MATANUSKA-SUSITNA BOROUGH
PLANNING COMMISSION AGENDA

Vern Halter, Mayor

PLANNING COMMISSION
Mary Anderson, District 1
Thomas Healy, District 2
John Klapperich, Chair, District 3
Colleen Vague, District 4
William Kendig, District 5
Tomas Adams, District 6
Vern Rauchenstein, District 7

John Moosey, Borough Manager

PLANNING & LAND USE DEPARTMENT
Eileen Probasco, Director of Planning & Land Use
Sara Jansen, Acting Planning Services Chief
Alex Strawn, Development Services Manager
Fred Wagner, Platting Officer
Mary Brodigan, Planning Clerk

Assembly Chambers of the
Dorothy Swanda Jones Building
350 E. Dahlia Avenue, Palmer

November 7, 2016
REGULAR MEETING
6:00 p.m.

I. CALL TO ORDER, ROLL CALL, AND DETERMINATION OF QUORUM

II. APPROVAL OF AGENDA

III. PLEDGE OF ALLEGIANCE

IV. CONSENT AGENDA

Items on the consent agenda are considered to be routine and non-controversial by the Commission and will be approved by one motion. There will be no separate discussion of these items unless a Commission Member so requests, in which case the item will be removed from the Consent Agenda and considered in its normal sequence on the agenda.

A. MINUTES
1. August 15, regular meeting minutes

B. INTRODUCTION FOR PUBLIC HEARING: QUASI-JUDICIAL MATTERS
1. A remand to the Planning Commission for further consideration of the Central Monofill Services (CMS) application for a Conditional Use Permit under MSB Code 17.60, for the operation of a monofill for the disposal of inert construction and demolition debris, including regulated asbestos-containing material (RACM) and non-regulated asbestos-containing material (non-RACM), and an outdoor storage yard for the sale of salvageable/recyclable materials, located at 2840 S. Glenn Highway (Tax ID: 17N02E18C010) AND 2560 S. Glenn Highway (Tax ID: 17N02E19B006); within Township 17 North, Range 2 East, Sections 18 and 19, Seward Meridian. Public Hearing: December 5, 2016. (*Applicant: Central Monofill Services (CMS), Staff: Mark Whisenhunt*)

C. INTRODUCTION FOR PUBLIC HEARING: LEGISLATIVE MATTERS

V. COMMITTEE REPORTS

VI. AGENCY/STAFF REPORTS

VII. LAND USE CLASSIFICATIONS

VIII. AUDIENCE PARTICIPATION (*three minutes per person, for items not scheduled for public hearing*)

IX. PUBLIC HEARING: QUASI-JUDICIAL MATTERS (*Public Hearings shall not begin before 6:15 p.m.)*

Commission members may not receive or engage in ex-parte contact with the applicant, other parties interested in the application, or members of the public concerning the application or issues presented in the application.

The Planning Commission members may submit questions to the Planning Commission Clerk concerning the following matters or request for more information from the applicant at the time of the introduction. All questions and requests submitted by the Commission shall be in writing and copies will be provided to the applicant and made available to all interested parties and the public upon request. Answers to questions and additional material requests will be addressed in the staff report for the public hearing.

A. **Resolution 16-37**, a request for a Conditional Use Permit in accordance with MSB 17.70, Regulation of Alcoholic Beverage Uses, for the operation of an alcoholic beverage dispensary (bar) at the 907 Club, located at 2541 S. Rosalie Court; MSB Tax ID# 5428000T00A; within Township 17 North, Range 3 West, Section 21, Seward Meridian. (*Applicant: Mark Button, dba RMB, LLC, 907 Club, Staff: Mark Whisenhunt*)

X. PUBLIC HEARING: LEGISLATIVE MATTERS

A. **Resolution 16-40**, A resolution recommending Assembly approval of an ordinance amending MSB 15.24.030(5) and adopting the City of Houston's Comprehensive Plan Update. (*Staff: Van Le, R&M Consultants)*

XI. CORRESPONDENCE & INFORMATION

XII. UNFINISHED BUSINESS

XIII. NEW BUSINESS

XIV. COMMISSION BUSINESS

A. MSB Board of Ethics Advisory Opinion 16-01

B. Correction to Code Reference in Planning Commission Resolutions 16-30, 16-31, and 16-32

C. Upcoming Planning Commission Agenda Items (*Staff: Eileen Probasco*)

XV. DIRECTOR AND COMMISSIONER COMMENTS

XVI. ADJOURNMENT (Mandatory Midnight)

In order to be eligible to file an appeal from a decision of the Planning Commission, a person must be designated an interested party. See MSB 15.39.010 for definition of "Interested Party." The procedures governing appeals to the Board of Adjustment & Appeals are contained in MSB 15.39.010-250, which is available on the Borough Internet home page, http://www.matsugov.us, in the Borough Clerk's office, or at various libraries within the Borough.

Disabled persons needing reasonable accommodation in order to participate at a Planning Commission Meeting should contact the borough ADA Coordinator at 861-8432 at least one week in advance of the meeting.

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MINUTES
August 15, 2016

(Page 5 - 20)

MINUTES

The regular meeting of the Matanuska-Susitna Borough Planning Commission was held on August 15, 2016, at the Matanuska-Susitna Borough Assembly Chambers, 350 E. Dahlia Avenue, Palmer, Alaska. The meeting was called to order at 6:00 p.m. by Chair John Klapperich.

I. CALL TO ORDER, ROLL CALL, AND DETERMINATION OF QUORUM

Planning Commission members present and establishing a quorum:
Ms. Mary Anderson, Assembly District #1
Mr. Thomas Healy, Assembly District #2
Mr. John Klapperich, Assembly District #3 *Chair*
Ms. Colleen Vague, Assembly District #4
Mr. William Kendig, Assembly District #5
Mr. Vern Rauchenstein, Assembly District #7

Planning Commission members absent and excused were:
Mr. Tomas Adams, Assembly District #6

Staff in attendance:
Mr. Alex Strawn, Development Services Manager
Mr. John Aschenbrenner, Deputy Borough Attorney
Ms. Susan Lee, Planner II
Ms. Mary Brodigan, Planning Commission Clerk

II. APPROVAL OF AGENDA

Chair Klapperich inquired if there were any changes to the agenda.

GENERAL CONSENT: The agenda was approved without objection.

III. PLEDGE OF ALLEGIANCE

The pledge of allegiance was led by Mr. Douglas Clegg, a member of the audience.

IV. CONSENT AGENDA

A. Minutes

1. August 1, 2016, regular meeting minutes

A. INTRODUCTION FOR PUBLIC HEARING: QUASI-JUDICIAL MATTERS

1. **Resolution 16-30**, a Conditional Use Permit (CUP) in accordance with MSB 17.67 – Tall Structures including Telecommunication Facilities, Wind Energy Conversion Systems, and Other Tall Structures, for a 180 foot tall telecommunication tower (NSL1), located at 23619 W. Parks Highway; MSB Tax ID # 18N04W11A001; within Township 18 North, Range 4 West, Section 11, Seward Meridian. Public Hearing: September 19, 2016. (*Staff: Mark Whisenhunt*)

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2. **Resolution 16-31**, a Conditional Use Permit (CUP) in accordance with MSB 17.67 – Tall Structures including Telecommunication Facilities, Wind Energy Conversion Systems, and Other Tall Structures, for a 180 foot tall telecommunication tower (DLY1), located at 41238 W. Parks Highway; MSB Tax ID # 20N04W06C003; within Township 20 North, Range 4 West, Section 6, Seward Meridian. Public Hearing: September 19, 2016. (*Staff: Mark Whisenhunt*)
3. **Resolution 16-32**, a Conditional Use Permit (CUP) in accordance with MSB 17.67 – Tall Structures including Telecommunication Facilities, Wind Energy Conversion Systems, and Other Tall Structures, for a 180 foot tall telecommunication tower (KSH1), located at 15960 E. Kashwitna Road; MSB Tax ID # 23N04W29C006; within Township 23 North, Range 4 West, Section 29, Seward Meridian. Public Hearing: September 19, 2016. (*Staff: Mark Whisenhunt*)

C. NTRODUCTION FOR PUBLIC HEARING: LEGISLATIVE MATTERS

1. **Resolution 16-27**, recommending Assembly adoption of the FY 2018 – 2023 Capital Improvement Program. Public Hearing: September 19, 2016. (*Staff: Sara Jansen*)

Chair Klapperich read the consent agenda into the record.

Chair Klapperich inquired if there were any changes to the consent agenda.

GENERAL CONSENT: The consent agenda was approved without objection.

V. COMMITTEE REPORTS

(There were no committee reports.)

VI. AGENCY/STAFF REPORTS

(There were no agency/staff reports.)

VII. LAND USE CLASSIFICATIONS

(There were no land use classifications.)

VIII. AUDIENCE PARTICIPATION (Three minutes per person.)

The following persons spoke in protest of the proposed Central Monofill Services facility: Ms. Rose Williams, Mr. Eric Bleakney, Ms. Geri McCann, Ms. Stephanie Nowers, Ms. Barbara Landi, Mr. Chris Kepler, Mr. Nicholas McGrath, Ms. Janet McGrath, Ms. Stephanie Figon, Mr. Tony Sellen, and Mr. William Quantick.

The following persons spoke regarding the Colony Skilled Nursing Facility: Mr. Douglas Clegg and Mr. Donald Dyer.

The following person spoke regarding concerns with public process: Mr. Eugene Carl Haberman.

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IX. PUBLIC HEARING: QUASI-JUDICIAL MATTERS *(Public Hearing not to begin before 6:15 P.M.)*

Commission members may not receive or engage in ex-parte contact with the applicant, other parties interested in the application, or members of the public concerning the application or issues presented in the application.

(There were no quasi-judicial public hearings.)

X. PUBLIC HEARING LEGISLATIVE MATTERS

A. **Resolution 16-28,** recommending Assembly approval of an Interim Materials District (IMD) known as Denali Highway Mile 99, in accordance with MSB 17.28 – Interim Materials District, for the extraction of 500,000 cubic yards of earth material within a 69.91 acre parcel until the year 2060, located within Township 19 South, Range 2 West, Section 10 & 15, Fairbanks Meridian. (*Applicant: State of Alaska, Department of Transportation and Public Facilities, AKDOT&PF, Staff: Susan Lee*)

Chair Klapperich read the resolution title into the record.

Ms. Susan Lee provided a staff report:
- staff recommended approval of the resolution with conditions.

Commissioners questioned staff regarding clarification of the size of the cells as shown on page 367 of the packet.

Mr. Henry Cole, Alaska Department of Transportation and Public Facilities (AKDOT&PF), provided an overview of their application via teleconference.

Commissioners questioned Mr. Cole regarding:
- whether there are other sources of gravel in the area; and
- will this IMD change the way the highway is used.

Chair Klapperich opened the public hearing.

The following person spoke regarding concerns with public process: Mr. Eugene Carl Haberman.

There being no one else to be heard, Chair Klapperich closed the public hearing and discussion moved to the Planning Commission.

Chair Klapperich offered Mr. Cole the opportunity to respond to questions and comments from members of the audience.

Mr. Cole responded to questions and comments from a member of the audience.

MOTION: Commissioner Healy moved to approve Resolution 16-28. The motion was seconded.

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MOTION: Commissioner Rauchenstein moved a primary amendment to add an additional condition to read: "The owner shall apply for a driveway permit prior to constructing a second driveway." The motion was seconded.

Deputy Attorney Aschenbrenner stated that this is a state road and the applicant, the State of Alaska, would not apply for a driveway permit with the Borough.

Mr. Cole:
- stated that there currently are no driveways in existence;
- for DOT to put in a driveway from a DOT road to a DOT material site would consist of sending a drawing of the proposal to our traffic engineer who will make sure that it complies with site distance requirements and dimensions;
- stated the AKDDOT does not require permits from themselves, and
- if and when they do construct a driveway, they will hold it to the same standards that they require of commercial businesses, contractors, and homeowners.

WITHDRAWN: Commissioner Rauchenstein withdrew his primary amendment.

There was no objection noted.

VOTE: The main motion passed without objection.

XI. CORRESPONDENCE AND INFORMATION

A. Superior Court Order Remanding the Planning Commission's Denial of CMS's Permit
B. Ethics Board Advisory Opinion 15-01

Chair Klapperich read the item into the record.

Mr. Alex Strawn:
- provided an overview of the events leading up to these agenda items;
- stated that he will be making a recommendation to the commission as to how he thinks that they should proceed with the recusal of Commissioner Kendig and the Conditional Use Permit (CUP) application for Central Monofill Services (CMS);
- recommended that the commission also give CMS the opportunity to state how they think the commission should proceed;
- noted that there was a procedural error with the way that Commissioner Kendig was recused, and for that reason, the CUP was remanded back to the commission by Alaska Superior Court;
- the Superior Court ordered that the commission revisit the recusal of Commissioner Kendig and then revisit CMS's application;
- recommended that the commission first afford Commissioner Kendig the opportunity to state his position on whether or not he should recuse himself;
- if Commissioner Kendig does not choose to recuse himself, the commission will need to take up the matter of his recusal;

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- the decision on whether to recuse Commissioner Kendig needs to be addressed first because if he is to be recused, he will not be able to participate in the proceedings;
- suggested that in this case they should review the transcripts for the previous meetings dealing with this issue, the information within the record, and the facts surrounding the recusal;
- the commission may also wish to request additional information to explore some of the facts around the case;
- stated that the next few PC meetings are already pretty full with towers, variances, and liquor stores;
- opined that November would be the earliest that a public hearing could be scheduled for this item;
- noted that the record will be large and the PC will need to act as a whole; and
- new commissioners will need to get caught up in order for the commission to make a new decision and to adopted findings of fact and conclusions of law to support the decision.

Chair Klapperich requested that both Mr. Aschenbrenner and Mr. Ingaldson explain to the Planning Commission how they think the commission should proceed regarding the recusal of Commissioner Kendig and the public hearing for CMS.

Mr. John Aschenbrenner, Deputy Borough Attorney:

- clarified that the court did not reverse the decision of the Planning Commission, but vacated the decision at the point where the commission took up the question of Commissioner Kendig's recusal;
- stated that there is currently no decision regarding CMS's application for a CUP;
- after the commission rendered its decision, Commissioner Kendig sought an ethics opinion on whether he should sit during a legislative item for an Assembly ordinance that would affect the ability of applicants like CMS to seek a permit within the core area;
- in the process of rendering a decision on the legislative item, the Ethics Board found that Commissioner Kendig had been appropriately recused on CMS's application for a CUP;
- opined that the commission has before it the task of determining if Commissioner Kendig should sit;
- the court also conveyed that it was the appropriate decision that Commissioner Kendig not vote on his recusal;
- Mr. Kendig can choose to recuse himself, in which case the commission will not have to take up the matter collectively;
- if he does not choose to recuse himself, the commission will have to address the matter;
- the two new commissioners will need to review the record and he urged the rest of the commission to familiarize themselves with it as well;
- in addition to vacating the decision, the court ruled that it will be appropriate to hold a hearing;
- opined that because the commission is back at the beginning before the previous public hearing, the hearing the court was contemplating was another public hearing before this body;
- stated that the court noted that if the matter isn't resolved under MSB 2.71.080 Recusal, the commission will have to take up 2.71.070(A)(2)(d), *A municipal official may not take or withhold official action in order to affect a matter in which the municipal official has a*

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substantial financial interest or 15.08.150(A) *shall not participate in deliberation or vote on a question if* (1) *the commission member or a member of the commission member's immediate family has a substantial financial interest in any property affected by the decision or* (2) *could foreseeably profit in any material way through a favorable or unfavorable decision*;

- if Commissioner Kendig does not recuse himself, additional information will need to be elicited from him since MSB 2.71.080 is fairly clear that an official must recuse themself if there has been a transaction that has occurred within 12-months of the matter:
  - what was the nature of the transaction that occurred between Commissioner Kendig and the individuals that are seeking this permit from the borough;
  - what was the nature of the conversation that members of the public witnessed after Commissioner Kendig recused himself and then took a seat in the audience;
  - commissioners will need to look at this information with regards to MSB 15.08.150 Conflict of Interest;
- the court made it clear that the commission must provide findings of fact not only on the recusal, but on the merits of the application;
- following a decision on a recusal and the public hearing, both sides can provide findings of fact, but the prevailing side is required to provide findings of fact; and
- stated that it is important to give the court the underlying rationale for a decision.

Chair Klapperich queried Mr. Aschenbrenner as to what he would like the Planning Commission to do tonight.

Mr. Aschenbrenner:

- questioned if Commissioner Kendig intends to recuse himself tonight;
- noted that Commissioner Kendig has an ethics opinion from the MSB Board of Ethics stating that he was properly recused from the original hearing;
- if Commissioner Kendig does not recuse himself, both he and Mr. Ingaldson concur that the verbiage should be "should Commissioner Kendig be recused from this matter" rather than "should he continue to sit";
- the second statement was in the negative and leaves a question as to the outcome; and
- opined that the commission had the correct outcome, but unfortunately the question was framed incorrectly.

Mr. Bill Ingaldson, Attorney representing CMS:

- stated the he and Mr. Aschenbrenner agree on some things, but not on other things;
- opined that the ethics opinion was part of the appeal and that the judge was aware of it;
- one of the arguments advanced by the borough is that even if there was a mistake with parliamentary procedure, the right result happened as confirmed by the ethics opinion;
- stated that this argument was rejected by the judge;
- CMS was not part of that particular ethics opinion and was unaware of it until recently;
- noted that even an ethics opinion is subject to appeal;
- the PC can consider this ethics opinion, but opined that it's not binding;
- stated that his appeal to superior court on behalf of CMS was to overturn the recusal of Commissioner Kendig;

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- Judge Smith rejected this argument and agreed with the borough that the decision had to be vacated;
- the commission will need to look at this from the perspective of now;
- a commissioner that may not have had a conflict back then, but may have one now;
- agreed with Mr. Aschenbrenner that the question of recusal was framed wrong;
- the question should have been, "should Commissioner Kendig be recused";
- Commissioner Kendig was not allowed to vote and so the vote came down to four people and it took four votes to take action;
- opined that it takes a majority vote and not four affirmative votes;
- stated that the court agreed that it should have been a majority vote;
- Commissioners Healy, Klapperich, and Rauchenstein voted that they thought that Commissioner Kendig could be fair, and Commissioner Endle voted "no";
- noted there was one sale of some scrap metal for less than $1,000 and questioned whether this would make Commissioner Kendig a client;
- opined that this is a vague area;
- respectfully disagreed that and suggested that Judge Smith disagreed as well;
- opined that the issue is "can Commissioner Kendig be fair";
- stated that going forward procedurally, one of the commissioners will have to bring a motion to recuse Commissioner Kendig unless he should choose to recuse himself for some reason;
- there will have to be a majority vote to recuse him and there will have to be a basis for the recusal;
- noted that there was a member of the Board of Adjustment and Appeals (BOAA) that divulged that he had done surveys for many of the people that live in that area;
- when asked if he could still be fair, he stated that he could;
- at the time of the first public hearing, Commissioner Healy worked for the City of Palmer and the City Mayor and Manager spoke against this application;
- stated that he has known Commissioner Healy on a professional level for a number of years and does not believe that he would make a decision based on what his employer said;
- suggested that the commission needs to afford Mr. Kendig the same courtesy;
- opined that if someone is recused, that is an automatic negative vote;
- agreed that the commission's first step is to address the issue with Commissioner Kendig;
- suggested that if he hasn't had any recent dealings with CMS, that will be the end of it unless someone else has another reason for him to be recused;
- acknowledged that Mr. Kendig spent a lot of time reviewing the packet the last time, and because he sold scrap metal for less than $1,000, he could not sit on this item;
- if this is something that the commission feels is unfair, then someone should make the motion to recuse Commissioner Kendig which will require a second and a vote;
- stated that he has heard hearsay comments and accusations that Commissioner Kendig was seen talking to CMS;
- his clients have denied speaking to Commissioner Kendig;
- acknowledged that during a break, Commissioner Kendig did approach him and started to speak, but he immediately cut him off saying "we can't talk;"
- stated that they separated with no discussion;
- the process needs to be fair going forward for everyone including property owners and the applicants;

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- since the decision has been vacated, everyone will have to go through the whole thing again and he would prefer to have seven commissioners sitting rather than six; and
- reminded the commissioners that all commissioners will have to go through the same process to determine if they have a potential conflict.

Mr. Aschenbrenner:
- stated that Mr. Ingaldson conveyed that the court rejected the Borough's argument that it could ignore the procedural motion and in the same sentence he brought up that the court had rejected the ethics complaint;
- stated that this is absolutely wrong;
- there was no reference in the court's decision regarding the ethics opinion;
- the court just didn't take it up;
- the Board of Ethics received their authority from the MSB Assembly to decide questions of ethics;
- the commission has a decision by that body conveying that Commissioner Kendig was properly recused;
- opined the idea that the court rejected the ethics opinion is flatly wrong; and
- stated that this will not be a new application, but the same application.

Mr. Ingaldson:
- agrees with Mr. Aschenbrenner that the ethics opinion is not referenced in the court decision, but implicit in his ruling is that it was rejected;
- stated that he will be happy to provide the commission with the briefing on this issue;
- emphasized that the defense brought up by the borough was that it doesn't matter that there was a procedural error because the ethics opinion determined that Mr. Kendig was appropriately recused;
- stated that the court rejected that argument or they wouldn't be here on this issue today;
- opined that the court wouldn't send anything back to vote on it if they didn't think that he deserved to be here;
- stated that it's not in the decision, but a lot of the things aren't in the decision; and
- implicit in that decision necessarily is that Judge Smith isn't going to make you do all do a bunch more work for nothing.

Commissioner Kendig:
- stated that he has a lot of questions before he makes a decision;
- heard that there will be a new public hearing, but is not clear if it will be the same application; and
- queried the borough attorney if the timeline will remain the same since so much time has passed.

Mr. Strawn stated that it will be the same application.

Mr. Aschenbrenner:
- the timeline remains the same;
- stated that it would be turning borough code on its head to say that an individual commissioner can sit as long as enough time goes by on an individual application;

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- this is the argument of CMS; and
- it is wrong to interpret borough code in the way that CMS is seeking, and opined that it makes no sense.

Chair Klapperich:
- stated that he had said that there wouldn't be any action tonight since there isn't an official public hearing; and
- prefers that Commissioner Kendig does not state his position tonight.

Commissioner Kendig:
- stated that he is as astounded about all of the this as anyone else;
- noted that it hasn't been any fun sitting in the hot seat;
- he takes his position on the commission very seriously, and wants without a shadow of a doubt to make the right decision;
- noted that Assemblymembers have in the past asked for a second opinion from a neutral party and is asking for the same;
- stated that he will be asking for another opinion from the Board of Ethics as he believes that this is a little bit of a different situation; and
- he would also like an opinion from an outside law firm.

Mr. Aschenbrenner:
- stated that the Board of Ethics is the second opinion;
- the ethics opinion addressed that Commissioner Kendig was properly recused;
- it does not address the various borough ordinances that will also have a bearing on whether or not he should sit;
- stated that there isn't anything to prohibit him from seeking another opinion from the Board of Ethics in the interim between this date and the date that the matter is set for a future public hearing;
- borough staff does not object to Commissioner Kendig seeking another opinion, but urges him to provide enough information to the board so that they can render a decision on those additional ordinances; and
- stated that even if Commissioner Kendig seeks an opinion from an outside attorney, the final authority is with the Board of Ethics.

Chair Klapperich:
- clarified that there will not be a public hearing regarding Commissioner Kendig's recusal;
- this will be an individual and Planning Commission decision only; and
- stated that there will be a new public hearing even though it is the same application that came before the commission previously.

Mr. Aschenbrenner:
- would like to note for the record, as he did in the original hearing, that anyone can appeal the final decision of the Planning Commission including interested parties, members of the public, and staff;
- if there is an error built into the record with regard to who is sitting, they will have an opportunity to appeal the decision based on that question;

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- this was noted in the courts decision; and
- while there won't be a separate public hearing regarding Mr. Kendig's recusal, it's clear that members of the public would have an opportunity to appeal the decision based on that question.

Mr. Ingaldson:
- stated that there is a lot of case law in Alaska regarding recusals;
- there has to be a legitimate reason for a recusal and it cannot be done lightly;
- judges that have tried to recused themselves have had their recusals overturned;
- the reason is that the public has the right to have a full panel whenever possible;
- there must be a serious reason to recuse yourselves;
- stated that he would agree with Mr. Aschenbrenner that if we were not having a new public hearing, we would go back to voting as it was at that time;
- this is what we urged the court to do, but they rejected it;
- you will have to go back a year from now and if one of you has a conflict that you didn't have before, you won't be able to sit;
- Commissioner Kendig's transaction was over two years ago with less than a $1,000 purchase;
- our position is that it was not a violation anyway;
- reminded the commission that an ethics opinion can be appealed;
- if you say that one of you should be recused because of this ethics opinion, we will be right back here because Judge Smith's decision is irreconcilable with that finding; and
- opined he would not be here asking commissioners to vote if, as a matter of law, Mr. Kendig should have recused himself.

Discussion ensued amongst the commission as to how to proceed.

Mr. Aschenbrenner:
- when the court vacated the decision, Judge Smith remanded it with the understanding that the matter was placed back before the commission at the point in time that the board took up who should sit on the matter;
- the appellant argued that Mr. Kendig's absence from the board was prejudicial to them;
- opined that to a certain extent the court agreed in the sense that it vacated the final decision and put it back before the board at the point in time that Commissioner Kendig's recusal was taken up by the commission;
- the vacation is of the final order, but the commission will still need to consider the entire record;
- the record will consist of everything that existed at the point in time where the commission took up the recusal question along with the transcript of the public hearings and anything new that comes before the commission before and during the new public hearing; and
- the commission will have to render a decision based on all of this information.

Mr. Ingaldson:
- stated that it is their position that there should be a vote on Mr. Kendig, after which he could review the record, and everyone else wouldn't have to go through this again;

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- Mr. Aschenbrenner argued that people have the right to have a hearing and Judge Smith agreed with him on that;
- concurred that the order is clear that the hearing was vacated;
- acknowledged that if the borough has new evidence, the commission will get to hear it;
- similarly, if CMS has new information, the commission will get to hear that as well;
- disagrees with Mr. Aschenbrenner on one point;
- the commission does not get to go back right to the spot to make it convenient to recuse Commissioner Kendig;
- everyone has worked very hard on this and deserves some finality, but everyone also deserves to have a fair hearing;
- stated that he will be happy to meet with Mr. Aschenbrenner about the scope of where to go and opines that they can come to some agreement of what they can or cannot consider; and
- very much appreciates that Mr. Aschenbrenner has been kind enough to urge the commission to listen to him.

Chair Klapperich queried the commission as to how they would like to wrap things up tonight.

Commissioner Vague:
- stated that she has known Mr. Kendig for more than ten years;
- acknowledged that Mr. Kendig brought this subject up to her in a private conversation that came up before she was given this information;
- queried whether this was ex parte communication and if she will need to recuse herself if the commission has to vote on whether or not to recuse Mr. Kendig;
- stated that she felt like she was being swayed to vote one way or another regarding a recusal; and
- until she got the packet a few days later, she didn't know what Mr. Kendig was talking about.

Mr. Aschenbrenner:
- ex parte contact contemplates a communication between a commissioner and one side;
- opined that this does not meet the definition of ex parte contact;
- thanked Commissioner Vague for disclosing this information;
- stated that the Borough Attorney's Office, on behalf of staff, does not object to Commissioner Vague sitting; and
- recommended that the commission allow Mr. Ingaldson to weigh in.

Mr. Ingaldson:
- stated that he has no objection to Commissioner Vague sitting;
- noted that no one has made a motion to recuse yet; and
- if Commissioner Vague wishes, she can abstain from voting on the recusal.

Chair Klapperich:
- requested clarification that if Commissioner Kendig chooses to recuse himself, the commission will not have to vote on his recusal; and

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- if Commissioner Kendig does not recuse himself, the commission will need to vote on whether he should be recused.

Mr. Ingaldson:
- stated that if Commissioner Kendig does not recuse himself, then he sits unless a commissioner moves to recuse him; and
- the motion will need to be seconded and then there will be a vote.

Chair Klapperich queried the commission as to what they would like to accomplish tonight.

Commissioner Healy:
- suggested that the commission schedule a public hearing for some time in November or December to provide adequate public notice;
- the borough will provide the packet with all of the information that has been considered previously; and
- the recusal issue can be brought up again just prior to the public hearing.

Discussion ensued:
- possible dates for the public hearing;
- the commission prefers not to schedule a public hearing on November 7th as only half of the Assembly Chambers will be available due to the November 8th election;
- possibly moving the November 7th meeting to November 14th;
- the potential for scheduling conflicts in December due to the holidays; and
- limiting the agenda to the one public hearing for CMS.

Commissioner Kendig stated that he has a conflict on November 14th and is not available.

The commission requested that Ms. Brodigan schedule the public hearing for a date other than November 7 or 14, 2016.

[Clerk's note: the introduction for CMS has been scheduled for November 7, 2016, with the public hearing on December 5, 2016.]

XII. UNFINISHED BUSINESS

(There was no unfinished business.)

XIII. NEW BUSINESS

(There was no new business.)

XIV. COMMISSION BUSINESS

A. Upcoming Planning Commission Agenda Items

(Commission Business was presented and no comments were noted.)

DRAFT

XV. DIRECTOR AND COMMISSIONER COMMENTS

Ms. Brodigan:

- stated that there are a couple of updates for code books; and
- requested commissioners bring in their code books if they would like them updated prior to the next few meetings.

Commissioner Anderson:

- thanked everyone for coming out tonight to listen to the proceedings and to weigh in;
- thanked Mr. Aschenbrenner and Mr. Ingaldson for bringing commissioners up to speed;
- stated that she is new and acknowledged that this will be a challenge, but opined that she is up to the task;
- thanked her fellow commissioners for their patience once again;
- acknowledged that sometimes issues like this come back and it takes a bit of time to get up to speed; and
- opined that the commission will come up with a good decision.

Commissioner Vague:

- stated that she has known Commissioner Kendig for years and would like to make it clear that she has the utmost respect for him;
- opined that he will do what it right for himself, everyone else on the board, and for the community;
- stated that she did not mean to imply anything otherwise, other than she wanted to do the right thing; and
- opined that the code word for the day is to be very transparent.

Commissioner Healy stated that he will be out of state during the September 19th and October 3rd meetings, and asking to be excused.

Chair Klapperich:

- stated that he wants the applicant to feel very confident regarding Commissioners Vague and Anderson regarding their professionalism and preparedness;
- noted that Ms. Vague provided great leadership on the school board for many years;
- Ms. Anderson, wife of former Mayor Anderson certainly knows what is going on;
- opined that they come very well educated and prepared;
- Mr. Adams will lend good credence as well;
- opined that sometimes getting it right takes a little extra effort; and
- stated that as chairman of this commission, he takes public process very seriously.

DRAFT

XVI. ADJOURNMENT

The regular meeting adjourned at 8:52 p.m.

JOHN KLAPPERICH, Planning Commission Chair

ATTEST:

MARY BRODIGAN, Planning Commission Clerk

Minutes approved: ____

DRAFT

INTRODUCTION FOR PUBLIC HEARING

QUASI-JUDICIAL

Central Monofill Services (CMS)
Application for a CUP
(Remanded back to the PC for further Consideration)

2840 S. Glenn Highway

(Page 21 – 3,224)

INTRODUCTION FOR PUBLIC HEARING

MATANUSKA-SUSITNA BOROUGH
Planning and Land Use Department
Development Services Division
350 East Dahlia Avenue • Palmer, AK 99645
Phone (907) 861-7822 • Fax (907) 861-7876
www.matsugov.us

MEMORANDUM

DATE: October 24, 2016

TO: Planning Commission

FROM: Alex Strawn, Development Services Manager

SUBJECT: Content of the Packet for Remand of Central Monofill Services' Request for Junkyard/Refuse Area Conditional Use Permit

The Superior Court for the State of Alaska has ordered the Planning Commission's decision to deny Central Monofill Services (CMS) conditional use permit be reversed and the case be remanded back to the Planning Commission. CMS had submitted a conditional use permit under MSB 17.60 – Conditional Uses, for the operation of a monofill for the disposal of inert material. The debris will primarily be non-hazardous shredded material from construction and demolition waste, including Regulated Asbestos Containing Material (RACM) and Non-RACM material. The proposed site is located on MSB Tax Parcels: 17N02E18C010 (2840 S. Glenn Highway) and 17N02E19B006 (2560 S. Glenn Highway); within Township 17 North, Range 2 East, Sections 18 and 19, Seward Meridian.

The content of the packet consists of the following items:

1. Superior Court Orders
2. Planning Commission Resolution 15-01 Supporting Denial of 14-33
3. Board of Adjustment and Appeals Order 15-01
4. Board of Ethics Advisory Opinion 16-01
5. Board of Ethics Advisory Opinion 15-01
6. Packet Related to Planning Commission Resolution 14-33
7. Handout Documents Related to Planning Commission Resolution 14-33
8. Packet Related to Planning Commission Resolution 15-01
9. Planning Commission Minutes for December 1, 2014
10. Planning Commission Minutes for December 15, 2014
11. Planning Commission Minutes for January 5, 2015
12. Transcript for Planning Commission Meeting December 1, 2014
13. Transcript for Planning Commission Meeting December 15, 2014
14. Transcript for Planning Commission Meeting January 5, 2015

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IN THE SUPERIOR COURT FOR THE STATE OF ALASKA

THIRD JUDICIAL DISTRICT AT PALMER

CENTRAL MONOFILL SERVICES, INC. Appellant, vs. MATANUSKA-SUSITNA BOROUGH BOARD OF ADJUSTMENTS, Appellee.	CASE NO. 3PA-15-01925 CI

ORDER

The Matanuska-Susitna Borough Board of Adjustments filed a Limited Motion to Reconsider, asking the court to reconsider its July 5, 2016 order as to the number of votes necessary for a motion to recuse. Because the court mistakenly stated that the necessary vote to recuse an individual under Robert's Rules was a two-thirds vote rather than a majority vote, the court will grant the motion and issue an amended order.

As the Borough correctly indicates, motions for recusal are not included in the list of motions which require a two-thirds vote according to Robert's Rules of Order, Newly Revised (11th ed.). Absent a rule that provides otherwise, the basic requirement for approval of an action by the assembly is a majority vote. RONR (11th ed.), § 44. Under MSB 15.08.075, "the majority vote required shall be four." Therefore, the correct

vote required for recusal is a majority vote, which here, is four votes.

For the foregoing reasons, it is ORDERED that the Matanuska-Susitna Borough Board of Adjustments Limited Motion to Reconsider is GRANTED. The court will issue an amended order with the correct voting requirement.

Dated at Palmer, Alaska, this 8th day of July, 2016.

ERIC SMITH
SUPERIOR COURT JUDGE

I certify that on 7/8/16 a copy of this document was sent to ☐ CSSD ☒ Attorney(s) of record ☐ Plaintiff ☐ Defendant ☐ Other At the address(es) of record: fax
Deputy Clerk

IN THE SUPERIOR COURT FOR THE STATE OF ALASKA

THIRD JUDICIAL DISTRICT AT PALMER

CENTRAL MONOFILL SERVICES, INC. Appellant, vs. MATANUSKA-SUSITNA BOROUGH BOARD OF ADJUSTMENTS, Appellee.	CASE NO. 3PA-15-01925 CI

AMENDED ORDER

Central Monofill Services ("CMS"), a corporation, appeals the denial of a conditional use permit by the Matanuska-Susitna Board of Adjustment and Appeals ("BOAA"). Because the Commission did not follow the proper procedures governing recusal, the court will reverse the denial of the permit and remand the case for further proceedings.

I. Facts and Proceedings

CMS applied for a conditional use permit for the operation of an inert monofill on two Mat-Su Borough land parcels totaling 118 acres in size. The Matanuska-Susitna Borough Planning Commission held a public hearing on the permit on December 1, 2014. In response to an inquiry from the Commission Chairman as to whether any of the Commissioners in attendance had any potential conflicts of interest, Commissioner Kendig disclosed that his business had sold scrap to Central Environmental, Inc.

("CEI"), a corporation owned by the same individuals as the ones who own CMS. Kendig stated that the most recent sale occurred in late summer or early fall of 2014, but prior to that transaction, he had not done business with CEI in "four or five years." Appellant's Excerpt of Record, p. 168. He further stated that he was "confident in saying that I can be impartial" with respect to CMS's application, and that he did not view occasional sales to CEI to constitute a conflict of interest. Id., p. 172.

The Deputy Borough Attorney informed the Commissioners that Kendig's sale of scrap to CEI raised the question of whether he should recuse himself under MSB 2.71.080, which provides that an official must recuse himself from acting in any proceeding "that involves any person who is, or has been, a client of the official or the official's firm or partnership within the 12-month period immediately preceding the date of the action." The Borough Clerk advised the Commission in this respect that "it's up to the Commission to determine whether or not [Kendig] can stay," thereby framing the issue before the Commission as requiring the Commission to determine whether to allow Kendig to participate in the permit application hearing and voting. Counsel for CMS and the Deputy Borough Attorney informed the Commission that the vote should address whether Kendig should be required to recuse himself, as opposed to whether he could stay.

The Commission decided to follow the Clerk's advice. It also concluded that Kendig should not be allowed to vote on the question of whether he would be allowed to participate. The Chair accordingly called for and received a motion "to allow Mr. Kendig to remain in the discussion [of] Resolution 14-33." Four affirmative votes are required to pass a motion. MSB 15.08.075 ("All board actions shall be by vote of a majority of the board's authorized membership; the majority vote required shall be four."); Appellant's Excerpt of Record, pp. 197, 200. When the motion in question was heard, there were five commissioners of seven in attendance. One of those present was Kendig, who was not allowed to participate. Of the four participants deemed eligible to vote, three voted to allow Kendig to participate and one voted against Kendig's participation.[1] Kendig therefore was precluded from participating in discussing and voting on CMS's permit application.

The Commission then proceeded with the December 1, 2014 public hearing regarding CMS's application, but was unable to complete the hearing on that date. It held a second hearing on December 15, 2014. At the beginning of the December 15th hearing, counsel for CMS re-raised the issue that the motion regarding Kendig's participation had been improperly framed and that recusal was not required under MSB 2.71.080. Counsel also

[1] Commissioner Endle dissented.

called attention to an email from the Borough Clerk to the Commission in which she had stated that the vote should instead have been properly framed as "does Mr. Kendig have a conflict of interest." The Chair declined to revisit the issue.

At the conclusion of the December 15, 2014 hearing, the Commission voted on whether to pass the resolution to approve CMS's conditional use permit. The vote was three in favor and three against[2], which meant that the permit application was denied after it did not receive the four favorable votes required to pass.

After the vote, the Deputy Borough Attorney advised the Commission that it was required to issue written findings and conclusions, and that because the application was denied based on a 3-3 vote, both those in favor and those against should submit proposed findings and conclusions. At a January 5, 2015 hearing, the Commission voted to adopt and approve the findings of fact and conclusions of law to support the Commission's denial of CMS's application, with four votes in favor and two opposed.[3] The Commission did not present for adoption any findings of fact and conclusions of law in support of the vote to approve CMS's application.

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[2] Commissioners Kapperich, Raucehnstein and Walden voted in favor of the resolution, and Commissioners Endle, Adams, and Healy voted against it.
[3] Commissioner Walden voted to approve the findings and conclusions supporting the denial of the conditional use permit, even though he had voted to approve the permit.

CMS timely appealed to the Board of Adjustment and Appeals ("BOAA"). On March 31, 2015, BOAA issued its Notice of Right to Appeal and Final Decision, unanimously affirming the Commission's denial of CMS's application. CMS timely filed this appeal on April 30, 2015.

II. Standard of Review

AS 22.10.020(d) provides this court with jurisdiction over appeals from administrative agency decisions. The court applies the "substitution of judgment standard to questions of law where no agency expertise is involved," Davis Wright Tremaine LLP v. State, Dep't of Admin., 324 P.3d 293, 299 (Alaska 2014), or "where the agency's specialized knowledge and experience would not be particularly probative as to the meaning of the statute." Tesoro Alaska Petroleum Co. v. Kenai Pipe Line Co., 746 P.2d 896, 903 (Alaska 1987). Under the substitution of judgment standard, the court may "substitute [its] own judgment for that of the agency even if the agency's decision had a reasonable basis in law." Id. (internal citations omitted). Courts also "review an agency's application of its own regulations for whether the agency's decision was 'arbitrary, unreasonable, or an abuse of discretion,'" which "requires [courts] to give deference to an administrative determination 'if it has a reasonable basis in law and fact.'" Alaska Cmty. Action on Toxics

v. Hartig, 321 P.3d 360, 366 (Alaska 2014)(internal citations omitted).

The initial issue to be resolved in this appeal is whether the Commission properly followed its own procedures for recusal of a board member. This is a question of law to which no deference is required. The Borough's decision to deny the permit is subject to the more deferential standard of review.

III. Analysis

A. *The Motion Presented to the Commission on Commissioner Kendig's Recusal Was Improperly Framed*

A key issued raised by CMS is that the Commission improperly framed the motion before it when it voted on Kendig's recusal. According to CMS, the proper motion would have been a motion to disallow Kendig's participation in the hearing, as opposed to whether Kendig should be allowed to participate in the hearing. CMS further claims that the Commission should have presumed as true Kendig's own conclusion that he could be fair and impartial when voting on CMS's permit application, unless they decided that, based on the evidence in the record, a vote on recusal was necessary. And CMS argues that Kendig should have been allowed to vote on his recusal because Robert's Rules of Order ("Robert's Rules") specifically allows a member to vote on questions affecting himself, including whether that member should be recused.

The Borough responds that the court should refrain from addressing whether the Commission properly followed its own parliamentary procedures preceding Kendig's recusal because "parliamentary rules are merely procedural and not substantive" and "[h]ence, they may be waived or disregarded by the legislative body." Appellee's Brief, pp. 41-42 (citing 59 Am. Jur. 2d Parliamentary Law § 5). The Borough also relies on Jefferson v. City of Anchorage, 513 P.2d 1099 (Alaska 1973)(finding that the city council could, by its customary practice, waive a procedural requirement) in support of this claim.

Contrary to the Borough's claim, the court has jurisdiction to address the procedures used by the Commission in voting on the recusal issue. Courts typically and properly review decisions of administrative agencies to determine whether the agency followed its own procedures. See, e.g., Copeland v. Ballard, 210 P.3d 1197, 1201 (Alaska 2009); In re Hanson, 532 P.2d 303, 305 (Alaska 1975). The authority cited by the Borough, by contrast, involved procedural decisions by legislative and municipal bodies, not executive branch agencies. In particular, the Am. Jur. treatise cited by the Borough states:

> The courts will not annul an act of a *legislature* or an ordinance of a *municipal council*, merely because one or the other was enacted in disregard of the rules that the legislature or the municipal council...had prescribed for its own government...unless they have proceeded in

> violation of the law of the land, or of the charter of the municipality, which is their organic law.

59 Am. Jur. 2d Parliamentary Law § 5 (emphasis added). And Jefferson, the Alaska Supreme Court was asked to review a procedural action of the Anchorage City Council, again, a legislative body.

The Commission is an executive branch agency and by the Borough's own admission, a quasi-judicial body. The procedural decisions of the Commission may thereby properly be reviewed by the court. (The Court also notes that unlike Jefferson, there is no indication from the record that the Commission voted in this instance (nor was it the Commission's regular practice) to suspend the applicability of Robert's Rules when voting on Kendig's recusal.)

The Commission consists of seven members who are registered to vote on matters before it. MSB 15.08.010. Four votes, which constitutes a majority of the seven members, are required for the Commission to take action. MSB 15.08.075. In the absence of a majority of the number of authorized board seats (defined as a "quorum") present at a meeting, any business transacted is null and void. MSB 4.05.080(B).

When voting on a matter before the Commission, a Commissioner may not take or withhold an official action in order to affect a matter in which the municipal officer has a

substantial financial interest, MSB 2.71.070(A)(2)(d), or "participate in deliberation or vote on question if the commission member...has a substantial financial interest in any property affected by the decision...or could foreseeably profit in any material way through a favorable or unfavorable decision." MSB 15.08.150(A). If the specific conflict of interest involves a person who has been a "client" of one of the officials in the past year, MSB 2.71.080(a) requires that that official recuse himself:

> "A municipal officer shall recuse himself from acting on any matter or proceeding coming before a borough-elected body, board, commission, or committee of which the official is a member when the matter or proceeding involves any person who is, or has been, a client of the official or the official's firm or partnership within the 12-month period immediately preceding the date of the action."

MSB 4.05.080(A) provides that "[a]ll meetings shall be conducted in accordance with the current edition of Robert's Rules of Order, Newly Revised." See also MSB 15.080100 ("Meetings shall be conducted under the current edition of Robert's Rule of Order Newly Revised, and such modified or amended rules as may be adopted by the commission."). As to whether a commissioner may vote on matters that involve potential conflicts of interest, Robert's Rules states: "It is a general rule that no one can vote on a question in which he has a direct personal or pecuniary interest." RONR (11th ed.), Ch. 46. However, Robert's Rules provides limited exceptions to this

rule, such as matters that affect more than one person at a time, like salary increases of board members. Id. It is in the context of these limited exceptions that Robert's Rules states: "If a member could in no case vote on a question affecting himself, it would be impossible...for a legislature to vote salaries to members, or for the majority to prevent a small minority from preferring charges against them and suspending or expelling them." Id. Finally, Robert's Rules reiterates: "A sense of delicacy usually prevents a member from exercising this right of voting in matters affecting himself except where his vote might affect the result." Id.

The plain language of MSB 2.71.080 requires the Commission to determine whether a Commissioner should be recused from participating in a proceeding. This requires an affirmative vote on recusal by the Commission, not an indirect vote on whether the Commissioner may remain. In other words, the issue properly framed for the Commission's vote was whether Kendig should be recused. Instead, as stated earlier, the Commission improperly framed the issue as whether to allow Kendig to participate in deliberations, which thereby allowed one vote to prevent Kendig's participation in the hearing on CMS's permit application, rather than the majority vote required by Robert's Rule's. RONR (11th ed.), Ch. 48.

The Commission did, however, properly decide that Kendig could not vote on his own recusal. Kendig clearly has a direct personal interest in his recusal, for as an active, appointed commissioner, Kendig certainly has a personal interest in his own involvement via continued participation and deliberation on matters before the Commission. Nor is the issue one that, despite Kendig's own personal or pecuniary interest, affects more than just him. Kendig therefore should not vote on the issue of his recusal. Cf. AS 22.20.020(c)(another judge must review a judge's decision to deny recusal).

B. Relief

CMS requests that the court simply order the Commission to hold a vote on the recusal issue, and if Kendig is allowed to participate, to have him vote based on the record developed at the December 2014 hearings. The Borough contends that if the court decides that the Commission failed to follow the correct procedure on remand, then the overall decision must be vacated and a new hearing held.

The court agrees with the Borough. The Commission voted 3-3 on the permit application, which means that the Commission's procedurally incorrect decision on Kendig's recusal had a significant effect on the outcome. This requires the permit decision to be vacated altogether, which in turn entails that all of the other challenges raised by CMS to the permit denial

are moot and need not be addressed by this court. The court notes in this respect that the CMS permit was very controversial - if CMS' proposed procedure were to be followed, then if Kendig were allowed to participate, he may well vote to grant the permit, which would raise serious and substantial legal issues regarding whether anyone opposed to the permit would have an opportunity to challenge that decision either before the BOAA or in court.

The court accordingly will remand this case to the Commission with an order that it revisit the recusal issue in a manner consistent with this order and then revisit CMS's permit application. The Commission should prepare findings of fact and conclusions of law as to any recusal decision it may make, as well as on the merits of CMS' permit application.

IV. Conclusion

For the foregoing reasons, it is ORDERED that the Borough's decision to deny CMS's permit is REVERSED and this case is remanded to the Commission for further proceedings consistent with this order.

Dated at Palmer, Alaska this 8th day of July, 2016.

ERIC SMITH
SUPERIOR COURT JUDGE

I certify that on 7/8/16
a copy of this document was sent to
☐ CSSD ☒ Attorney(s) of record
☐ Plaintiff ☐ Defendant ☐ Other
At the address(es) of record:
Rec'd Jnl
Deputy Clerk

By: Alex Strawn
Action: Adopted

MATANUSKA-SUSITNA BOROUGH
PLANNING COMMISSION RESOLUTION NO. 15-01(AM)

A RESOLUTION OF THE MATANUSKA-SUSITNA BOROUGH PLANNING COMMISSION ADOPTING FINDINGS OF FACT AND CONCLUSIONS OF LAW TO SUPPORT THEIR FAILURE TO APPROVE PLANNING COMMISSION RESOLUTION 14-33.

WHEREAS, Planning Commission Resolution 14-33 recommended approval of a conditional use permit, subject to conditions, for the operation of an inert material monofill on parcels 17N02E18C010 and 17N02E19B006, within Township 17 North, Range 2 East, Sections 18 and 19, Seward Meridian; and

WHEREAS, on December 1st and 15th, 2014, the Planning Commission held a public hearing on Resolution 14-33; and

WHEREAS, the Planning Commission's vote on the motion failed to garner a majority vote on December 15, 2014 which constitutes denial of the conditional use permit; and

WHEREAS, comments received regarding the proposed monofill raised the following concerns:

- Material has been dumped without MSB or ADEC permits
- Hazardous waste could end up in the landfill
- Trash was dumped in the water
- Water pollution
- Health problems
- Pollution of surrounding lakes
- Protection of watershed and aquifer
- Windblown unhealthy dust and particulates from the monofill, including asbestos
- Contamination of water wells

- Windblown materials/debris onto surrounding properties
- Previous problems with gravel extraction on this property and rising water table
- Breach of berm between two of the manmade lakes and impact on surrounding water levels
- Lack of oversight and planning
- Applicant's disregard for regulations
- Lack of CMS's ability to manage and provide oversight of the facility
- Failure to reclaim the property
- Contamination of soil
- Lowering of property values
- Visual impacts to the Glenn Highway, a Scenic Byway
- Threat to migratory and breeding birds
- How the redesign of the Glenn Highway will affect this site
- Rising water levels of nearby lakes
- Improper handling and disposal of asbestos
- Depositing of lead based paint, mercury and heavy metals in the monofill
- Close proximity to residential area
- Contamination of fish in Canoe, Kepler-Bradley Lake system
- Inconsistent with comprehensive plans
- Highway safety and access issues; and

WHEREAS, Goal LU-1 of the Borough-Wide Comprehensive Plan (2005 Update) is to *Protect and enhance the public safety, health, and welfare of Borough residents*; and

WHEREAS, Policy LU1-1 Borough-Wide Comprehensive Plan (2005 Update)is to *Provide for consistent, compatible, effective, and efficient development within the Borough*; and

WHEREAS, Goal LU-2 of the Borough-Wide Comprehensive Plan (2005 Update) is to *Protect residential neighborhoods and associated property values*; and

WHEREAS, Policy LU2-1 of the Borough-Wide Comprehensive Plan (2005 Update) is to *Develop and implement regulations that protect residential development by separating incompatible uses, while encouraging uses that support such residential uses including office, commercial and other mixed-use developments that are shown to have positive cumulative impacts to the neighborhood*; and

WHEREAS, Goal LU-3 of the Borough-Wide Comprehensive Plan (2005 Update) is to *Encourage commercial and industrial development that is compatible with residential development and local community desires*; and

WHEREAS, Policy LU3-1 of the Borough-Wide Comprehensive Plan (2005 Update) is to *Develop and implement regulations that provide for non-residential development; and*

WHEREAS, Goal LU-4 of the Borough-Wide Comprehensive Plan (2005 Update) is to *Protect and enhance the Borough's natural resources including watersheds, groundwater supplies and air quality; and*

WHEREAS, Policy LU4-1 of the Borough-Wide Comprehensive Plan (2005 Update) is to *Identify, monitor, protect, and enhance the quantity and quality of the Borough's watersheds, groundwater aquifers, and clean air resources; and*

WHEREAS, Goal CQ-1 of the Borough-Wide Comprehensive Plan (2005 Update) is to *Protect natural systems and features from*

the potentially negative impacts of human activities, but not limited to, land development; and

WHEREAS, Policy CQ1-2 of the Borough-Wide Comprehensive Plan (2005 Update) is to *Manage activities affecting air, vegetation, water, and the land to maintain or improve environmental quality, to preserve fish and wildlife habitat, to prevent degradation or loss of natural features and functions, and to minimize risks to life and property; and*

WHEREAS, this site is located within the boundary of the Core Area Comprehensive Plan (2007 Update) boundary; and

WHEREAS, Policy 1-B of the Land Use Goal within the Core Area Comprehensive Plan (2007 Update) is to *Promote an orderly land use pattern suited to the demand for attractive settings in which to live, work, shop, learn, play, and carry on other daily activities;* and

WHEREAS, Policy Discussion related to policy 1-B within the Core Area Comprehensive Plan (2007 Update) states *As the Core Area's population grows – it is forecast to double by 2025 and absorb most of the remaining vacant land in the Core Area – the limited vacant land supply must provide a balanced supply of well-located sites for homes, businesses, private and public institutions, industry, parks and recreation, public improvements, and other purposes. The plan needs to provide a place for every permitted land use, but not all land uses go*

well side-by-side. Some uses such as residences and open space or retail trade and service business are usually compatible and enhance each other. Others, like heavy industrial activities and residential subdivisions, make poor neighbors and are best separated by distance or buffers; and

WHEREAS, Goal 7 of the Core Area Comprehensive Plan (2007 Update) is to *Protect and conserve the natural resources that support the well-being of residents and the region's tourism and recreation economy;* and

WHEREAS, Policy 7-A of the Core Area Comprehensive Plan (2007 Update) is to *Protect groundwater supplies and quality*; and

WHEREAS, Policy Discussion related to policy 7-A of the Core Area Comprehensive Plan (2007 Update) states *Many existing and future residences and businesses will depend on on-site groundwater resources for their water supply. Protection of the supply and quality of groundwater is vital to sustain this arrangement*; and

WHEREAS, Policy 7-B of the Core Area Comprehensive Plan (2007 Update) is to *Protect surface water quality*; and

WHEREAS, Policy Discussion related to policy 7-B of the Core Area Comprehensive Plan (2007 Update) states *The Core Area's many lakes are valuable natural and economic assets. They provide an attractive setting for residential development,*

enhance property values, support a variety of public and private recreational activities, and provide natural habitat, absorb runoff. These lakes are linked to streams and wetlands with similar positive values. The borough's existing program of lake management plans already provides some protection for surface water quality; and

WHEREAS, the Alaska Department of Environmental Conservation has not approved a permit for this development, as proposed; and

WHEREAS, the previous use of this site was for earth materials extraction. There are pre-existing legal nonconforming use rights for earth materials extraction for this property, which means that the industrial use was not approved under the current regulatory structure or evaluated for compatibility with surrounding land uses; and

WHEREAS, The proposed monofill is an industrial use and is an incompatible use with the surrounding residential areas as there is the possibility of contamination of drinking water wells and surrounding lakes within the area; and

WHEREAS, the underlying water table level is subject to significant fluctuations resulting from adjacent land use activities including the spill way located on the property and the dredging operation immediately to the north; and

WHEREAS, the Middle Pond on the site is unable to reach its predevelopment equilibrium when surface water is diverted out of the Middle Pond, as is currently occurring through the spillway; as testified by Charlie Cobb, State Dam Safety Engineer for the Water Resources Section of the Department of Natural Resources; and

WHEREAS, water levels in the three gravel pit ponds on site tend to sit at three different elevations and are acutely related to surface connections, but also related to groundwater levels in the vicinity or vice versa; as testified by Charlie Cobb, Dam Safety Engineer; and

WHEREAS, the embankments between the three surface ponds of the gravel pits, and possibly the surrounding shoreline, may not be dynamically stable due to the liquefaction potential of silt and sand soils in the vicinity; as testified by Charlie Cobb, Dam Safety Engineer; and

WHEREAS, as conveyed by the Department of Natural Resources Water Resources Section, the continued diversion of surface water and the integrity of the dam at the site are unresolved; and

WHEREAS, the applicant has not addressed how they will monitor or manage the seasonal high water table fluctuations to ensure that the bottom of the monofill is not annually saturated by groundwater; and

WHEREAS, a hydrologic report submitted to the Borough early in 2014 predicts a potential 2-foot water table rise resulting from dredging operations adjacent to the proposed monofill site to the north; and

WHEREAS, contaminants from the monofill will likely travel to surrounding drinking water wells and lakes; and

WHEREAS, a hydrology report within the record conveys that there is a high risk of water table contamination due to leachate; and

WHEREAS, the CMS hydrologists (Maddox & Associates) used annual precipitation and evaporation rates, which ignores the fact that precipitation at the site is not evenly spread throughout the year; and

WHEREAS, JA Munter Consulting Inc. cited a recent USGS study which characterizes the site as transitional between maritime and continental climates and the USGS estimates that 1.4 inches of water per year will recharge groundwater at this site, which equates to more than one million gallons of water, which is a significant volume of water to percolate through the waste material and enter the groundwater system; and

WHEREAS, as proposed, the monofill will be unlined with no system to capture, treat, or monitor polluting leachate which is likely to leave the site; and

WHEREAS, soils in the area of the monofill site are very

porous loose gravels and glacial loess, and offer little or no filtering capacity for fluids being emitted or drained from the fill. Without a liner, a ten foot separation is not sufficient to prevent leachate from reaching the water table, thus increasing the risk of contamination of the water resources in the area; and

WHEREAS, the monofill is designed to have water flow through the construction debris with an average hydro conductivity of approximately 2.0 x 10-2 cm/second, as determined by an engineering report submitted by the applicant; and

WHEREAS, contaminants typically found in groundwater surrounding construction and demolition landfills include cadmium, lead, iron, manganese, several chlorinated volatile organic compounds, sulfate, hydrogen sulfide, and TDS (Total Dissolved Solids). In addition, chromium and arsenic are found if chrominated copper arsenate-treated wood is disposed in the landfill; and

WHEREAS, there is the potential for the construction and demolition monofill to undergo spontaneous combustion or to catch fire by other outside sources. In the event that the material catches fire, a common method for fire suppression is application of copious amounts of water and foam, which could

leach into the water table and cause dramatic and sudden increase of polluting leachate; and

WHEREAS, the applicant did not propose a water quality monitoring program as part of the application; and

WHEREAS, the applicant has not provided a plan for remediation should the water table be polluted beyond safe drinking water levels; and

WHEREAS, as proposed, it is not possible to set conditions to adequately protect the groundwater and aquifer from anticipated negative effects of the monofill; and

NOW, THEREFORE, BE IT RESOLVED, that the Matanuska-Susitna Borough Planning Commission hereby adopts the aforementioned findings of fact and makes the following conclusions of law supporting denial of Planning Commission Resolution 14-33:

1) the commission cannot find that this conditional use permit will preserve or not detract from the value, character, and integrity of the surrounding area as required by 17.60.100(B)(1); and

2) the commission concludes that it cannot find that this conditional use permit will not be harmful to the public health, safety, convenience, and welfare as required by 17.60.100(B)(2);and

3) the proposed monofill is inconsistent with the goals and policies of the Borough-Wide Comprehensive Plan (2005 Update) and the Core Area Comprehensive Plan (2007 Update) because the monofill is an industrial use that is incompatible with the neighboring residential areas.

BE IT FURTHER RESOLVED that this is a final determination which may be appealed in accordance with MSB 15.39.140 by filing a written notice of appeal with the Borough Clerk within 21 days from the date this determination was issued. If an appeal is not filed as described in the preceding sentence, the right to appeal is forfeited.

ADOPTED by the Matanuska-Susitna Borough Planning Commission this 5th day of January, 2015.

JOHN KLAPPERICH, Chair

ATTEST:

MARY BRODIGAN, Planning Clerk

(SEAL)

YES: Endle, Healy, Walden, and Adams.

NO: Klapperich and Rauchenstein.

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MATANUSKA-SUSITNA BOROUGH

BOARD OF ADJUSTMENT AND APPEALS

IN RE:	)	
	)	
Denial of Conditional Use Permit for	)	
Parcels 17N02E18C010 and 17N02E19B006	)	
Central Monofill Services, Inc.	)	
Shane Durand,	)	BOAA Case No. 15-01
Appellant	)	
	)	

NOTICE OF RIGHT TO APPEAL AND FINAL DECISION

NOTICE IS HEREBY GIVEN, that the Matanuska-Susitna Borough Board of Adjustment and Appeals (BOAA), on March 31, 2015, rendered the following final decision regarding the appeal filed in the above referenced matter. This final decision may be appealed within 30 days of the date of this decision, pursuant to MSB 15.39.250 and the Alaska Rules of Appellate Procedure, Part 600.

FINDINGS OF FACT

1. This appeal was filed in a timely manner.
2. The BOAA has jurisdiction over this administrative appeal from the decision of the Planning Commission on the conditional use permit application for a construction and demolition monofill pursuant to MSB 15.39.030(A)(2).
3. The Planning Commission's decision in this matter embodied in their Resolution Serial No. 15-01(AM) includes numerous

findings of fact supported by substantial evidence contained in the administrative record as follows:

a. The proposed monofill is inconsistent with numerous provisions of Borough comprehensive plans. R. 909, 947, 1040, 1124, 1519, 2103, 2804, 2852, 3014-3015.

b. Previous use of this site was for earth materials extraction, which had pre-existing legal nonconforming use rights for earth materials extraction, which means that the former industrial use of the property was not approved under the current regulatory structure or evaluated for compatibility with surrounding land uses. R. 15, 2833, 3036;

c. The applicant has not addressed how they will monitor or manage the seasonal high water table fluctuations to ensure that the bottom of the monofill is not annually saturated by groundwater. R.11-12;

d. A hydrologic report submitted to the Borough early in 2014 predicts a potential 2-foot water table rise resulting from dredging operations adjacent to the proposed monofill site to the north. R. 26, 901, 939, 1165, 1167, 1633, 2774-2775; See also Supplemental Record 1-41 "Groundwater Modeling Report, Alaska Sand and Gravel Palmer Pit".

e. The Central Monofill Services hydrologists (Maddox and Associates) used annual precipitation and evaporation rates, which ignore the fact that precipitation at the site is not evenly spread throughout the year. R. 1571;

f. The proposed monofill would be unlined with no system to capture, treat, or monitor leachate. R. 4, 11-12;

g. Soils in the area of the monofill site are very porous loose gravels and glacial loess, and with marginal filtering capacity for fluids being emitted or drained from the fill. R. 901, 958, 1082, 1145, 1289, 1899, 2321, 2829, 2941;

h. The monofill is designed to have water flow through the construction debris with an average hydro conductivity of approximately 2.0×10^{-2} centimeters per second, as determined by an engineering report submitted by the applicant. R. 410;

i. There is the potential for the construction and demolition monofill to catch fire. In the event that the material catches fire, a common method for fire suppression is application of copious amounts of water and foam, which could leach into the water table and cause dramatic and sudden increase of polluting

leachate. R. 1307, 2468-2469, 2470-2476, 2477-2499, 2500-2504, 2506-2509, 2510-2521, 2838-2839, 2849, 2946-2949, 2972-2973, 2983, 2995-2996;

j. The applicant did not propose a water quality monitoring program as part of the application. R. 11-12, 2648;

k. The applicant has not provided a plan for remediation should the water table be polluted beyond safe drinking water levels. R. 3-33.

CONCLUSIONS OF LAW

Based upon the above findings, the Board of Adjustment and Appeals makes the following conclusions:

1. The appeal was filed in a timely manner.
2. The BOAA has jurisdiction over the appeal of the decision of the Planning Commission denying the conditional use permit for the proposed construction and demolition monofill pursuant to MSB 15.39.030(A)(2).
3. The decision contained in Planning Commission Resolution Serial No. 15-01 contained numerous findings of fact supported by substantial evidence contained in the record.

4. The BOAA defers to the Planning Commission's findings of fact as required by MSB 15.39.210(B) because the findings of fact are supported by substantial evidence contained in the record that support the legal conclusions so that the Planning Commission could not find: (1) that the proposed construction and demolition monofill would preserve and not detract from the value, character, and integrity of the surrounding area; and (2) that the proposed construction and demolition monofill would not be harmful to the public health, safety, convenience and welfare, MSB 17.60.100 (B)(1)and(2) General Standards.

5. The BOAA lacks jurisdiction to adjudicate Appellant's constitutional fair hearing/due process claims of an alleged conflict by Planning Commissioner Thomas Healy and an alleged lack of a conflict by Planning Commissioner William Kendig. MSB 15.39.030(A)(2); *Alaska Public Interest Research Group v. State*, 167 P.3d 27, 36 (Alaska 2007) (*citing* Dougan v. Aurora Elec. Inc., 50 P.3d 789, 795 n. 27 (Alaska 2007)); 8A McQuillin Mun. Corp. § 25:257 (3d Ed. 2012).

6. Assuming that the BOAA had jurisdiction over the Appellant's constitutional fair hearing due process

claims, the Appellant waived this claim by failing to raise it until three weeks after the Planning Commission voted to deny the conditional use permit. See Griswold v. Homer City Council, 310 P.3d 938, 942 (Alaska 2013).

7. The BOAA does not have jurisdiction over the Appellant's constitutional fair hearing due process claims regarding William Kendig.

8. The BOAA does not have jurisdiction over the Appellant's constitutional fair hearing due process claims regarding Thomas Healy.

FINAL DECISION

Based upon the above Findings of Fact and Conclusions of Law, the Matanuska-Susitna Borough Board of Adjustment and Appeals affirms the Planning Commission's denial of the conditional use permit in the captioned case.

Dated this 31 day of March, 2015.

BOARD OF ADJUSTMENT AND APPEALS

A.C. Buswell, III
Chairperson

Attest:

Brenda J. Henry, CMC, Assistant Clerk

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MATANUSKA-SUSITNA BOROUGH

BOARD OF ADJUSTMENT AND APPEALS

IN RE:	)	
	)	
Denial of Conditional Use Permit for	)	
Parcels 17N02E18C010 and 17N02E19B006	)	
Central Monofill Services, Inc.	)	
Shane Durand,	)	BOAA Case No. 15-01
Appellant	)	
	)	

CERTIFICATE OF SERVICE

1. I am the Secretary for the Board of Adjustment and Appeals.

2. I certify that on March 31, 2015, I served true and accurate copies of the following document:

NOTICE OF RIGHT TO APPEAL AND FINAL DECISION

To:

BOAA Members
(via E-mail)
A.C. Buswell, III
Tina Crawford
Terry Nicodemus
Claudia Roberts

William Ingaldson, Attorney for
Shane Durand, Appellant
Central Monofill Services, Inc.
(via E-mail @ bill@impc-law.com)
311 N. Sitka Street
Anchorage, AK 99501-1841

Richard Harbuck and Stephanie Nowers, interested party and spokesperson accepting service for interested parties as follows:
Don Berberich
Deidre Berberich
Eric Bleakney
Tony Bluma
Marion Bumgardner
Robin Bumgardner

Karen Buskirk
Jim Cassidy
Judy Crosby
Norman Crosby
Theresa Daily
Johnnie Davis
Dan Delaney
Mark Denke
Edward Doyle
Kerry Eaton
Peggy Egelus
Stephanie Figon
Rachel Gernat
Stan Gillespie
David Gilley
Brian Goodman
Marlyn Goodman
Adam and Sarah Hall
Karen Harris
Charles Homan
Roy Jeffers
David Jenkins
Kent Johnson
Kathy Johnson
Aaron Kallas
Lisa and Roy Kallendar
Gerry Keeling
Bonnie Kelly
Chris Kepler
Arthur Keyes
Barbara Landi
Michael Lane
David Lewis
Kristin Lewis
Emily Longbrake
Bill Longbrake
Bill Marsan
Elizabeth Marsan
Sarah Mayfield
Dale Mayfield
Geri and Kevin McCann
Heather McGee Lackey
Zennon McNeill
Megan Mercer
Joe Moore
James Nelson
Janice Nelson

Murph O'Brien
Jon Olsen
Rob Oslund
Samantha Oslund
David Payne
Bill Quantick
Charles Ramage
Vicky Ramage
Samuel Raynovic
Michael Reed
Susan Reed
Michelle Rountree
John Rozzi
Jessie Saxton
Wendy Shaw
John Stuart
Roger VanderWeele
Ben VanderWeele
Jeffrey Vincent
Helen Vincent
Diane and Terry Warta
Dennis Wetherell
Sarah and Paulo Wolcoff
Melodie Wright
Charles and Susan Young
(Via E-mail @ superglide@mtaonline.net and snowers@mtaonline.net)
2371 S. Colleen Street
Palmer, AK 99645

Joe Hannan, interested party
(Via E-mail @ jhannan@palmerak.org)
City of Palmer
231 West Evergreen Avenue
Palmer, AK 99645

Charles Homan, interested party
(Via E-mail @ human@mtaonline.net)
7362 W. Parks Highway
#230
Wasilla, AK 99623-9300

Roseann Leiner, interested party
(Via E-mail @ roseannleiner@gmail.com)
2340 S. Killarney Drive
Palmer, AK 99645

Patricia Kepler Goossen
(Via E-mail @ pat_eye74@hotmail.com)
PO BOX 2908
Kodiak, AK 99615

Emmett Lance Leffel, interested party
(Via E-mail @ akthermalimaging@yahoo.com)
PO BOX 2674
Palmer, AK 99645

Nicholas Spiropoulos, Borough Attorney
(via hand delivery)

Alex Strawn, Development Services Manager
(via hand delivery)

Susan Lee, Planner II
(via hand delivery)

DATED at Palmer, Alaska, this 31 day of March, 2015.

MATANUSKA-SUSITNA BOROUGH

BRENDA J. HENRY, CMC, Assistant Clerk

MATANUSKA-SUSITNA BOROUGH

BOARD OF ADJUSTMENT AND APPEALS

IN RE:	)	
	)	
Request for Advisory Opinion,	)	Ethics Case No. 16-01
Bill Kendig, Requestor	)	
	)	
	)	

CERTIFICATE OF SERVICE

1. I am the secretary for the Board of Ethics.

2. I certify that on October 10, 2016, I served true and accurate copies of the following document:

ADVISORY OPINION 16-01

To: Ethics Board Members
(Via Email)
Dan F. Kennedy
Daniel Bowen
Diana Straub

Bill Kendig
(Via Email @ customfinancial@hotmail.com)

DATED at Palmer, Alaska, this 10 day of October, 2016.

MATANUSKA-SUSITNA BOROUGH
BOARD OF ETHICS

BRENDA J. HENRY, CMC, Assistant Clerk

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MATANUSKA-SUSITNA BOROUGH
Board of Ethics
c/o Office of the Borough Clerk
350 E. Dahlia Avenue • Palmer, Alaska 99645-6488
Phone (907) 861-8684 • Fax (907) 861-7845

Advisory Opinion No. 16-01

October 10, 2016

On September 1, 2016, the Board of Ethics received a Request for an Advisory Opinion from Mr. Bill Kendig, who is a member of the Planning Commission. The Board of Ethics met in a special meeting at 10 a.m. on October 10, 2016, to consider the request of Mr. Kendig.

Specific Question for the Board of Ethics

Mr. Kendig has requested an Advisory Opinion from the Board on the following question:

Should Mr. Kendig recuse himself from discussion and voting on Planning Commission Resolution Serial No. 14-33, which has been remanded back to the Planning Commission by the Superior Court.

Findings

The Board of Ethics finds that in his most recent request, Mr. Kendig states that he has not done business with Central Monofill Services (CMS), but with Central Environmental, Inc. (CEI), which are two separate companies.

The Board of Ethics finds that consistent with the amended order in 3PA-15-01925 CI, that Mr. Kendig stated "that he had done business with CEI, which is a corporation owned by the same individuals as the ones who own CMS." Mr. Kendig stated "that the most recent sale occurred in the late summer or early fall of 2014, but prior to that transaction, he had not done business with CEI in four or five years." Appellant's Excerpt of Record, p. 168.

The Board of Ethics finds that Per MSB 2.71.080 Mr. Kendig was previously recused from voting on Planning Commission Resolution No. 14-33 regarding a conditional use permit (CUP) as he had done business within the last 12-month period with a corporation that was directly related to CMS, which is the company that applied for the CUP.

The Board of Ethics finds that Planning Commission Resolution No. 14-33 denied a conditional use permit for a monofill (private landfill) for CMS. The resolution failed with three Planning Commissioners voting in support and three voting opposed. Mr. Kendig was recused due to his prior business relations.

The Board of Ethics finds that in their Advisory Opinion No. 15-01, Conclusion No. 5, that "The Board of Ethics concludes that MSB 2.71.080, Recusal did apply in relation to Planning Commission Resolution No. 14-33, but that Mr. Kendig was properly recused and that resolution is not at issue for this request."

The Board of Ethics finds that Planning Commission Resolution 14-33 is currently at issue for Board of Ethics Advisory Opinion No. 16-01.

Conclusions

1. The Board of Ethics concludes that Mr. Kendig is eligible to sit on the Planning Commission under MSB 4.05.030.

2. The Board of Ethics concludes that Mr. Kendig is subject to the Borough code, under MSB 4.05.030.

3. The Board of Ethics concludes that the code of ethics applies to Mr. Kendig as a municipal official under MSB 2.71.030.

4. The Board of Ethics concludes that as a Planning Commission Member Mr. Kendig does have the ability to take official action as he does vote in support or opposition of Planning Commission resolutions that are quasi-judicial in nature, such as whether to approve a CUP, which is the subject of Resolution No. 14-33.

5. The Board of Ethics concludes that MSB 2.71.080, Recusal, does apply in relation to Planning Commission Resolution No. 14-33, as they previously stated in Board of Ethics Advisory Opinion 15-01.

Summary of Opinion

The Board of Ethics has determined that Mr. Kendig does have a conflict under MSB 2.71.070, Conflict of Interest; Prohibited Acts, as it relates to Planning Commission Resolution No. 14-33 and should recuse himself under MSB 2.71.080, from discussion or voting on the question of a conditional use permit for CMS.

MATANUSKA-SUSITNA BOROUGH
BOARD OF ETHICS

Don Kennedy, Chair

Attest:

Brenda J. Henry, CMC, Assistant Clerk

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MATANUSKA-SUSITNA BOROUGH
Board of Ethics
c/o Office of the Borough Clerk
350 E. Dahlia Avenue • Palmer, Alaska 99645-6488
Phone (907) 861-8684 • Fax (907) 861-7845

Advisory Opinion No. 15-01

August 27, 2015

On July 14, 2015, the Board of Ethics received a Request for an Advisory Opinion from Mr. Bill Kendig, who is a member of the Planning Commission. The Board of Ethics met in a special meeting at 5 p.m. on August 27, 2015, to consider the request of Mr. Kendig.

Specific Question for the Board of Ethics

Mr. Kendig has requested an Advisory Opinion from the Board on the following question:

Should Mr. Kendig recuse himself from discussion and voting on Planning Commission Resolution Serial No. 15-26?

Findings

The Board of Ethics finds that Per MSB 2.71.080 Mr. Kendig was recused from voting on Planning Commission Resolution No. 14-33 regarding a conditional use permit (CUP) as he had done business within the last 12-month period with a corporation that was related to Central Monofill Services (CMS), which is the company that applied for the CUP.

The Board of Ethics finds that Planning Commission Resolution No. 14-33 denied a conditional use permit for a monofill (private landfill) for CMS. The resolution failed with three Planning Commissioners voting in support and three voting opposed. Mr. Kendig was recused due to his prior business relations.

The Board of Ethics finds that CMS appealed the denial of the CUP to the Board of Adjustment and Appeals (BOAA); the BOAA unanimously affirmed the Planning Commissions' denial of the CUP.

The Board of Ethics finds that CMS appealed the BOAA decision to the Superior Court, which is current and ongoing.

The Board of Ethics finds that the Planning Commission currently has Planning Commission Resolution No. 15-26 before them, which would recommend that the Assembly adopt legislation that would prohibit private landfills within the core area.

The Board of Ethics finds that in his request, Mr. Kendig states "that it could be argued that [Planning Commission Resolution No.] 15-26 would affect the applicants [CMS] if they were to win there [sic] appeal."

The Board of Ethics finds that Mr. Kendig would like an advisory opinion on whether he should recuse himself from Planning Commission Resolution No. 15-26.

Conclusions

1. The Board of Ethics concludes that Mr. Kendig is eligible to sit on the Planning Commission under MSB 4.10.030.

2. The Board of Ethics concludes that Mr. Kendig is subject to the Borough code, under MSB 4.10.030.

3. The Board of Ethics concludes that the code of ethics applies to Mr. Kendig as a municipal official under MSB 2.71.030.

4. The Board of Ethics concludes that as a Planning Commission Member Mr. Kendig does have the ability to take official action as he does vote in support or opposition of Planning Commission resolutions; however, the official action is advisory in nature only and does not provide him with a substantial financial interest.

5. The Board of Ethics concludes that MSB 2.71.080, Recusal, did apply in relation to Planning Commission Resolution No. 14-33, but that Mr. Kendig was properly recused and that resolution is **not** at issue for this request.

6. The Board of Ethics concludes that MSB 2.71.070, does not apply in relation to Planning Commission Resolution No. 15-26, because only the Borough's legislative body, which is the Borough Assembly, may take official legislative action that could potentially impact an appeal at the Superior Court level.

Summary of Opinion

The Board of Ethics has determined that Mr. Kendig does not have a conflict under MSB 2.71.070, Conflict of Interest; Prohibited Acts, as it relates to Planning Commission Resolution No. 15-26.

MATANUSKA-SUSITNA BOROUGH
BOARD OF ETHICS

David Wilson, Chair

Attest:

Brenda J. Henry, CMC, Assistant Clerk

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PUBLIC HEARING

QUASI-JUDICIAL

Resolution No. 14-33

CMS Monofill CUP

(Page _ - _)

PUBLIC HEARING

TABLE OF CONTENTS

Staff Report

Vicinity Maps

Application Material – January 15, 2014 & May 14, 2014

Photographs - CMS Site, Birchwood Landfill, Tire Bales

Comments

Correspondence – CMS, ADEC, ADNR, E-mail Correspondence

Planning Commission Resolution No. 14-33

Reference Material

- **Planning Commission Resolution 13-30(AM)**
- ***Potential Hydrologic Effects of Gravel Extraction South of Palmer, Alaska,* J. A. Munter Consulting, Inc, April 2010**
- ***Groundwater Modeling Report, AS&G Palmer Pit,* Brailey Hydrologic Consultants, August 2010**
- ***Hydrogeologic Evaluation of a Proposed Monofill, Palmer, Alaska*, J. A. Munter Consulting, Inc., June 27, 2013**
- ***Review of an Application for a Conditional Use Permit for a Proposed Monofill Near Palmer, Alaska*, J. A. Munter Consulting, Inc., February 7, 2014**
- **Glenn Highway Reconstruction Project Drawings**
- **Alaska Department of Environmental Conservation (ADEC) Permit Application Material**
- **ADEC Fact Sheets**
  - **Asbestos Handling & Disposal, July 2014**
  - **Handling & Disposal of Construction & Demolition Waste, April 2014**

SUPPLEMENTAL INFORMATION TO DECEMBER 1, 2014 PLANNING COMMISSION PACKET

HANDOUTS

DECEMBER 1, 2014

PLANNING COMMISSION MEETING

From: Durand, Shane [shane@cei-alaska.com]
Sent: Monday, December 01, 2014 8:37 AM
To: Alex Strawn; Susan Lee
Subject: Additional Comments
Attachments: CMS Response to comments.pdf; CMS City of Palmer response.pdf

We would like this in tonight's package if at all possible.

Thanks

HANDOUT

Shane Durand

Central Recycling Services
2400 Railroad Ave.
Anchorage, AK 99501
(907)748-7400
(907)770-5084 fax
www.centralrecyclingservices.com
www.crssurplusmaterials.com
www.cicequipment.com

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CENTRAL MONOFILL SERVICES

Anchorage
311 N. Sitka Street
Anchorage, AK 99501

Fairbanks
1301 Wells Street
Fairbanks, AK 99701

November 26, 2014

Susan Lee
Planning and Land Use Department
Matanuska-Susitna Borough
350 East Dahlia Avenue
Palmer, Alaska 99645

Reference: **Conditional Use Permit Application –Additional Information**
Location: 17N02E18C010 & 17N02E19B006
Existing Conditions and CRS Operating History

Dear Ms. Lee:

Central Monofill Services, (CMS) submits the information below and attached, to provide clarification to recent issues being raised via public comments.

Images are being displayed and distributed that claim to show the current condition of the gravel pit and existence of wetlands. Attached are pictures of the actual existing conditions in the bottom of the Monofill area. Pages 1077 to 1079 of the Dec 1st, 2014 planning commission package includes additional pictures taken by MSB staff in October 2014 of the proposed site. Pages 287 to 297 are the US Corps of Engineers Jurisdictional Determination that no wet Lands exist on this property. Also attached are photos of the ponds that are not part of the monofill. People have claimed these ponds have trash in them. The photos provided show no trash floating around the ponds. MSB and ADEC have investigated claims and visited the site in 2014 and found no trash.

Pictures provided during public comment showing recently raised water levels at surrounding lakes and indicating these are due to activities at our subject property are unfounded. CMS has done no dredging on this property or changes to the property that would increase the flow of water. CMS is working with ADNR on further studies of the region's water. Regional water issues are addressed by AlaskChem Engineers in pages 729 to 760.

Questions have been raised about Central Recycling Services, (CRS) history as an operator based upon an isolated incident in 2013 at the subject property. This incident was resolved to the satisfaction of the agencies in 2013. CRS has successfully operated its Anchorage facility since 2009 and the CMS Salcha Canaday Road Monofill since 2012. Attached is the last ADEC inspection report from August 2014 for the

PH (907) 770-7470 FAX (907) 770-5084
www.centralmonofillalaska.com • cms@centralmonofillalaska.com

CMS facility receiving a score of 100%. Since the fall of 2013 CRS has operated the Birchwood Shooting and Recreation Park, (BSRP) Monofill. This monofill has been in operation for over 20 years along Knik Arm. Eklutna Inc. is the pre-dominate surrounding land owner to this monofill. Pictures of the BSRP Monofill are attached. This is an operational facility with people working and recreating every day on top of and around the Monofill. The BSRP Monofill has been a model of good operation, such that neighbor Eklutna Inc. is working with CRS to develop another Monofill within the Municipality of Anchorage. Within the previously submitted documents are several letters of support from our neighbors of our existing facilities.

Concerns raised over the proximity of the monofill to natural water bodies can be compared to existing CRS operations. The Salcha Canaday Monofill site contains wet lands and is adjacent to Little Salcha Creek. The CRS Anchorage recycle facility is on the banks of Ship Creek. The BSRP Monofill is on the bank of Knik Arm as show in the attached photos. These sites among many others around Alaska have operated near sensitive bodies of water without incident.

Should you have any further questions or require further clarification please do not hesitate to ask.

Respectfully,

Shane Durand

Attachment A – Photos of CMS Palmer Site
Photos of BSRP Monofill
ADEC 2014 Inspection of Salcha Canaday Road C&C Monofill

Existing Conditions, Fall 2012

Bottom of Cell A, road berm on right.

PLANNING COMMISSION NOVEMBER 7, 2016

Existing Conditions, 2013

Bottom of Cell A, behind road berm on left.

Existing Conditions 2013

Bottom of Cell A, road berm straight ahead, standing below Glenn Highway elevation.

Existing Conditions, October 2014
Bottom of Cells F and G in Foreground

PLANNING COMMISSION NOVEMBER 7, 2016

Existing condition, June 2014

Bottom of Cells F and G

Existing Conditions of Ponds, 2013

Birchwood Recreation and Shooting Park Monofill, October 2014

Operated by Central Recycling Services since fall of 2013. Knik Arm in background. Monofill material in foreground prior to soil coverage. Monofill has been in operation for over 10 years.

Birchwood Recreation and Shooting Park Monofill, October 2014

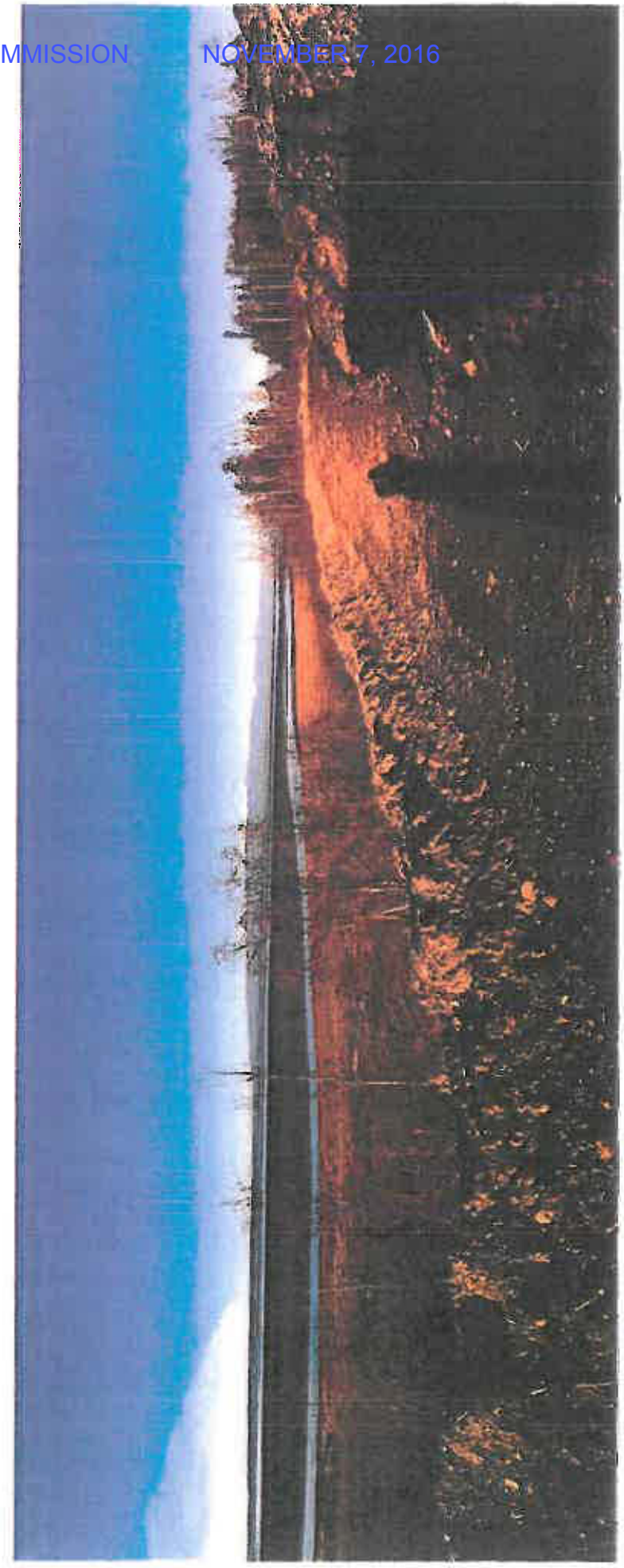
Monofill material in foreground prior to soil coverage. Monofill has been in operation for over 10 years. Shooting Park operates during operation of Monofill and on top of completed sections.

Birchwood Recreation and Shooting Park Monofill, October 2014

Monofill operations compacted residual and covered materials.

Birchwood Recreation and Shooting Park Monofill, October 2014

Operated by Central Recycling Services since fall of 2013. Knik Arm in background. Monofill material in foreground prior to soil coverage. Monofill has been in operation for over 10 years.



Birchwood Recreation and Shooting Park Monofill, October 2014. Knik Arm left, Monofill Site middle and right.

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THE STATE of ALASKA
GOVERNOR SEAN PARNELL

Department of Environmental Conservation

DIVISION OF ENVIRONMENTAL HEALTH
Solid Waste Program

610 University Avenue
Fairbanks, Alaska 99709-3643
Main: 907.451.2108
fax: 907.451.2188

October 01, 2014

Certified Mail #7002 3150 0003 6567 4238
Return Receipt Requested

File Number: 100.15.089

Stuart Jacques, President
Central Monofill Services, Inc.
311 N Sitka Street
Anchorage, AK 99501

Re: September 09, 2014 Inspection of Salcha Canaday Road C & D Monofill, Permit #SWZA063-17

Dear Mr. Jacques:

The Alaska Department of Environmental Conservation Solid Waste Program (ADEC) completed its first annual inspection of the Salcha Canaday Road C & D Monofill on September 09, 2014. I would like to thank Sean Holland for assisting me with the inspection.

The facility is being managed and operated excellently and received a compliance score of 100% during this year's inspection. Great Job! Specific details of the inspection are provided in the enclosed inspection checklist.

The Regulated Asbestos Containing Material (RACM) cell was nearly completed at the time of the inspection and has likely been completed. However, since the cell was not completed at the time of the inspection and RACM was not being received, the questions in the inspection checklist pertaining to RACM were not scored since they were not applicable at the time. During next year's inspection, these sections will be applicable.

Thank you for running a great operation. If you have any questions about this letter or the enclosed inspection checklist, please contact me by telephone at 907-451-2134 or by email at neil.lehner@alaska.gov.

Sincerely,

Neil Lehner
Environmental Program Specialist
Solid Waste Program

Enclosure: Inspection Checklist and Photos

G\EH\SW\Companies & Organizations\Salcha Canaday Homestead C & D\Inspections\2014\2014-10-01 Salcha Canaday Homestead Monofill inspection letter.docx

Inert Waste Monofill Inspection Checklist

Alaska Department of Environmental Conservation
Division of Environmental Health
Solid Waste Program

Landfill: Salcha Canaday Homestead Monofill

Date of Inspection: 09/09/14

ADEC Inspector: Neil Lehner

Participants: Sean Holland

Weather Conditions: Sunny and 60 degrees F

Past Month Rainfall: 2.61 Inches

Scoring	
Total points awarded:	250
Total possible points:	250
Final Score (percent):	100%

ADEC Signature:

Printed Name: Neil Lehner

Title: Environmental Program Specialist

Inert Waste Monofill Inspection Checklist

Alaska Department of Environmental Conservation
Division of Environmental Health
Solid Waste Program

Part One: ADEC Information Gathering

This section should be filled out completely, prior to the site visit. This section is not scored, but the information will be used during the site visit to determine compliance with requirements.

#	Part One: ADEC Information Gathering
1	**PERMIT AND OPERATING PLAN** – Review permit and operating plan to familiarize yourself with the requirements and approved operations for this landfill. Does the facility have a current ADEC permit? [X] Yes [ ] No Permit Number: SWZA063-17 Expiration Date: 6/17/2017
2	**SITE/DEVELOPMENT PLANS** – Review site plans and development plans to familiarize yourself with the approved layout of the landfill and the conditions at the site. Check the conditions that exist at the landfill: [X] Is the landfill located in or near wetlands? [X] Is the landfill located on permafrost? (It is in a general area of discontinuous permafrost) [ ] Is the landfill located in a 100-year floodplain? [ ] Are there any drinking water wells within 500 feet of the landfill property boundary? Has a current/up-to-date site map been submitted? Yes
3	**PREVIOUS INSPECTIONS** – Review previous inspection forms. List any issues that may still be outstanding that should be investigated. This is the first inspection.
4	**COMPLAINTS** – If ADEC has received any complaints regarding the facility, list and describe them below: One complaint was received in June. The individual was concerned with the truck traffic and degradation to the road and also concerned with the number of trucks going to the site. Individual also reported trucks arriving later in the evening.
5	**AUTHORIZED WASTE TYPES** – *The landfill is required to have a permit that authorizes all types of waste disposed at the site.* Check the types of waste that the facility is authorized to dispose: [X] Inert or C&D Waste [X] Regulated Asbestos Containing Material (RACM) *(Must be disposed in separate cell)* [ ] Other
6	**SIGN REQUIREMENTS** – *Many permits require signage that identifies the owner or operator, hours of operation, emergency contacts, or other information.* List any signage requirements specified in the permit:

Inert Waste Monofill Inspection Checklist

Alaska Department of Environmental Conservation
Division of Environmental Health
Solid Waste Program

#	Part One: ADEC Information Gathering
7	**LAND OWNERSHIP** – *The landfill application must contain documentation that the operator is the landowner, or that the operator has obtained authorization from the land owner.* Central Monofill Services is the landowner, Central Recycling Services is now the operator Check the appropriate box. [ ] The operator is the landowner [X] The landowner has authorized the landfill
8	**WAIVERS** – *The landfill may obtain waivers for requirements related to development or operation.* List any ADEC-approved waivers: None
9	**MONITORING REQUIREMENTS** – *A facility may be required to monitor groundwater or surface water. Requirements are specified in the permit or approved monitoring plan. By regulation, monitoring reports must be submitted to ADEC for groundwater and surface water. This information will help you determine if the operating record is complete.* Check the types of monitoring that the facility is required to conduct, note the required sampling frequency, and check if reports must be submitted to DEC:
10	**MONITORING LOCATIONS** – *Sampling must be conducted at approved wells or sites. Locations are specified in the monitoring plan.* Make a copy of a site plan or map that shows the locations of monitoring wells, surface water sampling sites, or other approved monitoring locations. Take the map with you to assist in field inspection.
11	**ADDITIONAL PERMIT REQUIREMENTS** List any additional permit requirements that are not addressed in the inspection checklist. 1. Notify ADEC when large quantities of RACM are accepted 2. Submit updated site development plans by Dec. 31 each year 3. Notify ADEC before the amount of waste deposited exceeds the annual expected average

✓	Type	Sampling frequency	Report to DEC required?
	Groundwater		
	Surface Water		

Part Two: ADEC Records Review

This section should be completed and scored in the office, prior to conducting the site visit.

Inert Waste Monofill Inspection Checklist

Alaska Department of Environmental Conservation
Division of Environmental Health
Solid Waste Program

#	Part Two: ADEC Records Review	POINTS Possible	POINTS Score
1	**FEES** – *The landfill is required to pay annual and other fees to ADEC.* 18 AAC 60.700 Is the facility current on payment of all fees? [X] Yes [ ] No Date of last payment: 12/26/13 OR Amount owed:	5	5
2	**MONITORING REPORTS** – *A facility may be required to monitor groundwater or surface water. Groundwater and surface water reports MUST be submitted to ADEC.* ***NOTE to inspector:*** *The project manager should be reviewing and communicating about monitoring reports as they are received.* 18 AAC 60.810, 18 AAC 60.830, permit condition Is Monitoring required? If so, does the facility submit the required monitoring reports to ADEC? Do monitoring reports address all required types of monitoring? Are monitoring reports complete and contain required analyses?	NA	NA
3	**FINANCIAL ASSURANCE** –*The landfill may need to demonstrate financial assurance to cover closure and post closure costs if monitoring is being done. The local government financial test is the most commonly used mechanism. Some financial assurance mechanisms require an annual update.* 18 AAC 60.235, 18 AAC 60.265 Check the type of financial assurance used : [ ] Local government financial test (requires annual update) [ ] Corporate financial test (requires annual update) [ ] Trust Fund [ ] Surety Bond guaranteeing payment or performance [ ] Letter of credit [ ] Insurance [ ] Corporate guarantee [ ] Local government guarantee [ ] Other state-approved mechanism What is the date of the latest financial assurance documentation?	NA	NA

Part Three: Landfill Records

This section should be completed at the landfill facility during the site visit.

Inert Waste Monofill Inspection Checklist

Alaska Department of Environmental Conservation
Division of Environmental Health
Solid Waste Program

#	Part Three: Landfill Records	POINTS Possible	POINTS Score
1	**PERMIT** – *A copy of the permit application and current permit must be kept in the operating plan.* 18 AAC 60.235 Is a copy of the permit application and current permit in the operating record? Yes	10	10
2	**OPERATIONS PLAN** – *The operations plan should be used as a guide for day to day operation of the landfill. A copy must be kept in the operating record.* 18 AAC 60.210, 18 AAC 60.235, permit Does the operating record contain a copy of the operations plan? Yes	10	10
3	**TRAINING** – *Landfill staff must receive training to recognize regulated hazardous waste and PCB waste. Records of training must be kept in the operating record.* 18 AAC 60.240 Does the landfill have a record showing that operators have received training to recognize regulated hazardous waste and PCB waste? Yes. All staff are current on multiple trainings including HAZWOP, Asbestos Abatement, HAZMAT	5	5
4	**RANDOM INSPECTION RECORDS** – *The landfill must perform random inspections of incoming waste loads to identify any regulated hazardous waste or PCB waste. Records of the inspections must be available for review.* 18 AAC 60.235, 18 AAC 60.240 Are random waste inspections performed and recorded? Yes. All loads are inspected as they are loaded and unloaded. A building survey is always done at site and recorded.	20	20
5	**ASBESTOS RECORDS** – *The landfill must maintain asbestos shipment records for each load of RACM. Records must include contact information for the waste generator and waste transporter, the amount (cy) disposed, and the date of receipt. The landfill must maintain an up-to-date map or site plan showing the boundaries of the asbestos cell. The landfill must maintain up-to-date records of the amount of waste in the RACM cell, including depth and the total volume.* 18 AAC 60.460 The permit was modified to include a RACM cell. However, no RACM has been received at the site yet so this is still Not Applicable until RACM is received. Does the landfill maintain complete asbestos shipment records for each load of RACM received? Does the operating record contain an adequate, up-to-date map of the asbestos cell? Does the operating record contain up-to-date information about the depth and total volume of RACM in the asbestos cell?	NA	NA

Inert Waste Monofill Inspection Checklist

Alaska Department of Environmental Conservation
Division of Environmental Health
Solid Waste Program

#	Part Three: Landfill Records	POINTS Possible	POINTS Score
6	**VISUAL MONITORING** – *Visual monitoring must be performed at least monthly and recorded on a form approved by ADEC. Records must be maintained for at least 5 years.* 18 AAC 60.800 Does the operating record contain copies of monthly visual monitoring reports? Yes, since opening. [X] Violations of permit conditions, or regulatory requirements [X] Settlement [X] Ponding [X] Leakage [X] Thermal instability (permafrost landfills only) [X] Frost action [X] Erosion [X] Signs of damage to due to operations [X] Damage to monitoring devices [X] Escape of leachate [X] Escape of waste [X] Unauthorized waste disposal [ ] Wind blown litter [X] Damage to a containment structure, retaining wall, erosion control, or diversion structure [X] Fire or combustion in the waste [X] Impacts to fish, wildlife, or vegetation [ ] Any other conditions that threaten public health or the environment:	10	10
7	**COST ESTIMATES AND FINANCIAL ASSURANCE** – *The landfill may need to update closure and post closure cost estimates annually to adjust for inflation. The landfill may need to demonstrate financial assurance to cover closure and post closure costs if monitoring is being done. The local government financial test is the most commonly used mechanism. Documentation must be kept in the operating record. Some financial assurance mechanisms require an annual update.* 18 AAC 60.235, 18 AAC 60.285 Does the operating record contain appropriate and up-to-date (i.e. annual) closure and post-closure cost estimates? Does the operating record contain appropriate and up-to-date financial assurance documentation? What is the date of the latest estimate? _____	NA	NA
8	**AS-BUILT DRAWINGS** – *The facility is required to maintain as-built drawings in the operating record.* 18 AAC 60.235 Does the operating record contain as-built drawings? Yes	5	5

Inert Waste Monofill Inspection Checklist

Alaska Department of Environmental Conservation
Division of Environmental Health
Solid Waste Program

#	Part Three: Landfill Records	POINTS Possible	POINTS Score
9	**MONITORING PLAN** – *If the facility is monitoring groundwater or surface water, it needs a plan to be kept in the operating record.* 18 AAC 60.810, 18 AAC 60.830 Is the facility required to monitor surface water or groundwater? If so, is the monitoring plan in the operating record?	NA	NA

Part Four: Landfill Development

This section should be completed at the landfill facility during the site visit.

#	Part Four: Landfill Development	POINTS Possible	POINTS Score
1	**LANDFILL DEVELOPMENT** – *The facility is required to follow the approved landfill site plans and development plans. If minor changes are made, they should not be detrimental to regular operations. Any major changes must be approved by ADEC.* 18 AAC 60.233, 18 AAC 60.210, permit Is the facility following the site and developments plans? Yes If any minor changes have been made, are they detrimental to operations? NA Is the waste disposal area at least 50 feet from the property boundary? Yes	30	30
2	**WATER WELLS** – *Waste may not be disposed of within 500 feet of a drinking water well. If any wells exist within 500 feet of the property boundary, the site must be developed and operated to ensure that waste is not deposited too near the wells.* 18 AAC 60.040 A new survey indicated that a drinking water well identified on the previous surveys was actually not a well. Therefore, no drinking water wells are located within 500 feet of the landfill boundary. Has development of the landfill or surrounding area impacted this separation zone?	NA	NA

Part Five: Access

This section should be completed at the landfill facility during the site visit.

#	Part Five: Access	POINTS Possible	POINTS Score
1	**SIGNAGE** – *A clearly legible sign must be posted at the entrance to the landfill. The sign must prohibit disposal of regulated hazardous waste and polychlorinated biphenyl (PCB) waste. Most permits also require signage that identifies the owner or operator, hours of operation, and emergency contacts.* 18 AAC 60.240, permit Are signs prohibiting hazardous waste and PCB waste posted and clearly legible? Yes If additional signage is required, is it posted and clearly legible? Yes Do the existing signs meet all of the requirements noted in Part One, Question 6? Na	5	5

Inert Waste Monofill Inspection Checklist

Alaska Department of Environmental Conservation
Division of Environmental Health
Solid Waste Program

#	Part Five: Access	POINTS Possible	POINTS Score
2	**ACCESS** – *Access to the landfill facility must be limited by the use of fencing, berms, or natural barriers to control public access to the site. This should prevent unauthorized traffic or dumping.* 18 AAC 60.220 Is access to and within the facility limited? Yes. Locked gates at entrance. Is there any evidence of unauthorized access to the landfill (target shooting, off-road vehicles, etc) No Is there any evidence of dumping outside the permitted areas? No	20	20

Part Six: Working Cell Operations

This section should be completed at the landfill facility during the site visit.

#	Part Six: Working Cell Operations	POINTS Possible	POINTS Score
1	**AUTHORIZED WASTE TYPES** – *The landfill is required to have a permit that authorizes all types of waste disposed at the site.* 18 AAC 60.200 Is there evidence that the facility has accepted or is accepting any wastes that are not addressed or authorized in the permit? *(See answers in Part One, Question 5)* No	20	20

Part Seven: General Operations

This section should be completed at the landfill facility during the site visit.

#	Part Seven: General Operations	POINTS Possible	POINTS Score
1	**LITTER** - *Litter must be controlled so that it does not become a nuisance or hazard and must be removed from access roads and other areas of the facility.* 18 AAC 60.233, 18 AAC 60. Is excessive litter evident at or near the landfill? No, none at all. Check the types of measures that are used to control litter at the landfill: [X] Litter fencing [ ] Litter collection [ ] Other _____	5	5
2	**DUST, ODOR, NOISE, ETC.** - *Dust, odor, noise, traffic, and other effects from the landfill must not become a nuisance or hazard to the public health, safety, or welfare.* 18 AAC 60.233 Are dust, odor, noise, traffic or other effects from the operation causing, or likely to cause, a nuisance to neighboring homes or businesses? No.	5	5

Inert Waste Monofill Inspection Checklist

Alaska Department of Environmental Conservation
Division of Environmental Health
Solid Waste Program

#	Part Seven: General Operations	POINTS Possible	POINTS Score
3	**SALVAGING** - *Public salvaging, if allowed, must be limited to an area that does not hinder facility operation, create a safety hazard, or cause pollution.* 18 AAC 60.220 This facility does not have any public salvaging. CRS (the operator of the landfill) does have a nicely organized laydown/reuse area where reusable/recyclable materials are stored. These materials are used by the company on other projects or sold. Is public salvaging restricted to a controlled area away from the working face? Is the salvage area managed with respect to safety and pollution control?	NA	NA
4	**DISEASE VECTORS AND ANIMALS** - *Disease vectors, including wildlife and domestic animals, must be controlled so that the public health, safety, or welfare are not endangered by the spread of disease or contact with animals, and that the animals are not harmed by contact with the waste or become a nuisance.* 18 AAC 60.230 Is there any evidence (prints, scat, digging, etc.) of bear, fox, or other animals around the waste? No Were there excessive numbers of birds present? None Are there any reports of wildlife being harmed, or conditions that are likely to harm wildlife? No	5	5
5	**INACTIVE AREAS** - *Areas that have not received waste for more than 90 days, but have not yet reached the final capacity or elevation, must receive an intermediate cover. The area must be covered with 12 inches of soil and graded to prevent ponding and erosion.* 18 AAC 60.243 Have inactive areas been appropriately covered and graded? Yes	10	10
6	**MAINTENANCE AND REPAIR** - *The landfill must maintain structures and components of the facility, and repair any structural changes or damage to the facility.* 18 AAC 60.815 Are there signs of damage to any component of the facility? No	10	10

Part Eight: Special Waste

This section should be completed at the landfill facility during the site visit.

Inert Waste Monofill
Inspection Checklist

Alaska Department of
Environmental Conservation
Division of Environmental Health
Solid Waste Program

#	Part Eight: Special Waste	POINTS Possible	POINTS Score
1	**RACM CELL-** *If the facility accepts RACM, it must be disposed of in a separate cell. Access to the asbestos site must be restricted, and there must be no visible emissions.* 40 CFR 61.154 *Asbestos loads must be inspected and handled to insure that all friable asbestos is sealed in leak-proof containers, deposited in the asbestos cell without damaging the containers, and covered by the end of the day with 6 inches of soil.* 18 AAC 60.450 **This question is currently not applicable but will be once RACM is received** Is RACM disposed of in a separate cell from MSW? It will be once it is received. Is there evidence of visible emissions? NA What measures are used to prevent public access to the asbestos disposal area? The site is not open to the public, locked gate at entrance, asbestos cell will be completely fenced with required signage. Are any exposed or broken bags evident? NA Has adequate cover been applied to the waste? NA	NA	NA
2	**NON-RACM HANDLING** - *Non-RACM waste must be handled so that it does not become friable. It must be covered within 24 hours using procedures that prevent the release of asbestos fibers.* 18 AAC 60.450 Does the facility handle non-RACM waste so that it does not become friable and does the facility cover it within 24 hours? Yes	10	10
3	**LIQUID WASTE** - *Liquid waste may not be disposed at the landfill, with the exception of small quantities (one gallon or less) of containerized household waste. This includes leachate and baler squeezings, unless recirculation has been approved under an RD&D permit.* 18 AAC 60.420 Are any prohibited liquids disposed at the landfill? No Are any fluids generated at the landfill (leachate or baler squeezings)? No If so, how are they disposed? Na	10	10
4	**VEHICLES** - *Vehicles may not be disposed at the landfill unless all fluids and batteries have been removed. If undrained vehicles, or the fluids and batteries removed from them, are stored at the landfill for later disposal or recycling, they must be managed to prevent release of fluids.* 18 AAC 60.335, 18 AAC 60.010 Are vehicles disposed at the landfill? No Are all fluids and batteries removed prior to disposal? Na	NA	NA

Part Nine: Surface Water Controls/Impacts

This section should be completed at the landfill facility during the site visit.

Inert Waste Monofill
Inspection Checklist

Alaska Department of Environmental Conservation
Division of Environmental Health
Solid Waste Program

#	Part Nine: Surface Water Controls/Impacts	POINTS Possible	POINTS Score
1	**RUN-ON/RUN-OFF** - *The landfill must have a control system to prevent run-on water from flowing into the active cell.* 18 AAC 60.225 Does the control system prevent run-on from flowing into the active cell? Yes Is there evidence that run-off may be impacting nearby waters? No	10	10
2	**SURFACE WATER AND PONDING** - *Waste may not be placed in surface water, including ponded rainwater. Landfill surfaces should be graded to prevent ponding, and all ponded water must be removed within 30 days.* 18 AAC 60.225 Is there any evidence of waste in contact with surface water, including ponded rainwater? No	5	5
3	**LEACHATE SEEPS** - *Leachate seeps must be prevented, or contained and controlled at the boundary of the waste management area if the department finds it necessary.* 18 AAC 60.225 Has the department found it necessary to contain or control leachate seeps? No Are there any visible leachate seeps outside the landfill cell? No What measures have been taken to contain and control the seeps? Na	30	30
4	**PERMAFROST** - *If the landfill is located on permafrost, it must be designed and operated so that the permafrost remains frozen. If the landfill settles and water is pooling, the operator must take corrective action.* 18 AAC 60.227 Are there any indications that permafrost is thawing (pooled water or settlement)?	NA	NA

Part Ten: Monitoring Locations

This section should be completed at the landfill facility during the site visit.

#	Part Ten: Monitoring Locations	POINTS Possible	POINTS Score
1	**MONITORING LOCATIONS** – *Monitoring, if done, must be conducted at approved locations. Surface water monitoring sites must be properly maintained. Groundwater monitoring wells must be properly maintained.* 18 AAC 60.810, 18 AAC 60.825, permit Are surface water monitoring sites clearly identified and marked? Are surface water monitoring sites located according to the approved plan? Are monitoring wells in good condition and locked? Are other monitoring devices well maintained and located as required?	NA	NA

Part Eleven: Additional Permit Requirements

This section should be completed at the landfill facility during the site visit.

Inert Waste Monofill Inspection Checklist

Alaska Department of Environmental Conservation
Division of Environmental Health
Solid Waste Program

#	Part Eleven: Additional Permit Requirements	POINTS	
		Possible	Score
1	**ADDITIONAL PERMIT REQUIREMENTS** Is the facility complying with the additional permit requirements listed in Part One, Question 11? Only one of the additional permit requirements applies at this point since RACM has not been accepted yet.	10 each	10

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Fig 1 Signage at landfill entrance

Fig 2 Entrance road to monofill

Fig 3 View of active disposal cell

Fig 4 View on top of active disposal cell

Fig 5 C & D working face

Fig 6 Eastern slope of active cell

Fig 7 View of active disposal cell from top of RACM cell berm

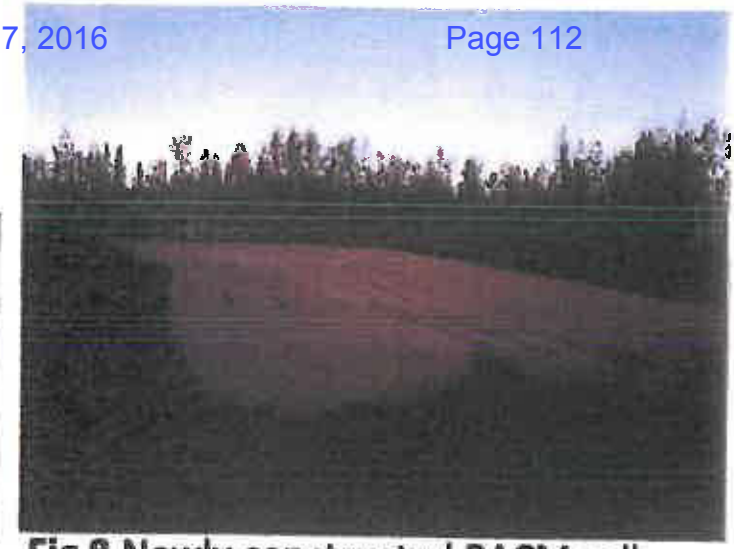

Fig 8 Newly constructed RACM cell

Fig 9 View of berm around RACM cell

Fig 10 Recycle/Reuse lay down area

Fig 11 Another view of Recycle/Reuse lay down area

Fig 12 View from the lay down area towards the western berm

Matanuska - Susitna Borough
Development Services
DEC 01 2014
Received

CENTRAL MONOFILL SERVICES

Anchorage
311 N. Sitka Street
Anchorage, AK 99501

Fairbanks
1301 Wells Street
Fairbanks, AK 99701

November 26, 2014

Susan Lee
Planning and Land Use Department
Matanuska-Susitna Borough
350 East Dahlia Avenue
Palmer, Alaska 99645

Reference: **Conditional Use Permit Application –Additional Information**
Location: 17N02E18C010 & 17N02E19B006
Response to City of Palmer Resolution

Dear Ms. Lee:

On November 25, 2014 The City of Palmer passed a resolution 14-038 requesting the MSB not approve the CMS, Conditional Use Permit application presently before the MSB Planning Commission. Central Monofill Services, (CMS) refutes the conclusions stated by the City of Palmer, (Palmer) in this resolution as they appear to be primarily based on opinions, not facts. Based on the conclusions and testimony of City Council members it is clear they have not thoroughly reviewed the CMS CUP application presently before the MSB.

Let's look at the inaccuracies and misconceptions in the resolution:

1. The resolution indicates we incorrectly identified the adjoining City property as industrial. The resolution doesn't identify what the City thinks is the correct land use designation, but the MSB has no zoning or land use definitions. CMS chose to identify this property as industrial since a large portion of the City property has been mined for gravel and leasing agricultural property is an industry. The farmhouse is unoccupied.

2. The City says it is concerned with the applicant's credibility given the Borough issued citations to "Central Environmental Services which operates Central Recycling Services and Central Monofill Services". Central Environmental, Inc., Central Recycling Services and Central Monofill Services are independent companies whose business structure and working relationship are clearly identified within the CUP package. Central Environmental, Inc. and Central Recycling Service were not issued any citations. Central Monofill Services was issued 3 citations, not six. These citations are currently under appeal.

PH (907) 770-7470 FAX (907) 770-5084
www.centralmonofillalaska.com • cms@centralmonofillalaska.com

3. The resolution says the Monofill will not meet the Alaska Department of Environmental Conservation requirement that the base of the Monofill be at least 10 feet above groundwater. This is incorrect and clearly shown and discussed at great length in the CUP package.

4. The resolution says there is potential for contaminants to travel off the property, however, they provide no documentation to support this statement. Please see the four expert's reports within the CMS CUP package which provide extensive documentation that refutes this unfounded allegation.

5. The City resolution indicates the CUP is not consistent with a goal of the Palmer Comprehensive plan. The subject property is not within the City of Palmer. The same statement indicates approval of the CUP will degrade the visual quality of the Glenn Highway which is unfounded since the MSB Code requires the operation be screened from view of the Glenn Highway and ROW. This screening requirement and proposed screening methods are described in detail in the CMS CUP application. The CMS operations within the CUP area will be screened from public view.

6. Another concern raised by the council in the resolution is debris will blow from the site and detract from the Scenic Byway experience. This issue was raised by MSB staff and CMS has addressed measures to control blowing debris in great depth within the current CMS CUP package. While Palmer has raised the issue of blowing debris they fail to note that they placed no restrictions on the City of Palmer, AK Demo Monofill CUP. The AK Demo Monofill supported by Palmer has not had reported issues with debris blowing from the site

7. The resolution indicates a future ADOT project may remove a berm from the property causing unsightly entry to the City. This has been addressed in the CMS CUP package, In summary should any screening be removed due to future ADOT projects it would have to be replaced per the requirements of the CUP therefore the operations will still be screened from view by the public.

8. Per the City of Palmer resolution, *"WHEREAS, the operation of the Alaska Demolition Construction & Demolition landfill does not include the sorting, collection, and sale of salvageable, reusable material on site similar to a junkyard and is therefore not a good comparison to the operation of the proposed inert material Monofill."* This does not make any sense. Per MSB code if the AK Demo Monofill were in the MSB, both operations would require a 17.60 Junkyard CUP. Both operations require the same ADEC permit. Both operations handle the same type of Construction & Demolition material. How are they not a good comparison? The only difference is the proposed CMS operations operates with many more controls and works to recycle and reduce how much of the same C&D material has to be thrown away.

The City of Palmer in its December of 2013, findings of facts to renew the AK Demolition Monofill CUP found; **"The conditional use will preserve the value, spirit, character and integrity of the surrounding area:", "Granting the conditional use permit will not be harmful to the public health, safety, convenience and comfort of the neighborhood."**

The City of Palmer's Resolution NO. 14-038 recommending disapproval of the CMS CUP before the MSB Planning Commission is not only based on numerous unfounded and unsupportable allegations, it also directly contradicts their action in approving a CUP for a similar Monofill CUP within the City of Palmer.

During the most recent renewal hearing for the AK Demo Monofill CUP that I attended, Council members expressed concern that the AK Demo Monofill was not being filled quickly enough. The City wants this property filled for additional Alaska State Fair parking. Passing this Resolution by the City of Palmer is hypocritical at best and designed to prohibit competition for the City of Palmers Monofill at worst.

Should you have any further questions or require further clarification please do not hesitate to ask.

Respectfully,

Shane Durand

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Susan Lee

From: Durand, Shane [shane@cei-alaska.com]
Sent: Monday, December 01, 2014 2:43 PM
To: Alex Strawn
Cc: Susan Lee
Subject: FW: Siezmic evaluations of existing ground surface
Attachments: 1460_001.pdf

Matanuska - Susitna Borough
Development Services

DEC 01 2014

HANDOUT

Received

From: Larry Helgeson [mailto:lhelgeson@emi-alaska.com]
Sent: Monday, December 01, 2014 2:31 PM
To: Durand, Shane
Subject: Siezmic evaluations of existing ground surface

Shane,

When we did our initial response to the MSB question (#23) requesting siezmic evaluations, we contacted Keith Mobley, PE, the civil engineer who did the seismic evaluation of the perimeter berms. We asked him to evaluate the existing topography as well. After a review of the general site conditions, he did not see any specific area of concern. He was willing to discuss any specific concern anyone has. Borehole data from the south part of the ponds show the soils to be predominately gravel and sand with silt. (see Test boring log #3 and #4 attached for typical soils, #4 is the further south log) This type of soil is not likely to liquefy. After our verbal consultation with Mr. Mobley we gave the following response to question 23.

"The existing site is not vulnerable to significant impacts from a large earthquake due to topography, soil types or ground water. The ground water is below the relatively flat bottom of the monofill, so there are no saturated soils that could liquefy and the flat bottom does not have areas for material to slough to. The monofill is designed with setbacks keeping the monofill away from the ponds so even if a slope were to fail the waste material would not reach the ponds."

Larry A. Helgeson, P.E.
Environmental Mangement, Inc.
206 E Fireweed lane, Suite 201
Anchorage, AK 99503
(907) 272-9336

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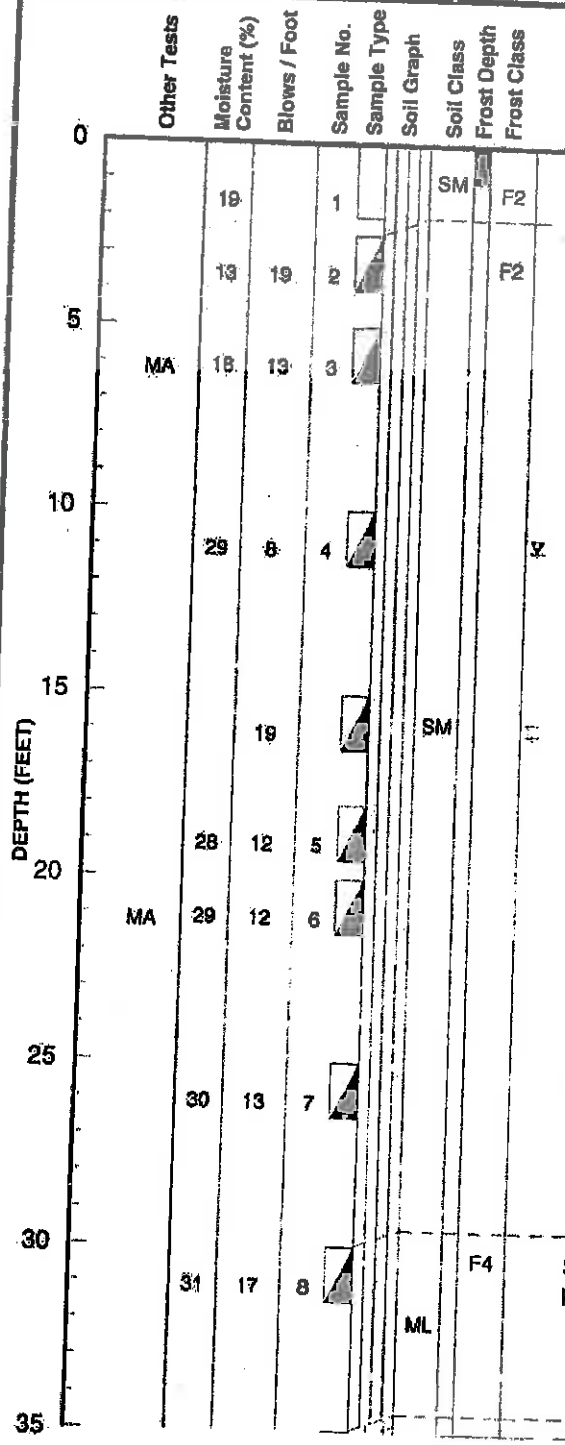
TEST BORING 3

LOCATION: N21962.0 / E50653.4
ELEVATION: 87.9 ft



DEPTH	
GRAVEL SURFACE, FROZEN, ICE AS Nbn	
FILL, SILTY SAND WITH GRAVEL, brown, about 40% gravel, 20% silt, nonplastic, gravel subrounded to 1", medium sand, damp	2.0
SILTY SAND, brown, about 15% silt, nonplastic, medium sand, damp, medium dense	
becoming siltier, 1% gravel, 48% silt, gravel subrounded to 1/2", medium to fine sand	
becoming sandier, about 45% silt, wet, loose	
no sample recovered, Groundwater encountered at 16' while drilling	
saturated, medium dense	
43% silt	
about 45% silt	
SANDY SILT, dark gray, about 45% sand, no to low plasticity, fine sand, saturated, very stiff	29.5
	34.5

(continued on next page)

KEY
MA = Mechanical Analysis
PI = Plasticity Index
LL = Liquid Limit
TD = Total Depth
= Groundwater After Drilling
= Grab Sample
= SPT Sample
= Shelby Tube - pushed
= Direct Push Sample
= 2.5" I.D. Spoon Sample 340# weight, 30" fall

DRILLING CO.: Denali Drilling, Inc.
EQUIPMENT: CME-85 Truck
OPERATOR: Michael Stockton
METHOD: 8 in. OD hollow-stem auger/mud rotary

CLIENT: Granite Construction
PROJECT: CPP Palmer Pit Dam Evaluation
LOGGED BY: Keri A. Nutter
TEST BORING COMPLETED: 1-27-10
W.O. 1122.59020.04

LOG OF EXPLORATION 59020.GPJ BLANKS.GDT 8/8/11

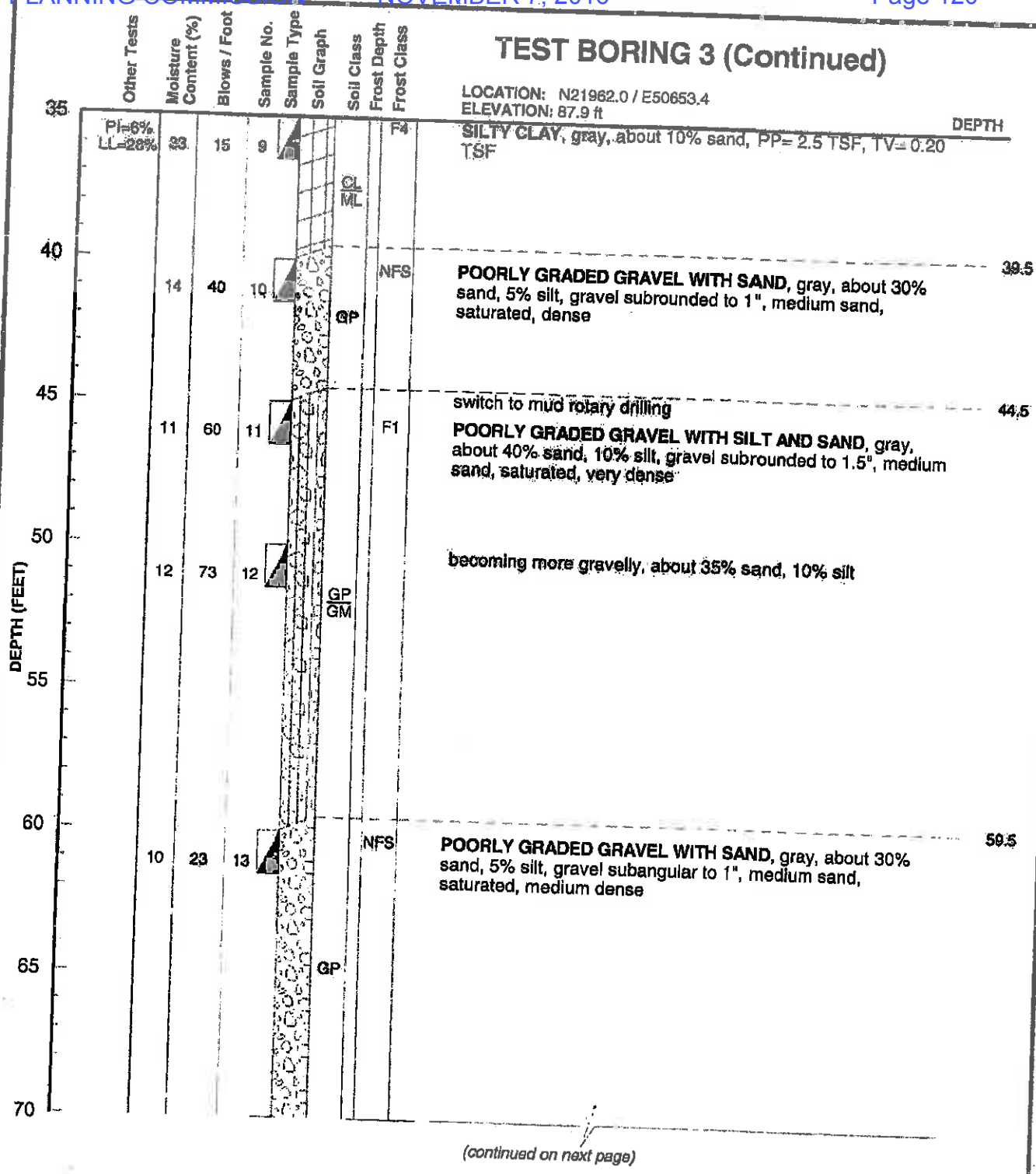
DOWL HKM

LOG OF TEST BORING 3

FIGURE B-3

TEST BORING 3 (Continued)

LOCATION: N21962.0 / E50653.4
ELEVATION: 87.9 ft



(continued on next page)

KEY
MA = Mechanical Analysis
PI = Plasticity Index
LL = Liquid Limit
TD = Total Depth
= Groundwater After Drilling
= Grab Sample
= SPT Sample
= Shelby Tube - pushed
= Direct Push Sample
= 2.5" I.D. Spoon Sample 340# weight, 30" fall

DRILLING CO.: Denali Drilling, Inc.
EQUIPMENT: CME-85 Truck
OPERATOR: Michael Stockton
METHOD: 8 in. OD hollow-stem auger/mud rotary

CLIENT: Granite Construction
PROJECT: CPP Palmer Pit Dam Evaluation
LOGGED BY: Keri A. Nutter
TEST BORING COMPLETED: 1-27-10
W.O. 1122.59020.04

LOG OF EXPLORATION 59020.GPJ BLANK2.GDT 9/8/11

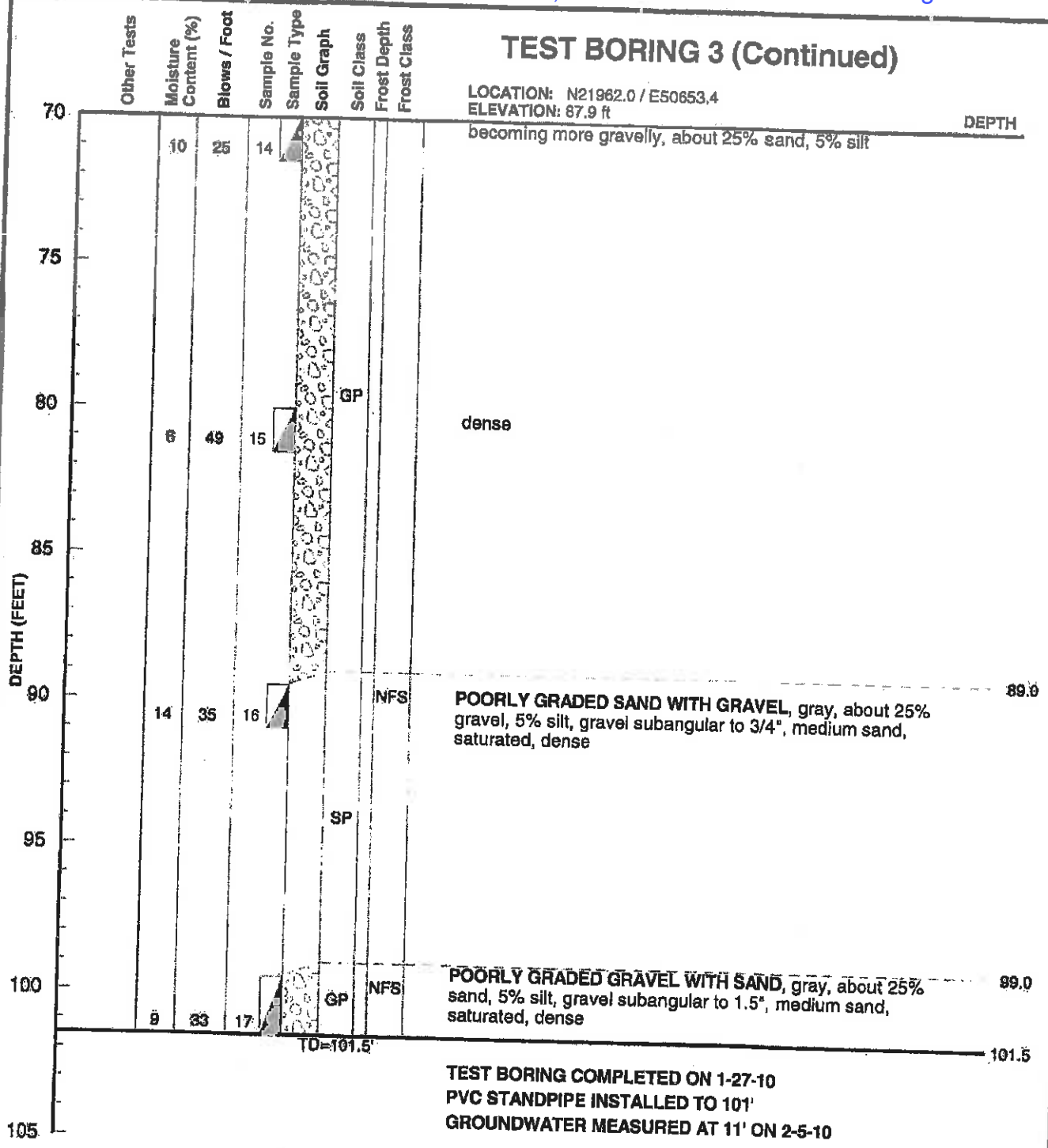
DOWL HKM

LOG OF TEST BORING 3

FIGURE B-3

TEST BORING 3 (Continued)

LOCATION: N21962.0 / E50653.4
ELEVATION: 87.9 ft



TEST BORING COMPLETED ON 1-27-10
PVC STANDPIPE INSTALLED TO 101'
GROUNDWATER MEASURED AT 11' ON 2-5-10

KEY
MA = Mechanical Analysis
PI = Plasticity Index
LL = Liquid Limit
TD = Total Depth
▽ = Groundwater After Drilling
□ = Grab Sample
■ = SPT Sample
▣ = Shelby Tube - pushed
⊡ = Direct Push Sample
⊠ = 2.5" I.D. Spoon Sample 340# weight, 30" fall

DRILLING CO.: Denali Drilling, Inc.
EQUIPMENT: CME-85 Truck
OPERATOR: Michael Stockton
METHOD: 8 in. OD hollow-stem auger/mud rotary

CLIENT: Granite Construction
PROJECT: CPP Palmer Pit Dam Evaluation
LOGGED BY: Keri A. Nutter
TEST BORING COMPLETED: 1-27-10
W.O. 1122.59020.04

LOG OF EXPLORATION: 59020.GPJ BLANK2.GDT 9/8/11

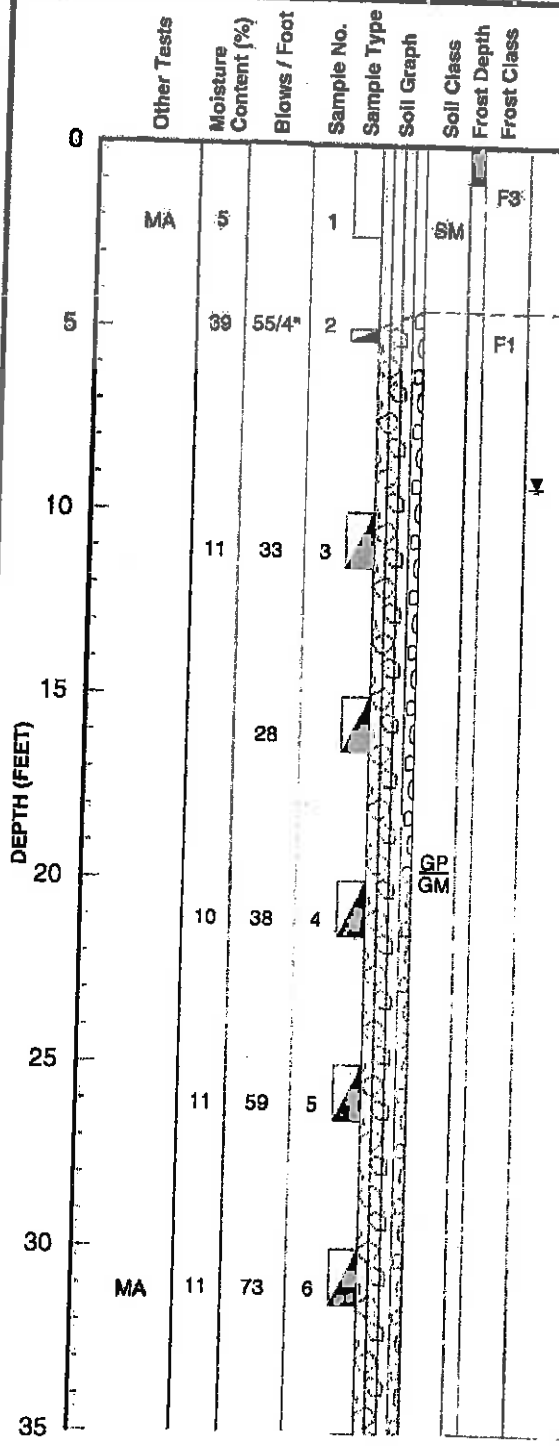
DOWL HKM

LOG OF TEST BORING 3

FIGURE B-3

TEST BORING 4

LOCATION: N21616.9 / E50691.5
ELEVATION: 86.8 ft



GRAVEL SURFACE, FROZEN, ICE AS Nbn

FILL, SILTY SAND, brown, 13% gravel, 25% silt, nonplastic, gravel subrounded to 1.5", medium sand

POORLY GRADED GRAVEL WITH SILT AND SAND, brown, about 30% sand, 10% silt, gravel subangular to 1.5", medium sand, wet, very dense

becoming sandier, about 35% sand, 10% silt, dense

no sample recovered - driving a cobble ahead of sampler

becoming sandier, about 40% sand, 10% silt, gravel subrounded to 1.5", saturated

very dense

becoming siltier, 39% sand, 6% silt, gravel subangular to 1.5", silt nodules to 3/4"

(continued on next page)

KEY
MA = Mechanical Analysis
TD = Total Depth
= Groundwater After Drilling
= Grab Sample
= SPT Sample
= Shelby Tube - pushed
= Direct Push Sample
= 2.5" I.D. Spoon Sample 340# weight, 30" fall

DRILLING CO.: Denali Drilling, Inc.
EQUIPMENT: CME-85 Truck
OPERATOR: Michael Stockton
METHOD: Wash Rotary

CLIENT: Granite Construction
PROJECT: CPP Palmer Pit Dam Evaluation
LOGGED BY: Brian M. Mullen, E.I.
TEST BORING COMPLETED: 1-19-10
W.O. 1122.59020.04

LOG OF EXPLORATION 59020.GPJ BLANK2.GDT 6/6/11

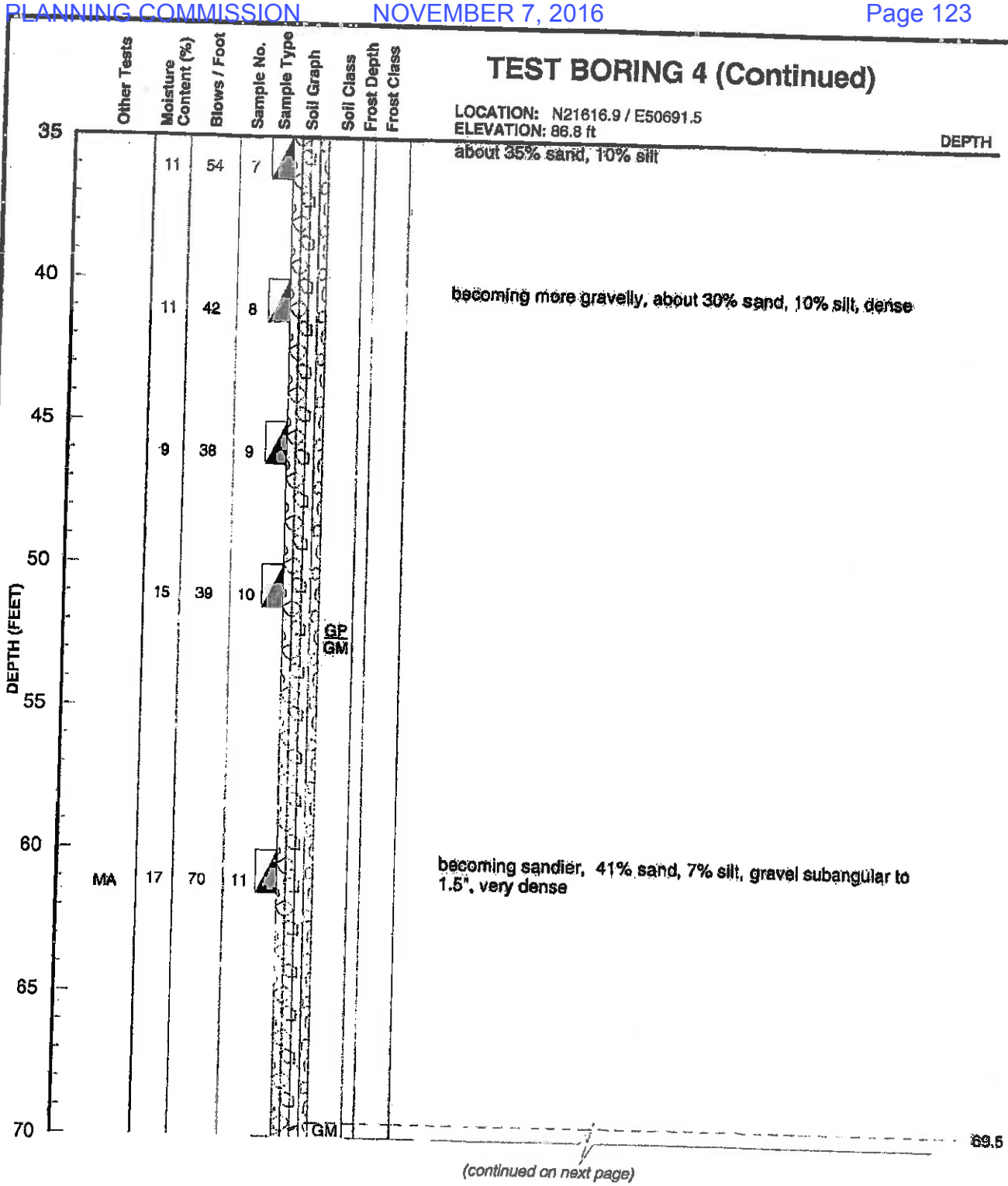
DOWL HKM

LOG OF TEST BORING 4

FIGURE B-4

TEST BORING 4 (Continued)

LOCATION: N21616.9 / E50691.5
ELEVATION: 86.8 ft



KEY
MA = Mechanical Analysis
TD = Total Depth
= Groundwater After Drilling
= Grab Sample
= SPT Sample
= Shelby Tube - pushed
= Direct Push Sample
= 2.5" I.D. Spoon Sample 340# weight, 30" fall

DRILLING CO.: Denali Drilling, Inc.
EQUIPMENT: CME-85 Truck
OPERATOR: Michael Stockton
METHOD: Wash Rotary

CLIENT: Granite Construction
PROJECT: CPP Palmer Pit Dam Evaluation
LOGGED BY: Brian M. Mullen, E.I.
TEST BORING COMPLETED: 1-19-10
W.O. 1122.59020.04

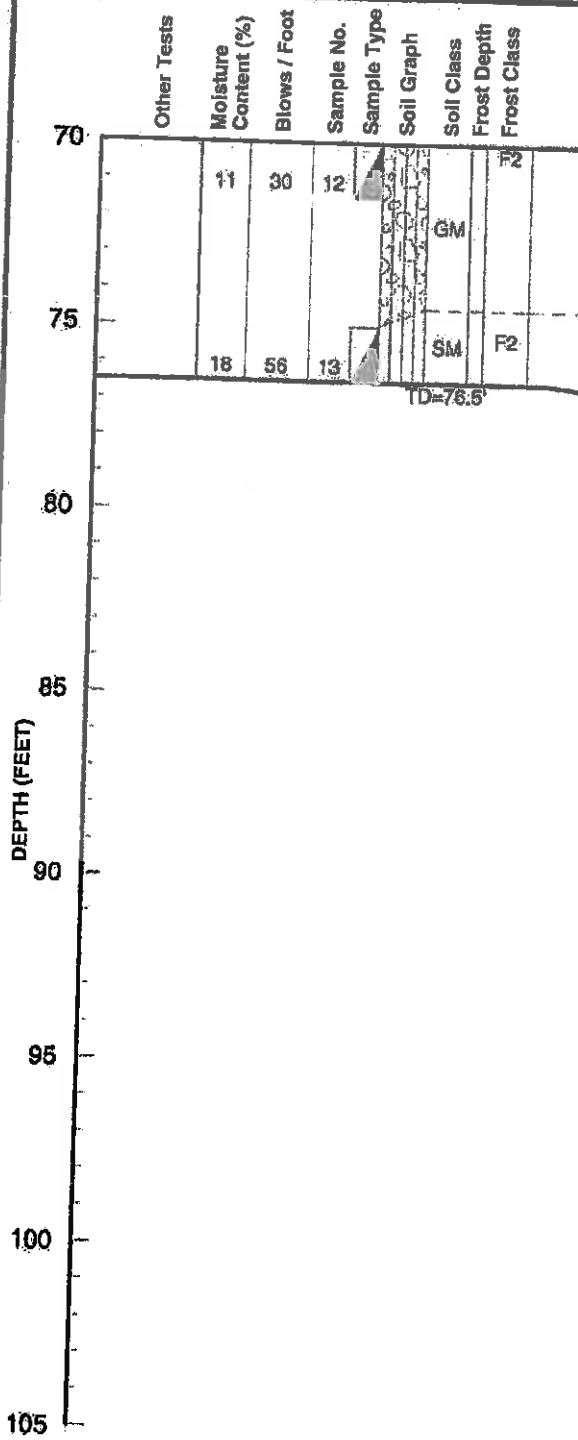
LOG OF EXPLORATION 59020.GPJ BLANK2.GDT 9/9/11

DOWL HKM

LOG OF TEST BORING 4

FIGURE B-4

TEST BORING 4 (Continued)



LOCATION: N21616.9 / E50691.5
ELEVATION: 86.8 ft

DEPTH

SILTY GRAVEL WITH SAND, brown, about 20% sand, 15% silt, nonplastic, gravel subangular to 1", medium sand, saturated, medium dense

SILTY SAND WITH GRAVEL, brown, about 35% gravel, 15% silt, nonplastic, gravel subangular to 1", medium sand, saturated, very dense — 74.5

76.5

TEST BORING COMPLETED ON 1-19-10
PVC STANDPIPE INSTALLED TO 76'
GROUNDWATER MEASURED AT 9.3' ON 2-5-10

KEY
MA = Mechanical Analysis
TD = Total Depth
▽ = Groundwater After Drilling
☐ = Grab Sample
☑ = SPT Sample
☒ = Shelby Tube - pushed
☒ = Direct Push Sample
☒ = 2.5" I.D. Spoon Sample 340# weight, 30" fall

DRILLING CO.: Denali Drilling, Inc.
EQUIPMENT: CME-85 Truck
OPERATOR: Michael Stockton
METHOD: Wash Rotary

CLIENT: Granite Construction
PROJECT: CPP Palmer Pit Dam Evaluation
LOGGED BY: Brian M. Mullen, E.I.
TEST BORING COMPLETED: 1-19-10
W.O. 1122.59020.04

LOG OF EXPLORATION 59020.GPJ BLANK2.GDT 9/6/11

DOWL HKM

LOG OF TEST BORING 4

FIGURE B-4

J. A. MUNTER CONSULTING, INC.

December 1, 2014

Re: Testimony to MSB Planning Commission about an application for a Conditional Use Permit for a proposed monofill near Palmer, Alaska

Members of the Board,

My name is Jim Munter. I am the Principal Hydrogeologist at J. A. Munter Consulting, Inc. Since my most recent submittal in February 2014, there have been some responses to my work and the borough Staff has prepared their analysis and recommendation in your packet. I was requested last week by the borough to review all of that information and provide additional comments as warranted by the record here tonight. I have not been involved in any technical discussions with the Borough or reviewers of my work between my submittal last February until today.

A great volume of complicated technical analysis is before you.
Time limits prohibit me from detailed rebuttal or discussion tonight.

Although a few sections of my prior reviews that would benefit from some minor revisions, I have found no compelling technical case to substantially revise or retract any of my prior comments.

The record still contains significant technical deficiencies that preclude supporting the statement found in the Borough findings, that this facility does not have the potential for groundwater contamination that could have negative effects on drinking water.

For example, Maddox, Terrasat, and the Borough misinterpreted evaporation data to conclude that the site is semi-arid. I do not agree with that interpretation. The US Geological Survey, in a recent and fully peer-reviewed report, characterize the site as transitional between maritime and continental climates. Maddox, Terrasat, and the Borough further conclude that as a result of the semiarid climate, recharge will not occur or be minimal at this site. The USGS estimates that 1.4 inches of water per year will recharge groundwater at this site, which equates to more than 1 million gallons of water. This is a significant volume of water to percolate through the waste material and enter the groundwater system.

Matanuska - Susitna Borough
Development Services
DEC 01 2014
Received
HANDOUT

5701 PENNY CIRCLE, ANCHORAGE, AK, 99516
jamunter@arctic.net
PHONE (907) 345-0165; FAX (907) 348-8592

Second, Terrasat's modeling understates potential groundwater contamination because it assumes that when leachate is generated, it mixes instantaneously with the entire volume of groundwater beneath the site. This is not what typically happens.

Thirdly, the Terrrasat analysis makes extensive reference to the final "silt cap" over the site. There is no requirement for a silt cap. Condition 21 should be revised to require a silt cap with a permeability no greater than 10-4cm/sec throughout the entire cap. This is what Terrasat used in their modeling. there should also be a sufficient field testing and verification program to prove that it gets properly installed and maintained.

Fourth, the Borough has proposed using Terrasat's groundwater monitoring plan from 2013. this plan contains major deficiencies that I previously commented on and that have not been fixed. But it is fixable. For example, the section line easement that cleaves the site looks like it might be an excellent location for a few monitoring wells.

Finally, this facility projects that the final compacted fill structure will be stable. Potential settlement of the pile and ponding of water on the final cap is a significant potential issue. The technical analysis supporting the stability of the pile is quite limited. I suggest a minimum five-year post-closure monitoring and remediation plan. This is because remediation of settlement and the prevention of ponding on the cap are critical factors for the long-term prevention of groundwater contamination at this site.

I would be happy to answer any questions.

HANDOUT

Introduced by: Mayor Johnson, Council Members Hanson and Best
Date: November 25, 2014
Action: Adopted
Vote: Unanimous

Yes:	No:
Erbey	
Carrington	
Combs	
DeVries	
Hanson	
Johnson	

Matanuska - Susitna Borough
Development Services

DEC 01 2014

Received

CITY OF PALMER, ALASKA

Resolution No. 14-038

A Resolution of the Palmer City Council Requesting the Matanuska-Susitna Borough Planning Commission Deny a Conditional Use Permit for the Operation of an Inert Material Monofill on MSB Parcels 17N02E18C010 and 17N02E19B006

WHEREAS, the City of Palmer is the owner of MSB Parcel 17N02E18D002 located adjacent to the proposed Conditional Use Permit for operation of an Inert Material Monofill to be considered by the Borough Planning Commission on December 1, 2014; and

WHEREAS, the applicant's map of Proposed CMS Site Showing Adjacent Property Types incorrectly identifies the City's parcel which contains a farmhouse and leased agricultural field as an Industrial use; and

WHEREAS, the City is concerned with the applicants credibility given the Borough issued six citations charging Central Environmental Services which operates Central Recycling Services and Central Monofill Services with illegally dumping material on MSB Parcels 17N02E18C010 and 17N02E19B006 prior to approval of a Borough permit; and

WHEREAS, according to the Central Monofill Services' application not all of the actual monofill site will meet the Alaska Department of Environmental Conservation requirement that the base of the monofill is at least 10 feet above groundwater; and

WHEREAS, given the unpredictable water table underlying the proposed site due to earlier penetration of the underground aquifer, there is a potential for contaminants from the monofill to travel off the property to area wells and lakes; and

WHEREAS, the application shows that 35.5 acres of the 52 acre site will be used for the monofill and 16.5 acres will be used for recycling operations; and

WHEREAS, the 16.5 acre recycling area will include outdoor collection and storage of salvageable and reusable material such as scrap metal, broken concrete, wood, tires and recyclable windows and HDPE pipe; and

WHEREAS, an inert landfill should not become a model of the reclamation of landfills in the area; and

WHEREAS, the outdoor storage of this salvageable and reusable material is generally categorized by the Borough as a "Junkyard"; and

WHEREAS, the establishment of a new junkyard adjacent to the Glenn Highway is inconsistent with maintaining the Glenn Highway corridor as an attractive community entry to Palmer which is Goal 1, Chapter 5 of the current Palmer Comprehensive Plan and Goal 7, Chapter 6 which is to maintain and improve the visual quality of the Glenn and Palmer-Wasilla Highways corridors, and other major community roads; and

WHEREAS, this region experiences frequent multiple-day high- wind events each year since it is at the confluence of the Matanuska and Knik River valleys and loose debris and dust from the fill has and is expected to continue to scatter beyond the boundaries of the site which is incompatible with the Glenn Highway National Scenic Byway designation of this section of the Glenn Highway; and

WHEREAS, the berm currently screening a portion of this site from the Glenn Highway, may be removed as the Glenn Highway is expanded to four lanes as proposed by the Alaska Department of Transportation further causing an unsightly entry into the City and reducing the value of the Glenn Highway National Scenic Byway experience for travelers; and

WHEREAS, the Inert Material Monofill application submitted by Central Monofill Services refers to the Alaska Demolition Construction & Demolition landfill located in the Palmer City limits which has had a Conditional Use Permit; and

WHEREAS, Alaska Demolition Construction & Demolition landfill is located on a minor community road that is not visible to the travelling public and is approved to fill a pit left by a former gravel operation without stacking cells to a level above the ground level of the adjacent property; and

WHEREAS, the operation of the Alaska Demolition Construction & Demolition landfill does not include the sorting, collection, and sale of salvageable, reusable material on site similar to a junkyard and is therefore not a good comparison to the operation of the proposed inert material monofill.

NOW, THEREFORE, BE IT RESOLVED by the Palmer City Council that it requesting the Matanuska-Susitna Borough Planning Commission not approve a Conditional Use Permit for the operation of an Inert Material Monofill on MSB Parcels 17N02E18C010 and 17N02E19B006.

Passed and approved by the City Council of the City of Palmer, Alaska this twenty-fifth day of November, 2014.

DeLena Goodwin Johnson, Mayor

Janette M. Bower, MMC, City Clerk

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Susan Lee

From: Stephanie Nowers [sjnowers@mtaonline.net]
Sent: Monday, December 01, 2014 11:42 AM
To: Alex Strawn; Susan Lee
Subject: incorrect finding in the staff recommendation.

HANDOUT

Hi Alex and Susan,

Just as a followup to our conversation with Alex on Wednesday, Nov. 26, it took me awhile to find it. But staff's findings (p. 69) include the statement that "Documentation has been provided demonstrating that the monofill operation does not have the potential for groundwater contamination that could have negative effects on driving water and surface water quality."

This is not an accurate reflection of the record. What the record shows is that documentation has shown that there is dispute about whether groundwater contamination could occur that would have negative impacts. Without a qualified hydrologist on staff, it's inaccurate to make the statement that this doesn't have the potential to impact groundwater.

- Stephanie Nowers.

P.S. Please also consider this email to be submitted to the planning commission, if possible.

Susan Lee

From: Stephanie Nowers [sjnowers@mtaonline.net]
Sent: Monday, December 01, 2014 10:02 AM
To: Susan Lee; Alex Strawn; Eileen Probasco
Cc: david.w.schade@alaska.gov; charles.cobb@alaska.gov
Subject: Request for DNR to be present at tonight's Planning Commission meeting

HANDOUT

Hi folks,

I'd like to request that the borough ask DNR to be present at the Planning Commission hearing tonight on the Conditional Use Permit request from Central Monofill Services for a dump site at Mile 38.3 of the Glenn Highway. Specifically to have folks from the Water Resources Section be present so that the record can be clear as to the status of DNR's work regarding the connection between the gravel pit ponds and area lakes and wells. In addition for DNR to be present to state their efforts to date to get CMS to repair the spillway that was installed between the two gravel pit ponds. The spillway is relevant because fixing it could alter the groundwater table where the dump is proposed. At one point, 1.4 million gallons A DAY was flowing through the spillway. The repair that is needed would reduce or eliminate that flow completely. This is key information for the planning commission to consider before deciding on this permit. In addition, CMS has stated that DNR has "not corroborated" the connection between the ponds and the lakes. That is true but not because it has been disproven. Rather DNR's work to date has not had enough time to rule out other possibilities.

Again I apologize for the short notice. I am copying David Schade and Charles Cobb from the Water Resources Division on this request.

Thank you,

Stephanie Nowers

Susan Lee

From: Stephanie & Stephen Nowers [snowers@mtaonline.net]
Sent: Tuesday, November 25, 2014 4:05 PM
To: Susan Lee
Cc: Alex Strawn; Eileen Probasco; Rich Harbuck; William Quantick; Stephanie Figon; matthewb@mtaonline.net
Subject: Re: Meeting this week

HANDOUT

Hi folks,

I'm disappointed no one is available to talk to, and I will submit written comment for the meetings.

In the interim, I'd request that the borough ask hydrologist Jim Munter to be present at the Dec. 1 Planning Commission hearing to answer any questions the planning commission might have about his hydrology reports to the borough. Munter, in two previous reports for the borough, concluded that the monofill as proposed posed a significant potential to contaminate groundwater and area wells. The borough in its staff report finds that the monofill has minimal potential for leachate and that there will be no contamination plume based on studies done by hydrology experts hired by CMS. Munter had reviewed those reports and still concluded there was significant potential for contamination. I'm assuming the borough does not have its own hydrologist available to review the conflicting hydrology reports. In light of that and because the uncertainty about the hydrology of this property is so key to the determination of whether the proposed operation poses a threat to public health, safety and welfare, I respectfully request that the borough in the interest of a full discussion provide the Planning Commission access to Mr. Munter for questions that may arise as well as the other hydrology experts if needed. FYI: I did speak with Mr. Munter this morning. He has reviewed the other hydrology reports provided by CMS, and he has not changed his opinion that as proposed this operation poses a significant potential to contaminate groundwater and area wells.

I apologize for the short notice of this request in a holiday week. However, the packet for the meeting has been on short notice as it was just posted online yesterday.

Thank you for your consideration.

- Stephanie Nowers
229.1982.

Sent from my iPhone

On Nov 25, 2014, at 12:19 PM, Susan Lee <Susan.Lee@matsugov.us> wrote:

> Stephanie:
>
> I will be out of the office the rest of the week and will be unable to meet with you.
>
> Staff took all of the hydrology reports under consideration in making our recommendation. Potential impacts to ground water quality are addressed in our recommended conditions including compaction, slope requirements, weekly cover, open area limitations, monitoring, and revegetation.
>
> As far as submitting additional information you can either e-mail it to me or bring it into the office. It will be provided to the commission as handouts at the meeting. This information will

need to be provided no later than noon on Monday, December 1.

The borough will be closed on Thursday and Friday.

Susan

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

-----Original Message-----
From: Stephanie & Stephen Nowers [mailto:snowers@mtaonline.net]
Sent: Tuesday, November 25, 2014 10:37 AM
To: Susan Lee; e.probasco@matsugov.us
Cc: Rich Harbuck; Stephanie Figon; William Quantick
Subject: Meeting this week

Hi Susan,

A few of us would like to meet with you and maybe other planning staff this week in advance of the hearing on Monday. Do you have time today?

We're looking for clarification on the hydrology review as it appears staff decided to reject Munter's conclusions and it's not clear why. We also have additional information from Ohio that is relevant given staffs findings but are unsure how to submit it. Finally if you have the page numbers for the water quality monitoring plan submitted by CMS, I still have not been able to find it in the packet. Sorry for the short notice. But working as fast as we can as we just got the packet yesterday.

Happy almost thanksgiving,

Stephanie

Sent from my iPhone

EXHIBITS FROM PUBLIC TESTIMONY

DECEMBER 1, 2014

PLANNING COMMISSION MEETING

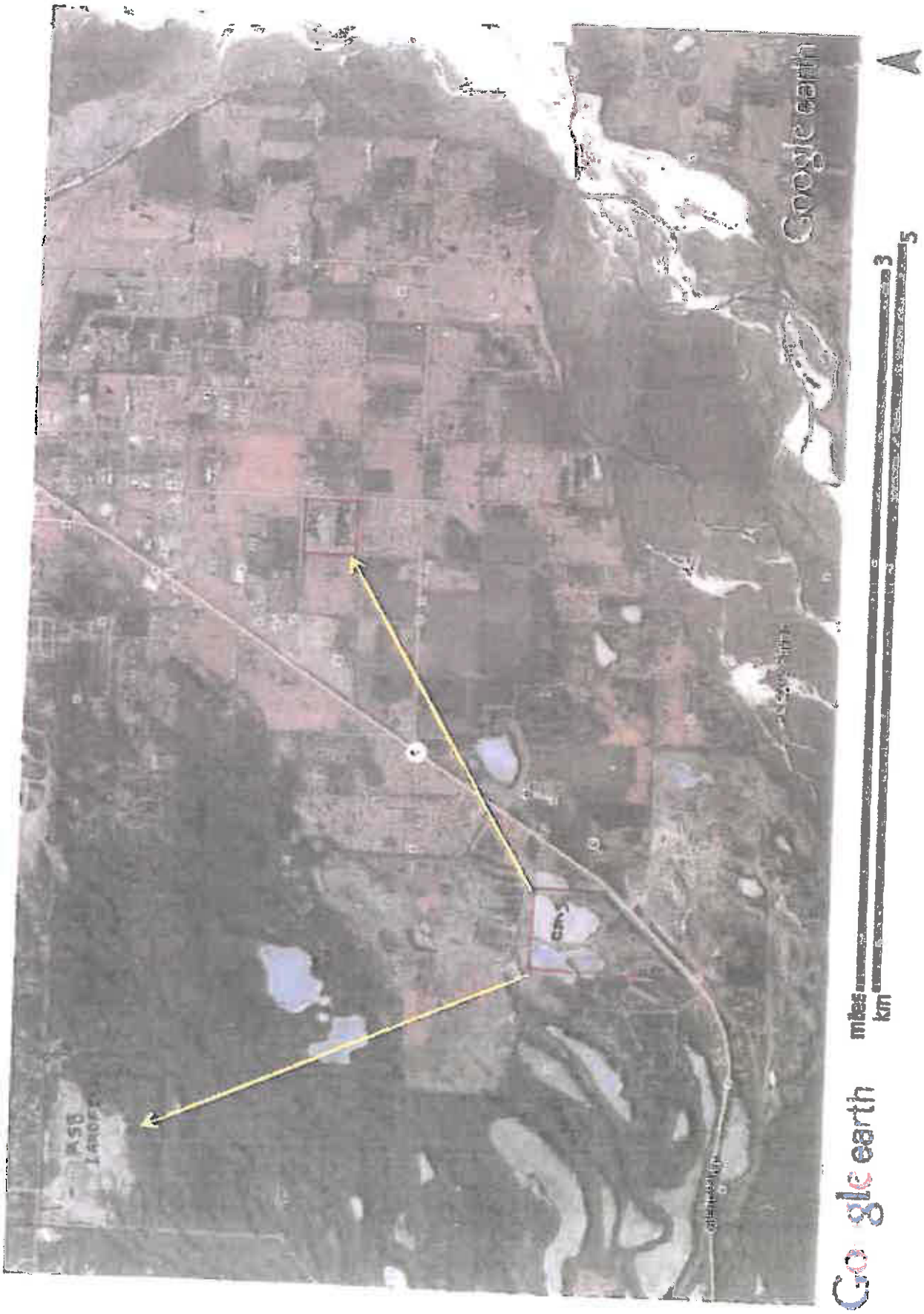
DECEMBER 1, 2014

EXHIBIT

Stephanie Nowers

FOLLOW THE WATER

PLANNING COMMISSION June 17, 2013 P.572



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DECEMBER 1, 2014

EXHIBIT

Jesse Saxton

PLANNING COMMISSION NOVEMBER 7, 2016 Page 143

according to common experiences. The geometry of the Payatas dumpsite seems to have met the slope requirement, showing slopes of about 1:3 with a height of 25-40 metres. However, some specific conditions that are particularly true in tropical developing countries were apparently not considered thoroughly:

The collapsed slope of the Payatas landslide four weeks after the event

- low density of waste - due to a high portion of light plastic materials and insufficient waste compaction
- unrestricted water percolation - water percolation usually decreases with the presence of paper. Observation has shown a lack of paper due to the outstandingly high recycling ratio
- extremely high rates and non-uniform distribution of rainfall.

The major reason for the landslide was the low waste density resulting from the composition of waste delivered to the Payatas dumpsite. The waste material was characterized by a high proportion of plastics and organics and a total absence of other materials (paper, glass, metals). MSW with this composition is resistant to conventional compaction methods, even using heavy equipment. The waste composition in Manila is typical for urban areas in developing countries and countries with emerging economies. Basically, this results from an extraordinary consumption of plastics as packaging material, a lack of recycling systems for organic waste and an outstandingly high recycling rate for reusable materials. The high recycling rate primarily reflects the country's poverty, which forces people to earn their living by segregating waste at dumpsites. The impact of low waste density on landfill stability was amplified by heavy rainfall, which is characteristic for the tropical location. The low waste density reduced the surface flow of rainwater and evaporation, resulting in a high rate of water infiltration. Landfill leachate decreased the shear strength of waste by mobilizing pore water pressure and flow pressure, finally triggering the failure. The settling of waste, due to the high content of organic materials, was also driving this effect.

Athens, Greece, March 2003

The municipal solid waste of the Greek capital Athens is disposed at several landfills in the metropolitan area. One of these is the landfill in Ano Liossia, located 10 km north of downtown Athens. This site is operated by the public agency ΕΣΔΚΝΑ (in English, ACMAR, the Association of the Communities and Municipalities of the Attiki Region). The dumping area amounts to approximately 0.5 km^2, and its height varies from about 60 to 80 metres. The site is surrounded by chains of hills, opening to the north to the Attiki plain.

In March 2003 the eastern slope of the landfill failed and cracked down, covering the 20-metre-deep notch between the slope and the recycling facilities with waste.

Approximately 800,000 m^3 of waste moved, leaving a 300- to 400-metre-wide gap in the slope behind.

July 10 2000 PAYATAS PHILIPPINES

Landfill failure in Athens, Greece. In this landslide, about 800,000 m^3 of waste moved, leaving a 300- to 400-metre-wide gap in the slope behind

A detailed forensic analysis is not available yet. Water is very likely to be a cause as it is in all cases of landfill failure, but no significant water outlet from the failing slope has been reported by the operator. This point makes the case even more interesting, since landfills in arid and semi-arid areas have not been endangered unless the internal water balance is massively disturbed. Since the landfill has been constructed according to current European standards with liner and drainage systems, there was no reason to expect waterborne stability problems. It hasn't become finally clear why the slope failed. It may also be a consequence of a fire, which occurred two weeks before in the landfill stretch concerned. Landfill fires are extremely dangerous for stability; smouldering fires, which do not burn with open flames on the surface, are especially dangerous. A smouldering fire may feed its way to deeper waste layers, leaving plastics and paper burnt and sweeping their reinforcement effect away. Fighting smouldering fires with water may even double the problem, because the fire is pushed forwards while the water level inside the landfill may increase.

Waste mechanics

It is well known to many landfill operators that waste has an extremely high strength, even enabling the construction of vertical temporary slopes. However, it is essential to understand what the material's strength is based on in order to evaluate landfill stability realistically. If the geotechnical engineer is not able to conduct an appropriate stability analysis specifically reflecting the strength characteristics, then the factors limiting safety can never be identified and the operators may carry out bad operating measures. As a consequence, more failures will happen.

Background

Municipal solid waste shows strength characteristics that are considerably different from soils. MSW strength is determined by the fibres and foils contained in the waste. These components produce an effect similar to reinforcement. Just like reinforced soil, the shear resistance of MSW takes into account the friction between the granular particles and the tensile forces in the fibrous components. The shear resistance due to reinforcement effects is called fibrous cohesion. The fibrous cohesion generated by tensile stress in the fibres depends on the normal stress (load). Therefore, shear strength increases with the depth of the deposit. The total shear strength resulting from friction and reinforcement is much higher than the shear strength of soil.

The eastern slope of the Ihlenberg landfill, where the cessation of waste dumping had caused a depression in the landfill's geometry

Because waste is normally placed in the landfill in roughly horizontal lifts, the fibrous components are directed

DECEMBER 1, 2014

EXHIBIT

Ben Vanderweele

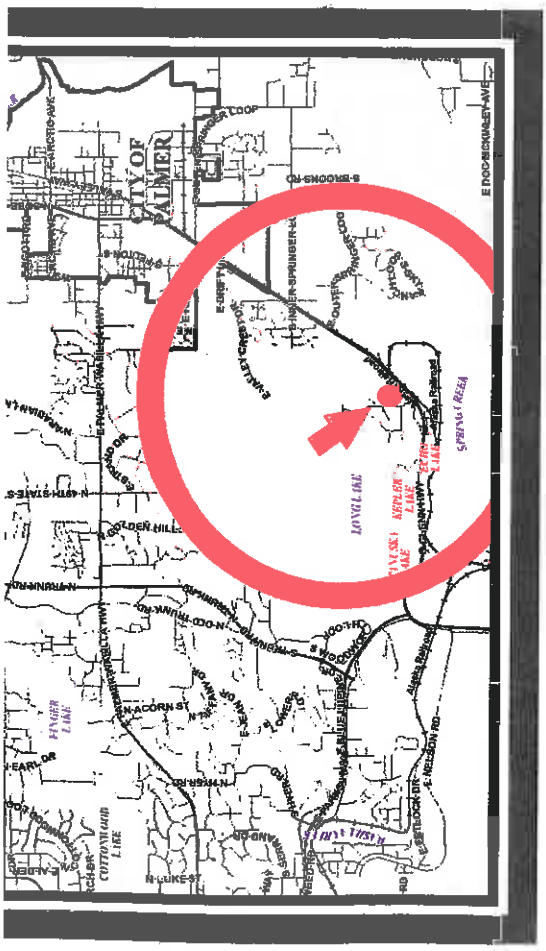
r Toxic Dumping Community Group
ox 3042
r, AK 99645

PRSRT STD
U.S. POSTAGE PAID
Palmer, Alaska
Permit No. 75

Current Resident Or
VANDERWEELE JOINT REV TRU
PO Box 461
Palmer, AK 99645-0461

up for our community
: **October 31** for written comments to be
in the planning commission information packet.
adline: **November 31** for written comments.
To the meeting
the December 1
g Commission Meeting
pm in MSB Assembly Chambers

Help get the word out:
To download and print flyers, visit
PalmerToxicDumping.Org



LOCATION: Glenn Hwy. at mile 38.3 behind the shooting range across from the Granite gravel pit.

MOTIVE: CMS is a private, for-profit shell corporation that will dispose of mostly Anchorage building waste on private land so that its owners can profit by avoiding the necessary cost of public dump fees. Because CMS operates as a shell corporation without large corporate assets, its owners can operate without incurring any significant liability for the future environmental damage that is predicted.

A DUMP IS FOREVER

Comment now
e-mail comments to slee@matsugov.us
Fax comments to 861-7876

ASBESTOS

There is no independent inspection process to assure proper asbestos containment at this PRIVATELY OWNED, FOR PROFIT dump. The Palmer dump already has an asbestos cell and C&D (construction and demolition) section with proper oversight. AK Demo already runs a private C&D dump 2 miles away.

POISON WELLS UP TO A MILE FROM THE SITE

A borough sponsored hydrological evaluation concludes: "Contaminants could travel approximately a mile down-gradient and still exceed drinking water standards". A quote from CT.gov states, "wood waste from construction, renovation and demolition, pressure treated timber … may contain creosote, lead, acrylic, chromium, pentachlorophenol, phenol-formaldehyde resins, and other known carcinogens and ground water contaminants…. These pollutants can leach into the ground water" (http://www.ct.gov/deep/cwp/view.asp?a=2718&q=325342)

ENVIRONMENTAL CRIME HISTORY

While being cited for **illegally dumping** waste without a permit or even a business license, CMS Corporate Officer Shane Durand stated, "the solution to pollution is dilution." The company was later fined and were repeatedly ordered to clean up although they claimed the dumped material was not trash-see photo.

(MSB Code compliance case summary G20130022 page 5—Read the official report at PalmerToxicDumping.Org)

CONTAMINATION OF FISHING IN THE KEPLER-BRADLEY LAKE SYSTEM

The site sits on top of the open aquifer that flows through fishing and recreation areas at Canoe Lake, Kepler-Bradley Lake, and beyond. Approval of a combination dump & junkyard permit for this property will allow fuel tanks and potentially leaky equipment to be parked on the edge of man-made gravel pit lakes OPEN TO THE AQUIFER.

WINDBLOWN TRASH

"Valley Trash" *will* be what people see on their way to Palmer. That affects tourism, business, property values and tax revenues.

PalmerToxicDumping.Org

Junkyard permit will allow fuel tanks next to gravel-pond lakes that feed directly into wells and our aquifer

Alaska DEC has already "tentatively approved" the

PLANNING COMMISSION NOVEMBER 7, 2016

Information from ADEC

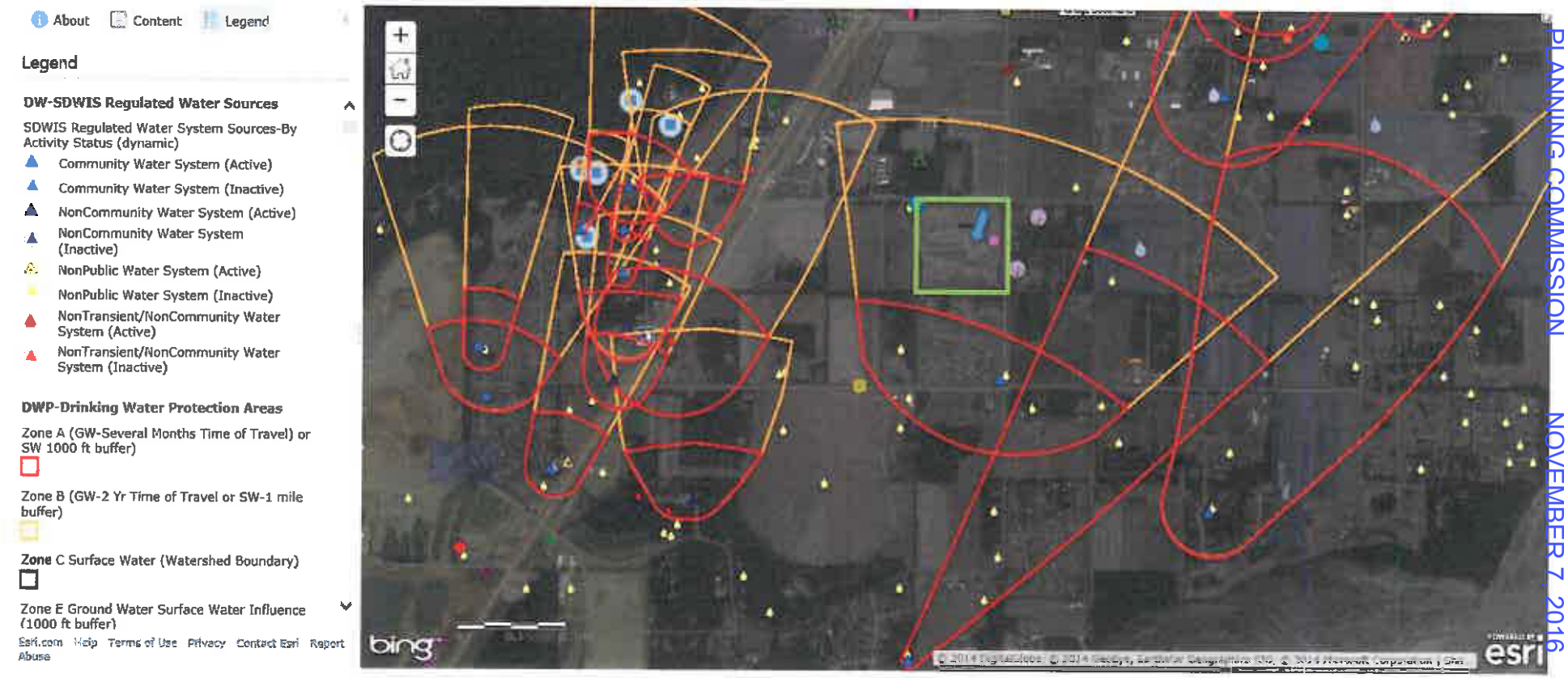
Groundwater Information for Central Monofill Services and Alaska Demolition

Susan Lee

From: Aldrich, Lori (DEC) [lori.aldrich@alaska.gov]
Sent: Tuesday, December 02, 2014 2:51 PM
To: Alex Strawn; Susan Lee
Subject: Palmer Inert Monofill info
Attachments: Palmer AK Demo Inert Waste Monofill.docx; Palmer CMS Inert Monofill.docx

Here are a couple of maps and data that is a snapshot of water at the two monofills. All information is approximate...I just created these off our drinking water maps.
Lori

Palmer AK Demo Inert Waste Monofill



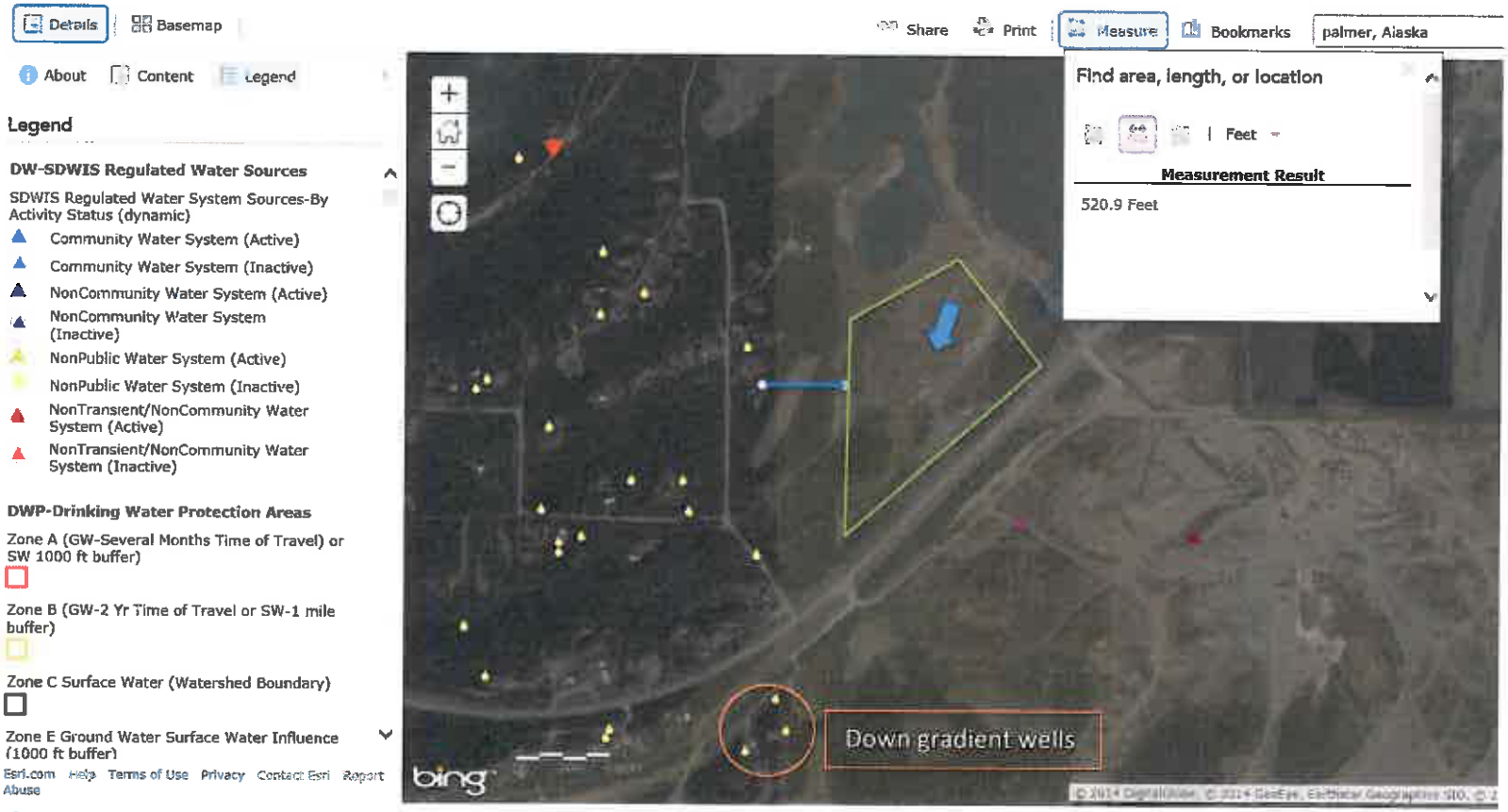
Approximate High groundwater based on USGS well data – 18' below the lowest point of the monofill

Approximate groundwater level measured in August 2003 – 26' below the lowest point of the monofill.

Located within a secondary Drinking Water Protection area (this information was not available when it was originally permitted)

Nearest drinking water well (not shown on the map) is 500' North of the Inert fill area. The section of the landfill from the inert fill to the property boundary is being filled with exempt waste.

Palmer CMS Inert Monofill



Approximate GW Direction (generally confirmed by nearby recharge areas. DEC Drinking Water Map (http://dec.alaska.gov/das/gis/apps.htm)

Groundwater at a nominal 10' below the lowest point of the monofill

Approximately 500 ft. from nearest drinking water well

Not located within a designated Drinking Water recharge area.

3 downgradient drinking water wells identified, nearest ~1000 ft.

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COMMENTS RECEIVED

DECEMBER 1, 2014

Susan Lee

From: Geri Zehrt McCann [gerimccann@hotmail.com]
Sent: Monday, December 01, 2014 1:00 PM
To: Susan Lee
Subject: FW: Public Comment for Planning Commission

HI Suzan,
i am in Boise and can not be at the meeting for public comment. Can someone read a letter from me by proxy?

Geri McCann
907-715-7891

From: gerimccann@hotmail.com
To: slee@matsugov.us
Subject: Public Comment for Planning Commission
Date: Fri, 31 Oct 2014 04:17:05 +0000

Mat-Su Borough Planning
Attn: Susan Lee
slee@matsugov.us
Public Comment to Planning Commission

Dear Planning Commission

We live on Canoe Lake and are opposed to Central Monofil's permit for a private dump at mile 38.3 of the Glenn Hwy.
This dump presents threats and hazards to the local surrounding area: Health, drinking water, lakes, fish, environment, natural habitat, wild life, air quality, and devastating results in the event of an earth quake or fire. It will be an eye sore, reduce property values in the region, and will be a detriment to our otherwise pristine national scenic byway.

Water quality is vital: It is the worst location for a monofil in the whole Matanuska/Susitna Valley because the site sits on top of the massive aquifer that feeds our lakes and provides drinking water. People with wells that are connected to the aquifer will not have confidence in drinking the water that once had no threat of pollution. The aquifer is connected to the water that feeds the surrounding lakes. The Kepler/Bradley Lake Systems and and Matanuska Lake Recreation area will be under threat of irreversible contamination. Local residents and tourists alike enjoy fishing in the pristine unpolluted waters in the rivers and lakes in the close surrounding area. With the threat of the dump that could contaminate the lakes it will detour recreational fishing in the area. When the lakes are contaminated it will pollute and possibly wipe out our fragile eco system and kill fish, waterfowl, birds of prey and wild life that live around and in the lakes. We have nesting eagles and osprey who hunt in this region. Central Monofill has not regulated the water levels in the ponds in order to protect the water levels in the surrounding lakes. How can we trust that they will protect the water quality?

. A dump permit would allow tanks and potentially leaky equipment to be parked next to the ponds open to the aquifer. Accidents happen. The aquifer is only 2 feet below the surface and even if they

state there is 10 feet, how can microscopic pollutants be filtered out in just 10 feet, Even if they line the dumping cells, they will have to pump them out – who will regulate this procedure to protect any spillage into the ponds or grounds. Where will they dump this toxic fluid?
ASBESTOS, HEALTH CONCERNS:, Cancer from asbestos is life threatening! Who will monitor the owners to make sure they dump the asbestos safely. Those who live close by are asked to take a drastic health risk and trust our lives and in the professional credibility of the monofill owners and staff. They to date have already been sited for not complying with contracts and codes. How can they be trusted? It will be cost prohibitive to pay borough staff to their monitor dumping practices, so they will be dumping without accountability and monitoring. Accidents happen and the local residents will suffer irreversible health issues as a result.
The dump is in a wind tunnel that can get winds up to 80 mph that snaps trees and tears roofs off of houses and causes substantial damage to structures. These winds will blow any trash that has not been covered adequately, and blow not only trash but air pollutants causing health hazards. It will harm those with lung issues such as asthma, emphysema etc.
CMS also wants to store and sell salvaged items and materials and vehicles & who knows what else? There will be stacks of vehicles, and junk that may also leak and pollute. Do we want a "Sanford & Son's" junkyard at our gateway and along our scenic byway, and down the highway from our new visitor center! This will be a detriment to our image and make us live up to the name of Valley Trash. We will be a joke and Anchorage will be laughing as we store and dump there trash in our front door!!
The borough would make so much revenue if they had to pay to dump in borough dumps. What is the reasoning that would cause the borough to let them create an eye sore and health hazard when they could be making money from these folks. If they want to bring Anchorage trash here they should pay like everyone else!!!
What happens WHEN there is an earthquake? The 64 earthquakes damaged our wetlands and rocked this area too!!! We have had some significant earthquakes in the last few months in the valley. I live just blocks away from the dump and our house was rocking and shaking.
The monofill site was supposed to have been developed into a beautiful subdivision for lakefront homes. There was only one problem… The soil in this earthquake zone is too unstable for building. The sand will liquefy in an earthquake. It may also subside as the hay flats did during the 1964 earthquake.
The CMS site is too unstable to support a house, but it is being planned to support a chemical containing waste pile 8 stories high. With the groundwater at ground level currently and many earthquakes to come, we could easily end up with a site that has acres of waste continuously leaching directly into groundwater.
What if there is a wild fire?? The toxic garbage and tires will heavily pollute the air and environment. This is a "NO BRAINER" anyone who votes r to approve the CMS dump application is either mentally unstable or "bought off" by CMS – in either case they should be removed from the Planning Commission. The community is watching and trusting the Planning Commission to make a decision on what is best for the communities health and well being and image. Will the Planning Commission vote for what is best for Valley residents or for questionable a Anchorage business.

We support the plan that was created and approved by the community which preserves this area for a a beautiful park or something that will benefit our community and compliment our National Scenic Byway, and be a beautiful welcome to our Valley that is just up from our new visitors center.

Sincerely

Geri McCann
2280 S. Killarney Dr.
Palmer, Ak 99645
907-715-7891
gerimccann@hotmail.com

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Susan Lee

From: Eileen Probasco
Sent: Wednesday, December 03, 2014 6:19 PM
To: Susan Lee
Cc: Mary Brodigan
Subject: Fwd: NO to CENTRAL MONOFIL !!!

Sent from my iPad

Begin forwarded message:

From: Jeff Sponsler <jsponsler@mtaonline.net>
Date: December 3, 2014 at 5:13:56 PM AKST
To: <eileen.probasco@matsugov.us>
Subject: NO to CENTRAL MONOFIL !!!

I am writing to voice my opinion "NO!!" on the toxic dump in Palmer.
We do not need Anchorage trash here.
I have property right there by the fair grounds that is farm and or future development.
It is on Inner Springer Loop.

I vote a serious and loud "NO" to that proposed toxic waste dump.
We are not Anchorage junkyard!

No No No to Central Monofill

Thank you

Jeffrey L Sponsler, MD

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CENTRAL MONOFILL SERVICES

CONDITIONAL USE PERMIT APPLICATION

2014

STAFF REPORT

MATANUSKA-SUSITNA BOROUGH
Planning and Land Use Department
Development Services
350 East Dahlia Avenue • Palmer, AK 99645
Phone (907) 861-7833 • Fax (907) 861-7876
Email: permitcenter@matsugov.us

DEVELOPMENT SERVICES DIVISION STAFF REPORT

File Number:	176020140001
Applicant:	Central Monofill Services, Inc.
Property Owner:	Central Monofill Services, Inc.
Request:	Planning Commission Resolution 14-33 Request for a conditional use permit in accordance with MSB 17.60 – Conditional Uses
Location:	17N02E18C010 (2840 S. Glenn Highway) and 17N02E19B006 (2560 S. Glenn Highway); within Township 17 North, Range 2 East, Sections 18 and 19, Seward Meridian
Size of Property:	118.9 acres
Public Hearing:	December 1, 2014
Planning Commission Action:	The planning commission shall conduct a public hearing and render a decision within 30 days from the close of the public hearing on the application for a conditional use permit
Reviewed By:	Eileen Probasco, Planning & Land Use Director Alex Strawn, Development Services Manager
Staff:	Susan Lee, Planner II
Staff Recommendation:	Approval, with conditions

EXECUTIVE SUMMARY

Central Monofill Services (CMS) has submitted a conditional use permit application under the requirements of MSB 17.60, for the operation of a monofill for the disposal of inert material. MSB 17.60.030(A)(1) requires a conditional use permit for the operation of junkyards and refuse areas. A "junkyard/refuse area" is defined as "a location which is commercially used for the

purpose of the outdoor storage, handling, dismantling, and wrecking, keeping or sale of used, discarded, wrecked or abandoned airplanes, vehicles, boats, building and building materials, machinery, equipment, or parts thereof, including but not limited to, scrap metals, wood, lumber, plastic, fiber, or other tangible materials". The applicant has stated that the inert debris will primarily be non-hazardous shredded residual nonrecyclable waste material from construction and demolition waste. Regulated Asbestos Containing Material (RACM) and Non-RACM will also be accepted at the site. In addition to the monofill, there will be a salvageable/recyclable materials storage yard on the site.

PROJECT DESCRIPTION

For clarification Central Monofill Services (CMS) owns the proposed monofill site properties and holds the permits for the properties; Central Recycling Services (CRS) owns and operates the recycle facilities and holds the operations contract with CMS to run the monofills; and Central Environmental, Inc. (CEI) is the demolition and abatement company and is a customer of CRS.

Please refer to the application material for the applicant's detailed project description.

Central Monofill Services (CMS) has submitted an application for a conditional use permit for the operation of an unlined monofill for the disposal of inert waste, RACM and Non-RACM. Under Alaska Administrative Code 18 AAC 60.990(64) "Inert waste" means solid waste that has a low potential to pollute air or water, and that does not normally attract wildlife; "inert waste" includes coal power plant ash, scrap metal, auto fluff, construction and demolition waste, and pavement rubble; "inert waste" does not include asphalt material that contains asbestos. The definition of "inert waste" does not include materials that contain asbestos.

Materials such as doors, windows, wood, bricks, glass, steel culvert pipe, and broken concrete that has been removed from the waste stream will be available for resale at the site. These materials will be stored at a separate area on the site from the monofill.

The two subject properties are a total of 118 acres in size. There is one single access to the site from the Glenn Highway. There are three industrial ponds located on the northern half of the property which cover 66 acres. The monofill footprint is not adjacent to these ponds. Of the remaining 52 acres, the monofill footprint is proposed to be 35.5 acres with 16.5 acres used for recycling operations. The conditional use permit is needed for 52 acres of the property. A scale house, maintenance shop and other support facilities will be needed to support the monofill and recycling operations and will be placed outside the 35.5 acre monofill footprint. The placement of material into the monofill is proposed to be over approximately 30 years.

Due to the previous earth material extraction activities on this property, the topography is essentially a large bowl. Waste materials to be deposited in the monofill will be placed to fill the natural and manmade topography of the property. The tire bales will be used as structural berms and act as visual buffers by framing the sides of the cells to contain the debris. The sides of the cells are constructed prior to filling each cell, which creates barriers on two or three sides, helping to block the wind and contain the material. A total of ten cells will be constructed over the life of the monofill.

ADEC permit regulations require that the bottom of the monofill cells be located a minimum of ten feet above the established groundwater levels. Alaska Administrative Code 18 AAC 60.990

defines "groundwater" as "water below the land surface in the zone of saturation". The ADEC requires that the separation requirement for the bottom layer of the cells be established using groundwater elevation information before materials are placed in the monofill. The elevation of the bottom layer of the waste disposal cells will be established using historical groundwater information. This information was measured over four seasons to determine the seasonal high groundwater elevation. The bottom cell will be located a minimum of 10 feet above the established seasonal high water level.

Filling of the cells will start at the southernmost part of the property and advance to the north. Each cell is proposed to be about 125 feet wide. There will be sub-cells created within the cells. As the cells increase in height the sides will be built up with tire bales that will be covered with topsoil and seeded for revegetation. These cells will be wide enough to allow equipment to maneuver and place loads in correct locations. Material will be spread into two-foot lifts and compacted. This process will continue until the layers of the cell each reach a depth of 15 feet. The working face receiving the inert materials will comprise, at any one time, an area approximately measuring 120' x 50'. The working face is the area within a cell where active filling is taking place and heavy equipment is compacting and covering the refuse. The maximum square footage that will be exposed and not covered at any one time during the monofill operation will be 25,000 square feet.

There will be two waste streams entering the facility. One stream is the material hauled from a Central Recycling Services (CRS) operation that has already been inspected and processed. The second waste stream is material hauled from known customers that has not yet been inspected. The general public will not be allowed to drop off or dispose of material at the monofill. Materials that have not been previously inspected are initially dumped on an impermeable inspection pad where they are inspected, recyclable material is removed and remaining non-recyclable material placed in the active monofill cell. The applicant states that if prohibited materials are found they will be removed for proper disposal and any contaminants will be cleaned up. The application material states that the following material will not be accepted at this monofill:

- PCBs or other Hazardous Wastes
- Household Waste
- Putrescible Waste
- Liquids
- Compressed Gas Cylinders
- Batteries
- Appliances with CFC/HCFC
- Animal Carcasses
- Petroleum Contaminated Materials

After materials have been deposited in the cell, the materials will be spread and compacted. The waste material will be shredded to a size of 12 inches or smaller. The shredded/compacted debris will be covered with daily cover which is screened fines of material three inches or smaller. The debris will be covered with soil weekly. That process will continue until the layers within the cell reach 15 feet in depth. Material excavated from cells that are under development will be used as the cover material for the operational cell. There will be a one foot lift of soil separation between each cell to create multiple fire barriers throughout the monofill. ADEC requires the monofill cells to be capped either weekly or when cells are full. This surface will be graded to drain in order to prevent surface ponding and reduce infiltration. All slopes will go to the industrial ponds.

Once the monofill cell is filled to final height, native soil, strippings, compost, etc., will be spread over the top and slopes of the cell for a minimum of two feet. This final surface will be graded to drain in order to prevent surface ponding and reduce infiltration. The cap for the monofill will be seeded and will allow the establishment of vegetation over the surface to occur. All drainage will flow away from the working face of the monofill and a minimum of 2% grade will be required. As the top sections of the monofill are completed to final height, 24" of native or imported soil will be spread over the top to serve as a final cap and to allow the reestablishment of vegetation on the site.

Material that contains 1% or more of asbestos is termed Asbestos-Containing Material (ACM). By definition, material that contains less than 1% asbestos is not considered ACM. There are two types of ACM:

- Regulated Asbestos-Containing Material (RACM) includes any ACM that is friable, or is likely to become friable due to the methods used for demolition, renovation, or disposal.
- Non-Regulated Asbestos-Containing Material (non-RACM) refers to ACM that is non-friable. Non-RACM waste must be handled carefully to prevent damage that could cause it to become friable. Non-RACM waste can become RACM waste if it is damaged so much that asbestos fibers may be released.

Friable: Used to describe ACM that, when dry, can be crumbled, pulverized, or reduced to powder by hand pressure.

Regulated Asbestos Containing Material (RACM) and Non-RACM will also be accepted at the site. RACM loads delivered to the monofill are packaged and sealed in leak proof containers and placed within the designated cell. These materials are not compacted by equipment to insure the integrity of the packaging. The application describes the process for Non-RACM (Regulated Asbestos Containing Materials) to be directly deposited in the monofill in the Non-RACM cell. The RACM disposal cell will be fenced and locked. Non-RACM and RACM have to be scheduled for delivery and disposal. ADEC requires all RACM waste to be covered with a minimum of six inches of soil or non-RACM by the end of the working day. (Refer to the ADEC *Asbestos Handling & Disposal* Fact Sheet).

The maximum finished elevation of the monofill will be 162 feet Above Sea Level. The adjacent Glenn Highway has an average finish elevation of 117 feet Above Sea Level, so the maximum height will be a little more than 40 feet above the Glenn Highway. The existing tree covered berm along the Glenn Highway has an average elevation of 130 feet Above Sea Level, with trees 20 feet and taller growing on top of that. The maximum depth of the monofill will be 75 feet with an average depth of 50 feet.

BACKGROUND

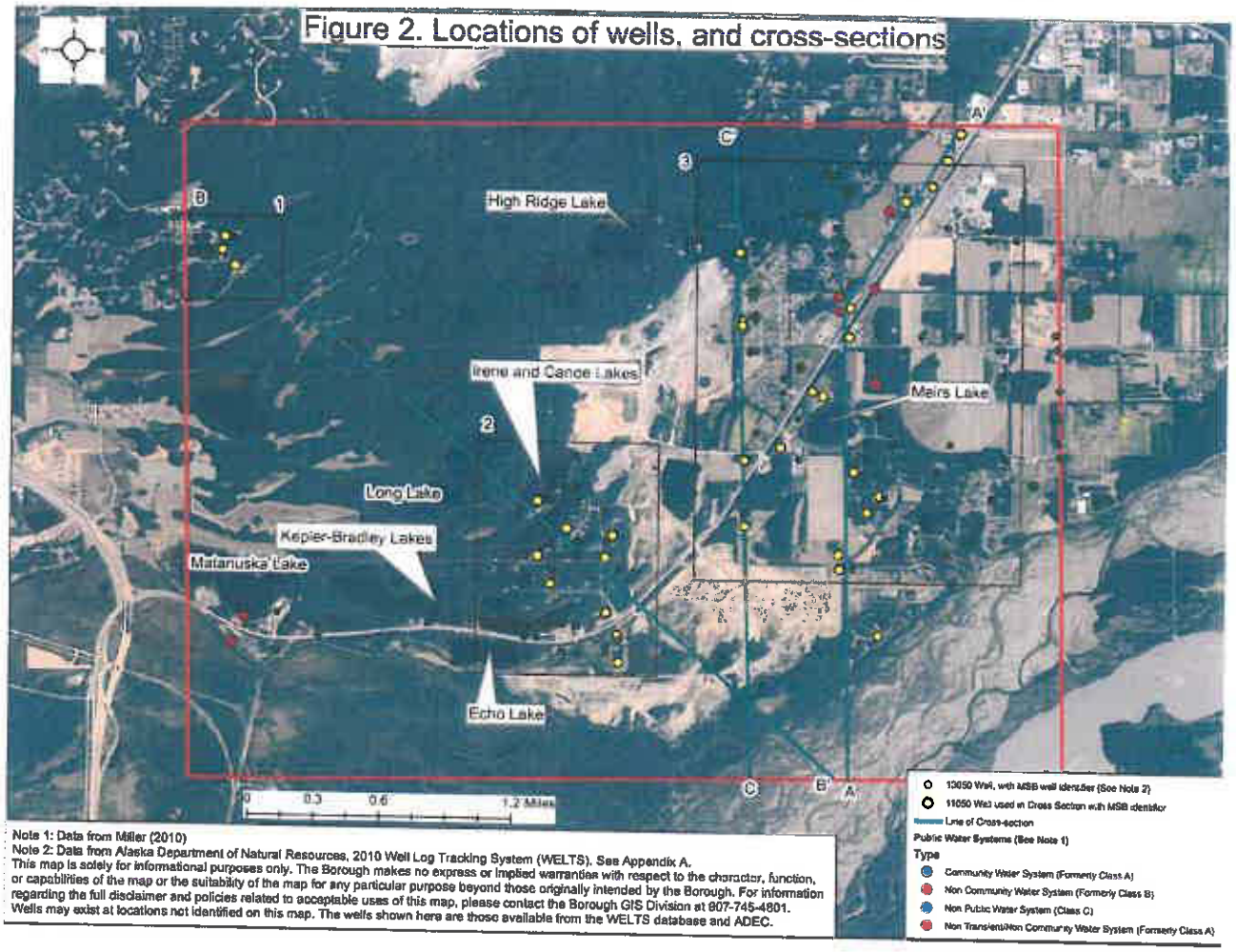
The past use of this property has been earth materials extraction. There are three manmade dredge ponds on site which are the result of previous gravel dredging. The ponds are fed from surface flow and groundwater. In 2004 there was a breach of the confining layer of the aquifer in one of the three dredge ponds that many have claimed caused problems with the local water table and lakes.

In 2010, Brailey Hydrological Consultants prepared a groundwater modeling study to assess the impact of dredging at the Anchorage Sand and Gravel Palmer gravel pit, which is directly adjacent to the north side of the proposed monofill property. In summary, this report states:

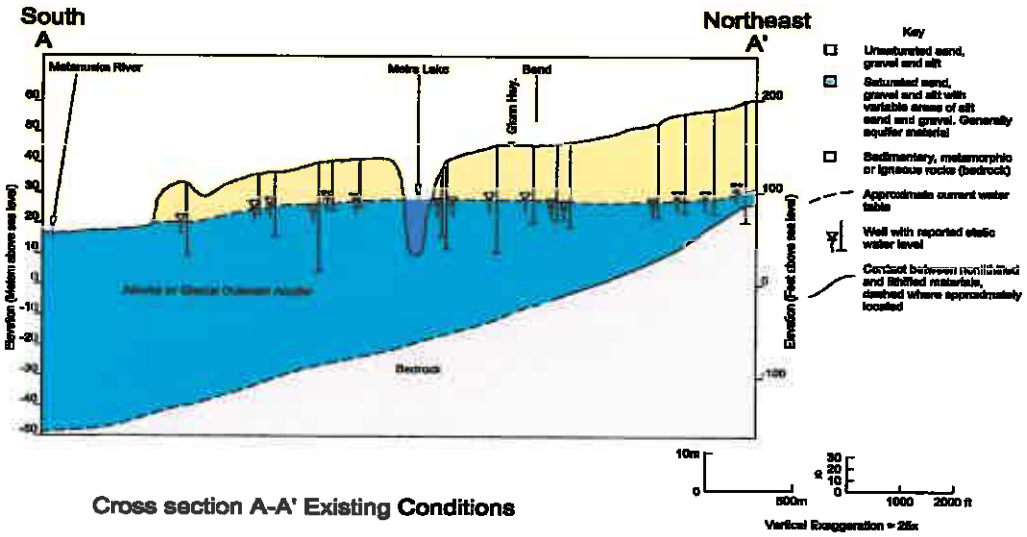
Based on a regional water table map prepared by the U.S. Geological Survey, groundwater flow is generally southward from the Talkeetna Mountain front. In the vicinity of the Palmer Pit, groundwater occurs in an unconfined aquifer tapped by numerous domestic and community water supply wells. The aquifer is relatively thick (locally over 200 feet) and commonly exhibits high well yields. Comparison of the water table elevation with adjacent floodplain elevations suggest that the unconfined aquifer is recharged by both the Matanuska River and by groundwater inflow from the north. Oxygen isotope studies performed by the U.S. Geological Survey indicate that the water table aquifer has a direct hydraulic connection to many lakes in the Palmer-Wasilla area. (Brailey Hydrologic Consultants, Groundwater Modeling Report, AS&G Palmer Pit, August 2010).

In 2010 J.A. Munter Consulting, Inc. prepared a report for the Borough on the *Potential Hydrologic Effects of Gravel Extraction South of Palmer, Alaska.* This report was prepared regarding the effects of gravel extraction in an area south of the City of Palmer (including the area of the proposed monofill site). The report addresses concerns about potential effects on nearby water wells serving individual residences and public water systems. In summary, this report states:

Several wells are located close enough to the proposed gravel mining areas that contaminants introduced into the aquifer could potentially reach the wells if the wells are located down gradient of the source of contamination. Also, capture zones of some of the wells could extend out into the gravel mining areas to draw in contaminants. With a general southward direction of flow in the study area, some nearby wells are likely to be located up gradient of the proposed mining area and would not be expected to be at risk of water quality impairments from



the proposed operations. Because a detailed and reliable water-table map for the entire area is not available, however, either for current conditions or post-mining conditions, it is difficult to evaluate groundwater flow directions in more detail. Therefore, in the absence of more detailed information, gravel extraction activities as proposed are considered to introduce a risk of impaired water quality to some existing and potential public drinking water aquifer sources.



Cross section A-A' Existing Conditions

The area of the proposed monofill is windy a substantial number of days per year. In Palmer, during the time frame of May 17, 2010 to May 17, 2011, the average maximum wind was 54 mph, the average wind was 6 mph and the minimum wind was 0 mph; the maximum wind gust was 77 mph/ average wind gust was 28 mph; and the minimum wind gust was 16 mph. During the time frame of May 17, 2011 to May 17, 2012 the maximum wind was 51 mph; the average wind was 6 mph; and the minimum wind was 0 mph; the maximum wind gust was 70 mph; the average wind gust was 26 mph; and the minimum wind gust was 16 mph. During the time frame from May 17, 2012 to May 17, 2013 the maximum wind was 48 mph; the average wind was 7 mph; and the minimum wind was 0 mph; the maximum wind gust was 69 mph; the average wind gust was 27 mph and the minimum wind gust was 18 mph. (Wind data collected from weather station at Palmer Airport).

Contaminants typically found in groundwater surrounding construction and demolition landfills include cadmium, lead, iron, manganese, several chlorinated volatile organic compounds, sulfate, hydrogen sulfide, and TDS (total Dissolved Solids). Chromium and arsenic are found if chrominated copper arsenate-treated wood is disposed in the landfill. (*Construction and Demolition Debris Landfills: Community and Occupational Health Issues*, Fall 2008, Florida Journal of Environmental Health; *Demolition Landfill Guidance*, Minnesota Pollution Control Agency, Waste/Solid Waste #5.04, August 2005; *Code of Federal Regulations, Pt. 257, App. I)*

Prior landfill studies do not take into account several factors. The type of waste in most of the studies was unknown. Some of the landfills studied started as municipal solid waste landfills or started as unlined municipal solid waste landfills before becoming inert debris landfills. Many of the landfills studied go back to a time before recycling and when little inspection or control of the waste took place. Inbound materials to the proposed monofill are proposed to be inspected and processed prior to disposal. Materials such as metals and sheet rock, that have caused

concerns for leachate production, are removed from the waste. Large quantities of sheetrock are removed from the waste and recycled by CRS.

In 2013 Central Monofill Services (CMS) submitted a conditional use permit application for the operation of an inert debris monofill at this location. On June 3, 2013 the Borough Planning Commission conducted a public hearing on this application. The conditional use permit was denied. On June 17, 2013 the Planning Commission adopted Resolution 13-30-(AM) with findings of fact and conclusions to support denial of the permit request. A copy of that resolution is included in this packet.

After the 2013 public hearing the Borough hired J.A. Munter Consulting, Inc. to prepare a hydrogeologic evaluation of the proposed monofill site. On June 27, 2013 the report was submitted to the Borough. A copy of that report is included in this packet.

The following is a brief summary of Munter's 2013 report. Munter states there appears to be no significant effort to reduce or control infiltration of rainfall and snowmelt through the waste; no provisions for an engineered native soil or other liner; with no impermeable cap, rainfall and snowmelt will infiltrate and percolate downward through the waste; water will pool up inside the waste and leachate will flow out and rain into the surrounding aquifer. The water table at this site is not well defined and the 10' separation between the bottom of the waste and the water table is insufficient. Normal seasonal variations of the water table have not been measured and reported. Potential changes in the water table have not been evaluated. There is an unreliable basis for designing the 10' water table separation at this facility. Design of this facility appears to be insufficient to assure a 10' separation from the bottom of the waste to the water table. There are no significant barriers to the migration of the leachates to groundwater and it is highly likely to result in measurable increases in contaminates beneath the facility for some distance down gradient. Groundwater is believed to flow toward the southwest and there are numerous wells in that general direction. If any significant amount of contamination should emanate from this site, it will encompass more than 20 wells within a one mile radius in a down gradient direction. Most of the known wells tap the same aquifer as the aquifer that underlies the proposed monofill site and there is the potential to contaminate water wells from this facility. This aquifer is known as an unconfined aquifer and the direction of groundwater flow in the aquifer is generally toward the south and southwest. The silt deposits above and within the aquifer are small and generally are not laterally continuous or thick enough to constitute significant protective layers on the scale of the analysis of the effects of the proposed monofill. This aquifer extends at least from Canoe Lake to the ponds northeast of the monofill and southward to the Glenn Highway and beyond and includes the proposed monofill site. The applicant needs to provide further clarification on how they would remediate the aquifer. The applicant does not appear to provide any substantive assurance that the aquifer is protected or that groundwater contamination can be detected or remediated should it occur.

On January 15, 2014 CMS submitted a new conditional use permit application for the proposed monofill. The Borough hired J.A. Munter Consulting, Inc. to review the application material. Munter submitted a report to the Borough on February 7, 2014. A copy of that report is included in this packet.

The following is a brief summary of Munter's 2014 report. Materials disposed of at inert monofill eventually rot, decay and leach into groundwater; studies have shown increased concentrations of contaminants from C & D landfills; waste breakdown will result in dissolution and entrainment of waste constituents in leachate if water flows through the waste. It is not clear

what hazardous waste will be excluded from the monofill. Only a small amount of some compounds or elements are needed to contaminate a large volume of water. It is reasonable to assume that there will be a sufficient amount of waste accumulated to generate leachate that will exceed one or more drinking water Maximum Contaminant Levels. There are no significant barriers to the migration of this leachate into groundwater and it is highly likely to result in measurable increases in contaminants beneath the facility and for some distance down gradient. The seasonal high groundwater level has not been determined at this site. The location of the guard wells will not intersect the leachate plumes. Fluctuations of water level changes should be addressed. Snow was not addressed with annual precipitation. The final cap materials for the monofill will primarily be sand and gravel, overlain with soil to support vegetative cover. These well-drained soils should not be characterized as almost impermeable, even if saturated. No data was provided on the permeability of the fill. If water enters the top of the structure, it will percolate down and eventually exit. The modeling shows that domestic drinking water wells could be contaminated from the monofill. Separation distances between the monofill and surrounding drinking water wells may be appropriate conditions. The proposed guard wells are located in places that would not detect any of the plumes shown in the groundwater modeling effort. It appears that the existing and/or proposed monitoring wells will be ineffective as detracting contaminants leaving the proposed monofill. The application material fails to present sufficient data and sound analysis to support their conclusion that the proposed monofill does not present a threat to groundwater. Insufficient data and analysis have been provided to accurately evaluate the effects of the proposed monofill.

On February 13, 2014 the Borough sent a letter to CMS requesting additional information. A copy of that letter is included in this packet. On May 14, 2014 CMS submitted a response to that request. This supplemental information is included with all of the CMS application material. CMS responded to the Munter report with reports from the following consultants: Environmental Management, Inc. (EMI), Maddox & Associates, TERRASAT, Inc., and AlaskaChem Engineering. The following are summaries from each of those reports:

Environmental Management, Inc. (EMI). The following is a summary of that report:
Larry Helgeson, P.E. responded as the engineer responsible for the design of the monofill. This monofill was designed to meet the established state and federal codes which were developed to protect both human health and the environment. It is only appropriate to evaluate this landfill against the standards that are in place to regulate inert landfills. Munter disagrees with this approach to landfill design and implies that the current standards are not appropriate for inert waste disposal but does not offer any alternative standards to use. Due to the borough's concerns about the established standards not being sufficient, CMS hired an expert in landfill design and assessment to review EMI's design for this monofill. The submitted operational procedures developed for this landfill will prevent hazardous waste, as defined by the federal government (40 CFR 261.3), from being placed in the landfill. The landfill is designed to minimize the moisture levels in the material, so that the rate of decay and rot will be very slow and will not significantly impact any leachate, if there is any leachate at all that leaves the monofill. The Synthetic Precipitation Leaching Procedure (SPLP) was used to check for potential contaminates of concern from the waste. The SPLP is an EPA approved method to test waste. The method is not designed to test water for drinking standards. It is designed to identify contaminates that may be of potential concern in waste water. This landfill has been specifically designed so that the waste will never stay in a saturated condition. CMS provided a ground water monitoring plan to verify that the monofill is not impacting the groundwater. We have found the probability of creating a leachate that will impact the groundwater is so low that that groundwater monitoring is not necessary and recommend the submitted ground water monitoring plan be

withdrawn and not implemented. Water level data from all four seasons with over 20 events from April 24, 2013 to April 15, 2014 has been obtained and provided to the borough. The applicant plans to continue collecting water data in order to continually update the data. The bottom of the monofill cells will be established based on all of the water data that is collected up to the time of construction of that cell. The seasonal high water table shown on Figure 6 (page A-8 in the application package) is based on the water data collected through April 15, 2014. This will be used for the final design for construction unless a higher water table is measured between now and the time of construction.

Maddox & Associates, Inc. The following is a summary of that report:
Maddox & Associates was hired by CMS to perform a review of the site hydrology and leachate concerns raised with the proposed monofill. The proposed monofill is located in a semi-arid climate where the balance between the annual precipitation and the annual evaporation precludes the formation of any significant volume of leachate. Any minor volumes of leachate that may be produced in the monofill will not have the ability to cause a significant impact on the underlying aquifer. CRS removes large quantities of drywall from the waste stream for recycling. This changes the waste composition from historical monofills that may have had elevated sulfate levels. No significant water will be available to percolate through the inert refuse, nor to "pond" at any level within the refuse mass. Therefore, drywall, if it were to be present in the waste stream at the proposed monofill, would not degrade and potentially impact the aquifer. The proposed monofill is taking in post recycling waste, which is waste that has been processed to remove metals, appliances, etc. for their commodity value. The material brought to CRS is sorted, screened, and processed to ensure that the material is free of hazardous waste and putrescible material and/or liquids. Every effort is made to ensure that no materials that may produce a harmful leachate will be present in the monofill. The proposed monofill will be located in an area of relatively low precipitation, with the base of the refuse a minimum of 10 feet above the seasonal high water table. The monofill will be located in a semi-arid environment, where the annual precipitation and annual evaporation are essentially equal. The average annual precipitation rate measured at the Matanuska Agriculture Experiment Station is approximately 15 inches. Under these climatic conditions, particularly when the precipitation is less than 15.75 inches per year, leachate is not formed in a landfill. Alaska State requirements are met for an inert landfill with respect to the minimum separation from the water table of 10 feet and no liner required.

ADEC requires a minimum 10' separation distance between the bottom of the refuse and the recorded historic high water table. The on-site groundwater monitoring wells were installed in April 2013. The three wells that lie under the footprint of the proposed monofill (MW#2, #3, & #4), which can be utilized to indicate the depth of water beneath the refuse, the minimum depth to water of 25.99 feet was recorded in well MW#4 was recorded January 23, 2014. The greatest depth to water recorded occurred on April 30, 2013 in MW #3 at 37.61 feet. Higher than normal precipitation occurred in the years 2011, 2012, and 2013. Based on this fact, the historical recorded site groundwater levels will be used to determine the historical high groundwater levels beneath the proposed monofill site.

One year of groundwater monitoring will be conducted in the existing on-site wells in order to collect sufficient data to determine if it will be necessary to construct down gradient guard wells. The groundwater monitoring wells were installed to determine the depth to groundwater beneath the base of the refuse in the proposed monofill in order to meet the ADEC requirement to maintain a 10-foot buffer zone between the refuse and the water table; and to collect data for modeling. Modeling results have indicated that there will be no contaminant plume extending

down gradient from the landfill mass. Therefore, it is not expected that additional down gradient wells will be required.

As working cells are completed and there is no working face, infiltration will decrease significantly. As each cell is completed and the vegetative cover established, the volume of infiltration will be significantly reduced. As vegetation is added, most precipitation will evaporate. A simple top cover with vegetation will reduce infiltration through evaporation. As the landfill expands and more cells are completed with the final vegetative cover, the volume of infiltration will be reduced. The volume of potential infiltration will be very low to begin with and will be further reduced as the landfill evolves, cell by cell.

The most vulnerable portion of the monofill at any one time is the "working face", which is the area within a cell where active filling is taking place and heavy equipment is compacting and covering the refuse. The working face of the proposed monofill will typically cover an area approximately 120' x 50'. As cells are completed and there is no working face, the potential for infiltration will decrease significantly. With the establishment of a vegetative cover as each cell is completed and the monofill expands, the volume of infiltration will be significantly reduced. The development of a vegetative cover will result in increased evaporation (evapotranspiration) and the minimal (to none) infiltration that may be present to begin with will be reduced to essentially nothing as the landfill evolves, cell by cell. Establishment of the native ground cover on the final cap of each cell would result in increased evaporation and reduced potential for infiltration.

The Munter report states that gravel mining close to the proposed monofill site could have the effect of lowering the water table several feet over an extended area. The monofill site will lie within the area of projected water table decline. If Munter is correct, the lowering of the water table would aid in maintaining the 10-foot minimum separation required for the monofill by the ADEC.

The potential for the production of leachate at the monofill site is low based on the following facts: The proposed monofill site is located in a semi-arid climate; the annual precipitation is relatively low; the annual evapotranspiration is approximately equal to the annual precipitation; the ground is frozen during a significant portion of the year; no significant period of residency of liquids within monofill materials; and no significant recharge in area of monofill.

TERRASAT, Inc. The following is a summary of that report:
TERRASAT tested Munter's assumptions about water quality exceedances and found his conclusions about water quality exceedances invalid. TERRASAT provided the calculation sheet using Munter's estimates of groundwater flow, infiltration, and opinions about sulfate, arsenic, iron and benzene to verify if his opinions are valid. The results from these calculations show that groundwater will not be significantly impacted. The results of TERRASAT's calculations show that the contamination issues raised by Munter are not based on fact or sound science.

TERRASAT evaluated infiltration processes and potential leachate fate and transport through the proposed monofill. They extended the leachate model to include groundwater migration to the property boundary, 50 feet down gradient of the proposed monofill. Three models were presented to describe the physical infiltration processes. Two potential contaminants of concern were identified, one being sulfate and the other is manganese. The results predict the likelihood that analytes will comply with ADEC's drinking water standards.

Seven monitoring wells were previously installed at this site. Groundwater levels were measured in July 2013 and at other times during the last 12 months. The water table generally fluctuates less than one foot. The unconfined aquifer that underlies the proposed monofill consists of sand and gravel with a relatively high hydraulic conductivity. Water is supplied to this aquifer primarily by infiltration from the Matanuska River.

The Palmer Alaska Experiment Station data from 1982 through 2012 reports an average annual total precipitation of 15.94 inches and a yearly total of evaporation of 18.34 inches. These measurements suggest that infiltration is -2.4 inches per year. In other words, soil infiltration does not occur. The Palmer Job Corp precipitation data from 1993 to 1997 and 2004 to 2012 reports that the average precipitation for this period is 15.63 inches per year. The measured evaporation rates for 1993 to 1997 was 15.57 inches, which suggests soil infiltration could be 0.06 inches per year. In summary, existing records suggest infiltration is minimal or non-existent.

The monofill cover is designed with an 18" thick silt cap that is overlain with a 6 inches of topsoil and planted with grass. The first process that occurs during a rainfall event is the vegetation incepts some or all of the rainfall. Rainfall in excess of inception reaches the soil and begins to infiltrate.

Three models were evaluated to explain the physical processes of water infiltration into the proposed monofill. The conceptual model shows the configuration of the monofill, the parameters that control infiltration and the infiltration pathways. The existing climatic records show infiltration is unlikely to occur. If some infiltration occurs, the amount will be minor. Vegetation inception prevents some rain from infiltrating the first layer of top soil.

Results from the Green-Amp model show infiltration is a slow process in both the top soil and the silt cap. Many storms without evaporation are required to infiltrate small amounts of water into the ground. Some of the infiltrated water is evaporated, some is stored as matric water for later plant use, and some comes back to the top boil by capillary pressures. For any water that migrates below the silt cap, the water will move through a residual waste cell in hours, as an unsaturated flow. This means little time is available to form leachate.

ADEC's leachate screening model shows that analytes, above detection limits from leachate studies, will be in compliance with ADEC drinking water standards. The leaching testing procedure requires water saturation, the addition of acid, and agitation to generate leachate. Those processes are absent in an unsaturated monofill.

Physical processes, such as cation fixation, sorption, and biodegradation will further reduce risks of leachate migration. The proposed monofill appears to be protective of groundwater sources if the monofill is constructed as modeled in the conceptual model.

AlaskaChem Engineering. The following is a summary of that report:
Ralph Hulbert, P.E. investigated the infiltration, percolation, and groundwater recharge near Palmer. That study examines the relationship between precipitation and groundwater recharge in the area south and west of Palmer pertinent to the proposed monofill.

Based on these investigations the proposed monofill will not cause recognized adverse health impacts from contamination of groundwater. There appears to be robust groundwater at the site

primarily supplied from the Matanuska River and the Talkeetna Mountain foothills. The estimated 1.4 inches per year recharge from precipitation in this area is a minor contribution.

Mr. Hulbert's study on infiltration, percolation, and groundwater recharge near Palmer states the following: *"A borough sponsored regional groundwater study, prepared by J. Jokela, James Munter, and James Evans in 1991, used surface water body elevations and well drillers' logs to plot groundwater contours. There was no fieldwork or apparent attempt to check if the wells tapped the same aquifer. This study grouped the Palmer terrace with the Lazy Mt., presuming the source of groundwater at both locations is local precipitation. Flow directions were drawn toward the Matanuska R., southeast in the southern Palmer terrace (as marked on Figure 1), ignoring Trainer's observations. This mistake is far more than missing a local groundwater flow direction by 90 degrees; this area has very productive wells for irrigation and city supply, and identifying its groundwater source is critical. If groundwater flows southeast, its source must be extremely high local precipitation recharge absent in adjacent areas), while a southwest flow with the Matanuska R. as the source explains the abundance".*

Summary
The borough has reviewed the information provided by J.A. Munter Consulting, Inc., Environmental Management, Inc., Maddox & Associates, Inc., TERRASAT, Inc., and AlaskaChem Engineering. The consultants hired by CMS have provided documentation to substantiate their conclusions. This information and documentation provided further clarification of the monofill operation. Modeling and calculations have been provided to disprove that large quantities of contaminated leachate will develop from the monofill and flow off-site. With the combination of limited annual precipitation, seasonally frozen ground, evapotranspiration effects, run-off of precipitation and numerous other factors discussed in the monofill analysis, there is very little transmission of water through the monofill, thus not creating the quantities of leachate Munter suggests. The consultant's reports show that if minor amounts of leachate are generated it is not expected to contain harmful concentrations of contaminants.

LAND USE

Existing Land Use:
This property was previously used for earth materials extraction. There are pre-existing legal nonconforming use rights for earth materials extraction for this property. Pre-existing legal nonconforming status for material extraction means the industrial use was in existence prior to the current regulatory structure and was not evaluated for compatibility with surrounding land uses.

Surrounding Land Uses:
Surrounding land uses include earth material extraction sites to the north and on the south side of the Glenn Highway; residential subdivisions to the west and northeast; and agricultural uses to the east of the site.

COMPREHENSIVE PLANS

The proposed monofill site lies within the Borough-Wide Comprehensive Plan (2005 Update) boundary. Some of the goals and policies that apply to this project are as follows:

Land Use Goals and Policies:
Goal (LU-1): *Protect and enhance the public safety, health, and welfare of Borough residents.*

Policy LU1-1: Provide for consistent, compatible, effective, and efficient development within the Borough.

Goal (LU-2) *Protect residential neighborhoods and associated property values.*

Policy LU2-1: Develop and implement regulations that protect residential development by separating incompatible uses, while encouraging uses that support such residential uses including office, commercial and other mixed-use developments that are shown to have positive cumulative impacts to the neighborhood.

Goal (LU-3): *Encourage commercial and industrial development that is compatible with residential development and local community desires.*

Policy LU3-1: Develop and implement regulations that provide for non-residential development.

Goal (LU-4): *Protect and enhance the Borough's natural resources including watersheds, groundwater supplies and air quality.*

Policy LU4-1: Identify, monitor, protect, and enhance the quantity and quality of the Borough's watersheds, groundwater aquifers, and clean air resources.

This site is also located within the boundary of the Core Area Comprehensive Plan (2007 Update) boundary. Some of the goals and policies that apply to this project are as follows:

Land Use Goals and Policies

Policy 1-B: *Promote an orderly land use pattern suited to the demand for attractive settings in which to live, work, shop, learn, play, and carry on other daily activities.*

Policy Discussion: As the Core Area's population grows – it is forecast to double by 2025 and absorb most of the remaining vacant land in the Core Area – the limited vacant land supply must provide a balanced supply of well-located sites for homes, businesses, private and public institutions, industry, parks and recreation, public improvements, and other purposes. The plan needs to provide a place for every permitted land use, but not all land uses go well side-by-side. Some uses such as residences and open space or retail trade and service business are usually compatible and enhance each other. Others, like heavy industrial activities and residential subdivisions, make poor neighbors and are best separated by distance or buffers.

Policy 1-J: *Encourage light industrial parks*

Policy Discussion: The Core Area does not have and is not expected to attract much heavy industry, not including earth materials extraction sites. However, the Core Area already has pockets of light industrial uses such as outdoor storage, construction yards and shops, building materials supply, garage and outdoor vehicle storage yards, warehousing, utility buildings, miscellaneous outdoor storage, etc. These industrial uses are necessary and a good fit for the local economy, with good growth potential. Demand for sites for industrial uses will increase as the Core Area's economy matures. Even so, industry will remain a modest land use in the overall picture.

These light industrial uses are generally mutually compatible. They tend to have similar locational requirements, such as good highway access and public utilities, and separation from residential neighborhoods, schools and recreation facilities, and public institutions. Designating sufficient well-situated tracts for light industry will help create a more attractive climate for these activities by enabling them to operate efficiently and with minimal conflict with other uses.

Restored earth materials extraction site with good highway access can be prime candidates for light industrial uses.

Policy 1-M: Collaborate with operators of large earth materials extraction sites to plan for site reclamation and re-use after earth materials extraction activities are finished.

Policy Discussion: Earth materials extraction sites – gravel and sand pits – are an extensive active interim land use in the Core Area. Several former sites have been redeveloped or await redevelopment. Earth materials extraction is expected to continue as a local industry, with additional sites being put to that interim use in the future.

Rising land values will enhance the development potential of former sites which often become prime real estate for new uses. Redevelopment of these sites makes good use of the borough's land base and enhances the value and economic potential of nearby properties.

This policy proposes that the borough work jointly with property owners, consistent with borough ordinances, to plan for redevelopment of these sites for productive and profitable reuse. The borough can facilitate redevelopment by ensuring that earth materials extraction is managed in a manner that conserves future redevelopment options and by providing essential public infrastructure for redevelopment.

Goal 7. Environment: *Protect and conserve the natural resources that support the well-being of residents and the region's tourism and recreation economy.*

Policy 7-A: *Protect groundwater supplies and quality.*

Policy Discussion: Many existing and future residences and businesses will depend on on-site groundwater resources for their water supply. Protection of the supply and quality of groundwater is vital to sustain this arrangement.

Policy 7-B: *Protect surface water quality.*

Policy Discussion: The Core Area's many lakes are valuable natural and economic assets. They provide an attractive setting for residential development, enhance property values, support a variety of public and private recreational activities, and provide natural habitat, absorb runoff. These lakes are linked to streams and wetlands with similar positive values. The borough's existing program of lake management plans already provides some protection for surface water quality.

The Core Area Land Use Map has designated this area as *"Potential Earth Materials Extraction Redevelopment Sites"*. The comprehensive plan states "this category includes current or former earth materials extraction sites of 20+ acres. The borough code treats materials extraction sites as interim uses. These sites are prime candidates for eventual redevelopment for residential, commercial, industrial, or institutional uses. Mixed-use development may also be appropriate, depending on site location and characteristics".

Applicant's Comprehensive Plan Review

CMS reviewed the Matanuska-Susitna Borough Comprehensive Plan (2005 Update) and Matanuska-Susitna Borough Core Area Comprehensive Plan (2007 Update). These plans manage land use to limit residential and commercial sprawl, limit proximity of incompatible land uses, and to encourage uses that support one another. The selected site has been an industrial material extraction site and our proposed new operation is industrial in nature. This CUP

application and CMS's proposed operation does not change the land use of the property. If the type of land use has not changed, the CUP would not create any compatibility issues. Residential, recreational or agricultural property is not being changed to industrial. Industrial property is staying industrial. Low Density residential property makes up less than 25% of the surrounding properties.

Many Goals of the comprehensive plans are to protect natural resources, develop green space and preserve agricultural land. These goals can be met with approval of this CUP. This CUP will not change the type of land use in the interim and as the monofill is completed, green space or agricultural land will be created on the top of the fill. Creation of this green space or agriculture land meets goals of the comprehensive plans. Many other developments could be proposed for this property that would required no MSB permitting, and not protect natural resources. The Recycle Facility and Monofill can be developed with proper engineering and operational controls to protect natural resources and public health. Two other C&D Monofill's have operated within 2 miles of the subject site for over 10 years with no known adverse impact to public safety, health, or natural resources. These other monofill accept C&D waste but do not perform the recycling, sorting or processing of the waste that leads to the waste diversion. This additional processing also insures any hazardous or prohibited items are removed prior to disposal.

CMS identified the following goals and policies in the Core Are Comprehensive Plan (2007 Update) that are applicable to this project:

Policy 1-J: Encourage light industrial parks

Policy 1-M: collaborate with operator's of large earth materials extraction sites to plan for site reclamation and re-use after earth materials extraction activities are finished.

Staff Response
With conditions, the operation of the proposed monofill at this location will be consistent with the goals and policies of the Borough-Wide Comprehensive Plan (2005 Update) and the Core Area Comprehensive Plan (2007 Update). The previous use of this site was for earth materials extraction. There are pre-existing legal nonconforming use rights for earth materials extraction for this property, which means that the industrial use was not approved under the current regulatory structure or evaluated for compatibility with surrounding land uses. The surrounding land uses include earth material extraction sites to the north and on the south side of the Glenn Highway; residential subdivisions to the west and northeast; and agricultural uses to the east of the site. After the monofill is completed the site can be developed for different uses in the future.

The proposed monofill is an industrial use. The site can be screened from the rights-of-way and adjacent residential properties. Conditions can be set to prevent material from blowing off-site. Documentation has been provided demonstrating that the monofill operation does not have the potential for groundwater contamination that could have negative effects on drinking water and surface water quality. The monofill can be developed with proper engineering and operational controls to protect the natural resources and public health and safety.

REVIEW OF APPLICABLE CRITERIA AND FINDINGS

MSB 17.03: Public Notification

Finding: Notices were mailed to all property owners within one-half mile of the site. There were 205 notices mailed. Over 150 written comments were submitted. The public hearing notices were published in the October 17, 2014 Frontiersman. The application material was also posted on the Borough web site. The property is not located within a community council boundary; however, the Gateway Community Council was notified of this permit request. The Gateway Community Council submitted a resolution opposing this request.

MSB 17.60: Conditional Uses

Section 17.60.100 General Standards.

(A) A conditional use may be approved only if it meets the requirements of this section in addition to any other standards required by this chapter.

(B) In granting a conditional use permit, the planning commission must make the following findings:

(1) The conditional use will preserve or not detract from the value, character, and integrity of the surrounding area.

APPLICANT'S STATEMENT

The following is the applicant's response to 17.60.100(B)(1) and 17.60.100(B)(2).

The proposed Conditional Use is compatible with the surrounding uses. The existing use of the site is for Earth Materials Extraction, an Industrial use. Large scale gravel extraction operations or commercial operations account for 76% of the surrounding properties. Low density residential only accounts for 24% of the remaining surrounding properties.

Recycle facility component of the CUP is a light industrial use that would be buffered by the Monofill. The use of old gravel pits for industrial use is supported by the comprehensive plans. Granting of this CUP will allow filling and reclamation of areas of the old gravel pit turning them into green space that could be used for parks or agriculture.

The proposed Conditional Use will not be harmful to the public health, safety, convenience or welfare. The inspection, handling and processing of the materials insures that regulatory restricted materials are not delivered or disposed of at the proposed facility. Only ADEC approved "inert waste" will be allowed for disposal at this facility. Recycling and processing of the waste such as the CRS recycle facility in Anchorage removes other materials that could cause odors. Odors related to neighboring farming operations such as land application of manure and fertilizers create more odors than will ever emanate from this facility.

Operations at the facility will be screened from view as required by code. The existing topography will screen most operations. The existing mineral extraction use requires the same screening needed for a Junk Yard CUP. As areas of the site are filled above the existing topography the required cell construction will create additional screening. Cells of no greater than 15' high will be built to contain the waste materials. These cells have soil covered earthen berms around the perimeter to contain the waste and additional provide the required screening. See the Attached drawings.

Best Management Practices to include: not unloading debris during high wind events, regular/timely compaction with a sheep's foot compactor, weekly covering of waste with soil, construction of 15' tall cell berms and the use of portable catch fences reduce the likelihood of any windblown debris from leaving the site. Employees will regularly patrol the perimeter of the property to clean up any loose debris if any.

Noise from the site will not exceed current Borough Code and will be similar or less than what is currently allowed or heard from the existing earth materials extraction operations.

Traffic to and from the site will not exceed current Borough Code. Traffic will enter the site from the Glenn highway and will not create any issues of mixing commercial traffic with residential.

According to the attached Maddox & Associates report the Monofill can be constructed and operated without an impact to groundwater.

If the site is not visible to the public, nothing blows off site, no odors emanate from the property, does not exceed code requirements for sound and does not pollute the ground water then the requirements of 17.60.1 and 2 are met.

Monofill design and operations are permitted by the Alaska Department of Environmental Conservation (ADEC). Again, the ADEC permit requirements protect public health, safety and welfare. The proposed monofill design has been submitted to ADEC for review and approval. ADEC has approved the proposed monofill design pending receipt of the MSB CUP. The proposed uses will not increase activities beyond what the property is already permitted for, and therefore, will not negatively impact the public and/or their convenience.

As this property is private property, signage will be posted at all entrances to the property including the maintenance of the property on Lot C010 informing the public to take caution of not entering the site unless authorized and/or accompanied by authorized personnel. This access point will prevent unsolicited visitors to trespass onsite (pedestrians/target practice/off-road vehicle usage) and away from any site activities.

There is also no concern of wildlife, or domestic animals, being attracted to the inert debris and the monofill operations. Since there will be no putrescible waste allowed (or disposed of) in the monofill, there will be no animals attracted to the site. The lack of putrescible waste eliminates odors and/or disease issues on or off site.

The recent renewal of the Alaska Demolition CUP for the Rebarchek Pit is further evidence a C&D Monofill in the MSB can be operated safely within the requirements of 17.60. During the public testimony for this CUP only one person testified. The testimony said although things had operated well they had issues with odors from the site and thought the weeds on the perimeter berm were unsightly. Nobody testified or made complaint about property values, incompatibilities, noise debris or other issues. The CMS Monofill will not have the same odor issues as the AK Demolition Monofill as materials are inspected processed and handled differently to remove the offending materials prior to delivery to the CMS site. If after 10 years of operation the AK Demolition Monofill only had one person speak a the Public Hearing it is a fair assumption the CMS Monofill can be operated as well or better. The CMS operation has more extensive testing, inspection, processing, handling and monitoring than either of the other two C&D Monofill's located within 2 miles of the subject site.

It should be found that the CMS CUP can meet the requirements of 17.60,

STAFF FINDINGS

Finding: In 2013, Borough staff documented trash and daily cover (screened fines) that had blown from the monofill site onto adjacent properties.

Finding: ADEC regulations (18 AAC 60.420(2)) state a monofill must be operated so that litter is controlled by fencing or another approved means, and is removed from access roadways and other areas in the facility.

Finding: This region experiences frequent multiple-day high-wind events each year since it is at the confluence of the Matanuska and Knik River valleys. Loose debris and dust from the fill has, and is, expected to continue to scatter beyond the boundaries of the site.

Discussion: On October 27, 2014 borough staff conducted a site visit at the Birchwood Landfill, where Central Recycling Services (CRS) is depositing the same type of material that is proposed to be deposited in this monofill. Staff observed loose plastic materials and pieces of Styrofoam in the landfill that could easily become airborne. Some of these materials were still loose even after being compacted. Staff did not observe any windblown trash on the adjacent property. However, it should be noted that the wind data for the Birchwood Airport indicates that the average wind speed is about half of what the wind speed is at the Palmer Airport.

Finding: The 15' tall cell berms will be constructed prior to waste placement.

Finding: As the cells increase in height the sides will be built up with tire bales that will be covered with topsoil and seeded for revegetation.

Finding: The use of a large sheep's foot landfill compactor to place and immediately compact the waste in the cell is the next method to prevent loose and blowing debris.

Finding: Regularly covering the waste with soil further prevents blowing debris.

Finding: The daily cover/screened fines consist of shredded materials that are less than three inches in size. Material this size is easily distributed by the wind.

Finding: The inert debris that will be deposited on the site will be shredded into pieces 12 inches or smaller. Material this size can also become windblown.

Finding: After the residual material is deposited and compacted it will be covered with the daily cover/screened fines, which will also be compacted. The monofill material will be covered with soil weekly.

Finding: The applicant has stated that a remote weather station will be placed on the site to monitor wind and when sustained wind conditions on the site exceed 20 mph, waste will not be unloaded without secondary containment in place.

Finding: Secondary containment proposed by the applicant involves the use of portable catch fences up to 15' tall and of variable lengths. The catch fences are used to slow the wind down and catch blown debris downwind.

Finding: The normal size of opening on the catch fences is 2" x 2".

Finding: The openings on the catch fences are still large enough that smaller pieces of material could still blow through them.

Discussion: In order to prevent material from blowing off-site during wind events staff is recommending the following measures: material not be deposited on the site when sustained winds exceed 10 mph; the stockpiled daily cover either be contained within a covered trailer or completely covered with tarps that are secured to ensure that material does not become airborne; the monofill material be covered with soil, secured tarps, or other appropriate measures, more frequently than weekly during wind events; catch fences installed downwind of active monofill cells, with fencing mesh size a maximum of one inch (1") in size; and CMS staff to monitor the site daily for windblown material.

Finding: The previous use of this site was for earth materials extraction. There are pre-existing legal nonconforming use rights for earth materials extraction for this property, which means that the industrial use was not approved under the current regulatory structure or evaluated for compatibility with surrounding land uses.

Finding: The surrounding land uses include earth material extraction sites to the north and on the south side of the Glenn Highway; residential subdivisions to the west and northeast; and agricultural uses to the east of the site.

Finding: The site is required to be visually screened on a year round basis from the view of any traveled or public right-of-way. The site must be screened from the Glenn Highway and from the section line easement on the west side of the property and the east-west section line running through the middle of the property. Staff is recommending the site also be screened from the residential properties on the west side.

Finding: The proposed monofill is an industrial use. The monofill can be screened with existing berms and by building up the berms and constructing site obscuring fencing. Screening from the western properties will have to be developed as the site is built up.

Finding: Salvageable/recyclable materials that are stored outside must also be screened from the Glenn Highway and section line easements on the property.

Finding: The maximum finished elevation of the monofill will be 162 feet Above Sea Level. The adjacent Glenn Highway has an average finish elevation of 117 feet Above Sea Level, so the maximum height will be a little more than 40 feet above the Glenn Highway. The existing tree covered berm along the highway has an average elevation of 130 feet Above Sea Level. The finished revegetated height of the monofill will be above the berm on the south side, adjacent to the Glenn Highway.

Discussion: The State of Alaska Department of Transportation and Public Facilities have plans for construction of the Glenn Highway, milepost 34 – 42 to accommodate increasing traffic. This application is located at approximately milepost 38.4 of the Glenn Highway.

The State of Alaska Department of Transportation and Public Facilities Glenn Highway schedule for reconstruction of the Glenn Highway milepost 34 – 42 is:

2008 – 2011 Environmental Document Re-Evaluation
2011 – 2015 Project Design
2012 – 2015 Right-of-Way Acquisition
2016 Construction Begins (Dependent upon future funding)

The applicant is aware that this highway project may condemn some of the CMS property including part of the existing berm. If that occurs, CMS will be required to install and maintain fencing or an earthen berm in order to comply with MSB 17.60.110. In addition, if this project may require the driveway to the CMS property to be moved .

Finding: Should the operation be modified as a result of the highway project, an updated site plan and plan of operations will need to be submitted to the Borough.

Finding: The previous use of this site was for earth materials extraction.

Finding: The surrounding land uses include earth material extraction sites to the north and on the south side of the Glenn Highway; residential subdivisions to the west and northeast; and agricultural uses to the east of the site.

Finding: The proposed monofill is an industrial use.

Finding: The site can be screened from the rights-of-way and adjacent residential properties.

Finding: Conditions can be set to prevent material from blowing off-site.

Finding: Documentation has been provided demonstrating that the monofill operation does not have the potential for groundwater contamination that could have negative effects on drinking water and surface water quality.

Finding: The monofill can be developed with proper engineering and operational controls to protect the natural resources and public health and safety.

Conclusion of Law: With conditions, the proposed monofill is consistent with the goals and policies of the Borough-Wide Comprehensive Plan (2005 Update) and the Core Area Comprehensive Plan (2007 Update)

Conclusion of Law: Based on the above findings, the proposed monofill will preserve and will not detract from the value, character, and integrity of the surrounding area as the monofill will be screened from the Glenn Highway, the section line easements and residential properties to the west. Conditions will be set to address trash and debris containment on the site. Documentation has been provided showing that the proposed monofill will not contaminate the groundwater or have negative effects on drinking water or surface water quality (17.60.100(B)(1)).

(2) That granting the conditional use permit will not be harmful to the public health, safety, convenience, and welfare.

APPLICANT'S STATEMENT
Refer to the above applicant statement.

STAFF FINDINGS
Finding: Comments received regarding the proposed monofill raised the following concerns:

- Dumping of material without MSB or ADEC permits
- Dumping of hazardous waste
- Trash in the water
- Water pollution
- Health problems
- Pollution of surrounding lakes
- Protection of watershed and aquifer
- Compromising the aquifer
- Windblown unhealthy dust and particulates from the monofill
- Contamination of water wells
- Windblown materials/debris onto surrounding properties
- Previous problems with gravel extraction on this property and rising water table
- Breaching of berm between two of the manmade lakes and impact on surrounding water levels
- Lack of oversight and planning
- Applicants disregard for regulations
- Lack of CMS's ability to manage and provide oversight of the facility
- Concerns about reclamation of the property
- Contamination of soil
- Lowering of property values
- The Glenn Highway is a Scenic Byway
- Threat to migratory and breeding birds
- How the redesign of the Glenn Highway will affect this site
- Rising water levels of nearby lakes
- Improper handling and disposal of asbestos
- Concerns about lead based paint, mercury and heavy metals deposited in the monofill
- Too close to residential area
- Contamination of fish in Canoc, Kepler-Bradley Lake system
- Inconsistent with comprehensive plans
- Highway safety and access issues

Finding: There have been many concerns and comments regarding the potential for groundwater contamination that could have negative effects on drinking water and surface water quality. The applicant has provided the following documentation from four consultants indicating that this will not be the case:

- Groundwater data has been collected.

- Based on the groundwater data the monofill will be designed to be at least 10 feet above groundwater.
- Water level data is continually being collected.
- The water table generally fluctuates less than one foot.
- The water that supplies the unconfined aquifer that underlies the proposed monofill is primarily through infiltration from the Matanuska River.
- The bottom of the monofill cells will be established based on all of the water data that is collected up to the time of construction of that cell.
- On-site groundwater monitoring wells were installed. Three wells lie under the footprint of the proposed monofill, which can be utilized to indicate the depth of water beneath the refuse.
- Historical groundwater levels will be used to determine the historical high groundwater levels beneath the proposed monofill site.
- If there is any leachate at all, the monofill is designed to minimize the moisture levels in the material, so that the rate of decay and rot will not significantly impact any leachate that leaves the monofill.
- The monofill is designed so that waste will not stay in a saturated condition.
- CMS submitted a groundwater monitoring plan with their application. Subsequently CMS withdrew the plan after their consultant EMI found that the probability of creating a leachate that would impact the groundwater is so low.
- The proposed monofill is located in a semi-arid climate where the balance between the annual precipitation and the annual evaporation precludes the formation of any significant volume of leachate. The average annual precipitation rate in the area of the proposed monofill is approximately 15 inches. Under these climatic conditions, particularly when the precipitation is less than 15.75 inches per year, leachate is not formed in a landfill.
- Material brought to the facility is sorted, screened and processed to ensure that the material is free of hazardous waste and putrescible material and/or liquids.
- CRS removes large quantities of drywall from the waste stream for recycling.
- No significant water will be available to percolate through the inert waste, nor to "pond" at any level within the refuse mass.
- ADEC requirements are met for an inert landfill with respect to the 10' minimum separation distance between the bottom of the refuse and the recorded historic high water table and no liner required.
- Testing for potential contaminants from the waste has occurred. EMI tested the residual material using the Synthetic Precipitation Leaching Procedure (SPLP) to check for potential contaminants of concern from the waste. This method is not used to test water for drinking water standards. It is designed to identify contaminants that may be of potential concern in waste water.
- Modeling results have indicated that there will be no contaminant plume extending down gradient from the landfill mass.
- Leachate modeling identified two potential contaminants of concern: sulfate and manganese. The results predict that the analytes will likely comply with ADEC's drinking water standards.
- The development of a vegetative cover will result in increased evaporation (evapotranspiration) and the minimal infiltration will be reduced as the landfill evolves, cell by cell.

- Establishment of the native ground cover on the final cap of each cell will result in increased evapotranspiration and reduced potential for infiltration.

Finding: The monofill will be unlined.

Finding: A total of ten cells will be constructed over the life of the monofill. The working face receiving the inert materials will comprise, at any one time, an area measuring 120" x 50'. Therefore, the surface of the monofill most vulnerable to infiltration by precipitation at any one time will be kept to a minimum (Maddox & Associates, December 13, 2013; page B-12).

Finding: The monofill is designed to minimize the moisture levels in the material so that the rate of decay and rot will be very slow and will not significantly impact any leachate, if there is any leachate at all that leaves the monofill.

Finding: ADEC regulations state that an unlined landfill may not be located closer than 10 feet above the highest measured level of an aquifer of resource value unless the landfill is constructed two feet or more above the natural ground surface (18 AAC 60.217).

Finding: Under Alaskan administrative regulations, this proposed monofill is exempt from providing groundwater monitoring and corrective action to state agencies, as it is located in an area with 25 inches or less in total precipitation each year, per ADEC regulations (18 AAC 60.820(a)(8)).

Finding: CMS provided a groundwater monitoring plan to verify that the monofill is not impacting the groundwater. EMI found the probability of creating a leachate that will impact the groundwater is so low that in his opinion groundwater monitoring is not necessary and recommends the submitted groundwater monitoring plan be withdrawn and not implemented.

Finding: CMS withdrew their groundwater monitoring plan from the application material. Staff is recommending that a groundwater monitoring plan be required by the Borough Planning Commission and implemented in the conditional use permit.

Conclusion of Law: Based on the above findings the monofill is being designed so that a significant amount of leachate will not be produced; the groundwater level has been determined; no contaminant plume will extend down gradient from the monofill; and there will be minimal infiltration. A condition will be set to implement a groundwater monitoring plan at this site.

Finding: Materials brought to the facility that have not been previously inspected will be deposited onto an impermeable pad for inspection, recyclable materials removed and remaining the non-recyclable material placed in the active monofill cell.

Finding: If prohibited materials are found they will be removed for proper disposal and any contaminants properly cleaned up.

Finding: The applicant states that the following material will not be accepted at this monofill:

- PCBs or other Hazardous Wastes
- Household Waste
- Putrescible Waste
- Liquids

- Compressed Gas Cylinders
- Batteries
- Appliances with CFC/HCFC
- Animal Carcasses
- Petroleum Contaminated Materials

Finding: Alaska Statutes 46.03.900(10)—defines "hazardous waste" as "A waste or combination of waste that because of quantity, concentration, or physical, chemical, or infectious characteristics may: cause or significantly contribute to, an increase in mortality or an increase in serious irreversible or incapacitating reversible illness; or pose a substantial present or potential hazard to human health or the environment when improperly managed, treated, stored, transportcd, or disposed of."

Finding: Material haulers transporting any demolition and/or renovation material to a CRS facility or this monofill must provide the following documentation: (1) A copy of all Hazardous Building Material Surveys for each project that will be bringing their demolition and/or renovation material to the facility. Should the Survey indicate the presence of any hazardous materials, then (2) a letter from the Contractor of each project is also submitted to CRS stating that all hazardous material has been properly removed from the project and there is no hazardous material being brought to the CRS facility. For their operations, CRS defines hazardous material as a material containing any percentage of asbestos.

Finding: Regulated Asbestos Containing Material (RACM) and Non-RACM will be accepted for disposal at the monofill in accordance with all applicable federal and state regulations for packaging, labeling, transport handling and disposal.

Finding: Materials that can be accepted at this monofill are described in the State of Alaska's Solid Waste Regulation, 18 AAC 60.

Finding: The Plan of Operations submitted to ADEC will prevent hazardous waste, as defined by the Federal government (40 CFR 261.3) from being placed in the monofill.

Conclusion of Law: Material brought to the facility is sorted, screened and processed to ensure that the material is free of hazardous waste and putrescible material and/or liquids.

Finding: Testing for potential contaminants from the waste has occurred.

Finding: Leachate modeling identified two potential contaminants of concern: sulfate and manganese. The results predict that the analytes will likely comply with the ADEC's drinking water standards.

Finding: Baseline data for water quality has been provided.

Finding: Seasonal water table elevation fluctuations have been established.

Finding: The site is less than one mile from the Palmer Hay Flats Refuge, which is a major migratory bird refuge in Southcentral Alaska.

Conclusion of Law: With conditions, the proposed monofill should not be harmful to the public health, safety, convenience, and welfare (17.60.100(B)(2)).

(3) That sufficient setback, lot area, buffers, or other safeguards are being provided to meet the conditions listed in subsections (B)(1) through (3) of this section.

APPLICANT'S STATEMENT

Currently on the existing site, there are no permanent or semi-permanent buildings, therefore there are no current setbacks from these buildings. Potential future structures will be placed more than 30 feet from the current Right-Of-Way and therefore setback requirements will not be an issue for these structures.

The ADEC regulations require that waste which is to be placed within the monofill be kept at a minimum of 50' from all property boundaries. Please see the Site Plan for the proposed location of the monofill and for the potential locations of any future structures.

CRS has implemented a minimum 25' setback from the industrial ponds on site. This setback states that no material will be placed or stockpiled within this 25' boundary between the industrial ponds and the rest of the useable property areas. No waste will be placed within 100' of the industrial ponds. This implementation not only reassures the public that the industrial ponds will not be affected by the monofill and its recycle operations, but this also helps CRS protect the industrial ponds. This 25'/100' setback is shown on the attached Site Plan.

The utilization of the natural vegetation and naturally occurring hills of the property will be employed as both visual and noise buffers. The usage of the existing site topography will allow Central Recycling Services to create a natural property/site boundary without the use of extensive fencing. Central Recycling Services will place the inert debris into the 35 acre monofill area without disrupting the current neighboring lands' ecosystems, both agricultural and natural occurring bio-networks.

The cell walls, as show in Sheet 3, the natural topography of the surrounding hills, and litter fences, reduce the possibility of dust and debris from being able to leave the site. The nearest home to the Monofill site is 500 feet with a nearly 300 foot buffer of trees.

The CMS CUP meets the setback requirements of 17.60.

STAFF FINDINGS

Finding: The maximum finished elevation of the monofill will be 162 feet Above Sea Level. The adjacent Glenn Highway has an average finish elevation of 117 feet Above Sea Level, so the maximum height will be a little more than 40 feet above the Glenn Highway. The existing tree covered berm along the Glenn Highway has an average elevation of 130 feet Above Sea Level. The maximum depth of the monofill will be 75 feet with an average depth of 50 feet.

Finding: The site can be screened with the existing berms and by building up the berms and constructing site obscuring fencing. Screening from the western properties will have to be developed as the site is built up.

Finding: Salvageable/recyclable materials that are stored outside for resale must also be screened.

Conclusion of Law: The monofill site can be screened with the existing berms and by building up the berms and constructing site obscuring fencing. Screening will be developed as the site is built up. Salvageable/recyclable material that is stored outside for resale will also be screened.

Finding: ADEC regulations require that monofill waste be set back a minimum of 50 feet from all property lines.

Finding: No material will be placed or stockpiled within 25 feet of the industrial ponds on the site.

Finding: No waste will be placed within 100 feet of the industrial ponds on the site.

Finding: In addition to the monofill, two storage or shop buildings, a scale house, and field office are proposed for the site.

Finding: The site plan depicts the proposed structures in compliance with setback requirements.

Finding: The operation will be required to comply with the maximum permissible sound level limits allowed in MSB Code, per the requirements of MSB 17.61.080 – Noise Standards and MSB 8.52 – Noise, Amplified Sounds, and Vibration.

Finding: The driveway to the site will be secured with a locked gate.

Finding: The site is monitored with camera security systems.

Finding: Only approved contractors will be allowed to bring material to the facility. This is controlled by gates and on-site personnel that will inspect all loads delivered to the facility.

Finding: The public will not be allowed to drop off or dispose of material at the monofill.

Finding: The sale yard will be open to the public with controlled access.

Finding: With conditions, there will be adequate safeguards in place to prevent blowing debris and incidental trash onto adjacent properties and roadways. Additional conditions will be set regarding the handling and storage of materials during wind events.

Conclusion of Law: Based on the above findings, the proposed structures are in compliance with setback requirements, the site will be screened from adjacent right-of-ways and residences, the driveway will be secured with a locked gate, and the site will be monitored with camera security systems (17.60.100(B)(3)).

(4) The conditional use fulfills all other requirements of this chapter pertaining to the conditional use in this section.

APPLICANT'S STATEMENT

Yes, this conditional use does fulfill all other requirements of MSB Chapter 17.60 regarding the conditional use.

STAFF FINDINGS

Finding: The application material adequately addresses the impacts of the climate, geology, hydrology and geography of the site and the impacts to surrounding land uses.

Finding: According to documentation and studies the proposed monofill site is located where the topography, geology, hydrology and soil are adequate for protection of ground and surface water quality.

Conclusion of Law: Based on the above finding, the conditional use does fulfill all other requirements of this chapter (17.60.100(B)(4)).

Section 17.60.110 Junkyards and Refuse Area Standards.

(A) No junkyard or auto wrecking yard shall be established or operated unless the wrecking yard is completely obscured from the view of any traveled or public right-of-way. The permit may require the junkyard or auto wrecking yard not within a building to be contained within a continuous solid fence no less than eight feet in height, if such requirement is necessary to prevent the unsightly display of the yard or for public safety purposes. Fencing may be of one or a combination of the following:

(1) Conventional solid wood or metal fencing;

(2) Evergreen or other natural planting sufficient to provide year round screening;

(3) Earthen berm or topography.

(B) In all cases, fencing provided shall be continuous and of sufficient density to provide visual screening required by this chapter on a year-round basis.

APPLICANT'S STATEMENT

See the above section on Visual Screening and Sheet 6 Cross Section of the drawings and Sheet 1 Individual Typical Section.

STAFF FINDINGS

Finding: The site is required to be visually screened on a year round basis from the view of any traveled or public right-of-way. The site must be screened from the Glenn Highway, the section line easement on the west side of the property, and the section line easement running east/west through the property.

Finding: The maximum finished elevation of the monofill will be 162 feet Above Sea Level. The adjacent Glenn Highway has an average finish elevation of 117 feet Above Sea Level, so the maximum height will be a little more than 40 feet above the Glenn Highway. The existing tree covered berm along the highway has an average elevation of 130 feet Above Sea Level. The finished revegetated height of the monofill will be above the berm on the south side, adjacent to the Glenn Highway.

Finding: The monofill can be screened with the existing berms and by building up the berms and constructing site obscuring fencing. Screening from the section line easements and properties on the west side will have to be developed as the site is built up.

Finding: The proposed monofill is an industrial use. The monofill can be screened with the existing berms and by building up the berms and constructing some site obscuring fencing.

Screening from the section line easement and western properties will have to be developed as the site is built up.

Finding: Salvaged/recyclable materials that are stored outdoors at the resale lot must also be screened.

Conclusion of Law: Based on the above findings screening of the site will be accomplished by using the existing topography and berms, building up berms and installing site obscuring fencing (17.60.110(A) & (B)).

STAFF RECOMMENDATION

Staff recommends approval of the conditional use permit for the operation of a monofill for the disposal of inert construction and demolition debris, including Regulated Asbestos-Containing Material (RACM) and Non-Regulated Asbestos-Containing material (Non-RACM) and an outdoor storage yard for salvageable/recyclable materials on 17N01E18C010 (2840 S. Glenn Highway) and 17N02E19B006 (2560 S. Glenn Highway). The application meets all the standards in MSB 17.60.100 and 17.60.110. Staff is recommending approval of this permit with the following conditions:

1. It is the responsibility of the property owner and operator to identify and comply with all applicable local, state, and federal regulations applicable to this development and obtain all necessary authorizations and permits and update as appropriate.

2. Upon issuance of a permit under MSB Chapter 17.60, the permittee shall provide and maintain all necessary documentation to demonstrate continued compliance with permit conditions.

3. The property owner and the permittee shall be responsible for maintaining all aspects of the operation, improvements, and development, and the site in compliance with the terms and conditions of the permit and all applicable local, state, and federal requirements.

4. Authorized representative of the borough shall be allowed to inspect the site at reasonable times for the purpose of monitoring compliance with all permit conditions. Upon reasonable notice from the Borough, the permittee shall provide necessary assistance to facilitate authorized inspections.

5. Except as otherwise specified by code, the privileges and requirements of a conditional use permit shall run with the land, subject to the following requirements: Within 90 days of recording the transfer of ownership of the subject land, the new owner shall provide written notification and a signed acknowledgement that the new owner assumes responsibility for compliance with the requirements of the permit.

6. If the operation expands or alters, an amendment to the conditional use permit shall be required.

7. The operation shall be limited to what is described in the development plan submitted to the Matanuska-Susitna Borough and the Plan of Operations submitted to the Alaska Department of Environmental Conservation.

8. An area no larger than 120' x 50' shall remain uncompacted at any one time.

9. The maximum square footage that shall be exposed and not covered at any one time during the monofill operation shall be 25,000 square feet.

10. At a minimum, the monofill material shall be covered with soil weekly.

11. Immediately after the tire bales used for the side walls are installed they shall be covered with topsoil and seeded for revegetation.

12. A remote weather station shall be installed at the site to monitor wind speed. The weather station shall be set up where the wind flows freely and is not influenced by nearby objects or topography.

13. When sustained wind conditions on the site exceed 10 mph, waste material shall not be deposited at the site.

14. When sustained wind speeds exceed 15 mph, all open areas shall be covered with soil, secured with tarps, or other appropriate measures until sustained winds decrease to less than 10 mph.

15. The applicant shall install catch fences downwind of active monofill cells at all times. The fencing mesh shall be a maximum of one inch (1") in size.

16. At the end of each day the stockpiled daily cover shall either be contained within a covered trailer or completely covered with tarps that are secured to ensure that material does not become airborne.

17. The site shall be monitored daily for windblown material. If materials are found to have blown off-site a corrective measures plan shall be submitted to the Borough for approval.

18. If material is windblown onto adjacent properties, reasonable attempts shall be made to obtain permission to gain access to these properties for debris removal

19. The site shall be visually screened on a year round basis from all traveled or public rights-of-way and from the residential properties on the west side of the property.

20. The maximum finished elevation of the monofill shall not exceed 162 feet Above Sea Level.

21. Upon completion, the monofill shall be covered with two feet of topsoil, seeded, and sloped as described in the development plan.

22. Should the operation be modified as a result of the Glenn Highway Reconstruction Project, an updated site plan and plan of operations shall be submitted to the Borough.

23. The bottom of the monofill shall not be located closer than 10 feet above the seasonal high water table.

24. If it is found that groundwater has been contaminated, a corrective measures plan shall be submitted to the Borough for approval.

25. The Groundwater Monitoring Plan prepared for this site by TERRASAT, Inc., dated May 17, 2013, shall be implemented and maintained, except that a final laboratory report resulting from a release investigation shall be submitted to the Borough within 48 hours of receiving the report.

26. Materials that can be accepted at this monofill are described in the State of Alaska Solid Waste Regulations, 18 AAC 60.

27. The following materials shall not be accepted at this monofill: PCBs or other hazardous wastes, household waste, putrescible waste, liquids, compressed gas cylinders, batteries, appliances with CFC/HCFC, animal carcasses, and petroleum contaminated materials.

28. Materials brought to the facility that have not been previously inspected by qualified personnel shall be deposited onto an impermeable pad for inspection prior to being deposited in the active monofill cell.

29. If prohibited materials are found, they shall be properly handled and disposed of in accordance with all state and federal laws.

30. Regulated Asbestos Containing Material (RACM) and Non-RACM shall be handled and disposed of at the site in accordance with state and federal regulations for packaging, labeling, transport handling and disposal.

31. Monofill waste shall be set back a minimum of 50 feet from all property lines.

32. No waste shall be placed or stockpiled within 100 feet of the industrial ponds on the site.

33. Only previously approved haulers shall be allowed to bring material to the facility.

34. The operation shall comply with the maximum permissible sound level limits allowed in MSB Code, per the requirements of MSB 17.61.080 – Noise Standards and MSB 8.52 – Noise, Amplified Sounds, and Vibration.

35. The site shall be gated and locked when not in operation. All visitors to the site must check in with personnel.

36. Hours of operation shall be limited to 7 a.m. to 7 p.m., Monday through Saturday, May through September and 8 a.m. to 5 p.m., Monday through Saturday, October through April.

37. Environmental and Pollution Insurance shall be maintained in the amount of $1 million single with a minimum $5 million aggregate.

38. This conditional use permit shall expire December 31, 2045.

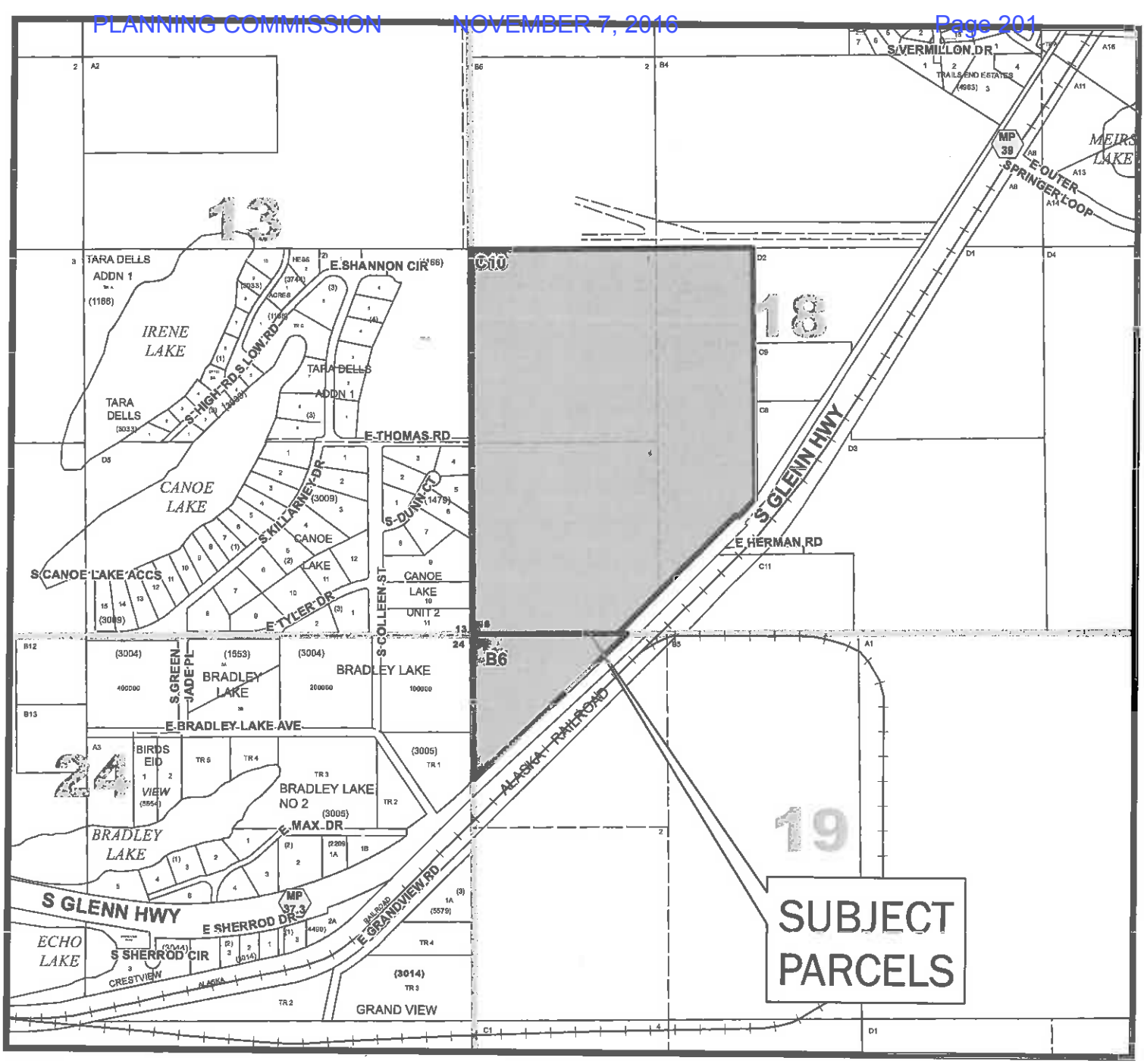
39. The owner shall provide copies of all permits issued by state and federal agencies to the Matanuska-Susitna Borough prior to commencement of the permitted use. The owner

shall also provide to the borough a copy of every application for an amendment to any such permit at the time the application is filed with the permitting agency, and a copy of any amendment approved by the permitting agency shall be provided to the borough within five days of issuance.

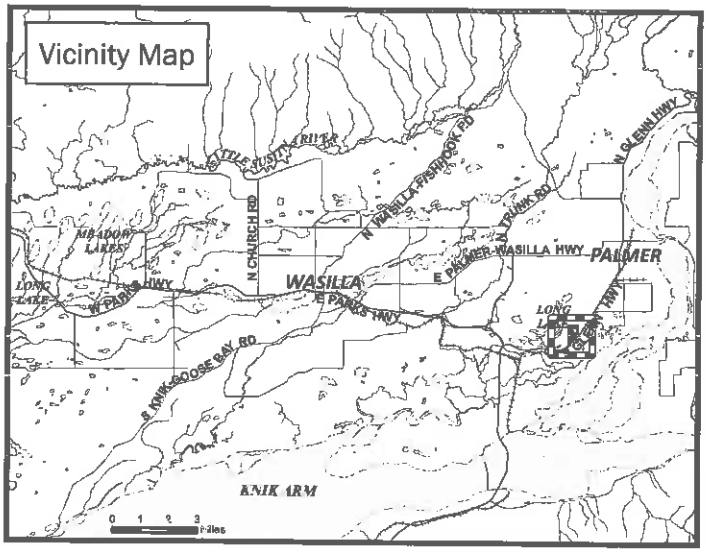
40. This permit has been approved by the Matanuska-Susitna Borough Planning Commission. The decision may be appealed within 21 days of the date of approval by the Planning Commission in accordance with MSB 15.39 – Board of Adjustment and Appeals.

Should the Planning Commission choose to deny this conditional use permit, findings for denial must be made.

VICINITY MAPS



17N02E18C010
17N02E19B006



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MSB Information Technology/GIS
February 5, 2013

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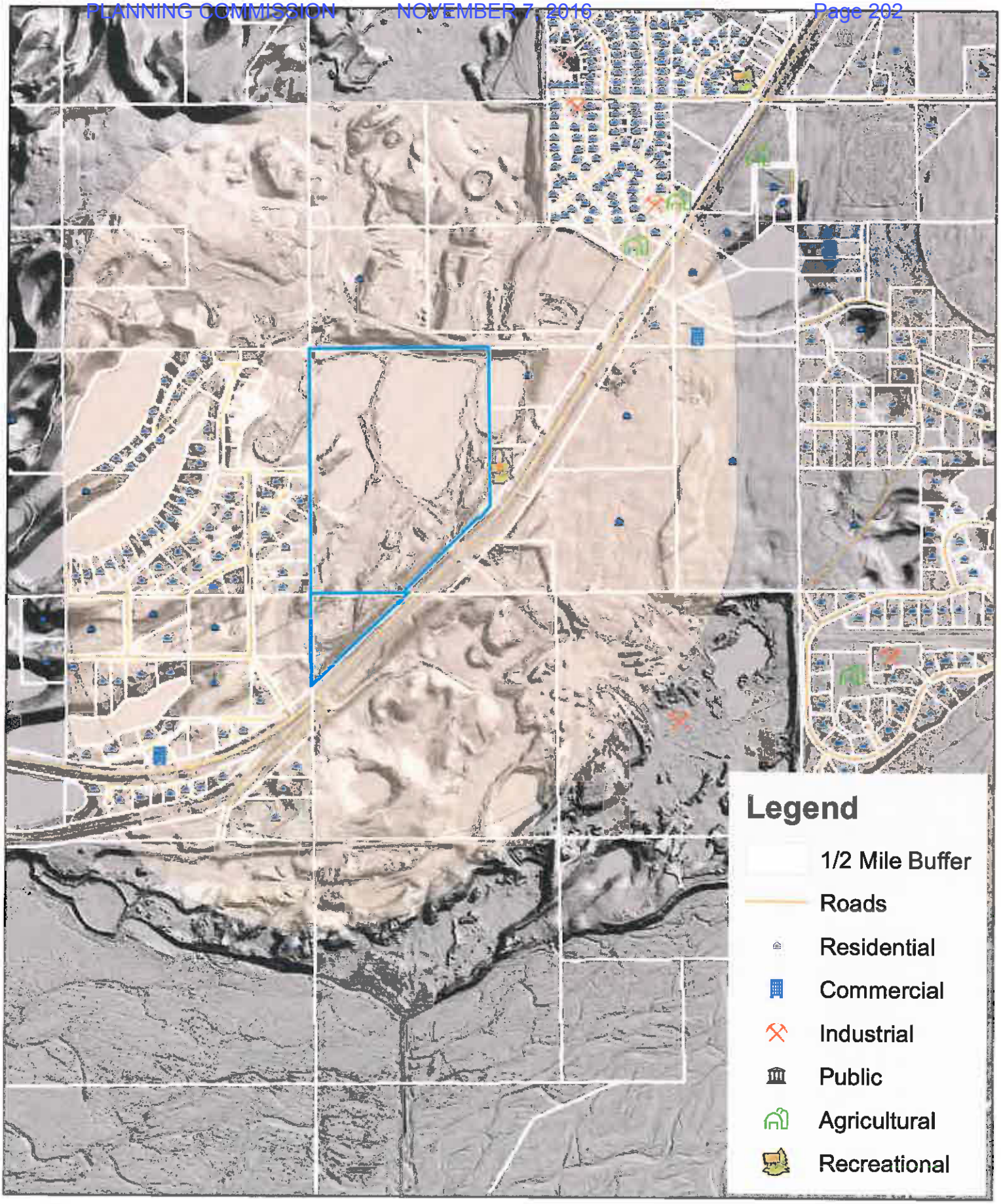

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17N02E18C010 &
17N02E19B006

1 inch = 1,300 feet

0 1,300 2,600 Feet

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17N02E18C010 &
17N02E19B006

1 inch = 400 feet

0 400 800 Feet

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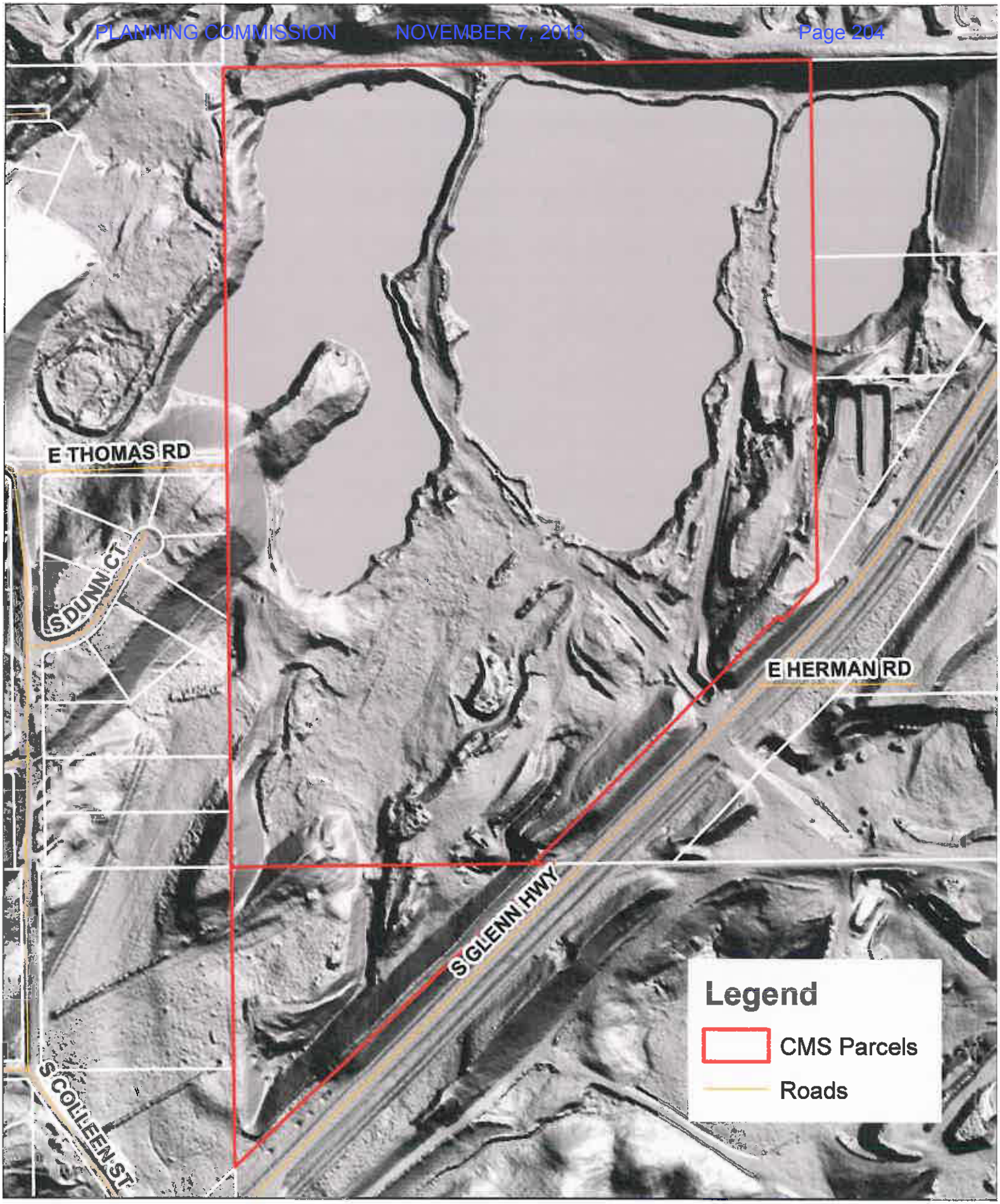

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17N02E18C010 &
17N02E19B006

1 inch = 400 feet

0 400 800 Feet

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CENTRAL MONOFILL SERVICES

CONDITIONAL USE PERMIT APPLICATION

JANUARY 15, 2014

CENTRAL MONOFILL SERVICES

Anchorage
311 N. Sitka Street
Anchorage, AK 99501

Fairbanks
1301 Wells Street
Fairbanks, AK 99701

Since 2009 the Central Companies have been expanding waste management and recycling services across Alaska. We currently have facilities in Anchorage, Fairbanks and Salcha. We recycle waste that had been historically landfilled in Alaska. Our services lower waste disposal costs and provide locally manufactured recycled content materials.

We are proposing to bring these services to the Mat-Su Borough with a recycling and C&D waste disposal facility located at the 118 acre site located at 2480 and 2560 S. Glenn Hwy. Municipal waste landfills, such as the Matanuska Susitna Borough Central Landfill, are expensive public facilities that often have to be funded by the public for expansion and closure outside of normal rates charged to the users. Due in part to the rising costs to build and manage municipal waste landfills and governmental requirements to divert waste from municipal landfills, public and private C&D Recycle facilities have opened around the country. The first C&D Recycle facility in Alaska was opened in 2009 by Central Recycling Services (CRS). These facilities accept inert waste, C&D, and commercial waste materials that have traditionally just been disposed of in a municipal landfill. Inert C&D debris can be generally characterized as the parts and pieces that make up your house; carpet, wood, metal, glass, concrete, etc., materials which can be reused or recovered from the waste stream and remanufactured into new products. These materials become waste during renovation, new construction and demolition of houses, commercial buildings, industrial facilities, etc. Some manufacturing facilities generate similar waste during production of new goods. The recyclable portion of the waste stream handled by the Central Companies does not contain any putrescent or regulated municipal wastes which are required to be disposed in a municipal landfill. Putrescent wastes are those that rot and rapidly decompose, and are typically household garbage. In accordance with the Alaska Department of Environmental Conservation (ADEC), regulations the inert portion of the waste stream can also be disposed of at a Monofill which is a type of Landfill that has different design requirements and regulations than a municipal waste landfill. The Monofill design requirements are particular to ADEC approved inert debris. Lawsuits against the EPA in the 1990's, resulted in settlement and the promulgation of today's landfill regulations. Subsequent studies done by the National Demolition Association and others support the existing regulations and have found that properly designed, maintained and operated demolition landfills, such as the monofill CMS is proposing, pose no significant threat to the environment and are the most economical and environmentally sound method to manage that portion of the inert waste that cannot be recycled.

PH (907) 770-7470 FAX (907) 770-5084
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CENTRAL MONOFILL SERVICES

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1301 Wells Street
Fairbanks, AK 99701

The significant cost to build a full scale commercial C&D Recycle Facility limits the viability of developing such a facility in the MSB. However, construction and other growth in the Valley have created a demand for our recycled and surplus goods and for commercial recycling services in the Valley. We have identified the need for our services in the Valley to collect and recycle inert C&D wastes, but also found it would not be cost effective without the ability to dispose of the non-recyclable residual wastes at the same facility. CRS recycles over 75% of the waste material received. Some of these recycled materials are sold into the local markets as new building materials and some are exported as commodities like metals and plastics. The 25% that is left over after recycling is considered the residual waste. This residual waste can be disposed of in an ADEC permitted monofill. In 2011 the Central Companies started looking for properties in the MSB that could be used for the storage, sales and distribution of recycled goods, collection of recycled materials and development of a monofill for the non-recyclable waste. Multiple properties were evaluated and in late 2012 the subject site selection was finalized and the property purchased by Central Monofill Services (CMS).

During the site selection process we consulted with the MSB staff to verify the MSB Code requirements for the proposed recycle facility and monofill. MSB Staff determined that the Recycle Facility component of our operation fell under the definition of a Junkyard and thus would require a Conditional Use Permit per MSB 17.60. Staff also determined the monofill component would also require the Junkyard Permit because the monofill would constitute the "outdoor storage... of used building materials..." per 17.60. Within 2 miles of the CMS site there are two other monofills and a recycling facility none of which have an MSB CUP. One of those monofills is within the City of Palmer and the other is operated by the MSB under Code Section 8.05 Solid Waste. The facility within the City of Palmer was recently granted a renewal of their City of Palmer CUP. The MSB operated VCRS recycle facility adjacent to the Central Landfill does not have a CUP for a Junkyard.

CMS has listened carefully to concerns expressed by the public and some commissioners during a prior submission and respectfully submits this revised package to address those concerns. In addition to having this design and proposal reviewed by a nationally recognized hydrogeologist to address water concerns, CMS has met with Alex Strawn to address staff concerns. CMS submits this CUP application and attachments to address the requirements described in MSB 17.60 and other requests made by staff. The MSB does not have design standards or specific CUP standards for a recycle facility or monofill. The facility has been designed to meet the State of Alaska DEC standards for an inert waste monofill. ADEC has approved the proposed Monofill design. Should you have further questions or clarifications please ask the applicant during the hearing.

PH (907) 770-7470 FAX (907) 770-5084
www.centralmonofillalaska.com • cms@centralmonofillalaska.com

Permit: *Application for a Conditional Use Permit- MSB 17.60*
Applicant: *Central Monofill Services*
Date Submitted: *January 15, 2014*

Contents

Application for a Junkyard Conditional Use Permit – MSB 17.60 3
Project Description 6
Project Need 6
Project Summary 8
Construction and Demolition (C&D) Debris Description 9
Reuse, Repurpose, Recycle 9
Site Selection 10
Comprehensive Plan Review 12
Environmental Review 15
Fire Risk 17
Blowing debris 18
Health and Safety Review 22
Central Recycling Services 24
Property Values 25
Total Permitted Acreage 26
Inert Debris Monofill Construction and Development 27
Site Topography 27
Monofill Construction 28
Base Construction 28
Material Containment 28
Material Compaction 29
Sequence of Fill 29
Monofill Cover/Closure 30
Summary 31
MSB 17.60 Requirements 31
Supplemental Information Requested by Staff 34
Site Plans 38
Closing/Conclusion 38

Permit: *Application for a Conditional Use Permit- MSB 17.60*
Applicant: *Central Monofill Services*
Date Submitted: *January 15, 2014*

ATTACHMENTS:

Attachment A – Site Drawings (10 Pages)
Attachment B – Maddox and Associates – Evaluation of Proposed Palmer Monofill With Respect to Potential Impact on Ground Water (106 Pages)
Attachment C – National Demolition Association – Demolition Contractors Manage And Dispose of Waste Responsibly (17 Pages)
Attachment D – Letters of Support (9 Pages)
Attachment E – Jurisdictional Determination (10 Pages)
Attachment F – Traffic Impact Analysis (2 Pages)
Attachment G – Ground Water Map (2 Pages)
Attachment H – Professional Services Reports (6 Pages)
Attachment I – Wind Data (4 Pages)
Attachment J – Relator Letter (2 Pages)
Attachment K – Property Values (6 Pages)
Attachment L – ADEC Information (7 Pages)
Attachment M – CMS Information Meeting PowerPoint Presentation (47 Pages)
Attachment N – Water Monitoring Plan (39 Pages)

Permit: *Application for a Conditional Use Permit- MSB 17.60*
Applicant: *Central Monofill Services*
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Application for a Junkyard Conditional Use Permit – MSB 17.60

MATANUSKA-SUSITNA BOROUGH
Planning and Land Use Department
Permit Center
350 East Dahlia Avenue • Palmer, AK 99645
Phone (907) 745-9822 • Fax (907) 745-9876
Email: PermitCenter@matsugov.us

APPLICATION FOR A JUNKYARD CONDITIONAL USE PERMIT – MSB 17.60

Carefully read instructions and applicable borough code. Fill out forms completely. Attach information as needed. Incomplete applications will not be processed.

Application fee must be attached:
_____**$500** for **Junkyard Conditional Use Permit**
Prior to the public hearing, the applicant must also pay the mailing and advertising fees associated with the application. Applicants will be provided with a statement of advertising and mailing charges. Payment must be made prior to the application presentation before the Borough Planning Commission.

Subject Property Township: 17N, Range: 02E, Section: 18 + 19, Meridian S
MSB Tax Parcel ID#: 19142 and 20725
SUBDIVISION: _____ BLOCK(S): _____, LOT(S): C10 + B10
STREET ADDRESS: 2480 S. Glenn Hwy and 2560 S. Glenn Hwy, Palmer, AK
(US Survey, Aliquot Part, Lat. /Long. etc) _____

Ownership A *written authorization by the owner must be attached for an agent or contact person, if the owner is using one for the application.* Is authorization attached? o Yes o No X N/A

Name of Property Owner	Name of Agent/ Contact for application
Central Monofill Services	
Address: 311 N Sitka St. Anchorage, AK 99501	Address:
Phne: Hm _____ Fax _____	Phne: Hm _____ Fax _____
Wk (907) 770-7470 Cell _____	Wk _____ Cell _____
E-mail cms@centralmonofillalaska.com	E-mail

In order to grant a conditional use permit under MSB 17.60, the Planning Commission must find that each of the following requirements have been met. Explain the following:	**Attached**
1. Is the conditional use compatible with and will it preserve or not materially detract from the value, character and integrity of the surrounding area?	Yes
2. Will the granting of the conditional use permit be harmful to the public health, safety, convenience and welfare?	Yes
3. Are sufficient setbacks, lot area, buffers and other safeguards being provided?	Yes
4. Does the conditional use fulfill all other requirements of MSB Chapter 17.60 pertaining to the conditional use in this section?	Yes

Permit: *Application for a Conditional Use Permit- MSB 17.60*
Applicant: *Central Monofill Services*
Date Submitted: *January 15, 2014*

Supplemental Information	**Attached**
1. Number of employees proposed to work on largest work shift	Yes
2. Hours of operation	Yes
3. Noise mitigation measures	Yes
4. How will contaminated materials be handled and disposed of at this site?	Yes
5. Total square footage or acreage of this property	Yes
6. Total square footage or acreage for this use on this site	Yes
7. Are there other existing or proposed uses on this site or will this operation be the sole use of the property? *If there are other uses on this property, provide a description.*	Yes
8. Use(s) of any proposed building(s) associated with this operation	Yes
9. Copy of Hazardous Material Plan for the operation, if applicable	Yes
10. Type of equipment to be used at this site	Yes
11. What type of containment systems will be in place at this site?	Yes
12. What type of non-permeable surface will be in place at this site?	Yes
13. What will be the daily traffic generation for this use?	Yes
14. Attach a written description of the buffering that will be provided at this site to meet the standards in 17.60.110. *This may include conventional solid wood or metal fencing; evergreen or other natural planting sufficient to provide year-round screening; and* earthen *berm or topography.*	Yes

SITE PLAN – Attach a detailed, to scale, site plan clearly showing the following information:	**Attached**
1. Proposed and existing structure(s) on the site. Indicate which structure(s) will be used for this use. Draw lot dimensions and indicate setback distance of structure(s) from the lot lines, rights-of-way, and waterbodies.	Yes
2. Dimensions of all structures	Yes
3. Location of the use or uses to be made of the development	Yes
4. Location of other uses on the site	Yes
5. Signage – Existing and Proposed	Yes
6. Location and dimensions for all access points to and from the site to public rights-of-way or public access easements	Yes
7. Buffering – Fences, trees, topography or berms	Yes
8. Drainage	Yes
9. Vehicular and pedestrian circulation patterns	Yes
10. Exterior site lighting	N/A
11. Location and dimensions of parking areas to be provided	Yes
12. Location of other uses on the site	Yes
13. Scale and north arrow	Yes

Permit: *Application for a Conditional Use Permit- MSB 17.60*
Applicant: *Central Monofill Services*
Date Submitted: *January 15, 2014*

OWNER'S STATEMENT: I am owner of the following property:

MSB Tax parcel ID #(s) 19142 and 20725 and, I hereby apply for approval a junkyard conditional use permit on that property as described in this application.

I understand all activity must be conducted in compliance with all applicable standards of MSB 17.60 and with all other applicable borough, state or federal laws.

I understand that other rules such as local, state and federal regulations, covenants, plat notes, and deed restrictions may be applicable and other permits or authorization may be required. I understand that the borough may also impose conditions and safeguards designed to protect the public's health, safety and welfare and ensure the compatibility of the use with other adjacent uses.

I understand that it is my responsibility to identify and comply with all applicable rules and conditions, covenants, plat notes, and deed restrictions, including changes that may occur in such requirements.

I understand that this permit and zoning status may transfer to subsequent owners of this land and that it is my responsibility to disclose the requirements of this status to the buyer when I sell the land.

I understand that changes from the approved conditional use permit may require further authorization by the Borough Planning Commission. I understand that failure to provide applicable documentation of compliance with approved requirements, or violation of such requirements will nullify legal status, and may result in penalties.

I grant permission for borough staff members to enter onto the property as needed to process this application and monitor compliance. Such access will at a minimum, be allowed when the activity is occurring and, with prior notice, at other times necessary to monitor compliance.

The information submitted in this application is accurate and complete to the best of my knowledge.

Signature: Property Owner	SHANE DURAND	1/8/14
	Printed Name	Date

Signature: Agent	Printed Name	Date

Permit: *Application for a Conditional Use Permit- MSB 17.60*
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Date Submitted: *January 15, 2014*

Project Description

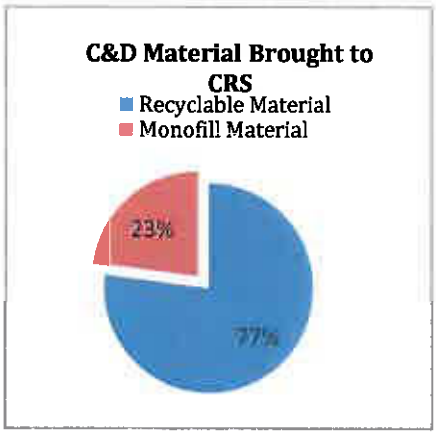
Project Need

Construction activities in the United States consume 40% of the raw materials used.[1]/[2] Construction waste accounts for roughly 30% of the solid waste disposed of in the United States. These large percentages place a burden on the environment to create new raw materials and dispose of discarded material. Today through reuse and recycling these percentages can be greatly reduced. Increases in reuse and recycling can lower construction costs by creating cheaper recycled content construction materials. Decreasing the amount of material landfilled by reuse and recycling typically lowers public costs by reducing pressure on traditionally expensive municipal landfills.

The need for greater waste diversion via reuse and recycling in Alaska is well documented. The Matanuska-Susitna Borough Solid Waste Management Plan recommends the borough to encourage the public to divert more materials from the landfill. This same plan indicates the diversion of 12% Construction and Demolition (C&D) waste from the Municipal Solid Waste Cell will result in a 11.3% cost savings to the Central Landfill.[3]

Over the last five years through public/private cooperation the state of Alaska and many local governments have begun accepting recycled content materials in new construction. This has led to the development of the Construction and Demolition (C&D), recycling industry in Alaska.

The C&D Recycling industry takes the construction waste once destined for the landfill and processes/recycles the waste into new recycled content manufactured products. The new recycled content products take the place of the virgin raw materials that once had to be used. Good examples of this is taking excess or demolished brick and concrete from a construction site and recycling into new aggregate instead of mining aggregate from a gravel pit, or taking waste wood from a construction site and selling it for reuse.



[1] LeBlanc, Rick, The Importance of Construction & Demolition Recycling, 11/11/2013; http://recycling.about.com/od/Construction/a/The-Imporance-Of-Construction-and-demolition-recycling.
[2] United States Environmental Protection Agency, Municipal Solid Waste in The United States, 2009 Facts and Figures
[3] CH2M Hill, Final Report: Solid Waste Management Plan, Year 2002, Prepared for Matanuska-Susitna Borough, May 2002.

Today's C&D recycle facilities often reclaim over 75% of the waste materials they receive. That means 75% of the construction material that once went to the landfill is now remanufactured, recycled or otherwise repurposed keeping it out of the landfill.

The 25% of construction debris residual waste left after recycling has no value and still needs to be landfilled. This residual waste material has been through multiple processes that help insure this waste is free of hazardous wastes, putrescent waste or other regulated types of waste. This recycle facility residual waste can be disposed of in an inert waste monofill. A monofill is a type of landfill that accepts only ADEC approved inert waste. In this case, the left over recycle residue is one of the types of inert waste. A monofill has different regulatory requirements than a traditional municipal landfill. Municipal landfills have to be designed to accept practically any type of waste. The waste from municipal waste garbage trucks and the public dumping in a municipal landfill are not inspected and can contain anything a person puts in the trash. Recycle facility residue or even C&D debris going to a monofill is from a known source and in accordance with EPA regulations has been inspected for hazardous materials. The monofill has less stringent design requirements than a municipal landfill because the waste material is from a known source and free of hazardous wastes, liquids and putrescent materials that would create problematic leachate. A monofill is less expensive to construct and operate than a municipal landfill. Municipal landfills such as the MatSu Central Landfill are constructed and operated with public monies. Placing recyclable construction material or recycle facility residue in a Municipal Landfill it adds to the public burden of paying for disposal. The Mat-Su Borough Solid Waste Management Plan, Year 2002 Update indicates the public costs associated with waste disposal can be reduced at an almost 1 to 1 ratio by recycling and disposal of inert waste at a private monofill instead of in a lined Municipal landfill.

To be cost effective, recycle facilities, disposal options, reusable materials and recycled content materials have to be close to market. Stigmas associated with recycling and landfilling challenge operators to find acceptable sites to locate these facilities. In order to make recycling viable the facilities have to be centrally located to where the waste is produced, recycle materials are used and byproducts disposed of. By moving any of those three criteria too far away from market the demand decreases and cost increases eliminate the viability of recycling. If recycling costs more than new raw materials or traditional methods of disposal it has been well documented that the public will utilize the least cost method even if it results in increased waste of raw materials.

The large scale recycle services provided by CRS are currently viable within the Municipality of Anchorage but not in the Matanuska Susitna Borough, (MSB). There is demand for these services in the MSB, but it is currently not viable to haul the recyclable waste materials to Anchorage for recycling and run an empty truck back to the MSB. If trucks can haul recyclable material from the MSB to the Anchorage facility and haul recyclable materials and the residual waste back to the CMS monofill disposal site, the recycling becomes viable. The CUP is needed to allow CRS to collect and transfer the

materials on site to larger trucks for hauling to Anchorage, to store or resell recycled or reusable materials from Anchorage and to place the residual waste in the CMS Monofill.

The benefits of this CUP are:

- Reduced Disposal Cost
- Reduced Construction Costs
- Increase in Reuse of Materials
- More options for building products
- Decrease in dependence on virgin raw materials
- Decrease in volume of material landfilled
- Reclamation of gravel pit industrial property into farm land or park space
- Creation of Jobs in the MSB
- New taxable business in the MSB

CRS Anchorage Recycling Facility

Project Summary

Central Monofill Services (CMS), intends to establish a recycle facility on the subject property where construction and demolition (C&D) materials can be collected and recycled and the residual waste disposed. Salvageable and reusable materials will be staged on site for resale. Some recyclable waste will be hauled to Anchorage to utilize the large CRS recycle processing facility. CRS will process the recyclable waste at the Anchorage recycle facility.. The recovered waste is manufactured into new recycled content products. Some of these recycled content products will be backhauled to the CMS Palmer site for resale. The CMS site will also operate an ADEC approved monofill to properly dispose of non-recyclable (Residual) C&D material.

Permit: *Application for a Conditional Use Permit- MSB 17.60*
Applicant: *Central Monofill Services*
Date Submitted: *January 15, 2014*

Construction and Demolition (C&D) Debris Description

The simplest way to describe C&D materials is to look at your house or office. C&D waste is generated from the materials used to build your house, office etc. These are materials you are exposed to every day, wood, carpet, cabinets, etc.

Construction and Demolition Debris for Recycling

The "Construction" portion typically refers to the leftover or waste material from new construction of homes and buildings. The lumber cutoffs, pipe ends, empty containers, packaging, scraps of flooring, concrete waste, etc.

"Demolition" debris is usually material generated during the removal or renovation of a building. Often times this is the entire structure including roofing and the foundation.

The handling, removal and disposal of these materials are regulated by OSHA and the EPA to insure worker safety and environmental protection. These are the same materials that each person lives with and is in contact with on a daily basis in their homes. These building materials are in a constant state of aging and degradation in a home similar to the degradation process of the same type of waste in a monofill.

Reuse, Repurpose, Recycle

After the identification and removal of hazardous materials from the waste stream, the first step to C&D Recycling is to salvage for reuse as much as possible from the potential waste stream. C&D often contains useable items, including everything from doors and windows to structural materials and furniture. These reusable items are removed and set aside for resale. These items are sold for less than new materials. Repurposed materials are those removed from the waste stream and with little modification are used for a new purpose other than originally manufactured. Examples are steel culvert pipe repurposed into fence posts or fire pits, broken concrete used as patio pavers. Material going through a recycle facility are

CRS Debris Sort Line

separated into different recyclable materials of value such as but not limited to: wood, certain grades of plastic, metals, concrete and brick, glass, cardboard etc. Some of these materials are resold as a commodity to be reprocessed by others such as, scrap metal that is sold back to a steel mill to be melted into new steel. Other recyclable material is reprocessed locally into new recycled content materials. Items reprocessed locally include; glass crushed into new aggregate, tires made into structural tire bales, concrete and brick crushed into new road aggregate and wood ground into mulch or made into wood pellet fuels.

Salvaged Wood

Reused, Repurposed and Recycled materials are kept out of the landfill and replace the use of new materials thus reducing the waste of our natural resources.

Site Selection

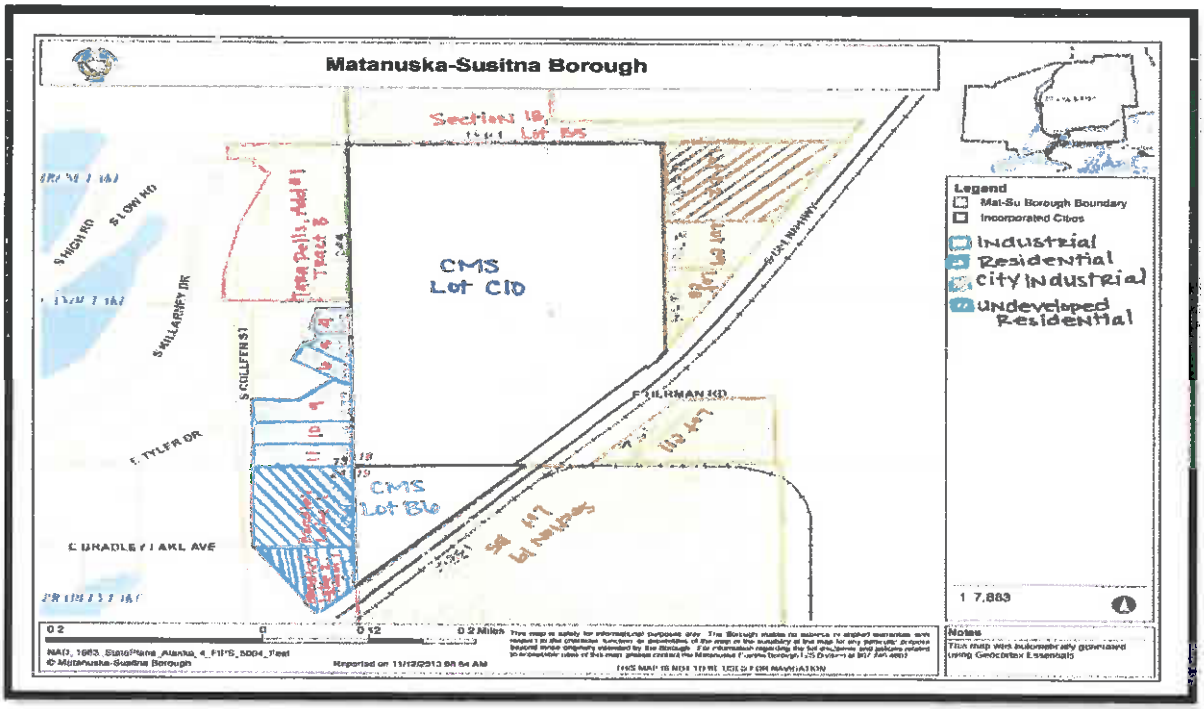
Aerial Photograph of 17N02E18C010 and 17N02E19B006
Proposed Monofill location highlighted

With an identified need for C&D Recycling in the MatSu Valley, CMS set out to find a location to provide this service. Several years have been spent trying to find a property that was for sale and in a suitable location.

To make the recycling economically viable it must be in a location close to the markets to reduce hauling costs on both the inbound and outbound materials. This economically viable distance was identified to be no further than Seward Meridian up the Parks Highway or beyond Fishhook on the Glenn Highway.

Other criteria included a site at least 20 acres in size, no wetlands or streams, access onto a main road, not in a residential neighborhood and with topography suitable for a fill site. The criteria reduced suitable sites down to only a couple available. Other available sites were priced to be major commercial developments or for their considerable gravel reserves.

The Selected site, lots 17N02E18C010 and 17N02E19B006, located along MP 38 of the South Glenn Highway belonged to Granite Construction Company. This site met the above criteria and was for sale. This site is a gravel pit that has been mined since the early 1990's. The 118 acre property had been substantially mined leaving roughly half the property a large depression and half the property mined into industrial ponds. This site had infrastructure and good access in place to support the recycle facility and monofill and due to the mining activities the site was in a developed state.



Proposed CMS Site Showing Adjacent Property Types

Further investigation into the selected site located at MP 38 South Glen Highway found other significant advantages to locating a recycle facility and monofill on this site.

- 76% of surrounding property is industrial
- Main access directly onto the Glenn Hwy
- Central location close to both Palmer, Wasilla and the Parks/Glenn Interchange
- Existing industrial use
- Permitted gravel extraction created required buffers and screening

No other sites were available meeting the selection criteria. Besides being the only site available the selected property is an ideal candidate due to the existing industrial use of the site and the majority of bordering properties being compatible industrial properties.

Permit: *Application for a Conditional Use Permit- MSB 17.60*
Applicant: *Central Monofill Services*
Date Submitted: *January 15, 2014*

Comprehensive Plan Review

CMS reviewed the Matanuska-Susitna Borough Comprehensive Development Plan (2005 Update) and Matanuska-Susitna Borough Core Area Comprehensive Plan (2007 Update). These plans manage land use to limit residential and commercial sprawl, limit proximity of incompatible uses, and to encourage uses that support one another. The selected site has been an industrial material extraction site and our proposed new operation is industrial in nature. This CUP application and CMS's proposed operation does not change the land use of this property. If the type of land use has not changed, the CUP would not create any compatibility issues. Residential, recreational or agricultural property is not being changed to industrial. Industrial property is staying industrial. Low Density residential property makes up less than 25% of the surrounding properties.

In review of the Comprehensive Plan's the following applicable policies were found to support the CMS CUP application.

(2007 Update), page 44
Policy 1-J: Encourage light industrial parks

Discussion: *The Core Area does not have and is not expected to attract much heavy industry, not including earth materials extraction sites. However, the Core Area already has pockets of light industrial uses such as outdoor storage, construction yards and shops, building materials supply, garage and outdoor vehicle storage yards, warehousing, utility buildings, miscellaneous outdoor storage, etc. These industrial uses are necessary and a good fit for the local economy, with good growth potential. Demand for sites for industrial uses will increase as the Core Area's economy matures. Even so, industry will remain a modest land use in the overall picture.*

These light industrial uses are generally mutually compatible. They tend to have similar locational requirements, such a good highway access and public utilities, and separation from residential neighborhoods, schools and recreation facilities, and public institutions. Designating sufficient well-situated tracts for light industry will help create a more attractive climate for these activities by enabling them to operate efficiently and with minimal conflict with other ***uses. Restored earth materials extraction site with good highway access can be prime candidates for light industrial uses.***

(2007 Update), page 46
Policy 1-M: Collaborate with operators of large earth materials extraction sites to plan for site reclamation and re-use after earth materials extraction activities are finished.

Discussion: *Earth materials extraction sites – gravel and sand pits – are an extensive active interim land use in the Core Area. Several former sites have been redeveloped or await redevelopment. Earth materials extraction is expected to continue as a local industry, with additional sites being put to that interim use in the future.*

Permit: *Application for a Conditional Use Permit- MSB 17.60*
Applicant: *Central Monofill Services*
Date Submitted: *January 15, 2014*

> *Rising land values will enhance the development potential of former sites which often become prime real estate for new uses. Redevelopment of these sites makes good use of the borough's land base and enhances the value and economic potential of nearby properties.*
>
> *This policy proposes that the borough work jointly with property owners, consistent with borough ordinances, to plan for redevelopment of these sites for productive and profitable reuse. The borough can facilitate redevelopment by ensuring that earth materials extraction is managed in a manner that conserves future redevelopment options and by providing essential public infrastructure for redevelopment.*

Many Goals of the comprehensive plans are to protect natural resources, develop green space and preserve agricultural land. These goals can be met with approval of this CUP. This CUP will not change the type of land use in the interim and as the monofill is completed, green space or agricultural land will be created on the top of the fill. Creation of this green space or agriculture land meets goals of the comprehensive plans. Many other developments could be proposed for this property that would require no MSB permitting, and not protect natural resources. The Recycle Facility and Monofill can be developed with proper engineering and operational controls to protect natural resources and public health. Two other C&D Monofill's have operated within 2 miles of the subject site for over 10 years with no known adverse impact to public safety, health or natural resources. These other monofill accept C&D waste but do not perform the recycling, sorting or processing of the waste that leads to the waste diversion. This additional processing also insures any hazardous or prohibited items are removed prior to disposal.

Permit: *Application for a Conditional Use Permit- MSB 17.60*
Applicant: *Central Monofill Services*
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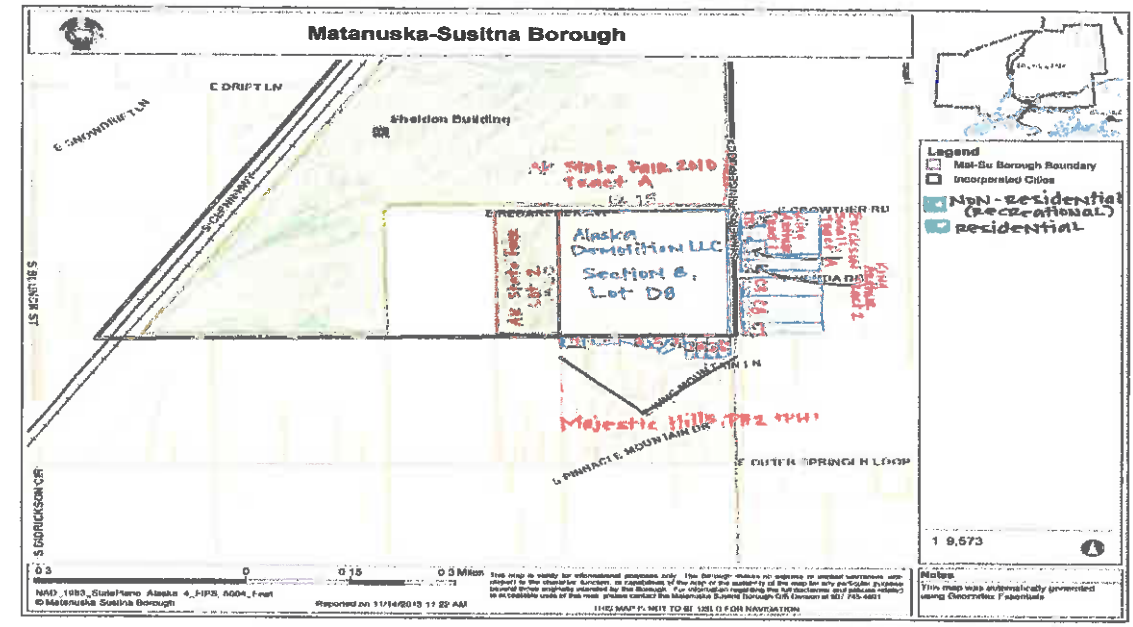


Alaska Demolition LLC Site Adjacent Property Types

The (2007 Update) indicates that only 2.6% of MSB land is Industrial compared to the Municipality of Anchorage (MOA), with 6.8%. Reductions to existing industrial land will only further reduce the economic potential of the MSB. The subject site and CUP should be compared to similar operations that exist in the MSB for compatibility with surrounding uses.

Table of Surrounding Land Use at Similar Monofill Sites in Alaska

	Total Acres	Residential	Recreational/ State Fair	Undeveloped	Industrial	Agriculture
MSB Central Landfill	620	310	310	0	0	0
Alaska Demo C & D Monofill	38.8	19.4	19.4	0	0	0
Central Monofill Salcha Site	40	20	0	10	0	10
Central Monofill Proposed Site	118.9	16	0	12.5	90.4	0

If existing comparable operations in the MSB which have greater interface with neighboring residential neighborhoods or recreational users have not created conflicts, environmental issues or land use incompatibilities it would be reasonable to say this proposed CUP can be compatible with the goals of the comprehensive plans.

On two separate occasions, once in 2003 and again in 2013, the City of Palmer granted a CUP to Alaska Demolition for the Rebarchek C&D Monofill. [4] On both occasions the City of Palmer, Planning and Zoning Commission determined the C&D Monofill to be in accord with both the borough and city comprehensive plans. This property is bordered 50% by Mat Su Borough developed residential property. To our knowledge, the MSB did not oppose this City of Palmer CUP or request environmental protections be considered even though this Rebarchek C&D Monofill clearly impacts the MSB and its residents.

The (2005 Update) has many goals to protect natural resources, public safety and health. To insure these goals can be met a thorough environmental review of the project was performed. The review, contained in the CUP application, has found this CUP can be issued and meet the applicable goals set forth in the Land Use Plans. There will be no environmental, health, safety or quality of life impacts to residents.

Complaints and arguments from residents that this property is a park and they are losing recreational space are invalid. Residents that have been recreating on this site have been trespassing on private property. However, the fact they have been able to enjoy neighboring Industrial property indicates a compatible land use.

Environmental Review

CMS reviewed the subject site for various natural resource and environmental concerns. Concerns discovered were all found to be manageable with proper engineering controls and work practices.

The status of the onsite industrial ponds was reviewed and determined to not be Waters of the US, Wetlands or navigable waters only manufactured industrial ponds. Hemlock Scientific performed a wetlands review and the Regulatory Division of the United Stated Army Corps of Engineers (USACE) was asked for a Jurisdictional Determination on the subject property. The USACE Jurisdictional Determination (JD) was received July 25th, 2013 and is attached. The JD determined that the property did not contain wetlands or waters of the United States under Corps jurisdiction.

The property was determined to be a true pit with all surface water flows into the property. The only surface flow on or off the property is the industrial ponds that adjoin adjacent parcels. No surface flow was found in or out of the industrial ponds.

Concerns had been raised with Granite's prior mining into the water table that created the ponds. MSB changes to the earth material extraction regulations shuttered mining in the water table in 2011 on this property. Complaints had been made about possible changes to the elevation of the aquifer and nearby lake due to Granite's mining operations. The basis

[4] Supplement to Conditional Use Application, Submitted by Alaska Demolition LLC, Concerning the Palmer Reclamation Site (aka Rebarcheck Pit)

for these complaints has not been corroborated and may be the result of other variables including normal variations in seasonal weather events. CMS is working cooperatively with the State of Alaska Department of Natural Resources to monitor the water levels in these ponds to accurately determine what if any impact occurs to neighboring lakes. CMS CUP application maintains a setback from the ponds for both the storage of materials and monofill materials. Proposed activities related to the recycle facility and monofill will not require any alterations to the ponds or aquifer. The ponds are not included in the area requested for CUP.

Maddox & Associates was hired to perform an independent review of the site hydrology and leachate concerns raised with the proposed CMS Monofill. Maddox & Associates is a nationally recognized professional hydrogeologist with experience evaluating contaminate potential in over 50 sanitary landfills in the US and Canada. Mr. Maddox looked at everything from rainwater infiltration through the monofill, potential leachate, ground water movement and potential worst case scenarios. The Maddox report and associated findings are attached. In summary Mr. Maddox found that *"the construction and operation of the proposed monofill will not present a threat to groundwater beneath the site, nor down-gradient of the site."*

A previous report by the National Demolition Association, entitled "Demolition Contractors Manage and Dispose of Waste Responsibly" confirms Mr. Maddox's findings. This report is attached and in summary finds, "For years, these facilities have accepted construction/demolition wastes and, when managed properly, pose no significant threat to the environment." "These findings support National Demolition Association's conclusion that properly designed, well maintained and operated demolition waste landfills are the most economical and environmentally sound method to manage that portion of the demolition industry's waste which cannot economically be recycled." The proposed CMS Monofill will be the first in Alaska to meet the National Demolition Association guideline for prudent, environmentally responsible operations.

To further insure the protection of the Groundwater CMS has installed monitoring wells around the site. Water level data is being shared with Alaska Department of Natural Resources for regional study of ground water table elevations.

The site has been previously completely stripped of trees reducing any potential animal habitat issues. C&D material is considered inert and non-putrescent, so it does not attract animals or birds. The CRS facility in Anchorage has processed C&D materials since 2009 with no animal attraction issues to any of the materials handled or processed.

Matanuska - Susitna Borough
Development Services

MAY 1 4 2014

Received

Odors and smells are often cited as complaints with landfills. This is often associated with putrescent rotting waste in a municipal landfill. Putrescent waste is prohibited from being disposed of in the CMS Monofill eliminating this concern. The other cited smell is hydrogen sulfide, rotten egg smells, related to gypsum wall board disposal. Gypsum is a component of the C&D waste stream that is removed for recycling. Gypsum is often ground and used as a soil amendment in farming. The removal of gypsum from the waste at CRS and the cold climate in Alaska greatly reduces the probability of any hydrogen sulfide release at the CMS site.

The Matanuska Valley has large tracts of agriculture land and the application of manure and other fertilizers creates similar odors to those complained about around landfills. Open burning and wood stoves in the Matanuska Valley can also create unpleasant odors. The CMS Monofill will not produce these types of odors and gases due to the waste material composition, material processing and operations plan.

Attached are multiple letters from neighbors to existing CRS facilities that confirms we have had no issues with odors, blowing debris or animals at our existing facilities.

Alaska Department of Environmental Conservation (ADEC) reviewed the CMS Monofill Permit application for this site and has approved the permit conditioned upon receipt of the MSB CUP.

Fire Risk

A concern exists over landfill fires. Modern landfills are designed with smaller cells of material surrounded in a fire break material. This reduces the risk a large uncontrolled fires. The CMS Monofill is designed in this manner with soil material between cells creating a fire break.

The most important part to eliminating landfill fires is proper management of how and what material is placed within the fill. Properly compacted waste reduces the potential for fires. Unlike the waste placed into most landfills or monofills, the shredded residual waste which will be placed into the CMS Monofill can be well compacted. Compaction verification testing has been performed and confirmed by Northern Geotechnical Engineering, Inc. (See attached)

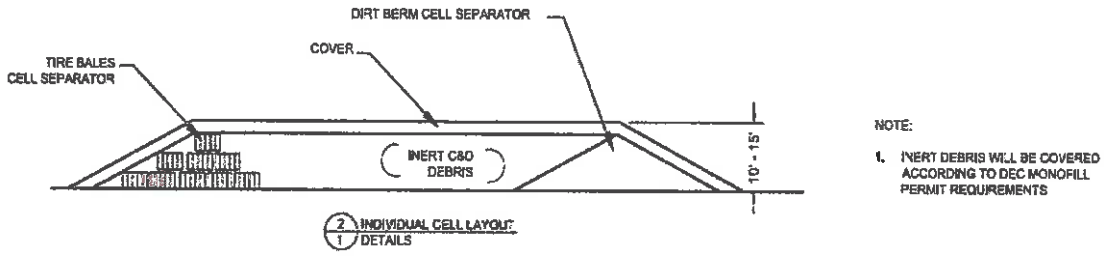
Proper management of what material is dumped in the monofill will prevent fires attributed to burning or smoldering material disposal. The CMS operations plan eliminates the risk of these hazards due to the inspection and processing of materials prior to disposal. This processing prevents typical fire starters such as chemicals, burning debris, organic debris etc. from being placed in the CMS Monofill.

If a fire were to occur at the monofill the Operations Plan includes onsite equipment and water to fight any fire. Hose and pumps will be available on site to pump water from the ponds in an emergency. Water tankers are available for dust control and fire response.

Blowing debris

Proper operations are required to prevent putative materials from leaving the site. CMS standard operation procedures reduce or eliminate the risk of blowing debris leaving the site.

Waste materials are placed within the 15' tall cell berms (See Sheet 1 Individual Cell Typical Section Drawing Above and attached). These berms are constructed prior to waste placement and form the first line of defense to loose windblown debris.



The use of a large sheeps foot landfill compactor to place and immediately compact the waste in the cell is the next method to prevent loose and blowing debris. This compactor has specially designed wheels with hundreds of pointed "sheeps foot" that help break down and lock the material together, chopping and binding the waste with the compactor wheels. This compaction densifies the material further reducing the probability of any material being loose. Regularly covering the waste with soil further prevents blowing debris.

Landfill Compactor

A remote weather station will be placed on site to monitor wind and temperature conditions. This information will be remotely available to managers and operators. When sustained wind conditions on site exceed 20mph, waste will not be unloaded without secondary containment in place.

Secondary containment involves the use of portable catch fences up to 15' tall and of variable lengths. These fences are moveable around site and can be placed near the area of operations. Catch fences are used both to slow the wind

down and to catch blown debris downwind. The MSB recently purchased these portable catch fences for use at the Central Landfill.

Portable "Catch" Fences at MSW Landfill

It is important to note that the MSB has an existing ordinance in place that can be acted upon by Code Compliance if debris was found to leave the site.

The CRS facility in Anchorage where these same materials are processed and recycled has not had any complaints or issues in the last 3 years of operation over blowing debris. See the attached letters from neighbors of CRS that confirm no issues with blown debris.

Standard operations and available secondary containment will prevent blown debris and eliminate this concern.

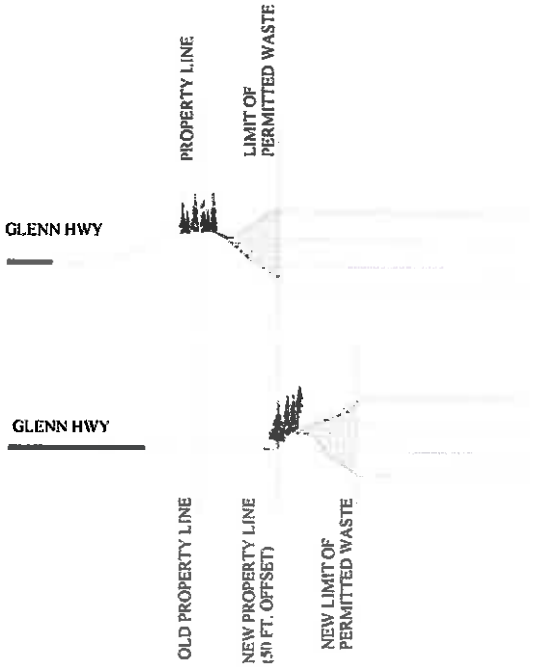
Permit: *Application for a Conditional Use Permit- MSB 17.60*
Applicant: *Central Monofill Services*
Date Submitted: *January 15, 2014*

Visual screening and ROW

The recycle facility and monofill have been designed to be out of view from the public Right of Way (ROW) which is a 17.60 requirement for the CUP. The only public ROW adjacent the monofill is the Glenn Highway. The visual screening and berms are in place due to the Existing Material Extraction use on site. CMS will comply with the 17.60.110 screening requirements

Construction of the monofill requires retaining berms creating the cell walls to place the monofill material inside of. These berms have to be constructed prior to waste placement in order to contain the waste materials. This berm will also screen the monofill from view. Areas along the ROW where the trees maybe thin or the final monofill height may near the height of the trees will be visually screened by these new cell berms. See the attached drawings for details of these berms and screening.

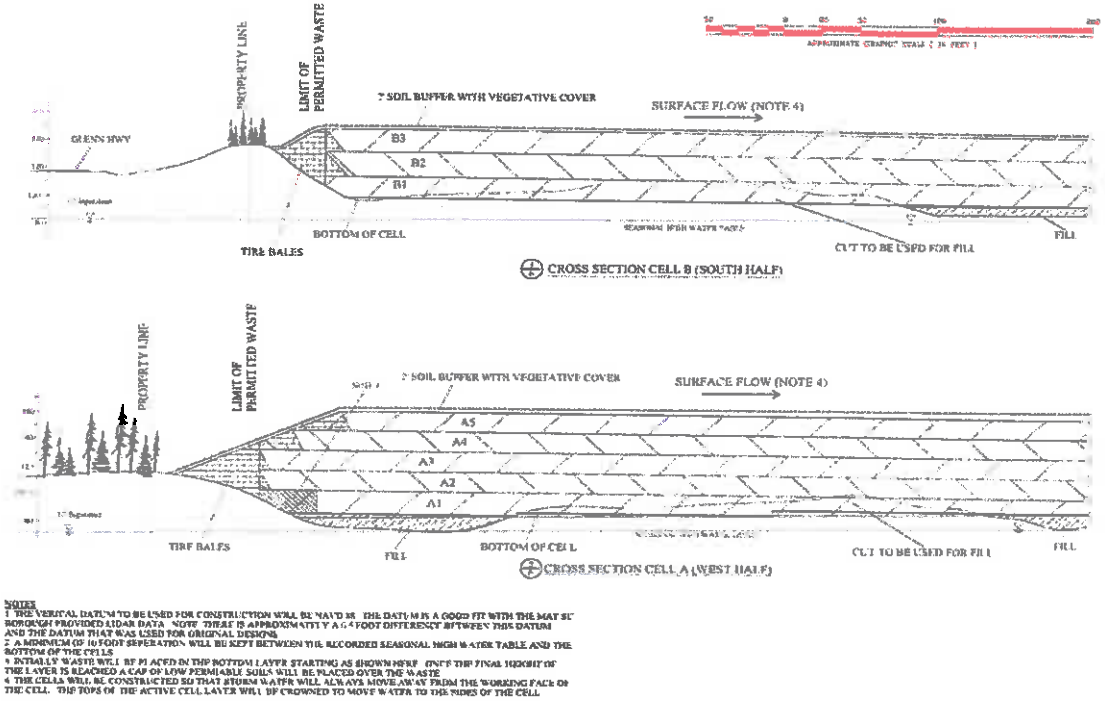
View of Right of Way from Road and existing berms and trees to screen monofill. Final height near tree tops.



Right of Way Screening Plan

Permit: *Application for a Conditional Use Permit- MSB 17.60*
Applicant: *Central Monofill Services*
Date Submitted: *January 15, 2014*

Since 1989 The Alaska Department of Transportation (ADOT) has discussed several concepts to improve the Glenn Hwy along the property. This Highway project may require ADOT to condemn some of the CMS property including part of the existing berm. In the event the state removed some of the existing visual screening CMS will maintain a continuous solid fence or earthen berm no less than 8' in height in compliance with MSB 17.60.110



NOTES
1 THE VERTICAL DATUM TO BE USED FOR CONSTRUCTION WILL BE NAVD 88. THIS DATUM IS A GOOD FIT WITH THE MAT SU BOROUGH PROVIDED LIDAR DATA. NOTE: THERE IS APPROXIMATELY A 6.4 FOOT DIFFERENCE BETWEEN THIS DATUM AND THE DATUM THAT WAS USED FOR ORIGINAL DESIGN.
2 A MINIMUM OF 10 FOOT SEPERATION WILL BE KEPT BETWEEN THE RECORDED SEASONAL HIGH WATER TABLE AND THE BOTTOM OF THE CELLS
3 INITIALLY WASTE WILL BE PLACED IN THE BOTTOM LAYER STARTING AS SHOWN HERE. ONCE THE FINAL HEIGHT OF THE LAYER IS REACHED A CAP OF LOW PERMIABLE SOILS WILL BE PLACED OVER THE WASTE
4 THE CELLS WILL BE CONSTRUCTED SO THAT STORM WATER WILL ALWAYS MOVE AWAY FROM THE WORKING FACE OF THE CELL. THE TOPS OF THE ACTIVE CELL LAYER WILL BE CROWNED TO MOVE WATER TO THE SIDES OF THE CELL

Typical Property Cross Section at ROW

From inside the CMS property, only one house is visible. This house is on a natural rise over a quarter mile away with other gravel pits in between. The adjoining residential lots are screened from view of the property by trees.

View from inside property looking South West toward residence. The final height of the monofill will not exceed the height of the existing tree line.

All MSB 17.60 Public ROW screening requirements are met with this CUP application.

Health and Safety Review

Beyond the safety of the groundwater supply, other health and safety factors were reviewed. Health and safety issues would mainly be related to the delivery, acceptance and disposal of unknown or Hazardous Wastes. CMS and CRS have specific policies, further outlined in the Operations Plan, to prevent these materials from being delivered to the facility. Hazardous materials pose a significant risk to employees in the recycling and Demolition process. Federal regulations must be followed to protect the workers during handling of these materials. If C&D is handled properly, per Federal regulations, in the demolition and recycling process there will not be any possible exposure to the public.

C&D debris delivered to the facility will go through the CRS acceptance process outlined in the Operations Plan. This process will prevent Hazardous Wastes from being delivered and if they were, identifies how they will be properly handled to prevent any exposure.

Per the ADEC permit municipal and household waste will not be accepted at the facility. These materials could contain known and unknown hazardous wastes potentially dangerous to the public. By not accepting these materials this risk is eliminated. Only known haulers and previously approved contractors will be allowed to bring material to the facility. This is controlled by gates and onsite personnel that will inspect all loads delivered to the facility. This is further monitored via camera security systems. Loads hauled into the facility that have not been previously inspected by CRS personnel will be dumped onto a lined pad for inspection. This inspection pad will consist of a 50'x100', 30 Mil Pit Liner capped with 2' of soil. Loads dumped on the inspection pad will be inspected for suspect or prohibited materials. Loads found to be clean will be placed into the monofill or trucks for back hauling to the CRS Anchorage Recycle facility. This inspection pad will reduce the risk of contamination due to improper dumping. Should something prohibited be dumped on the pad it can be cleaned up without risk of subsurface contamination. This inspection pad will be near the working area of the landfill and relocated as the cells and working area move within the monofill.

It has been argued that C&D debris is hazardous because construction materials may contain chemicals that are hazardous. An example is carpet. Carpet may contain formaldehyde or other hazardous chemicals. It is argued the carpet must therefore be hazardous. These hazardous chemicals can be in the carpet or other building materials in your house where children may play and is considered safe for human exposure. These materials typically do not change chemical composition when buried in a monofill. These C&D materials do not suddenly become hazardous wastes after demolition. Hazardous wastes in a building or home are required by the EPA to be identified and removed from the structure prior to demolition. Common items removed are mercury switches that are found in thermostats, mercury containing fluorescent light bulbs and radioactive exit signs. Proof of this removal is required prior to delivery of materials to CRS and CRS employees are trained to look for suspect materials. Suspect materials delivered to CRS are tested

and, if found, removed from the waste stream, and the client charged for the proper disposal.

Some building materials have paint or other coatings on them. Suspect material will be tested in accordance with regulatory required test methods to identify hazardous materials content, if any. Should lead based paint be found on debris, a Toxicity Characteristic Leaching Procedure (TCLP) analysis of the waste stream will be performed as required by the EPA. Only painted materials determined to be non-hazardous in accordance with EPA regulations will be accepted.

Asbestos will be accepted for disposal at the CMS Monofill in accordance with all applicable federal and state regulations for packaging, labeling, transport handling and disposal. Asbestos containing materials (ACM) are categorized into two types, Regulated (RACM) and Non-Regulated (Non-RACM). Regulated asbestos waste will be placed only in a pre-designated cell designed and maintained for this sole purpose. This cell is permanently fenced off from the other monofill cells, and the waste will be covered by non-organic soils on a daily basis. A copy of the RACM asbestos waste manifests must be provided to the regulatory agency within ninety days of disposal.

When handled properly per Federal regulations, asbestos wastes do not pose an environmental or health risk. Asbestos fibers do not dissolve, are a heavy mineral fiber and do not transport in groundwater and therefore pose no risk to the groundwater supply. The potentially friable asbestos waste accepted at the site must be properly packaged to ensure no airborne release, and in accordance with ADEC requirements, the packaged waste is covered daily.

Dissolved metals have created leachate issues in old landfills where both ferrous and non-ferrous metals were buried as a standard part of the C&D waste stream. Today, these metals, both Ferrous and Non-Ferrous are a valuable commodity that is actively removed from the waste stream and recycled. Extremely low percentages of any metals will be left in the waste which will be placed in the CMS Monofill which eliminates the concern over dissolved metals.

Safety concerns over trucks and traffic are no greater than the current use of the site for gravel extraction. The entrance directly off the Glenn highway keeps truck traffic out of residential areas or other side streets.

Central Recycling Services

CMS will contract with Alaskan owned and operated Central Recycling Services (CRS) to operate the proposed Recycle Facility and inert debris monofill. CRS has operated a monofill for CMS in Salcha, AK since summer of 2012.

Salcha Canaday Homestead C&D Monofill;
Salcha, Alaska
Owner: Central Monofill Services, Inc.

CRS, one of the Central Companies, is a waste management company that specializes in the recycling of C&D materials. CRS has operated Alaska's only mixed C&D recycling facility in Anchorage since 2009. CRS has other recycle operations in Fairbanks and Prudhoe Bay.

The CRS Anchorage Facility operates industrial sized recycling equipment capable of processing large volumes of material. A large shredder, crusher, screens, magnets and sort lines make up the main equipment used to process the C&D material. Stockpiles of unprocessed C&D, residual waste material and recyclable material are often at this site. This facility is located on the bank of Ship Creek, within 1000' of a fish hatchery, 200' from a bike trail and adjoined on three sides by other business with offices steps away from the recycle facility. CRS has never had complaints of smells, flying debris, dust, trash, animals etc. that are often cited as concerns of the subject CUP. The close proximity to neighbors at the Anchorage facility, and large piles of C&D material would make the probability of nuisance issues the highest at the CRS facility. See attached letters from neighbors to existing operational CRS facilities that support this claim. Monitoring wells on CRS Anchorage site have been tested for water quality and nothing has been measured in the 4 years of operation. Again the highest likelihood of any measurable contamination would be at this facility where the C&D is not covered during processing.

CRS generally recycles over 75% of waste received and has pioneered the manufacture and use of several recycled content products in Alaska. Pioneered products include Tire Bales and Recycled Glass Aggregate (RGA).

CRS's record of success in protecting its workers, neighbors and the environment while recycling and processing C&D makes CMS confident in being able to operate this new facility in the MSB while ensuring the safety, health and welfare of borough residents.

Property Values

It has been argued that monofills will lower surrounding property values. Property value data does not support this either locally or nationally. Recent data used for the Alaska Demolition CUP renewal with the City of Palmer[5] shows an increase in property values around their C&D Monofill in Palmer over the last several years. This site located less than 2 miles from the Proposed CMS Monofill is directly adjacent to the Majestic Hills subdivision. During the public testimony and public comment period for this extension no issues were raised with property values around that site. The data provided by Alaska Demolition in their CUP shows a minor increase over the last three years. A local independent Real Estate broker Laura Hamilton was contacted in regards to property values around Landfills. Mrs. Hamilton found that "Based on the review of sales data the overall value of the properties located around the Alaska Demolition Monofill, MSB Landfill and Former Chugiak Landfill have increased at the same rate as properties further away." A review of property values adjacent to the MSB Central Landfill verify that property values have increased over the life of the Landfill. Spreadsheets with property values are attached.

It is important to remember that the CMS property is currently an approved existing mineral extraction site. Per the Alaska Property Disclosure form a seller has to disclose if their property is within 1 mile of a gravel pit or fill site. Item23. "*Are you aware of a waste disposal site or a gravel pit within a one-mile radius of the property*?" Anyone within 1 mile of this property is already required to disclose this property as a gravel pit or fill site not drawing a distinction between the two.

Mrs. Hamilton's states "In reviewing property disclosure forms, another thing I found interesting is that sellers adjacent to the Alaska Demolition Monofill in several cases did not acknowledge there is a site in these areas, Page 5 of the Alaska Property Disclosure, asks if you are aware of any waste disposal site or gravel pit within one mile radius of the property. In some cases it was marked No, and other did not mark it at all. For sellers to not be aware of an adjacent gravel pit or Waste site would indicate that these are very unobtrusive operations that would not have adverse impact on property values."

Mrs. Hamilton's review concludes "Based on this I would not expect your proposed facility to impact surrounding property values particularly not 10% or more."

Many closed and reclaimed Landfills become sought after properties when they are reclaimed into parks or other recreational space. In Anchorage, multiple public facilities are built upon closed Municipal landfills. The Loretta French Equestrian Center, Merrill Field Airport and De La Vega Ball Fields are a few examples. Portions of the Alaska Regional Hospital are built directly on top of the old Anchorage Municipal Landfill.

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[5] Supplement to Conditional Use Application, Submitted by Alaska Demolition LLC, Concerning the Palmer Reclamation Site (aka Rebarcheck Pit)

These Municipal Landfills were typically unlined and accepted all municipal wastes. Long term monitoring of these sites has identified minimal or no environmental or public health issues.

Total Permitted Acreage

CMS purchased both Lot C010 and Lot B006 in December of 2012. The two properties are adjacent, combining to a total of 118 acres. These two properties share one single access from the South Glenn Highway. There are three industrial ponds located on the northern half of the property which cover 66 of the acres. The industrial ponds do not have any relevance with respect to the proposed monofill or recycle facility. Please refer to the Site Plans, Sheet 1, showing the separate location of the monofill in respect to the separate location of the three industrial ponds.

Of the remaining 52 acres, the monofill footprint is proposed to be 35.5 acres with 16.5 acres used for recycling operations. *Recycle Facility, Material Reuse Business or Monofill* are generally categorized by the Matanuska-Susitna Borough Specification 17.60 definition as a "Junk Yard". The CUP is needed for 52 acres of the property. As a recycling company, building materials may be stored or processed outside of the footprint of the monofill. A scale house, maintenance shop and other support facilities will be needed to support the monofill and recycling operations. These facilities will be placed outside the 35.5 acre footprint of the monofill. See the attached Sheet 1 Conditional Use Permit Site Plan

Inert Debris Monofill Construction and Development

Site Topography

Due to the mineral extraction which occurred by the previous land owner, both lots have very similar topography. This topography, in essence, is a large bowl. The perimeter of this property has elevated sides sloping downward into the base (or the bottom) of the topographic bowl. As this bowl exists currently, the property's topography is ideal for the construction of a monofill. Lot B006 is located directly south of Lot C010, as shown on the attached Site Plans. The monofill is proposed to be constructed on the majority of Lot B006 and the southern part of Lot C010, as indicated on the Existing Conditions Sheet 1.

Lot C010 contains the three large industrial ponds (located at an average elevation of 77 feet ASL on the northern half of the lot). Again, these industrial ponds do not have any relevance with respect to the proposed monofill. The proposed monofill footprint is not adjacent to these industrial ponds, and does not touch or overlap any part of the industrial ponds. Please refer to the attached Site Plans showing the separate location of the monofill in respect to the separate location of the three industrial ponds. These industrial ponds also have a minimum 25' setback buffer located around the entire perimeters of each pond for any activity and a minimum 100' setback from the monofill. .

The surrounding west, south and east sides of these properties are naturally occurring elevated hills creating the west, south and east sides of the proposed monofill. The north side of the topographic bowl has the lowest elevation. By using the existing topography, this lessens the amount of constructed/man-made retaining walls needed for the site. CRS has been working with engineers to design and construct the northern side of the monofill. Within the southernmost boundary of Lot B006, retaining walls may also be used in the small saddle within the existing south-eastern topography. By elevating the low laying saddle in the south-east topography, this will bring the height of the southern cells of the monofill to the original topographic elevation of the site.

These naturally occurring hills will also create a visual buffer from the Glenn Highway. The existing driveway enters the site on the east side of Lot C010 from the Glenn Highway, and steadily slopes down towards the southern center area of Lot C010. There will be no direct line of vision of the monofill from the South Glenn Highway entrance or any other public ROW.

The entrance to these two lots is gated. The truck scale and scale house/field office will be located behind the gate to regulate trucks entering and exiting the site. This entrance will also separate traffic from the monofill and recycling operations. The monofill will not be open to the public.

Approximately a seven acre portion of the property north of the entrance, southeast of the ponds, will be leveled for a future reclaimed and salvaged material Sales Yard, equipment storage and a potential warehouse or shop building area. A future equipment maintenance shop building is also proposed to be constructed within this area.
The vegetation that is remaining on site is the forest located along the top of the mined banks and helps create a visual barrier between the public and the CUP activities. The existing trees will be left in place and used as a visual and noise buffer. Please see the Site Plan for further reference.

Excavation required for the monofill is limited to shaping the existing terrain. No excavation is required within 4' of the water table.

Monofill Construction

Base Construction

The ADEC requires the base of the monofill to be a minimum 10' above the water table. The Maddox & Associates report confirms the 10' requirement as sufficient to protect the water table. The existing 7 monitoring wells on site have been measured over the last year to determine the seasonal elevation of the water table. These measured ground water elevations were used to determine the minimum elevation of the bottom of the monofill. More than 70% of the existing monofill footprint is already in excess of 10' above the seasonal ground water table. Those areas with insufficient separation from ground water will be filled with onsite earthen materials to obtain a minimum separation of 10'. On site overburden and waste soils left over from mining activities will be placed and compacted to design grades prior to monofill waste placement. Materials with low percolation rate are intended for use under the monofill. Moisture percolation testing was performed by Environmental Management Inc. on the various on-site soils which could be used for the base of the monofill. These percolation test results were used in the Maddox & Associates evaluation of the site. Percolation test reports, material reports and ground water map are attached.

Material Containment

The proposed cell walls and slopes will be made from soil or recycled tires in the form of tire bales. (See Individual Cell Typical Section Drawing Below) CRS has been collecting tires from the community and locally manufacturing tire bales since 2011. Tire bales are made from 70 to 100 used tires pressed into desk sized cubes (about 5' x 3' x 3') and banded with stainless steel wire to create a light weight structural building block. These bales are designed and engineered to be stacked, as shown on The tire bales allow slopes to be steepened

Tire Bales

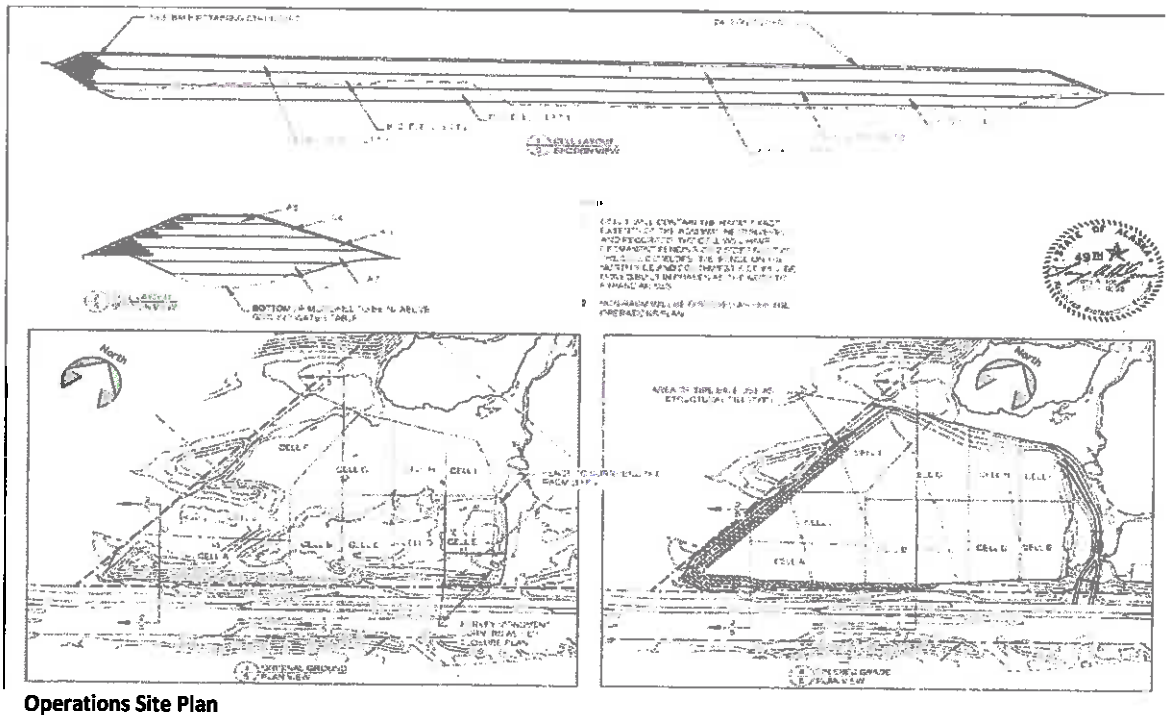
along the outside of the monofill. To lessen the visual impact of tire bales, the outer face of the tire bale wall will be covered with soil and exterior monofill slopes vegetated.

Material Compaction

Placement of material within the cells is performed with large landfill compactors which will compact the material and reduce loose debris. Each load is compacted by a sheep's foot compactor. This compactor will compact the debris the day it arrives on site. RACM loads delivered to the monofill are packaged in sealed leak proof containers, placed within the designated cell. These materials are not compacted by equipment to insure the integrity of the packaging.

Sequence of Fill

Filling of cells will start at the southernmost part of the property and advance to the north. This inert debris placement process will begin on the first lift in Cell A. Each cell is proposed to be about 125 foot wide (see attached Sheet 5 Operations Plan and Sheet 6 Cross Sections). Each cell will have sub-cells created within. These cells will be wide enough to allow trucks to easily maneuver within the cell and place their loads in the correct locations. The trucks will drive into the operational cell, turn around, and backup into the directed area, to then place its material. As the trucks leave each load of material, a landfill compactor, or dozer, will spread the material into two foot deep lifts and compact



Operations Site Plan

Shredded Residual Material

the placed debris within the operating cell. This process will continue until the layers within the cell reach a depth of 15 feet. The placement of inert material into this monofill site is proposed to be over a period of approximately thirty years.

CRS has performed density testing on the shredded residual material and found it highly compactable. Unlike traditional landfills and Monofills, the shredded residual is a consistently sized material that upon compaction reached near soil densities. The consistency of this material will reduce long term differential settlement often seen in monofills. Differential settlement occurs when large and inconsistently sized materials are buried that doesn't compact well and create large underground voids that slowly fill over time and creat movement in the fill. This movement can result in the final surface above a fill to settle. The CMS Monofill built primarily with shredded residual material and properly compacted will result in a stable fill with a smooth top suitable for agriculture or sports fields. Northern Geotechnical Engineering, Inc.'s compaction summaries are attached.

Monofill Cover/Closure

Material excavated from adjoining cells that will be under development will be excavated, hauled, and placed as the cover material for the operational cell prior to starting the next cell up. There will be a one foot lift of soil separation between each Cell to create multiple fire barriers throughout the monofill. This surface will be graded to drain in order to prevent surface ponding and reduce infiltration. Earth from adjoining cells will be excavated and used for the construction of access roads and some cover material within the monofill.

In accordance with the ADEC permit, the cells within the monofill will be capped as required either weekly or when cells are full, as shown in the Operations Plan. This surface will be graded to drain in order to prevent surface ponding and reduce infiltration. Per EPA and OSHA regulation, RACM and Non-RACM will be covered on a daily basis. Other materials deposited into the monofill are placed within the cells and will be covered intermittently, however not necessarily daily. Sides of the cells are constructed prior to filling each cell, which create barriers on two or three sides, helping block the wind and contain the material. These cell walls are shown on Sheet 1 Individual Cells Typical Sections.

Once areas/cells of the monofill are filled to final height, native soil, strippings, compost, etc. will be spread over the top and slopes of the cell for a minimum of two feet. This final

surface will be graded to drain in order to prevent surface ponding and reduce infiltration. This cap for the monofill will be seeded and will allow the establishment of vegetation over the surface to occur. All drainage will flow away from the working face of the monofill and a minimum of 2% grade will be required.

The ADEC permit requires the owner to provide bonding or other financial assurance to cover the cost of monofill closure. The ADEC has a predetermined method for calculating the amount required for the bond or other financial assurance to make sure it is enough to cover all closure costs. CMS has met this obligation as part of the ADEC permit. CMS also has sufficient Environmental and Pollution Insurance to cover this project.

Summary

There is a need in the MSB for C&D recycling and this CUP will facilitate the development of C&D recycling and the manufacture of recycled content materials in the MSB. This expansion of industry will bring new materials, options and jobs to the MSB. This can be done without sacrificing the health and safety of the public or environment. The design and operations of the facility will protect our workers, the public and the environment. The materials brought to this facility and their handling is regulated by EPA and OSHA and the Monofill itself regulated by the ADEC to protect the health, safety, convenience and welfare of the public.

Per the MSB Comprehensive Plans these old gravel pits can be used as Industrial property and the proposed industrial use has an added benefit of eventually creating green space.

The requested CUP should be issued as it meets or exceeds all of the MSB 17.60 Requirements.

MSB 17.60 Requirements

1. Is the conditional use compatible with and will it preserves or not materially detract from the value, character and integrity of the surrounding area?

2. Will the granting of the conditional use permit be harmful to the public health, safety, convenience and welfare?

Response to Requirements 1 & 2

The proposed Conditional Use is compatible with the surrounding uses. The existing use of the site is for Earth Materials Extraction, an Industrial use. Large scale gravel extraction operations or commercial operations account for 76% of the surrounding properties. Low density residential only accounts for 24% of the remaining surrounding properties. The

Recycle facility component of the CUP is a light industrial use that would be buffered by the Monofill. The use of old gravel pits for industrial use is supported by the comprehensive plans. Granting of this CUP will allow filling and reclamation of areas of the old gravel pit turning them into green space that could be used for parks or agriculture.
The proposed Conditional Use will not be harmful to the public health, safety, convenience or welfare. The inspection, handling and processing, of the materials insures that regulatory restricted materials are not delivered or disposed of at the proposed facility. Only ADEC approved "inert waste" will be allowed for disposal at this facility. Recycling and processing of the waste such as at the CRS recycle facility in Anchorage removes other materials that could cause odors. Odors related to neighboring farming operations such as land application of manure and fertilizers create more odors than will ever emanate from this facility.

Operations at the facility will be screened from view as required by code. The existing topography will screen most operations. The existing mineral extraction use requires the same screening needed for a Junk Yard CUP. As areas of the site are filled above the existing topography the required cell construction will create additional screening. Cells of no greater than 15' high will be built to contain the waste materials. These cells have soil covered earthen berms around the perimeter to contain the waste and additional provide the required screening. See the Attached drawings.

Best Management Practices to include: not unloading debris during high wind events, regular/timely compaction with a sheeps foot compactor, weekly covering of waste with soil, construction of 15' tall cell berms and the use of portable catch fences reduce the likelihood of any windblown debris from leaving the site. Employees will regularly patrol the perimeter of the property to clean up any loose debris if any.

Noise from the site will not exceed current Borough Code and will be similar or less than what is currently allowed or heard from the existing earth materials extraction operations.

Traffic to and from the site will not exceed current Borough Code. Traffic will enter the site from the Glenn highway and will not create any issues of mixing commercial traffic with residential.

According to the attached Maddox & Associates report the Monofill can be constructed and operated without an impact to groundwater.

If the site is not visible to the public, nothing blows off site, no odors emanate from the property, does not exceed code requirements for sound and does not pollute the ground water then the requirements of 17.60 1 and 2 are met.

Monofill design and operations are permitted by the Alaska Department of Environmental Conservation (ADEC). Again, the ADEC permit requirements protect public health, safety and welfare. The proposed monofill design has been submitted to ADEC for review and

approval. ADEC has approved the proposed monofill design pending receipt of the MSB CUP. The proposed uses will not increase activities beyond what the property is already permitted for, and therefore, will not negatively impact the public and/or their convenience.

As this property is private property, signage will be posted at all entrances to the property including the main entrance of the property on Lot C010 informing the public to take caution of not entering the site unless authorized and/or accompanied by authorized personnel. This access point will prevent unsolicited visitors to trespass onsite (pedestrians/target practice/off-road vehicle usage) and away from any site activities.

There is also no concern of wildlife, or domestic animals, being attracted to the inert debris and the monofill operations. Since there will be no putrescible waste allowed (or disposed of) in the monofill, there will be no animals attracted to the site. The lack of putrescible waste eliminates odors and/or disease issues on or off site.

The recent renewal of the Alaska Demolition CUP for the Rebarchek Pit is further evidence a C&D Monofill in the MSB can be operated safely within the requirements of 17.60. During the public testimony for this CUP only one person testified. The testimony said although things had operated well they had issues with odors from the site and thought the weeds on the perimeter berm were unsightly. Nobody testified or made complaint about property values, incompatibilities, noise debris or other issues. The CMS Monofill will not have the same odor issues as the AK Demolition Monofill as materials are inspected processed and handled differently to remove the offending materials prior to delivery to the CMS site. If after 10 years of operation the AK Demolition Monofill only had one person speak at the Public Hearing it is a fair assumption the CMS Monofill can be operated as well or better. The CMS operation has more extensive testing, inspection, processing, handling and monitoring than either of the other two C&D Monofill's located within 2 miles of the subject site.

It should be found that the CMS CUP can meet the requirements of 17.60

3. Are sufficient setbacks, lot areas, buffers and other safeguards being provided?

Currently on the existing site, there are no permanent or semi-permanent buildings; therefore there are no current setbacks from these buildings. Potential future structures will be placed more than 30 feet from the current Right-Of-Way and therefore setback requirements will not be an issue for these structures.

The ADEC regulations require that waste which is to be placed within the monofill be kept at a minimum of 50' from all property boundaries. Please see the Site Plan for the proposed location of the monofill and for the potential locations of any future structures.

CRS has implemented a minimum 25' setback from the industrial ponds on site. This setback states that no material will be placed or stockpiled within this 25' boundary between the industrial ponds and the rest of the useable property areas. No waste will be placed within 100' of the industrial ponds. This implementation not only reassures the public that the industrial ponds will not be affected by the monofill and its recycle operations, but this also helps CRS protect the industrial ponds. This 25' / 100' setback is shown on the attached Site Plan.

The utilization of the natural vegetation and naturally occurring hills of the property will be employed as both visual and noise buffers. The usage of the existing site topography will allow Central Recycling Services to create a natural property/site boundary without the use of extensive fencing. Central Recycling Services will place the inert debris into the 35 acre monofill area without disrupting the current neighboring lands' ecosystems, both agricultural and natural occurring bio-networks.

The cell walls, as show in Sheet 3, the natural topography of the surrounding hills, and litter fences, reduce the possibility of dust and debris from being able to leave the site. The nearest home to the Monofill site is 500 feet with a nearly 300 foot buffer of trees.

The CMS CUP meets the setback requirements of 17.60.

4. Does the conditional use fulfill all other requirements of MSB Chapter 17.60 pertaining to the conditional use in this section?

Yes, this conditional use does fulfill all other requirements of MSB Chapter 17.60 regarding the conditional use.

Supplemental Information Requested by Staff

1. ***Number of Employees proposed to work on largest work shift:***

Three (3) employees will be used for normal monofill operations and up to thirty (30) for periodic accessory operations.

2. ***Hours of Operation***

This site will operate on a seasonal schedule. During the months from May through September, the operational hours will be from 7am to 7pm, Monday through Saturday. Throughout the months of October to April, the standard operational hours will be from 8am to 5pm, Monday through Saturday on an as needed basis.

3. ***Noise Mitigation Measures***

The prior and existing use, on this property is Mineral Extraction. Equipment associated with Mineral Extraction is generally similar to the equipment required for operating a monofill. There will not be an increase in the amount of equipment or truck traffic compared to the existing use and as such noise levels will not be greater than the existing permitted use. . In an effort to further reduce noise, monofill operating equipment will be fitted with white noise back up alarms that reduce sound associated with beeping back up alarms. The existing surrounding topography and vegetated buffer also assist to mitigate noise from the site. The proposed operations will comply with MSB existing sound ordinances.

4. ***How will contaminated material be handled and disposed of at this site?***

As previously mentioned, all material, including the shredded residual material, will be sorted by the operator, at Central Recycling Services either at the site or before the inert material is brought to the monofill site. During the inspection and sorting procedures, all material is thoroughly screened before it is allowed to be disposed of on site. Therefore, it will not be necessary to clean up any prohibited or unauthorized waste since thorough screening procedures will eliminate the possibility of hazardous or unauthorized waste being placed into the monofill site.

The recycle facility at CRS abides by all federal, state or local regulations and permit conditions regarding inert debris inspections, handling, placement and sorting of material. These same procedures will be applied to any materials delivered to the monofill.

In the unlikely event of a contaminated material brought to the monofill, both Central Monofill Services and Central Recycling Services have trained individuals receiving the waste who can identify potential unauthorized materials. All waste delivered directly to the monofill is first placed within a lined area and inspected. Questionable materials are identified, tested and properly segregated from the waste stream. CMS and CRS will have authority to contact an environmental remediation firm of its choice and request the contaminated material be disposed of quickly and properly. The cost of this cleanup operation is charged to the owner of the material.

5. ***Total square footage or acreage of this property:*** 118 acres total

6. ***Total square footage or acreage for this use on this site:*** 52 acres for the recycle facility and monofill. The monofill is 35.5 acres within the 52

7. ***Are there other existing or proposed uses on this site or will this operation be the sole use of the property?***

This site is permitted for mineral extraction. With issuance of this CUP permit, mineral extraction would be a secondary or accessorial use, to the monofill and recycling operations.

8. ***Use(s) of any proposed building(s) associated with this operation:***

The proposed future buildings associated with this monofill, recycling operations and equipment maintenance on the site may include a warehouse, shop, field office / scale house. The proposed locations can be seen on the attached Site Plan Sheet 2.

In addition to proposed future buildings associated with the recycling operations on site, laydown and storage areas are also proposed. A laydown area is a location on site that is used to store equipment, material, etc. for a certain amount of time.

A laydown area is different than a storage area. A storage area has a purpose to allow items to be left with no timeline as to when the items will leave the site. A laydown area usually accumulates items that will be used within the near future. These items placed in a laydown area usually have an identified purpose and will be needed in another location sooner than later, therefore, these items typically do not stay in the laydown area for long periods of time.

The materials that are typically placed in the laydown areas are frequently salvaged materials or materials that are needed to be processed. Currently, many customers purchase reusable materials from CRS' salvage laydown yards. These materials range from usable windows taken out of a local demolition project to new pieces of HDPE pipe that were extra pieces and not needed on a local utility project.

9. ***Copy of Hazardous Material Plan for the operation, if applicable:***

Regulated Asbestos Containing Material (RACM) waste will be accepted at the monofill site but will have to be scheduled for delivery and disposal. All waste that includes regulated asbestos-containing material (RACM) waste will be managed in a manner that prevents the release of asbestos fibers to the air or to surface water and must be disposed of in a designated cell (such as Cell E). The base of the asbestos cell will be undisturbed earth or stable fill and will be fenced from all other monofill operations. The cell is located in a manner that it will not preclude any future closeout or remedial action at the facility.

The CRS operator shall inspect each load of RACM waste to assure that the friable asbestos material is sealed in leak-proof bags or containers, labeled in accordance with 29 CFR 1910.1001(j)(4), revised as of July 1, 1998. The waste will be accompanied by a complete and accurate shipment record meeting the requirements of 18 AAC 60.

RACM Bag ready for disposal

After placement of packaged RACM in the monofill, it is required to be covered on a daily basis.

CRS will retain a copy of all records required under 18 AAC 60.450 for at least two years, and shall furnish them to the DEC upon request.

As required by regulations, CRS will maintain in the operating record of the monofill a map or diagram showing the surveyed boundaries of the asbestos waste management area, its depth, and the amount in cubic yards, of the RACM waste located there. These documents will be maintained until the monofill closure is complete and beyond.

10. ***Type of equipment to be used at this site:***

Excavator, wheel loaders, fork lifts compactors, trucks and Bulldozers.

11. ***What type of containment systems will be in place at this site?***

As mentioned in the above, soil or tire bales will be used to create cell walls for steepened slopes. Existing hills will also be used as cell walls of the monofill. Soil barriers will be used for monofill cell containment and as fire barriers throughout the monofill. All containment will meet ADEC requirements for a monofill. The attached Maddox & Associates report supports our design and the ADEC regulation that an impermeable liner is not required for this facility.

12. ***What type of non-permeable surface will be in place at this site?***

The entrance driveways and approaches to the truck scales may potentially be paved to minimize tracking and dust. This will amount to less than 1% of the surface area of the site.

As stated previously, the working face of the proposed monofill will be routinely graded and compacted to ensure water drains away from the working area and that there is no ponding. The working surfaces will be graded to ensure surface water does not enter the material placed into the monofill, and to direct the water away from the placed material.

Please see the design drawings and the Maddox & Associates report on water transmission through the monofill and findings that a non-permeable liner is not required under the monofill.

13. ***What will be the daily traffic generation for this use?***

The monofill is not open to the public. The recycle facility will have some public traffic but estimated to be low volume. The MSB levels specified in 17.61.090 "Core Area Land Use Permit" application will not be exceeded with less than 100 trips during peak and 750 total per day. Central Recycling Services Daily Trip Rate is calculated at an average of 6.97 -daily trip rate using the "Common Land Uses Chart" in the "Core Area Land Use Permit" application. Central Recycling Services is prepared for summer traffic to be heavier than winter traffic due to hours of operation, the Alaskan construction season, and weather

conditions. It is anticipated that we will reduce the truck traffic during the Alaska State Fair.

14. ***Attach a written description of the buffering that will be provided at this site to meet the standards in 17.60.110.***

See the above section on Visual Screening and Sheet 6 Cross Section of the drawings and Sheet 1 Individual Typical Section

Site Plans

Please see the attached detailed Site Plans for the requested Site Plan Items 1 through 14.

Closing/Conclusion

This CUP application meets all applicable MSB Code 17.60 requirements for a Junkyard. The proposed recycle facility and monofill meets all applicable Federal and State requirements. The design and operations plan for this facility meets or exceeds all health, safety and environmental controls required by any applicable regulatory agency. . Although not required by regulation, and expert opinion indicates no risk to the groundwater, CMS has installed monitoring wells and developed a ground water monitoring plan which will be implemented to verify compliance. . The existing site has been studied by experts, the design reviewed independently and by the ADEC, the materials going into the monofill have been tested by independent testing laboratories and a thorough operations plan developed, all to insure the health and safety of the public and environment. All other concerns that have been raised by MSB staff or the public have been reviewed and addressed.

All of the facts support that the CUP as submitted should be unconditionally approved.

ATTACHMENT A – SITE DRAWINGS

NOTE:

1. CONTOURS SHOWN ARE 2' MINOR AND 10' MAJOR.
2. ALL SLOPES AND SURFACES WILL BE REVEGETATED WITH GRASS.

MATERIAL STORAGE AND RECYCLING AREAS (MINIMUM 25' SETBACK FROM ALL OPEN WATER)

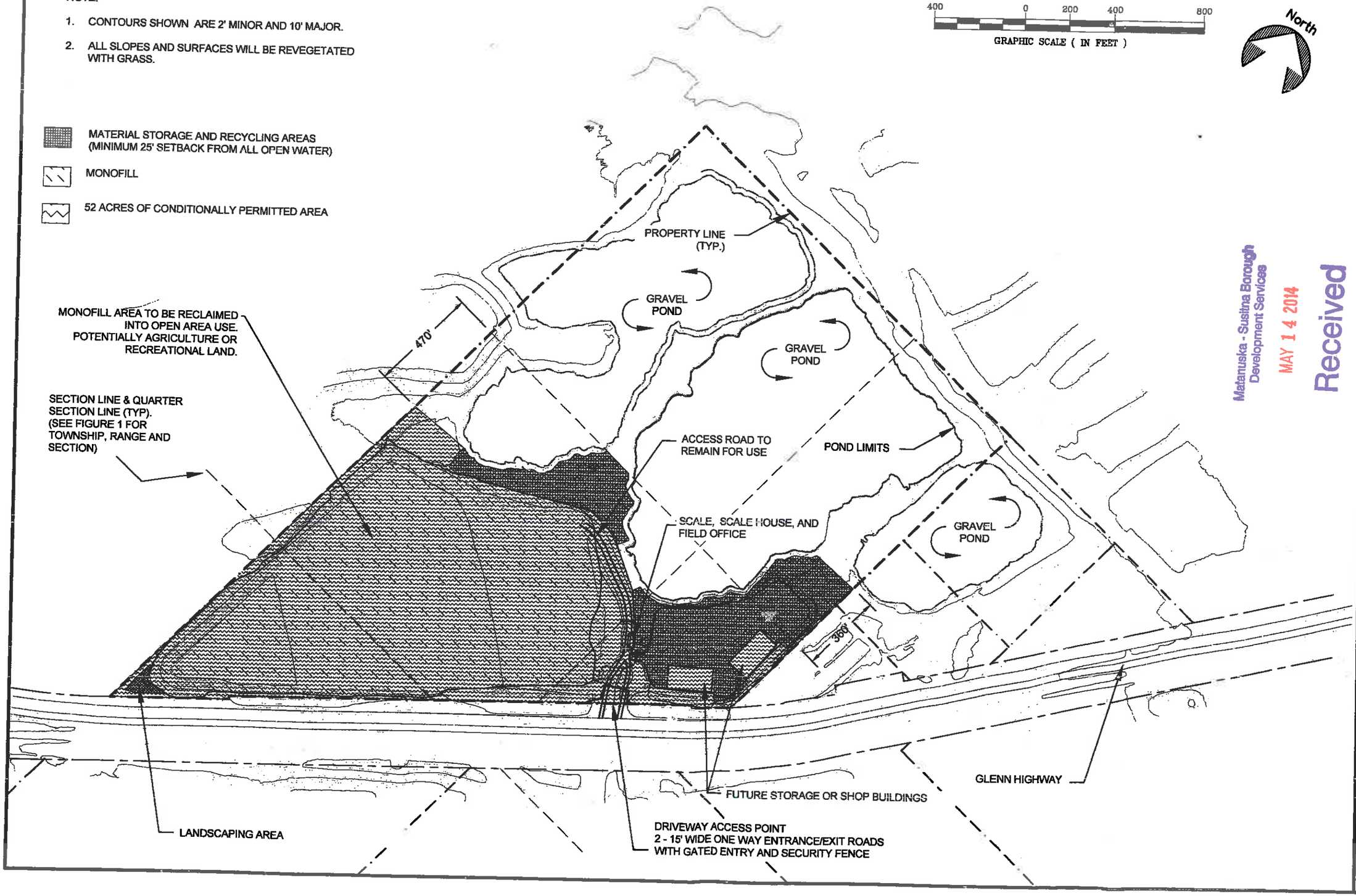
MONOFILL

52 ACRES OF CONDITIONALLY PERMITTED AREA

400 0 200 400 800

GRAPHIC SCALE (IN FEET)

North



Matanuska - Susitna Borough
Development Services
MAY 14 2014
Received

CENTRAL MONOFILL SERVICES
PALMER MONOFILL
PALMER , AK

CONDITIONAL USE PERMIT
SITE PLAN

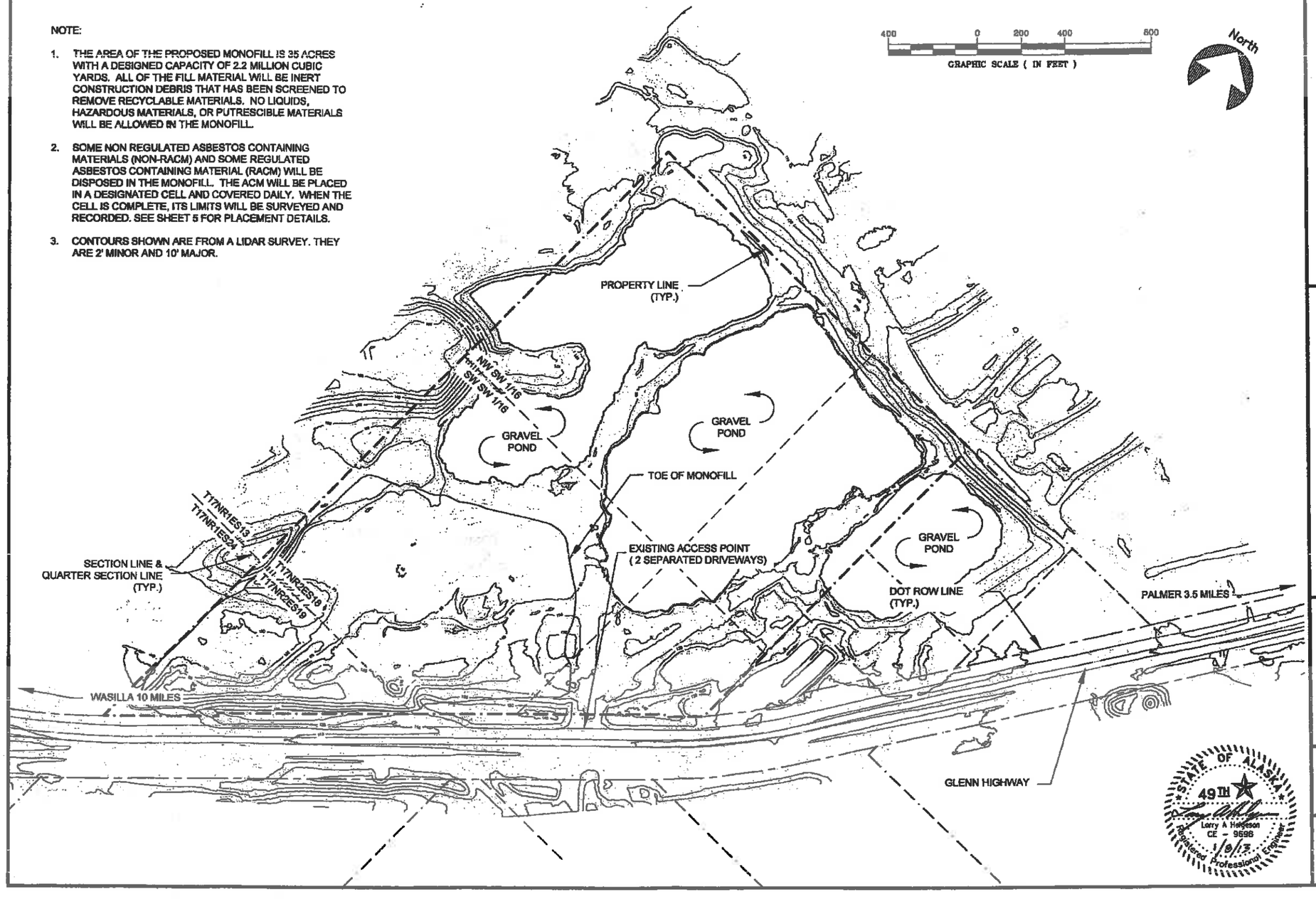
ENVIRONMENTAL MANAGEMENT INCORPORATED

PREPARED: LMR
DRAWN: LMR
REVIEWED: SD
DATE: 2/14/14

SHEET: A
OF 1 SHEETS

NOTE:

1. THE AREA OF THE PROPOSED MONOFILL IS 35 ACRES WITH A DESIGNED CAPACITY OF 2.2 MILLION CUBIC YARDS. ALL OF THE FILL MATERIAL WILL BE INERT CONSTRUCTION DEBRIS THAT HAS BEEN SCREENED TO REMOVE RECYCLABLE MATERIALS. NO LIQUIDS, HAZARDOUS MATERIALS, OR PUTRESCIBLE MATERIALS WILL BE ALLOWED IN THE MONOFILL.
2. SOME NON REGULATED ASBESTOS CONTAINING MATERIALS (NON-RACM) AND SOME REGULATED ASBESTOS CONTAINING MATERIAL (RACM) WILL BE DISPOSED IN THE MONOFILL. THE ACM WILL BE PLACED IN A DESIGNATED CELL AND COVERED DAILY. WHEN THE CELL IS COMPLETE, ITS LIMITS WILL BE SURVEYED AND RECORDED. SEE SHEET 5 FOR PLACEMENT DETAILS.
3. CONTOURS SHOWN ARE FROM A LIDAR SURVEY. THEY ARE 2' MINOR AND 10' MAJOR.



CENTRAL MONOFILL SERVICES
PALMER MONOFILL
PALMER , AK

EXISTING CONDITIONS

ENVIRONMENTAL MANAGEMENT INCORPORATED

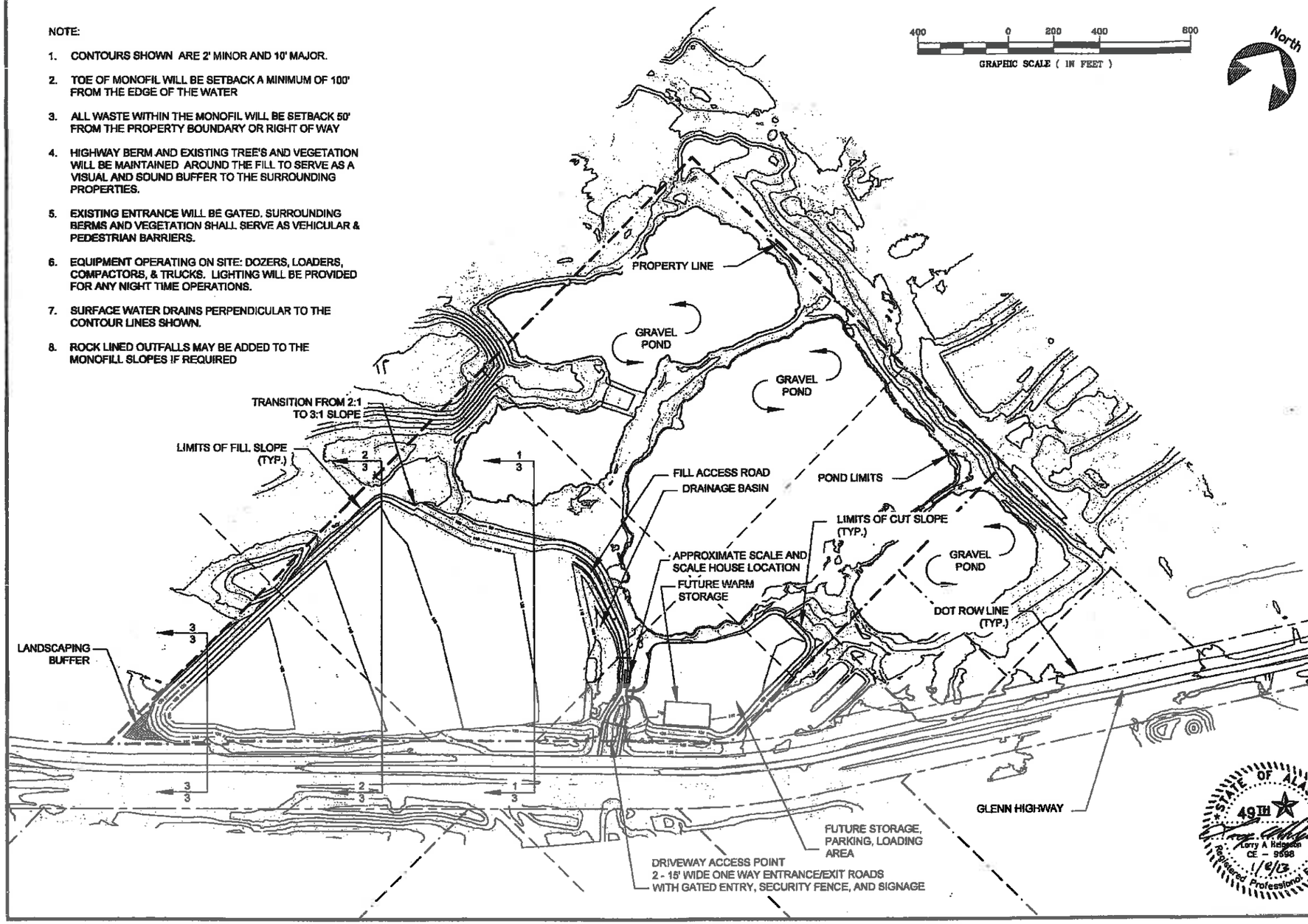
PREPARED: LMR
DRAWN: LMR
REVIEWED: LAH
DATE: 1/2/13

SHEET: 1 OF 5 SHEETS

STATE OF ALASKA 49TH
Larry A Hellyson
CE - 9696
1/9/13
Registered Professional Engineer

NOTE:

1. CONTOURS SHOWN ARE 2' MINOR AND 10' MAJOR.
2. TOE OF MONOFIL WILL BE SETBACK A MINIMUM OF 100' FROM THE EDGE OF THE WATER
3. ALL WASTE WITHIN THE MONOFIL WILL BE SETBACK 50' FROM THE PROPERTY BOUNDARY OR RIGHT OF WAY
4. HIGHWAY BERM AND EXISTING TREE'S AND VEGETATION WILL BE MAINTAINED AROUND THE FILL TO SERVE AS A VISUAL AND SOUND BUFFER TO THE SURROUNDING PROPERTIES.
5. EXISTING ENTRANCE WILL BE GATED. SURROUNDING BERMS AND VEGETATION SHALL SERVE AS VEHICULAR & PEDESTRIAN BARRIERS.
6. EQUIPMENT OPERATING ON SITE: DOZERS, LOADERS, COMPACTORS, & TRUCKS. LIGHTING WILL BE PROVIDED FOR ANY NIGHT TIME OPERATIONS.
7. SURFACE WATER DRAINS PERPENDICULAR TO THE CONTOUR LINES SHOWN.
8. ROCK LINED OUTFALLS MAY BE ADDED TO THE MONOFILL SLOPES IF REQUIRED



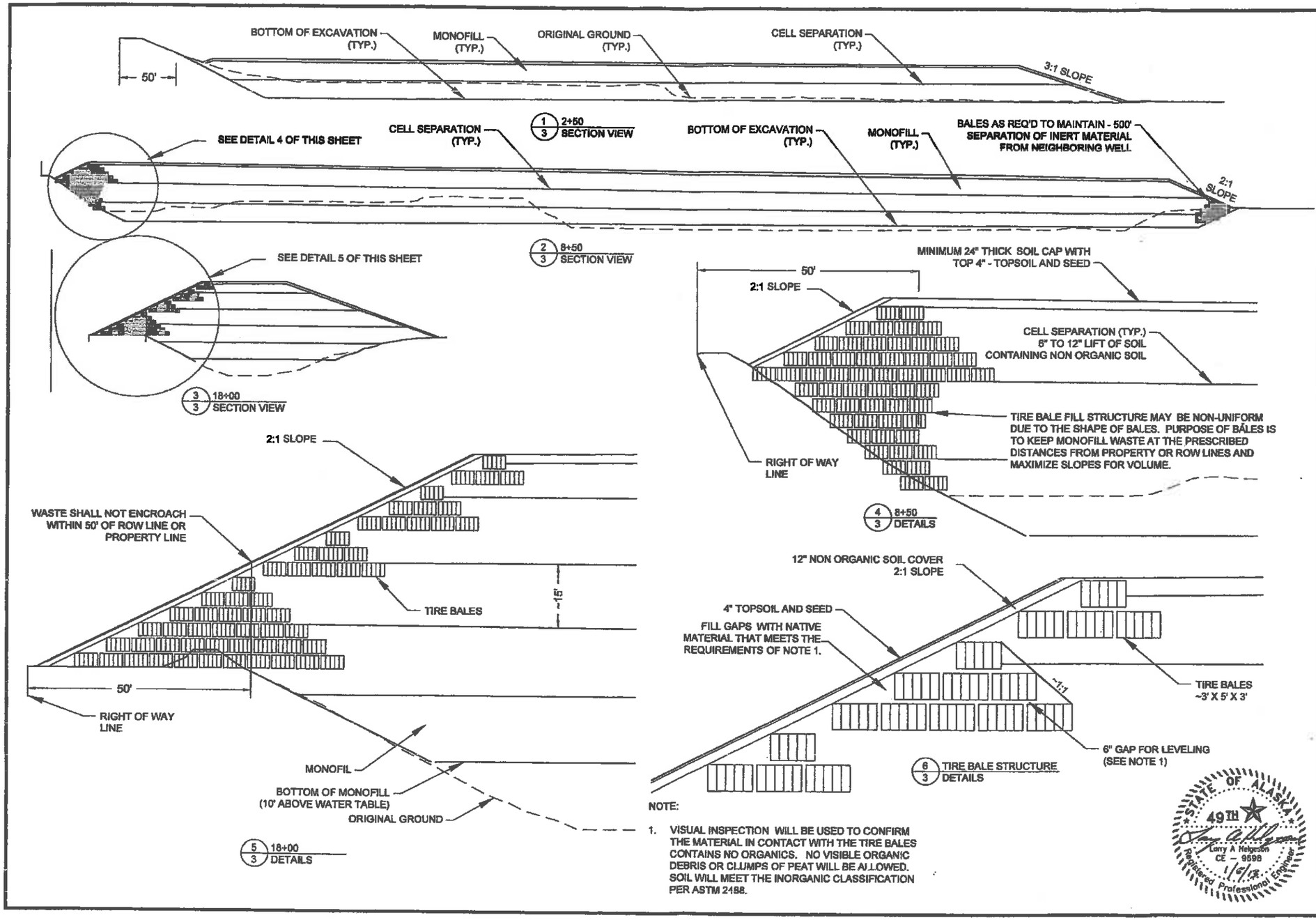
CENTRAL MONOFILL SERVICES
PALMER MONOFILL
PALMER, AK

SITE PLAN

ENVIRONMENTAL MANAGEMENT INCORPORATED

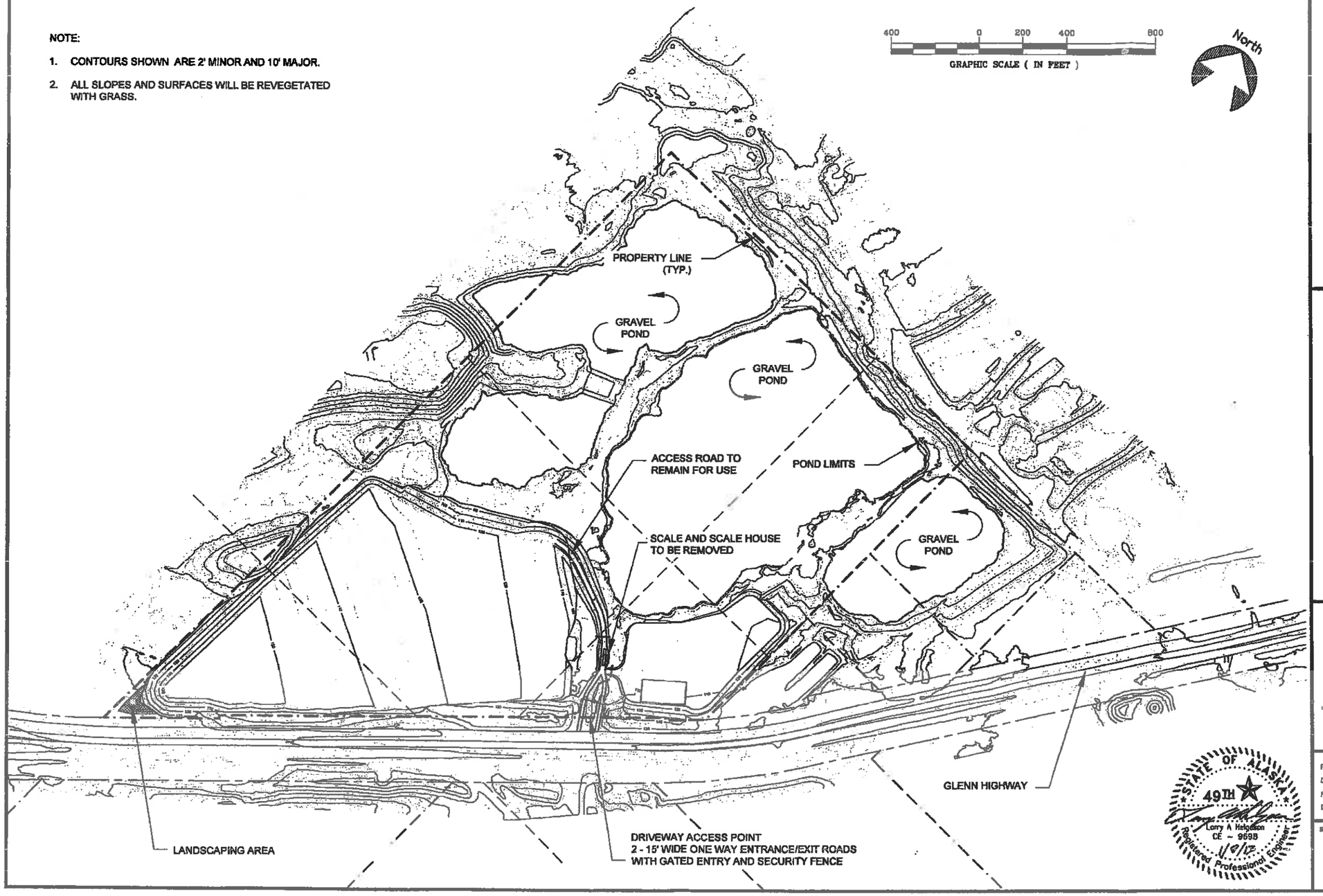
STATE OF ALASKA 49TH
Larry A Hutchison CE - 9898 Registered Professional Engineer 1/8/13

PREPARED: LMR
DRAWN: LMR
REVIEWED: LAH
DATE: 1/8/13
SHEET: 2
OF 5 SHEETS


BOTTOM OF EXCAVATION (TYP.)
MONOFILL (TYP.)
ORIGINAL GROUND (TYP.)
CELL SEPARATION (TYP.)
50'
3:1 SLOPE
SEE DETAIL 4 OF THIS SHEET
CELL SEPARATION (TYP.)
1/3 2+50 SECTION VIEW
BOTTOM OF EXCAVATION (TYP.)
MONOFILL (TYP.)
BALES AS REQ'D TO MAINTAIN - 500' SEPARATION OF INERT MATERIAL FROM NEIGHBORING WELL
2:1 SLOPE
2/3 8+50 SECTION VIEW
SEE DETAIL 5 OF THIS SHEET
3/3 18+00 SECTION VIEW
MINIMUM 24" THICK SOIL CAP WITH TOP 4" - TOPSOIL AND SEED
50'
2:1 SLOPE
CELL SEPARATION (TYP.) 6" TO 12" LIFT OF SOIL CONTAINING NON ORGANIC SOIL
TIRE BALE FILL STRUCTURE MAY BE NON-UNIFORM DUE TO THE SHAPE OF BALES. PURPOSE OF BALES IS TO KEEP MONOFILL WASTE AT THE PRESCRIBED DISTANCES FROM PROPERTY OR ROW LINES AND MAXIMIZE SLOPES FOR VOLUME.
RIGHT OF WAY LINE
4/3 8+50 DETAILS
2:1 SLOPE
WASTE SHALL NOT ENCROACH WITHIN 50' OF ROW LINE OR PROPERTY LINE
TIRE BALES
~15'
50'
RIGHT OF WAY LINE
MONOFILL
BOTTOM OF MONOFILL (10' ABOVE WATER TABLE)
ORIGINAL GROUND
5/3 18+00 DETAILS
12" NON ORGANIC SOIL COVER 2:1 SLOPE
4" TOPSOIL AND SEED
FILL GAPS WITH NATIVE MATERIAL THAT MEETS THE REQUIREMENTS OF NOTE 1.
~1:1
TIRE BALES ~3' X 5' X 3'
6" GAP FOR LEVELING (SEE NOTE 1)
6/3 TIRE BALE STRUCTURE DETAILS
NOTE:
1. VISUAL INSPECTION WILL BE USED TO CONFIRM THE MATERIAL IN CONTACT WITH THE TIRE BALES CONTAINS NO ORGANICS. NO VISIBLE ORGANIC DEBRIS OR CLUMPS OF PEAT WILL BE ALLOWED. SOIL WILL MEET THE INORGANIC CLASSIFICATION PER ASTM 2488.
STATE OF ALASKA 49TH
Larry A Helgeson CE – 9598
Registered Professional Engineer
1/1/13
CENTRAL MONOFILL SERVICES
PALMER MONOFILL
PALMER , AK
TYPICAL SECTIONS
ENVIRONMENTAL MANAGEMENT INCORPORATED
PREPARED: LMR
DRAWN: LMR
REVIEWED: LAH
DATE: 12/6/12
SHEET: 3
OF 5 SHEETS

NOTE:

1. CONTOURS SHOWN ARE 2' MINOR AND 10' MAJOR.
2. ALL SLOPES AND SURFACES WILL BE REVEGETATED WITH GRASS.



CENTRAL MONOFILL SERVICES
PALMER MONOFILL
PALMER , AK

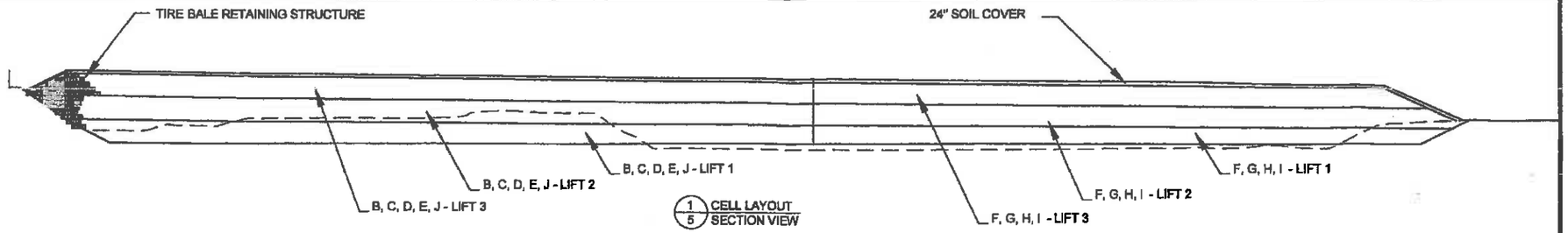
CLOSURE PLAN

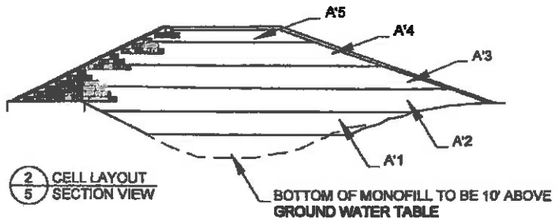
ENVIRONMENTAL MANAGEMENT INCORPORATED

STATE OF ALASKA 49TH
Larry A Helgeson
CE - 9698
1/9/13
Registered Professional Engineer

PREPARED:	LMR
DRAWN:	LMR
REVIEWED:	LAH
DATE:	1/8/13

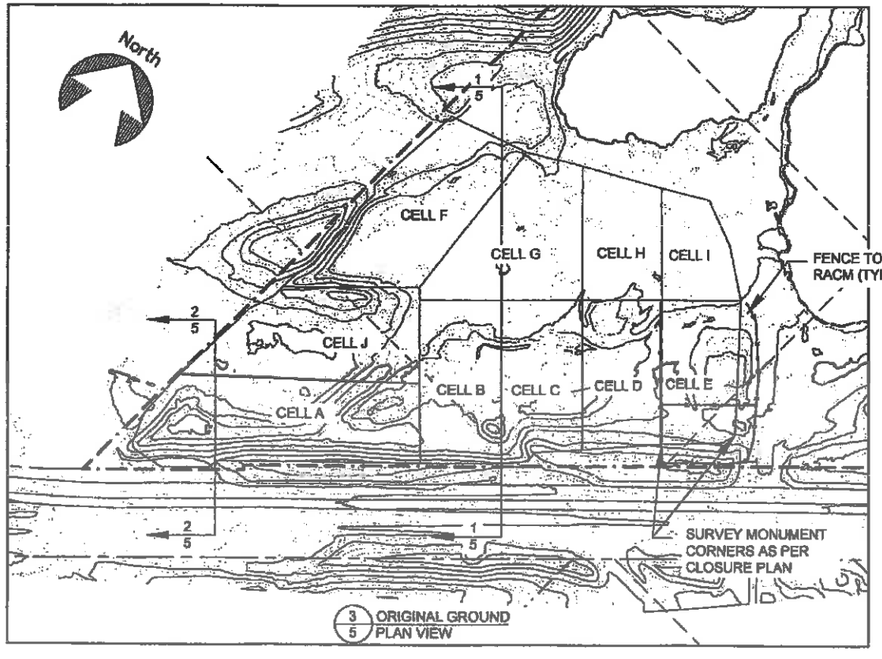
SHEET: 4 OF 5 SHEETS

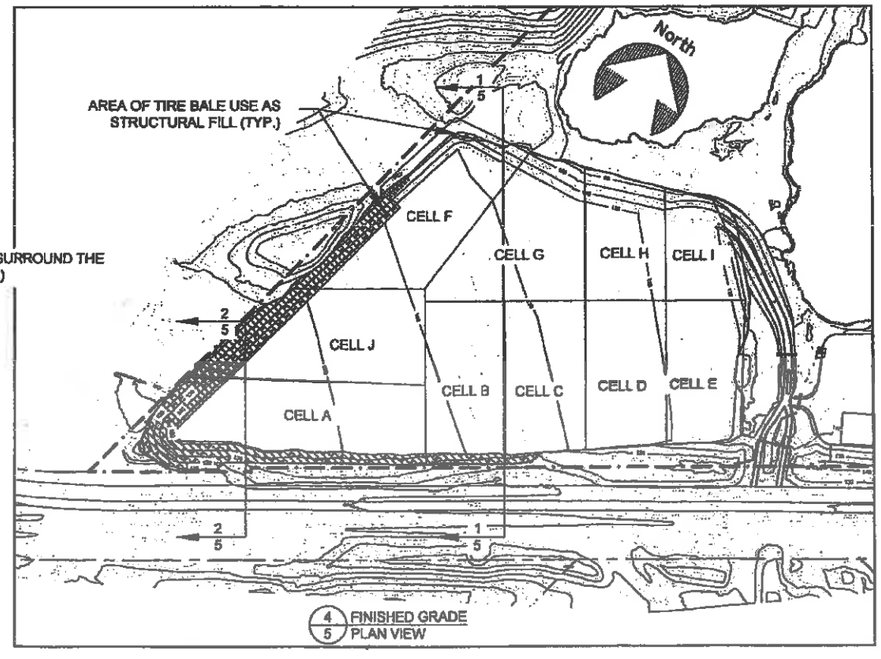




NOTE:

1. CELL E WILL CONTAIN THE RACM. EXACT EXTENTS OF THE ACM WILL BE SURVEYED AND RECORDED. THE CELL WILL HAVE PERMANENT FENCING ON 2 SIDES BUILT AS THE CELL DEVELOPS. THE FENCE ON THE NORTH SIDE AND SOUTHWEST SIDE WILL BE MOVED/BUILT IN PHASES AS THE NEED TO EXPAND ARISES.
2. NON-RACM WILL BE DISPOSED AS PER THE OPERATIONS PLAN.





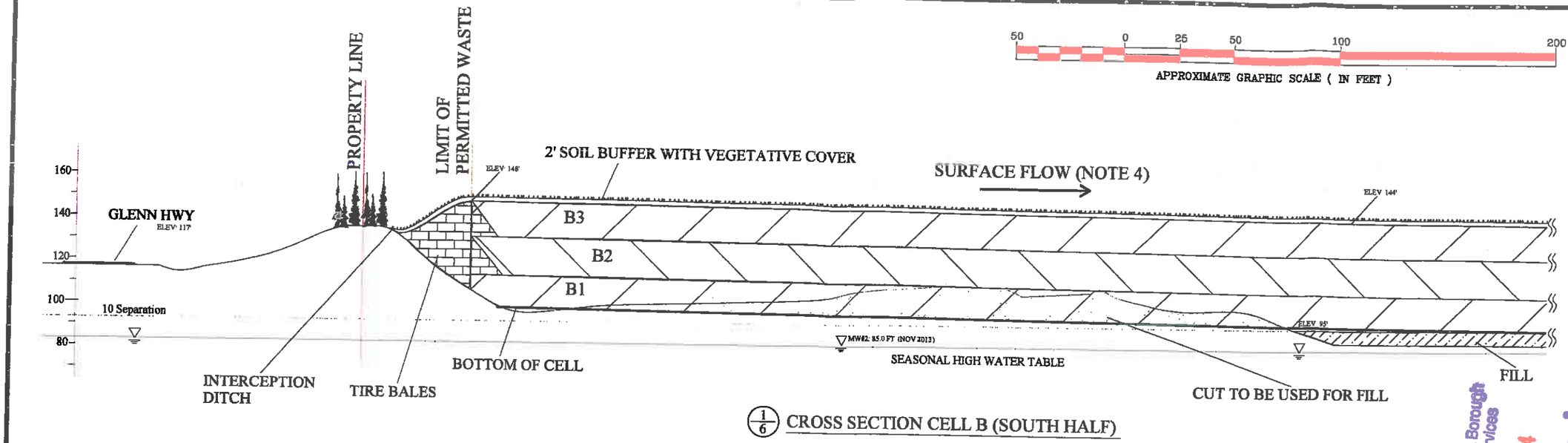
CENTRAL MONOFILL SERVICES
PALMER MONOFILL
PALMER , AK

OPERATIONS PLAN

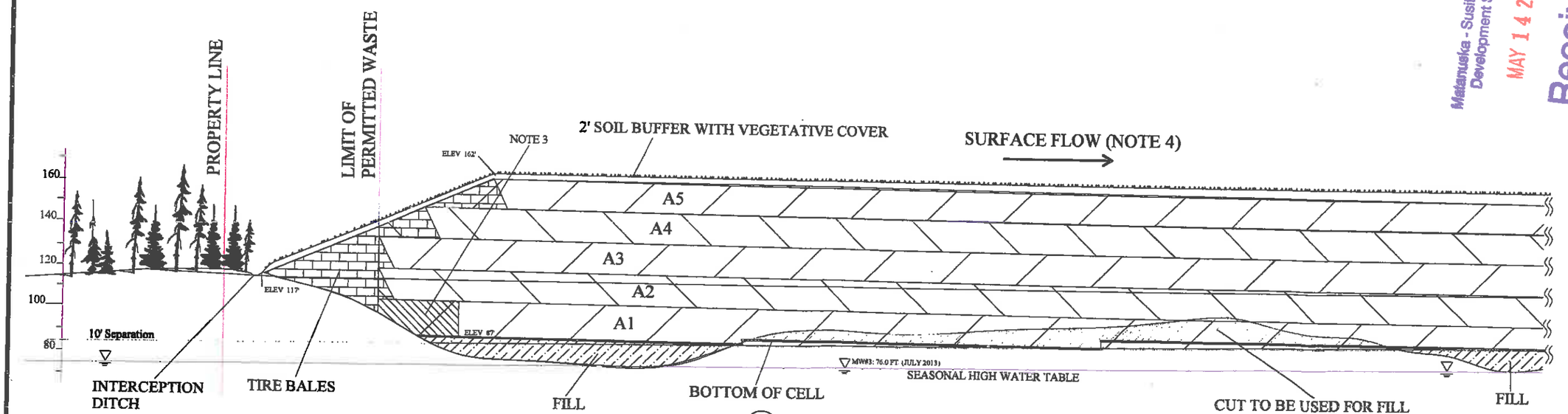
ENVIRONMENTAL MANAGEMENT INCORPORATED

PREPARED: LMR
DRAWN: LMR
REVIEWED: LAH
DATE: 12/6/12

SHEET: 5 OF 6 SHEETS



1/6 CROSS SECTION CELL B (SOUTH HALF)



2/6 CROSS SECTION CELL A (WEST HALF)

NOTES
1. THE VERICAL DATUM TO BE USED FOR CONSTRUCTION WILL BE NAVD 88. THE DATUM IS A GOOD FIT WITH THE MAT SU BOROUGH PROVIDED LIDAR DATA. NOTE: THERE IS APPROXIMATELY A 6.5 FOOT DIFFERENCE BETWEEN THIS DATUM AND THE DATUM THAT WAS USED FOR ORIGINAL DESIGNS.
2. A MINIMUM OF 10 FOOT SEPERATION WILL BE KEPT BETWEEN THE RECORDED SEASONAL HIGH WATER TABLE AND THE BOTTOM OF THE CELLS.
3. INTIALLY WASTE WILL BE PLACED IN THE BOTTOM LAYER STARTING AS SHOWN HERE. ONCE THE FINAL HEIGHT OF THE LAYER IS REACHED A CAP OF LOW PERMIABLE SOILS WILL BE PLACED OVER THE WASTE.
4. THE CELLS WILL BE CONSTRUCTED SO THAT STORM WATER WILL ALWAYS MOVE AWAY FROM THE WORKING FACE OF THE CELL. THE TOPS OF THE ACTIVE CELL LAYER WILL BE CROWNED TO MOVE WATER TO THE SIDES OF THE CELL.

Matanuska - Susitna Borough Development Services
MAY 14 2014
Received

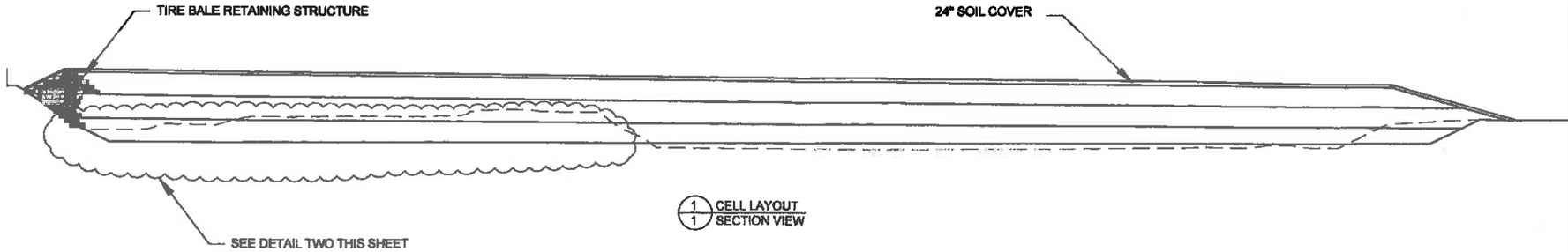
PALMER MONOFILL
PALMER, AK

PALMER MONOFILL CROSS SECTION

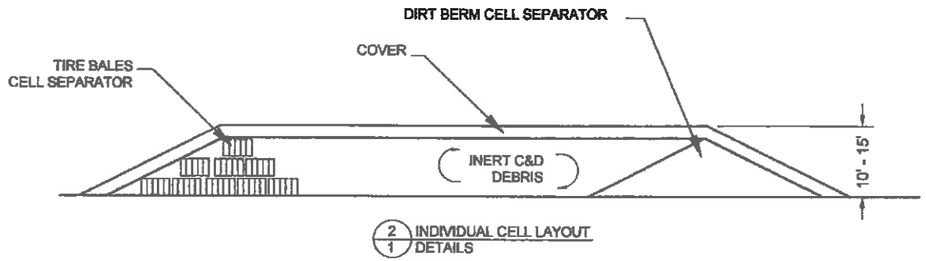
ENVIRONMENTAL MANAGEMENT INCORPORATED

PREPARED: LAH
DRAWN: ADA
REVIEWED: LAH
DATE: 5/5/14

FIGURE
6



1/1 CELL LAYOUT SECTION VIEW



2/1 INDIVIDUAL CELL LAYOUT DETAILS

NOTE:

1. INERT DEBRIS WILL BE COVERED ACCORDING TO DEC MONOFILL PERMIT REQUIREMENTS

CENTRAL MONOFILL SERVICES
PALMER MONOFILL
PALMER, AK

INDIVIDUAL CELL TYPICAL SECTION

ENVIRONMENTAL MANAGEMENT INCORPORATED

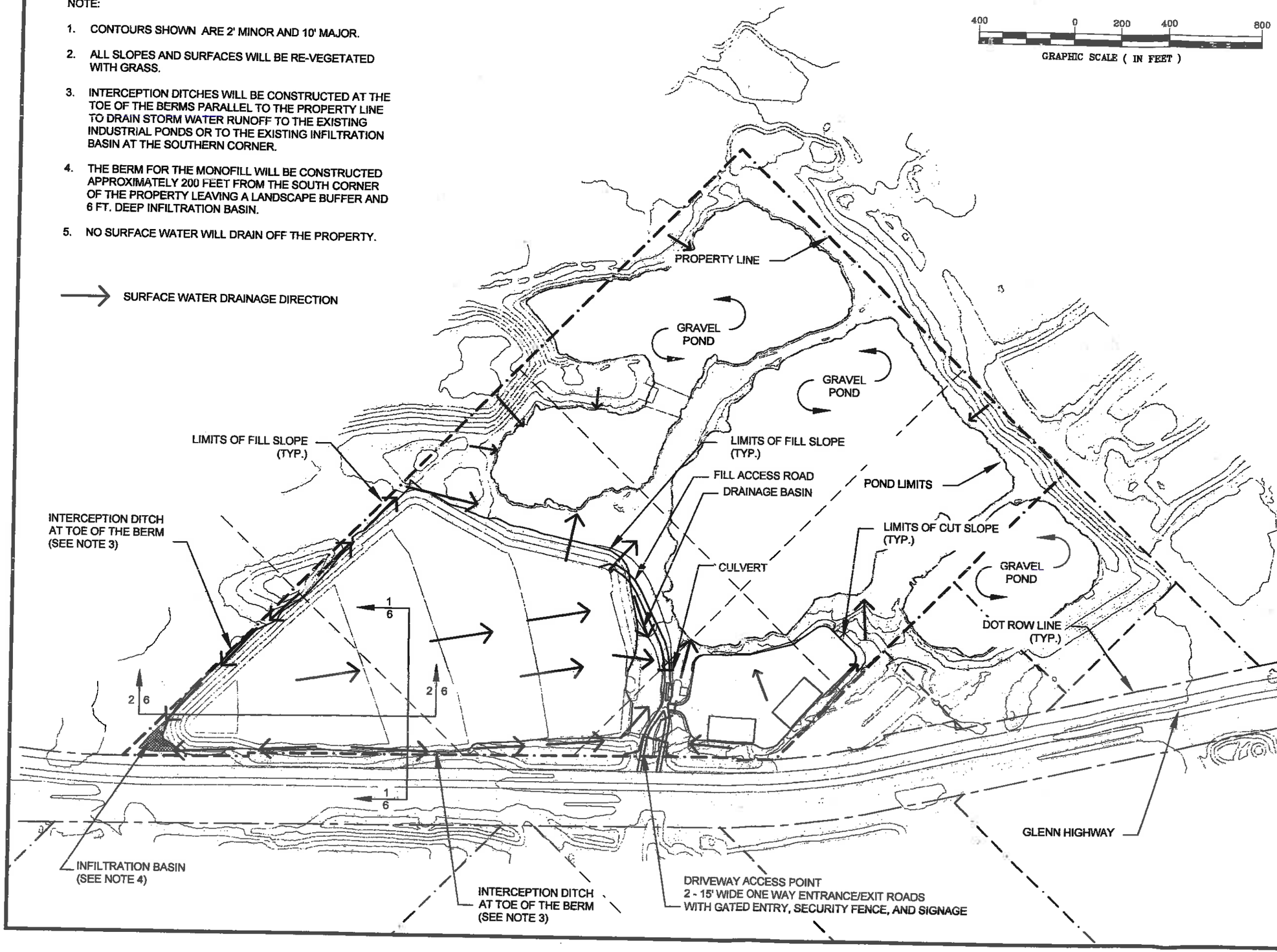
PREPARED: LMR
DRAWN: LMR
REVIEWED: KA
DATE: 2/27/13

SHEET: 7 OF 1 SHEETS

NOTE:

1. CONTOURS SHOWN ARE 2' MINOR AND 10' MAJOR.
2. ALL SLOPES AND SURFACES WILL BE RE-VEGETATED WITH GRASS.
3. INTERCEPTION DITCHES WILL BE CONSTRUCTED AT THE TOE OF THE BERMS PARALLEL TO THE PROPERTY LINE TO DRAIN STORM WATER RUNOFF TO THE EXISTING INDUSTRIAL PONDS OR TO THE EXISTING INFILTRATION BASIN AT THE SOUTHERN CORNER.
4. THE BERM FOR THE MONOFILL WILL BE CONSTRUCTED APPROXIMATELY 200 FEET FROM THE SOUTH CORNER OF THE PROPERTY LEAVING A LANDSCAPE BUFFER AND 6 FT. DEEP INFILTRATION BASIN.
5. NO SURFACE WATER WILL DRAIN OFF THE PROPERTY.

→ SURFACE WATER DRAINAGE DIRECTION



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Development Services
MAY 14 2014
Received

CENTRAL MONOFILL SERVICES
PALMER MONOFILL
PALMER , AK

DRAINAGE PLAN

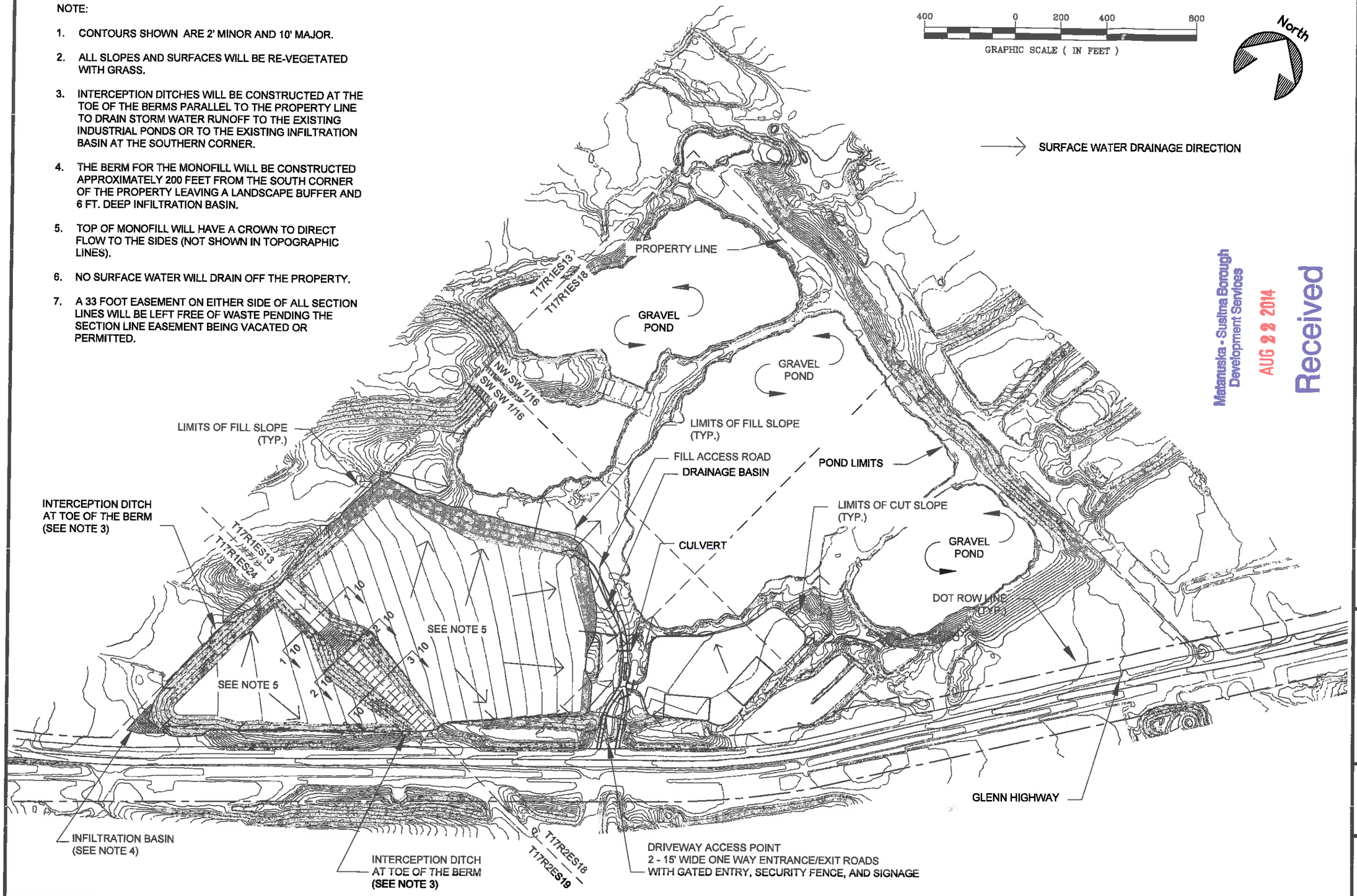
ENVIRONMENTAL MANAGEMENT INCORPORATED

PREPARED: LMR
DRAWN: LMR
REVIEWED: LAH
DATE: 3/3/14

SHEET: 8

NOTE:

1. CONTOURS SHOWN ARE 2' MINOR AND 10' MAJOR.
2. ALL SLOPES AND SURFACES WILL BE RE-VEGETATED WITH GRASS.
3. INTERCEPTION DITCHES WILL BE CONSTRUCTED AT THE TOE OF THE BERMS PARALLEL TO THE PROPERTY LINE TO DRAIN STORM WATER RUNOFF TO THE EXISTING INDUSTRIAL PONDS OR TO THE EXISTING INFILTRATION BASIN AT THE SOUTHERN CORNER.
4. THE BERM FOR THE MONOFILL WILL BE CONSTRUCTED APPROXIMATELY 200 FEET FROM THE SOUTH CORNER OF THE PROPERTY LEAVING A LANDSCAPE BUFFER AND 6 FT. DEEP INFILTRATION BASIN.
5. TOP OF MONOFILL WILL HAVE A CROWN TO DIRECT FLOW TO THE SIDES (NOT SHOWN IN TOPOGRAPHIC LINES).
6. NO SURFACE WATER WILL DRAIN OFF THE PROPERTY.
7. A 33 FOOT EASEMENT ON EITHER SIDE OF ALL SECTION LINES WILL BE LEFT FREE OF WASTE PENDING THE SECTION LINE EASEMENT BEING VACATED OR PERMITTED.



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CENTRAL MONOFILL SERVICES
PALMER MONOFILL
PALMER , AK

CONDITIONED PLAN VIEW
WITH SECTION LINE EXCLUSION
(WITH DRAINAGE PLAN)

ENVIRONMENTAL MANAGEMENT INCORPORATED

PREPARED:	ADA
DRAWN:	ADA
REVIEWED:	LAH
DATE:	8/21/14

SHEET: 9

NOTE:

1. CONTOURS SHOWN ARE 2' MINOR AND 10' MAJOR.
2. ALL SLOPES AND SURFACES WILL BE RE-VEGETATED WITH GRASS.
3. INTERCEPTION DITCHES WILL BE CONSTRUCTED AT THE TOE OF THE BERMS PARALLEL TO THE PROPERTY LINE TO DRAIN STORM WATER RUNOFF TO THE EXISTING INDUSTRIAL PONDS OR TO THE EXISTING INFILTRATION BASIN AT THE SOUTHERN CORNER.
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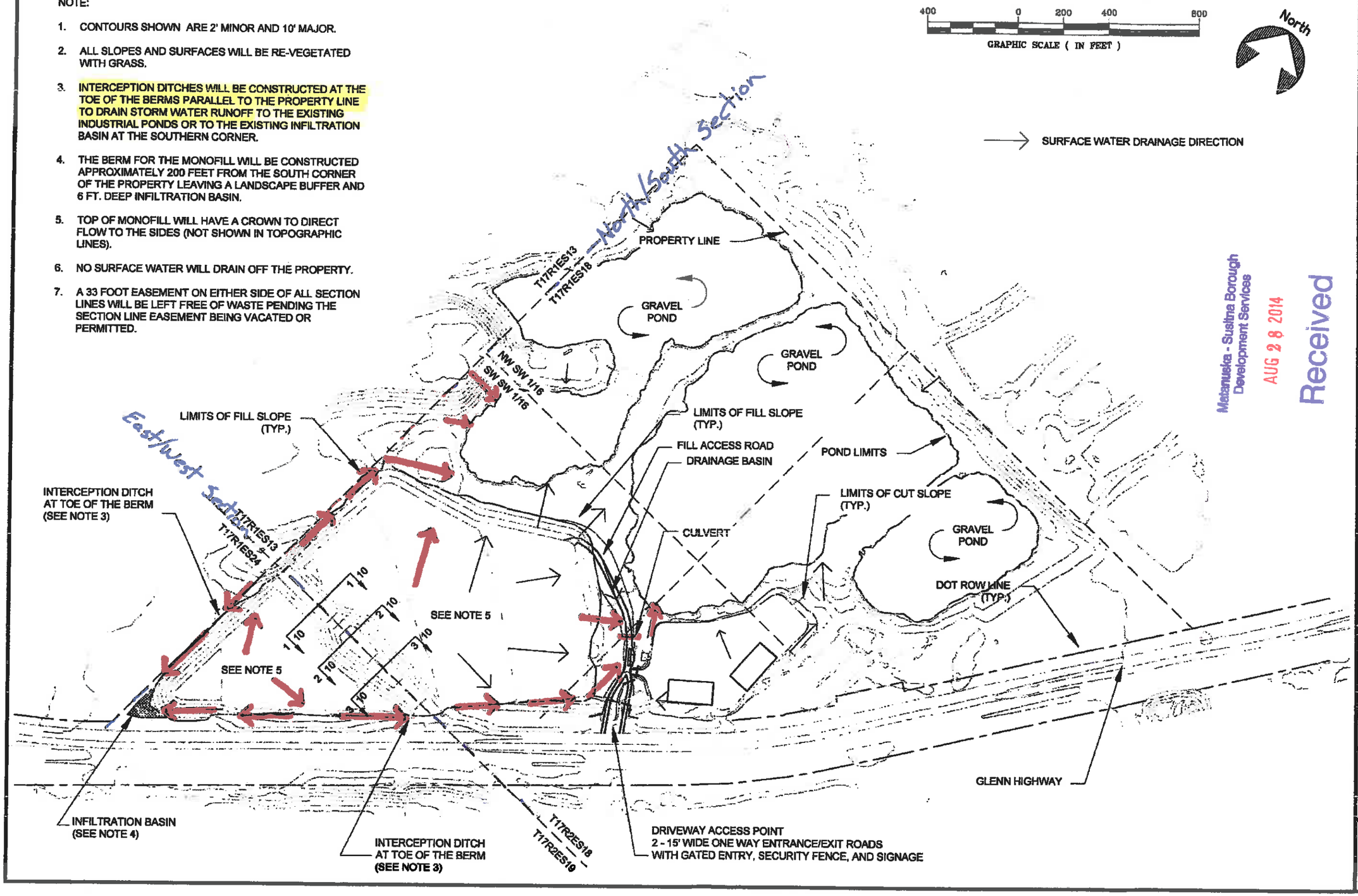


CENTRAL MONOFILL SERVICES
PALMER MONOFILL
PALMER , AK

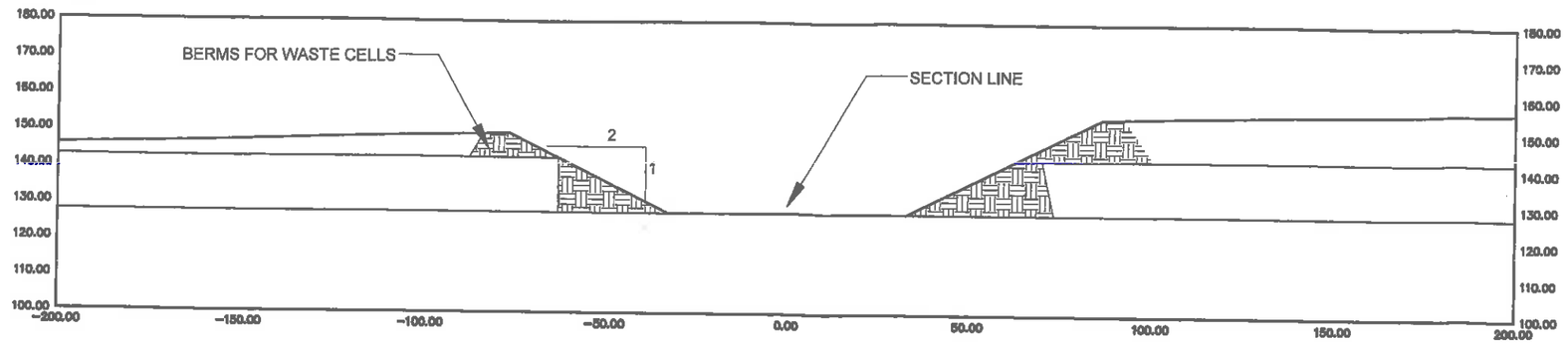
CONDITIONED PLAN VIEW
WITH SECTION LINE EXCLUSION
(WITH DRAINAGE PLAN)

ENVIRONMENTAL MANAGEMENT INCORPORATED

PREPARED: ADA
DRAWN: ADA
REVIEWED: LAH
DATE: 8/21/14

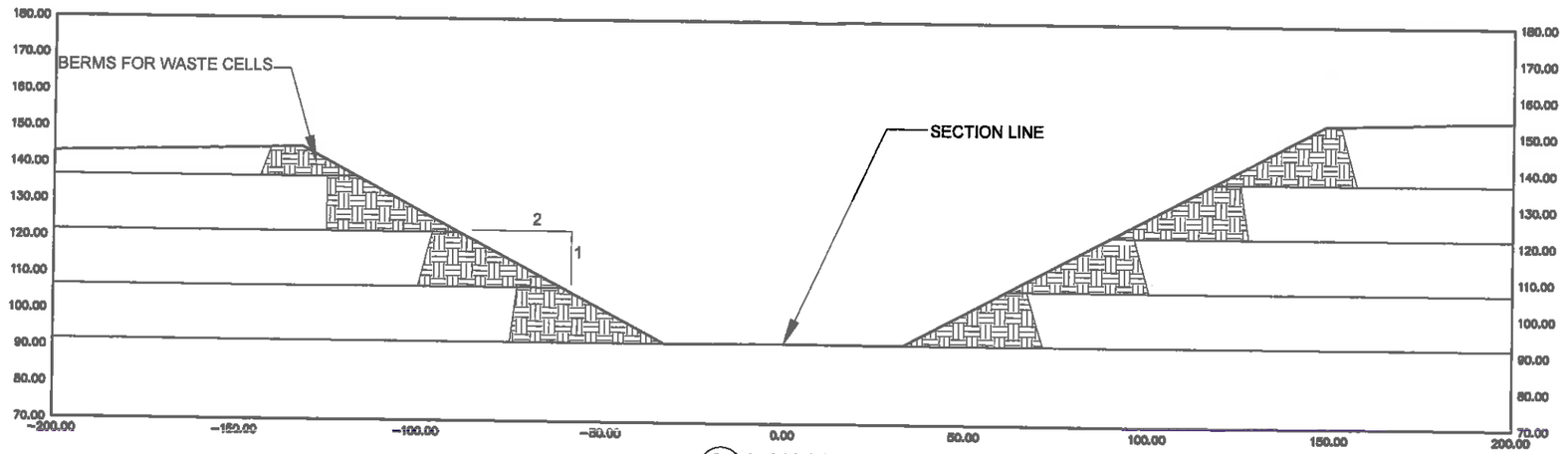
SHEET: 9
8/28/14

Matanuska - Susitna Borough
Development Services
AUG 28 2014
Received

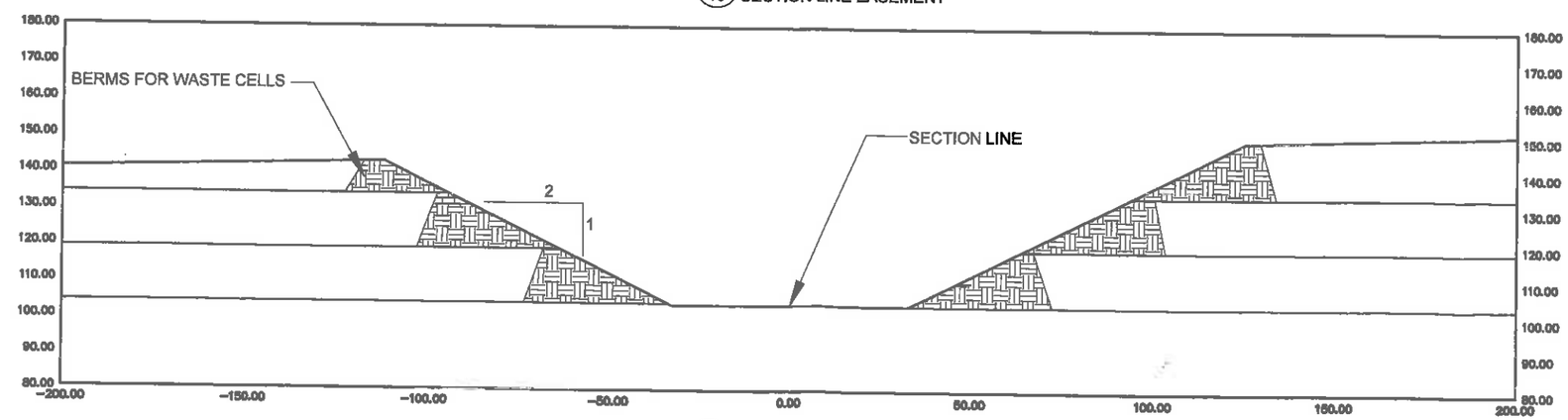


SECTION LINE

1/10 CROSS SECTION VIEW
SECTION LINE EASEMENT



2/10 CROSS SECTION VIEW
SECTION LINE EASEMENT



3/10 CROSS SECTION VIEW
SECTION LINE EASEMENT

40 0 20 40 80 100

GRAPHIC SCALE (IN FEET)

Received
AUG 22 2014
Matanuska - Susitna Borough
Development Services

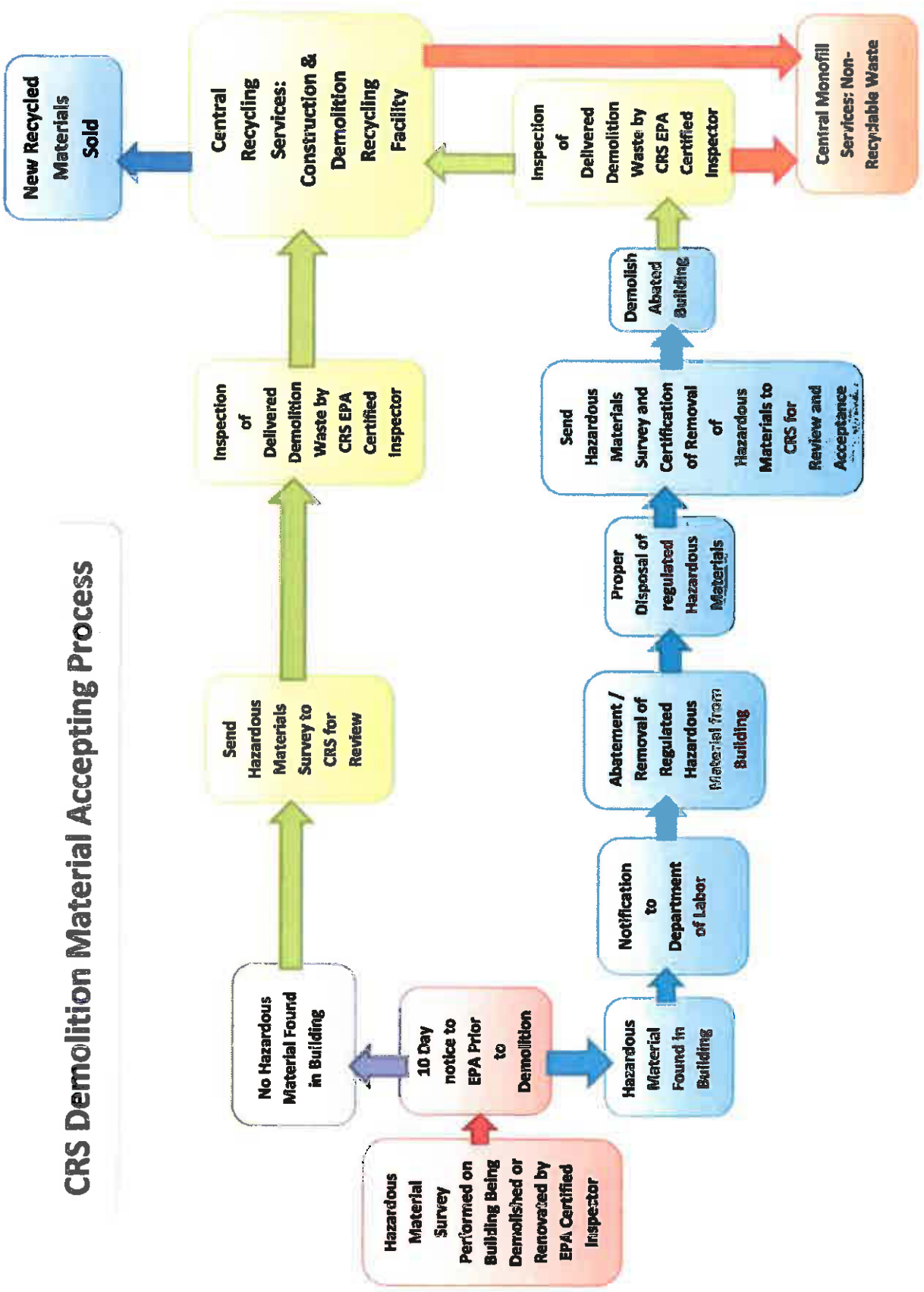
CENTRAL MONOFILL SERVICES
PALMER MONOFILL
PALMER , AK

CONDITIONED CROSS SECTION VIEW
OF SECTION LINE EXCLUSION

ENVIRONMENTAL MANAGEMENT INCORPORATED

PREPARED: ADA
DRAWN: ADA
REVIEWED: LAH
DATE: 8/21/14

SHEET: 10


CRS Demolition Material Accepting Process
Hazardous Material Survey Performed on Building Being Demolished or Renovated by EPA Certified Inspector
No Hazardous Material Found in Building
10 Day notice to EPA Prior to Demolition
Hazardous Material Found in Building
Send Hazardous Materials Survey to CRS for Review
Notification to Department of Labor
Abatement / Removal of Regulated Hazardous Material from Building
Inspection of Delivered Demolition Waste by CRS EPA Certified Inspector
Proper Disposal of regulated Hazardous Materials
Central Recycling Services: Construction & Demolition Recycling Facility
Send Hazardous Materials Survey and Certification of Removal of Hazardous Materials to CRS for Review and Acceptance
Inspection of Delivered Demolition Waste by CRS EPA Certified Inspector
Demolish Abated Building
New Recycled Materials Sold
Central Monofill Services: Non-Recyclable Waste

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ATTACHMENT B – MADDOX AND ASSOCIATES

EVALUATION OF PROPOSED PALMER MONOFILL WITH RESPECT TO POTENTIAL IMPACT ON GROUNDWATER

MADDOX & ASSOCIATES
Geologists (RG, CEG, CHG)
Engineers
Environmental Services

Property Transaction Screens
• ASTM E 1528
Environmental Site Assessments
• Phase I-ASTM E 1527
Subsurface Site Characterization
• Phase II
Landfill Investigations
• Landfill Gas
• Groundwater
Site Remediation-Soil/Groundwater
• Phase III
UST Management/Removal
Geotechnical & Geophysical Invest.

EVALUATION OF PROPOSED PALMER MONOFILL WITH RESPECT TO POTENTIAL IMPACT ON GROUNDWATER

Prepared by:

MADDOX & ASSOCIATES, INC.
39371 SAN THOMAS COURT
MURRIETA, CA 92562

Prepared for:

CENTRAL ENVIRONMENTAL, INC.
311 N. SITKA STREET
ANCHORAGE, AK 99501

December 13, 2013

39371 San Thomas Court • Murrieta, CA 92562 • Cell: (951) 805-1100 • E-mail: smaddox@ca.rr.com

REPORT SUBMITTAL

All work performed during the planning of this project, the interpretation of data collected, and the preparation of this report was done according to the accepted standards of the profession. To the best of my knowledge, all of the data presented in this report are accurate. The stated conclusions are based upon a finite amount of data available--additional data, if available, may result in modification of some of the conclusions presented herein.

Respectfully submitted,

Steve Maddox

Steve Maddox, CA PG 4814/CHG 298; AZ PG 529

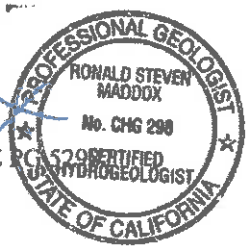

TABLE OF CONTENTS

SECTION/SUBJECT		PAGE
1.0	EXECUTIVE SUMMARY	1
2.0	INTRODUCTION	3
2.1	SITE DESCRIPTION	4
2.2	SITE CONCEPTUAL MODEL (SCM)	4
3.0	MONOFILL DESCRIPTION	6
4.0	PHYSIOGRAPHY	8
5.0	GEOLOGY	8
5.1	GEOLOGIC SETTING	8
5.2	GEOLOGIC UNITS IN THE SITE AREA	8
5.3	SITE GEOLOGY	9
6.0	HYDROGEOLOGY	9
6.1	SITE HYDROGEOLOGY	10
6.2	STUDY BY J.A. MUNTER: POTENTIAL HYDROLOGIC EFFECTS OF GRAVEL EXTRACTION SOUTH OF PALMER, ALASKA	11
6.3	WATER QUALITY IN THE PONDS LOCATED WITHIN THE SITE	12
7.0	RELATION OF PROPOSED MONOFILL TO AREA HYDROGEOLOGY	13
7.1	RESULTS OF LEACHING OF TYPICAL MONOFILL MATERIAL	13
7.1.1	OTHER STUDIES INVESTIGATING THE POTENTIAL IMPACT OF LEACHATES DERIVED FROM INERT LANDFILLS ON GROUNDWATER	15
7.2	POTENTIAL FOR INFILTRATION OF PRECIPITATION INTO THE MONOFILL	17

7.2.1	DESCRIPTION AND SIGNIFICANCE OF RAINFALL OCCURRENCE	19
7.3	MOVEMENT OF GROUNDWATER	20
8.0	GROUNDWATER MODELING	21
9.0	CONCLUSIONS	26
10.0	SELECTED REFERENCES	29

TABLES

7.1	RESULTS OF ANALYSES OF SHREDDED MONOFILL MATERIALS	14
7.2	C&D LANDFILLS-SEVEN CONSTITUENTS THAT ARE PROBLEMATIC IN LEACHATE	15
8.1	MAXIMUM CONCENTRATIONS VERSUS TIME	25
8.2	DISTANCE OF ANALYTE TRAVEL VERSUS TIME	25
8.3	REDUCTION IN ANALYTE CONCENTRATION VERSUS TIME	25

FIGURES **Following Page**

2.1	SITE LOCATION MAP	4
2.2	EXISTING CONDITIONS	4
3.1	CONDITIONAL USE PERMIT SITE PLAN-PALMER MONOFILL	6
3.2	TYPICAL SECTIONS	7
5.1	HYDROGEOLOGIC FRAMEWORK OF THE MATANUSKA-SUSITNA VALLEY, ALASKA	8
5.2	BASE OF HOLOCENE OUTWASH AND ALLUVIUM	9
5.3	HYDROGEOLOGIC SECTIONS LOCATION MAP	9

5.4	HYDROGEOLOGIC CROSS SECTIONS	9
5.5	CMS PALMER MONOFILL MONITORING WELL LOCATION MAP	9
6.1	UPDATED WATER-TABLE CONTOUR MAP AND LOCATIONS OF 2009 SYNOPTIC WATER-LEVEL MEASUREMENTS	10
8.1	STATIC GROUNDWATER ELEVATIONS	23
8.2	1,2-DCA SOLUTE TRANSPORT	24
8.3	PCE SOLUTE TRANSPORT	24
8.4	BENZENE SOLUTE TRANSPORT	24
8.5	BENZENE INITIAL CONCENTRATIONS	24
8.6	BENZENE CONCENTRATIONS AFTER 180 DAYS	24
8.7	BENZENE CONCENTRATIONS AFTER 1 YEAR	24
8.8	1,2-DCA INITIAL CONCENTRATIONS	24
8.9	1,2-DCA CONCENTRATIONS AFTER 180 DAYS	24
8.10	1,2-DCA CONCENTRATIONS AFTER 1 YEAR	24
8.11	PCE INITIAL CONCENTRATIONS	24
8.12	PCE CONCENTRATIONS AFTER 1 YEAR	24
8.13	PCE CONCENTRATIONS AFTER 2 YEARS	24
8.14	PCE CONCENTRATIONS AFTER 3 YEARS	24
8.15	PCE CONCENTRATIONS AFTER 5 YEARS	24

APPENDICES

A	LABORATORY ANALYSES OF SHREDDED MONOFILL MATERIALS
B	MONITORING WELL/BORING CONSTRUCTION LOGS

C MONOFILL WATER TABLE 7-1-13 CONTOUR MAP

MADDOX & ASSOCIATES
Geologists (RG, CEG, CHG)
Engineers
Environmental Services

Property Transaction Screens
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Environmental Site Assessments
• Phase I-ASTM E 1527
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• Phase III
UST Management/Removal
Geotechnical & Geophysical Invest.

December 13, 2013

EVALUATION OF PROPOSED PALMER MONOFILL WITH RESPECT TO POTENTIAL IMPACT ON GROUNDWATER

1.0 EXECUTIVE SUMMARY

Maddox & Associates, Inc. (M&A) was asked to review the plans and procedures for the construction of an inert monofill near Palmer, Alaska. The main goal was to evaluate the potential for possible contamination of the underlying aquifer by leachate that might be released from the inert materials. M&A has experience evaluating contamination potential and associated landfill problems at over 50 sanitary landfills. This work has been conducted in all of the regions of the United States and in Canada.

A Site Conceptual Model (SCM) was constructed to provide a brief, overall understanding of the proposed monofill and its relation to the underlying aquifer. A summary of the SCM indicates that it will be constructed in such a manner and will contain inert materials such that it will not pose a threat to groundwater or human health; limited infiltration by low rates of local precipitation will minimize the volume of liquid entering the inert materials; groundwater modeling indicates that, should any contaminants that pose a threat to human health enter the groundwater beneath the site, they would not travel significant distances before they began to degrade and their concentrations would be reduced to low levels (as much as 96% after one-mile).

The site is located approximately 3-miles southwesterly of Palmer, Alaska; it has been historically used as a gravel pit. The portion of the site to be used as a monofill will comprise 35.5 acres. The materials it will receive are classified as inert, that is, they do not contain municipal solid waste, putrescible waste, or hazardous waste, and other types of waste that may contribute contaminants of concern to underlying groundwater. The monofill will be comprised of ten major cells to be constructed over time, beginning with Cell A (or, possibly B), in the southwest corner of the monofill. The working face receiving the inert materials will comprise, at any one time, an area measuring

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approximately 120-feet by 50-feet. Therefore, the surface area of the monofill most vulnerable to infiltration by precipitation at any one time will be kept to a minimum.

The proposed monofill meets Alaska State requirements for inert landfills. No liner is required and the base of the inert materials will be 10-feet above the water table.

The glacially-derived sediments beneath the site contain an unconfined aquifer of significant thickness. The calculated volume of groundwater flowing beneath the footprint of the proposed monofill is in excess of 6-million gallons per day. The base of the inert materials within the proposed monofill will be a minimum of 10-feet above the seasonal high water table, and will not be immersed in water. Kikuchi (2013) concluded that the groundwater system is in a state of dynamic equilibrium, characterized by water-level fluctuation about a constant average state, with no long-term trends in aquifer-system storage. Thus, no long-term fluctuation in groundwater levels beneath the site are likely to occur, and the initial minimum separation of the inert materials from the water table will be maintained.

Leaching analysis was conducted on three residual samples of typical shredded monofill materials (such as will be deposited at the proposed Palmer monofill) by SGS Laboratories, Anchorage, Alaska (**Appendix A**). The material came from stockpiled materials at Central Recycling Service's (CRS) facility in Anchorage, Alaska. No contaminants considered to be hazardous by the Alaska Department of Environmental Conservation (ADEC) were detected in the leachate. It appears that the constituents present in the inert materials will not present a threat to the water table at the site.

Studies of leachates produced by inert landfills by the U.S. Environmental Protection Agency (USEPA) and other agencies concluded that an unlined inert landfill may be properly permitted if the site is properly evaluated in advance, only inert non-deleterious materials are landfilled, and the site is properly managed during its lifetime and following closure. The procedures specified in the Operations Plan for the monofill conform to these recommendations.

The USEPA determined that there are seven constituents that are problematic in leachates derived from inert landfills. They are: 1,2-DCA, Methylene chloride, Cadmium, Iron, Lead, Manganese, and Total Dissolved Solids (TDS). Only one of these problematic constituents was detected in the leachate from the inert materials tested by SGS Laboratories, and that was manganese, considered to be non-hazardous.

The annual precipitation in the area around Palmer, Alaska is approximately 15.49-inches. A portion of this rainfall will infiltrate the surface of the monofill, and a larger portion will run off the surface. Compaction of the inert materials during filling operations will reduce the void ratio and the ability of water to move through the materials will be significantly reduced. This will reduce the rate of infiltration and increase the rate of runoff. Numerous studies have determined that infiltration is increased in the summer and reduced in the winter. The long period of reduced temperatures will reduce infiltration of precipitation.

Groundwater modeling was conducted in order to understand the movement and concentrations of potential contaminants in the highly permeable aquifer beneath the site. Three constituents that are commonly the result of human activities, and each of which is a carcinogen, were selected for modeling. They are 1,2-DCA, PCE, and benzene. These compounds are not allowed as constituents in the inert materials to be deposited at the monofill, however the unintended/accidental release of one or more of these chemicals within the monofill could have a detrimental impact on the aquifer. This would be a "worst case" condition, so they were chosen as the subject of this model.

The results indicate that after travelling approximately one-mile, all of these contaminants experienced a very significant reduction in concentration, ranging from 70% to 96%. The demonstrated decline in concentration of all three of these chemicals over time and distance is an indication that they are breaking down chemically and will essentially cease to be present in detectable concentrations after a relatively short transport distance beyond the monofill boundaries. There is no indication that any of these compounds, were they to be present, would reach the groundwater beneath the site due to the very low likelihood of any liquids passing through the thickness of the monofill.

Our review of the proposed monofill, including the inert materials it will receive, it's construction, operations, closure plans, geologic/hydrogeologic setting, apparent unlikelihood of significant infiltration, and groundwater modeling results indicate that the site will not pose a threat to the underlying aquifer.

2.0 INTRODUCTION

Maddox & Associates, Inc. (M&A) was asked to review the plans and procedures for the construction of an inert monofill near Palmer, Alaska. The main goal was to evaluate the potential for possible contamination of the underlying aquifer by leachate that might be released from the inert refuse.

M&A has experience evaluating contamination potential and associated landfill problems at over 50 sanitary landfills. This work has been conducted in all of the regions of the United States and in Canada.

M&A was provided with copies of the "Inert Waste Monofill Solid Waste Permit Application", with all of its attachments, one of which was the "Operations Plan" for the monofill. In addition, M&A was provided with numerous other documents and communications pertaining to the proposed monofill.

Additionally, M&A obtained data pertinent to the geology and hydrogeology in the site area for review and study. Personal communications were conducted with Agencies, laboratories, and other pertinent persons and entities.

The following document is a report on our findings.

2.1 SITE DESCRIPTION

The proposed monofill will be located on 120 acres located on tax lot C10, in Township 17 North, Range 2 East, Section 18 in the Seward Meridian and tax lot B6 located within Township 17 North, Range 2 East, Section 19 in the Seward Meridian, within Palmer, Alaska (**Figure 2.1**).

Lot C10 is in the southwest corner of Section 18 and Lot B6 is north of the Glenn Highway in the northwest corner of Section 19.

The site has historically been used as a gravel pit. The site contours vary greatly as different sections of the lot have been mined for gravel, with elevations ranging from 80 feet above mean sea level (amsl) to 150-feet amsl. The surrounding slopes are at the natural angle of repose for the native soils, and in some cases as steep as 2:1.

The monofill will occupy 35.5 acres over lots C10 and B6 and maintain a 100-foot buffer from the existing industrial ponds located on the property (**Figure 2.2**).

The natural soils on-site vary from well-graded sandy gravel, to areas of clay and silt that were not suitable for mining. The three industrial ponds within the property are reported to be as deep as 90 feet. The ponds are manmade and caused by past industrial gravel dredging. These water bodies do not have inflowing or out-flowing surface water and are fed primarily by groundwater and some onsite surface flow.

Permafrost has not been encountered at any time on the site during historical use and the area of Palmer is in a sporadic permafrost zone. The likelihood of permafrost at the site is low.

The Matanuska River lies approximately 0.7-miles to the southeast. This river ultimately discharges into the Knik Arm, located approximately 4.5-miles to the southwest.

Annual precipitation is reported to be approximately 15.49-inches.

2.2 SITE CONCEPTUAL MODEL (SCM)

The purpose of the Site Conceptual Model (SCM) that follows is to provide a brief, overall understanding of the proposed monofill and its relation to the underlying aquifer. It is placed at the beginning of this document to provide the reviewer with the key elements needed to properly evaluate the proposed project as the review progresses.

The proposed monofill will be comprised of 35.5-acres, located within the southwest corner of a 120 acre plot of land south of Palmer, Alaska. The materials it will receive are classified as inert, that is, they does not contain types of refuse such as general municipal solid waste, putrescible waste, or hazardous waste, and other types of waste that are known to contribute significant contaminants of concern to underlying groundwater.

The monofill will be comprised of ten major cells to be constructed over time, beginning with Cell A (or, possibly B), in the southwest corner of the monofill. The working face receiving the inert materials will comprise, at any one time, an area approximately measuring approximately 120-feet by 50-feet. Therefore, the surface area of the monofill most vulnerable to infiltration by precipitation at any one time will be kept to a minimum.

The site is located in an area underlain by glacial outwash materials, typically sands and gravels, with some minor clays/silts. These granular glacial sediments contain an unconfined aquifer of significant thickness which underlies the site. Calculations of the volume of groundwater flowing beneath the footprint of the proposed monofill are in excess of 6-million gallons per day--flows of this magnitude are not uncommon in these types of materials. The base of the inert materials within the proposed monofill will be a minimum of 10-feet above the seasonal high water table, and will not be immersed in water.

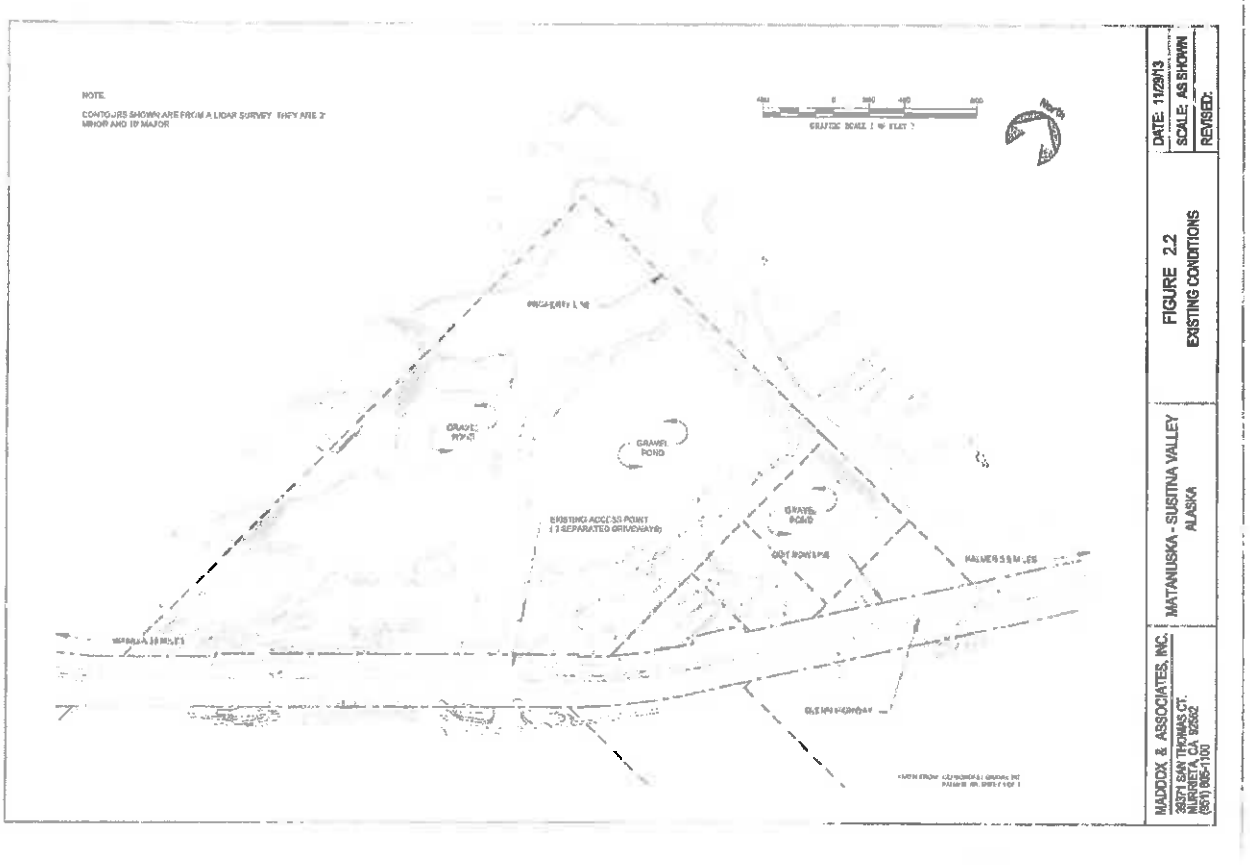
Leaching analysis was conducted on three residual samples of typical shredded monofill materials (such as will be deposited at the proposed Palmer monofill) by SGS Laboratories, Anchorage, Alaska (**Appendix A**). The material came from stockpiled materials at Central Recycling Service's (CRS) facility in Anchorage, Alaska. The results indicate that no contaminants considered to be hazardous by the Alaska Department of Environmental Conservation (ADEC) were detected in the leachate. Only sulfate, manganese, sodium, and zinc were detected at or above laboratory detection limits. Of these, only manganese and sulfate were detected at concentrations above the secondary Maximum Contamination Limit (MCL). Secondary MCLs are non-enforceable guidelines regulating contaminants that may cause cosmetic effects (such as skin or tooth discoloration) or aesthetic effects such as taste, odor, or color). It appears that the constituents present in the inert materials will not present a threat to the water table at the site.

The leaching method employed on the shredded monofill materials was the Synthetic Precipitation Leaching Procedure (SPLP); this method is recognized and accepted by the Unite States Environmental Protection Agency (USEPA).

Based upon the annual precipitation amount and patterns, and the mechanics of infiltration, it is not likely that a significant volume of liquids will pass through the monofill bottom into the water table.

Groundwater modeling, by use of the FlowPath II Ver. 1.3.2.1 software, indicates that, in the unlikely circumstance that any contaminants that are a risk to human health may enter the groundwater beneath the site, they would not travel significant distances before their concentrations would be reduced to relatively low levels. The modeling results will be used to determine the proper location of guard wells to intercept any such contaminants, allowing for the early detection of any groundwater contamination by fluids that may originate in the monofill.

DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
SITE
MADDOX & ASSOCIATES, INC.
39371 SAN THOMAS CT.
MURRIETA, CA 92562
(951) 805-1100
MATANUSKA - SUSITNA VALLEY
ALASKA
FIGURE 2.1
SITE LOCATION MAP
DATE: 11/29/13
SCALE: AS SHOWN
REVISED:


NOTE
CONTOURS SHOWN ARE FROM A LIDAR SURVEY THEY ARE 2' MINOR AND 10' MAJOR
GRAPHIC SCALE 1" = 1'-0"
NORTH
GRAVEL PIT
GAMEL POND
EXISTING ACCESS POINT (3 SEPARATED DRIVEWAYS)
GRAVEL ROAD
OLD MINERS
PALMER-SUTTON
GLENN HIGHWAY
MADDOX & ASSOCIATES, INC.
3537 SAN THOMAS CT.
ANCHORAGE, AK 99502
(907) 865-1100
MATANUSKA - SUSITNA VALLEY
ALASKA
FIGURE 2.2
EXISTING CONDITIONS
DATE: 11/29/13
SCALE: AS SHOWN
REVISED:

The SCM indicates that the construction and operation of the proposed monofill is not likely to have a detrimental impact on the groundwater beneath or down-gradient of the site.

3.0 MONOFILL DESCRIPTION

The proposed monofill will comprise approximately 35.5 acres, and will reach a maximum height of 150-feet above mean sea level, about the same height as the highest level currently on the property (**Figure 3.1**).

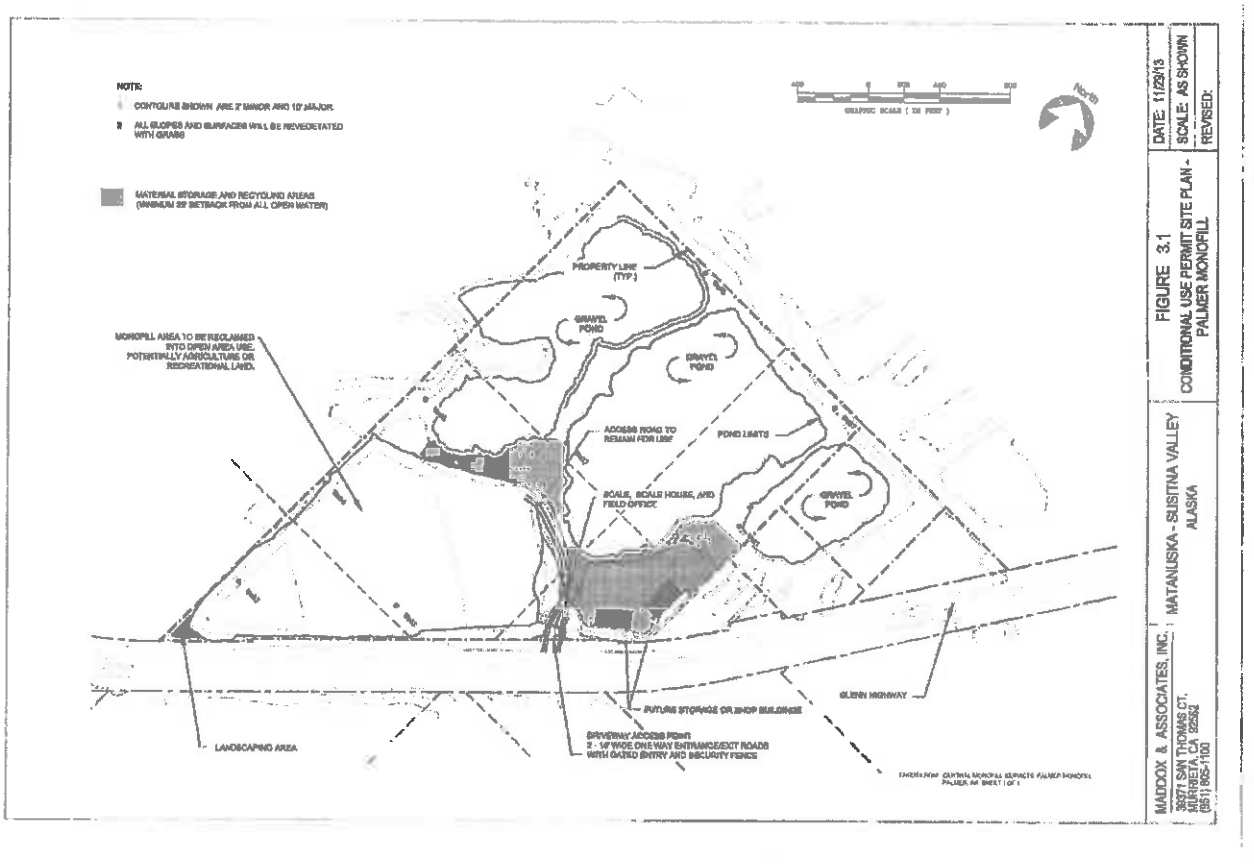
The inert debris brought to the site will be primarily building demolition debris. Some of the material will come directly from demolished buildings in the Matanuska-Susitna Borough. Most of the waste material will be processed and shredded residual recycling waste material. Shredded residual material is a variety of non-hazardous, inert material which is shredded to a size of approximately 12-inches and smaller. This material is the by-product of a recycling facility in Anchorage, Alaska called Central Recycling Services. Central Recycling Services (CRS) specializes in recycling inert construction and demolition waste. CRS will also operate a recycling facility at Palmer to process construction and demolition debris. The material brought to CRS will be both manually and mechanically sorted, screened, and processed through to ensure that the material is free of hazardous material, putrescible material and/or liquids. The shredded inert material will be placed on a trailer and hauled to the monofill in Palmer.

The following materials are not allowed into the monofill:

- PCBs
- Household waste
- Putrescible waste
- Liquids
- Compressed gas cylinders
- Batteries
- Appliances with CFC/HCFC
- Chemical Waste
- Animal carcasses
- Petroleum contaminated materials

Control of Organic Material:

- No organic soils will be allowed to be in contact with any inert debris or tire bales used in the landfill;
- No organic materials other than dry wood construction debris will be allowed in the landfill;
- Clean tire bales (no organic debris attached) will be used for construction of berms or subgrade structural fill.


NOTE:
CONTOURS SHOWN ARE 2' MINOR AND 10' MAJOR.
ALL SLOPES AND SURFACES WILL BE REVEGETATED WITH GRASS
MATERIAL STORAGE AND RECYCLING AREAS (MINIMUM 25' SETBACK FROM ALL OPEN WATER)
PROPERTY LINE (TYP.)
GRAVEL POND
GRAVEL POND
MONOFILL AREA TO BE RECLAIMED INTO OPEN AREA USE, POTENTIALLY AGRICULTURE OR RECREATIONAL LAND.
ACCESS ROAD TO REMAIN FOR USE
POND LIMITS
SCALE, SCALE HOUSE, AND FIELD OFFICE
GRAVEL POND
GLENN HIGHWAY
FUTURE STORAGE OR SHOP BUILDINGS
LANDSCAPING AREA
DRIVEWAY ACCESS POINT 2 - 14' WIDE ONE WAY ENTRANCE/EXIT ROADS WITH GATED ENTRY AND SECURITY FENCE
GRAPHIC SCALE (IN FEET)
North
MADDOX & ASSOCIATES, INC.
3637T SAN THOMAS CT.
MERIDETA, CA 95842
(661) 965-1700
MATANUSKA - SUSITNA VALLEY
ALASKA
FIGURE 3.1
CONDITIONAL USE PERMIT SITE PLAN - PALMER MONOFILL
DATE: 11/29/13
SCALE: AS SHOWN
REVISED:

Following are the types of materials allowed into the monofill:

The monofill could accept anything allowed by the ADEC permit. The monofill is regulated by the ADEC to protect the public health, safety, convenience, and welfare.

Waste Placement:

The inert material will be placed to fill the natural and manmade dry voids of the property and take advantage of all the onsite features such as existing material berms and valleys.

The elevation of the bottom layer of the waste disposal cells will be established using historical groundwater information. This historical groundwater information was measured over four seasons to determine the seasonal high groundwater elevation. The bottom cell will be located a minimum 10 feet above the established seasonal high-water levels.

A total of 10 cells main will be constructed over the life of the monofill; the cells will be identified as A through I. The first cell to be constructed will be Cell A or B, with the rest of the cells being constructed in the order which best facilitates progress of the filling operations.

After each cell lift is filled completely (See **Figure 3.2** for typical cell sections), a bulldozer will spread 6"-12" of excess soil, strippings, and non-organic overburden on top of the cell's inert debris, creating a fire barrier.

As the top sections of the monofill are completed to final height, 24-inches of native or imported soil will be spread over the top to serve as a final cap and to allow the re-establishment of vegetation on the site within a reasonable period of time.

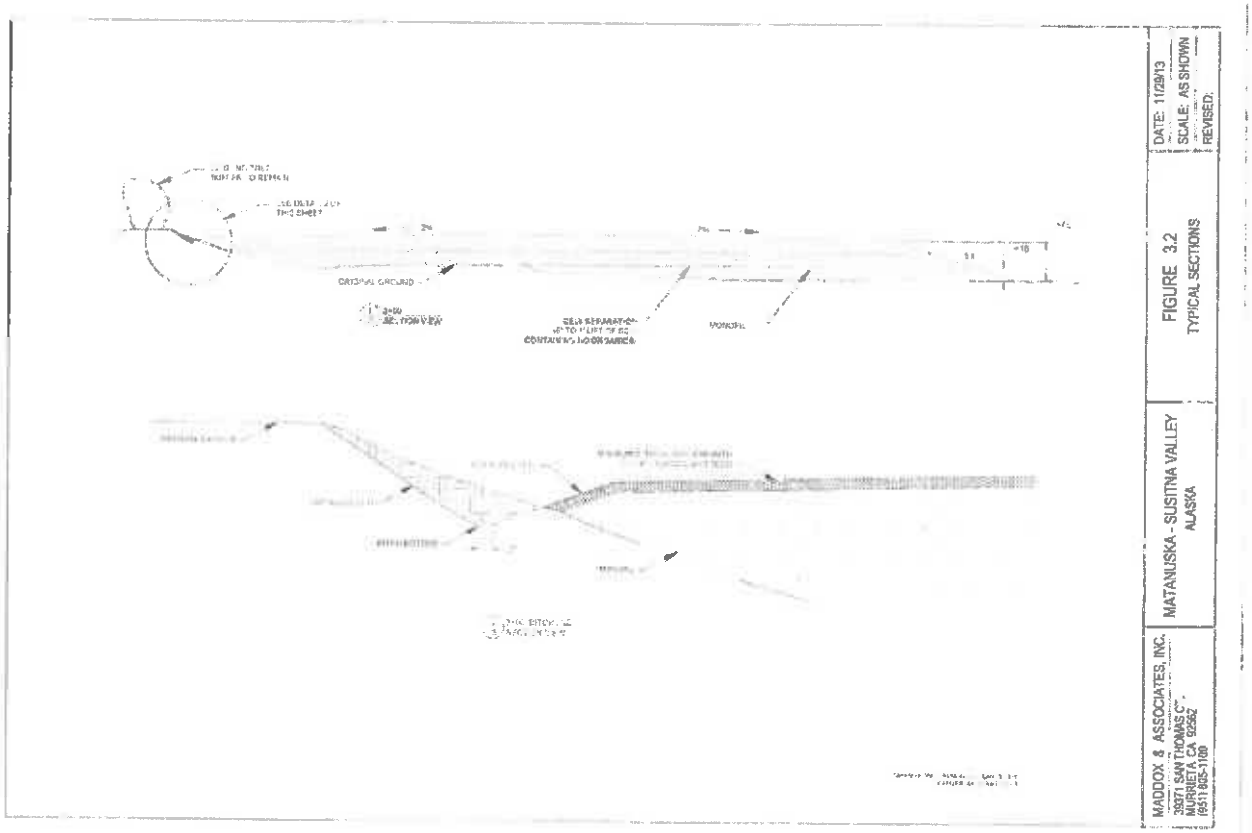
Slopes will be established as the monofill is constructed to maintain structural stability of the filled materials and to establish the necessary surface drainage to divert as much surface water as possible off of the monofill surface and thus minimize the amount of potential infiltration of water into the inert debris. The slopes will be 2:1 at their steepest when reinforced with tire bales, and 3:1 or less everywhere else. These are slopes of significant grade:

- 2:1 = 50% grade
- 3:1 = 33% grade

Where present, such grades will greatly facilitate the flow of precipitation from the monofill surface, thus significantly reducing the amount of infiltration into the refuse.

Alaska State requirements are met for inert landfill with respect to the following:

- Minimum separation from water table of 10 feet
- No liner required


ORIGINAL GROUND
MONOFILL
FIGURE 3.2
TYPICAL SECTIONS
DATE: 11/28/13
SCALE: AS SHOWN
REVISED:
MATANUSKA - SUSITNA VALLEY
ALASKA
MADDOX & ASSOCIATES, INC.
28371 SAN THOMAS CT.
MURRIETA, CA 92562
(951) 805-1100

4.0 PHYSIOGRAPHY

The site is located within and at the easterly end of the Matanuska-Susitna Valley, approximately 3.5 miles to the south-southwest of the City of Palmer, Alaska. The surface relief has been influenced by the most recent glacial advance through the area. It is known as the Naptowne advance of the Matanuska Glacier. The retreat of the glacier left behind a number of geomorphic landforms in the area, two of which appear to merge in the area of the proposed monofill. The two landforms are the Crevasse-fill-ridge complex and the Palmer Terrace. The Crevasse-fill-ridge topography is that of linear to arcuate ridges, while the Palmer Terrace is a low-lying surface of low relief. Both of these landforms are composed of glacial sands and gravels.

The site has traditionally been used as a gravel pit and the surface is irregular, with elevations ranging from approximately 150-feet above mean sea level (amsl), to a low of approximately 80-feet amsl. The nearest bodies of water are three industrial ponds caused by past industrial gravel dredging; the depth of the ponds is as much as 90 feet.

The site is located approximately 0.7-miles to the northwest of the bank of the Matanuska River.

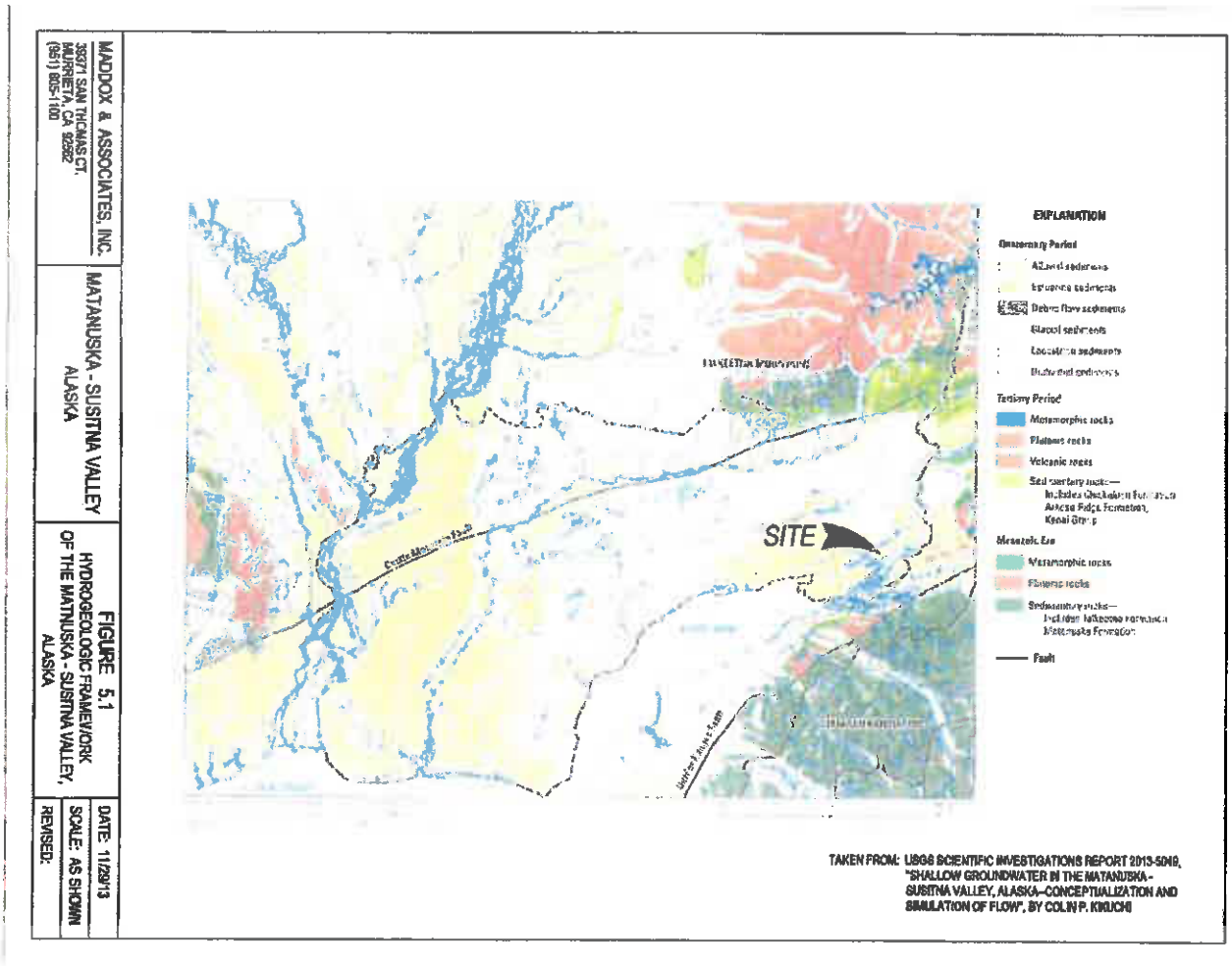
5.0 GEOLOGY

5.1 GEOLOGIC SETTING

Per Kikuchi (2013), the Matanuska-Susitna Valley is in a structural trough bounded by two faults: the Castle Mountain Fault to the north and the border Ranges Fault to the southeast (**Figure 5.1**). **Figure 5.1** depicts the geology of the Matanuska-Susitna Valley. The geologic history of the Matanuska-Susitna Valley includes three major time periods. The Mesozoic Era geology includes the roots of the Talkeetna and Chugach Mountains, comprising intrusive and extrusive igneous rocks adjacent to metamorphic rocks and deep, thick sedimentary layers. The Tertiary period geology includes the Chickaloon and Arkose Ridge Formations abutting the Talkeetna Mountains, as well as the oil-bearing Kenai Group in the Cook Inlet Basin. Finally, the basement rock generated during these two periods is overlain by unconsolidated Quaternary sediments of glacial and non-glacial origin. These sediments are highly permeable in places and comprise the most productive aquifers in the Matanuska-Susitna Valley. The subject site is underlain by the highly permeable Quaternary sediments of glacial origin, forming a very productive aquifer.

5.2 GEOLOGIC UNITS IN THE SITE AREA

The description of the geologic units in the area of the site is taken from Munter (April 2010). The surface geology has been influenced by the most recent glacial advance through the area. It is known as the Naptowne advance of the Matanuska Glacier. The retreat of the glacier left behind a number of geomorphic landforms in the area, two of


SITE
EXPLANATION
Quaternary Period
Tertiary Period
Metamorphic rocks
Plutonic rocks
Volcanic rocks
Mesozoic Era
Fault
TAKEN FROM: USGS SCIENTIFIC INVESTIGATIONS REPORT 2013-5049, "SHALLOW GROUNDWATER IN THE MATANUSKA-SUSITNA VALLEY, ALASKA--CONCEPTUALIZATION AND SIMULATION OF FLOW", BY COLIN P. KIKUCHI
MADDOX & ASSOCIATES, INC.
35371 SAN THOMAS CT.
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(951) 695-1100
MATANUSKA - SUSITNA VALLEY
ALASKA
FIGURE 5.1
HYDROGEOLOGIC FRAMEWORK
OF THE MATNUSKA - SUSITNA VALLEY,
ALASKA
DATE: 11/29/13
SCALE: AS SHOWN
REVISED:

which appear to merge in the area of the proposed monofill. The two landforms are the Crevasse-fill-ridge complex and the Palmer Terrace. Both of these landforms are composed of glacial sands and gravels. Kikuchi includes these sediments as part of the Holocene Outwash and Alluvium unit (**Figure 5.2**). **Figures 5.3** and **5.4** show, respectively, hydrogeologic section lines and the corresponding hydrogeologic sections showing the water-bearing geologic units.

Palmer Terrace: Munter (April 2010) describes the Palmer Terrace along the Glenn Highway, south of Palmer, as a gently sloping plain of pitted sand and gravel outwash. The terrace is 25 to 50 feet above the current braidplain of the Matanuska River, which is approximately 0.7-miles to the southeast of the site. The terrace contains several natural kettle lakes formed by melting blocks of glacial ice that were buried during sediment accumulation. The largest kettle lake is Meirs Lake, located approximately 1-mile to the northeast of the site, on the easterly side of Glenn Highway, near it's intersection with Outer Springer Loop road.

Crevasse-fill-ridge complex: During the late stages of the glacial ice cover, open crevasses in the ice were filled with accumulations of alluvial sands and gravels that now stand as arcuate ridges adjacent to valleys and lakes where the ice has melted away.

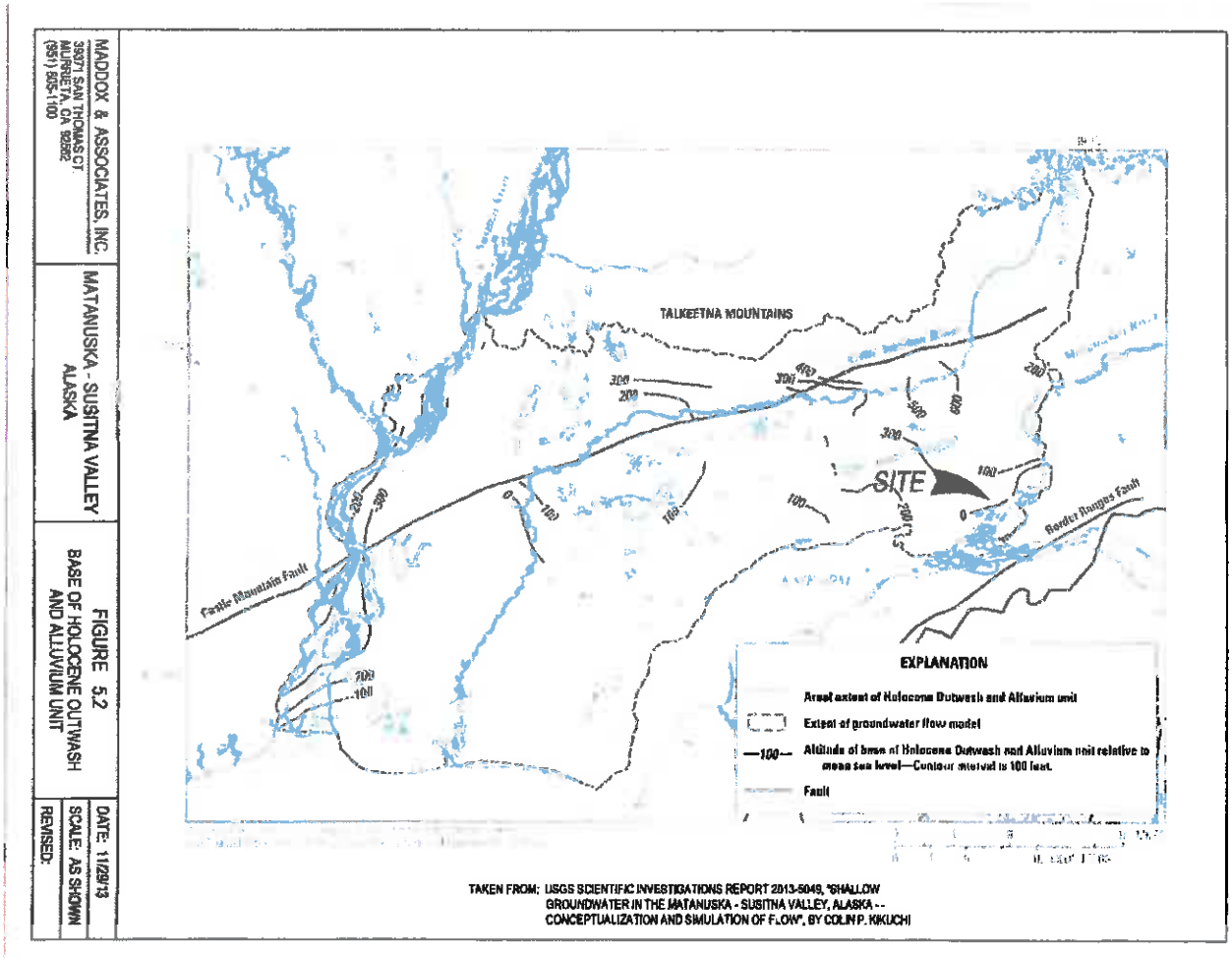
5.3 SITE GEOLOGY

Reference to boring logs for seven groundwater monitoring wells constructed by Environmental Management, Incorporated (EMI) within the site indicate that the geologic materials beneath the site are composed generally of gravel with sand, and minor zones of clay/silt (**Appendix B**). These wells were drilled/constructed between April 22, 2013 and April 24, 2013. The well depths ranged from 15 to 45 feet below ground surface (bgs). Inspection of the boring logs does not present a clear understanding of the actual depth at which groundwater was encountered beneath the site during drilling. However, following well construction and development, the water levels stabilized and the depth to water in the wells located beneath the footprint of the monofill on July 1, 2013 ranged from 26.23 feet to 36.87 feet bgs. The monitoring well locations are shown on **Figure 5.5.**

Reference to Figure 5, Granite Palmer Pit Revised Bedrock Surface Map (TERRASAT, Inc., August 2012) indicates that the approximate depth to bedrock beneath the footprint of the proposed monofill is 120 to 140 feet.

6.0 HYDROGEOLOGY

Kikuchi (2013) states that groundwater-age data collected during previous studies show that water moves quickly through the groundwater system, suggesting that the system responds quickly to changes in climate forcing. Similarly, the groundwater system quickly returns to long-term average conditions following variability due to seasonal or interannual changes in precipitation. These analyses indicate that the groundwater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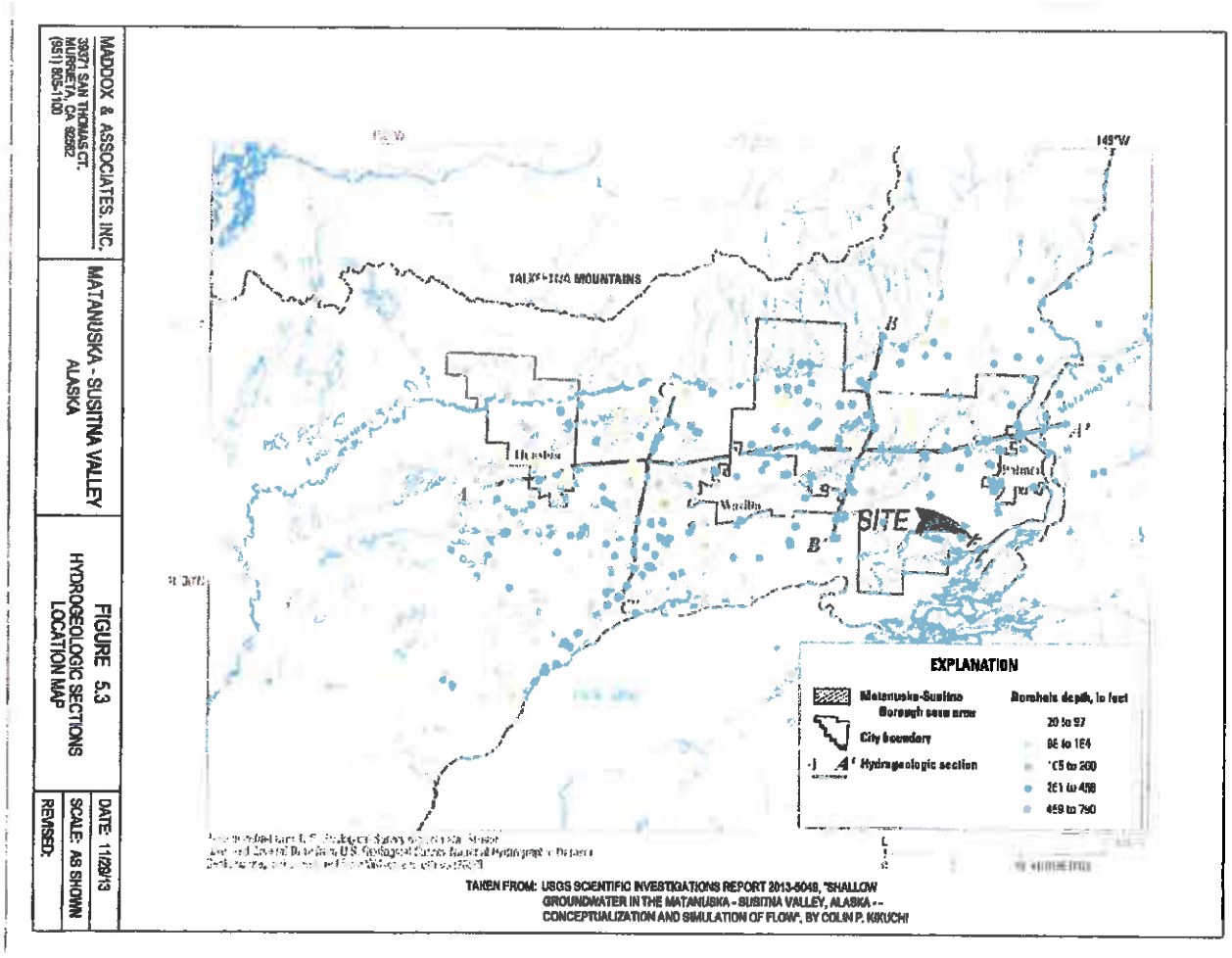
(951) 505-1100
MATANUSKA - SUSITNA VALLEY
ALASKA
FIGURE 5.2
BASE OF HOLOCENE OUTWASH
AND ALLUVIUM UNIT
DATE: 11/29/13
SCALE: AS SHOWN
REVISED:
TALKEETNA MOUNTAINS
SITE
Castle Mountain Fault
Border Ranges Fault
EXPLANATION
Areal extent of Holocene Outwash and Alluvium unit
Extent of groundwater flow model
—100— Altitude of base of Holocene Outwash and Alluvium unit relative to mean sea level—Contour interval is 100 feet.
Fault
TAKEN FROM: USGS SCIENTIFIC INVESTIGATIONS REPORT 2013-5049, "SHALLOW GROUNDWATER IN THE MATANUSKA - SUSITNA VALLEY, ALASKA -- CONCEPTUALIZATION AND SIMULATION OF FLOW", BY COLIN P. KIKUCHI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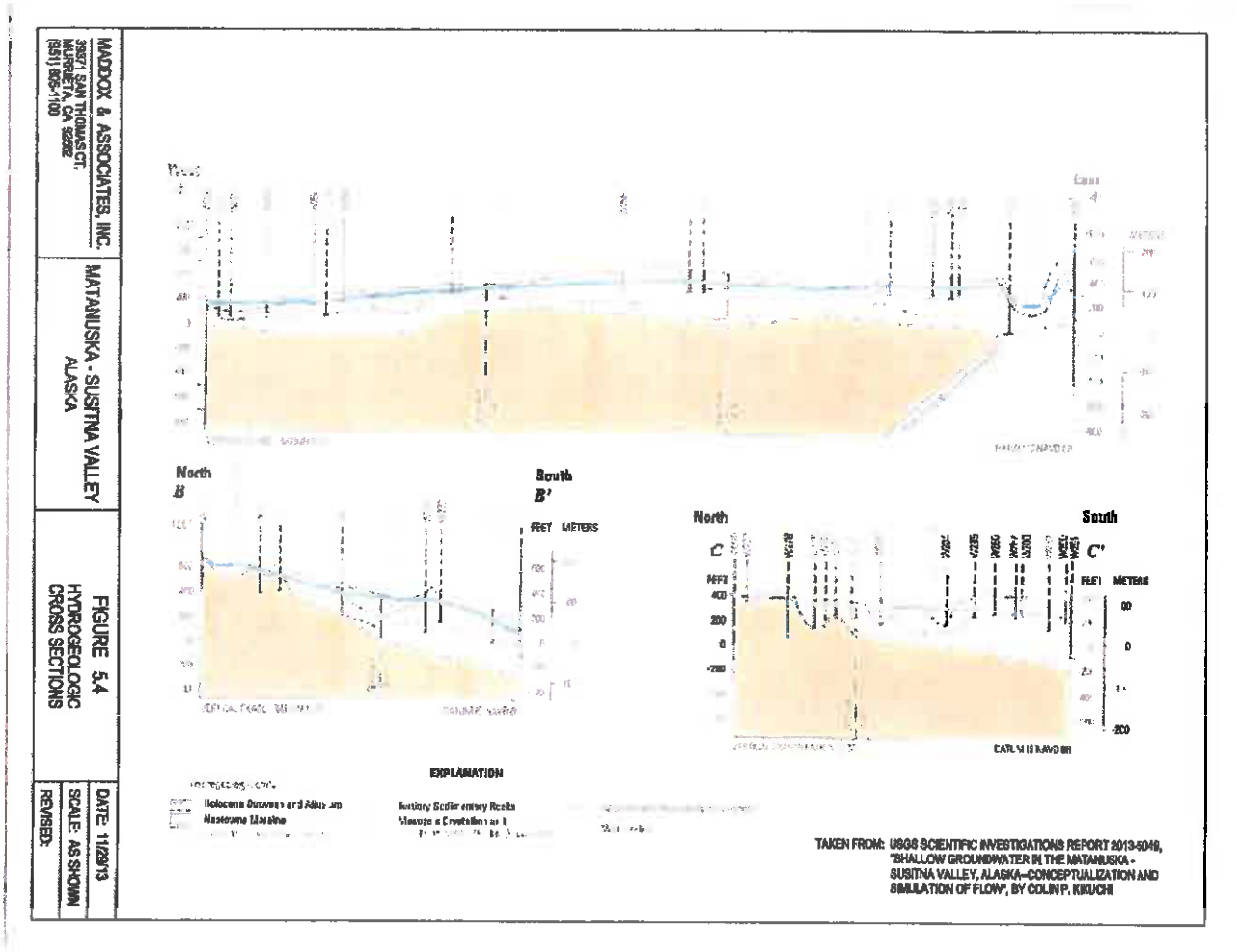
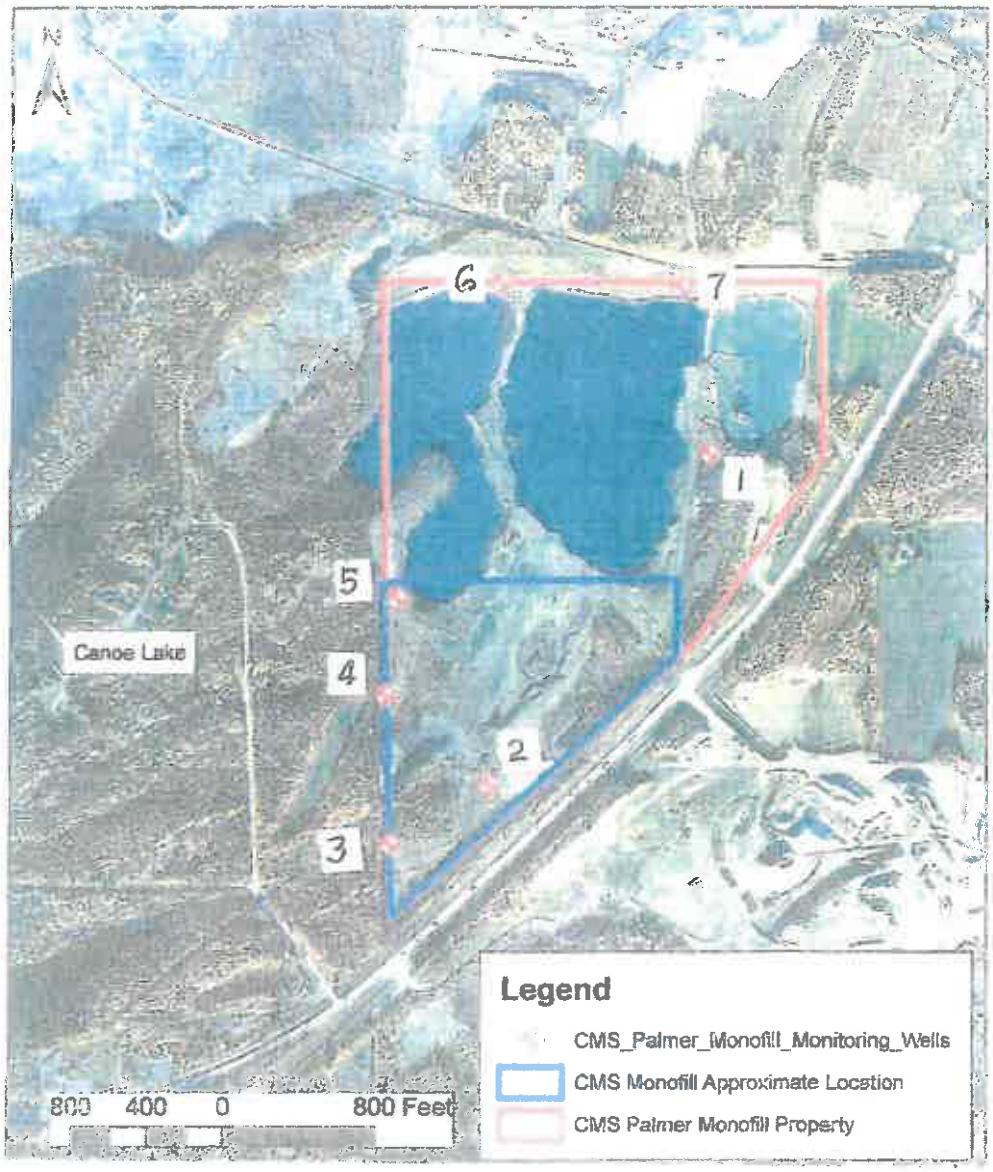
MATANUSKA - SUSITNA VALLEY
ALASKA
FIGURE 5.3
HYDROGEOLOGIC SECTIONS
LOCATION MAP
DATE: 11/28/13
SCALE: AS SHOWN
REVISED:
149°W
TALKEETNA MOUNTAINS
Houston
Wasilla
Palmer
SITE
A
A'
B
B'
C
C'
EXPLANATION
Matanuska-Susitna Borough area area
City boundary
Hydrogeologic section
Borehole depth, in feet
20 to 97
98 to 184
185 to 260
261 to 458
459 to 790
TAKEN FROM: USGS SCIENTIFIC INVESTIGATIONS REPORT 2013-5048, "SHALLOW GROUNDWATER IN THE MATANUSKA - SUSITNA VALLEY, ALASKA -- CONCEPTUALIZATION AND SIMULATION OF FLOW", BY COLIN P. KIKUCHI


MADDOX & ASSOCIATES, INC.
MATANUSKA - SUSITNA VALLEY
ALASKA
FIGURE 5.4
HYDROGEOLOGIC
CROSS SECTIONS
DATE: 11/29/13
SCALE: AS SHOWN
REVISED:
North
B
South
B'
FEET METERS
North
C
South
C'
EXPLANATION
TAKEN FROM: USGS SCIENTIFIC INVESTIGATIONS REPORT 2013-5049,
"SHALLOW GROUNDWATER IN THE MATANUSKA -
SUSITNA VALLEY, ALASKA--CONCEPTUALIZATION AND
SIMULATION OF FLOW", BY COLIN P. KIKUCHI



TAKEN FROM: TERRASAT, FIGURE 2, APRIL 4, 2013.

MADDOX & ASSOCIATES, INC. 39371 SAN THOMAS CT. MURRIETA, CA 92562 (951) 805-1100	MATANUSKA - SUSITNA VALLEY ALASKA	FIGURE 5.5 CMS PALMER MONOFILL MONITORING WELL LOCATION MAP	DATE: 11/29/13 SCALE: AS SHOWN REVISED:

system is in a state of dynamic equilibrium, characterized by water-level fluctuation about a constant average state, with no long-term trends in aquifer-system storage. Thus, no long-term fluctuation in groundwater levels beneath the site are likely to occur.

The water-table map for the Matanuska-Susitna Valley contained in the 2013 report Kikuchi (**Figure 6.1**) indicates flow through the groundwater system is driven primarily by recharge in the Little Susitna River Valley, located to the north of the Palmer area, following generally north to south paths in the area surrounding Wasilla and transitioning to northeast to southwest flow paths in the area near Big Lake (Kikuchi, 2013). Groundwater flow in the site area is primarily to the south and west, from the foothills of the Talkeetna Mountains to discharge along the Matanuska River and its contributing sloughs and tributaries.

Numerous closed-basin lakes (lakes with no surface water outlet) occur in the area of the site. Examples are lakes such as Meirs Lake in the pitted outwash of the Palmer Terrace and the long, narrow arcuate lakes between the crevasse-fill ridges in the Kepler-Bradley lakes area. These are groundwater flow-through type lakes, receiving groundwater inflow on the up-gradient side of the lake, and contributing lake water to the groundwater system on the down-gradient side. Kikuchi (2013) states that most of the lakes in the Matanuska-Susitna Valley are hydraulically connected to the groundwater system.

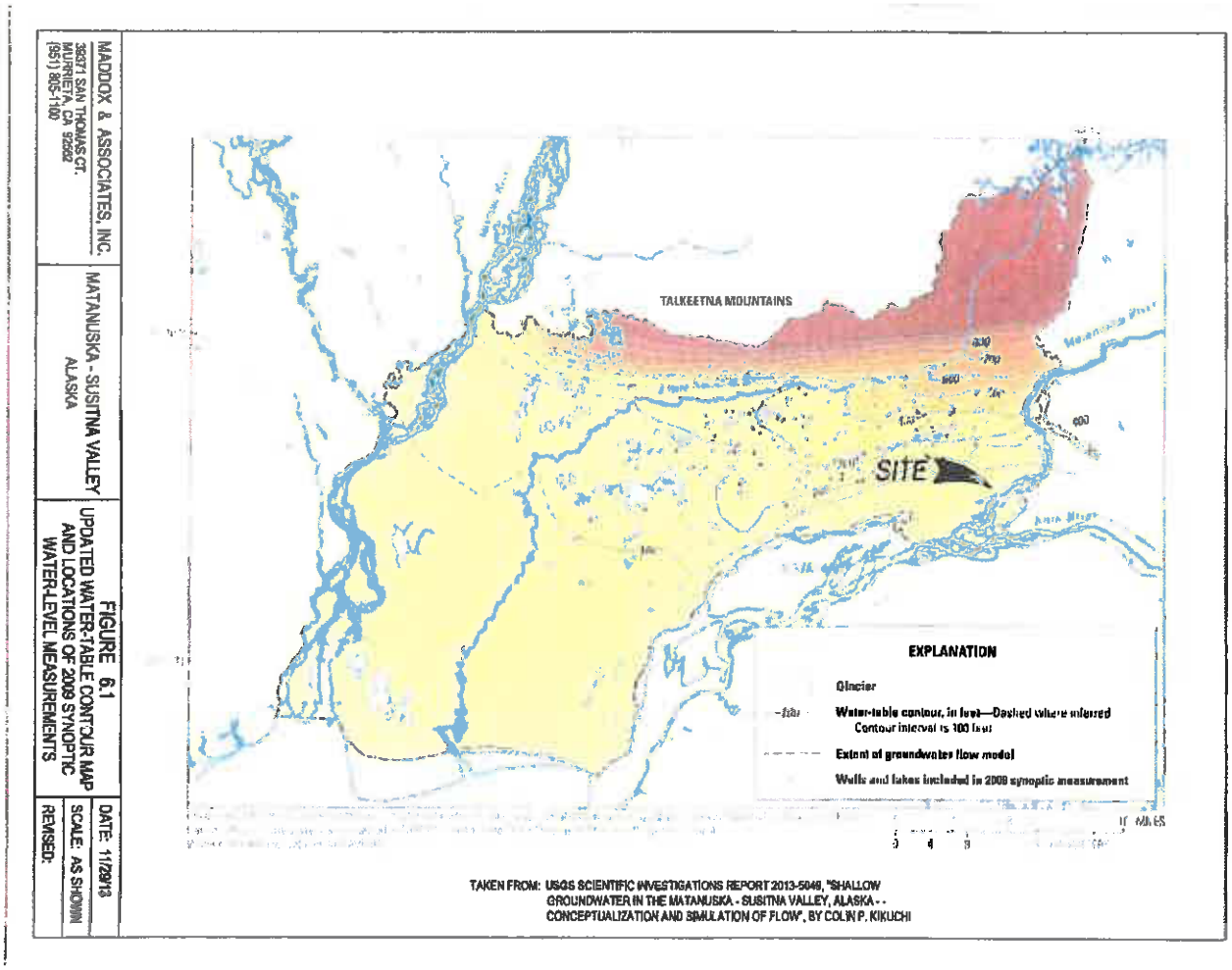
6.1 SITE HYDROGEOLOGY

Munter (April 2010) states that there are two aquifers in the area of the site:

Alluvial or Glacial Outwash Aquifer: This aquifer is the principal aquifer in the site area and is comprised predominantly of alluvial and glacial outwash sand and gravel. This aquifer occurs under water-table conditions in the site area, with limited areas where the groundwater is confined. The aquifer thickness ranges from approximately 50 to 250 feet thick in most areas, although it may be thinner or thicker locally. Reference to Figure 5, Granite Palmer Pit Revised Bedrock Surface Map (TERRASAT, Inc., August 2012) indicates that the thickness of the aquifer material is approximately 120 to 140 feet thick beneath the proposed monofill. The aquifer material is underlain by bedrock. High-yield irrigation or public-supply wells are constructed in some locations. Freethy and Scully (1980) state that wells located in alluvium adjacent to present rivers have yields that may exceed 4,000 gallons per minute (over 5,000,000 gallons per day).

Bedrock Aquifer: This aquifer, underlying the Alluvial or Glacial Outwash Aquifer, is comprised of sedimentary, metamorphic, or igneous rocks (bedrock) that occur at depth throughout the area. Well yields are typically low.

As discussed in Section 5.3, based upon review of boring logs for seven groundwater monitoring wells installed in April 2013, the geologic materials beneath the site are composed generally of gravel with sand, and minor zones of clay/silt. The well depths ranged from 15 to 45 feet below ground surface (bgs). Inspection of the boring logs does not present a clear understanding of the actual depth at which groundwater was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MATANUSKA - SUSITNA VALLEY
ALASKA
FIGURE 6.1
UPDATED WATER-TABLE CONTOUR MAP
AND LOCATIONS OF 2009 SYNOPTIC
WATER-LEVEL MEASUREMENTS
DATE: 11/29/13
SCALE: AS SHOWN
REVISED:
TALKEETNA MOUNTAINS
SITE
EXPLANATION
Glacier
Water-table contour, in feet—Dashed where inferred
Contour interval is 100 feet
Extent of groundwater flow model
Wells and lakes included in 2009 synoptic measurement
MILES
TAKEN FROM: USGS SCIENTIFIC INVESTIGATIONS REPORT 2013-5049, "SHALLOW GROUNDWATER IN THE MATANUSKA - SUSITNA VALLEY, ALASKA - - CONCEPTUALIZATION AND SIMULATION OF FLOW", BY COLIN P. KIKUCHI

encountered beneath the site during drilling. However, following well construction and development, the water levels stabilized and the depth to water in the wells located beneath the footprint of the monofill on July 1, 2013 ranged from 26.23 feet to 36.87 feet bgs. The monitoring well locations are shown on **Figure 5.5.**

Following is a discussion of the groundwater in the Palmer area contained in Freethy and Scully (1980):

"The deposits beneath the present valley floors of the Matanuska and Knik rivers are generally unconfined; that is, ground water exists under atmospheric pressure. Till sheets and less permeable lenses cause some local confinement, but nearly the entire area is readily recharged by infiltrating precipitation and seepage from the Matanuska and Knik rivers. Numerous bedrock outcrops indicate that the thickness of alluvium is not great. Groundwater is being withdrawn from relatively continuous sand-and-gravel beds in outwash deposits and Holocene stream alluvium. Well yields range from 5 to 75 gallons per minute in areas away from large recharge sources and where localized confinement occurs. Yields may exceed 4,000 gallons per minute in alluvium adjacent to present rivers."

6.2 STUDY BY J.A. MUNTER: POTENTIAL HYDROLOGIC EFFECTS OF GRAVEL EXTRACTION SOUTH OF PALMER, ALASKA

James A. Munter (April 2010) conducted an evaluation of the effects of gravel extraction in two pits proposed for the site area. Granite Construction Company (Granite) has a sand and gravel mining operation going on just across Glenn Highway, approximately 0.5-miles to the southeast, between the site and the Matanuska River.

Munter used a model (Theiss, 1935) to estimate water level declines resulting from the sand and gravel mining operations to be conducted near the site by Granite. The depths of Granite's operations are reported to be 50 to 150-feet below the ground surface, extending far below the water table.

Granite's gravel mining operations will extend the pit into the braidplain of the Matanuska River. The result will be a lake with a surface elevation of approximately 49-feet amsl, matching that of the water table in that area. The permeable alluvium at the site makes it likely that a good hydraulic connection will be present between the lake and the water table.

The model indicates that after one year, water table declines of several feet attributable to the gravel pit could extend 1.5 miles or more in a generally northward direction from the newly-formed lake. The site of the proposed monofill lies well within this 1.5-mile distance of water-table lowering.

Kikuchi (2013) discusses Munter's study on page 4 of his paper. He reports Munter's conclusions of a lowering of the water table in the site area with no disagreement.

The planned elevation of the bottom of the inert refuse in the monofill is a minimum of 10-feet below the normal seasonal high. If the water table in the area of the monofill is lowered by "several feet", it will increase the distance between the base of the monofill material and the water table.

It is our opinion that more data are needed to determine if Munter's conclusions are valid.

6.3 WATER QUALITY IN THE PONDS LOCATED WITHIN THE SITE

On December 5, 2012 SLR International Corporation (SLR) obtained one surface water sample from each of the three ponds occupying the three abandoned gravel pits on the north side of the Granite Construction Palmer Facility. The following scope of work was completed:

- A hand auger was used to drill a hole through the ice at two of the three locations. Open water was accessible at one location.
- Water quality parameters pH, conductivity dissolved oxygen, oxidation-reduction potential, and temperature were monitored using a YSDI 556 multi-meter prior to sampling and recorded on sampling forms.
- Three surface water samples and one duplicate were collected using disposable bailers and transferred to laboratory sampling containers.
- Samples were hand delivered to SGS North America, Inc. (SGS) in Anchorage, Alaska for analyses.

All work was completed by Alaska Department of Environmental Conservation (ADEC) qualified personnel under 18 AAC 75.990(100).

Analyses:

Three surface water samples (GCP-1, GCP-2, and GCP-3) were tested for RCRA Metals by EPA Method 6000/7000 series, benzene, toluene, ethylbenzene, and xylenes (BTEX) by EPA Method 8021, nitrate/nitrite by SM 4500-NO_3 , fecal Coliform bacteria SM 9222, and total dissolved solids by SW2540C.

Results:

BTEX: None detected (ND) at or above laboratory detection limits

Fecal Coliform bacteria: None detected at or above laboratory detection limits
RCRA metals: Only barium was detected above laboratory detection limits, with concentrations ranging from 25.8 µg/L to 39.3 µg/L--these are below the Alaska Drinking Water Standard of 2,000 µg/L.

Total nitrate/nitrite as nitrogen: Detected in all three samples at concentrations ranging from 1870 µg/L to 2200 µg/L--these are below the Alaska Drinking Water Standard of 10,000 µg/L (10 mg/L).

Phosphorous: Detected in all three samples at concentrations ranging from 0.06 to 0.1 mg/L. There is no Alaska Drinking Water Standard for phosphorous.

TDS: TDS in the three samples ranged from 325 mg/L to 359 mg/L, and did not exceed Alaska Water Quality Standards.

Comparison to City of Palmer Water System:
An analysis of water from the Palmer water system was obtained through the State of Alaska Drinking Water Watch web-page. The comparisons are as follows:

Granite Ponds	Palmer water system
Barium 25.3 µg/L to 39.3 µg/L	20.8 µg/L
Nitrate/nitrite 1870 to 2200 µg/L	0.987 mg/L

The City of Palmer analyses were performed on 7/19/13. RCRA Metals analyses and nitrate/nitrite and were the only analytes for which the City of Palmer tested. Only barium and nitrate/nitrite were detected above the laboratory detection limits.

Based on the measured parameters, the quality of the water in the three ponds on the subject site is not as good as the water in the Palmer water system, but it does not exceed Alaska Drinking Water Standards.

Relation of Water in the Three On-Site Ponds to Groundwater:

Both Kikuchi (2013) and Munter (April 2010) state that the lakes (and by association, the ponds) are groundwater flow-through types receiving groundwater inflow on the up-gradient side of the lake, and contributing lake water to the groundwater system on the down-gradient side. As noted above, Kikuchi (2013) states that most of the lakes (and by association, the ponds) in the Matanuska-Susitna Valley are hydraulically connected to the groundwater system. Site data indicate that the ponds on the site are man-made industrial ponds caused by past industrial dredging. These bodies do not have inflowing or out-flowing water and are fed by onsite surface flow and groundwater. Based upon this evaluation, it appears that the analyses of the three ponds on the subject site also apply to the groundwater within the site.

7.0 RELATION OF PROPOSED MONOFILL TO AREA HYDROGEOLOGY

7.1 RESULTS OF LEACHING OF TYPICAL MONOFILL MATERIAL

EMI submitted three samples of shredded inert waste materials to SGS for analyses by the Synthetic Precipitation Leaching Procedure (SPLP). This method uses a solution of

acetic acid in water to leach the components of the subject materials. The shredded monofill materials were composed generally of:

- Metals
- plastics
- Foam
- Insulation
- Drywall
- Wood (the majority of the material)

This material was collected from the CRS recycle facility and is representative of the inert shredded materials that will be placed in the Palmer monofill.

The leachate produced by the SPLP procedure was analyzed by the following methods:

- SW 6020 SPLP: metals by ICP/MS SPLP SW1312
- SW9045C: pH, Soil (S)
- SW8270D SPLP: Semi-Volatile SPLP Liq/Liq
- SW1312/8260B: SPLP Volatile Organic Compounds 8260
- SW 300.0: Sulfate

The results are contained in Table 7.1:

TABLE 7.1
RESULTS OF ANALYSES OF SHREDDED MONOFILL MATERIALS

SAMPLE	PARAMETER	RESULT	ALASKA DRINKING WATER STANDARDS
Residual A	pH, corrosivity	6.10	6.5--8.5
	Manganese	*0.384 mg/L	0.05 mg/L
	Sodium	65.4 mg/L	None
	Zinc	2.22 mg/L	5.0 mg/L
	Sulfate	*591 mg/L	250 mg/L
Residual B	pH, corrosivity	6.04	6.5--8.5
	Manganese	*0.347 mg/L	0.05 mg/L
	Sodium	53.0 mg/L	None
	Sulfate	*520 mg/L	250 mg/L
Residual C	pH, corrosivity	6.61	6.5--8.5
	Manganese	*0.373	0.05 mg/L
	Sodium	66.5	None
	Sulfate	673 mg/L	250 mg/L

* Exceeds Alaska State Drinking Water Standards

It should be noted that only three analytes were detected above laboratory detection levels in the leachate derived from the SPLP method. Of these, only manganese and sulfate exceeded the Alaska State Drinking Water Standards. The standards for manganese and sulfate are Secondary Standards. Secondary Standards are non-enforceable guidelines regulating contaminants that may cause cosmetic effects (such as skin or tooth discoloration) or aesthetic effects (such as taste, odor, or color) in drinking water. Sulfate detected by SGS is not considered a problematic constituent by the USEPA. Sodium, which was detected in the leachate from all three samples, is considered to be an essential nutrient and is not regulated.

7.1.1 OTHER STUDIES INVESTIGATING THE POTENTIAL IMPACT OF LEACHATES DERIVED FROM INERT LANDFILLS ON GROUNDWATER

The results of three studies will be discussed in this section.

A. *"Construction and Demolition Waste Landfills"*, Prepared for U.S. Environmental Protection Agency, Office of Solid Waste by ICF Incorporated, Contract No. 68-W3-0008, February 1995; May 18 1995 Draft Report:

This study addressed construction and demolition (C&D) leachate quality. Sampling data were collected for 305 parameters from a total of 21 C&D landfills. Of the 305 parameters, 93 were detected at least once. Of the 93 parameters detected, 24 had at least one measured value above the regulatory or health-based benchmark. Based on (1) the number of landfills at which the benchmark was exceeded and (2) a comparison between the median detected concentration and the benchmark, seven constituents emerged as being potentially problematic. They are listed in the table below:

TABLE 7.2
C&D LANDFILLS
SEVEN CONSTITUENTS THAT ARE PROBLEMATIC IN LEACHATE

CONSTITUENT	NO. OF LANDFILLS SAMPLED	NO. OF LANDFILLS DETECTED	NO. OF LANDFILLS > BENCHMARK	RATIO OF MEDIAN TO BENCHMARK
1,2-Dichloroethane	9	3	3	4
Methylene chloride	9	4	3	3
Cadmium	19	14	12	2
Iron	20	20	19	37
Lead	18	15	13	4
Manganese	14	14	13	59
Total Dissolved Solids	18	17	15	4

It should be noted that for three of the seven parameters listed in Table 7.2, (iron, manganese, and TDS) the benchmarks are secondary MCLs, which are set to protect water supplies for aesthetic reasons. The remaining four parameters did not greatly exceed MCLs, so their concentration in groundwater are likely to fall below health-based benchmarks.

Only one of the seven problematic constituents was detected in the leachate derived from the shredded monofill materials representative of those to be filled at the Palmer site, and that constituent (manganese) is only problematic due to aesthetic concerns. It is apparent that if leachates derived from the typical monofill materials enter the groundwater beneath the proposed monofill, the groundwater will not be negatively impacted.

B. *"A Comparison of Selected Parameters from Ohio Construction and Demolition Debris Leachate with Ohio Municipal Solid Waste Leachate"*, Ohio EPA, Draft: June 12, 2009

The Conclusions section of this report stated:

Ohio EPA is often asked "Which leachate is cleaner?" The appropriate response is, "They are both of concern." Both types of leachate have numerous parameters that exceed U.S. EPA primary drinking water standards, which for C&D leachate is contrary to the industry literature (National Demolition Association, 1995). Both types of leachate would violate Ohio discharge limits to groundwater and surface water if released to the environment. Both types of leachate pose threats to public health and the environment if released to groundwater or surface water from organic compounds, metals, and inorganic compounds. The degree of risk associated with the threat from a release of either type of leachate will be dependent upon how the material in the landfill was disposed, the location of the landfill, site conditions, leachate management, closure, post-closure care, and circumstances surrounding the site, which often change over time.

It is apparent that this study revealed that, under certain conditions and circumstances, inert landfills can produce leachates that will negatively impact groundwater in the area of the landfill. It is also apparent that proper restrictions on the types of inert wastes disposed in the monofill and proper management of the site will greatly lessen the likelihood of groundwater impaction. The management of inert wastes prior to landfilling, as described in Section 3.0 of this document, will greatly lessen the possibility of groundwater contamination.

C. Memorandum from Carl Anderson, P.G., Administrator, Solid and Hazardous Waste Division, Wyoming Department of Environmental Quality, August 29, 2011, *"Screening Criteria for Operation of Unlined Construction/Demolition Disposal Facilities."*

The conclusions of this memorandum was that C/D wastes and C/D leachates are not benign, but C/D leachate has less capacity to cause environmental impacts. So, a relatively limited site evaluation may provide adequate data to determine site suitability for use as an unlined landfill.

CONCLUSIONS TO BE DRAWN FROM OTHER STUDIES PERTAINING TO THE PROPOSED MONOFILL:

A proposed unlined inert landfill may pose no harm to the environment or public health if the site is properly evaluated in advance, only non-deleterious materials are landfilled, and the site is properly managed during its lifetime and following closure. These conditions are met in the proposed monofill to be constructed at the Palmer site.

Additionally, the observed effects of landfills on groundwater, in general, in the Anchorage, Alaska area are described in *"Water Quality Assessment of the Cook Inlet Basin, Alaska–Summary of Data through 1997"*, USGS Water-Resources Investigations Report 99-4116, National Water-Quality Assessment Program

On page 49 the following statement is made:

"Leachates from landfills contain high concentrations of dissolved solids. Madison and others (1988) report that leachates from two Anchorage landfills contain large concentrations of iron, manganese, and organic carbon. The leachates have concentrations of dissolved solids ranging from 2 to 20 times greater than adjacent, unaffected groundwater. Ground-water contamination by landfills in the study unit **appears to be limited to areas immediately adjacent to the landfills**. The Merrill Field landfill in Anchorage was used from the 1940's through 1987. Minor amounts of contaminants have reached distances about 2,200 feet from the site, but concentrations are generally less than MCLs except for those within the landfill itself.(Brunett, 1990)."

This may indicate that, in areas where there is a significant flow of groundwater in the subsurface, contaminant concentrations diminish rapidly outside the footprint of the landfill.

7.2 POTENTIAL FOR INFILTRATION OF PRECIPITATION INTO THE MONOFILL

The annual precipitation in the area around Palmer, Alaska is approximately 15.49-inches per year. A portion of this rainfall will infiltrate the surface of the monofill, and a larger portion will run off the surface.

Infiltration is the process by which water enters the soil. It separates water into two major hydrologic components--surface runoff and subsurface recharge. The infiltration rate usually shows a sharp decline with time from the start of the application of water. The constant rate approached after a sufficiently large time is referred to as the steady-infiltration rate. The process is described by the equations of Kostiakov (1932) and Horton (1040), which show a decreasing infiltration rate as a function of time.

A dry soil will have a higher infiltration rate than a soil with a high water content; this is due to the decreasing infiltration rate the closer the soil gets to its saturation point. A

fully-saturated soil becomes almost an impermeable layer (**Lund Institute of Technology, 2011**)

Typically, in summer, infiltration is greater than in winter. More overland flow (runoff) can be expected in winter than in summer (**Diamond and Thomas, 2013**). This is true in freely drained soils that have not been compacted. Compacted materials will produce more copious overland flow. A low soil temperature will slow the infiltration or fully prevent it if the soil is frozen (**Lund Institute of Technology, 2011**). Low soil temperatures are present for a significant portion of each year at the site, thus the susceptibility to infiltration of precipitation is reduced during the cold weather portion of the year.

The active working area of the site, where daily dumping, compaction, and covering is conducted, will cover, on average, approximately 120-feet by 50-feet. This will vary from day to day.

When water is applied to the active filling area of the monofill and the refuse is compacted, the void spaces in the refuse will be filled, the permeability of the material will be greatly lessened, and the amount of runoff will be increased, thus infiltration will be reduced.

When the inert materials are compacted, as they will be during the filling operations, the void ratio is reduced and the ability of the water to move through the materials is significantly reduced. However, the area of the active filling will allow more infiltration than the adjacent areas with soil cover.

Sloping and proper grading procedures will direct free water off the surface and the amount of runoff will be further increased. The result is that much more water will be runoff over the site as a whole than that which infiltrates.

Page 11 of the Operations Plan for the monofill submitted as a part of the Inert Waste Monofill Solid Waste permit Application, dated January 2013, states that, "A SWPPP plan will be in effect, in conjunction with grading plans to direct surface water off the monofill and onto the surrounding land surface and into the drainage basin composed of industrial water." The SWPP will be in effect during construction in areas that allow water to flow off-site. Page 9 of the Operations Plan states that, "Side slopes will be 2:1 at their steepest when reinforced with tire bales and 3:1 or less everywhere else." These are slopes of significant grade:

- 2:1 = 50% grade
- 3:1 = 33% grade

As stated above, where present, such grades will greatly facilitate the flow of water from the monofill surface, thus significantly reducing the amount of infiltration into the refuse.

It is important to note that the area of active filling, at any one time, will be small compared to the entirety of the surface area of the particular cell being worked. As stated above, the active working area of the site, where daily dumping, compaction, and covering is conducted, will cover, on average, approximately 120-feet by 50-feet. This will vary from day to day. Thus only small areas of inert refuse will be exposed to the elements.

7.2.1 DESCRIPTION AND SIGNIFICANCE OF RAINFALL OCCURRENCE

As stated above, the average rainfall in Palmer, Alaska is 15.49-inches. It is of interest to note that the average annual precipitation in the City of Los Angeles, California is very similar to that of Palmer--it is approximately 15.0-inches. Both locations are considered to be semi-arid, without significant annual precipitation.

Discussions with local residents indicate that most of the 15.49-inches of rainfall normally occurs during two seasons:

- Spring
- Fall

Normally, only minor rainfall occurs during the summer.

It is, therefore, apparent that the annual rainfall of 15.49 inches per year does not get spread out at an average rate over the entire year-long period.

Rainfall records for the Palmer area were reviewed for the period 10/1/12 through 11/30/23. Rainfall in the Palmer area occurs in episodes of a couple of days to a week, with the average of the longer periods being approximately 4 days of consecutive rain. Most rainy episodes last for one to two days. Following such a period of rainfall, it is common for no additional rain to fall for a week or more. Over the last 12 months, there have been 11 periods of no rain lasting for two to three weeks at a time.

Based on the mechanics of infiltration, the short periods of intense rain will result in more surface runoff, and less infiltration, than if the rainfall were spread out evenly over a 12-month period. Consequently, with short, intense periods of rainfall, the upper zone of the soil cover will become overloaded with moisture as the pores fill and become clogged with water. This will result in reduced permeability, increased runoff, and reduced infiltration.

In between periods of rainfall, the upper horizons of the refuse will tend to dry out due to evapotranspiration and the cycle will begin again with the next period of rain. This cyclic process will result in the minimization of infiltration and maximization of evapotranspiration.

It is difficult to estimate the actual volume of water per unit of surface area that may penetrate into the monofill because of the relatively small daily working area, but with

this type of cyclic process, it is likely that none of the precipitation will make its way through the considerable thickness of the proposed monofill. It follows, then, that it is unlikely that any of the monofill constituents will leach into the water table.

7.3 MOVEMENT OF GROUNDWATER

Munter (April 2013) considers the transmissivity of the unconfined aquifer in the area of the site to be approximately 100,000 ft.^{2}/day. In an unconfined aquifer, the transmissivity is defined by

T=Kb,

where b is the saturated thickness above the underlying aquitard that bounds the aquifer. K is the hydraulic conductivity of the aquifer materials. General consensus by authors who have studied this area is that the aquifer ranges up to about 200+ feet in thickness, so if this maximum thickness is assumed, and that is the value assigned to b, the value of K is equal to 500 feet per day. Data indicate that the saturated aquifer thickness beneath the proposed monofill site is approximately 120 feet. Using this value, K= 833 feet per day beneath the site. Glacial outwash material typically has a very high yield, and is the second-most important category of aquifer.

The direction of groundwater flow and its gradient were calculated using the groundwater contour map constructed by TERRASAT titled "Monofill Water Table 7-1-13 Contour Map", dated July 31, 2013 (**Appendix C**), and prepared for Environmental Management, Inc. The results show a groundwater flow direction of S 34W, with a gradient of 0.008.

The volume of groundwater flow beneath the site was calculated by use of Darcy's Law:

Q=KIA

where

Q = flow in gallons per day
K=Hydraulic conductivity in feet per day
I=Gradient
A=Area water flows through in square feet

Taking the width of the proposed monofill perpendicular to the direction of groundwater flow, a saturated aquifer thickness of 120 feet, a gradient of 0.008, and K=833 feet per day, the volume of groundwater flowing beneath the site is:

6.7 million gallons per day

This is fits well into the statement by Freethy and Scully (1980) that wells located in alluvium adjacent to present rivers have yields that may exceed 4,000 gallons per minute,

which is approximately 5,760,000 gallons per day. The proposed monofill is located only 0.7 miles from the Matanuska River.

8.0 GROUNDWATER MODELING

The following sections describe the methodology used to conduct groundwater flow and fate and transport modeling at the subject site. Groundwater modeling was conducted in order to understand the movement and concentrations of potential contaminants in the highly permeable aquifer beneath the site. It is not expected that any leachate containing contaminants will reach the aquifer. But if it does happen, it will be possible to understand the fate and transport of these chemicals and their impact on the aquifer.

SELECTION OF CONTAMINANTS TO BE CONSIDERED IN THE MODEL

The laboratory analytical results for the three residual monofill samples showed only the presence of manganese, sodium, zinc, and sulfate (See Table 7.1, above). Of these analytes, only manganese and sulfate were detected above the Alaska State Drinking Water Standards, and as described above, they are not a threat to human health, public safety, or the environment. Manganese, zinc, and sodium are considered to be "essential nutrients", and so are of no environmental concern. Additionally, the fate and transport properties of these metals is such that they tend to be adsorbed onto soil particles in both the unsaturated zone and within the aquifer, and will remain in the immediate area of the monofill.

Since none of the detected analytes are considered to be a threat to human health, they were not included in this model. It should be noted that, for the constituents selected to be modeled, the laboratory analyses of the three residual samples of typical monofill materials showed no detection for these constituents at or above the laboratory detection limits. That means that it is possible that these three constituents could be present at concentrations lower than the detection limits, although the detection limits for these analytes are low. Following are the three constituents chosen for modeling and the reasons for choosing them:

- 1,2-DCA is one of the seven potentially problematic constituents typical of inert landfill leachates (USEPA, 1995), commonly released into the environment by man's activities, it is extremely mobile in groundwater, and it is a carcinogen;
- Benzene is a compound commonly released into the environment by man's activities and it is a carcinogen;
- PCE, a common chemical used to clean metals, is another compound commonly released into the environment by man's activities, and it is a carcinogen.

These compounds are considered to be a threat to human health and are commonly released into the subsurface as the result of human activities. Although these compounds are not allowed as constituents in the inert materials deposited at the monofill, the unintended/accidental release of one or more of these chemicals within the monofill would have a detrimental impact on the aquifer if they were to reach the water table. Release of one or more of them into the groundwater beneath the site is considered to be a "worst case" condition and so they were chosen as the subject of this model.

MODEL DESCRIPTION

The groundwater flow model FLOWPATH© was used to simulate groundwater flow and transport in the shallow aquifer beneath the site. FLOWPATH© is a two-dimensional steady-state groundwater flow and transport that can be used for wellhead protection analysis, calculating hydraulic heads, groundwater velocities, and time-related pathlines and capture zones. FLOWPATH© uses a block-centered finite difference grid and solves the resulting set of algebraic equations by means of the modified iterative alternating direction implicit method. The model simulates unconfined, leaky, or confined flow in a heterogeneous and anisotropic aquifer. Pathlines and capture zones are calculated using a weighted Eularian time integration scheme. Input requirements for the model include a grid size and spacing delineation over known well coordinates, domain boundary, aquifer property, material thickness, leakage factor, pumping well locations, particle release locations, and capture time. During model calculation, a modified iterative alternating direction implicit method was used at a convergence criterion of 0.01 percent. The maximum number of iterations was set at 250, which results in a head discrepancy of less than 0.02 percent. FLOWPATH© has been verified with existing numerical codes including PLASM© and MODFLOW for hydraulic head distribution, and with RESSQ© and GWPATH© for pathlines and travel times, by the author, Waterloo Hydrogeologic Services, Ontario, Canada.

OVERVIEW OF MODELING PRODCEDURES

Groundwater flow modeling was accomplished through the following steps:

1) Conceptualizing a hydrogeologic flow regime,
2) Designing a finite-difference grid system,
3) Assigning model boundary conditions,
4) Assigning a hydraulic conductivity and porosity to aquifer materials,
5) Calibrating the computer model using known measured data and then run the flow model.
6) Input transport parameters such as initial concentrations, dispersivity parameters, retardation factors and decay constants.
7) Run particle tracking (solute transport) and fate and transport components of the model.

HYDROGEOLOGIC FLOW REGION

The model domain consists of a 9000 by 12000 feet area that includes the Site and the surrounding areas. The depth of groundwater beneath the Site occurs approximately 10 feet below ground surface (bgs). Groundwater beneath the Site flows towards the south and southwest. The average hydraulic gradient beneath the study area is approximately 0.008 feet/feet.

For modeling purposes, it was assumed that the shallow groundwater zone beneath the study area consists of a single unconfined layer that is generally comprised of sandy and gravelly materials. The thickness of this layer was assumed to be approximately 120 feet everywhere within the model domain.

Cell A was chosen as the point of possible origin for three chemicals (1,2-DCA, PCE, and benzene) that are serious carcinogens. They have not been detected in the three samples of typical residual materials that will be deposited at the monofill, but were chosen as possible contaminants that might unknowingly be deposited in the monofill. Cell A is the first cell that will be operational and it is located at the extreme southerly tip of the monofill, in an upgradient direction of possible receptors to the south and off the site.

MODEL BOUNDARY CONDITIONS

Water level data from monitoring wells located within the site area indicate that the groundwater flow direction underneath the Site is generally toward the south and southwest. We assumed that the groundwater flow gradient is relatively consistent and does not change significantly with time.

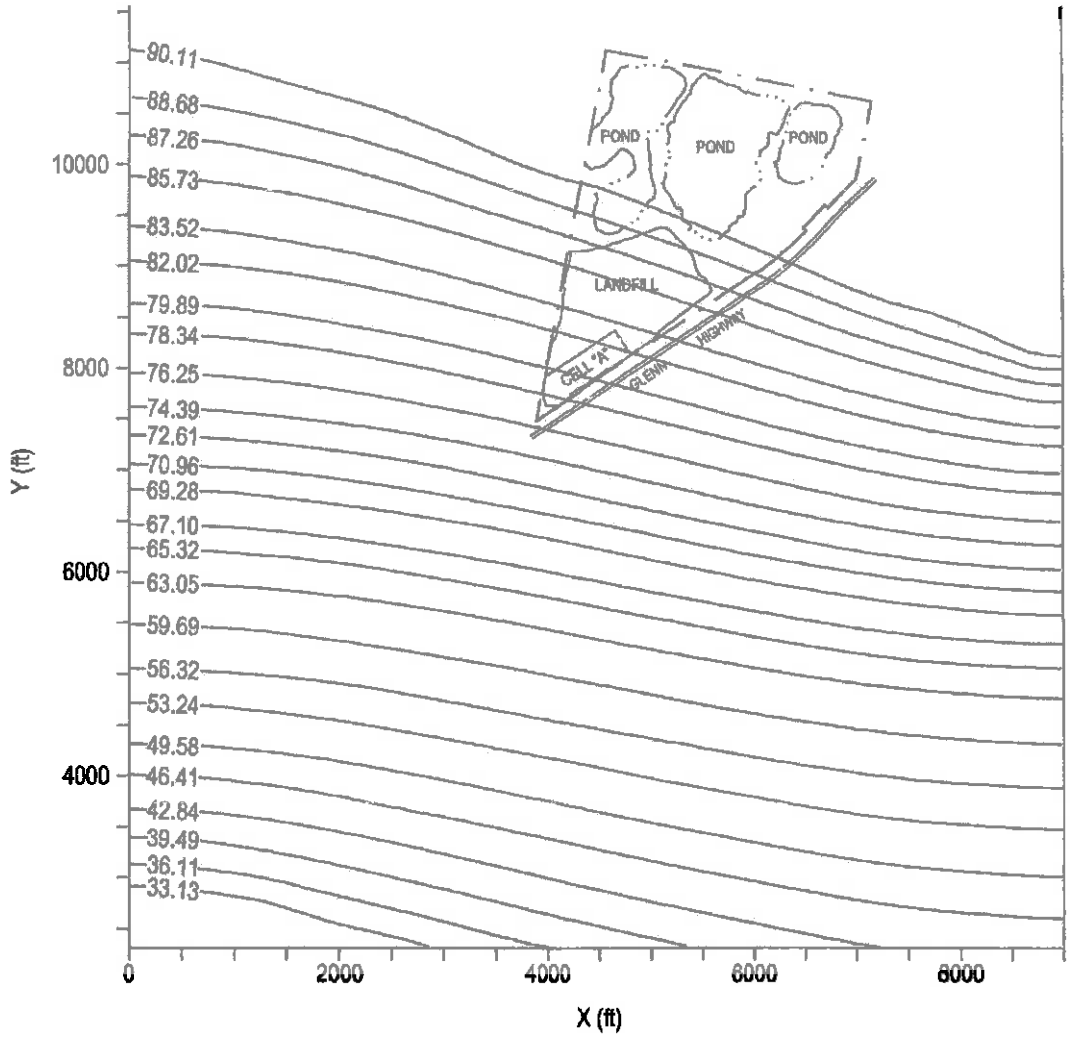
Hydraulic conditions along the boundaries of the grid were defined by specifying a constant head value at each end of the north and south boundaries. Water elevations from the recent period (7-1-13 Terrasat, Inc. Contour Map) were used to simulate the static condition (**Figure 8.1**) Constant head values were placed in a manner that model domain in a configuration to simulate the average hydraulic gradient and contours across the site.

HYDRAULIC CONDUCTIVITY AND OTHER PARAMETERS

The lithologic logs of sediments beneath the Site indicate that saturated sediments beneath the Site are composed of highly permeable sandy and gravelly materials. Aquifer transmissivity of 100,000 ft^2/day was reported, which yields a hydraulic conductivity of the aquifer materials of about 833 feet per day.

A single porosity value of 0.25 was selected based on estimates of ranges of effective porosity for the type of formation that underlies the site, obtained from published data (Driscoll 1986; Freeze and Cherry 1979).

Longitudinal and transverse dispersivity of 10 and 3 feet were assumed, respectively.



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MADDOX & ASSOCIATES, INC. 39371 SAN THOMAS CT. MURRIETA, CA 92562 (951) 805-1100	MATANUSKA - SUSITNA VALLEY ALASKA	FIGURE 8.1 STATIC GROUNDWATER ELEVATIONS	DATE: 11/19/13 SCALE: NONE REVISED:

MODEL RESULTS

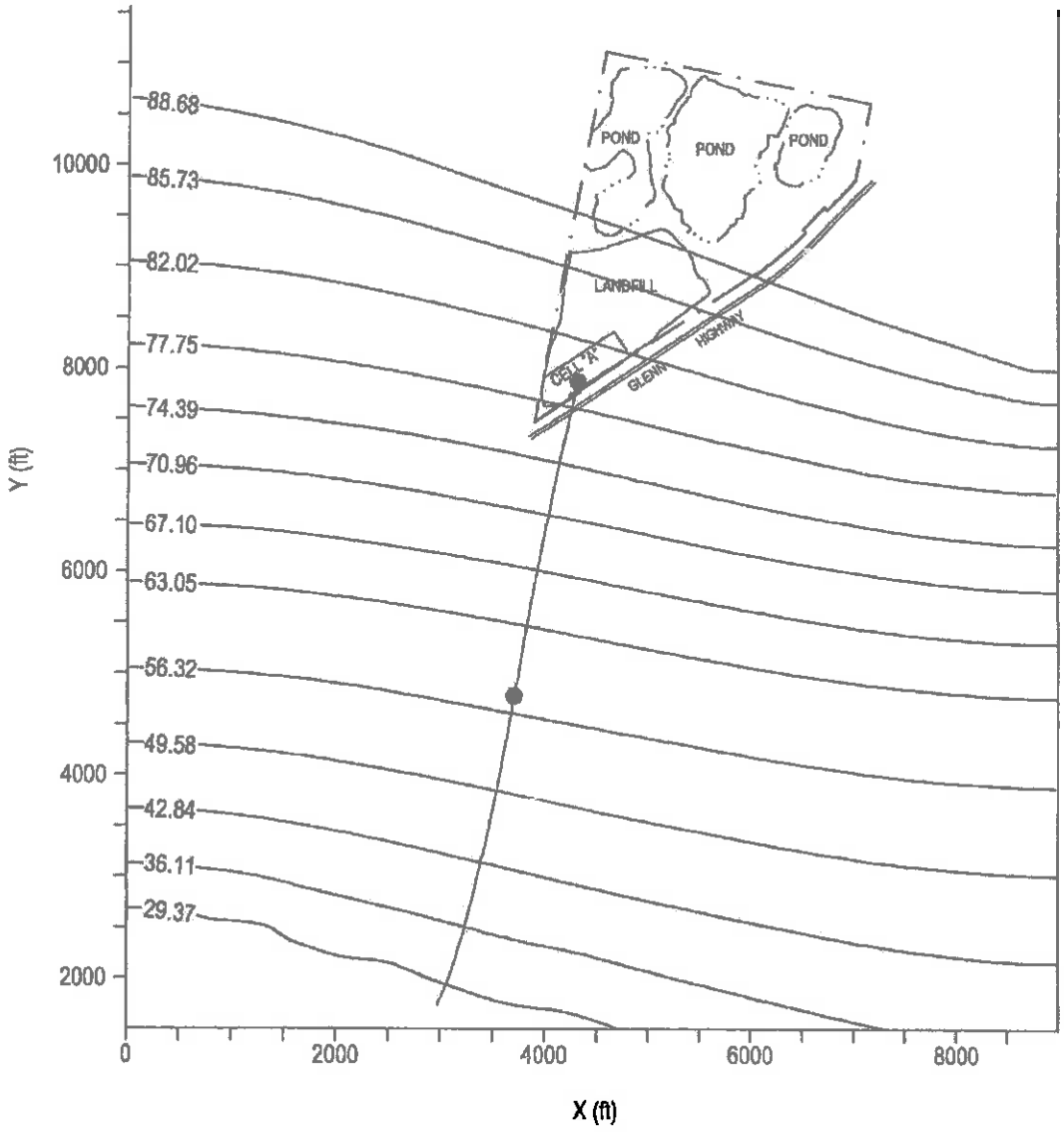
Several model runs were performed to simulate the static groundwater condition, each time the simulated results were compared to the actual field observations of groundwater elevations. After the calibration was completed, fate and transport parameters were input to the model. Three potential chemicals of concern were evaluated: Benzene, PCE and 1, 2-DCA. Data from the lab indicated detection limits of 24.0, 30.0 and 30.0 ug/L for Benzene, PCE and 1, 2-DCA, respectively. This means that, even though none of the three compounds were detected at or above the laboratory detection limits, they may be present below these concentrations. We used a leachate concentration of 10 times these detection limits to be conservative and to show "worst case"; concentrations of these magnitudes would pose s threat to groundwater. The results of the particle tracking and the fate and transport models are presented below.

In order to simulate non-decay concentrations, forward particle tracking was used to calculate travel pathlines. The particles were released down-gradient of the landfill within Cell A and forward tracked. These simulations do not account for the decay of contaminants due to dissolution of contaminants sorbed onto aquifer solids. The simulations are shown on **Figure 8.2** through **Figure 8.4**. It appears that it takes about a year for benzene and 1, 2-DCA to travel about a mile down-gradient of the Cell A, whereas it takes about five years for PCE.

Figure 8.5 through **Figure 8.7** present predicted benzene concentrations for every 6 months for the distance of one mile down-gradient of the Cell A. Similarly, **Figure 8.8** through **Figure 8.10** show the simulated groundwater concentrations for 1, 2-DCA. **Figure 8.11** through **Figure 8.15** show the simulated groundwater concentrations for PCE.

All of these compounds show a significant breakdown and decrease in concentration over reasonably short periods of time relative to the projected life of the monofill. After one year, the greatest distance traveled by any of the compounds is approximately 6,000-feet. It is important to keep in mind that these compounds have not been detected in the typical inert refuse that will be deposited in the monofill. They are only "worst case", and there is no reason to expect that any of these compounds would ever reach the groundwater beneath the site, due to the very low likelihood of any leachate passing through the thickness of the monofill, as described above.

The following two tables will illustrate the modeled distance of analyte travel versus time and analyte concentrations versus time.



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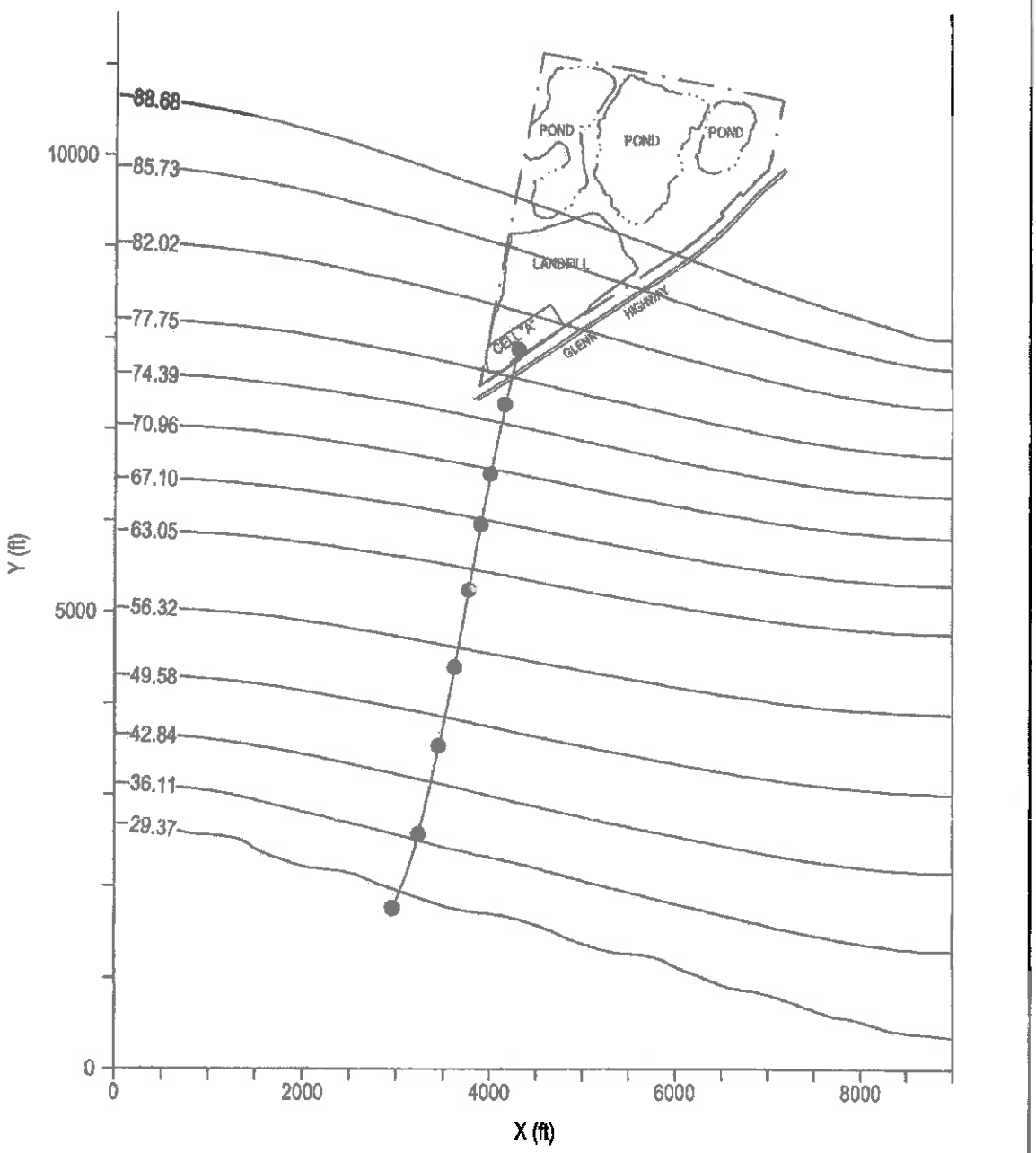
MADDOX & ASSOCIATES, INC. 39371 SAN THOMAS CT. MURRIETA, CA 92562 (951) 805-1100	MATANUSKA - SUSITNA VALLEY ALASKA	FIGURE 8.2 1, 2 - DCA SOLUTE TRANSPORT DOTS ARE 180 DAYS APART	DATE: 11/19/13 SCALE: NONE REVISED:


88.68
85.73
82.02
77.75
74.39
70.96
67.10
63.05
56.32
49.58
42.84
36.11
29.37
POND
POND
POND
LANDFILL
CELL "A"
GLENN
HIGHWAY
Y (ft)
10000
5000
0
0
2000
4000
6000
8000
X (ft)
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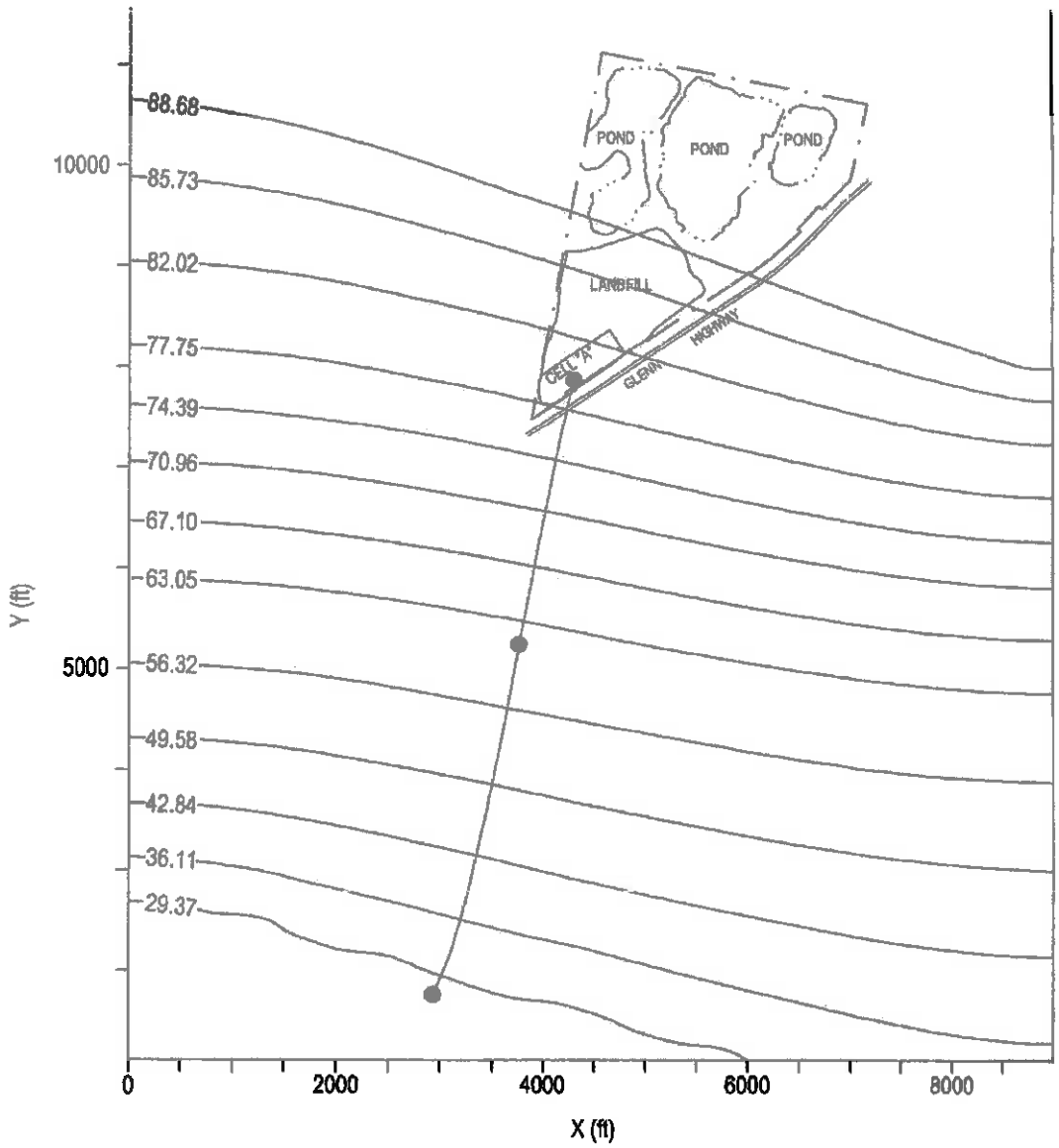
(951) 805-1100
MATANUSKA - SUSITNA VALLEY
ALASKA
FIGURE 8.3
PCE SOLUTE TRANSPORT
DOTS ARE 180 DAYS APART
DATE: 11/19/13
SCALE: NONE
REVISED:



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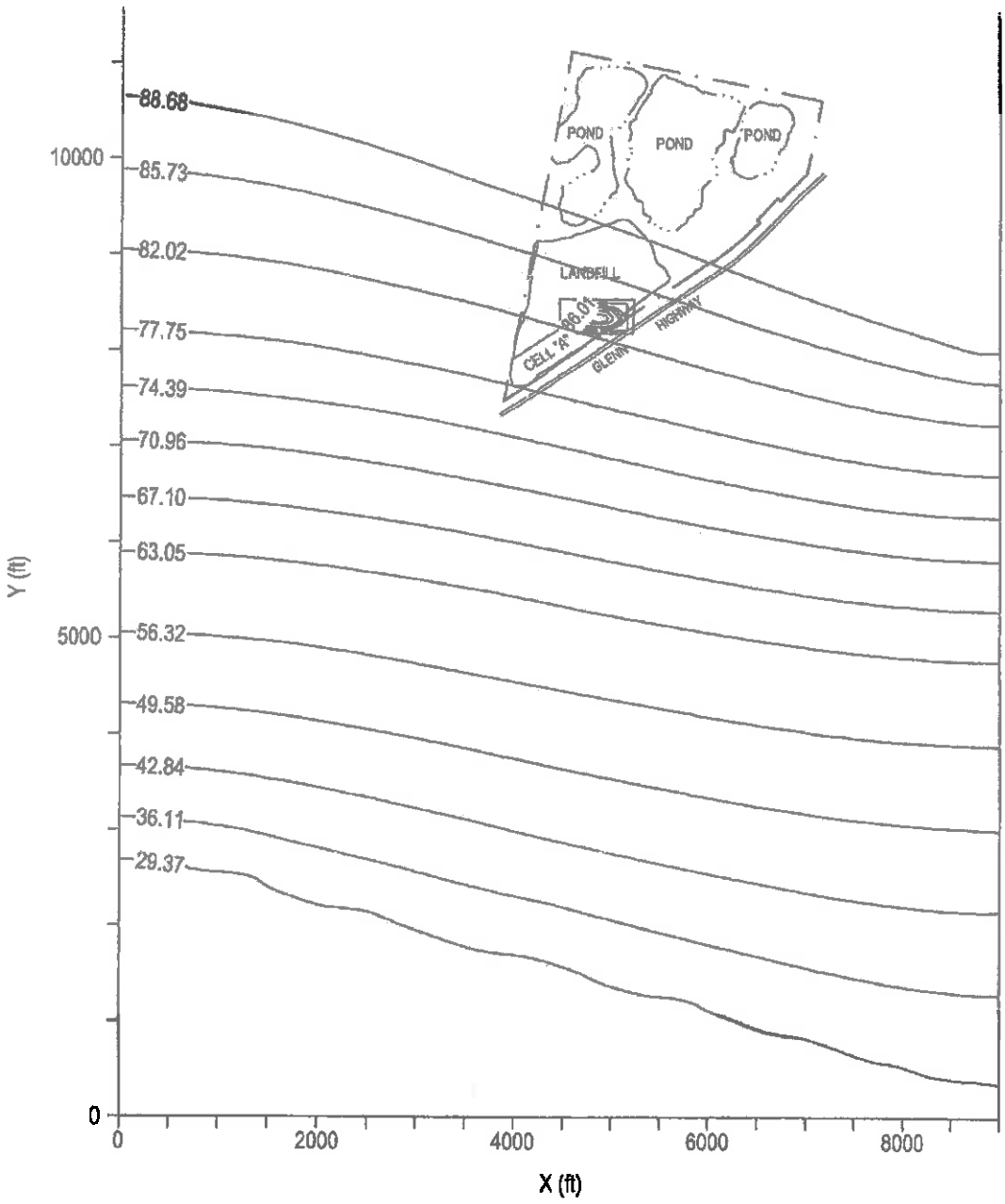
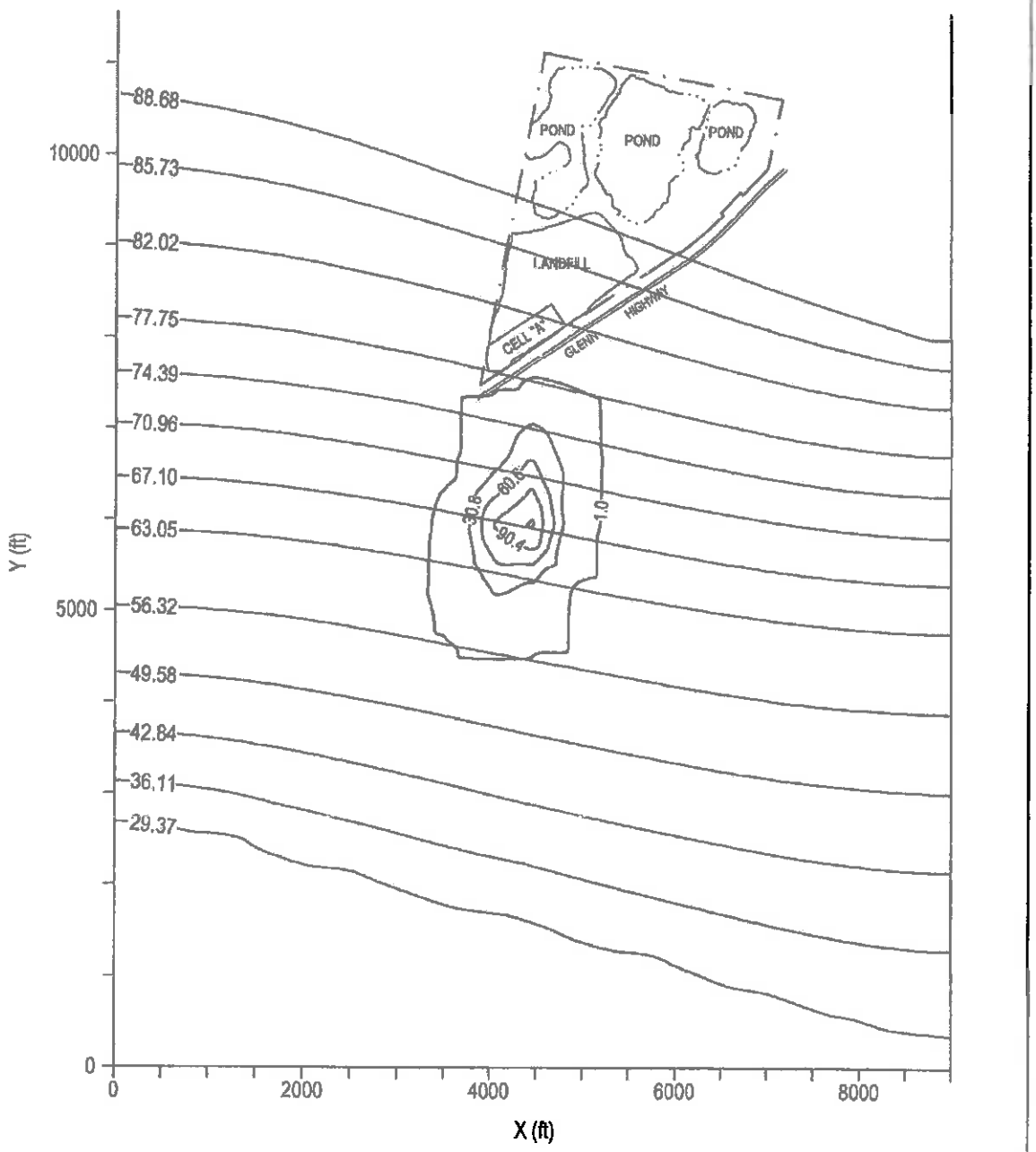
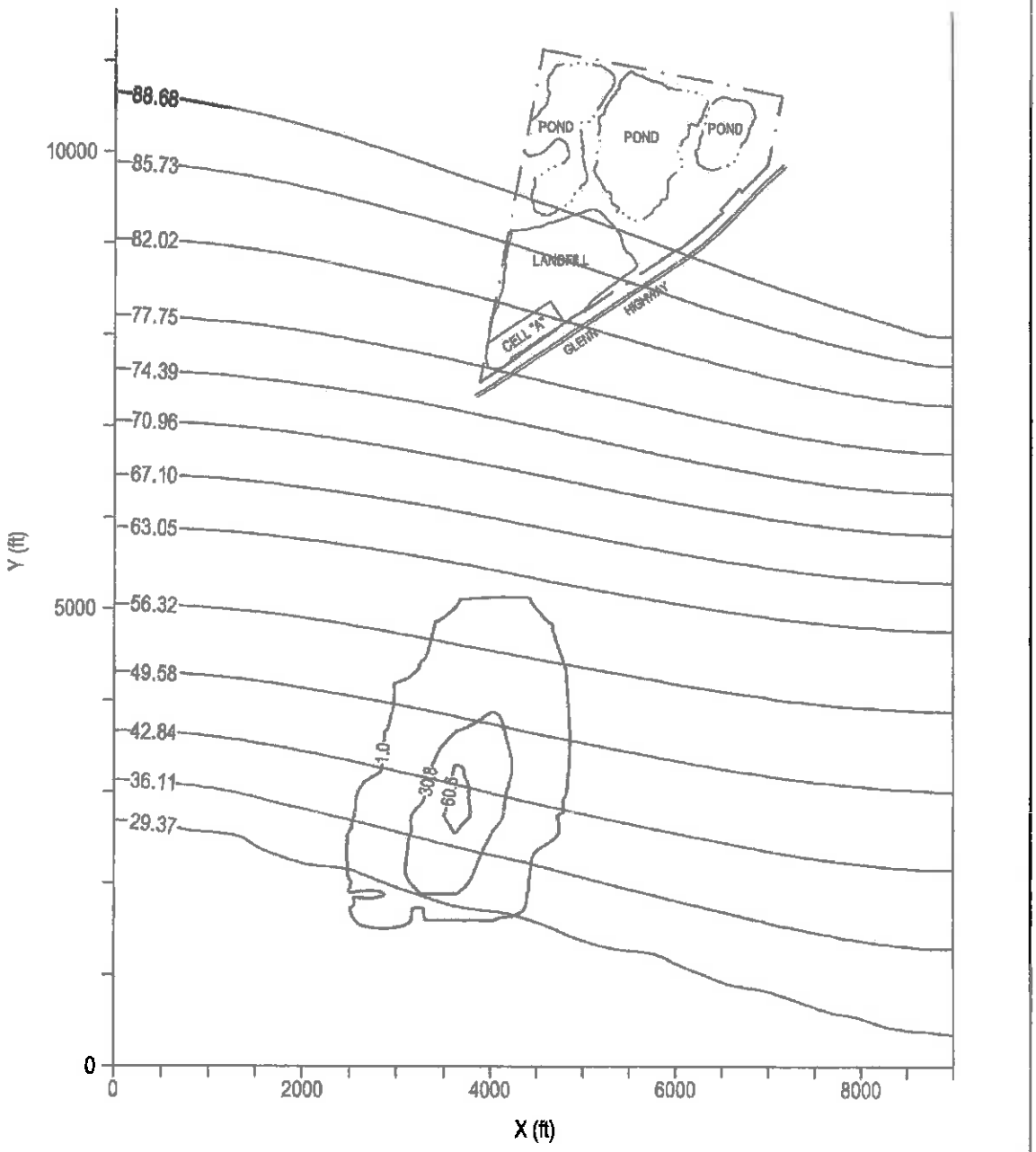
MADDOX & ASSOCIATES, INC. 39371 SAN THOMAS CT. MURRIETA, CA 92562 (951) 805-1100	MATANUSKA - SUSITNA VALLEY ALASKA	FIGURE 8.4 BENEZENE SOLUTE TRANSPORT DOTS ARE 180 DAYS APART	DATE: 11/19/13 SCALE: NONE REVISED:



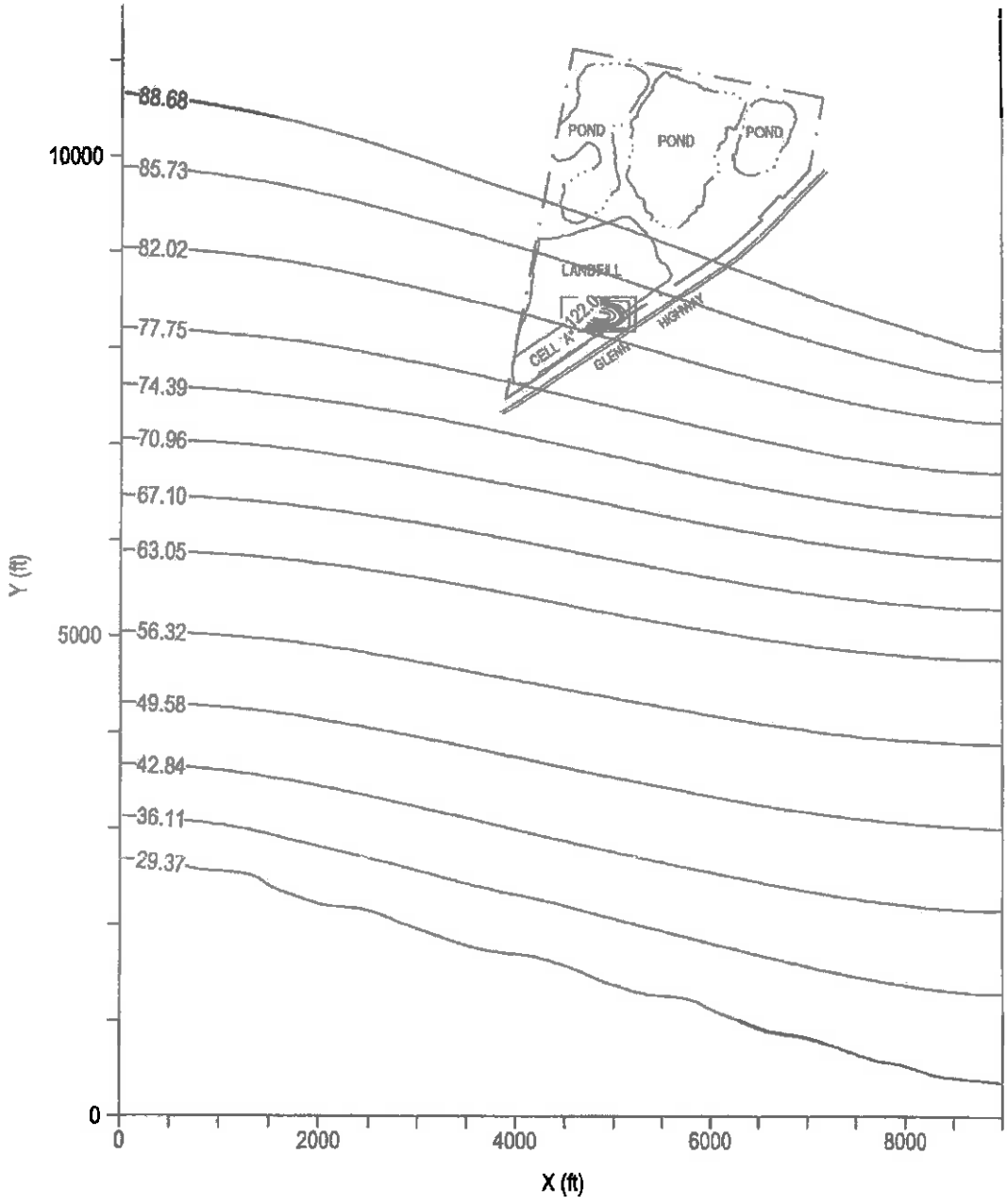
MADDOX & ASSOCIATES, INC. 39371 SAN THOMAS CT. MURRIETA, CA 92562 (951) 805-1100	MATANUSKA - SUSITNA VALLEY ALASKA	FIGURE 8.5 BENEZENE INITIAL CONCENTRATIONS 240 ug/L	DATE: 11/19/13 SCALE: NONE REVISED:



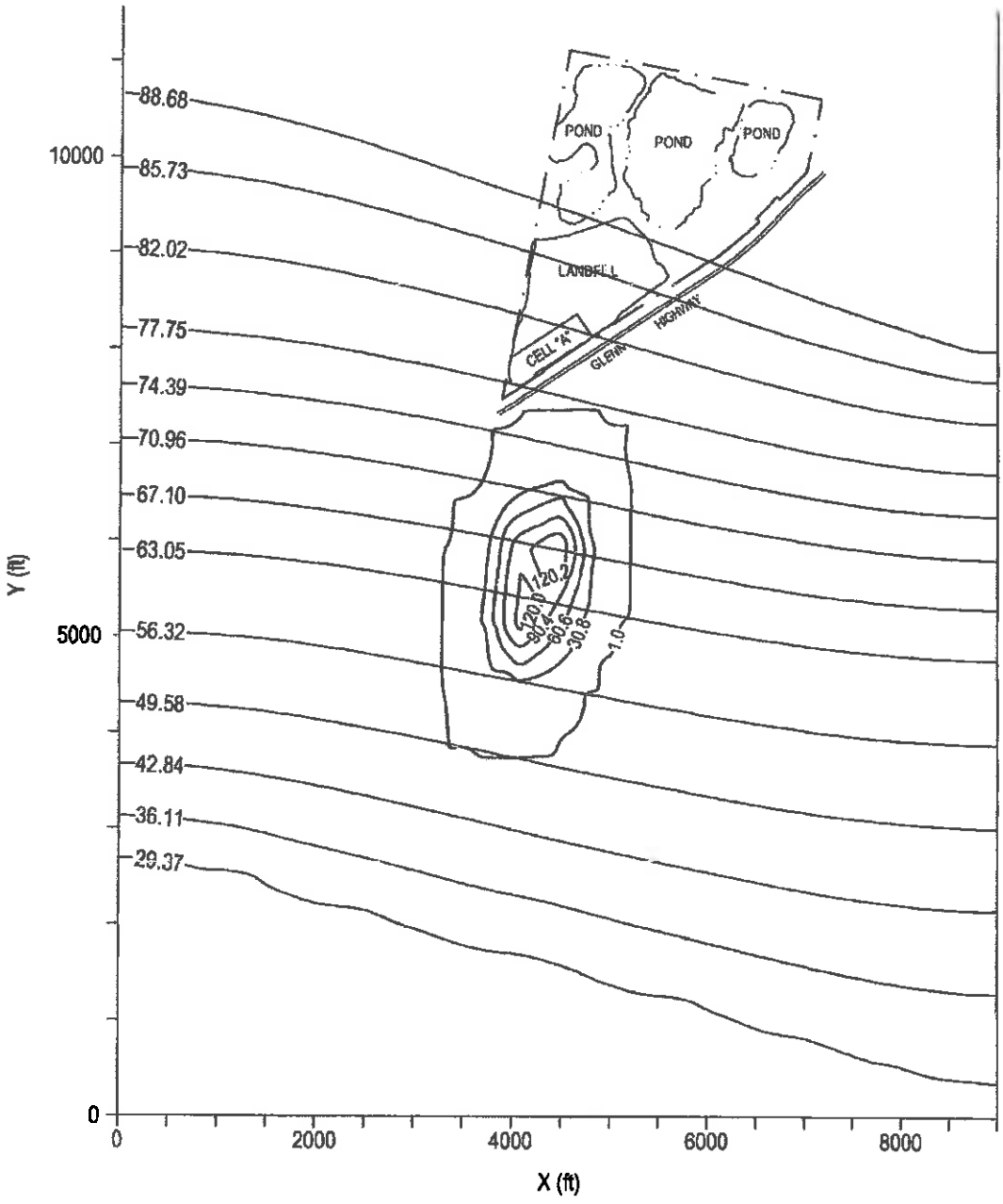
MADDOX & ASSOCIATES, INC. 39371 SAN THOMAS CT. MURRIETA, CA 92562 (951) 805-1100	MATANUSKA - SUSITNA VALLEY ALASKA	FIGURE 8.6 BENEZENE CONCENTRATIONS AFTER 180 DAYS	DATE: 11/19/13 SCALE: NONE REVISED:



MADDOX & ASSOCIATES, INC. 39371 SAN THOMAS CT. MURRIETA, CA 92562 (951) 805-1100	MATANUSKA - SUSITNA VALLEY ALASKA	FIGURE 8.7 BENEZENE CONCENTRATIONS AFTER 1 YEAR	DATE: 11/19/13 SCALE: NONE REVISED:



MADDOX & ASSOCIATES, INC. 39371 SAN THOMAS CT. MURRIETA, CA 92562 (951) 805-1100	MATANUSKA - SUSITNA VALLEY ALASKA	FIGURE 8.8 1, 2 - DCA INITIAL CONCENTRATIONS	DATE: 11/19/13 SCALE: NONE REVISED:



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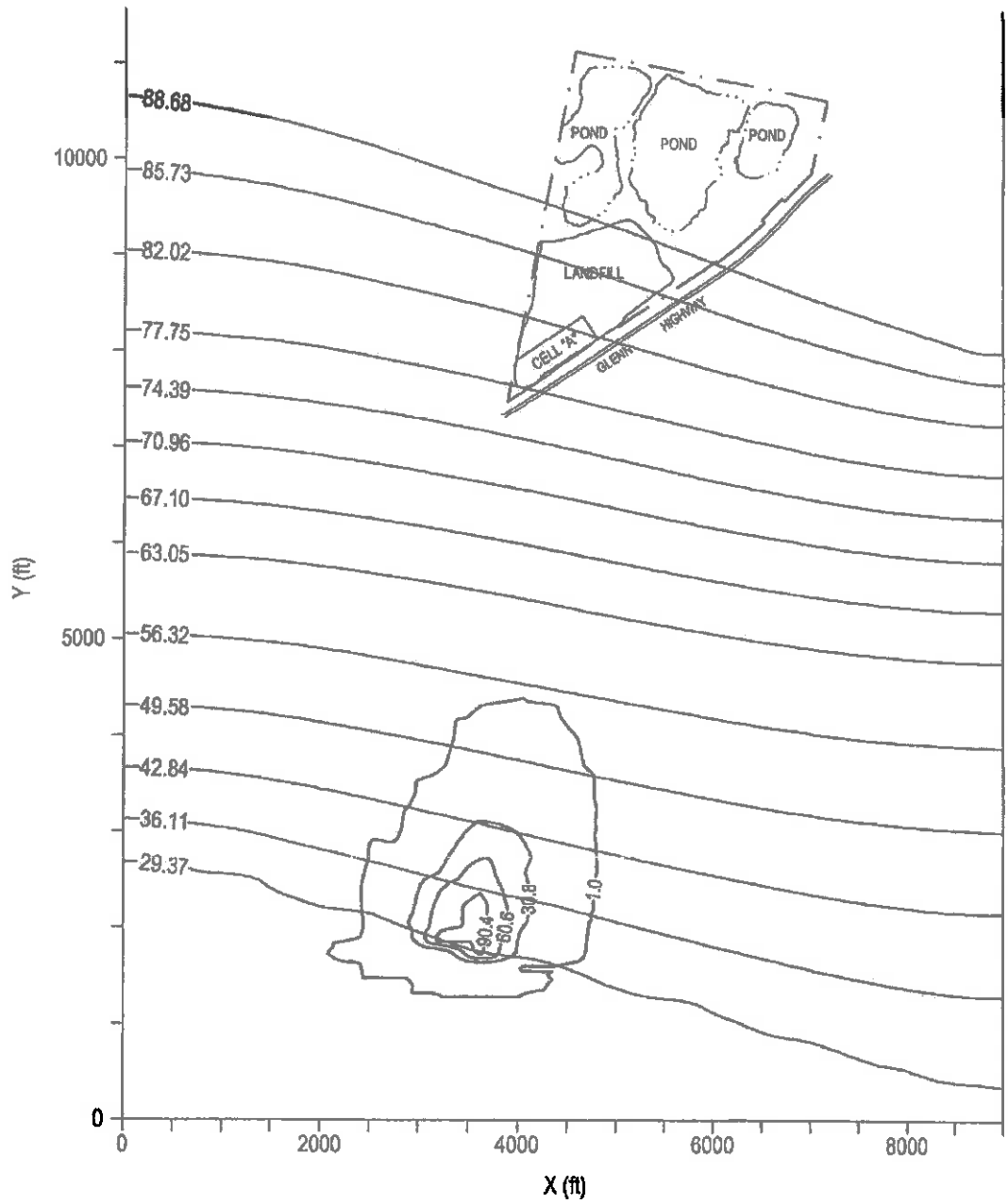
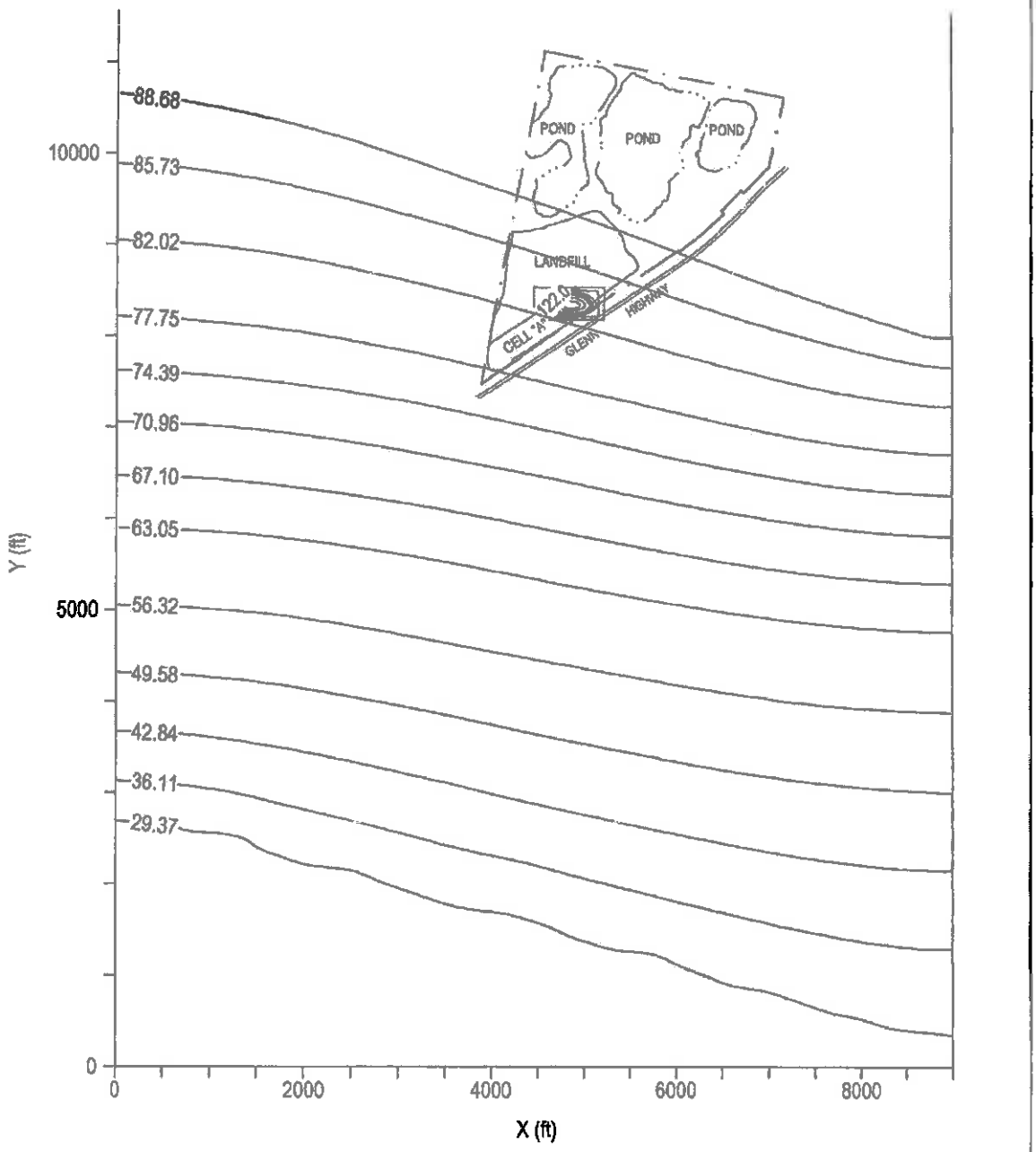
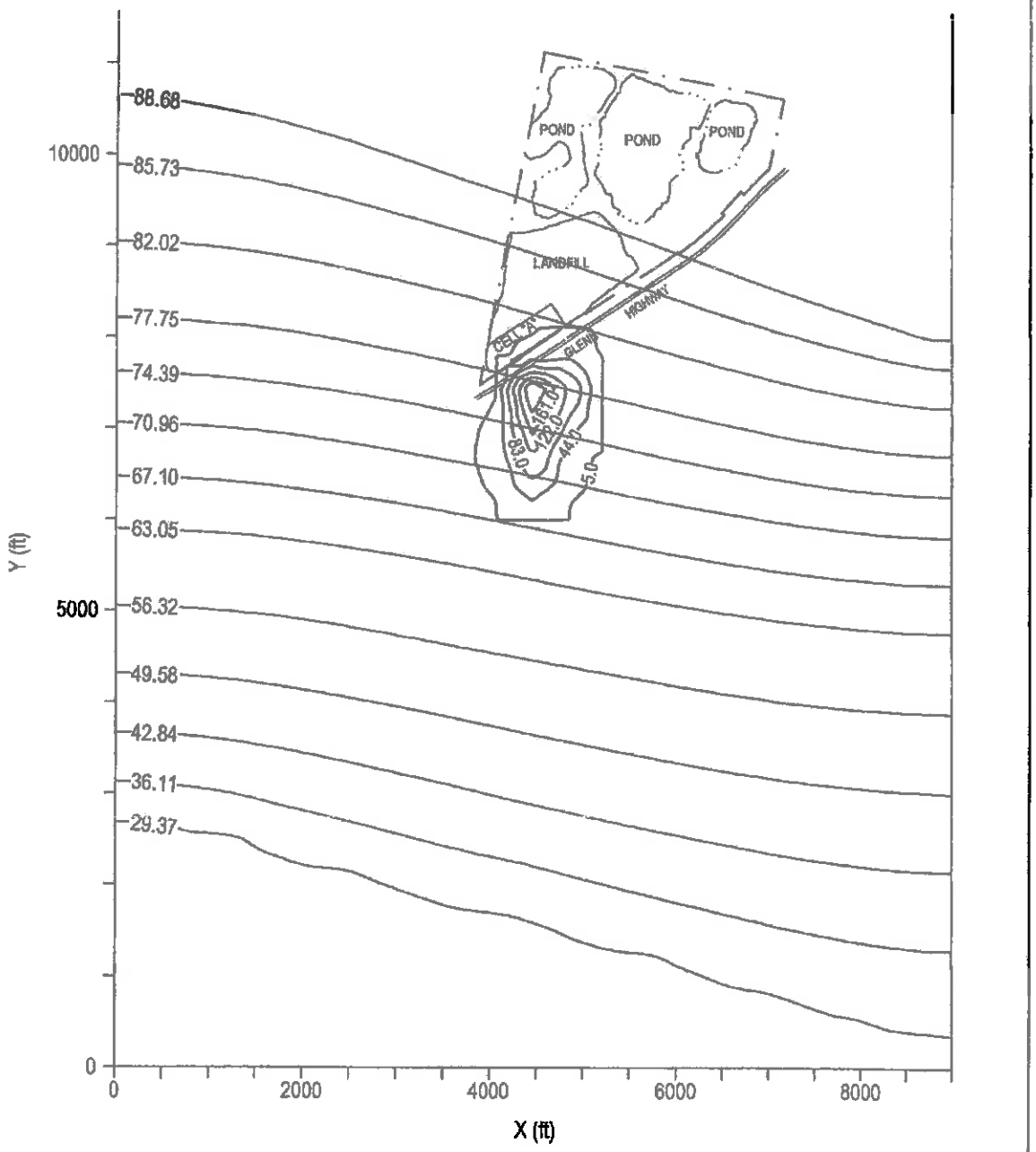
MADDOX & ASSOCIATES, INC. 39371 SAN THOMAS CT. MURRIETA, CA 92562 (951) 805-1100	MATANUSKA - SUSITNA VALLEY ALASKA	FIGURE 8.9 1, 2-DCA CONCENTRATIONS AFTER 180 DAYS	DATE: 11/19/13 SCALE: NONE REVISED:



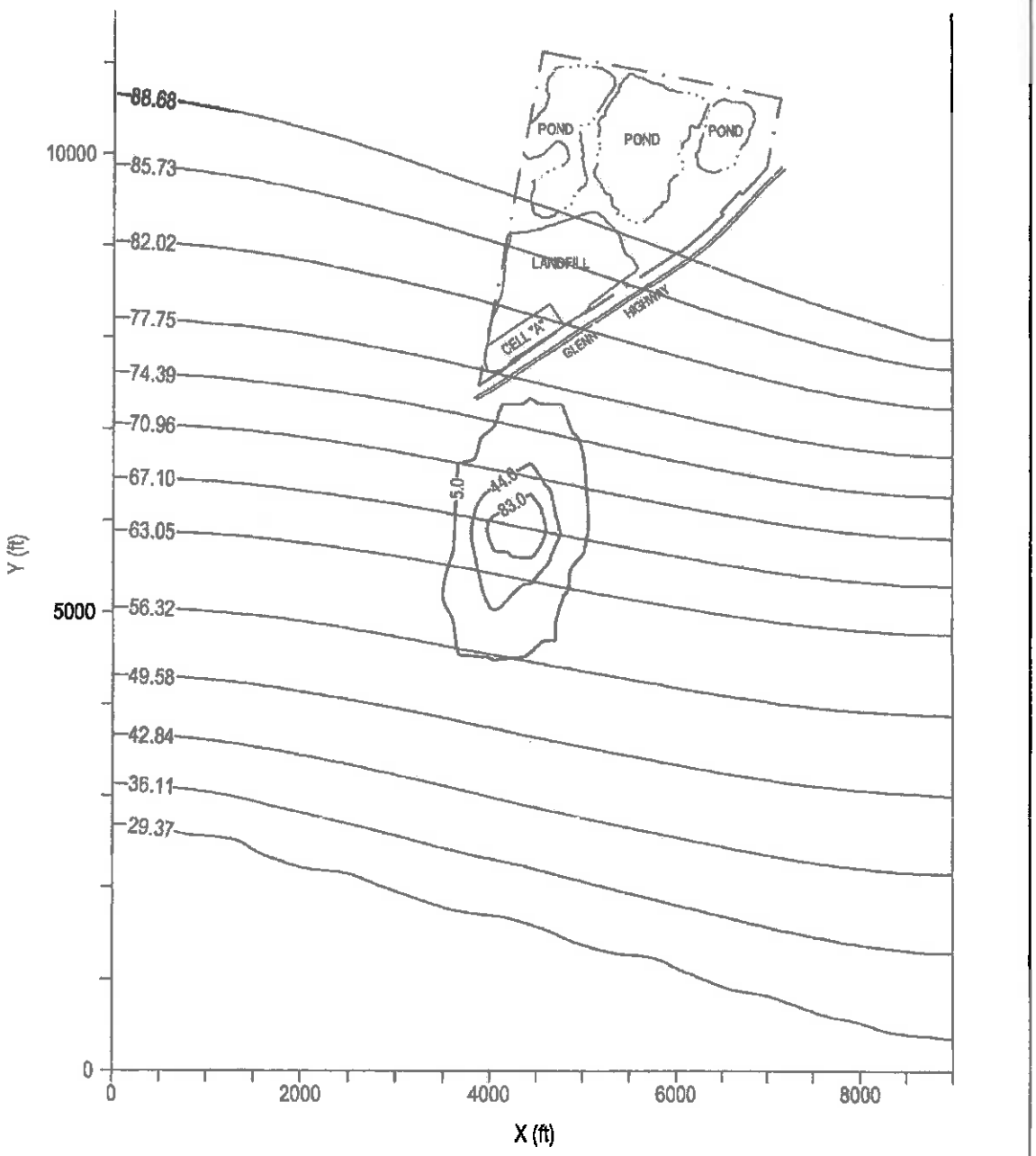
MADDOX & ASSOCIATES, INC. 39371 SAN THOMAS CT. MURRIETA, CA 92562 (951) 805-1100	MATANUSKA - SUSITNA VALLEY ALASKA	FIGURE 8.10 1, 2 - DCA CONCENTRATIONS AFTER 1 YEAR	DATE: 11/19/13 SCALE: NONE REVISED:



MADDOX & ASSOCIATES, INC. 39371 SAN THOMAS CT. MURRIETA, CA 92562 (951) 805-1100	MATANUSKA - SUSITNA VALLEY ALASKA	FIGURE 8.11 PCE INITIAL CONCENTRATIONS	DATE: 11/19/13 SCALE: NONE REVISED:



MADDOX & ASSOCIATES, INC. 39371 SAN THOMAS CT. MURRIETA, CA 92562 (951) 805-1100	MATANUSKA - SUSITNA VALLEY ALASKA	FIGURE 8.12 PCE CONCENTRATIONS AFTER 1 YEAR	DATE: 11/19/13 SCALE: NONE REVISED: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85.73
82.02
77.75
74.39
70.96
67.10
63.05
56.32
49.58
42.84
36.11
29.37
POND
POND
POND
LANDFILL
CELL "A"
GLENN
HIGHWAY
5.0
44.0
83.0
Y (ft)
10000
5000
0
0
2000
4000
6000
8000
X (ft)
FLOWPATH II VER. 1.3.2.1 © 1989-1999 WHI
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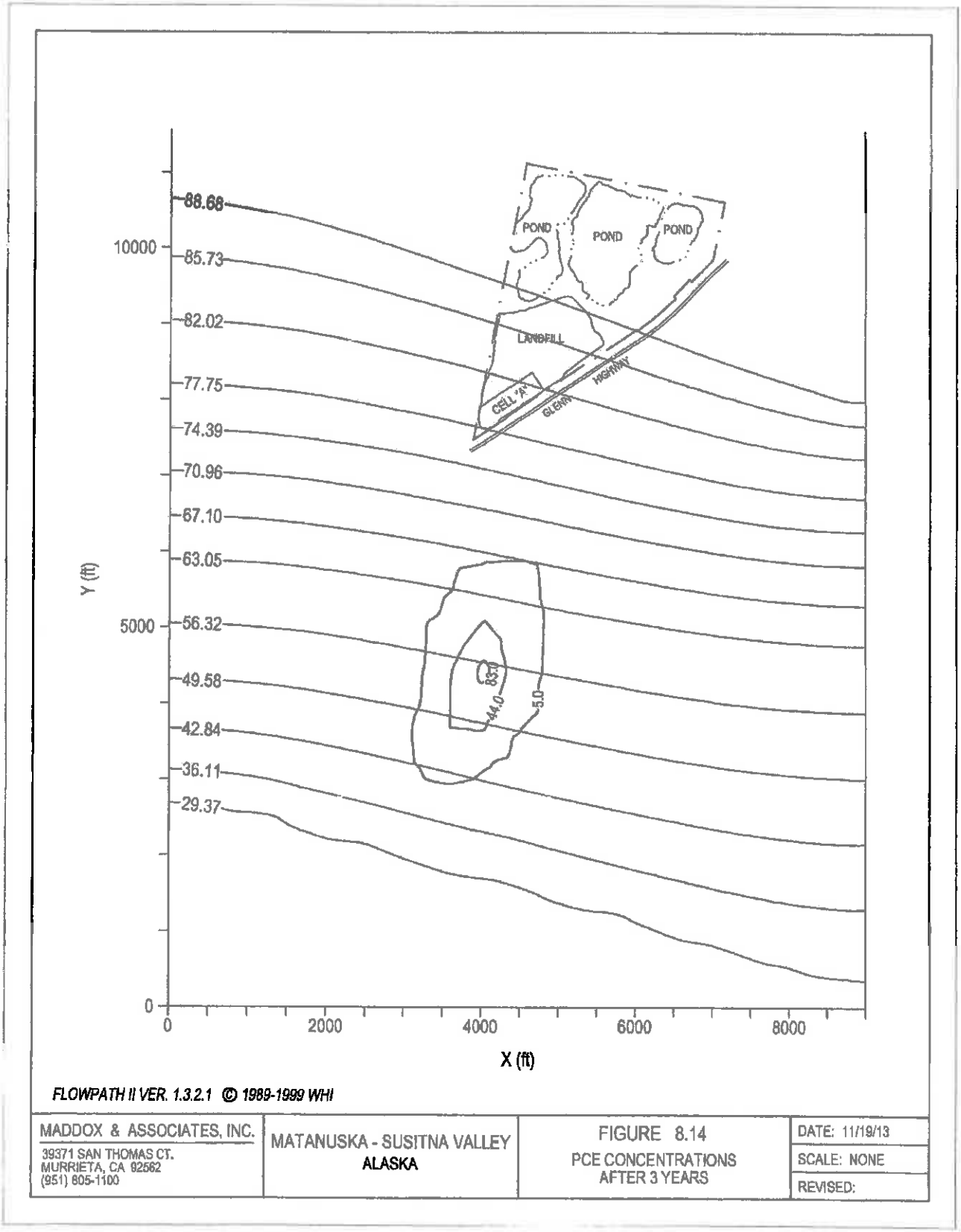
MATANUSKA - SUSITNA VALLEY
ALASKA
FIGURE 8.13
PCE CONCENTRATIONS
AFTER 2 YEARS
DATE: 11/19/13
SCALE: NONE
REVISED:


88.68
85.73
82.02
77.75
74.39
70.96
67.10
63.05
56.32
49.58
42.84
36.11
29.37
POND
POND
POND
LANDFILL
CELL "A"
GLENN
HIGHWAY
857
44.0
5.0
Y (ft)
10000
5000
0
0
2000
4000
6000
8000
X (ft)
FLOWPATH II VER. 1.3.2.1 © 1989-1999 WHI
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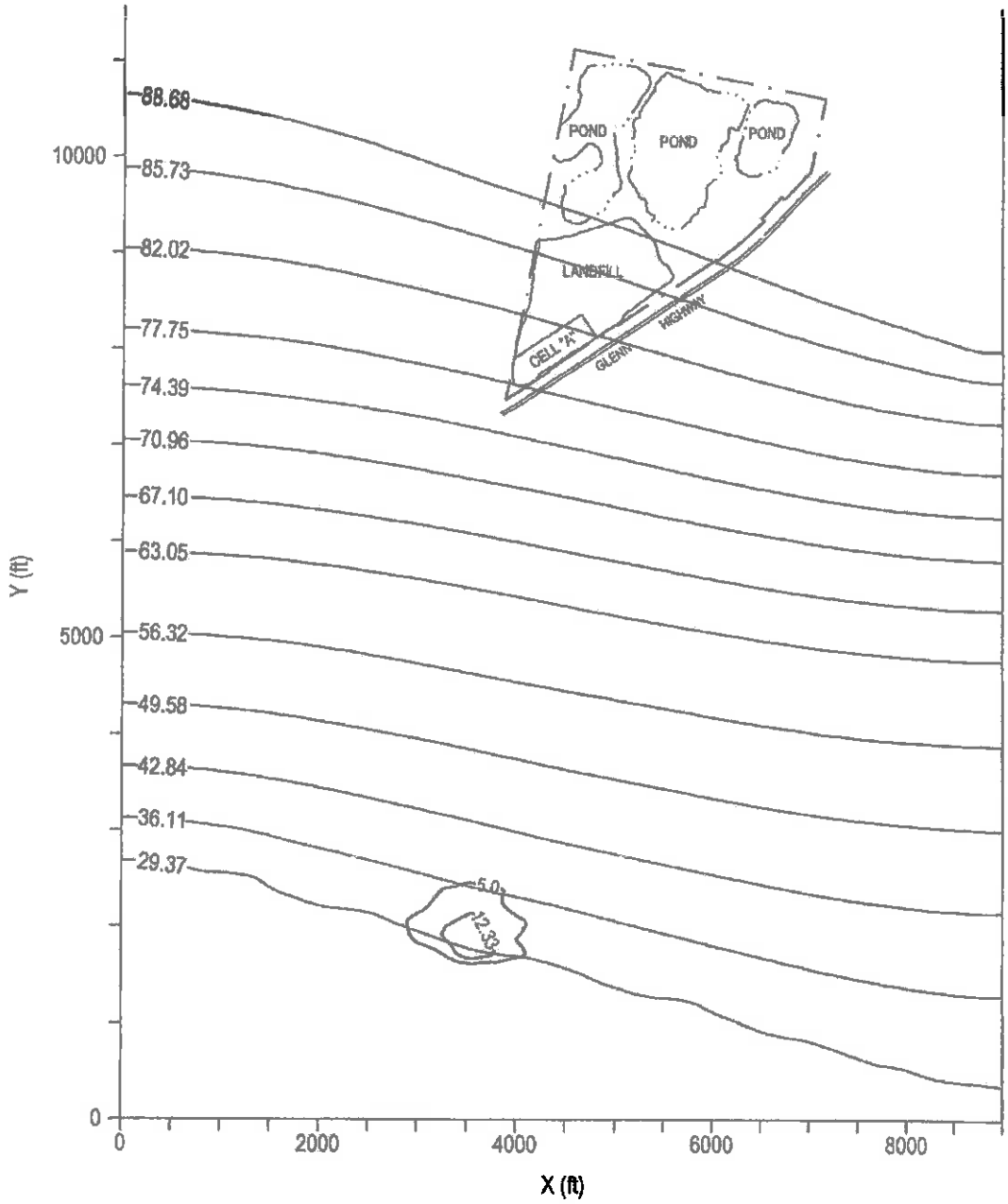
MURRIETA, CA 92562
(951) 805-1100
MATANUSKA - SUSITNA VALLEY
ALASKA
FIGURE 8.14
PCE CONCENTRATIONS
AFTER 3 YEARS
DATE: 11/19/13
SCALE: NONE
REVISED:



FLOWPATH II VER. 1.3.2.1 © 1989-1999 WHI

MADDOX & ASSOCIATES, INC. 39371 SAN THOMAS CT. MURRIETA, CA 92562 (951) 805-1100	MATANUSKA - SUSITNA VALLEY ALASKA	FIGURE 8.15 PCE CONCENTRATIONS AFTER 5 YEARS	DATE: 11/19/13 SCALE: NONE REVISED:

TABLE 8.1
MAXIMUM CONCENTRATIONS VERSUS TIME

ANALYTE	INITIAL CONC. µg/L	0.5 YR.	1 YR.	2 YR.	3 YR.	4 YR.	5 YR.
BENZENE	240 µg/L	90.4 µg/L	60.6 µg/L	--	--	--	--
PCE	300 µg/L	--	161 µg/L	83 µg/L	83 µg/L	--	12.33 µg/L
1,2-DCA	300 µg/L	120.2 µg/L	90.4 µg/L	--	--	--	--

TABLE 8.2
DISTANCE OF ANALYTE TRAVEL VERSUS TIME

ANALYTE	0.5 YR.	1 YR.	2 YR.	3 YR.	4 YR.	5 YR.
BENZENE	1,650 FT.	4,356 FT.	--	--	--	--
PCE		480 FT.	1,879 FT.	3,343 FT.	--	5,807 FT.
1,2-DCA	1,925 FT.	4,900 FT.	--	--	--	--

Reference to these two tables will indicate that over relatively short periods of time and short distances, the three compounds of concern will be significantly reduced in concentration. This is illustrated by the data contained in the following table:

TABLE 8.3
REDUCTION IN ANALYTE CONCENTRATION OVER TIME/DISTANCE

ANALYTE	DISTANCE	TIME	CONCENTRATION REDUCTION
BENZENE	0.8 MILE	1 YR.	75%
PCE	1.1 MILE	5 YR.	96%
1,2-DCA	0.9 MILE	1 YR.	70%

It should be noted that, after traveling approximately one-mile, all of these contaminants experienced a very significant reduction in concentration, ranging from 70% to 96%. The demonstrated decline in concentration of all three of these chemicals over time and distance is an indication that they are breaking down chemically and will essentially cease to be present in detectable concentrations after a relatively short transport distance beyond the monofill boundaries.

GUARD WELLS

The results of this model will allow for the proper placement of the planned "guard wells" down-gradient of the site. Proper placement of these wells will allow for the earliest possible detection of any contaminants that may pass into the groundwater beneath the monofill. As stated in section 7.2, above, there is little likelihood of any liquids passing through the monofill and entering the groundwater. Also, as stated above, if any of the leached constituents detected in the leachate produced during the laboratory analysis were to reach the water table, they would likely not travel beyond the footprint of the monofill.

9.0 CONCLUSIONS

- The Site Conceptual Model (SCM) describes the monofill as one that, as proposed in structure, operation (during operation and after closure), and location does not pose a threat to the underlying aquifer.

- The hydrogeology in the area is typical of areas underlain by glacial outwash materials (sands and gravels). A study by Kikuchi (2013) indicates that groundwater moves quickly through the system in the area of the site and responds quickly to changes in climate forcing. Similarly, the groundwater system quickly returns to long-term average conditions following variability due to seasonal or interannual changes in precipitation. The groundwater system is in a state of dynamic equilibrium, characterized by water-level fluctuation about a constant average state, with no long-term trends in the aquifer-system storage. Thus, no long-term fluctuation in groundwater levels beneath the monofill are likely to occur.

- Groundwater occurs at depths greater than 10-feet beneath the footprint of the proposed monofill.

- Over 6,000,000-gallons per day of groundwater flow beneath the area of the monofill.

- The aquifer beneath the site is unconfined.

- The three industrial ponds located on the site are in direct hydraulic connection with the water table.

- Leaching tests/analyses of three shredded samples of inert materials typical of the type that will be accepted at the proposed monofill indicated the presence of only non-hazardous materials.

- Studies of leachates produced by inert landfills by the USEPA, the Ohio EPA, and the State of Wyoming indicate that a proposed unlined inert landfill may pose no

health or environmental hazards and be properly permitted if the site is properly evaluated in advance, only non-deleterious materials are landfilled, and the site is properly managed during its lifetime and following closure. The CUP application and the Operations Plan for the proposed monofill indicate that the site meets these criteria.

- The annual precipitation in the area around Palmer, Alaska is approximately 15.49-inches. A portion of this rainfall will infiltrate the surface of the monofill, and a larger portion will run off the surface. As the inert materials are compacted during filling operations the void ratio will be reduced and the ability of water to move through the materials will be significantly reduced. This will reduce the rate of infiltration and increase the rate of runoff. Numerous studies have determined that infiltration is increased in the summer and reduced in the winter. The susceptibility to infiltration of precipitation is reduced during the cold weather portion of the year, a significant period.

- The area of active filling, at any one time, will be small compared to the entirety of the surface area of the particular cell being worked. The active working area of the site, where daily filling, compaction, and covering is conducted, will cover, on average, approximately 120-feet by 50-feet. Thus only relatively small areas of inert materials will be exposed to the elements.

- The annual rainfall of 15.49-inches per year does not occur spread out evenly over the year.

- Rainfall in the Palmer area occurs in episodes of a couple of days to a week, with the average of the longer periods being approximately 4 days of consecutive rain. Most rainy episodes last for one to two days. Following such a period of rainfall, it is common for no additional rain to fall for a week or more. Over the last 12 months, there have been 11 periods of no rain lasting for two to three weeks at a time.

- Based on the mechanics of infiltration, the short periods of intense rain will result in more surface runoff, and less infiltration, than if the rainfall were spread out evenly over a 12-month period. Consequently, with short, intense periods of rainfall, the upper zone of the soil cover will become overloaded with moisture as the pores fill and become clogged with water. This will result in reduced permeability, increased runoff, and reduced infiltration.

- In between periods of rainfall, the upper horizons of the refuse will tend to dry out due to evapotranspiration and the cycle will begin again with the next period of rain. This cyclic process will result in the minimization of infiltration and maximization of evapotranspiration.

- It is difficult to estimate the actual volume of water per unit of surface area that may penetrate into the monofill because of the relatively small daily working

area, but with this type of cyclic process, it is likely that none of the precipitation will make its way through the considerable thickness of the proposed monofill. It follows, then, that it is unlikely that any of the monofill constituents will leach into the water table.

- Groundwater modeling of three hazardous compounds (1,2-DCA, PCE, and benzene) that are typically released into the environment by man's activities indicate that, if they are inadvertently introduced into the aquifer, they will experience significant breakdown in concentration over relatively short periods of time.

- All of the contaminants modeled showed a very significant reduction in concentration, ranging from 70% to 96%. over a distance of approximately one mile.

Our review of the proposed monofill, including the inert materials it will receive, it's construction, operations, closure plans, geologic/hydrogeologic setting, and the unlikelihood of significant infiltration of precipitation indicate that the site will not pose a threat to the underlying aquifer.

10.0 SELECTED REFERENCES

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APPENDIX A:

LABORATORY ANALYSES OF SHREDDED MONOFILL MATERIALS

SGS

Laboratory Report of Analysis

To: Environmental Mgmt Inc (EMI)
206 E Fireweed Ln #201
Anchorage, AK 995032703
(907)272-9336

Report Number: **1133673**

Client Project: **CMS Monofills**

Dear Larry Helgeson,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of five years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of fourteen (14) days from the date of this report unless other archiving requirements were included in the quote.

If there are any questions about the report or services performed during this project, please call Forest at (907) 562-2343. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,
SGS North America Inc.

Stephen C. Ede
Alaska Division Technical Director

Stephen Ede
2013.09.06
16:39:43 -08'00'

Forest Taylor Date
Project Manager
Forest.Taylor@sgs.com

200 West Potter Drive, Anchorage, AK 99518
t 907 562 2343 f 907.561.5301 www.us.sgs.com

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Case Narrative

SGS Client: **Environmental Mgmt Inc (EMI)**
SGS Project: **1133673**
Project Name/Site: **CMS Monofills**
Project Contact: **Larry Helgeson**

Refer to sample receipt form for information on sample condition.

Residual A (1133673001) PS

8270D - LOQs are elevated due to sample dilution. Sample analyzed at a dilution due to matrix.
8270D - Surrogate recovery is outside of QC criteria due to sample dilution.
300.0 - Sulfate - Sulfate was analyzed off of the SPLP extract. Sulfate results: 591 mg/L.

Residual B (1133673002) PS

8270D - LOQs are elevated due to sample dilution. Sample analyzed at a dilution due to matrix.
8270D - Surrogate recovery is outside of QC criteria due to sample dilution.
300.0 - Sulfate - Sulfate was analyzed off of the SPLP extract. Sulfate results: 520 mg/L.

Residual C (1133673003) PS

8270D - LOQs are elevated due to sample dilution. Sample analyzed at a dilution due to matrix.
8270D - Surrogate recovery is outside of QC criteria due to sample dilution.
300.0 - Sulfate - Sulfate was analyzed off of the SPLP extract. Sulfate results: 673 mg/L.

LCSD for HBN 1472973 [XXX/2964 (1168117) LCSD

8270D - LCS/LCSD RPD for pyridine and anitine does not meet QC criteria. These analytes were not detected above the LOQ in the associated samples.

1138227001MSD (1167786) MSD

6020 - Metals - MSD recoveries for several analytes were outside of acceptance criteria. Post digestion spike was successful.

*QC comments may be associated with the field samples found in this report. When applicable, comments will be applied to associated field samples.

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Laboratory Qualifiers

Enclosed are the analytical results associated with the above work order. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. If you have any questions regarding this report, or if we can be of any other assistance, please contact your SGS Project Manager at 907-562-2343. All work is provided under SGS general terms and conditions (<http://www.sgs.com/terms_and_conditions.htm>), unless other written agreements have been accepted by both parties.

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry & Microbiology) & UST-005 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020A, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035B, 6020, 7470A, 7471B, 8021B, 8082A, 8260B, 8270D, 8270D-SIM, 9040B, 9045C, 9056A, 9060A, AK101 and AK102/103). Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

The following descriptors or qualifiers may be found in your report:

*	The analyte has exceeded allowable regulatory or control limits.
!	Surrogate out of control limits
B	Indicates the analyte is found in a blank associated with the sample.
CCV	Continuing Calibration Verification
CL	Control Limit
D	The analyte concentration is the result of a dilution.
DF	Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
F	Indicates value that is greater than or equal to the DL
GT	Greater Than
IB	Instrument Blank
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
JL	The analyte was positively identified, but the quantitation is a low estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LOD	Limit of Detection (i.e., 2xDL)
LOQ	Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT	Less Than
M	A matrix effect was present.
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
Q	QC parameter out of acceptance range.
R	Rejected
RPD	Relative Percent Difference
U	Indicates the analyte was analyzed for but not detected.

Note Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content. All DRO/RRO analyses are integrated per SOP.

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Sample Summary

Client Sample ID	Lab Sample ID	Collected	Received	Matrix
Residual A	1133673001	08/02/2013	08/08/2013	Solid/Soil (Wet Weight)
Residual B	1133673002	08/02/2013	08/08/2013	Solid/Soil (Wet Weight)
Residual C	1133673003	08/02/2013	08/08/2013	Solid/Soil (Wet Weight)

Method	Method Description
SW6020 SPLP	Metals by ICP/MS SPLP SW1312
SW9045C	pH, Soil (S)
SW8270D SPLP	Semi-Volatile SPLP Liq/Liq
SW1312/8260B	SLP Volatile Organic Compounds 8260

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Detectable Results Summary

Client Sample ID: **Residual A**			
Lab Sample ID: 1133673001	Parameter	Result	Units
Characterization	pH, Corrosivity	6.10	pH units
SPLP METALS	Manganese	0.384	mg/L
	Sodium	65.4	mg/L
	Zinc	2.22	mg/L
Client Sample ID: **Residual B**			
Lab Sample ID: 1133673002	Parameter	Result	Units
Characterization	pH, Corrosivity	6.04	pH units
SPLP METALS	Manganese	0.347	mg/L
	Sodium	53.0	mg/L
Client Sample ID: **Residual C**			
Lab Sample ID: 1133673003	Parameter	Result	Units
Characterization	pH, Corrosivity	6.61	pH units
SPLP METALS	Manganese	0.373	mg/L
	Sodium	66.5	mg/L

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Results of **Residual A**

Client Sample ID: **Residual A**
Client Project ID: **CMS Monofills**
Lab Sample ID: 1133673001
Lab Project ID: 1133673

Collection Date: 08/02/13 00:00
Received Date: 08/08/13 08:23
Matrix: Solid/Soil (Wet Weight)
Solids (%):

Results by Characterization

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
pH, Corrosivity	6.10		0.00	0.00	pH units		(2-12.5)	08/30/13 17:55

Batch Information

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Results of Residual A

Client Sample ID: **Residual A**
Client Project ID: **CMS Monofills**
Lab Sample ID: 1133673001
Lab Project ID: 1133673

Collection Date: 08/02/13 00:00
Received Date: 08/08/13 08:23
Matrix: Solid/Soil (Wet Weight)
Solids (%):

Results by Semivolatile Organic GC/MS (SPLP

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
2,4,5-Trichlorophenol	0.122 U	0.122	0.0378	mg/L	10		08/15/13 21:44
2,4,6-Trichlorophenol	0.122 U	0.122	0.0378	mg/L	10		08/15/13 21:44
2,4-Dinitrotoluene	0.122 U	0.122	0.0378	mg/L	10		08/15/13 21:44
2-Methylphenol (o-Cresol)	0.122 U	0.122	0.0378	mg/L	10		08/15/13 21:44
3&4-Methylphenol (p&m-Cresol)	0.244 U	0.244	0.0756	mg/L	10		08/15/13 21:44
Hexachlorobenzene	0.122 U	0.122	0.0378	mg/L	10		08/15/13 21:44
Hexachlorobutadiene	0.122 U	0.122	0.0378	mg/L	10		08/15/13 21:44
Hexachloroethane	0.122 U	0.122	0.0378	mg/L	10		08/15/13 21:44
Nitrobenzene	0.122 U	0.122	0.0378	mg/L	10		08/15/13 21:44
Pentachlorophenol	0.610 U	0.610	0.183	mg/L	10		08/15/13 21:44
Pyridine	0.244 U	0.244	0.0756	mg/L	10		08/15/13 21:44
Surrogates							
2,4,6-Tribromophenol	85.6	40-125		%	10		08/15/13 21:44
2-Fluorobiphenyl	76	50-110		%	10		08/15/13 21:44
2-Fluorophenol	51.2	20-110		%	10		08/15/13 21:44
Nitrobenzene-d5	66	40-110		%	10		08/15/13 21:44
Phenol-d6	64.75	10-115		%	10		08/15/13 21:44
Terphenyl-d14	86.3	50-135		%	10		08/15/13 21:44

Batch Information

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Results of **Residual A**

Client Sample ID: **Residual A**
Client Project ID: **CMS Monofills**
Lab Sample ID: 1133673001
Lab Project ID: 1133673

Collection Date: 08/02/13 00:00
Received Date: 08/08/13 08:23
Matrix: Solid/Soil (Wet Weight)
Solids (%):

Results by **SPLP METALS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Aluminum	25.0	U	25.0	7.50	mg/L	25		08/13/13 17:07
Arsenic	0.250	U	0.250	0.0750	mg/L	25		08/13/13 17:07
Barium	0.750	U	0.750	0.235	mg/L	25		08/13/13 17:07
Beryllium	0.0500	U	0.0500	0.0250	mg/L	25		08/13/13 17:07
Cadmium	0.100	U	0.100	0.0300	mg/L	25		08/13/13 17:07
Chromium	0.200	U	0.200	0.0600	mg/L	25		08/13/13 17:07
Cobalt	0.0500	U	0.0500	0.0155	mg/L	25		08/13/13 17:07
Copper	0.300	U	0.300	0.0900	mg/L	25		08/13/13 17:07
Iron	50.0	U	50.0	15.5	mg/L	25		08/13/13 17:07
Lead	0.0500	U	0.0500	0.0155	mg/L	25		08/13/13 17:07
Manganese	0.384		0.100	0.0310	mg/L	25		08/13/13 17:07
Mercury	0.0500	U	0.0500	0.0155	mg/L	25		08/13/13 17:07
Nickel	0.100	U	0.100	0.0310	mg/L	25		08/13/13 17:07
Sodium	65.4		50.0	15.5	mg/L	25		08/13/13 17:07
Zinc	2.22		1.25	0.390	mg/L	25		08/13/13 17:07

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Results of Residual A

Client Sample ID: **Residual A**
Client Project ID: **CMS Monofills**
Lab Sample ID: 1133673001
Lab Project ID: 1133673

Collection Date: 08/02/13 00:00
Received Date: 08/08/13 08:23
Matrix: Solid/Soil (Wet Weight)
Solids (%):

Results by SPLP Volatiles GC/MS

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,1-Dichloroethene	200 U	200	62.0	ug/L	200		08/13/13 13:29
1,2-Dichloroethane	100 U	100	30.0	ug/L	200		08/13/13 13:29
1,4-Dichlorobenzene	100 U	100	30.0	ug/L	200		08/13/13 13:29
2-Butanone (MEK)	2000 U	2000	620	ug/L	200		08/13/13 13:29
Benzene	80.0 U	80.0	24.0	ug/L	200		08/13/13 13:29
Carbon tetrachloride	200 U	200	62.0	ug/L	200		08/13/13 13:29
Chlorobenzene	100 U	100	30.0	ug/L	200		08/13/13 13:29
Chloroform	200 U	200	60.0	ug/L	200		08/13/13 13:29
Hexachlorobutadiene	200 U	200	62.0	ug/L	200		08/13/13 13:29
Tetrachloroethene	200 U	200	62.0	ug/L	200		08/13/13 13:29
Trichloroethene	200 U	200	62.0	ug/L	200		08/13/13 13:29
Vinyl chloride	200 U	200	62.0	ug/L	200		08/13/13 13:29
Surrogates							
1,2-Dichloroethane-D4	99.2	70-120		%	200		08/13/13 13:29
4-Bromofluorobenzene	119	75-120		%	200		08/13/13 13:29
4-Bromofluorobenzene	99.3	75-120		%	200		08/13/13 13:29
Toluene-d8	100	85-120		%	200		08/13/13 13:29

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Results of **Residual B**

Client Sample ID: **Residual B**
Client Project ID: **CMS Monofills**
Lab Sample ID: 1133673002
Lab Project ID: 1133673

Collection Date: 08/02/13 00:00
Received Date: 08/08/13 08:23
Matrix: Solid/Soil (Wet Weight)
Solids (%):

Results by **Characterization**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
pH, Corrosivity	6.04		0.00	0.00	pH units		(2-12.5)	08/30/13 17:55

Batch Information

SGS

Results of Residual B

Client Sample ID: **Residual B**
Client Project ID: **CMS Monofills**
Lab Sample ID: 1133673002
Lab Project ID: 1133673

Collection Date: 08/02/13 00:00
Received Date: 08/08/13 08:23
Matrix: Solid/Soil (Wet Weight)
Solids (%):

Results by **Semivolatile Organic GC/MS (SPLP**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
2,4,5-Trichlorophenol	0.0532	U	0.0532	0.0165	mg/L	5		08/15/13 22:01
2,4,6-Trichlorophenol	0.0532	U	0.0532	0.0165	mg/L	5		08/15/13 22:01
2,4-Dinitrotoluene	0.0532	U	0.0532	0.0165	mg/L	5		08/15/13 22:01
2-Methylphenol (o-Cresol)	0.0532	U	0.0532	0.0165	mg/L	5		08/15/13 22:01
3&4-Methylphenol (p&m-Cresol)	0.106	U	0.106	0.0330	mg/L	5		08/15/13 22:01
Hexachlorobenzene	0.0532	U	0.0532	0.0165	mg/L	5		08/15/13 22:01
Hexachlorobutadiene	0.0532	U	0.0532	0.0165	mg/L	5		08/15/13 22:01
Hexachloroethane	0.0532	U	0.0532	0.0165	mg/L	5		08/15/13 22:01
Nitrobenzene	0.0532	U	0.0532	0.0165	mg/L	5		08/15/13 22:01
Pentachlorophenol	0.266	U	0.266	0.0798	mg/L	5		08/15/13 22:01
Pyridine	0.106	U	0.106	0.0330	mg/L	5		08/15/13 22:01
Surrogates								
2,4,6-Tribromophenol	84.38		40-125		%	5		08/15/13 22:01
2-Fluorobiphenyl	76.9		50-110		%	5		08/15/13 22:01
2-Fluorophenol	47.43		20-110		%	5		08/15/13 22:01
Nitrobenzene-d5	60.75		40-110		%	5		08/15/13 22:01
Phenol-d6	57.78		10-115		%	5		08/15/13 22:01
Terphenyl-d14	100.7		50-135		%	5		08/15/13 22:01

Batch Information

SGS

Results of **Residual B**

Client Sample ID: **Residual B**
Client Project ID: **CMS Monofills**
Lab Sample ID: 1133673002
Lab Project ID: 1133673

Collection Date: 08/02/13 00:00
Received Date: 08/08/13 08:23
Matrix: Solid/Soil (Wet Weight)
Solids (%):

Results by **SPLP METALS**

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Aluminum	25.0 U	25.0	7.50	mg/L	25		08/13/13 17:09
Arsenic	0.250 U	0.250	0.0750	mg/L	25		08/13/13 17:09
Barium	0.750 U	0.750	0.235	mg/L	25		08/13/13 17:09
Beryllium	0.0500 U	0.0500	0.0250	mg/L	25		08/13/13 17:09
Cadmium	0.100 U	0.100	0.0300	mg/L	25		08/13/13 17:09
Chromium	0.200 U	0.200	0.0600	mg/L	25		08/13/13 17:09
Cobalt	0.0500 U	0.0500	0.0155	mg/L	25		08/13/13 17:09
Copper	0.300 U	0.300	0.0900	mg/L	25		08/13/13 17:09
Iron	50.0 U	50.0	15.5	mg/L	25		08/13/13 17:09
Lead	0.0500 U	0.0500	0.0155	mg/L	25		08/13/13 17:09
Manganese	0.347	0.100	0.0310	mg/L	25		08/13/13 17:09
Mercury	0.0500 U	0.0500	0.0155	mg/L	25		08/13/13 17:09
Nickel	0.100 U	0.100	0.0310	mg/L	25		08/13/13 17:09
Sodium	53.0	50.0	15.5	mg/L	25		08/13/13 17:09
Zinc	1.25 U	1.25	0.390	mg/L	25		08/13/13 17:09

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Results of Residual B

Client Sample ID: **Residual B**
Client Project ID: **CMS Monofills**
Lab Sample ID: 1133673002
Lab Project ID: 1133673

Collection Date: 08/02/13 00:00
Received Date: 08/08/13 08:23
Matrix: Solid/Soil (Wet Weight)
Solids (%):

Results by **SPLP Volatiles GC/MS**

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,1-Dichloroethene	200 U	200	62.0	ug/L	200		08/13/13 13:46
1,2-Dichloroethane	100 U	100	30.0	ug/L	200		08/13/13 13:46
1,4-Dichlorobenzene	100 U	100	30.0	ug/L	200		08/13/13 13:46
2-Butanone (MEK)	2000 U	2000	620	ug/L	200		08/13/13 13:46
Benzene	80.0 U	80.0	24.0	ug/L	200		08/13/13 13:46
Carbon tetrachloride	200 U	200	62.0	ug/L	200		08/13/13 13:46
Chlorobenzene	100 U	100	30.0	ug/L	200		08/13/13 13:46
Chloroform	200 U	200	60.0	ug/L	200		08/13/13 13:46
Hexachlorobutadiene	200 U	200	62.0	ug/L	200		08/13/13 13:46
Tetrachloroethene	200 U	200	62.0	ug/L	200		08/13/13 13:46
Trichloroethene	200 U	200	62.0	ug/L	200		08/13/13 13:46
Vinyl chloride	200 U	200	62.0	ug/L	200		08/13/13 13:46
Surrogates							
1,2-Dichloroethane-D4	99.4	70-120		%	200		08/13/13 13:46
4-Bromofluorobenzene	117	75-120		%	200		08/13/13 13:46
4-Bromofluorobenzene	97.1	75-120		%	200		08/13/13 13:46
Toluene-d8	99.4	85-120		%	200		08/13/13 13:46

Batch Information

SGS

Results of **Residual C**

Client Sample ID: **Residual C**
Client Project ID: **CMS Monofills**
Lab Sample ID: 1133673003
Lab Project ID: 1133673

Collection Date: 08/02/13 00:00
Received Date: 08/08/13 08:23
Matrix: Solid/Soil (Wet Weight)
Solids (%):

Results by **Characterization**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
pH, Corrosivity	6.61		0.00	0.00	pH units		(2-12.5)	08/30/13 17:55

Batch Information

SGS

Results of Residual C

Client Sample ID: **Residual C**
Client Project ID: **CMS Monofills**
Lab Sample ID: 1133673003
Lab Project ID: 1133673

Collection Date: 08/02/13 00:00
Received Date: 08/08/13 08:23
Matrix: Solid/Soil (Wet Weight)
Solids (%):

Results by Semivolatile Organic GC/MS (SPLP

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
2,4,5-Trichlorophenol	0.0667 U	0.0667	0.0207	mg/L	5		08/15/13 22:18
2,4,6-Trichlorophenol	0.0667 U	0.0667	0.0207	mg/L	5		08/15/13 22:18
2,4-Dinitrotoluene	0.0667 U	0.0667	0.0207	mg/L	5		08/15/13 22:18
2-Methylphenol (o-Cresol)	0.0667 U	0.0667	0.0207	mg/L	5		08/15/13 22:18
3&4-Methylphenol (p&m-Cresol)	0.133 U	0.133	0.0413	mg/L	5		08/15/13 22:18
Hexachlorobenzene	0.0667 U	0.0667	0.0207	mg/L	5		08/15/13 22:18
Hexachlorobutadiene	0.0667 U	0.0667	0.0207	mg/L	5		08/15/13 22:18
Hexachloroethane	0.0667 U	0.0667	0.0207	mg/L	5		08/15/13 22:18
Nitrobenzene	0.0667 U	0.0667	0.0207	mg/L	5		08/15/13 22:18
Pentachlorophenol	0.333 U	0.333	0.100	mg/L	5		08/15/13 22:18
Pyridine	0.133 U	0.133	0.0413	mg/L	5		08/15/13 22:18
Surrogates							
2,4,6-Tribromophenol	84.78	40-125		%	5		08/15/13 22:18
2-Fluorobiphenyl	77.85	50-110		%	5		08/15/13 22:18
2-Fluorophenol	50.05	20-110		%	5		08/15/13 22:18
Nitrobenzene-d5	67.65	40-110		%	5		08/15/13 22:18
Phenol-d6	59.1	10-115		%	5		08/15/13 22:18
Terphenyl-d14	92.95	50-135		%	5		08/15/13 22:18

Batch Information

SGS

Results of **Residual C**

Client Sample ID: **Residual C**
Client Project ID: **CMS Monofills**
Lab Sample ID: 1133673003
Lab Project ID: 1133673

Collection Date: 08/02/13 00:00
Received Date: 08/08/13 08:23
Matrix: Solid/Soil (Wet Weight)
Solids (%):

Results by **SPLP METALS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Aluminum	25.0	U	25.0	7.50	mg/L	25		08/13/13 17:11
Arsenic	0.250	U	0.250	0.0750	mg/L	25		08/13/13 17:11
Barium	0.750	U	0.750	0.235	mg/L	25		08/13/13 17:11
Beryllium	0.0500	U	0.0500	0.0250	mg/L	25		08/13/13 17:11
Cadmium	0.100	U	0.100	0.0300	mg/L	25		08/13/13 17:11
Chromium	0.200	U	0.200	0.0600	mg/L	25		08/13/13 17:11
Cobalt	0.0500	U	0.0500	0.0155	mg/L	25		08/13/13 17:11
Copper	0.300	U	0.300	0.0900	mg/L	25		08/13/13 17:11
Iron	50.0	U	50.0	15.5	mg/L	25		08/13/13 17:11
Lead	0.0500	U	0.0500	0.0155	mg/L	25		08/13/13 17:11
Manganese	0.373		0.100	0.0310	mg/L	25		08/13/13 17:11
Mercury	0.0500	U	0.0500	0.0155	mg/L	25		08/13/13 17:11
Nickel	0.100	U	0.100	0.0310	mg/L	25		08/13/13 17:11
Sodium	66.5		50.0	15.5	mg/L	25		08/13/13 17:11
Zinc	1.25	U	1.25	0.390	mg/L	25		08/13/13 17:11

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Results of **Residual C**

Client Sample ID: **Residual C**
Client Project ID: **CMS Monofills**
Lab Sample ID: 1133673003
Lab Project ID: 1133673

Collection Date: 08/02/13 00:00
Received Date: 08/08/13 08:23
Matrix: Solid/Soil (Wet Weight)
Solids (%):

Results by **SPLP Volatiles GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,1-Dichloroethene	200	U	200	62.0	ug/L	200		08/13/13 14:02
1,2-Dichloroethane	100	U	100	30.0	ug/L	200		08/13/13 14:02
1,4-Dichlorobenzene	100	U	100	30.0	ug/L	200		08/13/13 14:02
2-Butanone (MEK)	2000	U	2000	620	ug/L	200		08/13/13 14:02
Benzene	80.0	U	80.0	24.0	ug/L	200		08/13/13 14:02
Carbon tetrachloride	200	U	200	62.0	ug/L	200		08/13/13 14:02
Chlorobenzene	100	U	100	30.0	ug/L	200		08/13/13 14:02
Chloroform	200	U	200	60.0	ug/L	200		08/13/13 14:02
Hexachlorobutadiene	200	U	200	62.0	ug/L	200		08/13/13 14:02
Tetrachloroethene	200	U	200	62.0	ug/L	200		08/13/13 14:02
Trichloroethene	200	U	200	62.0	ug/L	200		08/13/13 14:02
Vinyl chloride	200	U	200	62.0	ug/L	200		08/13/13 14:02
Surrogates								
1,2-Dichloroethane-D4	99.3		70-120		%	200		08/13/13 14:02
4-Bromofluorobenzene	116		75-120		%	200		08/13/13 14:02
4-Bromofluorobenzene	96.7		75-120		%	200		08/13/13 14:02
Toluene-d8	99.7		85-120		%	200		08/13/13 14:02

Batch Information

SGS

Method Blank

Blank ID: MB for HBN 1472367 [MXT/4905]
Blank Lab ID: 1167782

QC for Samples:
1133673001, 1133673002, 1133673003

Matrix: Water (Surface, Eff., Ground)

Results by SW6020 SPLP

Parameter	Results	LOQ/CL	DL	Units
Aluminum	1.50U	2.50	0.750	mg/L
Iron	3.10U	5.00	1.55	mg/L
Sodium	3.10U	5.00	1.55	mg/L
Arsenic	0.0150U	0.0250	0.00750	mg/L
Barium	0.0470U	0.0750	0.0235	mg/L
Beryllium	0.00500U	0.00500	0.00250	mg/L
Cadmium	0.00600U	0.0100	0.00300	mg/L
Chromium	0.0120U	0.0200	0.00600	mg/L
Cobalt	0.00310U	0.00500	0.00155	mg/L
Copper	0.0180U	0.0300	0.00900	mg/L
Lead	0.00310U	0.00500	0.00155	mg/L
Manganese	0.00620U	0.0100	0.00310	mg/L
Mercury	0.00310U	0.00500	0.00155	mg/L
Nickel	0.00620U	0.0100	0.00310	mg/L
Zinc	0.0780U	0.125	0.0390	mg/L

Batch Information

SGS

Blank Spike Summary

Blank Spike ID: LCS for HBN 1133673 [MXT4905]
Blank Spike Lab ID: 1167783
Date Analyzed: 08/13/2013 16:38

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1133673001, 1133673002, 1133673003

Results by SW6020 SPLP

	Blank Spike (mg/L)		
Parameter	Spike	Result	Rec (%)
Arsenic			**104**
Barium			**98**
Beryllium			**101**
Cadmium			**102**
Chromium			**98**
Copper			**104**
Lead			**102**
Mercury			**120**
Nickel			**103**
Zinc			**104**

Batch Information

SGS

Matrix Spike Summary

Original Sample ID: 1138227001
MS Sample ID: 1167785 MS
MSD Sample ID: 1167786 MSD

Analysis Date: 08/13/2013 16:40
Analysis Date: 08/13/2013 16:42
Analysis Date: 08/13/2013 16:45
Matrix: Soil/Solid (dry weight)

QC for Samples: 1133673001, 1133673002, 1133673003

Results by SW6020 SPLP

		Matrix Spike (mg/L)		Spike Duplicate (mg/L)				
Parameter	Sample	Spike	Result	Rec.(%)	Spike	Result	Rec.(%)	CL	RPD (%)
Arsenic	0.0600U						101		1.93
Barium	0.186U						95		2.38
Cadmium	0.0240U						98		2.79
Chromium	0.116						98		2.00
Lead	0.0124U						97		1.40
Mercury	0.0124U						97		3.62

Batch Information

SGS

Original Sample ID: 1138227001
MS Sample ID: 1167784 BNT
MSD Sample ID:

Analysis Date: 08/13/2013 16:40
Analysis Date: 08/13/2013 16:47
Analysis Date:
Matrix: Soil/Solid (dry weight)

QC for Samples: 1133673001, 1133673002, 1133673003

Results by SW6020 SPLP

		Matrix Spike (mg/L)			Spike Duplicate (mg/L)					
Parameter	Sample	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Arsenic	0.0600U	2 51	2 69	107						
Barium	0.188U	50 1	47 8	95						
Cadmium	0.0240U	25 1	24 4	97						
Chromium	0.118	25 1	24 2	97						
Lead	0.0124U	25 1	24 4	98						
Mercury	0.0124U	0 501	0 483	96						

Batch Information

SGS

Method Blank

Blank ID: MB for HBN 1472461 [VXX/25050]
Blank Lab ID: 1167816

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1133673001, 1133673002, 1133673003

Results by **SW1312/8260B**

Parameter	Results	LOQ/CL	DL	Units
1,1-Dichloroethene	0.620U	1.00	0.310	ug/L
1,2-Dichloroethane	0.300U	0.500	0.150	ug/L
1,4-Dichlorobenzene	0.300U	0.500	0.150	ug/L
2-Butanone (MEK)	6.20U	10.0	3.10	ug/L
Benzene	0.240U	0.400	0.120	ug/L
Carbon tetrachloride	0.620U	1.00	0.310	ug/L
Chlorobenzene	0.300U	0.500	0.150	ug/L
Chloroform	0.600U	1.00	0.300	ug/L
Hexachlorobutadiene	0.620U	1.00	0.310	ug/L
Tetrachloroethene	0.620U	1.00	0.310	ug/L
Trichloroethene	0.620U	1.00	0.310	ug/L
Vinyl chloride	0.620U	1.00	0.310	ug/L
Surrogates				
1,2-Dichloroethane-D4	99.7	70-120		%
4-Bromofluorobenzene	99.5	75-120		%
Toluene-d8	100	85-120		%

Batch Information

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Leaching Blank

Blank ID: LB for HBN 1471465 [TCLP/6909]
Blank Lab ID: 1167212

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1133673001, 1133673002, 1133673003

Results by **SW1312/8260B**

Parameter	Results	LOQ/CL	DL	Units
1,1-Dichloroethene	124U	200	62.0	ug/L
1,2-Dichloroethane	60.0U	100	30.0	ug/L
1,4-Dichlorobenzene	60.0U	100	30.0	ug/L
2-Butanone (MEK)	1240U	2000	620	ug/L
Benzene	48.0U	80.0	24.0	ug/L
Carbon tetrachloride	124U	200	62.0	ug/L
Chlorobenzene	60.0U	100	30.0	ug/L
Chloroform	120U	200	60.0	ug/L
Hexachlorobutadiene	124U	200	62.0	ug/L
Tetrachloroethene	124U	200	62.0	ug/L
Trichloroethene	124U	200	62.0	ug/L
Vinyl chloride	124U	200	62.0	ug/L
Surrogates				
1,2-Dichloroethane-D4	98.8	70-120		%
4-Bromofluorobenzene	98.6	75-120		%
Toluene-d8	100	85-120		%

Batch Information

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SGS

Blank Spike Summary

Blank Spike ID: LCS for HBN 1133673 [VXX25050]
Blank Spike Lab ID: 1167817
Date Analyzed: 08/13/2013 10:19

Spike Duplicate ID: LCSD for HBN 1133673 [VXX25050]
Spike Duplicate Lab ID: 1167818
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1133673001, 1133673002, 1133673003

Results by **SW1312/8260B**

	Blank Spike (ug/L)		Spike Duplicate (ug/L)			
Parameter	Result	Rec (%)	Spike	Result	Rec (%)	RPD (%)
1,1-Dichloroethene	30.7	102	30	29.8	99	3.20
1,2-Dichloroethane	29.3	98	30	28.7	96	2.10
1,4-Dichlorobenzene	32.6	109	30	32.6	109	0.03
2-Butanone (MEK)	96.6	107	90	97.1	108	0.55
Benzene	31.2	104	30	30.5	102	2.60
Carbon tetrachloride	30.7	102	30	29.9	100	2.70
Chlorobenzene	33.0	110	30	32.3	108	2.20
Chloroform	31.3	104	30	30.5	102	2.70
Hexachlorobutadiene	31.6	105	30	31.4	105	0.63
Tetrachloroethene	34.8	116	30	33.9	113	2.70
Trichloroethene	31.4	105	30	30.8	103	2.00
Vinyl chloride	31.1	104	30	30.1	100	3.10
Surrogates						
1,2-Dichloroethane-D4		89			88	1.60
4-Bromofluorobenzene		96			98	1.10
Toluene-d8		102			101	0.72

Batch Information

200 West Potter Drive Anchorage, AK 95518
t 907 562 2343 f 907 561 5301 www.us.sgs.com

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SGS

Duplicate Sample Summary

Original Sample ID: 1133673001
Duplicate Sample ID: 1173756

Analysis Date: 08/30/2013 17:55
Matrix: Solid/Soil (Wet Weight)

QC for Samples:

1133673001, 1133673002, 1133673003

Results by SW9045C

NAME	Original ()	Duplicate ()	RPD (%)	RPD CL
pH, Corrosivity	6.10	6.12	0.33	

Batch Information

SGS

Blank Spike Summary

Blank Spike ID: LCS for HBN 1133673 [WPH6717]
Blank Spike Lab ID: 1173753
Date Analyzed: 08/30/2013 17:55

Matrix: Soil/Solid (dry weight)

QC for Samples: 1133673001, 1133673002, 1133673003

Results by SW9045C

Blank Spike (pH units)

Parameter	Spike	Result	Rec (%)
pH, Corrosivity	7	6.98	100

Batch Information

Blank Spike Summary

Blank Spike ID: LCS for HBN 1133673 [WPH6717]
Blank Spike Lab ID: 1173757
Date Analyzed: 08/30/2013 17:55

Matrix: Soil/Solid (dry weight)

QC for Samples: 1133673001, 1133673002, 1133673003

Results by SW9045C

	Blank Spike (pH units)		
Parameter	Spike	Result	Rec (%)
pH, Corrosivity	7	7.00	100

Batch Information

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t 907.562.2343 f 907.561.5301 www.us.sgs.com

Member of SGS Group

Method Blank

Blank ID: MB for HBN 1472973 [XXX/29640]
Blank Lab ID: 1168115

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1133673001, 1133673002, 1133673003

Results by SW8270D SPLP

Parameter	Results	LOQ/CL	DL	Units
2,4,5-Trichlorophenol	0.00620U	0.0100	0.00310	mg/L
2,4,6-Trichlorophenol	0.00620U	0.0100	0.00310	mg/L
2,4-Dinitrotoluene	0.00620U	0.0100	0.00310	mg/L
2-Methylphenol (o-Cresol)	0.00620U	0.0100	0.00310	mg/L
3&4-Methylphenol (p&m-Cresol)	0.0124U	0.0200	0.00620	mg/L
Hexachlorobenzene	0.00620U	0.0100	0.00310	mg/L
Hexachlorobutadiene	0.00620U	0.0100	0.00310	mg/L
Hexachloroethane	0.00620U	0.0100	0.00310	mg/L
Nitrobenzene	0.00620U	0.0100	0.00310	mg/L
Pentachlorophenol	0.0300U	0.0500	0.0150	mg/L
Pyridine	0.0124U	0.0200	0.00620	mg/L
Surrogates				
2,4,6-Tribromophenol	76.1	40-125		%
2-Fluorobiphenyl	76.8	50-110		%
2-Fluorophenol	56.6	20-110		%
Nitrobenzene-d5	64.8	40-110		%
Phenol-d6	62.7	10-115		%
Terphenyl-d14	98	50-135		%

Batch Information

SGS

Blank Spike Summary

Blank Spike ID: LCS for HBN 1133673 [XXX29640]
Blank Spike Lab ID: 1168116
Date Analyzed: 08/14/2013 19:53

Spike Duplicate ID: LCSD for HBN 1133673 [XXX29640]
Spike Duplicate Lab ID: 1168117
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1133673001, 1133673002, 1133673003

Results by **SW8270D SPLP**

	Blank Spike (mg/L)		Spike Duplicate (mg/L)			
Parameter	Result	Rec (%)	Spike	Result	Rec (%)	RPD (%)
2,4,5-Trichlorophenol	0.0906	91	0.1	0.0915	92	1.10
2,4,6-Trichlorophenol	0.0899	90	0.1	0.0941	94	4.50
2,4-Dinitrotoluene	0.0959	96	0.1	0.0988	99	3.00
2-Methylphenol (o-Cresol)	0.0690	69	0.1	0.0688	69	0.23
3&4-Methylphenol (p&m-Cresol)	0.112	80	0.14	0.112	80	0.22
Hexachlorobenzene	0.0937	94	0.1	0.0960	96	2.50
Hexachlorobutadiene	0.0735	74	0.1	0.0751	75	2.10
Hexachloroethane	0.0612	61	0.1	0.0644	64	5.10
Nitrobenzene	0.0729	73	0.1	0.0736	74	1.00
Pentachlorophenol	0.132	94	0.14	0.134	96	1.80
Pyridine	0.0498	50	0.1	0.0298	30	50.50
Surrogates						
2,4,6-Tribromophenol		98			99	1.60
2-Fluorobiphenyl		81			88	6.40
2-Fluorophenol		51			56	9.00
Nitrobenzene-d5		70			71	0.69
Phenol-d6		65			62	4.70
Terphenyl-d14		98			98	0.34

Batch Information

SGS

SGS North America Inc.
CHAIN OF CUSTODY RECORD

1133673

Instructions: Sections 1 - 5 must be filled out. Omissions may delay the onset of analysis.

Page: ___ of ___

Section 1

CLIENT: EMI

CONTACT: Larry Helgerson PHONE NO: 272-9336

PROJECT NAME: CMS Monofills PWSID/ PERMIT#: 17472

REPORTS TO: same E-MAIL: lhelgerson@emi-alaska.com

INVOICE TO: EMI QUOTE #:

P.O. #: 17472

Section 2

RESERVED for lab use	SAMPLE IDENTIFICATION	DATE mm/dd/yy	TIME HH:MM	MATRIX/ MATRIX CODE	# CONTAINERS	Type C = COMP G = GRAB BI = Multi Incremental Soils	Preservative: SPLP VOC	SPLP-SVOC	SPLP-Metals (15)	SPLP-Sulfate	REMARKS/ LOC ID
CA	Residual A	08/02/13	N/A	S	1	C	X	X	X	X	
CB	Residual B	"	"	S	1	C	X	X	X	X	
CC	Residual C	"	"	S	1	C	X	X	X	X	

Section 5

	Date	Time	
Relinquished By: (1) Emily Plumenik	8/8/2013	8:23	Received By:
Relinquished By: (2)	Date	Time	Received By:
Relinquished By: (3)	Date	Time	Received By:
Relinquished By: (4)	8/8/13	8:23	Received For Laboratory By

Section 4

DOD Project? Yes (No)

Data Deliverable Requirements: Class II

Cooler ID:

Requested Turnaround Time and/or Special Instructions: Std TAT 8/22/13

*Al, As, Ba, Be, Cd, Co, Cr, Cu, Fe, Mn, Ni, Na, Pb, Hg, Zn

Temp Blank °C

or Ambient

(See attached Sample Receipt Form)

Chain of Custody Seal: (Circle) INTACT BROKEN (ABSENT)

(See attached Sample Receipt Form)

[ ] 200 W. Potter Drive Anchorage, AK 99518 Tel: (907) 562-2343 Fax: (907) 561-5301
[ ] 5500 Business Drive Wilmington, NC 28405 Tel: (910) 350-1903 Fax: (910) 350-1557

http://www.sgs.com/terms-and-conditions

F063-K0_Request and COC Template-Blank

Page 30 of 32

PLANNING COMMISSION NOVEMBER 7, 2016

Page 358

SGS

1133673

SAMPLE RECEIPT FORM

Review Criteria:	Condition:	Comments/Action Taken:
Were custody seals intact? Note # & location, if applicable. **COC accompanied samples?**	Yes No (N/A) (Yes) No N/A	
Temperature blank compliant* (i.e., 0-6°C after CF)? ** Note: Exception permitted for chilled samples collected less than 2 hours ago.* Cooler ID: _____ @ _____ w/ Therm.ID: _____ Cooler ID: _____ @ _____ w/ Therm.ID: _____ Cooler ID: _____ @ _____ w/ Therm.ID: _____ Cooler ID: _____ @ _____ w/ Therm.ID: _____ Cooler ID: _____ @ _____ w/ Therm.ID: _____ *Note: If non-compliant, use form FS-0029 to document affected samples/analyses.* If samples are received without a temperature blank, the "cooler temperature" will be documented in lieu of the temperature blank & "COOLER TEMP" will be noted to the right. In cases where neither a temp blank nor cooler temp can be obtained, note "ambient" or "chilled." **If temperature(s) <0°C, were all sample containers ice free?**	Yes No (N/A) Yes No (N/A)	Ambient
Delivery method (specify all that apply): (Client) USPS Alert Courier C&D Delivery AK Air Lynden Carlile ERA PenAir FedEx UPS NAC Other: → *For WO# with airbills, was the WO# & airbill info recorded in the Front Counter eLog?*	Note ABN/ tracking # See Attached or (N/A) Yes No (N/A)	
→ For samples received with payment, note amount ($) and cash / check / CC (circle one) or note: (N/A) → For samples received in FBKS, ANCH staff will verify all criteria are reviewed.		SRF Initiated by: SLC N/A
Were samples received within hold time? *Note: Refer to form F-083 "Sample Guide" for hold time information.* **Do samples match COC*** (i.e., sample IDs, dates/times collected)? ** Note: Exception permitted if times differ <1hr; in that case, use times on COC.* **Were analyses requested unambiguous?**	(Yes) No N/A (Yes) No N/A (Yes) No N/A	
Were samples in good condition (no leaks/cracks/breakage)? **Packing material used** (specify all that apply): Bubble Wrap Separate plastic bags Vermiculite Other:	(Yes) No N/A	
Were all VOA vials free of headspace (i.e., bubbles ≤6 mm)? **Were all soil VOAs field extracted with MeOH+BFB?**	Yes No (N/A) Yes No (N/A)	
Were proper containers (type/mass/volume/preservative*) **used?** ** Note: Exception permitted for waters to be analyzed for metals.* **Were Trip Blanks** (i.e., VOAs, LL-Hg) in cooler with samples?	(Yes) No N/A Yes No (N/A)	
For special handling (e.g., "MI" or foreign soils, lab filter, limited volume, Ref Lab), **were bottles/paperwork flagged** (e.g., sticker)?	Yes No (N/A)	
For preserved waters (other than VOA vials, LL-Mercury or microbiological analyses), **was pH verified and compliant?** **If pH was adjusted, were bottles flagged** (i.e., stickers)?	Yes No (N/A) Yes No (N/A)	
For RUSH/SHORT Hold Time, were COC/Bottles flagged accordingly? Was Rush/Short HT email sent, if applicable?	Yes No (N/A)	
For SITE-SPECIFIC QC, e.g. BMS/BMSD/BDUP, were containers / paperwork flagged accordingly?	Yes No (N/A)	
For any question answered "No," has the PM been notified and the problem resolved (or paperwork put in their bin)?	Yes No (N/A)	SRF Completed by: SLC 8/8/13 PM = N/A
Was PEER REVIEW of *sample numbering/labeling completed?*	Yes No (N/A)	Peer Reviewed by: N/A
Additional notes (if applicable):		

Note to Client: Any "no" circled above indicates non-compliance with standard procedures and may impact data quality.

Page 31 of 32

F004r27_SampleReceiptForm_revised_20121218

SGS North America Inc.
200 W. Potter Drive, Anchorage, AK 99518
phone (907) 562-2343, fax (907) 561-5301

Characterization of TCLP Samples for LIMS Login

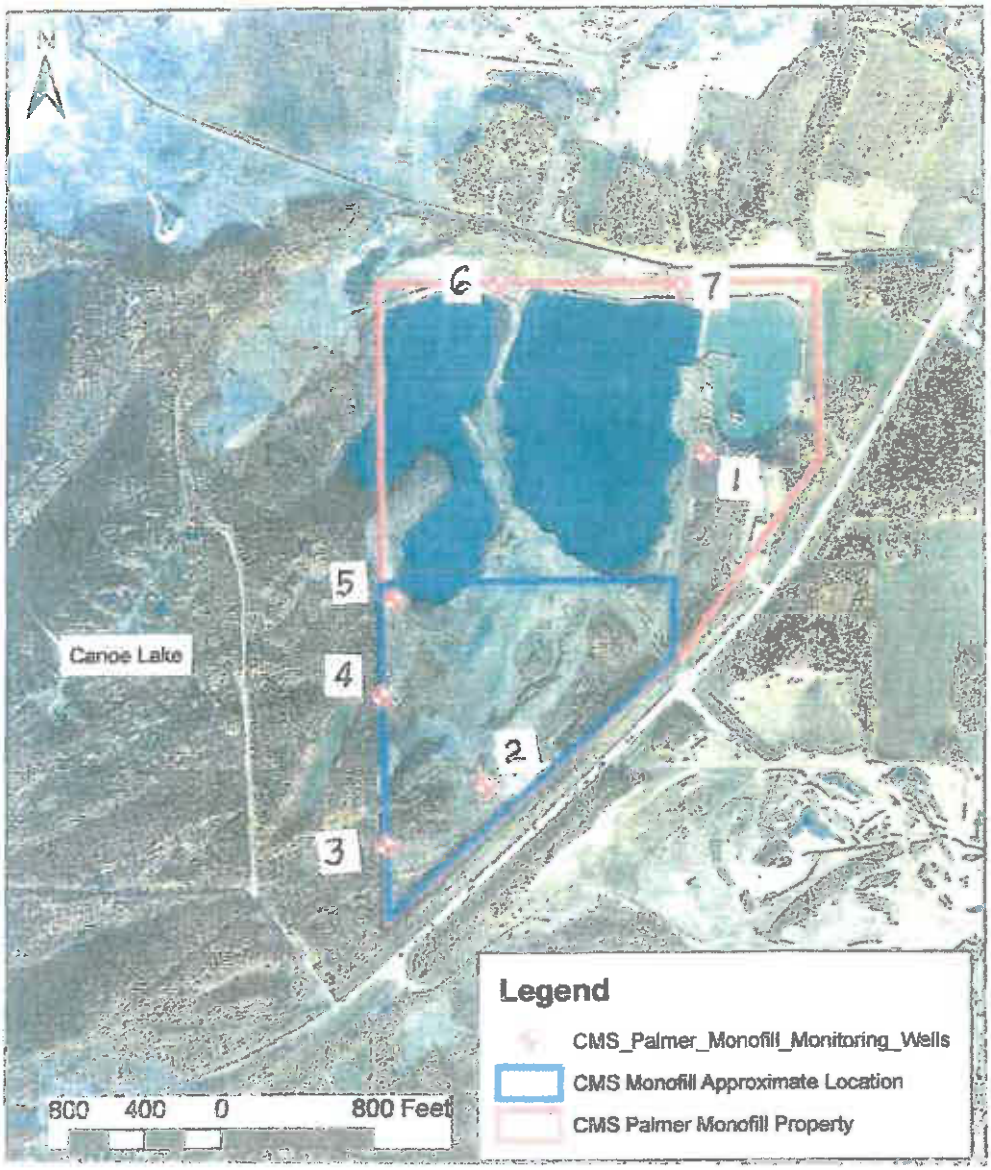
Date Characterized: 8/8/15 Analyst: SLC

Sample Container ID:	Matrix	%	Is sufficient volume/mass available?	Notes:
1A	Xylene miscible (Top layer * = matrix 3 **)		(Yes) / No	If multiple jars were received, were they consistent? Yes / No / (NA)
	Water miscible (Middle layer = matrix 6)			If biphasic, was there only one layer with sufficient sample ***? Yes / No / (NA)
	Solid (Bottom layer = matrix 7 or 2 if % solids required)	100%		Sample description/other observations: Wood chips
2A	Xylene miscible (Top layer * = matrix 3 **)		(Yes) / No	If multiple jars were received, were they consistent? Yes / No / (NA)
	Water miscible (Middle layer = matrix 6)			If biphasic, was there only one layer with sufficient sample ***? Yes / No / (NA)
	Solid (Bottom layer = matrix 7 or 2 if % solids required)	100%		Sample description/other observations: Wood chips
3A	Xylene miscible (Top layer * = matrix 3 **)		(Yes) / No	If multiple jars were received, were they consistent? Yes / No / (NA)
	Water miscible (Middle layer = matrix 6)			If biphasic, was there only one layer with sufficient sample ***? Yes / No / (NA)
	Solid (Bottom layer = matrix 7 or 2 if % solids required)	100%		Sample description/other observations: Wood chips
	Xylene miscible (Top layer * = matrix 3 **)		Yes / No	If multiple jars were received, were they consistent? Yes / No / NA
	Water miscible (Middle layer = matrix 6)			If biphasic, was there only one layer with sufficient sample ***? Yes / No / NA
	Solid (Bottom layer = matrix 7 or 2 if % solids required)			Sample description/other observations:
	Xylene miscible (Top layer * = matrix 3 **)		Yes / No	If multiple jars were received, were they consistent? Yes / No / NA
	Water miscible (Middle layer = matrix 6)			If biphasic, was there only one layer with sufficient sample ***? Yes / No / NA
	Solid (Bottom layer = matrix 7 or 2 if % solids required)			Sample description/other observations:

Remember: * = Chlorinated oils will be heavier than water and present as the bottom later.
** = Oils must be filterable to be logged in as matrix 3. Nonfilterable oils must be logged in as matrix 7.
*** = Refer to F079 'Characterization of TCLP Samples for LIMS' to determine if there's sufficient volume/mass.

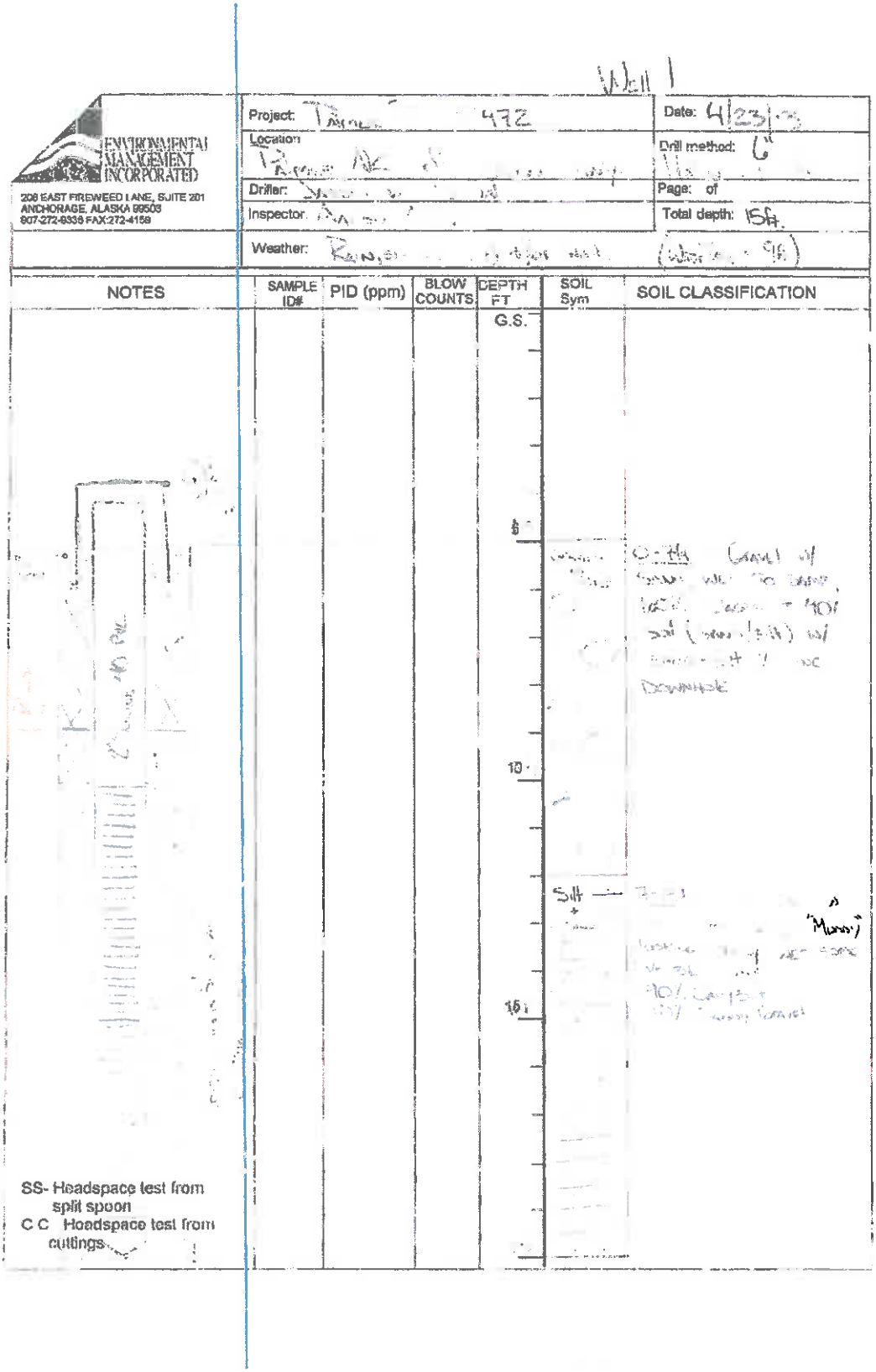
APPENDIX B:

MONITORING WELL/BORING CONSTRUCTION LOGS



TAKEN FROM: TERRASAT, FIGURE 2, APRIL 4, 2013.

MADDOX & ASSOCIATES, INC. 39371 SAN THOMAS CT. MURRIETA, CA 92562 (951) 805-1100	MATANUSKA - SUSITNA VALLEY ALASKA	FIGURE 5.5 CMS PALMER MONOFILL MONITORING WELL LOCATION MAP	DATE: 11/29/13 SCALE: AS SHOWN REVISED:



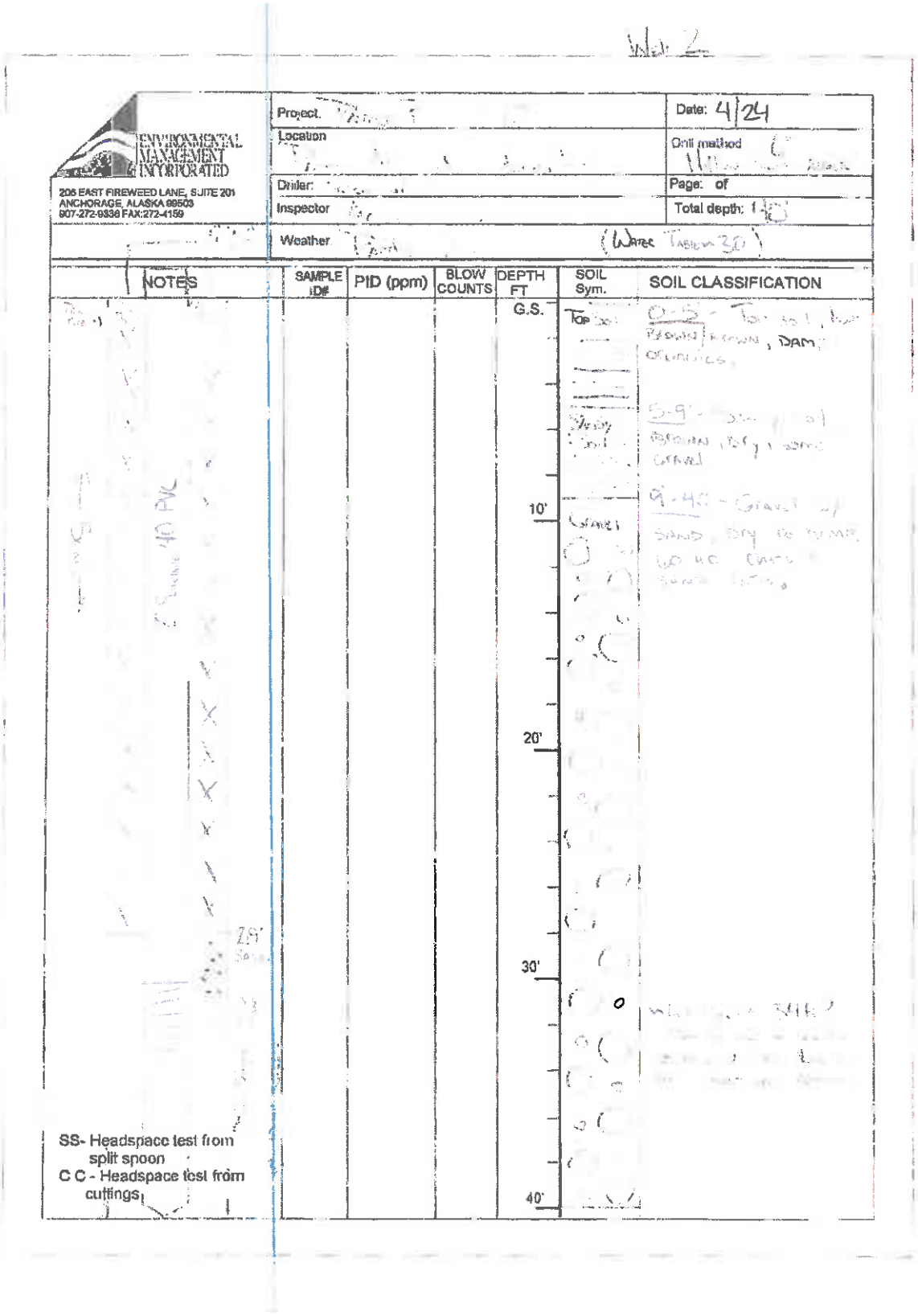
Well 1

ENVIRONMENTAL MANAGEMENT INCORPORATED
208 EAST FIREWEED LANE, SUITE 201
ANCHORAGE, ALASKA 99503
907-272-9339 FAX:272-4159

Project: [illegible] 472 Date: 4/23/13
Location: [illegible] Drill method: 6"
Driller: [illegible] Page: of
Inspector: [illegible] Total depth: 15ft.
Weather: [illegible]

NOTES	SAMPLE ID#	PID (ppm)	BLOW COUNTS	DEPTH FT	SOIL Sym	SOIL CLASSIFICATION
				G.S.		
				5		
				10		
				15		

SS- Headspace test from split spoon
C C Headspace test from cuttings



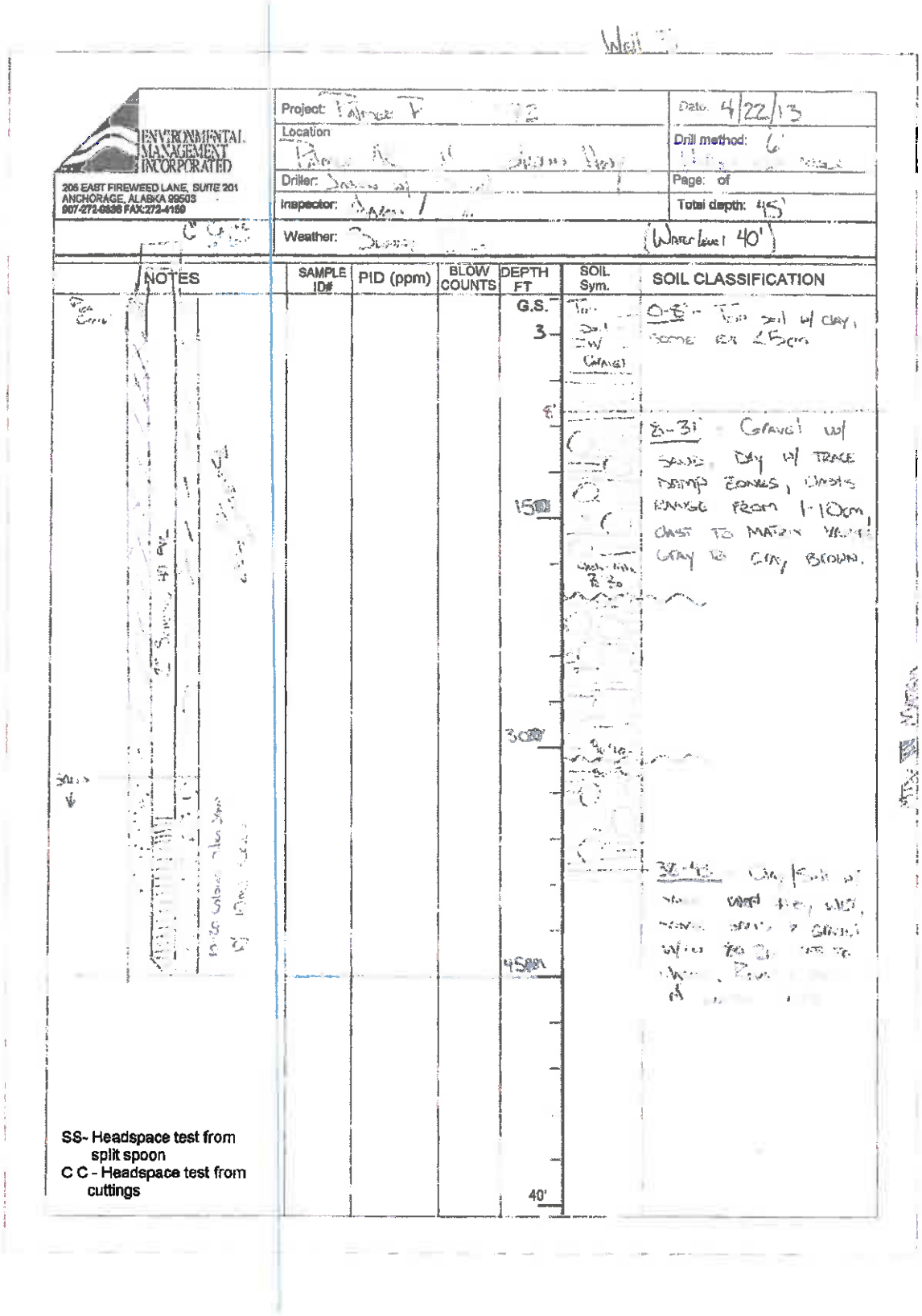
ENVIRONMENTAL MANAGEMENT INCORPORATED
208 EAST FIREWEED LANE, SUITE 201
ANCHORAGE, ALASKA 99503
907-272-9336 FAX:272-4159

Project:
Location
Driller:
Inspector
Weather

Date: 4/24
Drill method
Page: of
Total depth:

NOTES	SAMPLE ID#	PID (ppm)	BLOW COUNTS	DEPTH FT	SOIL Sym.	SOIL CLASSIFICATION
				G.S.		
				10'		
				20'		
				30'		
				40'		

SS- Headspace test from split spoon
C C - Headspace test from cuttings



ENVIRONMENTAL MANAGEMENT INCORPORATED
206 EAST FIREWEED LANE, SUITE 201
ANCHORAGE, ALASKA 99503
907-272-0336 FAX:272-4159

Project: Palmer T 12
Location
Driller:
Inspector:
Weather:
Date: 4/22/13
Drill method: 6"
Page: of
Total depth: 45'
(Water level 40')

NOTES	SAMPLE ID#	PID (ppm)	BLOW COUNTS	DEPTH FT	SOIL Sym.	SOIL CLASSIFICATION
				G.S.		
				3		0-3' Top soil w/ clay, some to 25cm
				15		3-31' Gravel w/ sand, clay w/ trace pump zones, clasts range from 1-10cm, clast to matrix varies, gray to grey brown,
				30		
				45		32-45 Clay/silt w/
				40'		

SS- Headspace test from split spoon
C C - Headspace test from cuttings

Well 4

ENVIRONMENTAL MANAGEMENT INCORPORATED

206 EAST FIREWEED LANE, SUITE 201
ANCHORAGE ALASKA 99503
907-272-9336 FAX:272-4159

Project:	Date: 4/23
Location:	Drill method: 6"
Driller:	Page: of
Inspector:	Total depth: 40'
Weather: Rain w/ … Hail	(Water Table -30')

NOTES	SAMPLE ID#	PID (ppm)	BLOW COUNTS	DEPTH FT.	SOIL Sym	SOIL CLASSIFICATION
2" … 40' PVC				G.S.	SAND	0-40 - Sand w/ few small ½-2 ft zones of … Damp, … to … gray.
					SAND	8-10 - …
				10'		
				20'		
				30'		
SS- Headspace test from split spoon C C - Headspace test from cuttings				40'		

Well 5

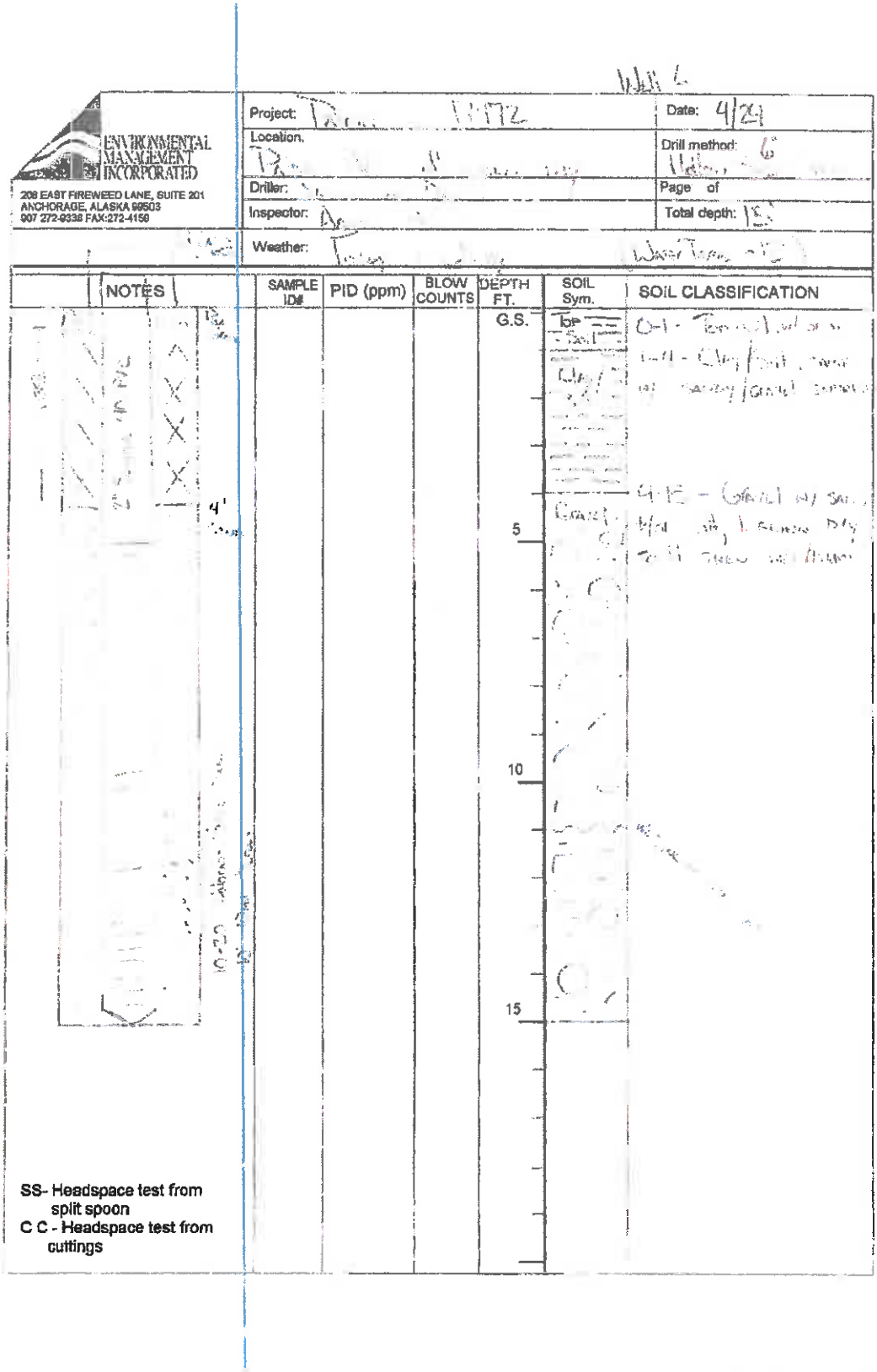
ENVIRONMENTAL MANAGEMENT INCORPORATED
206 EAST FIREWEED LANE, SUITE 201
ANCHORAGE, ALASKA 99503
907-272-9338 FAX:272-4159

Project: [illegible] 2012 | Date: 4/22/12
Location: [illegible] | Drill method: 6"
Driller: [illegible] | Page: of
Inspector: Aaron [illegible] | Total depth: 25'
6" casing | Weather: [illegible] | Water Table: 20'

NOTES	SAMPLE ID#	PID (ppm)	BLOW COUNTS	DEPTH FT.	SOIL Syn	SOIL CLASSIFICATION
				G.S.		0-3' - Top soil, silty w/ trace organics, damp,
				3'	Gravel w/ Sand	3-13' - Gravel w/ sand & clay, gravel clasts range from 1-10cm, damp, no odor or organics
				10'		
				13'	Gravel w/ Sand	17-25' - Gravel w/ [illegible]
				20'		
				30'		
				40'		

2" Sch. 40 PVC
Sand
14'
10-20 Colorado Silica Sand
[illegible]

SS- Headspace test from split spoon
C C - Headspace test from cuttings

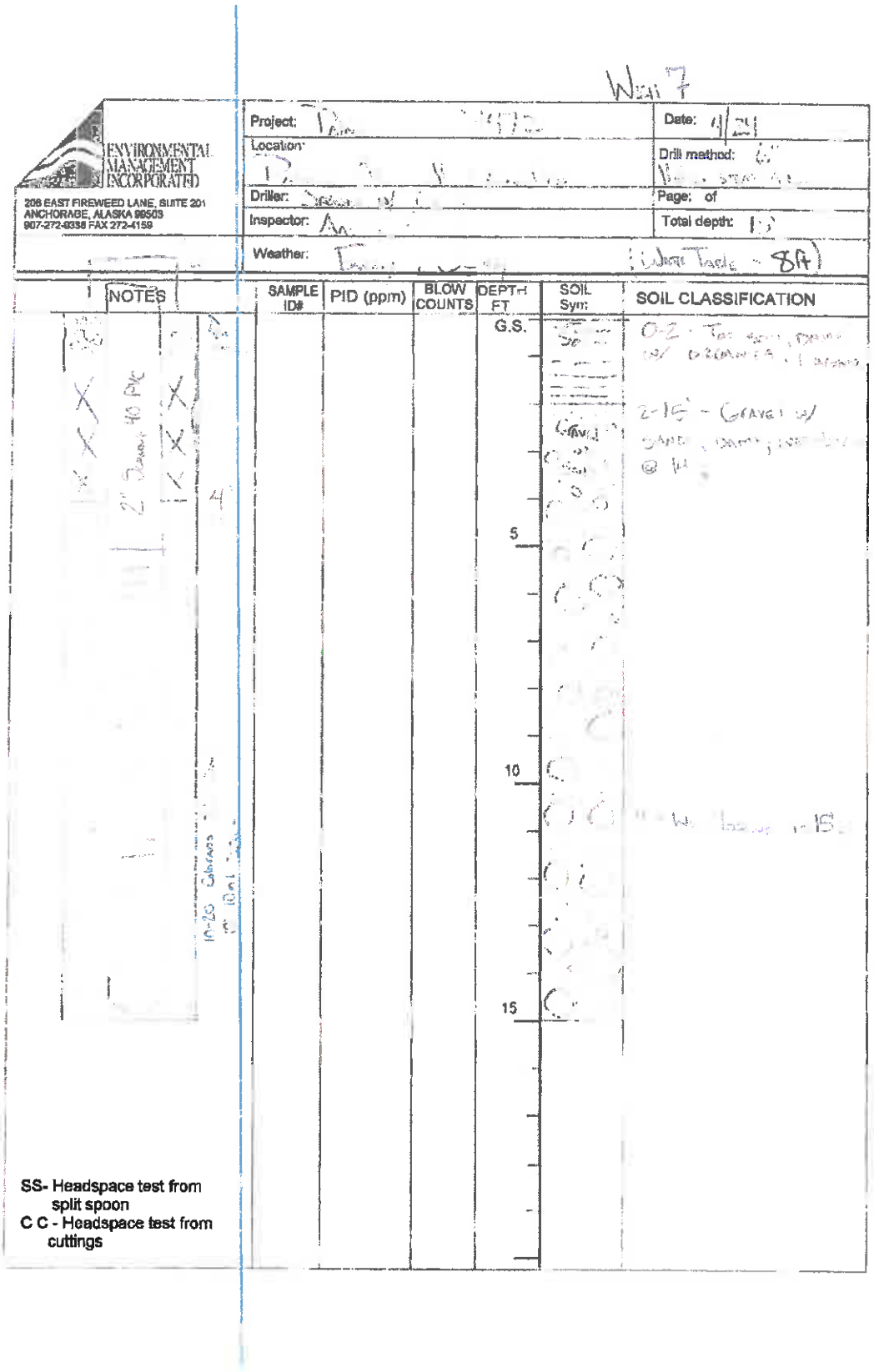


ENVIRONMENTAL MANAGEMENT INCORPORATED
208 EAST FIREWEED LANE, SUITE 201
ANCHORAGE, ALASKA 99503
907 272-9338 FAX:272-4150

Project:
Location:
Driller:
Inspector:
Weather:
Date: 4/21
Drill method:
Page of
Total depth:

NOTES	SAMPLE ID#	PID (ppm)	BLOW COUNTS	DEPTH FT.	SOIL Sym.	SOIL CLASSIFICATION
				G.S.		
				5		
				10		
				15		

SS- Headspace test from split spoon
C C - Headspace test from cuttings



ENVIRONMENTAL MANAGEMENT INCORPORATED
206 EAST FIREWEED LANE, SUITE 201
ANCHORAGE, ALASKA 99503
907-272-0338 FAX 272-4159

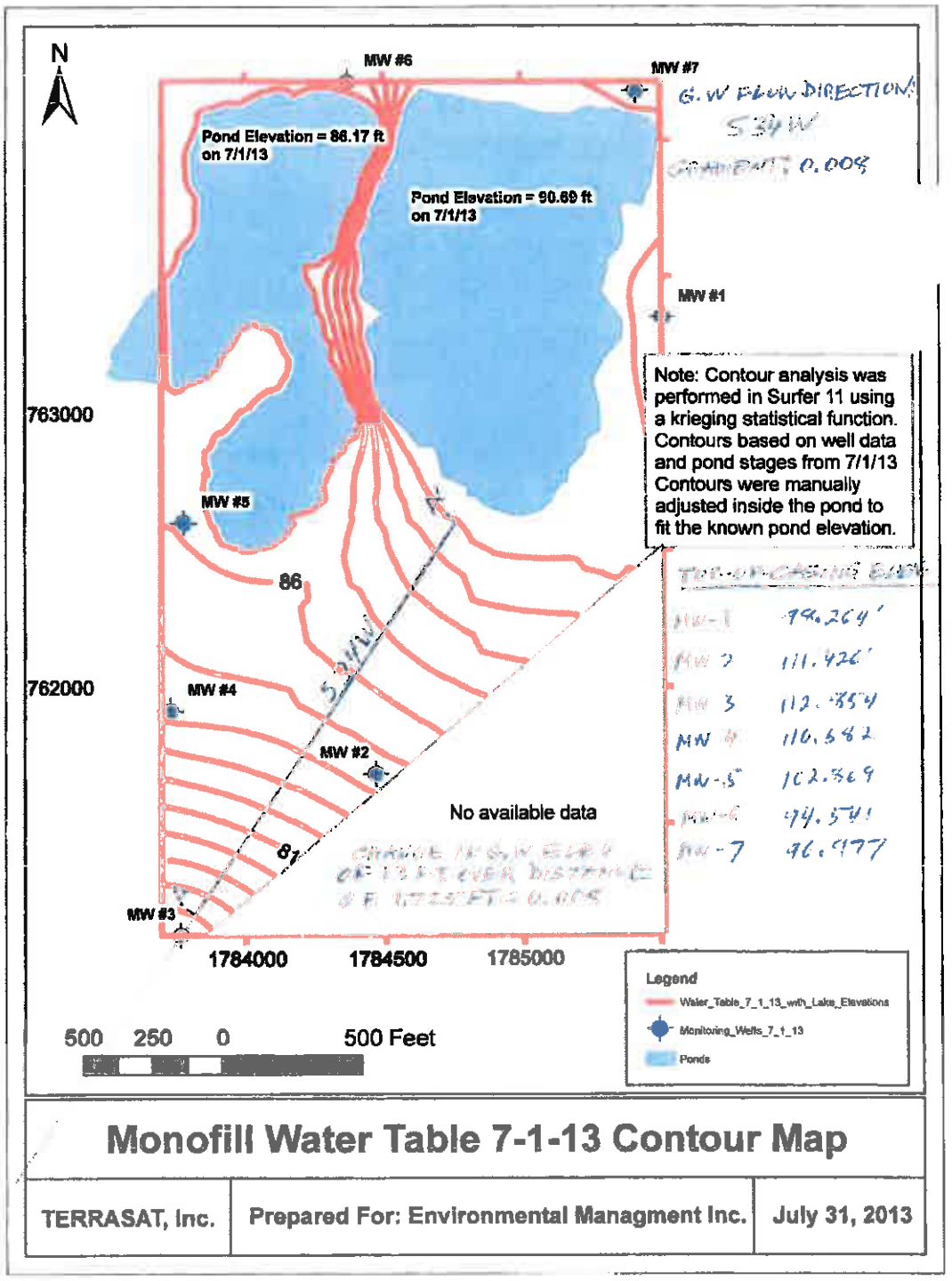
Project:
Location:
Driller:
Inspector:
Weather:
Date:
Drill method:
Page: of
Total depth:

NOTES	SAMPLE ID#	PID (ppm)	BLOW COUNTS	DEPTH FT	SOIL Sym	SOIL CLASSIFICATION
				G.S.		
				5		
				10		
				15		

SS- Headspace test from split spoon
C C - Headspace test from cuttings

APPENDIX C:

MONOFILL WATER TABLE 7-1-13 CONTOUR MAP


N
MW #6
MW #7
Pond Elevation = 86.17 ft on 7/1/13
Pond Elevation = 90.69 ft on 7/1/13
MW #1
763000
MW #5
86
762000
MW #4
MW #2
No available data
81
MW #3
1784000
1784500
1785000
500 250 0 500 Feet
Note: Contour analysis was performed in Surfer 11 using a krieging statistical function. Contours based on well data and pond stages from 7/1/13 Contours were manually adjusted inside the pond to fit the known pond elevation.
Legend
Water_Table_7_1_13_with_Lake_Elevations
Monitoring_Wells_7_1_13
Ponds
Monofill Water Table 7-1-13 Contour Map
TERRASAT, Inc.
Prepared For: Environmental Managment Inc.
July 31, 2013

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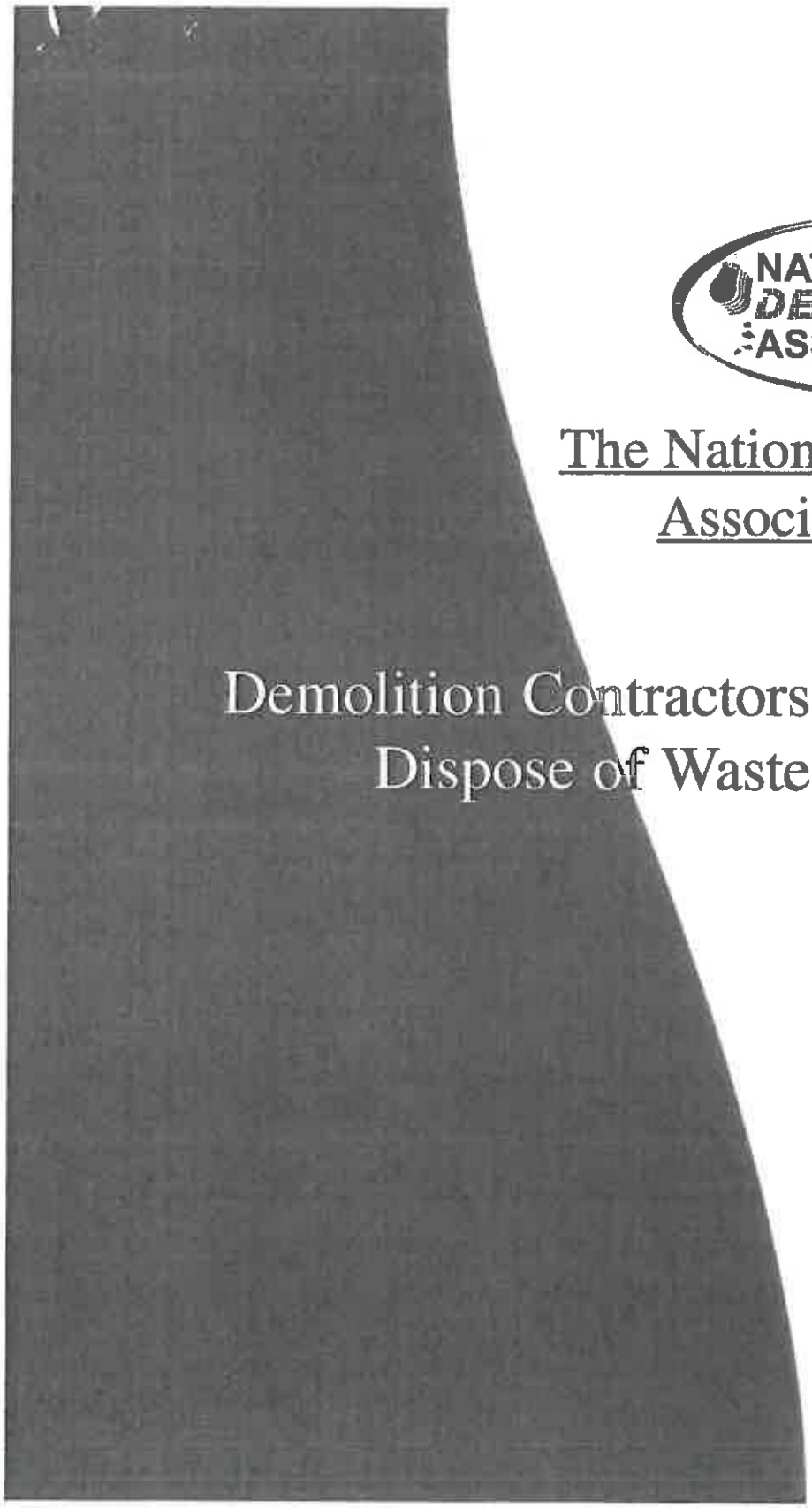
ATTACHMENT C – NATIONAL DEMOLITION ASSOCIATION

DEMOLITION CONTRACTORS MANAGE AND DISPOSE OF WASTE RESPONSIBILY



NATIONAL DEMOLITION ASSOCIATION

The National Demolition Association Reports:

Demolition Contractors Manage and Dispose of Waste Responsibly

The National Demolition Association Reports:

Demolition Contractors Manage and Dispose of Waste Responsibly

A report based on research conducted
by Gershman, Brickner & Bratton, Inc.

February, 1995

Presented by

National Demolition Association

16 North Franklin Street, Suite 203
Doylestown, PA 18901
Phone: 215-348-4949
Toll Free: 1-800-541-2412
Fax: 215-348-8422
E-Mail: info@demolitionassociation.com
Website: www.demolitionassociation.org

Printed on Recycled Paper

Background

The National Demolition Association

For more than two decades, the National Demolition Association has been a source of information about the demolition industry, offering its professional and experience-based insight to governmental regulators, and helping to ensure that environmentally responsible and safe practices are standard practice for the demolition industry.

As the recognized voice for the demolition industry, the National Demolition Association is often asked for information about topics of current focus, concern, and significance. This report has been prepared in response to requests from the U.S. Environmental Protection Agency for information about the character of demolition waste, methods by which it is managed, the quality of leachate from demolition landfills, associated environmental risks, and for the National Demolition Association's conclusions and recommendations regarding the type of regulation and control appropriate for demolition landfills.

Sierra Club vs. Browner

In settlement of a lawsuit brought by the Sierra Club, the U.S. EPA agreed to promulgate revised criteria for nonmunicipal solid waste facilities in the coming months. Demolition landfills which receive for disposal a very controlled and limited wastestream are one type of facility which could be subject to such regulations.

The EPA has requested the National Demolition Association to provide information that will help address the question of whether regulations similar to EPA's Sub-title D standards for municipal solid waste landfills are needed to ensure environmental protection for landfills serving the demolition industry – essentially to answer the question, are demolition wastes managed and disposed of responsibly?

National Demolition Association's Databases

For decades, the National Demolition Association has supported the environmentally responsible management of demolition wastes by the industry. National Demolition Association experience has led to it's firm belief that these efforts have resulted in safe management of demolition wastes. However, National Demolition Association's knowledge of the effectiveness of the industry's efforts is not the same as being able to demonstrate and document:

- What **materials** are being landfilled?
- What type of **regulations** apply to demolition landfills across the U.S.?
- What are the **characteristics of leachate** from demolition landfills?

In order to provide the best available base of information to address these questions, the National Demolition Association sought an independent third-party to perform the necessary research effort. The firm of Gershman, Brickner & Bratton, Inc. (GBB), recognized experts in the study and management of demolition waste, was retained to complete a nation-wide research program that would compile and review databases on the characteristics of demolition waste, applicable state regulations, and leachate characteristics. These research efforts and their resulting resource documents are identified in the table below.

Table 1: National Demolition Association Databases and Reports

Topic	Research Approach	Resource Developed
Characteristics of construction and demolition wastes	Complication of published reports and articles about the composition of materials delivered to demolition landfills for disposal	*C&D Waste Characterization Database, Volumes 1&2*, prepared for the National Demolition Association by GBB, February, 1994
Regulations governing design, operation, monitoring, and closure of demolition landfills	Survey of 50 states	*State Regulatory Database, Volumes 1&2*, prepared for the National Demolition Association by GBB, August, 1944
Characteristics of leachate from demolition landfills	Survey of 50 states, published reports and articles, records solicited from operating facilities	*C&D Waste Landfills Leachate Quality Data, Volumes 1&2*, prepared for the National Demolition Association by GBB, February, 1995
Analysis of collected leachate data	GBB evaluation of collected information	*Preliminary Report on Demofill Leachate Quality*, prepared for the National Demolition by GBB, February, 1995

The databases and technical reports developed through GBB's efforts are available through the NATIONAL DEMOLITION ASSOCIATION; more information about how to obtain these resource reports can be found on the last page of this document.

How does the Demolition Industry Manage Project Site and Segregate Waste Streams for Proper Handling?

What is demolition waste?

Before significant demolition activity begins, demolition contractors carefully inventory and isolate items which are know to be hazardous. Materials which are difficult to identify or which are suspected of potentially having hazardous characteristics are also isolated. Suspect materials are either identified or tested in order to select an appropriate disposal method. Marketable timbers, metals, fixtures, and other materials from demolition projects which have value for reuse or recycling are segregated and recovered. The demolition industry annually recycles millions of tons of concrete, steel, and brick.
As a result of these efforts to isolate hazardous items for separate disposal and to reclaim materials of value, the demolition wastes which are ultimately delivered to landfills comprise only a portion of all the material initially found at demolition project sites. This landfilled fraction is composed of materials which cannot be economically recovered and which do not require special disposal arrangements. Numerous composition studies show this landfilled fraction to be primarily a mixture of unrecyclable concrete, wood, glass, metals, roofing materials, plastics, and dirt, an inert material.

Pre-demolition Inspections

A first step for demolition projects includes a walk-through visual inspection that helps to identify any transformers, drums, liquids, tanks, or other items which will require special handling and/or testing. Site managers and crews are highly trained and drilled in the importance of identifying and isolating suspect materials. Many projects are begun only after a more formal site audit is performed by the site owner or a third party environmental consultant.

In addition, during the site inspection demolition contractors identify materials to be removed and sold for reuse or to be processed and recycled. This inspection process is also essential for the demolition contractor to identify any structural hazards, note any safety concerns and to determine the specific sequence that will be followed for the demolition activities.

Sequencing of Demolition Activities

Interior or partial demolition projects and an increasing number of total demolition projects are scheduled so that the removal of floor coverings, ceiling materials, interior walls, and other items occur in sequence before any structural demolition takes place. These steps maximize the efficiency and safety of the process and provide a further opportunity to inspect the waste materials as they are separately removed and readied for disposal.

Demolition contractors provide sophisticated safeguards for their businesses, employees, and projects by being experts in the applicable regulations for their projects: air quality, water quality, solid and hazardous waste, occupational safety, and noise, among others. The industry's standard practice entails careful assessment of project sites well in advance of demolition activities; specialized removal and disposal of potentially hazardous items; recycling of marketable equipment and extensive recycling of brick, concrete, and steel, along with growing efforts to recycle wood waste. The balance of materials from demolition project sites are landfilled.

Composition of Wastes Delivered to Demolition Landfills

The database compiled by GBB shows that the majority of wastes delivered to demolition landfills are made up of mixed concrete, wood, brick, rubble, metals (primarily ferrous), soil and fines, and smaller quantities of intermixed glass, plastics, textiles, and other materials.

The quantity and type of waste materials received by demolition landfills vary somewhat by the type of activity performed: site clearance, roadwork, excavation, building demolition, and construction/renovation. Some demolition landfills receive waste from all these types of activities; some accept only a more limited spectrum; for example, some accept wastes originating strictly from demolition operations. However, data from many sources shows a general materials profile for the wastes received at all studied demolition landfills, with wood waste dominating, followed by concrete and other rubble. Ferrous metals, glass, plastics, roofing materials, and other items comprise significantly smaller fractions of the mix.

The full waste composition database compiled by GBB is available from the National Demolition Association. This compilation of studies and investigations of demolition landfills across the U.S. shows a certain degree of uniformity in the categories of waste landfilled at these facilities, and the composition consists of a limited range of materials. In contrast, landfills for municipal solid waste (MSW-the aggregate wastestream from a community's commercial, residential, and industrial sources) and landfills for industrial waste disposal typically receive a very broad spectrum of waste types and quantities.

The waste characteristics of these facilities has a far higher organic fraction, and the generation of the incoming waste loads is from millions of untrained, often indifferent, casual generators. In contrast, demolition wastes originate from a highly specialized and trained industry, whose success in safeguarding the environment is evident both in the uniformity of composition found in the database search as well as in the historical absence of significant environmental problems associated with landfills that have accepted only demolition wastes.

How are demolition landfills currently regulated?

State Regulations

GBB's nationwide survey found that over 40 of the 50 states have differentiated regulations for demolition landfills. However, where the states have regulated demolition landfills, their regulatory approaches have generally reflected the comparatively inert character of the demolition wastestream, and demolition landfill requirements have been far less complex than the requirements the states have put in force for the management and disposal of municipal solid wastes and industrial wastes.

For the majority of states which do regulate demolition landfills, a significant portion of the regulations rely heavily on disclosure of the location of small volume disposal facilities and on the innocuous character of the wastestream to provide a sufficient safeguard for disposal sites. Commonly, small demolition disposal sites are required only to provide a registration or notification of operations and to maintain simple records of the quantity and/or origin of wastes disposed.

Most states which have adopted more formal permit or license requirements for demolition landfills have some form of groundwater monitoring requirement as well. GBB's analysis however, has found that these standards are often inadequate to document both background groundwater quality as well as a discernible identification of the effects of the monitored facilities.

What are the operating practices and design characteristics of a state-of-the-art landfill serving the demolition industry?

Based on the experience of the demolition industry, the National Demolition Association has identified an inventory of the operating practices and design characteristics that it considers to be representative of demolition landfill that reflects current industry standards. For many situations, these attributes would exceed the minimum existing regulatory requirements. However, they are viewed by the National Demolition Association as representing an industry guideline for prudent, environmentally responsible operations.

Table 2: Operating Practices and Design Characteristics for State-of-the-Art Demolition Landfills

Responsible, trained personnel	Appropriate supervision of facility operations; training requirements for all on-site employees
Routine Procedures and Protocols	Plan of Operations or Operations Manual; training in site safety/operational practices required of all staff
Defined Listing of Acceptable and Unacceptable Waste	Wastes allowable for receipt well defined; personnel trained in identification
Inspection of All Incoming Waste Loads	Required disclosure of waste type and source; visual inspection of material when delivered also when placed on working face
Isolation and Analysis of Suspect Materials	Requirements for and routine practice of isolation of suspect materials; documented procedures for identification, isolation,testing, and disposal of unacceptable and suspect wastes
Siting	Suitable site surface and subsurface conditions; Compatible with adjacent land uses
Leachate Containment	Capacity to contain leachate either through native soil conditions, compaction of native soils, or other containment system
Groundwater Monitoring	Upgradient (background) and downgradient groundwater monitoring for appropriate parameters,tested at least annually
Record Keeping	Maintenance of records of waste receipts and waste placements
Financial Assurance	Long-term funding for post-closure cover maintenance
Closure Plan	Design for installation and maintenance of final cover

These standards and practices provide an assurance that demolition landfills are repositories of only those wastes appropriate for disposal at these sites and the corresponding assurance that unacceptable materials are diverted to proper management alternatives; long-term monitoring of the environment; and assurance of permanent facility care.

Just as demolition contractors apply stringent controls to ensure that hazardous materials are separately removed from project sites and properly disposed, similarly, state-of-the-art demolition landfills must apply clear, consistent standards to define wastes acceptable for disposal. This is among the best, most effective means of environmental control for demolition facilities. Training for site operators and personnel, training and informational materials for haulers and facility users; rigorous screening of incoming loads; records of gate receipts and disposal placement all are hallmarks of facilities which follow National Demolition Association guidance. Such steps can ensure that the long-standing characterization of demolition waste as environmentally innocuous is well-founded.

What are the characteristics of leachate from demolition landfills?

The third database developed for the National Demolition Association by GBB entailed compilation and review of demolition landfill leachate monitoring records and other background documentation about the quality of leachate generated from demolition landfills across the United States.

Data from MSW Sites is not Representative of Demolition Landfills

GBB's 1994 research and assessment found that many of the existing reports and leachate data supposedly about "demolition landfills" are seriously flawed. Municipal solid waste has very different characteristics from demolition debris, and obviously, sizable deposits of municipal solid waste at facilities would skew the groundwater monitoring data considerably. Several sites classified as construction/demolition landfills (sites supposedly accepting only demolition and construction waste) were found to have accepted municipal solid waste for some period of time. It is suspected that many facilities were converted to construction/ demolition landfills rather than attempt to comply with contemporary regulations for municipal solid waste sites. Regardless of such facilities' present suitability for demolition waste disposal, leachate data from such dual purpose facilities cannot be used to validly characterize the effects of construction/demolition wastes.

Leachate Data from a State-of-the-Art Demolition Landfill

The research effort found excellent long-term leachate test documentation (more than 5 years) from a state-of-the-art demolition landfill operated in a major midwestern metropolitan area. Reports provided by this facility to its state regulators document leachate characteristics on a quarterly basis. Because the facility is lined and leachate is collected, the information is comprehensive.

The facility operator has concluded that the facility's waste receipts are characteristic of the mix of materials regularly received by demolition landfills, and the National Demolition Association considers the data from this facility to be the best current information representative of leachate characteristics for demolition landfills meeting industry standards.

Representative Leachate Data for Demolition Landfills

Tables 3 and 4 are excerpted from GBB's technical analysis of the leachate database. On Table 3, the first column identifies the National Drinking Water Standard's Maximum (allowable) Contaminant Levels (MCL). The second column lists the published range of leachate concentrations found for demolition landfills, including those for which the data is flawed by a past history of MSW disposal. The third column, headed "Potential Surrogate Range C&D Landfills," provides a calculated range -a surrogate- for the range of contaminant's in the demolition landfill leachate. This calculated range is based heavily on the record of analysis for the representative midwestern demolition landfill described above.

The table indicates that contaminant concentrations in leachate from a state-of-the-art demolition landfill, as represented by the "Potential Surrogate Range" values, would not exceed primary national drinking water standards.

Table 4 compares the representative values for demolition landfill leachate, the "Potential Surrogate Range" in column 3, with one source's published data and its estimates of leachate concentrations for MSW landfills. As is quickly evident in a scan of the table, for most listed parameters, the "Potential Surrogate Range" representative of demolition facilities shows values far below those found at MSW sites, often by at least an order of magnitude.

Of special note is the fact that the GBB database showed that lead is not a major component of demolition landfill leachate even with high lead paint content often found in older demolition projects. The U.S. EPA has recently taken these findings into account in development of a proposed disposal standard for lead-based paint contaminated debris.

On Table 4, sulfate, a substance that is essentially environmentally innocuous, is the one parameter for which there is an exception to the pattern of higher concentrations in MSW leachate. The higher sulfate concentrations estimated for demolition facilities are associated with the higher volumes of concrete and rubble disposed at demolition sites.

Table 3. Leachate Data Summary[1]

	MCL[2]	Published Range C&D Landfills[4]	Potential Surrogate Range C&D Landfills
Metals (mg/L)			
Arsenic	0.05	ND-0.12	<0.002-0.02
Barium	1.0	0.05-0.8	0.1-0.16
Cadmium	0.005	ND-2.05	0.0001-<0.0004
Chromium	0.10	ND-0.45	<0.001-<0.01
Lead	0.05	0.0002-0.669	<0.0002-<0.003
Manganese	0.05[3]	0.019-258	<0.08-12
Selenium	0.01	ND-<0.02	<0.02
Zinc	5.03	ND-0.81	<0.01-0.03
Volatile Organics (mg/L)			
Trichloroflouromethane	N/A	<0.02-13	<0.02-0.025
1,2 Dichloroethan	0.005	<0.0004-26	<0.0004-0.0008
Trichloroethane	—	<0.025	<0.025
1,1,1-Trichloroethane	0.2	0.0006-<0.025	<0.001-<0.025
Ethyl Benzene	0.7	0.0008-18	<0.0008-<0.025
Conventional Parameters			
Alkalinity	N/A	ND-1800	410-1450
Calcium	N/A	<0.03-600	280-600
Chloride	250[3]	8-2400	100-460
Chemical Oxygen Demand (COD)	—	ND-1100	110-230
Conductivity (mmhos/CM	—	220-2010	1000-2010
Cyanide	0.2	ND-0.02[5]	0.01-0.02[5]
Hardness	N/A	150-2420	340-2420
Iron	0.3[3]	0.02-93.4	0.02-14
Nitrogen, Organic	—	0.07-2.4	0.07-1.5
Nitrogen, Nitrate	10	ND-10	<0.25-3.5
Nitrogen, Ammonia	—	ND-170	<.05-1.2
pH (unit)	6.5-8.5[3]	6.2-7.24	6.8-7.1
Sulfate	250[3]	11.7-2700	730-1700
Total Dissolved Solids (TDS)	500[3]	270.8400	1700-5740
Total Suspended Solids (TSS)	—	<4-5000	<4-320

[1]C&D Waste Project Report, *A Preliminary Report on Demofill Leachate Quality* prepared for the National Demolition Association , prepared by Gershman, Brickner & Bratton, Inc., February 14, 1995.

[2]MCL = Maximum Contaminant Level – National Primary Drinking Water Standards.

[3]National Secondary Drinking Water Standards.

[4]Includes data from facilities which accepted MSW for some period of time.

[5]Exclusive of complex; highest complex is 0.34

ND = Not-detected.

All Quantities mg/L unless otherwise noted.

Table 4. Comparison of Published MSW Landfill and C&D Landfill Leachate Data[1]

	Published Range MSW Leachate Data	Surrogate MSW Leachate Data	Potential Surrogate Range C&D Landfills[4]
Metals (mg/L)			
Arsenic	5.0-1600	0.0039-0.12	<0.002-0.02
Cadmium	0.5-Ñ140	ND-0.013	0.0001-<0.0004
Chromium	30-1600	ND-0.12	<0.001-<0.01
Lead	8-1020	ND-0.25	<0.0002-<0.003
Zinc	0.03-4	ND-53	<0.01-0.03
Conventional Parameters			
Alkalinity	300-11500	DNP	410-1450
Chloride	100-5000	99-3300	100-460
Chemical Oxygen Demand (COD)	500-4500	97-8100	110-230
Iron	3.0-280	3.3-320	0.02-14
Nitrogen, Nitrate	0.1-50	DNP	<0.25-3.5
Nitrogen, Ammonia	30-3000	DNP	<.05-1.2
pH (unit)	7.5-9	6.2-8.3	6.8-7.1
Sulfate	10-420	ND-330	730-170
Total Dissolved Solids (TDS)	—	480-24000	1700-5740
Total Suspended Solids (TSS)	—	26-7400	<4-320

[1]Excerpted data from referenced reports for comparison purposes only; mg/L unless otherwise noted.

[2]Norstrom, James M. et al Properties of *Leachate from Construction/Demolition Waste Landfills* (presented at the Fourteenth Annual Madison Waste Conference) September 25-26, 1991 and from Waste Age Landfill Course, July 1991.

[3]Wastewater Treatment Group (Waste Management of North America, Inc.) *Construction & Demolition Lanfill Leachate Study,* December 1991.

[4]Consolidated database from Table 3.

DNP = Data Not Provided in referenced report.

National Demolition Association Conclusions and Recommendations

National Demolition Association's development of nation-wide databases regarding demolition waste composition, state regulation of demolition landfills, and demolition landfill leachate characteristics was prompted by requests for the best available up-to-date information that could help guide development of federal and state regulations applying to demolition landfills. National Demolition Association has concluded that data representative of state-of-the-art demolition landfill leachate does exist and is the best information representative of industry impacts. The National Demolition Association's database and associated research effort should be considered by regulators as a comprehensive attempt to reconcile several different databases, documents and opinions on the use of published construction/demolition landfill leachate databases in the effort to help formulate regulatory policy.

National Demolition Association's waste characterization database documents that a vast majority of waste received by demolition landfills is relatively inert. Demolition wastes are predominantly a mixture of wood, concrete, brick, dirt, metals, roofing materials, glass, plastics and other non-recyclable wastes.

Some have suggested that demolition lanfills must meet EPA standards for Sub-title D municipal solid waste landfills, a view based in part on data regarding demolition landfill leachate quality from studies which pre-date National Demolition Association's 1994 review and database compilation. It cannot be overemphasized that the extensive National Demolition Association research effort found that landfills that used to be "old MSW dumps" or that have been the recipients of unchecked, unauthorized or illegal waste generate poor quality leachate. Unfortunately, the records for some of these sites are still being considered as part of the database being relied on to support the development of new, more stringent regulations for demolition facilities. However, as National Demolition Association's database shows, leachate from state-of-the-art demolition landfills and MSW landfills are not similar in concentration or composition, and thus should not demand similar regulatory regimes.

These findngs support National Demolition Association's conclusion that properly designed, well

maintained and operated demolition waste landfills are the most economical and environmentally sound method to manage that portion of the demolition industry's waste which cannot economically be recycled. National Demolition Association recommends that the standards and practices outlined in Table 2 be the basis for defining the manner in which demolition landfills can remain a viable and economic alternative for disposal of demolition wastes. In all cases, the National Demolition Association believes that the development of effective regulations for demolition landfills must begin with a clear definition of the materials which constitute "Acceptable Waste" for demolition landfill disposal. In addition, every facility must have an Operations Plan which includes provisions to effectively exclude unacceptable wastes and provide for their proper management.

National Demolition Association believes that just as the disposal of significant quantities of hazardous waste, batteries, waste oils, and other special wastes have been successfully reduced and/or eliminated from MSW landfills, yard waste composting sites, and waste-to-energy facilities, it is possible to work through demolition contractors, home builders, general contractors and other construction/demolition waste generators to eliminate inappropriate materials from demolition landfills.

In response to the challenge of handling the large amount of demolition debris generated in the United States in an environmentally safe manner, National Demolition Association members recycle millions of tons of waste annually, creating products for use in manufacturing, road building and maintenance, landscaping, nursery production, and more. However, not all wastes can be recycled, therefore, landfilling remains an integral, necessary component of the industry's appropriate waste management options. The demolition landfill is considered by the National Demolition Association to be a viable means of disposal for construction/demolition waste. For years, these facilities have accepted construction/demolition wastes and, when managed properly, pose no significant threat to the environment.

Databases, Reports, and Other Information

The databases and technical reports described in this document are available from the National Demolition Association for the nominal cost of reproduction.

- *C&D Waste Characterization Database, Volumes 1&2*, prepared for the National Demolition Association by GBB, February, 1994
- *State Regulatory Database, Volumes 1&2,* prepared for the National Demolition Association by GBB, August, 1994
- *C&D Waste Landfills Leachate Quality Data, Volumes 1&2,* prepared for the National Demolition Association by GBB, February, 1994
- *Preliminary Report on Demofill Leachate Quality,* prepared for the National Demolition Association by GBB, February, 1995

About the National Demolition Association

The size and experience of its membership have made the National Demolition Association of a driving force and voice for the demolition and recycling industry for nearly a quarter century. The National Demolition Association was formed in 1972 as a non-profit organization to foster communication between the public, governmental regulators and contractors engaged in the demolition industry. The National Demolition Association sponsors educational programs to increase public understanding of all aspects of the demolition industry, supports research efforts regarding issues of concern, and acts as an information clearinghouse for its members.

For copies of these documents or for additional information about the National Demolition Association or about the demolition industry, please call or write:

National Association of Demolition Contractors
16 North Franklin Street • Doylestown, Pennsylvania 18901
215-348-4949 • Toll Free 1-800-541-2412 • Fax 215-348-8422

National Demolition Association
16 North Franklin Street, Suite 203
Doylestown, PA 18901
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800-541-2412
Fax: 215-348-8422
E-Mail: info@demolitionassociation.com
Website: www.demolitionassociation.org

ATTACHMENT D – LETTERS OF SUPPORT

DiTomaso, Inc.

June 13, 2013

To Whom It May Concern:

Please accept this letter as our support to Central Recycling Services, (CRS), and Central Monofill Service in their effort to obtain a conditional use permit.

Our offices and warehouse are located at 601 Yakutat Street, directly adjacent to Central Recycling Services. We have been at this location since 1990 and a neighbor of CRS since they moved to their current location more than three years ago.

It has been our observation in the time (CRS) has been our neighbor that there has been no change in the quality of the area's environment. There has been no increase in excessive noise or odors, no change in bird or other pest presence, or any problem of debris and litter coming onto our property.

We would hope that the value, to the business community and the community at large, of the type of services (CRS) offers should be evident as a necessity and strongly urge the granting of the permit.

Very Sincerely,

Jeffrey Keim
Secretary/Treasurer

601 Yakutat St. Anchorage, Alaska 99501 (907) 276-8343 Fax (907) 278-8392

Grubstake Auction Co., Inc.

235 Ingra Street • P.O. Box 201667
Anchorage, Alaska 99520-1667
907-274-9269 • Fax 907-274-9270
Email Auction@Alaska.Net
WWW.GRUBSTAKEAUCTION.COM

STATEWIDE SERVICES
- Auctioneers
- Real Estate Broker
- Liquidators
- Personal Property Appraisals

To Whom it may Concern:

I am writing in support of the Conditional Use Permit for which Central Monofill Service (CMS) and Central Recycling Services (CRS) have applied. My business has been located adjacent to the CRS facility for over three years, and my office is within 500 feet of the site where the bulk of the recycling is done. Trucks loaded with debris that might normally end up in the landfill enter the facility, and in the time we have been neighbors there have been no problems of any sort. Concerns of noise, odors and blowing debris that attracts birds is unfounded. We have observed none of these issues. The services of CMS and CRS are of tremendous value to the community and to the state of Alaska. The granting of the Conditional Use Permit will allow these businesses to grow and expand and add to the economic vitality of the city and the Ship Creek industrial area. The benefits these businesses bring to the area far outweigh the perceived fears and concerns of future neighbors. It is my belief that they will prove to be baseless.

Ron Alleva,
President

June 11, 2013

To whom this may concern,

I am writing in support of Central Recycling Services plan to build a new monofill. I live in Salcha, Alaska located close to Fairbanks, Alaska and near Central Recycling Services monofill in Salcha, Alaska. As a neighbor, Central Recycling Services has made it so that living next to the monofill is, without a doubt, not a nuisance. From Central Recycling Services informing me when needed, keeping a clean area, and always being considerate of their surrounding and my land, I feel as though the monofill is not even there. In conclusion, the constrution of the monofill has not affected my home or the land around it in anyway, and I find that because of Central Recycling Services professional techniques and work ethic that it will be the same with the development of their new monofill.

If you have any questions or concerns please feel free to contact me.

Wesley Cullip

6672 Canaday Rd.

Salcha, Alaska

Matanuska-Susitna Borough
Planning &
Land Use Department
Planning Department
350 East Dahlia
Palmer, Alaska 99645

Dear Ms. Susan Lee

My name is Silvia Moore and I am writing this letter in support of Shane Durand and his company.

I, Silvia Moore would like to make a public comment on the Central Monofill Services proposed Monofill site along the Glenn Highway.

I am the next doo neighbor to the Central Monofill Services site in Salcha, Alaska. Our driveway goes through the middle of their Monofill site. Prior to development of the Salcha property, we had concerns about traffic, noise and odors from the Monofill site.

Shane Durand and his employees have gone out of their way to address the concerns of the neighborhood. After a season of operations I am happy to be able to say things have been much better than we could have expected. Traffic has been minimal and the trucks have been more than considerate of local residents. We have had no issues with odors or debris blowing around from the site. Equipment has only operated on site during daytime hours as required and in general this operation is out of sight and out of mind.

Also some neighbors, the local school and I have directly experienced Shane Durand's kindness and helpfulness. This operation is one of the neatest ones I have ever seen

I don't believe that you will have any regrets issuing permits to Central Monofill Services.

Please contact me at: 907 488-3831 if you have any further questions.

Sincerely,

Silvia Moore

Mrs. Moore

BST
BOB's SERVICES
2009 SPAR AVE.
ANHCORAGE AK 99501
PHONE: 907-276-3221
FAX: 907-276-1972

To whom it may concern: May 31, 2013

I would like to provide my support to Central Monofill Service, (CMS) and Central Recycling Services (CRS) and their application for a Conditional Use Permit. My business, Bob's Services Inc, is located directly adjacent to the C RS recycle facility in Anchorage. My office is within 500' of their operations. We have been neighbors now for over three years and I can report that we have no issues what so ever with their operations. Any concerns of noise, odors, blowing debris, dust and birds have never been an issue and no incidents with any of those concerns. The services CRS and CMS bring to Alaska we feel are highly needed and the granting of the Conditional Use Permit will allow their business to grow and expand, and in the short and long term be very beneficial to the State of Alaska. I can attest from experience that perceived fears and concerns of their operations have never been an issue with us as their neighbor and will not be an issue or problem.

Sincerely,

Bill Brown
President
Bob's Services Inc

HICKEL CONSTRUCTION & ENGINEERING, INC.
P.O Box 92617, Anchorage, Alaska 99509-2617 Phone: (907) 272-7713 FAX: (907) 272-7753

May 31, 2013

To whom it may concern:

I am writing this letter in full support of **Central Recycling Services** and **Central Monofill Service** and their application for a Conditional Use Permit. Our offices and warehouse have been located at 2600 Railroad Avenue in Anchorage for more than 20 years. CRS Recycle is literally down the street from our offices and their trucks and their customers pass by our front door several times daily. We cannot recall one instance since CRS first moved in and opened for business in this location where we have had any issues with them as our neighbor or any reason for concern with their operations.

Central Recycling Services has diligently maintained their properties and the contents thereon in an exceptional manner. CRS continues to take an active role in policing and maintaining the roadways surrounding our businesses as do the rest of our neighbors. Their operations have not produced excessive noises or odors and they do a great job of organizing and separating the various materials brought in for recycle to their property. This is a model business providing a much needed service to the Alaskan community, which was barely conceived as feasible a dozen years ago.

It is our contention that the State of Alaska and its many communities will be better served with the granting of the Conditional Use Permit being sought by Central Recyclying Service and Central Monofil Service. Anything short of a full approval would be undeserved.

Should you have any questions concerning this letter, please contact the undersigned at (907) 272-7713.

Sincerely,

HICKEL CONSTRUCTION & ENGINEERING, INC.

Peter J. Hickel, President

CC: FILE/VEH

As a resident of Alaska who cares about our people, environment , and working in the Engineering field as the State Materials Engineer for the Department of Transportation & Public Facilities--I would like to submit a formal comment regarding the conditional use permit application for Central Monofill Services operated by Central Recycling Services, per MSB 17.60, requesting to operate a monofill for the disposal of inert material within the Matanuska-Susitna Borough.

Per the application I understand that;

The inert debris will primarily be non-hazardous shredded residual nonrecyclable waste material from construction and demolition waste and will also accept Regulated Asbestos Containing Material (RACM) and Non-RACM will be accepted at the site. The proposed site is located on MSB Tax Parcels: 17N02E18C010 (2840 S. Glenn Highway) and 17N02E19B006 (2560 S. Glenn Highway; within Township 17 North, Range 2 East, Sections 18 and 19, Seward Meridian. Applicant: Central Monofill Services.

Working in the Engineering field with specific expertise in construction materials, I can say I have a good grasp of most all the issues surrounding monofills and recycling of materials. The question of having a recycling operation in your community, monofill or not, is highly dependent on who is in responsible charge of its daily operations as well as the reputation of the company tasked in the governance of these types of endeavors because if properly permitted, maintained, and operated a monofill and recycling center can become an asset to the surrounding community its supports. I pass this on having seen the revival of Anchorage's Glass Recycling Program, which would not have been possible without the hard fought work of Shane Durand with Central Recycling Services , who along with ALPAR came to AKDOT&PF in hopes of finding a use for the glass containers waste stream entering our Landfill. Shane at Central Recycling Services, ALPAR, and my office worked together to educate engineers that ultimately drafted a statewide crushed glass construction material specification for AKDOT&PF projects, a specification that would strengthen our roads at that same time strengthen our State. Each year new research is published on transportation construction materials that professes the benefits of using recycled materials to construct long lasting and durable infrastructure by using product once thought only best suited for landfill waste. Recently, there has been discussions, presentation, and research on the use of non-hazardous fines produced as a by-product from recycled waste to construct durable embankments for highways and roads. This material is similar to the type of materials seen in most monofill operations today. I am not saying that the Department of Transportation is anytime soon going to be using this material because the research has just begun, but it does highlight an important issue of something we once thought was only waste can, or could be, engineered to economically be turned into valuable construction materials.

As the State Materials Engineer my job is to sample & test materials and of course define their quality and in doing so I have come to know quality when I find it. Having said that, and having personally worked with Central Recycling Services and Shane Durand who oversees daily operations at the Recycling Center in Anchorage, I have at every turn encountered Quality in the company and person, respectively. ! personally believe, if Matanuska-Susitna Borough permits Central Recycling Services to operate a monofill and recycling center in the Matanuska-Susitna Borough its operations and the services provided by Central Recycling will quickly become a valued asset and highly praised member or your community. Central Recycling Services and Shane Durand are bringing Alaska information and services long provided in the lower 48. and if allowed will work to improve their new community one piece of recycled materials at a time. They have consistently clean operations, follow the strictest of standards, and have shown, at times, to go beyond the minimums even at the expense of profits-- all the time knowing other ventures could prove more profitable--but they choose to continue their commitment to clean recycling, I think, it's simply because they find value in it. Thank You for considering my comments, and no matter the outcome, if anyone at the Borough ever wants to talk about my favorite subject "construction materials" feel free to call any time. And in closing I want to wish the Matanuska-Susitna Borough all the best in the coming future.

Warm Regards

Michael San Angelo P.E.

State Materials Engineer, AKDOT&PF

907-269-6234

ATTACHMENT E – JURISDICTIONAL DETERMINATION

DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, ALASKA
ANCHORAGE FIELD OFFICE CEPOA-RD-SA
1600 A STREET SUITE 110
ANCHORAGE, ALASKA 99501-5146

REPLY TO ATTENTION OF:

Regulatory Division
POA-2013-305

JUL 25 2013

Central Monofill Services
Attention: Shane Durand
311 North Sitka Street
Anchorage, Alaska 99501

Dear Mr. Durand:

This letter responds to your May 24, 2013, request for a Department of the Army (DA) jurisdictional determination for your proposed Palmer Monofill Site. It has been assigned number POA-2013-305, Matanuska River, which should be referred to in all correspondence with us. The project site is located within Section 18, T. 17 N., R. 2 E., Seward Meridian; USGS Quad Map Anchorage C-6; Latitude 61.5577º N., Longitude 149.1749º W.; Matanuska-Susitna Borough; near Palmer, Alaska.

Based on our review of the information you provided and resources available to us, we have determined the subject property does not contain waters of the United States (U.S.) under Corps jurisdiction. Therefore, a DA permit is not required. A copy of the Approved Jurisdictional Determination form is available at: www.poa.usace.army.mil/Missions/Regulatory/JurisdictionalDeterminations.aspx under the above file number.

This approved jurisdictional determination is valid for a period of five (5) years from the date of this letter, unless new information supporting a revision is provided to us before the expiration date.

Enclosed is a Notification of Administrative Appeal Options and Process and Request for Appeal form regarding this approved jurisdictional determination (see section labeled "Approved Jurisdictional Determination").

Section 404 of the Clean Water Act requires that a DA permit be obtained for the placement or discharge of dredged and/or fill material into waters of the U.S., including jurisdictional wetlands (33 U.S.C. 1344). The Corps defines wetlands as those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.

Section 10 of the Rivers and Harbors Act of 1899 requires that a DA permit be obtained for structures or work in or affecting navigable waters of the U.S. (33 U.S.C. 403). Section 10 waters are those waters subject to the ebb and flow of the tide shoreward to the mean high water mark, and/or other waters identified by the Alaska District.

Nothing in this letter excuses you from compliance with other Federal, State, or local statutes, ordinances, or regulations.

Please contact me via email at Steve.D.Lindamood@usace.army.mil, by mail at the address above, by phone at (907) 753-2796, or toll free from within Alaska at (800) 478-2712, if you have questions.

Sincerely,

Steve Lindamood
Project Manager

Enclosures

www.poa.usace.army.mil/Missions/Regulatory

APPROVED JURISDICTIONAL DETERMINATION FORM
U.S. Army Corps of Engineers

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

SECTION I: BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD): 24 July 2013

B. DISTRICT OFFICE, FILE NAME, AND NUMBER: Alaska District, POA-CEPOA-RD-SA-POA-2013-305

C. PROJECT LOCATION AND BACKGROUND INFORMATION:
State: Alaska Borough: Matanuska-Susitna City: Palmer
Center coordinates of site (lat/long in degree decimal format, NAD-83): Lat. 61.5577° N, Long. 149.1749° W;
Universal Transverse Mercator: N/A; Within section(s) 18, T. 17 N., R. 2 E., Seward Meridian
Name of nearest water body: Matanuska River
Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: N/A - Uplands
Name of watershed or Hydrologic Unit Code (HUC): N/A
☒ Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request.
☐ Check if other sites (e.g., offsite mitigation sites, disposal sites, etc…) are associated with this action and are recorded on a different JD form.

D. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):
☒ Office (Desk) Determination. Date: 24 July 2013
☐ Field Determination. Date(s):

SECTION II: SUMMARY OF FINDINGS

A. RHA SECTION 10 DETERMINATION OF JURISDICTION.

There **Are no** "*navigable waters of the U.S.*" within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area. [***Required***]
☐ Waters subject to the ebb and flow of the tide.
☐ Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce. Explain:

B. CWA SECTION 404 DETERMINATION OF JURISDICTION.

There **Are no** "*waters of the U.S.*" within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area. [***Required***]

1. **Waters of the U.S.**
   a. **Indicate presence of waters of U.S. in review area (check all that apply):** [1]
      ☐ TNWs, including territorial seas
      ☐ Wetlands adjacent to TNWs
      ☐ Relatively permanent waters[2] (RPWs) that flow directly or indirectly into TNWs
      ☐ Non-RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
      ☐ Impoundments of jurisdictional waters
      ☐ Isolated (interstate or intrastate) waters, including isolated wetlands

   b. **Identify (estimate) size of waters of the U.S. in the review area:**
      Non-wetland waters: linear feet: width (ft) and/or acres
      Wetlands: acres

   c. **Limits (boundaries) of jurisdiction** based on: **Pick List**
      Elevation of established OHWM (if known):

2. **Non-regulated waters/wetlands (check if applicable):**[3]
   ☐ Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional. Explain:

[1] Boxes checked below shall be supported by completing the appropriate sections in Section III below.
[2] For purposes of this form, an RPW is defined as a tributary that is not a TNW and that typically flows year-round or has continuous flow at least "seasonally" (e.g., typically 3 months).
[3] Supporting documentation is presented in Section III.F.

SECTION III: CWA ANALYSIS

A. TNWs AND WETLANDS ADJACENT TO TNWs

The agencies will assert jurisdiction over TNWs and wetlands adjacent to TNWs. If the aquatic resource is a TNW, complete Section III.A.1 and Section III.D.1. only; if the aquatic resource is a wetland adjacent to a TNW, complete Sections III.A.1 and 2 and Section III.D.1.; otherwise, see Section III.B below.

1. **TNW**
   Identify TNW:

   Summarize rationale supporting determination:

2. **Wetland adjacent to TNW**
   Summarize rationale supporting conclusion that wetland is "adjacent":

B. CHARACTERISTICS OF TRIBUTARY (THAT IS NOT A TNW) AND ITS ADJACENT WETLANDS (IF ANY):

This section summarizes information regarding characteristics of the tributary and its adjacent wetlands, if any, and it helps determine whether or not the standards for jurisdiction established under *Rapanos* have been met.

The agencies will assert jurisdiction over non-navigable tributaries of TNWs where the tributaries are "relatively permanent waters" (RPWs), i.e. tributaries that typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months). A wetland that directly abuts an RPW is also jurisdictional. If the aquatic resource is not a TNW, but has year-round (perennial) flow, skip to Section III.D.2. If the aquatic resource is a wetland directly abutting a tributary with perennial flow, fill out Section III.D.2 and Section III.D.4.

A wetland that is adjacent to but that does not directly abut an RPW requires a significant nexus evaluation. Corps districts and EPA regions will include in the record any available information that documents the existence of a significant nexus between a relatively permanent tributary that is not perennial (and its adjacent wetlands if any) and a traditional navigable water, even though a significant nexus finding is not required as a matter of law.

If the water body[4] is not an RPW, or a wetland directly abutting an RPW, a JD will require additional data to determine if the water body has a significant nexus with a TNW. If the tributary has adjacent wetlands, the significant nexus evaluation must consider the tributary in combination with all of its adjacent wetlands. This significant nexus evaluation that combines, for analytical purposes, the tributary and all of its adjacent wetlands is used whether the review area identified in the JD request is the tributary, or its adjacent wetlands, or both. If the JD covers a tributary with adjacent wetlands, complete Section III.B.1 for the tributary, Section III.B.2 for any onsite wetlands, and Section III.B.3 for all wetlands adjacent to that tributary, both onsite and offsite. The determination whether a significant nexus exists is determined in Section III.C below.

1. **Characteristics of non-TNWs that flow directly or indirectly into TNW**

   (i) **General Area Conditions:**
   Watershed size: **Pick List**
   Drainage area: **Pick List**
   Average annual rainfall: inches
   Average annual snowfall: inches

   (ii) **Physical Characteristics:**
   (a) Relationship with TNW:
   ☐ Tributary flows directly into TNW.
   ☐ Tributary flows through **Pick List** tributaries before entering TNW.

   Project waters are **Pick List** river miles from TNW.
   Project waters are **Pick List** river miles from RPW.
   Project waters are **Pick List** aerial (straight) miles from TNW.
   Project waters are **Pick List** aerial (straight) miles from RPW.
   Project waters cross or serve as state boundaries. Explain:

   Identify flow route to TNW[5]:
   Tributary stream order, if known:

[4] Note that the Instructional Guidebook contains additional information regarding swales, ditches, washes, and erosional features generally and in the arid West.
[5] Flow route can be described by identifying, e.g., tributary a, which flows through the review area, to flow into tributary b, which then flows into TNW.

(b) General Tributary Characteristics (check all that apply):
Tributary is: ☐ Natural
☐ Artificial (man-made). Explain:
☐ Manipulated (man-altered). Explain:

Tributary properties with respect to top of bank (estimate):
Average width: feet
Average depth: feet
Average side slopes: **Pick List**

Primary tributary substrate composition (check all that apply):
☐ Silts ☐ Sands ☐ Concrete
☐ Cobbles ☐ Gravel ☐ Muck
☐ Bedrock ☐ Vegetation. Type/% cover:
☐ Other. Explain:

Tributary condition/stability [e.g., highly eroding, sloughing banks]. Explain:
Presence of run/riffle/pool complexes. Explain:
Tributary geometry: **Pick List**
Tributary gradient (approximate average slope): %

(c) Flow:
Tributary provides for: **Pick List**
Estimate average number of flow events in review area/year: **Pick List**
Describe flow regime:
Other information on duration and volume:
Surface flow is: **Pick List**. Characteristics:
Subsurface flow: **Pick List**. Explain findings:
☐ Dye (or other) test performed:

Tributary has (check all that apply):
☐ Bed and banks
☐ OHWM[6] (check all indicators that apply):
☐ clear, natural line impressed on the bank ☐ the presence of litter and debris
☐ changes in the character of soil ☐ destruction of terrestrial vegetation
☐ shelving ☐ the presence of wrack line
☐ vegetation matted down, bent, or absent ☐ sediment sorting
☐ leaf litter disturbed or washed away ☐ scour
☐ sediment deposition ☐ multiple observed or predicted flow events
☐ water staining ☐ abrupt change in plant community
☐ other (list):
☐ Discontinuous OHWM.[7] Explain:

If factors other than the OHWM were used to determine lateral extent of CWA jurisdiction (check all that apply):
☐ High Tide Line indicated by: ☐ Mean High Water Mark indicated by:
☐ oil or scum line along shore objects ☐ survey to available datum;
☐ fine shell or debris deposits (foreshore) ☐ physical markings;
☐ physical markings/characteristics ☐ vegetation lines/changes in vegetation types.
☐ tidal gauges
☐ other (list):

(iii) Chemical Characteristics:
Characterize tributary (e.g., water color is clear, discolored, oily film; water quality; general watershed characteristics, etc.).
Explain:
Identify specific pollutants, if known:

[6]A natural or man-made discontinuity in the OHWM does not necessarily sever jurisdiction (e.g., where the stream temporarily flows underground, or where the OHWM has been removed by development or agricultural practices). Where there is a break in the OHWM that is unrelated to the water body's flow regime (e.g., flow over a rock outcrop or through a culvert), the agencies will look for indicators of flow above and below the break.
[7]Ibid.

(iv) Biological Characteristics. Channel supports (check all that apply):
- ☐ Riparian corridor. Characteristics (type, average width):
- ☐ Wetland fringe. Characteristics:
- ☐ Habitat for:
  - ☐ Federally Listed species. Explain findings:
  - ☐ Fish/spawn areas. Explain findings:
  - ☐ Other environmentally-sensitive species. Explain findings:
  - ☐ Aquatic/wildlife diversity. Explain findings:

2. Characteristics of wetlands adjacent to non-TNW that flow directly or indirectly into TNW

(i) Physical Characteristics:

(a) General Wetland Characteristics:
Properties:
Wetland size: acres
Wetland type. Explain:
Wetland quality. Explain:
Project wetlands cross or serve as state boundaries. Explain:

(b) General Flow Relationship with Non-TNW:
Flow is: **Pick List**. Explain:

Surface flow is: **Pick List**
Characteristics:

Subsurface flow: **Pick List**. Explain findings:
- ☐ Dye (or other) test performed:

(c) Wetland Adjacency Determination with Non-TNW:
- ☐ Directly abutting
- ☐ Not directly abutting
  - ☐ Discrete wetland hydrologic connection. Explain:
  - ☐ Ecological connection. Explain:
  - ☐ Separated by berm/barrier. Explain:

(d) Proximity (Relationship) to TNW
Project wetlands are **Pick List** river miles from TNW.
Project waters are **Pick List** aerial (straight) miles from TNW.
Flow is from: **Pick List.**
Estimate approximate location of wetland as within the **Pick List** floodplain.

(ii) Chemical Characteristics:
Characterize wetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characteristics; etc.). Explain:
Identify specific pollutants, if known:

(iii) Biological Characteristics. Wetland supports (check all that apply):
- ☐ Riparian buffer. Characteristics (type, average width):
- ☐ Vegetation type/percent cover. Explain:
- ☐ Habitat for:
  - ☐ Federally Listed species. Explain findings:
  - ☐ Fish/spawn areas. Explain findings:
  - ☐ Other environmentally-sensitive species. Explain findings:
  - ☐ Aquatic/wildlife diversity. Explain findings:

3. Characteristics of all wetlands adjacent to the tributary (if any)
All wetland(s) being considered in the cumulative analysis: **Pick List**
Approximately ( ) acres in total are being considered in the cumulative analysis.

For each wetland, specify the following:

Directly abuts? (Y/N)	Size (in acres)	Directly abuts? (Y/N)	Size (in acres)

Summarize overall biological, chemical and physical functions being performed:

C. SIGNIFICANT NEXUS DETERMINATION

A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by any wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of a TNW. For each of the following situations, a significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of a TNW. Considerations when evaluating significant nexus include, but are not limited to the volume, duration, and frequency of the flow of water in the tributary and its proximity to a TNW, and the functions performed by the tributary and all its adjacent wetlands. It is not appropriate to determine significant nexus based solely on any specific threshold of distance (e.g. between a tributary and its adjacent wetland or between a tributary and the TNW). Similarly, the fact an adjacent wetland lies within or outside of a floodplain is not solely determinative of significant nexus.

Draw connections between the features documented and the effects on the TNW, as identified in the *Rapanos* Guidance and discussed in the Instructional Guidebook. Factors to consider include, for example:

- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to carry pollutants or flood waters to TNWs, or to reduce the amount of pollutants or flood waters reaching a TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), provide habitat and lifecycle support functions for fish and other species, such as feeding, nesting, spawning, or rearing young for species that are present in the TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to transfer nutrients and organic carbon that support downstream foodwebs?
- Does the tributary, in combination with its adjacent wetlands (if any), have other relationships to the physical, chemical, or biological integrity of the TNW?

Note: the above list of considerations is not inclusive and other functions observed or known to occur should be documented below:

1. **Significant nexus findings for non-RPW that has no adjacent wetlands and flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary itself, then go to Section III.D:

2. **Significant nexus findings for non-RPW and its adjacent wetlands, where the non-RPW flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D:

3. **Significant nexus findings for wetlands adjacent to an RPW but that do not directly abut the RPW.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D:

D. DETERMINATIONS OF JURISDICTIONAL FINDINGS. THE SUBJECT WATERS/WETLANDS ARE (CHECK ALL THAT APPLY):

1. **TNWs and Adjacent Wetlands.** Check all that apply and provide size estimates in review area:
   - ☐ TNWs: linear feet width (ft), Or, acres.
   - ☐ Wetlands adjacent to TNWs: acres.

2. **RPWs that flow directly or indirectly into TNWs.**
   - ☐ Tributaries of TNWs where tributaries typically flow year-round are jurisdictional. Provide data and rationale indicating that tributary is perennial:
   - ☐ Tributaries of TNW where tributaries have continuous flow "seasonally" (e.g., typically three months each year) are jurisdictional. Data supporting this conclusion is provided at Section III.B. Provide rationale indicating that tributary flows seasonally:

Provide estimates for jurisdictional waters in the review area (check all that apply):
- ☐ Tributary waters: linear feet width (ft)
- ☐ Other non-wetland waters: acres
  Identify type(s) of waters:

3. **Non-RPWs[8] that flow directly or indirectly into TNWs.**
   ☐ Water body that is not a TNW or an RPW, but flows directly or indirectly into a TNW, and it has a significant nexus with a TNW is jurisdictional. Data supporting this conclusion is provided at Section III.C.

   Provide estimates for jurisdictional waters within the review area (check all that apply):
   - ☐ Tributary waters: linear feet width (ft).
   - ☐ Other non-wetland waters: acres
     Identify type(s) of waters:

4. **Wetlands directly abutting an RPW that flow directly or indirectly into TNWs.**
   ☐ Wetlands directly abut RPW and thus are jurisdictional as adjacent wetlands.
   - ☐ Wetlands directly abutting an RPW where tributaries typically flow year-round. Provide data and rationale indicating that tributary is perennial in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW:

   - ☐ Wetlands directly abutting an RPW where tributaries typically flow "seasonally." Provide data indicating that tributary is seasonal in Section III.B and rationale in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW:

   Provide acreage estimates for jurisdictional wetlands in the review area: acres

5. **Wetlands adjacent to but not directly abutting an RPW that flow directly or indirectly into TNWs.**
   ☐ Wetlands that do not directly abut an RPW, but when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisidictional. Data supporting this conclusion is provided at Section III.C.

   Provide acreage estimates for jurisdictional wetlands in the review area: acres

6. **Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs.**
   ☐ Wetlands adjacent to such waters, and have when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

   Provide estimates for jurisdictional wetlands in the review area: acres

7. **Impoundments of jurisdictional waters.[9]**
   As a general rule, the impoundment of a jurisdictional tributary remains jurisdictional.
   - ☐ Demonstrate that impoundment was created from "waters of the U.S.," or
   - ☐ Demonstrate that water meets the criteria for one of the categories presented above (1-6), or
   - ☐ Demonstrate that water is isolated with a nexus to commerce (see E below).

E. ISOLATED [INTERSTATE OR INTRA-STATE] WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGRADATION OR DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (CHECK ALL THAT APPLY):[10]
- ☐ which are or could be used by interstate or foreign travelers for recreational or other purposes.
- ☐ from which fish or shellfish are or could be taken and sold in interstate or foreign commerce.
- ☐ which are or could be used for industrial purposes by industries in interstate commerce.
- ☐ Interstate isolated waters. Explain:
- ☐ Other factors. Explain:

Identify water body and summarize rationale supporting determination:

---

[8] See Footnote # 3.
[9] To complete the analysis refer to the key in Section III.D.6 of the Instructional Guidebook.
[10] **Prior to asserting or declining CWA jurisdiction based solely on this category, Corps Districts will elevate the action to Corps and EPA HQ for review consistent with the process described in the Corps/EPA *Memorandum Regarding CWA Act Jurisdiction Following Rapanos.***

Provide estimates for jurisdictional waters in the review area (check all that apply):
☐ Tributary waters: linear feet width (ft)
☐ Other non-wetland waters: acres
Identify type(s) of waters:
☐ Wetlands: acres

F. NON-JURISDICTIONAL WATERS, INCLUDING WETLANDS (CHECK ALL THAT APPLY):
☐ If potential wetlands were assessed within the review area, these areas did not meet the criteria in the 1987 Corps of Engineers Wetland Delineation Manual and/or appropriate Regional Supplements.
☐ Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce.
☐ Prior to the Jan 2001 Supreme Court decision in "*SWANCC*," the review area would have been regulated based solely on the "Migratory Bird Rule" (MBR).
☐ Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. Explain:
☐ Other: (explain, if not covered above):

Provide acreage estimates for non-jurisdictional waters in the review area, where the sole potential basis of jurisdiction is the MBR factors (i.e., presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment (check all that apply):
☐ Non-wetland waters (i.e., rivers, streams): linear feet width (ft).
☐ Lakes/ponds: acres.
☐ Other non-wetland waters: acres. List type of aquatic resource:
☐ Wetlands: acres.

Provide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction (check all that apply):
☐ Non-wetland waters (i.e., rivers, streams): linear feet, width (ft).
☐ Lakes/ponds: acres.
☐ Other non-wetland waters: acres. List type of aquatic resource:
☐ Wetlands: acres.

SECTION IV: DATA SOURCES.

A. SUPPORTING DATA. Data reviewed for JD (check all that apply - checked items shall be included in case file and, where checked and requested, appropriately reference sources below):
☒ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: **Project Site Map**
☐ Data sheets prepared/submitted by or on behalf of the applicant/consultant.
☐ Office concurs with data sheets/delineation report.
☐ Office does not concur with data sheets/delineation report
☐ Data sheets prepared by the Corps:
☐ Corps navigable waters' study:
☐ U.S. Geological Survey Hydrologic Atlas:
☐ USGS NHD data
☐ USGS 8 and 12 digit HUC maps
☐ Alaska District's Approved List of Navigable Waters
☒ U.S. Geological Survey map(s). Cite scale & quad name: **Anchorage C-6, Topographic Map**
☒ USDA Natural Resources Conservation Service Soil Survey. Citation: **Knik silt loam and Yensus silt loam**
☒ National wetlands inventory map(s). Cite name: **NWI Wetland Map**
☐ State/Local wetland inventory map(s):
☐ FEMA/FIRM maps:
☐ 100-year Floodplain Elevation is: (National Geodectic Vertical Datum of 1929)
☒ Photographs: ☐ Aerial (Name & Date):
or ☒ Other (Name & Date): **2011 Google Earth Pro Satellite Imagery**
☐ Previous determination(s). File no. and date of response letter:
☐ Applicable/supporting case law:
☐ Applicable/supporting scientific literature:
☐ Other information (please specify):

B. ADDITIONAL COMMENTS TO SUPPORT JD: The subject site does not contain the soils, hydrology and vegetation required in the 1987 Wetland Delineation Manual and the Alaska Regional Supplement to be considered a wetland, nor does it contain other waters of the U.S. The area is determined to be Uplands.

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ATTACHMENT F – TRAFFIC IMPACT ANALYSIS

TRAFFIC IMPACT ANALYSIS (TIA) THRESHOLD WORKSHEET

Complete this form as an aid to determine if your project requires a Traffic Impact Analysis, as per Borough Code 17.61.

Project Name: Central Monofill Services Inc, Palmer Monofill
Location: Mile Post 35.3 Glen Highway, Palmer AK
Applicant: Central Monofill Services, Inc. ☒ Owner or ☐ Agent
Address: 311 N. Sitka Street Anchorage AK 99501
Phone: 907.561.0125

Box A (Original TIA) *NON-RESIDENTIAL DEVELOPMENT*

Anticipated Land Use	Project Size			Peak Hour?	Daily Trip Rate	Peak Hour Trips	Trip Rate Source
	Acres	GFA	Other*				
Industrial Light	52.0	15,000		PM	6.97	16 2	attached

*Specify

Box B (Updated TIA) Complete only if property already has a TIA on file.

Peak Hour Trips Projected In Current TIA	Peak Hour Trips (from Box A or B) Projected in *Updated* Development Plan	Increase in Peak Hour Trips (If over 100 additional trips, a new TIA is required)

Box C (Information regarding the person/agency who prepared the TIA)

Prepared by: Luke Randell, PE Agency: EMI Date: 1-23-13
Comments:

For Official Use only.

A Traffic Impact Analysis is required. The applicant preparing the study should meet with Borough staff _____ to discuss the scope and requirements of the study before beginning the study
A Traffic Impact Analysis is **not required.** The traffic generated by the proposed development does not _____ exceed the threshold requirements.
_____ The Traffic Impact Analysis has been waived for the following reason(s): _____

Reviewed by: _____ Date: _____

NOTE: **GFA = Gross Floor Area (building size).**
ITE = Institute of Transportation Engineers, *Trip Generation,* 6th Edition, 525 School Street SW, Ste. 410 Washington, DC 20024-2729; (202)554-8050

S:\Planning\Code Compliance\Forms\Core Area Land Use Permit.doc Revised 11/23/05

Page 3 of 4

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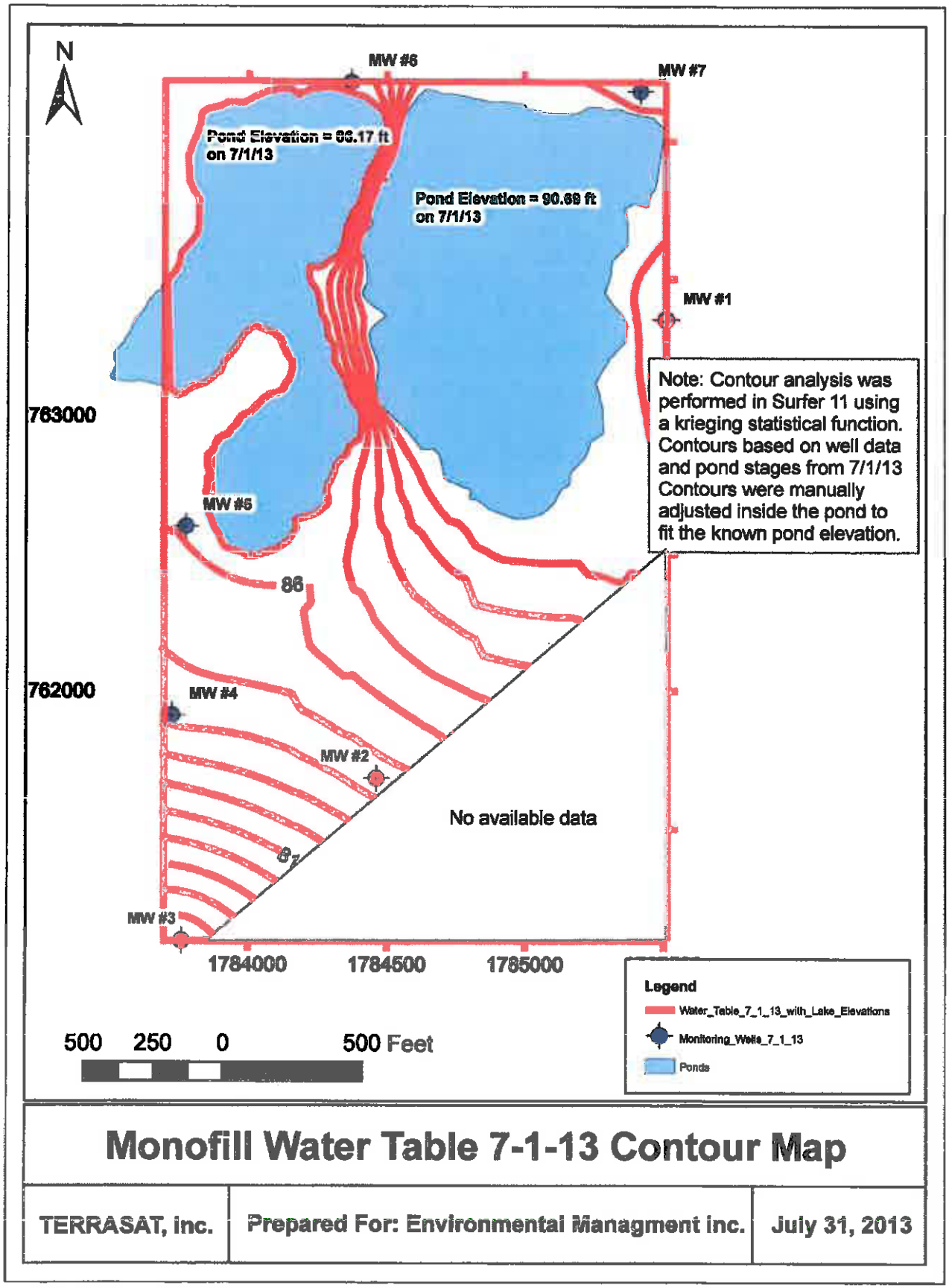
ATTACHMENT G – GROUND WATER MAP



Monofill Water Table 7-1-13 Contour Map

TERRASAT, inc.	Prepared For: Environmental Managment inc.	July 31, 2013

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ATTACHMENT H – PROFESSIONAL SERVICES REPORTS

NORTHERN GEOTECHNICAL ENGINEERING, INC. / TERRA FIRMA TESTING
Laboratory Testing Geotechnical Engineering Instrumentation Construction Monitoring Services Thermal Analysis

December 24, 2013 3568-13

Central Monofill Services
311 N. Sitka Street
Anchorage, AK 99501

Attn: Jay Stepetin

RE: PENETRATION TESTING SUMMARY LETTER

Jay,

Per your request, Northern Geotechnical Engineering, Inc. d.b.a. Terra Firma Testing has prepared this summary letter to provide the mechanical properties of the materials for your project. A detailed calculation of the test data collected and the associated engineering conclusions are included in this letter.

Three penetration tests were conducted similar to California Bearing Ratio (CBR) on the soil/shredded building debris material for this project. CBR is a penetration test for evaluation of the material mechanical strength. The test is performed by measuring the pressure required to penetrate a soil sample with a plunger of standard area. The measured pressure (k) is then divided by the pressure required to achieve an equal penetration on a standard crushed rock material (assumed as 3400 psi). Physical and mechanical properties of three test samples were shown in Table 1.

Table 1: Physical and Mechanical Properties

Samples	Density	Water Content	k	CBR
S1	66.5psf	11.8%	44psi	1.3
S2	69.1psf	21.2%	84psi	2.5
S3	67.4psf	27.3%	73psi	2.1

Average CBR value 2 were selected for the following analysis. Based on the approximate relationship with CBR, bearing capacity could be assumed as 4 psi (575 psf).

$$Q = \frac{1}{2}B\,\gamma\,N_\gamma + D_f\gamma\,N_q$$

11301 Olive Lane Anchorage, Alaska 99515 Phone: 907-344-5934 Fax: 907-344-5993

With Q being 575 psf, N_γ and N_q are ø-dependent terms. Assuming D_f= 1 ft, B = 1 ft, and γ = 67 psf, it is calculated that ø is approximate 20°.

Provided proper engineering controls (sheeps foot compacted), this material will stand an approximately 2H:1V slope, with a vertical height less than 15 ft.

The strength of the mixture will be a function of the amount of mineral soil in the mixture, which is expected to be quite variable. Our samples used for testing have minimal mineral soil, thus representing a minimum slope value.

We appreciate the opportunity to provide you with our services. If you have any questions, please do not hesitate to contact us at your convenience.

Sincerely,

Northern Geotechnical Engineering, Inc. *d.b.a.* Terra Firma Testing,

Xiaoxuan (Eva) Ge, E.I.T.
Project Engineer

Keith F. Mobley, P.E.
President

STATE OF ALASKA
49TH
24 Dec 2013
KEITH F. MOBLEY
CE - 5066
REGISTERED PROFESSIONAL ENGINEER

11301 Olive Lane, Anchorage, Alaska 99515 Phone: 907-344-5934 Fax: 907-344-5993 Email: kmobley@nge-tft.com

NORTHERN GEOTECHNICAL ENGINEERING, INC. / TERRA FIRMA TESTING
Laboratory Testing Geotechnical Engineering Instrumentation Construction Monitoring Services Thermal Analysis

November 19, 2013

Jay Stepetin
Central Recycling Services
2400 Railroad Ave
Anchorage, AK 99501

Subject: **Shredded C & D Material with Soil Testing Procedure**

No water was added to the shredded C & D material with soil prior to densification testing.

An approximate 2' loose lift of shredded C&D material with soil was bladed over the testing vessel and statically densified by using the tracks of a bulldozer. Upon completion of the track densification the testing vessel was carefully excavated out of the compacted lift and the top struck flush. The testing vessel was then hoisted onto a digital platform scale to determine the unit weight.

If you have any questions or require additional information, please contact the undersigned.

Northern Geotechnical Engineering, Inc.-Terra Firma Testing

Ron J.P. Caron C.E.T.
V.P. Technical Engineering
NGE-TFT

11301 Olive Lane ◆ Anchorage, Alaska 99515 ◆ Phone: 907-344-5934 ◆ Fax: 907-344-5993 ◆ www.nge-tft.com

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ENVIRONMENTAL MANAGEMENT INCORPORATED

August 15, 2013

Central Monofill Services
311 N. Sitka Street
Anchorage, AK 99501
Attn: Shane Durand

RE: CMS Proposed Monofill Site, Palmer Alaska

Subj: Analysis of On Site Soils for Use in Construction of the Monofill

This letter describes the results of the percolation tests and laboratory tests performed on typical soils at the project site. The in-situ percolation tests were performed on July 1, 2013, at the proposed Palmer Monofill site by Aaron Acena, a geologist from Environmental Management, Inc. (EMI) under the oversight of Larry Helgeson, P.E. The laboratory analysis was conducted by Terra Firm Testing of Anchorage.

The standard 6-inch falling head pressure test that is recommended by Alaska Department of Environmental Conservation (ADEC) was used to complete the tests. Boreholes were dug to a depth of approximately 2 feet in 3 areas on the property which appeared to represent "native" soil conditions on site that would be found under the monofill. Holes 1 and 2 were located within 50 ft. of each other on the south end of the property and a 3rd hole was dug closer to the west/central area of the property in a flattened zone. Holes were prepped with 2 inches of gravel at the base and allowed to soak for 1-2 hours before the test. Hole 3 exhibited water movement that qualified as ready to test "as is" without soaking. Holes 1 and 2 indicated additional soaking would be required before a percolation test could be used to meet ADEC requirements to test soils for a leech field. The final percolation rate will likely be slower than these tests indicate. The preliminary percolation rates were taken from an average of the last three readings taken from each hole and are listed in Table 1.

Table 1

Location ID	Percolation Rate (min/in)
Hole 1	41
Hole 2	81
Hole 3	7

206 E. FIREWEED LANE, SUITE 201 • ANCHORAGE, AK 99503-2703
CONSULTING (907) 272-9336 • FAX (907) 272-4159 • TRAINING (907) 272-8852 • FAX (907) 272-0319
www.emi-alaska.com

These percolation tests indicate most of the soil is very suitable for the base of a monofill, allowing any accumulated storm water to slowly percolate into the ground. In areas where the soils has long percolation rates, such as around Hole 2, the bottom of the cells will need to be graded to prevent ponding. In addition, storm water control, such as interception ditches, should be constructed to prevent additional storm water from entering the cell area.

The soils from the locations selected as possible source material for covers for the cells were sent to Terra Firma Testing in Anchorage for gradation testing and checking the hydraulic conductivity. The predominant materials available on site consist of silts and sands with some gravel. With a hydraulic conductivity of around 10^{-4} cm/sec these soils will be suitable for use on intermediate caps and the final cap for the cells.

Sincerely,
Environmental Management, Inc.

Larry Helgeson, PE
Principal

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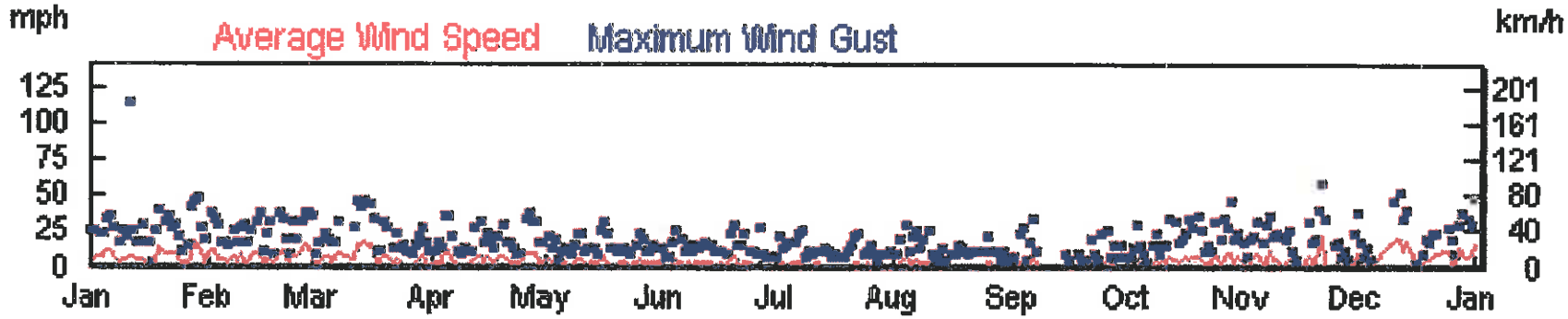
CONSULTING (907) 272-9336 • FAX (907) 272-4159 • TRAINING (907) 272-8852 • FAX (907) 272-0319
www.emi-alaska.com

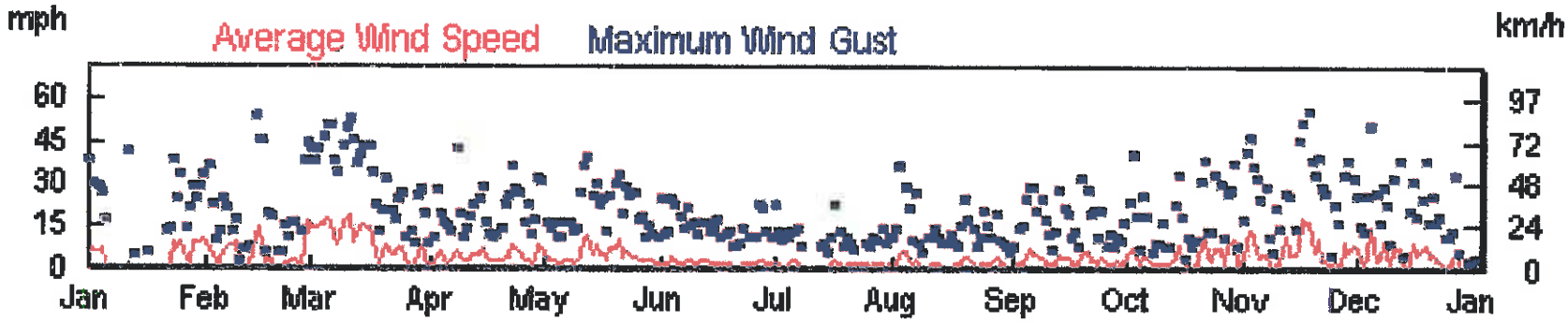
ATTACHMENT I – WIND DATA

KAKPALME16 Wind Graph
January 1, 2013 - January 1, 2014

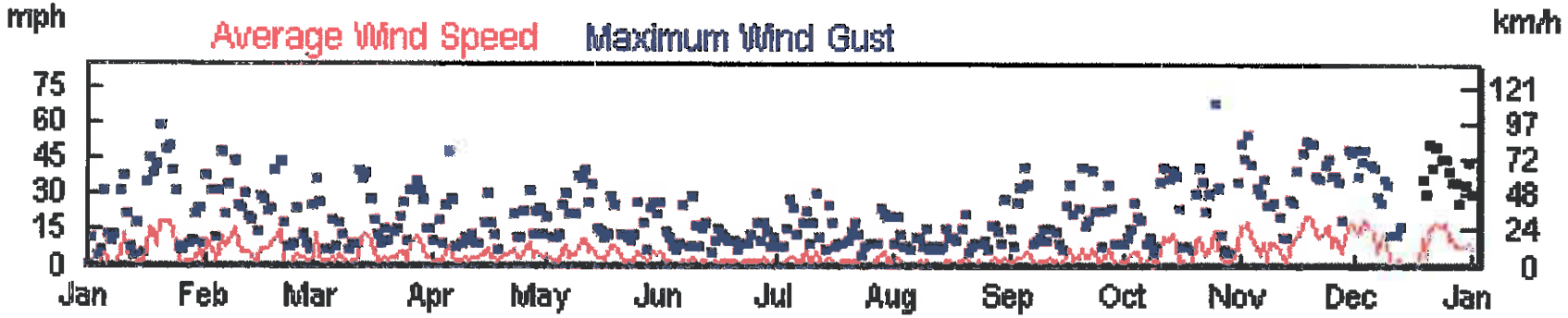


PLANNING COMMISSION NOVEMBER 7, 2016

KAKPALME16 Wind Graph
January 1, 2011 - January 1, 2012



KAKPALME16 Wind Graph
January 1, 2012 - January 1, 2013



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ATTACHMENT J – RELATOR LETTER

Glen Price

From: Shane Durand <Shane@cei-alaska.com>
Sent: Friday, May 31, 2013 10:35 AM
To: gplaw@mtaonline.net; Stuart@cei-alaska.com
Subject: FW: Market research

This attachment as well

From: Laura Hamilton [mailto:remaxlaura1@gmail.com]
Sent: Thursday, May 16, 2013 9:08 AM
To: Shane Durand
Subject: Market research

As per your request I have looked at the value of homes sold around local waste disposal sites to determine if there is a risk of adjoining property values declining. I looked at homes in the Majestic Hills subdivision and since 2005 when homes were originally built home values have increased between 10 and 25% according to the report on closed listings. Homes in this subdivision do not appear to have a lesser value then homes in similar subdivisions located further from the Alaska Demolition Monofill. Similarly homes in the Chugiak area do not have a history of losing value based on the proximity to the land fill. I have had a home at the end of Skyview on the corner of Wildwood Drive since 1982 and have not seen the landfill effect home values in that area. I bought my home in 1982 for $110,000 and it is now worth $230,000 or more as an example of home values increase in that area.

In reviewing property disclosure forms another thing I found very interesting is that sellers adjacent to the Alaska Demolition Monofill in several cases did not acknowledge there is a site in these areas, Page 5 of the State of Alaska Property Disclosure, asks if you are aware of any waste disposal site or a gravel pit within one mile radius of the property. In some cases it was marked No, and others did not mark it an all. For sellers to not be aware of an adjacent gravel pit of Waste site would indicate that these are very unobtrusive operations that would not have adverse impact on property values.

Based on the review of sales data the overall value of the properties located around the Alaska Demolition Monofill, MSB Landfill and Former Chugiak Landfill have increased at the same rate as properties further away.

Based on this I would not expect your proposed facility to impact surrounding property values particularly not 10% or more.

--
Laura Hamilton
Associate Broker
Re/max of Eagle River, Inc
907-244-0357 1-800-770-4242
ABR, CRS,SRES,CDPE
www.homesbylaura.net
Referrals Appreciated
CONFIDENTIALITY NOTICE
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ATTACHMENT K – PROPERTY VALUES

Property Values for Properties Located Near Central Landfill

East Lee Ann Drive

	2011	2012	2013
9600	$ 226,400.00	$ 232,200.00	$ 235,900.00
9601	$ 177,700.00	$ 183,400.00	$ 184,800.00
9650	$ 34,000.00	$ 34,000.00	$ 34,000.00
9651	$ 255,000.00	$ 259,500.00	$ 263,600.00
9700	$ 37,000.00	$ 37,000.00	$ 37,000.00
9701	$ 32,000.00	$ 32,000.00	$ 32,000.00
9750	$ 183,700.00	$ 184,500.00	$ 185,700.00
9751	$ 204,800.00	$ 210,400.00	$ 211,900.00
9800	$ 243,800.00	$ 245,600.00	$ 249,900.00
9815	$ 153,000.00	$ 153,900.00	$ 159,800.00
9825	$ 228,800.00	$ 231,800.00	$ 233,600.00
9830	$ 265,100.00	$ 275,200.00	$ 279,100.00
9845	$ 189,400.00	$ 187,600.00	$ 187,900.00
9860	$ 32,000.00	$ 32,000.00	$ 32,000.00
9900	$ 200,100.00	$ 211,500.00	$ 212,600.00
9930	$ 182,900.00	$ 175,000.00	$ 175,400.00
Average Value	**$ 165,356.25**	**$ 167,850.00**	**$ 169,700.00**

East Loma Rica Drive

	2011	2012	2013
10120	$ 187,900.00	$ 185,700.00	$ 192,800.00
10121	$ 258,400.00	$ 270,300.00	$ 268,100.00
10201	$ 256,100.00	$ 264,400.00	$ 263,900.00
10202	$ 350,600.00	$ 332,900.00	$ 332,800.00
Average Value	$ 263,250.00	$ 263,325.00	$ 264,400.00

East Strand Drive

	2011	2012	2013
10000	$ 194,000.00	$ 203,400.00	$ 201,600.00
10005	$ 194,000.00	$ 195,500.00	$ 194,200.00
10030	$ 164,000.00	$ 166,100.00	$ 166,300.00
10055	$ 184,600.00	$ 197,500.00	$ 200,300.00
10060	$ 169,500.00	$ 168,200.00	$ 167,200.00
10075	$ 138,400.00	$ 139,500.00	$ 140,400.00
10090	$ 32,000.00	$ 32,000.00	$ 32,000.00
10095	$ 160,900.00	$ 163,500.00	$ 164,300.00
10115	$ 146,600.00	$ 152,300.00	$ 153,700.00
10120	$ 219,000.00	$ 218,500.00	$ 222,300.00
10135	$ 256,900.00	$ 257,200.00	$ 265,300.00
10150	$ 216,500.00	$ 223,300.00	$ 223,900.00
10175	$ 179,000.00	$ 188,100.00	$ 190,900.00
10180	$ 218,500.00	$ 216,700.00	$ 218,400.00
10195	$ 157,300.00	$ 167,600.00	$ 168,900.00
10210	$ 199,000.00	$ 198,500.00	$ 199,700.00
10225	$ 258,200.00	$ 253,700.00	$ 254,600.00
10240	$ 308,300.00	$ 297,300.00	$ 297,300.00
10245	$ 179,000.00	$ 164,000.00	$ 162,700.00
10270	$ 221,900.00	$ 211,000.00	$ 208,000.00
10300	$ 271,500.00	$ 293,300.00	$ 296,000.00
9600	$ 233,900.00	$ 232,800.00	$ 236,400.00
9630	$ 74,700.00	$ 74,100.00	$ 72,600.00
9660	$ 214,500.00	$ 214,400.00	$ 216,000.00
9700	$ 225,800.00	$ 238,900.00	$ 247,100.00
9725	$ 161,000.00	$ 170,300.00	$ 168,500.00
9730	$ 215,000.00	$ 226,000.00	$ 230,300.00
9760	$ 340,000.00	$ 346,400.00	$ 348,300.00
9790	$ 183,700.00	$ 186,900.00	$ 190,000.00
9815	$ 291,900.00	$ 299,700.00	$ 318,300.00
9820	$ 70,000.00	$ 70,000.00	$ 70,000.00
9845	$ 41,000.00	$ 41,000.00	$ 41,000.00
9850	$ 20,200.00	$ 204,600.00	$ 202,000.00
9875	$ 250,000.00	$ 256,600.00	$ 258,200.00
9905	$ 226,700.00	$ 273,700.00	$ 255,200.00
9925	$ 291,000.00	$ 297,600.00	$ 299,800.00
9955	$ 241,300.00	$ 252,700.00	$ 250,700.00
9975	$ 204,000.00	$ 218,400.00	$ 217,100.00
Average Value	**$ 193,521.05**	**$ 202,928.95**	**$ 203,934.21**

Properties Values for Properties Located Near AK Demo Landfill

S. Pinnacle Mountain Drive

	2011	2012	2013
789	$ 195,400.00	$ 193,600.00	$ 195,100.00
790	$ 249,900.00	$ 252,400.00	$ 254,500.00
811	$ 223,100.00	$ 220,500.00	$ 222,200.00
820	$ 295,800.00	$ 294,600.00	$ 297,100.00
831	$ 236,800.00	$ 231,400.00	$ 233,100.00
844	$ 249,100.00	$ 241,400.00	$ 243,300.00
853	$ 200,900.00	$ 200,100.00	$ 201,600.00
866	$ 257,600.00	$ 260,900.00	$ 263,000.00
882	$ 214,800.00	$ 211,800.00	$ 213,400.00
895	$ 186,000.00	$ 185,700.00	$ 187,000.00
900	$ 272,400.00	$ 273,100.00	$ 274,100.00
912	$ 217,500.00	$ 213,500.00	$ 215,100.00
935	$ 200,900.00	$ 200,100.00	$ 201,600.00
956	$ 284,500.00	$ 286,000.00	$ 288,400.00
Average Value	**$ 234,621.43**	**$ 233,221.43**	**$ 234,964.29**

South Idaho Peak

	2011	2012	2013
870	281300	281600	284000
875	225600	232000	234000
876	254300	256700	258800
881	286600	285300	287700
884	170400	172000	173200
889	209200	207800	209400
910	198700	203600	205100
915	197200	193600	195000
Average Value	**$ 227,912.50**	**$ 229,075.00**	**$ 230,900.00**

Properties Values for Properties Located Near AK Demo Landfill

S. Pinnacle Mountain Drive

	2011	2012	2013
789	$ 195,400.00	$ 193,600.00	$ 195,100.00
790	$ 249,900.00	$ 252,400.00	$ 254,500.00
811	$ 223,100.00	$ 220,500.00	$ 222,200.00
820	$ 295,800.00	$ 294,600.00	$ 297,100.00
831	$ 236,800.00	$ 231,400.00	$ 233,100.00
844	$ 249,100.00	$ 241,400.00	$ 243,300.00
853	$ 200,900.00	$ 200,100.00	$ 201,600.00
866	$ 257,600.00	$ 260,900.00	$ 263,000.00
882	$ 214,800.00	$ 211,800.00	$ 213,400.00
895	$ 186,000.00	$ 185,700.00	$ 187,000.00
900	$ 272,400.00	$ 273,100.00	$ 274,100.00
912	$ 217,500.00	$ 213,500.00	$ 215,100.00
935	$ 200,900.00	$ 200,100.00	$ 201,600.00
956	$ 284,500.00	$ 286,000.00	$ 288,400.00
Average Value	**$ 234,621.43**	**$ 233,221.43**	**$ 234,964.29**

South Idaho Peak

	2011	2012	2013
870	281300	281600	284000
875	225600	232000	234000
876	254300	256700	258800
881	286600	285300	287700
884	170400	172000	173200
889	209200	207800	209400
910	198700	203600	205100
915	197200	193600	195000
Average Value	**$ 227,912.50**	**$ 229,075.00**	**$ 230,900.00**

TABLE 1, Page 1 of 2

Platted Lots by Year, per Mat-Su Borough Assessor

Year	Improved Lots	Change to Prior Yr.	Percent Change	Total Lots	Change to Prior Yr.	Percent Change
2004	30578			66822		
2005	32602	**2024**	6.62%	69732	**2910**	4.35%
2006	34309	**1707**	5.24%	71268	**1536**	2.20%
2007	35595	**1286**	3.75%	72841	**1573**	2.21%
2008	36519	**924**	2.60%	73947	**1106**	1.52%
2009	37360	**841**	2.30%	74588	**641**	0.87%
2010	38285	**925**	2.48%	74990	**402**	0.54%
2011	39056	**771**	2.01%	75321	**331**	0.44%
2012	39858	**802**	2.05%	75565	**244**	0.32%
2013	40663	**805**	2.02%	75926	**361**	0.48%
10/22/2013 (to date)	40897	**234**	0.58%	76012	**86**	0.11%

Outlook - akstevea@hotmail.com

Page 1 of 1

steve agri

New Reply Delete Archive Junk Sweep Move to Categories

Search email

Mat Su parcels counts

Folders

Inbox

Archive

Idris Van Sant (Idris.VanSant@matsugov.us) Ad

To: akstevea@hotmail.com

Cc: David Dunivan

Steve – this is the total parcel count at Certification each year. I am breaking it down into Improved (well, septic and/or buildings) and total.

YEAR	IMPROVED COUNT	TOTAL COUNT
2004	30,578	66,822
2005	32,602	69,732
2006	34,309	71,268
2007	35,595	72,841
2008	36,519	73,947
2009	37,360	74,588
2010	38,285	74,990
2011	39,056	75,321
2012	39,858	75,565
2013	40,663	75,925

YEAR TO DATE 2014 – WORK IN PROGRESS

10/22/2013	40,897	76,012

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10/23/2013

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ATTACHMENT L – ADEC INFORMATION

Handling & Disposal of Construction & Demolition Waste

August 2011

Solid Waste Program

Division of Environmental Health

Department of Environmental Conservation

Anchorage Office:
555 Cordova St
Anchorage, AK 99501
(907)269-7802
Fax (907) 269-7600

Fairbanks Office:
610 University Ave
Fairbanks, AK 99709
(907) 451-2108
Fax (907) 451-2188

Juneau Office:
410 Willoughby Ave, Ste 303
Juneau, AK 99801
(907) 465-5318 or
(907) 465-5353
Fax (907) 465-5362

http://dec.alaska.gov/eh/sw

This guidance document is intended to give building owners, inspectors, and contractors information on how to best handle the materials and wastes resulting from the construction, demolition, and renovation of buildings. Federal regulations require the removal of all asbestos-containing materials and all hazardous or toxic materials before demolition or renovation of a building begins. Contractors will provide a safer environment for their workers and the public by giving proper attention to the wastes generated by a project before demolition or renovation begins.

Topics Covered

- The First Step: The Building Survey
- What if a Building Has Asbestos?
- What about Hazardous Waste?
- What if I Want to Burn the Woody Debris?
- How Do I Dispose of Non-Hazardous Waste?
- What Wastes Can be Disposed Without an ADEC Solid Waste Permit?
- Contact Information

The First Step: The Building Survey

As mentioned above, the federal regulations require the removal of all asbestos-containing materials and hazardous or toxic materials prior to beginning a building demolition or renovation. Identifying the location and approximate amounts of these materials is most readily accomplished by completing a building survey. Once each waste type is identified and located, it can then be removed from the building according to appropriate state and federal regulations and best management practices and recycled or disposed in the most appropriate manner. A building survey does not need to be complicated and there are different methods for doing a survey. You should develop a method that best fits your needs.

Handling & Disposal of Construction & Demolition Waste

August 2011

Removal of asbestos and hazardous wastes **after** demolition is difficult and expensive. By knowing the types and quantities of all wastes that will be generated, you can plan ahead and figure out how to recycle or dispose of those wastes in the most efficient and safest manner. Even though it may be difficult to correctly identify all the material, a thorough investigation can save you many headaches later.

Once you have surveyed your project and know all the types and amounts of materials that will be generated, you can determine which materials can be recycled, burned, or disposed. The most common methods for disposing of different wastes will be discussed in this document. Please contact your local landfill, recycling facility, or sponsoring organization for recycling information. Some common recyclable wastes include piping, conduit, fixtures, timbers, windows, and doors.

Federal law requires that you contact EPA before demolition begins, regardless of the type of waste involved. Contact them after you have identified the types of wastes the project will generate.

What If a Building Has Asbestos?

Regulated Asbestos-Containing Material (RACM) must be removed prior to the demolition of a building and must be disposed at a landfill permitted to accept RACM wastes.

RACM waste is any asbestos-containing material that contains more than 1% asbestos, and that when dry, can be crumbled or reduced to powder by something as minor as hand pressure. If it can be crumbled or reduced to powder relatively easily, it is called "friable".

Non-RACM waste, on the other hand, is asbestos-containing material that is not friable or is not likely to become friable during the demolition or renovation activities. In other words, it is material that when dry cannot be crumbled, pulverized, or reduced to powder by hand pressure or by the demolition or renovation process. Non-RACM waste can be disposed at a permitted construction and demolition waste landfill or at a permitted municipal solid waste landfill provided the operator is willing to accept the waste.

For projects in rural areas without a nearby permitted landfill, the project may qualify for an authorization for the one-time disposal of asbestos waste. Such authorizations are described in greater detail in the section "How Do I Dispose of Demolition Waste?" ADEC Solid Waste Program staff can help you determine if this is an option for your project.

You will typically find asbestos-containing material in anything that was intended to retard fires. Specifically look at door gaskets, duct insulation, and the tape at duct connections of furnaces, boiler, and wood stoves. Hot water pipes inside walls and the tees, valves, elbow, and cross connections should also be checked. Wall board; mastic, acoustical tile or sprayed-on ceilings; roof felt and shingles; window putty; cement asbestos board siding and undersheeting; electrical equipment such as

lamp sockets, outlet and switch boxes, recessed lighting units, and old-fashioned wiring insulation, and older electrical appliances may be additional sources for asbestos-containing material.
It is important in older facilities such as HUD housing, FAA buildings, and military facilities to survey the flooring. Many floors had 1½ to 3 inches of material stacked on top of one another. Asbestos-containing material may be in some or all of the layers.

Asbestos waste may not be burned because it does not burn but just becomes airborne. Therefore, it is important to remove all asbestos-containing materials if your intention is to burn debris after a building is demolished. Note that if non-RACM waste catches fire, it becomes regulated by EPA under the National Emission Standards for Hazardous Air Pollutants (NESHAP) program.

Once you have identified and located any RACM waste, you must arrange for a certified contractor to remove it. The contractor will package and ship it to a landfill that is permitted for RACM waste. Contractors certified to remove RACM waste can be found in the telephone directory, usually under environmental/ecological services.

Remember to notify EPA before any asbestos removal or building demolition begins. The EPA requires notification ten working days in advance so they have an opportunity to inspect the job. They can provide greater detail as to what is or is not considered RACM waste. The regulations can be complex, and EPA welcomes the opportunity to provide clarification and assistance. You can contact EPA at the Alaska office at 907-271-3688 or 800-781-0983, or the Seattle office at 206-553-4226.

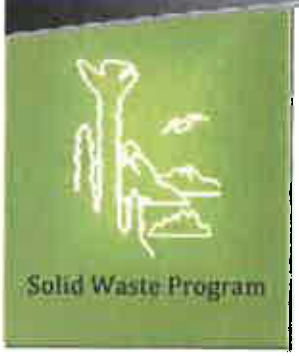
What about Hazardous Waste?

Federal regulations define what materials are considered hazardous waste and how these materials must be disposed. Contact EPA at 907-271-6329 or 800-781-0983 for more information.

Hazardous wastes commonly found in a demolition project include:

- Some lead painted materials;
- Some fluorescent tubes and spent incandescent bulbs;
- Lead pipe and solder
- Mercury switches;
- Lead based paint;
- Some liquid paint wastes;
- Unused solvent based paints;
- PCB containing transformers (classified as toxic);
- PCB containing light ballasts (classified as toxic).

Federal and State occupational safety and health regulations may apply if your project involves hazardous materials, such as asbestos- or lead-containing products, and your workers may need to be certified or specifically trained. Please contact Alaska Occupational Safety and Health for more information.



If you are demolishing a building which has an air conditioning system, you must recover the refrigerant, something that may only be done by a certified technician. Simply venting the refrigerant into the air is prohibited.

Burning hazardous wastes or any materials that may emit a toxic gas when burned is prohibited. This includes such things as certain chemicals, tars, linoleum, plastic, foam insulation, rubber, toxic waste, lead pipes, and PVC plastic piping.

When determining the amount of hazardous waste that will be generated, you must include all the hazardous products used for removing building materials.

State law generally prohibits the disposal of hazardous waste in the state. However, small quantity generators of hazardous waste (those that generate less than 220 pounds per month per site) can dispose of their hazardous wastes at a permitted Class I or II landfill. If you are registered with the EPA as a small quantity generator, contact your local landfill to find out if it is a Class I or II landfill with a current permit and is will to accept "conditionally exempt small quantity generator" waste.

If the local landfill does not have a Class I or II permit, you may be able to transport the waste to another Class I or II landfill for disposal, if that landfill accepts hazardous waste from outside its municipal boundary. Contact the landfill and/or ADEC Solid Waste Program for more information.

If your demolition project produces more than 220 pounds of hazardous waste in a month, you will need to ship this waste out of state to an EPA-registered treatment, storage, and disposal facility.

What if I Want to Burn the Woody Debris?

Controlled burning of clean, woody debris from construction, demolition, or land clearing projects is allowed in most areas of Alaska, but it needs to be conducted in a manner that doesn't create a nuisance or become a health hazard to local residents. "Clean woody debris" means wood that has not been treated with a paint containing cadmium or lead, or with a weatherizing preservative (such as pentachlorophenol or creosote).

It is important to note that burning is <u>not</u> considered to be complete disposal for construction and demolition waste because the ash and unburned debris must be disposed at a permitted landfill. You may also be required to test the ash and debris in order to verify that it is non-hazardous (see previous section for hazardous waste management).

Solid Waste Program

Ash from the burning of land clearing waste is not a solid waste and is therefore not required to go to a landfill. However, if you are burning greater than 40 acres of land clearing debris, or if black smoke will be produced, you will need a permit from ADEC's Air Quality Program. Some areas in Alaska require coordination with and permits from the local authorities. For instance, if your project is located in Fairbanks, Anchorage, Ketchikan, Homer, or Juneau, you need to contact local government authorities for approval. In some areas, the Alaska Department of Natural Resources, Division of Forestry may also require a burn permit. It is always wise to contact the local fire department to let them know you will be burning in the area.

To learn more about burning woody debris in your project area, please contact the ADEC Air Quality Program at: Interior 907-451-2114 or South Central and Southeast 907-269-6847. Or visit their website at http://www.dec.state.ak.us/air/ob.htm.

How Do I Dispose of Non-Hazardous Waste?

If the waste you generate is not an EPA-regulated hazardous waste and is not exempt from state permit requirements (see next section), you must dispose of it at a permitted solid waste landfill. This may be an existing facility or a landfill specifically permitted for your project. A solid waste permit ensures that waste is disposed at a suitable location and in a way that will minimize the likelihood of pollution or associated health problems. If you plan to take waste to a permitted facility, you should contact them directly. If you want to permit a project-specific landfill, contact the nearest ADEC Solid Waste Program office regarding whether you will need an inert waste landfill permit or an asbestos landfill permit. Program staff will discuss your situation with you and help you determine which option is best for the project. The permit application review and public notice process will begin after a completed application and the required fee is received.

Another option that may apply to your project is obtaining an authorization for a one-time disposal of either inert or asbestos waste. These authorizations come with strict limitations on the amount of waste allowed in the one-time disposal so not all projects will qualify for these. ADEC provides two types of one-time authorizations for remote construction and demolition projects:

- **Authorization for one-time disposal of asbestos-containing waste.** This authorization allows the disposal of up to 250 cubic yards of RACM and non-RACM waste that is generated on the project site. This authorization pertains only to projects in locations that do not have year-round road access to the national highway system and are more than 50 miles from a permitted landfill. If your situation does not fit these conditions, you will need to apply for an asbestos waste monofill permit. You should also contact EPA to determine if any federal regulations will apply to the project.

Handling & Disposal of Construction & Demolition Waste

August 2011

Solid Waste Program

- **Authorization for one-time disposal of inert waste.** This authorization allows the one-time disposal of up to 1,000 cubic yards of building debris and other inert wastes, but does not include asbestos waste or non-salvageable scrap metal debris. This authorization may only be used for disposal of wastes in locations that are 100 miles from the nearest permitted landfill that can be reasonably accessed or if all reasonably-accessed landfills within 100 miles refuse to accept the waste. If your situation does not fit these conditions, you will need to apply for an inert waste monofill permit.

What Wastes Can Be Disposed Without an ADEC Solid Waste Permit?

Most building construction and demolition debris is considered "low risk," which means that it has little or no potential to cause pollution problems. Some wastes such as concrete, brick, and mortar are considered "very low risk" and are usually not regulated. This "exempt" waste does not need to go to a permitted landfill, as long as it is not mixed with other wastes. Examples of exempt wastes that you might encounter during demolition, renovation, or construction projects include:

- Land clearing waste, including excavated dirt, rock soil, butt ends, limbs, stumps, or other foliage;
- Portland cement type concrete and associated steel rebar that can't be easily removed;
- Crushed glass except for television tubes, fluorescent light tubes, or computer monitors;
- Crushed asphalt pavement used in:
  - A building pad or parking area as road base or pavement; or
  - As a material to construct a containment berm for a tank farm

Contact the ADEC Solid Waste Program for more about different disposal options and exempt waste.

Contact Information	
Asbestos EPA, Alaska Operations Office 907-271-3688 or 800-781-0983 EPA, Seattle 206-553-4226	Alaska Occupational Safety and Health (AKOSH) Anchorage: 907-269-4940 or 800-770-4940
Hazardous Waste, Recycling EPA, Alaska Operations Office 907-271-6329 or 800-781-0983	Burning, ADEC Air Quality Program Interior: 907-451-2114 South Central & Southeast: 907-269-6847
Lead Paint & Refrigeration EPA, Seattle 206-553-4226	ADEC Solid Waste Program Anchorage: 907-269-7802 Fairbanks: 907-451-2108 Juneau: 907-465-5318

ATTACHMENT M – CMS INFORMATION MEETING POWERPOINT

CENTRAL MONOFILL SERVICES

Proposed Palmer Recycle Facility and Monofill
Public Informational Session
May 14th, 2013

CENTRAL MONOFILL SERVICES

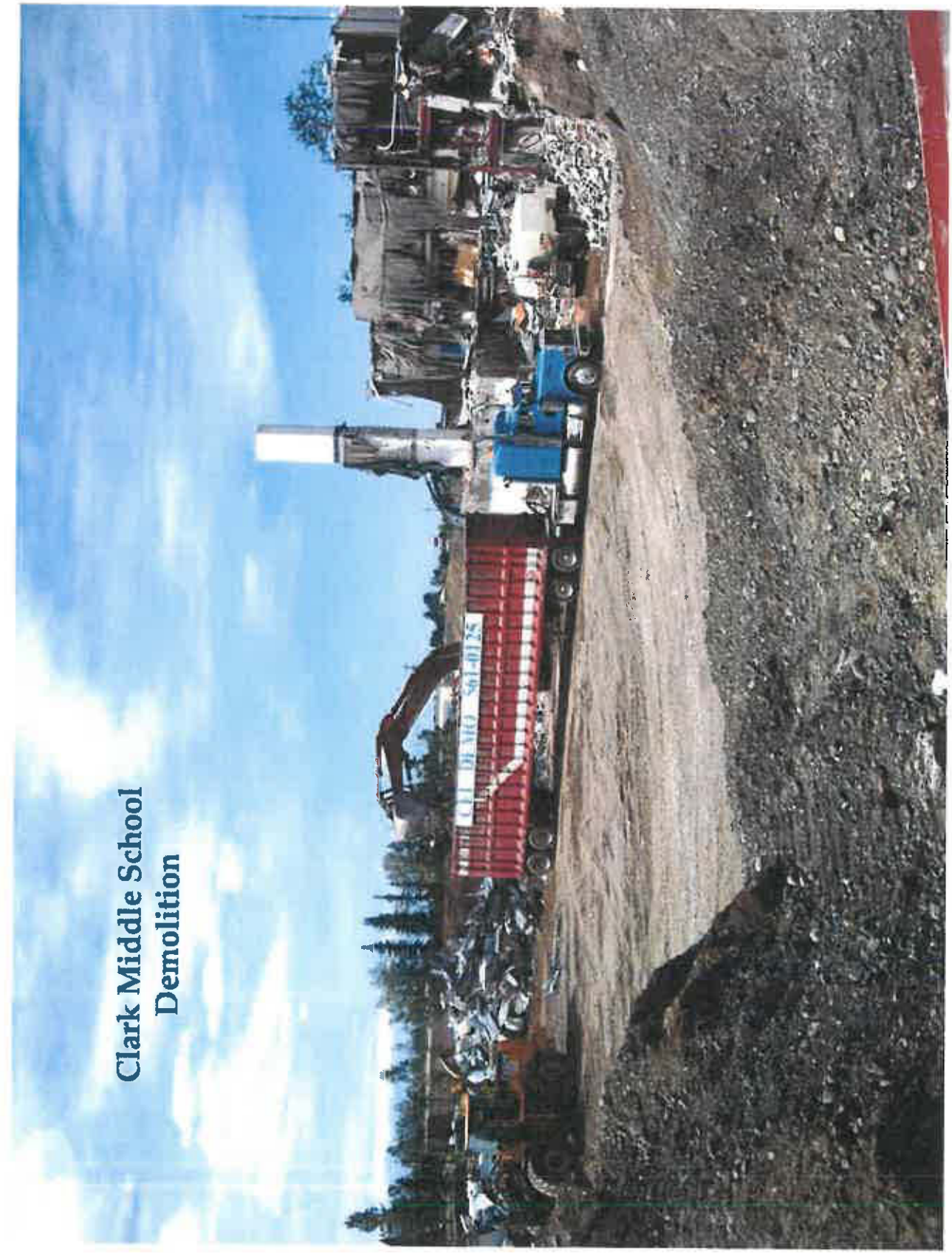
CENTRAL Recycling Services

CEI "The Solutions Company"

CEI

"The Solutions Company"

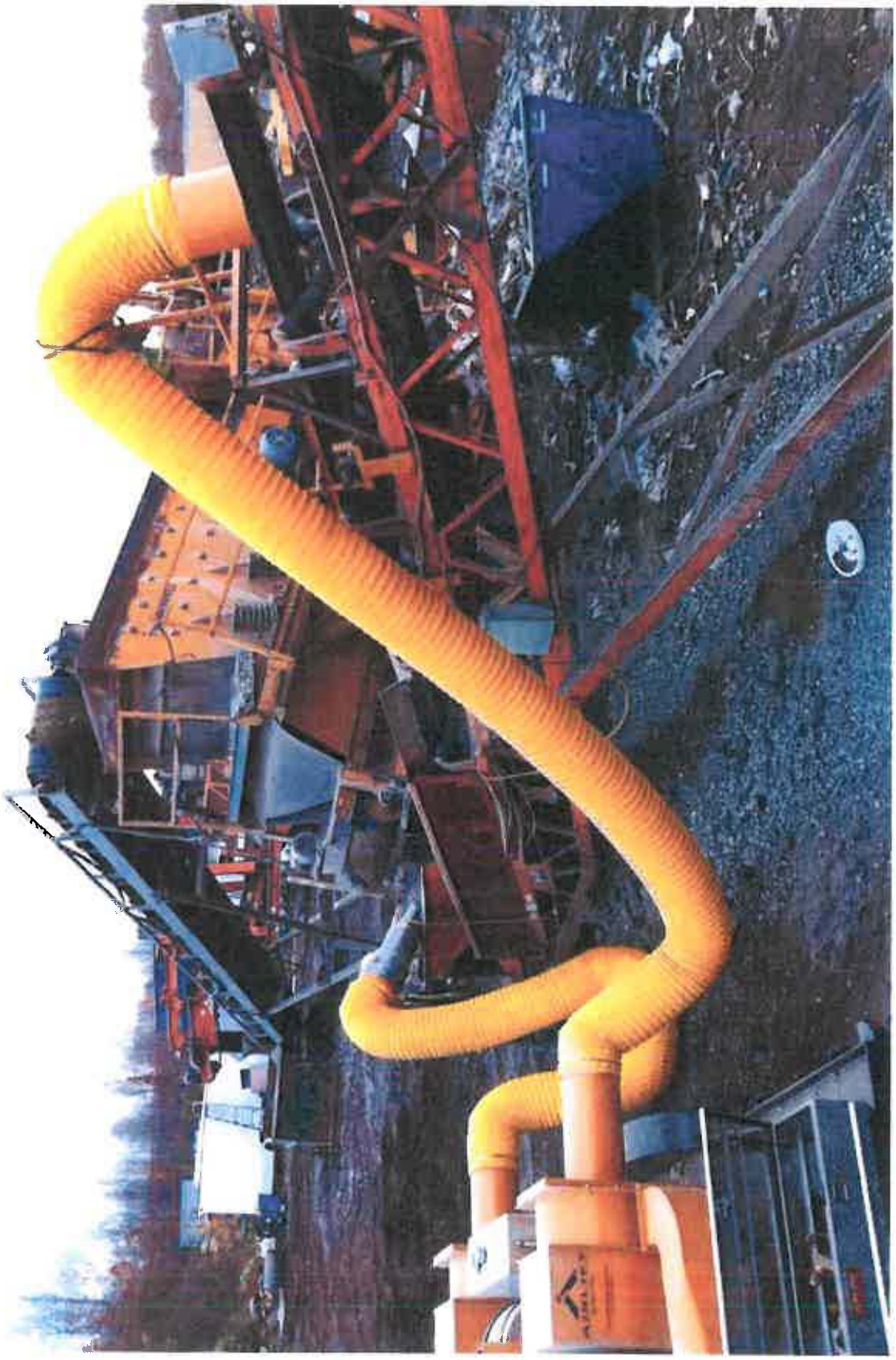
- **Central Environmental Inc.**
  - Environmental Services, Demolition and Civil Construction
  - Established 1984
  - Over 8500 completed projects
  - Notable recent local Demolition projects
    - Kulis ANGB
    - East Dowling Road Extension
    - Donated Abatement of Locomotive 557
    - Site Summit Nike Missile Site
    - Alaska Railroad Emergency Warehouse Demolition
    - Clark Middle School

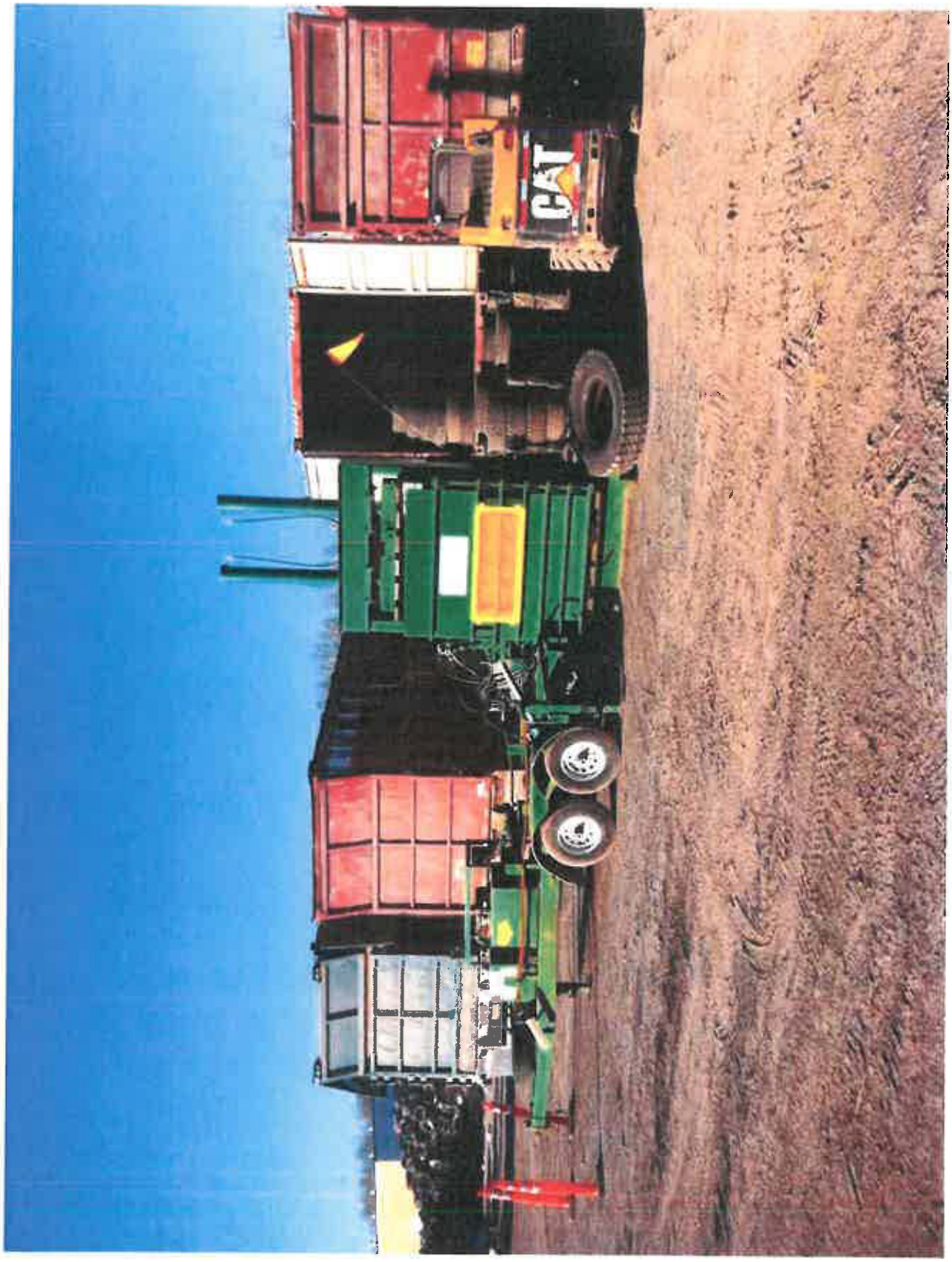

Clark Middle School
Demolition

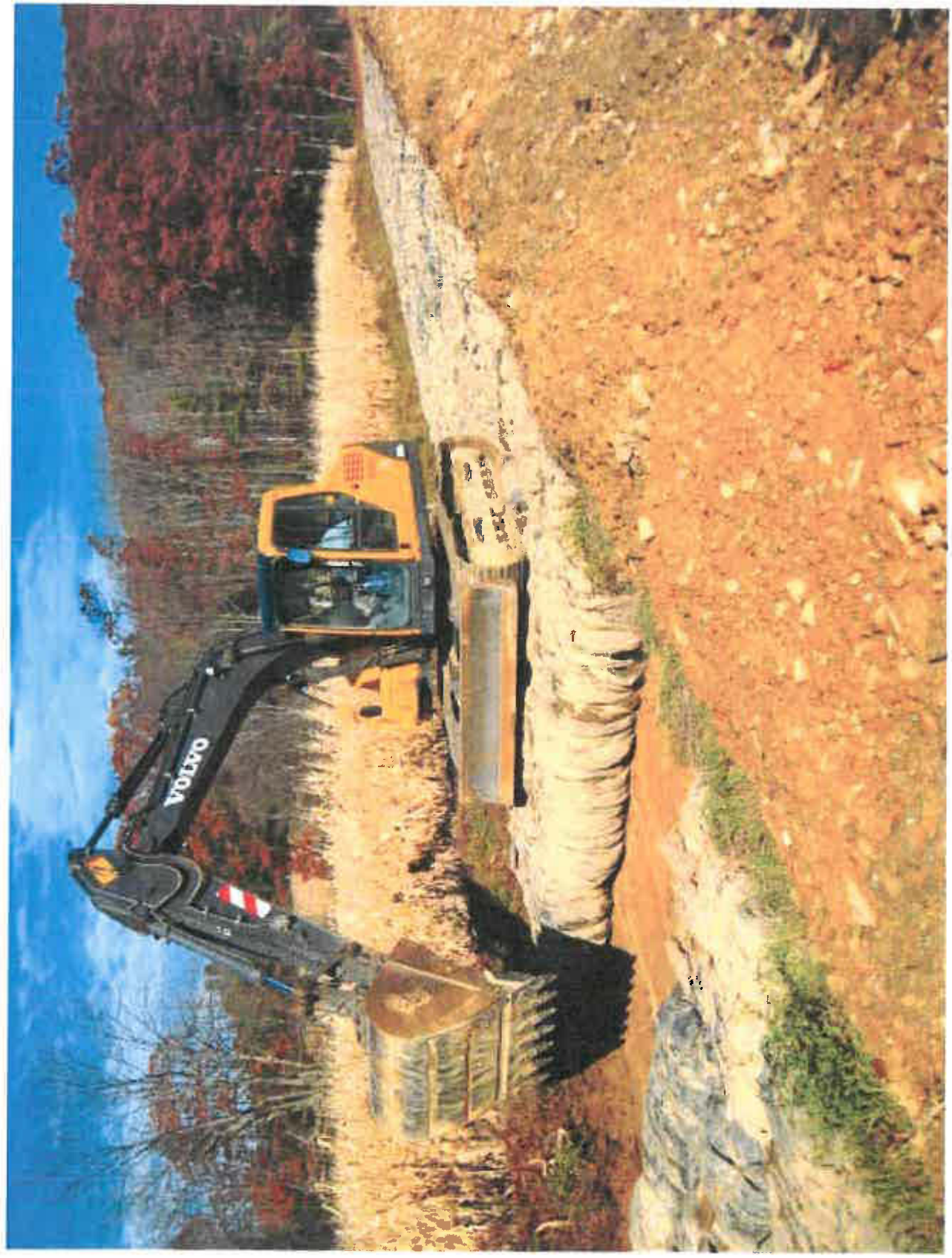
Central Recycling Services

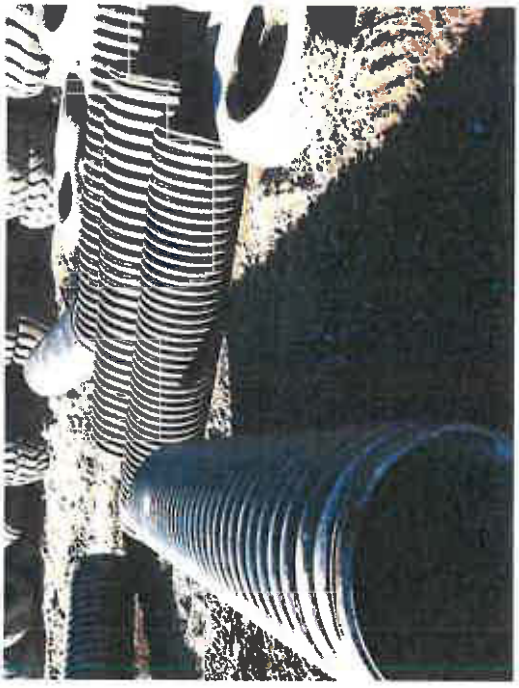
CENTRAL
Recycling Services

- **Central Recycling Services**
  - Construction and Demolition Debris Recycle Facility
  - State Wide Waste Management Services
  - Portable Recycle Crushing
  - Established 2009
  - ALPAR, Alaskan's for Litter Prevention and Recycling Awards:
    - 2009 Outstanding Business Recycler
    - 2012 Outstanding Supporter
  - Notable recent accomplishments:
    - Established a sustainable glass recycling program in Anchorage
    - State and Municipal level Recycled Concrete Aggregate Specifications
    - Removed over 2 million pounds of Recyclable material from Prudhoe Bay in 2012



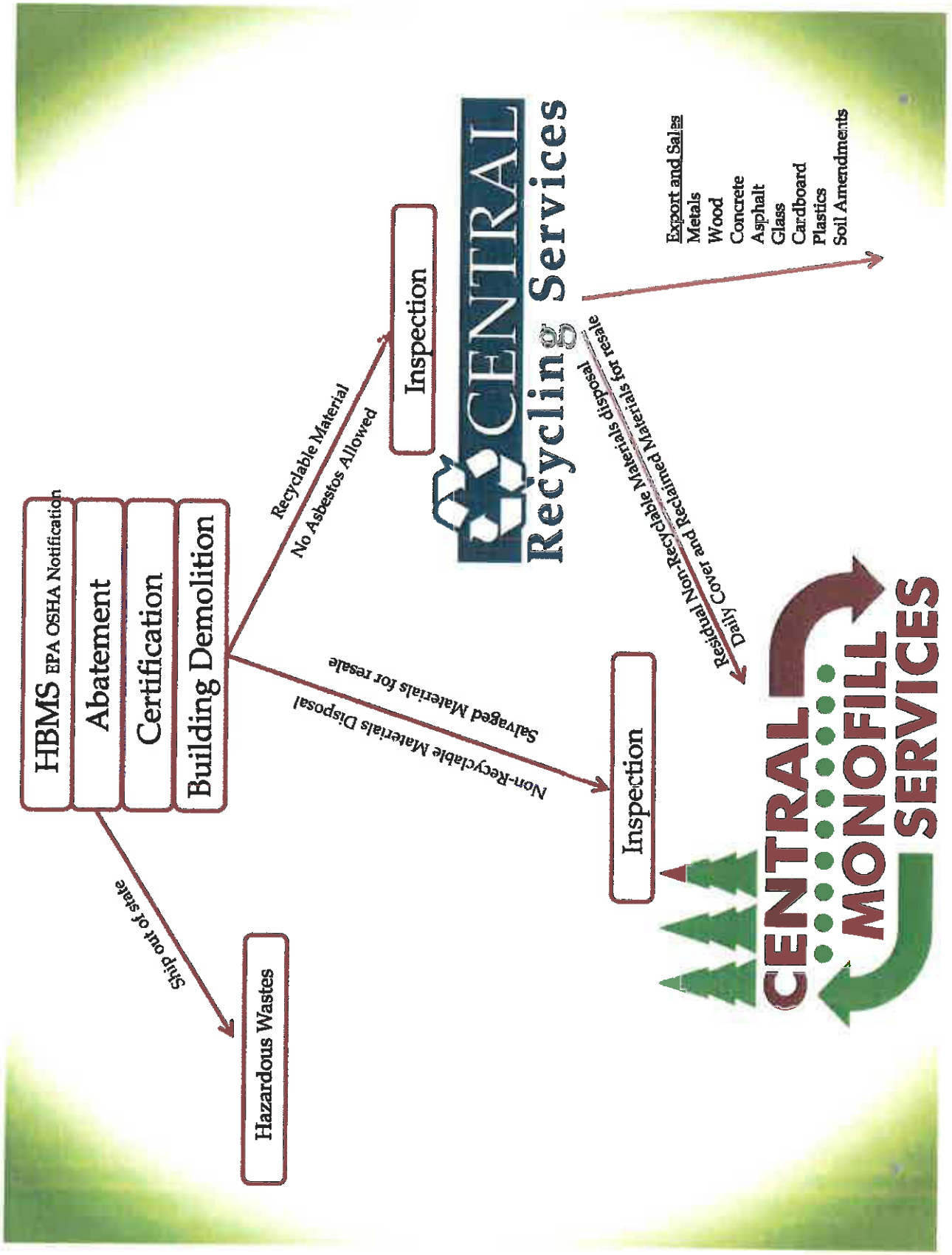

CAT


VOLVO

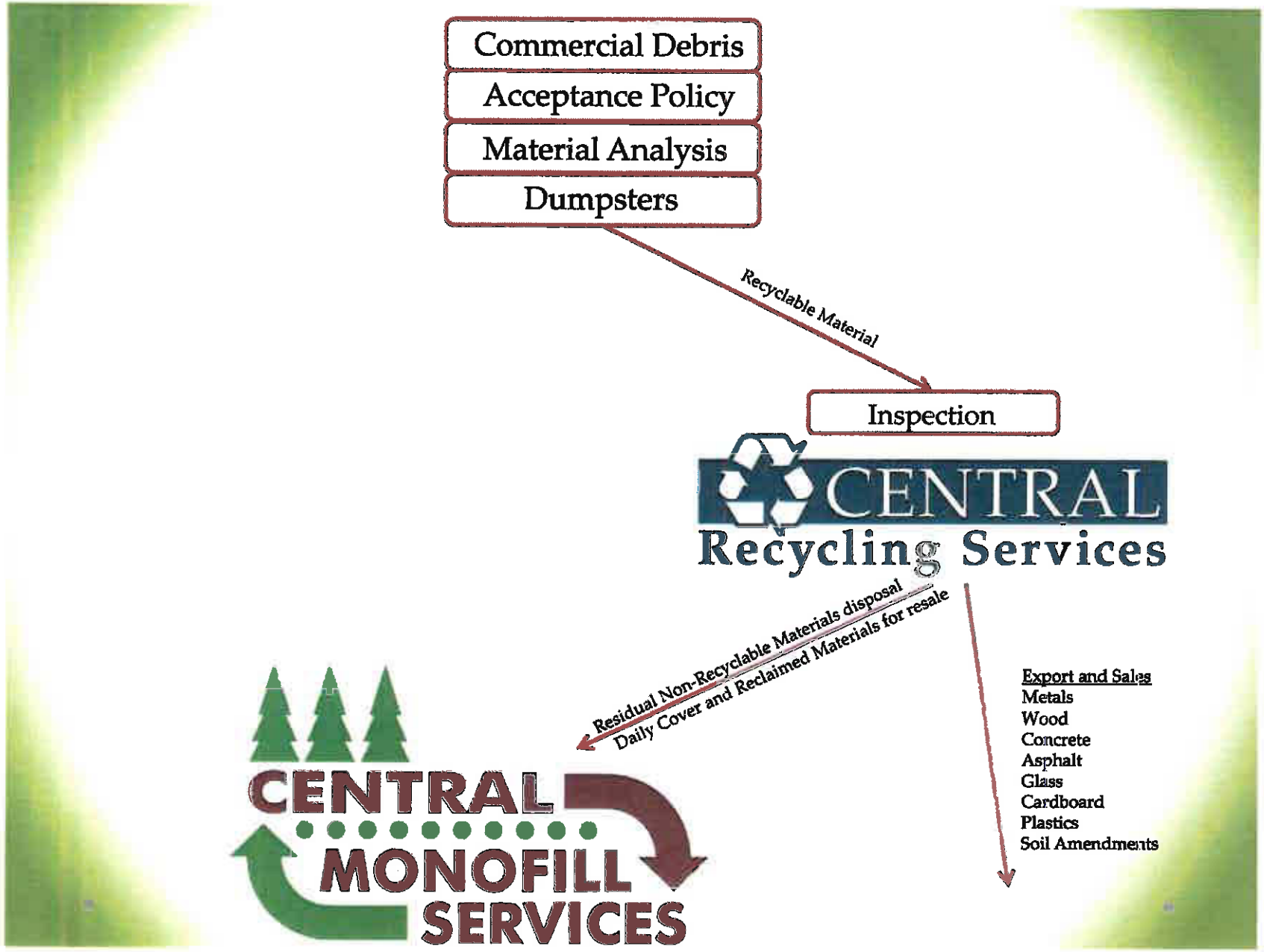


- **Central Monofill Services**
  - State Wide Waste Management Services
  - Inert Material Monofills
    - Materials having only limited or no ability to react chemically to other elements.
    - No Household garbage or putrescent waste
  - Established 2011
  - Permitted and Developed Salcha Monofill in 2012 to support Recycling in the interior and facility reduction at Eielson AFB
  - Design and Permit stage of Eklutna Monofill and Recycle facility in Chugiak in cooperation with Eklutna Native Corporation.

CENTRAL
Recycling Services



Central Monofill Services, Inc.
Matanuska - Susitna Borough
Conditional Use Permit



PLANNING COMMISSION NOVEMBER 7, 2016 Page 486

- **Palmer Site**
  - Disposal
    - Clean Soil (Currently permitted)
    - Inert Material Monofill
      - Residual Recycle Debris
      - Non-Recyclable C&D Debris
        - Includes Non-Regulated Asbestos Materials
      - Regulated Asbestos Containing Material Cell

CENTRAL MONOFILL SERVICES

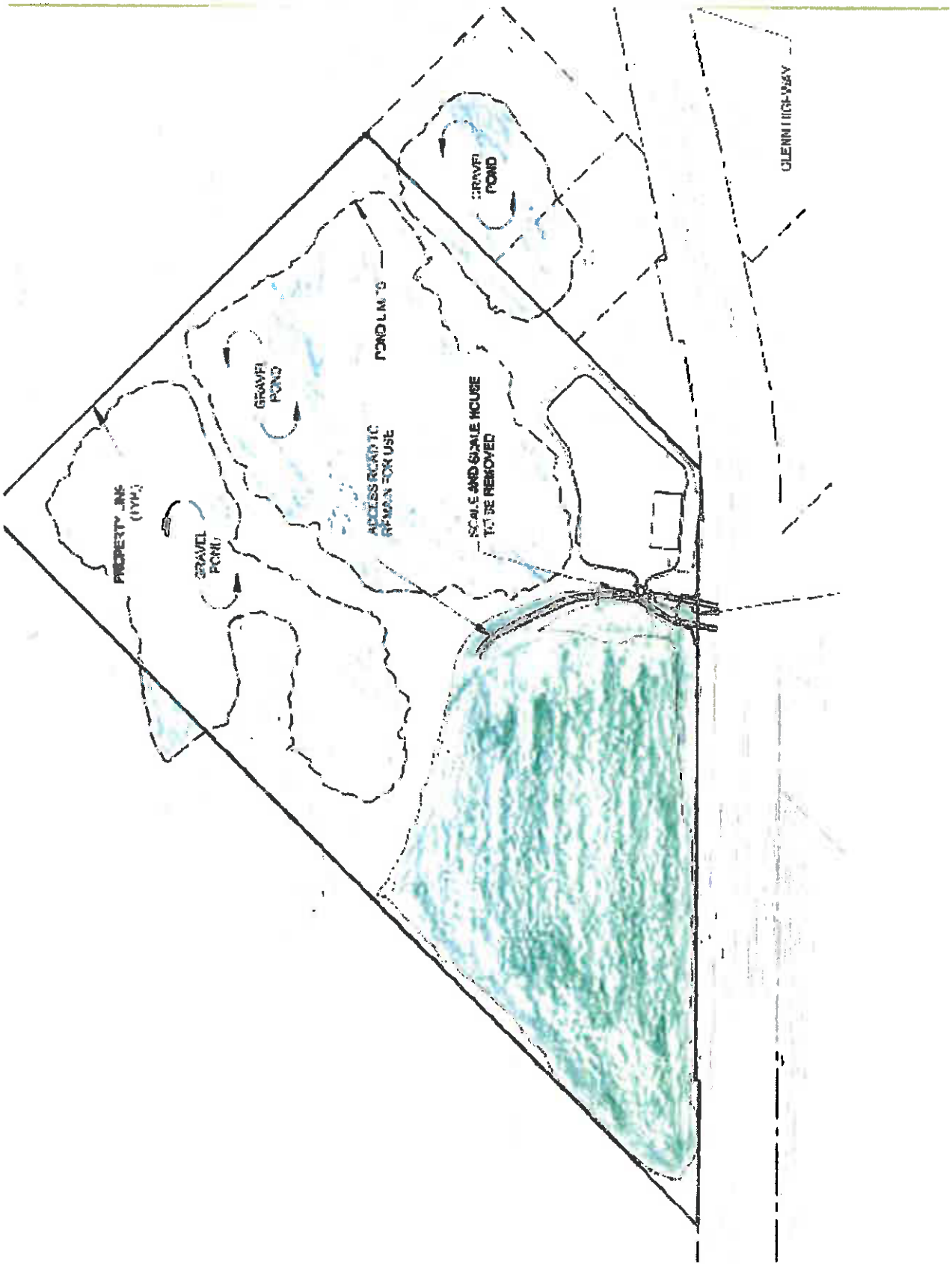
- **Palmer Site**
  - Recycling
    - Concrete and Asphalt Recycling
    - Glass Recycling
    - Salvaged and Reclaimed Materials Resale
      - Beams, pipe, doors, windows, insulation, etc.
    - Compost and Mulch
    - Recycled/Amended soil
    - Tires and Tire Bales
    - Gypsum soil amendment

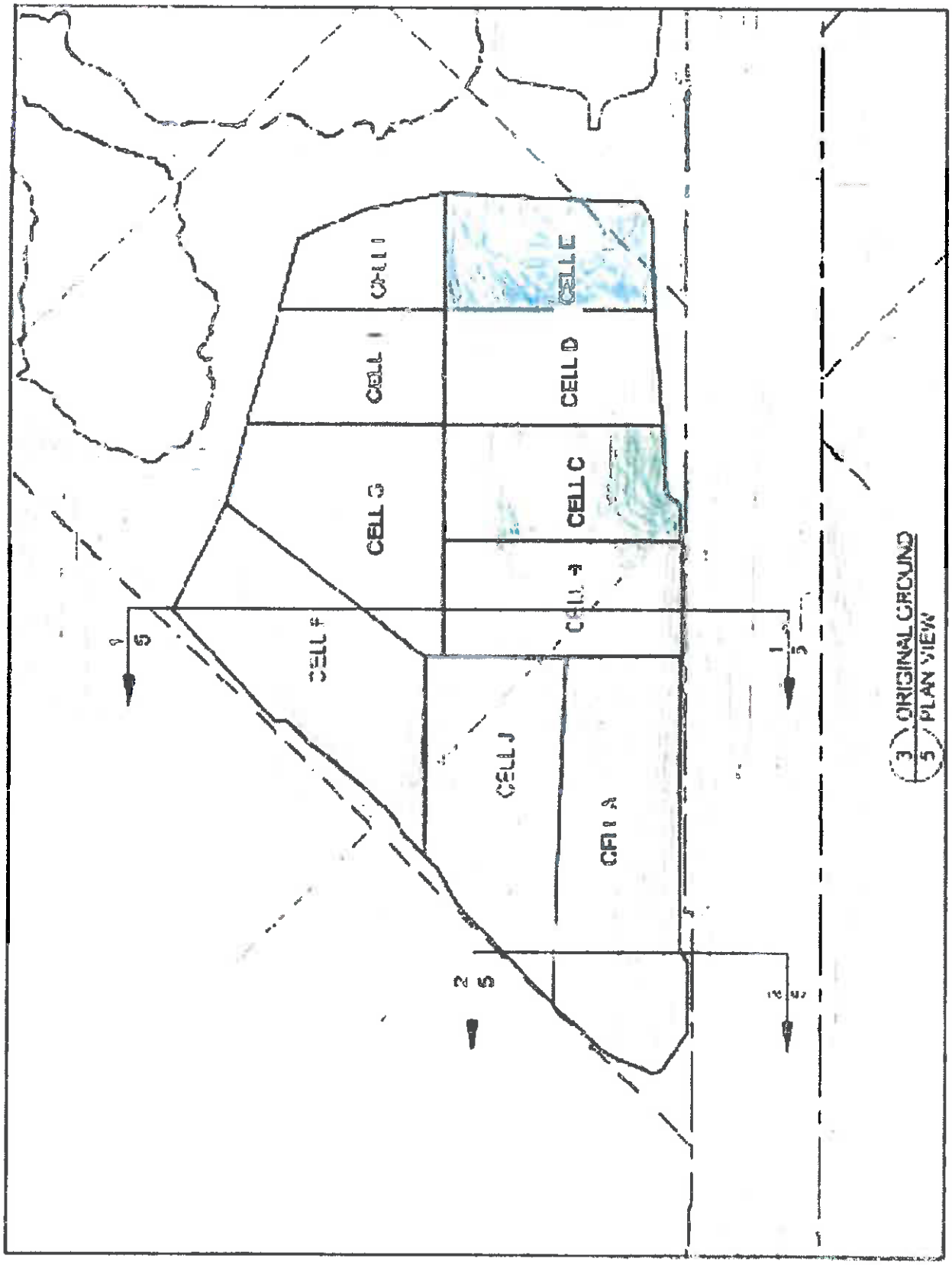
- **Palmer Site**
  - Recycle Management
    - Collection and Backhaul of recyclable C&D Debris
    - Collection and Backhaul of steel and metals
    - Consolidation of recyclables with other Valley recycling programs for reduced freight costs

PLANNING COMMISSION NOVEMBER 7, 2016 Page 489

- **Palmer Site**
  - Community Benefits
    - 10 to 20 Jobs Created
    - Expanded Recycling Options
    - Salvaged and Reclaimed products for reuse and repurpose

PLANNING COMMISSION NOVEMBER 7, 2016 Page 490


GRAVEL POND
POND LIMITS
GRAVEL POND
ACCESS ROAD TO REMAIN FOR USE
SCALE AND SCALE HOUSE TO BE REMOVED
PROPERTY LINE (TYP.)
GRAVEL POND
GLENN HIGHWAY


CELL I
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CELL H
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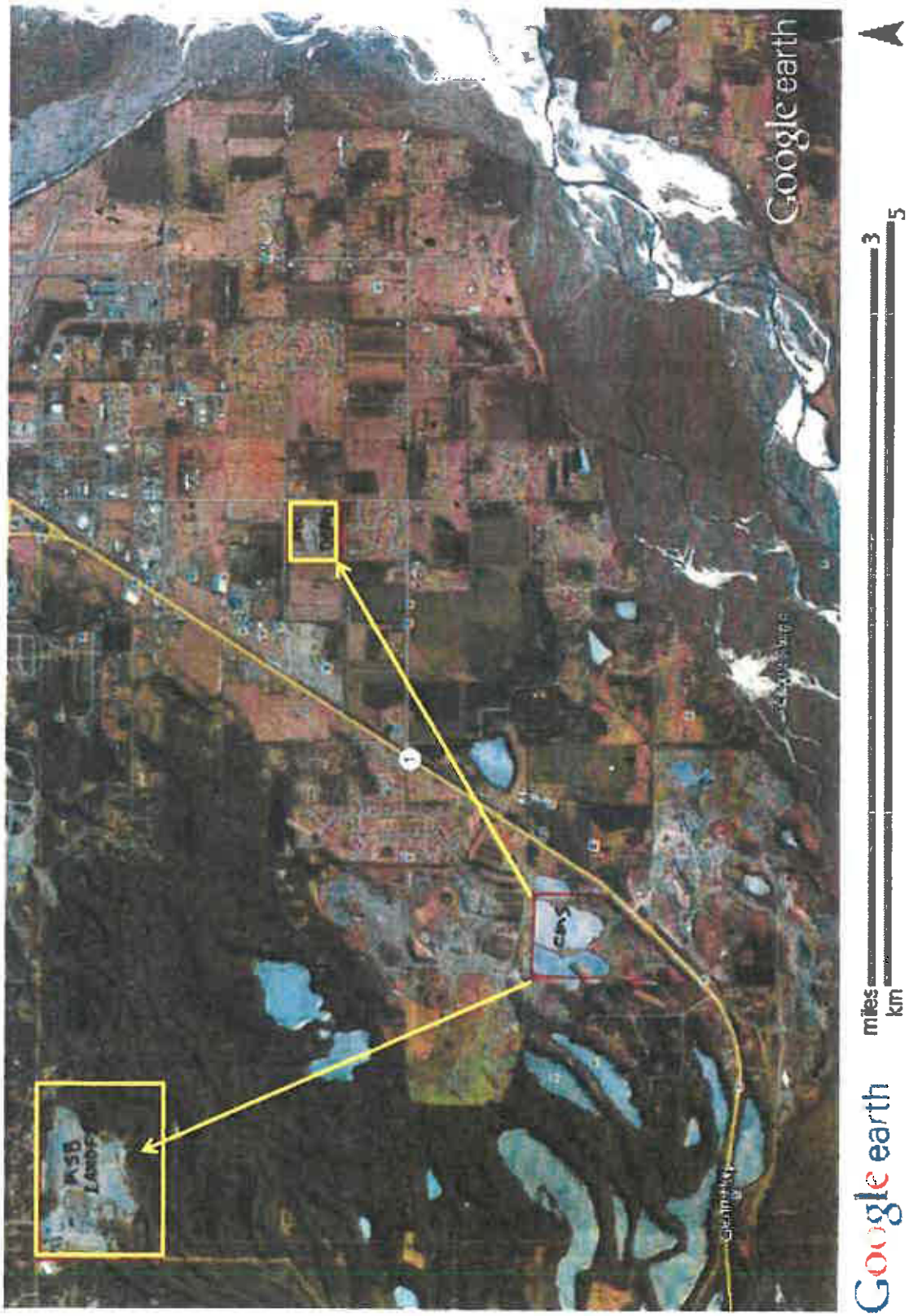
CELL C
CELL F
CELL J
CELL A
3 ORIGINAL GROUND
5 PLAN VIEW


Google earth
3
5
miles
km
Google earth
ASB Lands

Asbestos

Asbestos is a generic term used to describe a group of fibrous silicate minerals that occur naturally in the environment and have been mined for commercial use. The asbestos minerals have high tensile strength, the ability to be woven, and resistance to heat and most chemicals. Because of these properties, asbestos fibers have been used in a wide range of heat resistant, durable manufactured goods.

Asbestos

The physical properties of asbestos are also the reason that asbestos is not expected to move through soil. It is a mineral (i.e., rock) and dense, having a specific gravity typically reported as ranging between 2.0 and 3.5 (two to three and half times heavier than water), depending on the mineral variety. Asbestos is made up of fibers that are not soluble and, therefore, **cannot be transported in a water solution**. The particles are also too large to be transported preferentially by other physical-chemical processes like diffusion. Therefore, asbestos fibers tend to remain stationary within the soil matrix. In other words, in a natural soil setting, **asbestos fibers do not move through the soil**. Based on studies of other insoluble particles of similar size, the expected migration rate of an asbestos fiber through soils by the forces of groundwater is approximately 1 to 10 centimeter (.4 to 4 inches) per 3,000 to 40,000 years. Thus, **asbestos is not considered a groundwater contaminant.** (Berkland, 1974)

PLANNING COMMISSION NOVEMBER 7, 2016

- **Concerns**
  - **Hazardous Waste**
    - **NO Hazardous Waste Accepted**
    - **Asbestos is not a Hazardous Waste**
    - **Inspections by EPA Certified inspectors**
    - **Video Surveillance**
    - **If something were to be dumped its reported to EPA and OSHA as a spill. The spill is cleaned up by properly certified workers and the customer charged. CRS has done this before.**

PLANNING COMMISSION NOVEMBER 7, 2016 Page 497

- Concerns
  - Water Quality
    - Follow DEC design
      - Monofill is not in the ponds
    - NO WASTE DUMPED IN PONDS
    - Monitoring wells
    - Asbestos does not leach or migrate through soil
    - Proper institutional designs and controls

PLANNING COMMISSION NOVEMBER 7, 2016 Page 498

- **Concerns**
  - **Air Quality**
    - **Debris covered per ADEC requirements**
    - **The berms around each cell help contain material**
    - **Fences if needed**
    - **Water for dust control**

PLANNING COMMISSION NOVEMBER 7, 2016 Page 499

- **Concerns**
  - **Noise Pollution**
    - **White noise passive back up alarms**
    - **Day time monofill operations**
    - **Less Noise than Gravel Pit**
    - **Meets MSB Code**
    - **Size and topography of site will limit noise**

PLANNING COMMISSION NOVEMBER 7, 2016 Page 500

- Concerns
  - Why this site
    - Existing Monofills are not controlled as tightly
      - MatSu Borough open to public and no inspection
    - Comparative limited residential surrounding the site
    - Surrounded on 3 sides by industrial gravel operations and a shooting range
    - Traffic in and out on Glenn Highway not through neighborhoods
    - Central location to collect recyclables in the Valley
    - Existing site topography favorable for site screening

PLANNING COMMISSION NOVEMBER 7, 2016 Page 501

- Concerns
  - Property Values
    - State property disclosure requires notice if within one mile of Gravel Pit or Waste Site
    - Data does not support claim that property values decrease near waste sites. Look at properties adjoining other Sites.
      - Matanuska Borough Landfill
        - East Lee Ann Drive 3% increase
        - East Loma Rica Drive 1% increase
        - East Strand Drive 5% increase
      - Alaska Demolition Monofill
        - South Pinnacle Drive No Change
        - South Idaho Peak 1% increase
    - Properties have been increasing in value
    - After closure and reclamation it may increase value due to the recreational opportunity

PLANNING COMMISSION NOVEMBER 7, 2016 Page 502

- Concerns
  - Closure and Reclamation
    - DEC permit requires substantial financial bond to cover closure
    - Central Companies have significant insurance including pollution liability

PLANNING COMMISSION NOVEMBER 7, 2016 Page 503

CENTRAL MONOFILL SERVICES

Proposed Palmer Recycle Facility and Monofill
Public Informational Session
May 14th, 2013
Questions?

ATTACHMENT N – WATER MONITORING PLAN

TERRASAT, INC.
4203 Iowa Dr. Anchorage, AK 99517 (907) 344-9370 fax (907) 243-7870
Geological Consulting • Environmental Restoration • Regulatory Compliance

Ground Water Monitoring Plan
For
Central Monofill Services (CMS) Palmer Monofill
Palmer, Alaska

Prepared for:
Central Monofill Services (CMS)

Prepared by:
TERRASAT, Inc.
4203 Iowa Dr.
Anchorage, AK 99517

May 17, 2013

©Copyright TERRASAT, Inc. 2013

Table of Contents

1. *INTRODUCTION* 1

2. *MONITORING WELLS* 2

2.1. Locations 2
2.2. Installation Procedures 2

3. *WATER QUALITY MONITORING* 2

3.1. Aquifer Productivity and Quality 2
3.2. Baseline Monitoring 3
3.3. Detection Monitoring 3
3.4. Sampling Frequency 4
3.5. Duration of Monitoring 4

4. *RELEASE ACTIONS* 4

Figures

Figure 1 ..... **Site Location**

Figure 2 ..... **Proposed Monitoring Well Locations Map**

Figure 3 ..... **Well Installation Diagram**

Figure 4 ..... **Baseline Suite of Analytes**

Figure 5 ..... **Local Wells Investigated**

Appendix

Appendix A **ADEC Assessment versus Detection Monitoring Plan**

Appendix B **Example Calculations of Prediction Limits for Detection Monitoring**

Appendix C **CMS Palmer Monofill Ground Water Monitoring Schedule**

1. Introduction

TERRASAT Inc. (TERRASAT) was retained by Environmental Management, Inc. (EMI) to develop a ground water monitoring plan at Central Monofill Services (CMS) site of a proposed monofill in Palmer, Alaska. (see Figure 1).

TERRASAT followed the Clean Water Act 40 CFR 258.54 "Detection Monitoring Program" in developing the *Detection Monitoring Plan* and used guidelines established in ASTM D 6312-98 "Standard Guide for Developing Appropriate Statistical Approaches for Ground-Water Detection Monitoring Programs" in creating the *Detection Monitoring Plan* for this project.

The State of Alaska, Department of Environmental Conservation (ADEC), Solid Waste Management Program recognizes the ASTM D 6312-98 procedure as a valid approach when applied to landfills and solid waste disposal sites. See Appendix A for a discussion of this procedure and Appendix B for example calculations.

According to the 18 AAC 60.820, groundwater monitoring and corrective action is required for all solid waste disposal facilities with eight exceptions. The CMS Palmer monofill is granted exception to groundwater monitoring and corrective action under 18 AAC 60.820 number 8, which grants exception to "a Class II MSWLF inert waste monofill located in an area that receives 25 inches or less in total precipitation each year". The CMS Palmer monofill will contain inert waste and is located in an area with less than 25 inches of total precipitation each year. According to www.usclimatedata.com, Palmer, Alaska receives 15.8 inches of precipitation each year.

Environmental stewardship is important to CMS. Though not required by regulations, as a good faith effort and in response to concerns, CMS will monitor groundwater on their site to detect potential unanticipated impacts to the groundwater in time to take corrective action to ensure a release does not occur.

This plan includes the use of two down-gradient monitoring wells and one up gradient well (see Figure 2) to obtain a statistically representative model.

The groundwater monitoring plans includes initial baseline sampling followed with detection monitoring after two quarterly baseline sampling events. Detection monitoring is defined in ASTM D 6312-98 as *"ground water monitoring that is intended to detect a potential impact from a facility by testing for statistically significant changes in geochemistry in a down gradient monitoring well relative to background levels"*. After baseline sampling is complete, a hierarchical analysis will be conducted and prediction limits will be calculated for one or two analytes that would be indicators used to predict a potential for a release. Subsequent detection monitoring will continue to monitor these indicator analytes to identify the potential for a release and the possible source.

2. Monitoring Wells

2.1. Locations

Figure 2 shows the location of the two proposed down-gradient wells and the one proposed up-gradient well. The well locations were chosen to provide the best locations for the detection of a release (the down-gradient wells) and to monitor up gradient background groundwater characteristics. Figure 2 shows the monitoring wells in the project area.

2.2. Installation Procedures

Well installation followed the guidelines established in the ADEC – SPAR document Monitoring Well Guidance, updated November 2011. This document fulfills the regulatory requirements of 18 AAC 75 and 18 AAC 78 for monitoring well design, construction, installation, maintenance, and decommissioning. Monitoring wells were constructed at least four feet below the top of the water table with 10 foot screens bedded in sand. The wells will be constructed at least four feet below the top of the water table. Bentonite chips or grout was used to seal the well/aquifer from meteoric water/potential surface contaminates traveling along the casing. Figure 3 illustrates the typical well installation procedures used for this project.

3. Water Quality Monitoring

3.1. Aquifer Productivity and Quality

The CMS Palmer Monofill will use a 35 acre area with a design capacity of 2.2 million cubic yards for inert construction debris. This debris will be screened to remove recyclable and hazardous materials. Both regulated and non-regulated asbestos containing materials (NON-RACM) will be disposed in the monofill. The ACM will be placed in a designated cell and covered daily. When the cell is complete, its limits will be surveyed and recorded. TERRASAT investigated bore hole logs of eight previously drilled bore holes on the property, logged by Shannon and Wilson, Inc. (see Figure 5 for a list of bore hole logs). The eight wells were constructed in the unconfined aquifer with water levels varying from 3 to 35 feet below ground surface (BGS). Generally, the water table is encountered closest to the surface near the man made ponds on the site and deepens toward the southwest. Wells N-15 and N-20, which are the most down-gradient wells on the property in the past, did not encounter groundwater. N-20 was drilled 41 feet and N-15 was drilled 120 feet. TERRASAT'S opinion is monofill operations as designed, with at least 10 feet of undisturbed soil separation above the water table will have no impact on productivity of the unconfined aquifer.

3.2. Baseline Monitoring

This monitoring plan proposes to sample a baseline suite of analytes at the three designated monitoring wells. Baseline monitoring will consist of selected analytes listed in "Table J – Optional Monitoring Constituents and Parameters" of the 18 AAC 60. After three years of baseline sampling, CMS will potentially reduce the suite of analytes for a detection monitoring plan by following ADEC accepted procedures. Figure 4 lists the baseline suite of analytes.

3.3. Detection Monitoring

The results of principal component analyses of baseline data will lead to a determination that some constituents best represent the characteristics of the water table aquifer. From these principal components, a list of constituents will be chosen as *potential* indicators, based on their score within a statistical principal component matrix.

After potential indicator constituents are selected using principal component analysis of baseline data, a further reduced list of indicator constituents will be selected that are statistically valid to provide early warning, should a release occur during monofill operations. For each constituent chosen to be included in the final indicator list, a prediction limit will be calculated based on available sampling results. Monitoring will include pH and conductivity as well as those constituents determined by baseline sampling to be valid indicator analytes for this project.

This plan is designed as an early detection program for potential releases. The plan's creation and implementation is based on the following actions:

- ◊ Creating a database of baseline sampling results
- ◊ Evaluating subsurface conditions at study area
- ◊ Determining the statistical distribution of sample results
- ◊ Selecting appropriate indicator constituents to be monitored for the detection of a release
- ◊ Determining prediction limits of indicator constituents
- ◊ Re-evaluating prediction limits when new sampling data are available
- ◊ Evaluating sampling data after each sampling event to determine if a release occurred
- ◊ Conducting verification re-sampling if a release is suspected
- ◊ Implementing a release investigation if verification sampling suggest a release
- ◊ Initiating corrective action and monitoring if a release is detected

3.4. Sampling Frequency

Constituent sampling will be conducted on a bi-annual basis, spring and fall, to assure that variability of ground water is being evaluated (see Appendix C Table 1). Groundwater level measurements will be collected and recorded for the three designated monitoring wells. Initially water level measurements will be collected approximately bi-monthly from monitoring wells until October. After that time, water level will be monitored approximately monthly. Less frequent water level monitoring will be conducted after one year. See Appendix C Table 2 for water level measurement monitoring schedule. CMS will report the sampling annually to the applicable regulatory agency and if a release is confirmed.

3.5. Duration of Monitoring

Unless evidence of a release occurs, water quality monitoring will cease one year after the monofill is no longer in use. If a release occurs, then water quality monitoring may be required as part of a long-term remediation plan.

4. Release Actions

If analyte concentrations exceed the prediction limits, verification re-sampling will be conducted in the wells that exceed the prediction limit. If verification re-sampling confirms a release, a release investigation will be initiated. The release investigation may use the baseline-full suite of constituents for comparison with existing background data. A report of the release investigation will be submitted to the appropriate government agencies within 60 days of receipt of the final laboratory reports. If baseline data shows a analyte is above the drinking water standard naturally, it will be statistically evaluated using Shewart-CUSUM control charts that indicate anthropogenic input based on the analytes seasonal trends.

Please contact us at (907) 344-9370 if you have any questions or would like further information.

Prepared by:

Jeremy Stariwat
Project Geologist

Approved by:

Dan Young
Certified Professional Geologist, #7811

Figures

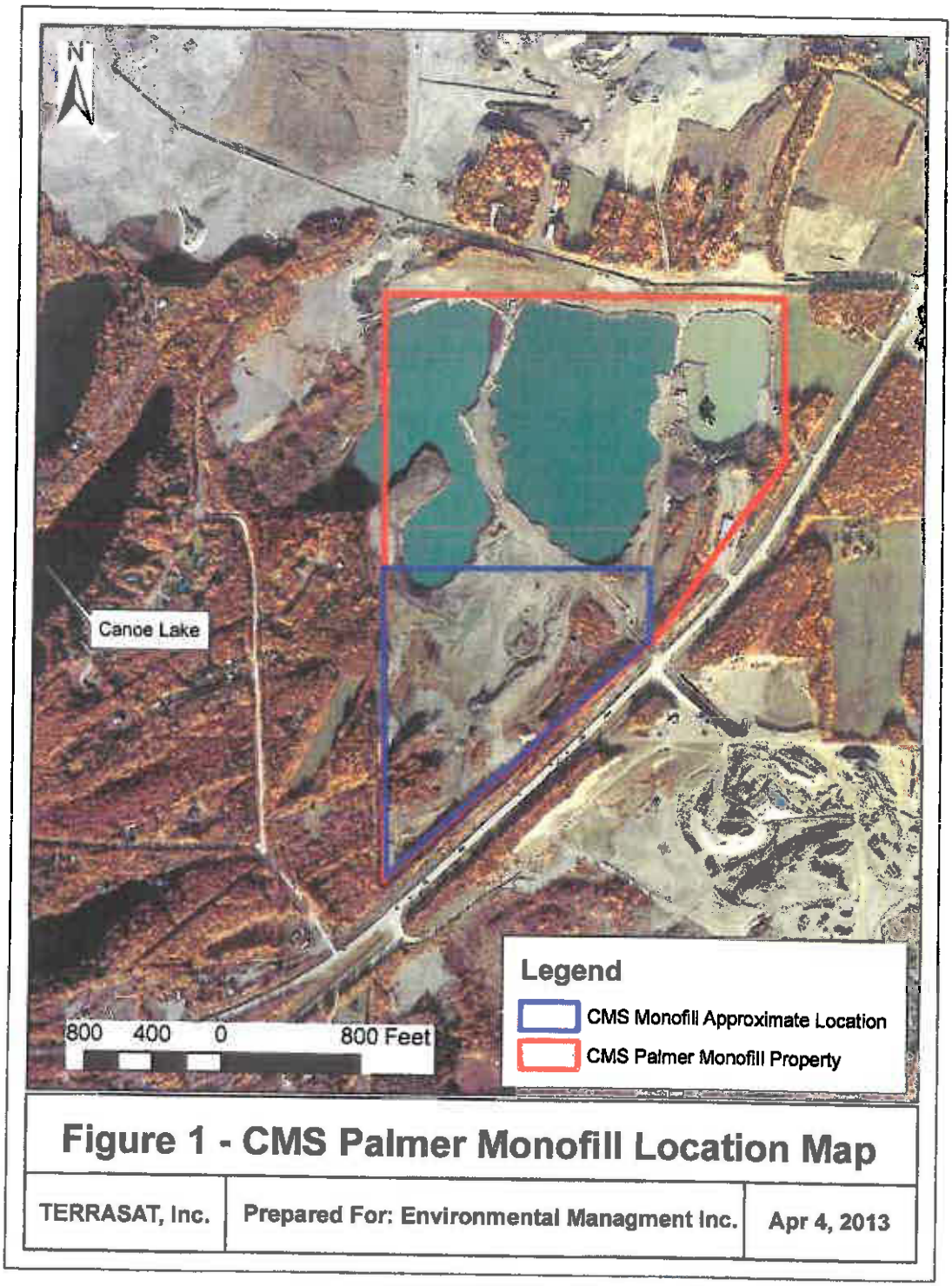


Figure 1 - CMS Palmer Monofill Location Map

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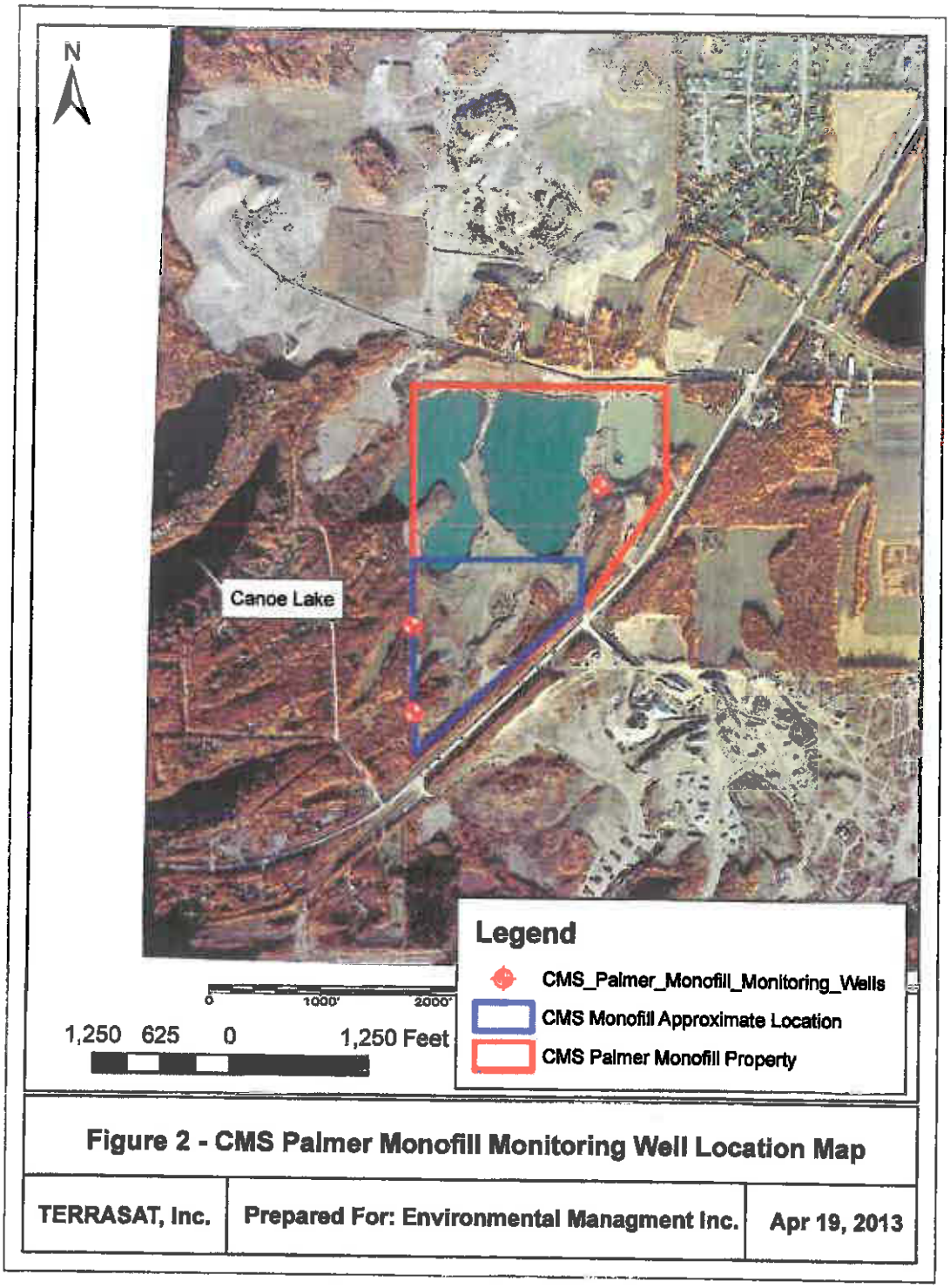

Figure 2 - CMS Palmer Monofill Monitoring Well Location Map

TERRASAT, Inc.	Prepared For: Environmental Managment Inc.	Apr 19, 2013

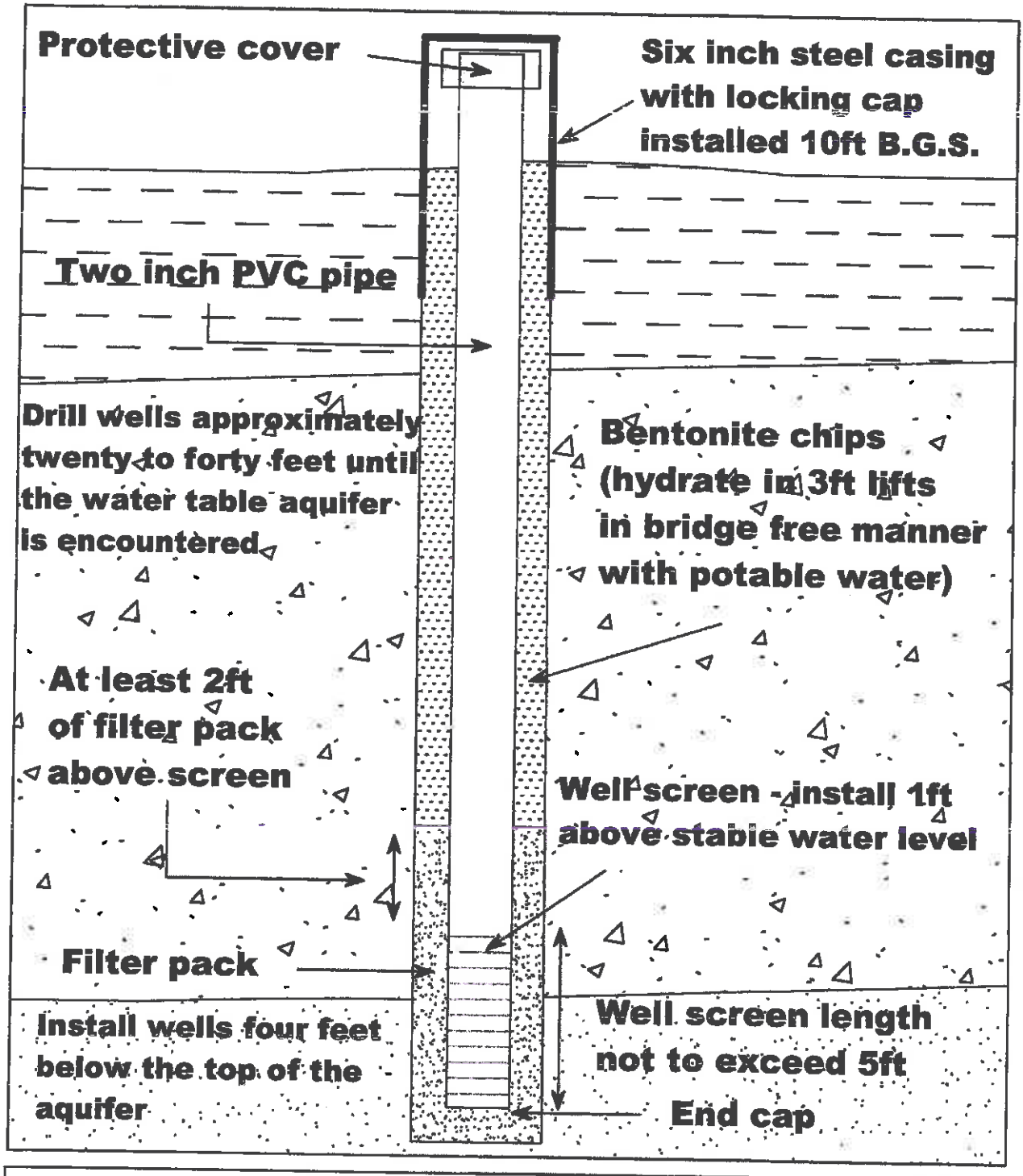

Figure 3 Monitoring Well Cross Section Detail

TERRASAT, Inc.	Prepared For: Environmental Management Inc.	Not to Scale	April 8, 2013

Figure 4 - Baseline Suite of Analytes

ANALYTE	Drinking Water Standards (ppb)
Iron (Fe)	300
Phosphorus (P)	NRI
Manganese (Mn)	50
Nitrate	10000
S04 (sulfate)	250000
Conductivity	NRI
pH	6.5 - 8.5
All concentrations are given in µg/L (ppb). NRI denotes a constituent of the analysis not regulated in 18 AAC 80	

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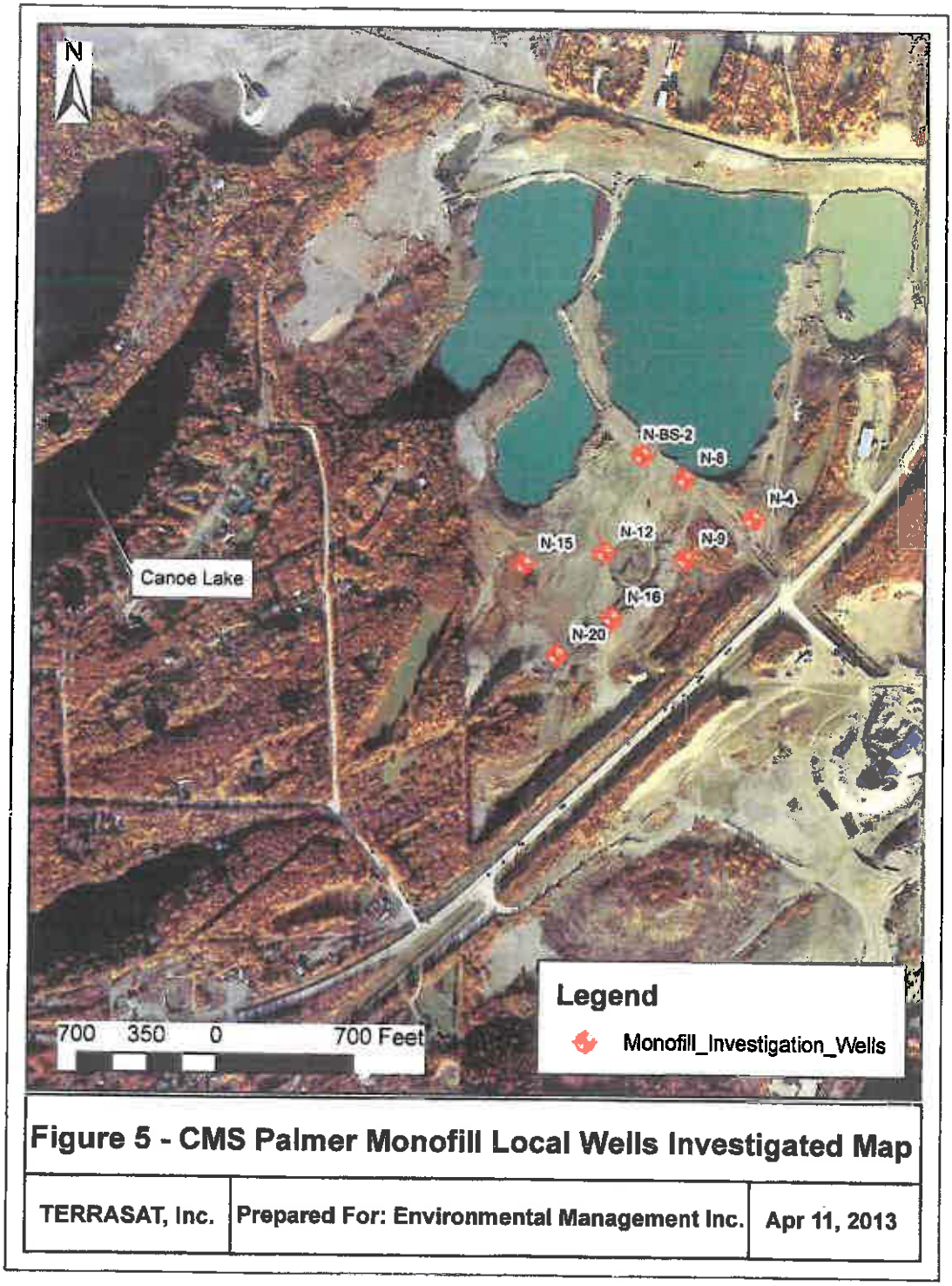

Figure 5 - CMS Palmer Monofill Local Wells Investigated Map

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Appendix A

ADEC Assessment versus Detection Monitoring Plan

Detection vs. Assessment Monitoring At Municipal Landfills

April 2009

Alaska Department of Environmental Conservation

Division of Environmental Health

Solid Waste Management Program Offices

www.dec.state.ak.us/eh/sw

Juneau Office:
410 Willoughby Ave
Suite 303
Juneau, AK 99801
(907) 465-5160
FAX (907) 465-5362

Anchorage Office:
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Anchorage, AK 99501
(907) 269-7802
FAX (907) 269-7600

Fairbanks Office:
610 University Ave
Fairbanks, AK 99709
(907) 451-2106
FAX (907) 451-2188

Soldotna Office:
43335 Kalifornsky
Beach Road, Suite 11
Soldotna, AK 99669
(907) 262-5210
FAX (907) 262-2294

Many landfills in the state of Alaska are required to conduct groundwater monitoring to ensure that the landfill is not affecting groundwater quality. There are actually two types of groundwater monitoring and this fact sheet explains the difference between the two types.

Detection Monitoring
Most landfills are doing what is called detection monitoring, which is intended to "detect" if the landfill is impacting groundwater quality.

An important aspect of detection monitoring is that the analytical results of the monitoring are not compared to water quality standards. This is because the purpose of the monitoring is strictly to determine if there is an impact, which is defined as a statistically significant change in the concentration of one or more parameters.

Concentrations of substances in ground water tend to fluctuate. One or two measurements that exceed background levels don't necessarily mean the landfill is impacting the groundwater. Analysts must look at all the data to determine if there has been a 'statistically significant' increase in pollution.

So, rather than comparing to water quality standards, the analytical results are compared to background concentrations: the concentrations that would normally be found in groundwater in that area. If detection monitoring documents a statistically significant increase above background concentrations that is caused by the landfill, then the landfill operator must begin assessment monitoring.

Assessment Monitoring
The purpose of assessment monitoring is to assess the extent and nature of the impacted groundwater. This includes determining what pollutants are impacting groundwater, whether those pollutants exceed applicable standards, and how far the pollution extends. For a more detailed description of assessment monitoring, see the *"Assessment Monitoring Requirements"* fact sheet.

Compared to detection monitoring, assessment monitoring includes a longer list of required analyses, more frequent monitoring, and the monitoring results are compared to an applicable water quality standard. For more information on these standards, see the *"Water Quality Standards for Groundwater Monitoring"* fact sheet.

If assessment monitoring shows that any contaminants exceed water quality standards, then the facility must take corrective action to clean up the pollution and ensure that the problem doesn't continue. If monitoring shows that all contamination is below water quality standards, the facility must continue assessment monitoring to ensure that levels do not rise above the standards. The assessment monitoring program ends only when groundwater quality has been restored to the natural background conditions.

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Appendix B

Example Calculations of Prediction Limits for Detection Monitoring

Prediction Limit for Next Measurement

$\mu := 3.29$ Mean

$\sigma := 1.72$ Standard deviation

$k := 18$ k is the number of comparisons (sampling stations times constituents)

$n := 18$ Number of background measurements

$df := n - 1$ Degrees of freedom

$t_{.95} := qt(.95, df)$ Student's T for 95%

$$PL := \mu + t_{.95} \cdot \sigma \cdot \sqrt{1 + \frac{1}{n}}$$

$PL = 6.364$ Upper prediction limit for the next single measurement from a normal distribution. Use this for detection.

Prediction Limit for Verification Resample

$$PL_{1\_of\_1} := \mu + t_{1\_of\_1} \cdot \sigma \cdot \sqrt{1 + \frac{1}{n}} \qquad PL_{1\_of\_2} := \mu + t_{1\_of\_2} \cdot \sigma \cdot \sqrt{1 + \frac{1}{n}}$$

$$PL_{2\_of\_2} := \mu + t_{2\_of\_2} \cdot \sigma \cdot \sqrt{1 + \frac{1}{n}}$$

$PL_{1\_of\_1} = 6.3$ Upper prediction limit for one of one verification resamples

$PL_{1\_of\_2} = 5.247$ Upper prediction limit for the first verification resample or one of two verification resamples

$PL_{2\_of\_2} = 6.636$ Upper prediction limit for the first one or two of two verification resamples

ASTM D 6312-98 (2005), Standard Guide for Developing Appropriate Statistical Approaches for Ground Water Monitoring Programs

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Ground Water Solutions

Page 1 of 2

α is the false positive rate

t is the one-sided (1-α)*100% point on the Student's T distribution with n-1 degrees of freedom

$$\alpha_{1\_of\_1} := \left(1 - .95^{\frac{1}{k}}\right)^{\frac{1}{2}} \qquad t_{1\_of\_1} := qt\left(1 - \alpha_{1\_of\_1}, df\right)$$

$$\alpha_{1\_of\_2} := \left(1 - .95^{\frac{1}{k}}\right)^{\frac{1}{3}} \qquad t_{1\_of\_2} := qt\left(1 - \alpha_{1\_of\_2}, df\right)$$

$$\alpha_{2\_of\_2} := \sqrt{1 - .95^{\frac{1}{k}}} \cdot \sqrt{\frac{1}{2}} \qquad t_{2\_of\_2} := qt\left(1 - \alpha_{2\_of\_2}, df\right)$$

Appendix C

CMS Palmer Monofill Groundwater Monitoring Shedule

Appendix C: CMS Palmer Monofill Ground Water Monitoring Schedule

Table 1: Schedule of Constituent Monitoring for CMS Palmer Monofill

Year	Month	Constituent List	Wells
2013 - 2014	**May or June 2013	Baseline	ALL three monitoring wells
Duration of Project*	April	Detection-Indicator	ALL three monitoring wells
	October	Detection-Indicator	ALL three monitoring wells

*Constituents will be monitored as indicated for the duration of the project and for three years after the project terminates
** The two rounds of baseline samples have been taken at the time of this monitoring plan

Table 2: Schedule of Water Level Monitoring for CMS Palmer Monofill

Year	Dates of Monitoring	Water Level Measuring Frequency	Wells
2013-2014	April until October	Bi-Monthly, Approximately	ALL three monitoring wells
	October until April	Monthly	ALL three monitoring wells
Duration of Project*	Duration of project after April 2014	As deemed appropriate	ALL three monitoring wells

* Water level will be monitored as indicated for one year

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Geological Consulting • Environmental Restoration • Regulatory Compliance

Ground Water Monitoring Plan
For
Central Monofill Services (CMS) Palmer Monofill
Palmer, Alaska

Prepared for:
Central Monofill Services (CMS)

Prepared by:
TERRASAT, Inc.
4203 Iowa Dr.
Anchorage, AK 99517

May 17, 2013

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Table of Contents

1. INTRODUCTION *1*

2. MONITORING WELLS *2*

2.1. Locations 2
2.2. Installation Procedures 2

3. WATER QUALITY MONITORING *2*

3.1. Aquifer Productivity and Quality 2
3.2. Baseline Monitoring 3
3.3. Detection Monitoring 3
3.4. Sampling Frequency 4
3.5. Duration of Monitoring 4

4. RELEASE ACTIONS *4*

Figures

Figure 1 ..... Site Location

Figure 2 ..... Proposed Monitoring Well Locations Map

Figure 3 ..... Well Installation Diagram

Figure 4 ..... Baseline Suite of Analytes

Figure 5 ..... Local Wells Investigated

Appendix

Appendix A ADEC Assessment versus Detection Monitoring Plan

Appendix B Example Calculations of Prediction Limits for Detection Monitoring

Appendix C CMS Palmer Monofill Ground Water Monitoring Schedule

1. Introduction

TERRASAT Inc. (TERRASAT) was retained by Environmental Management, Inc. (EMI) to develop a ground water monitoring plan at Central Monofill Services (CMS) site of a proposed monofill in Palmer, Alaska. (see Figure 1).

TERRASAT followed the Clean Water Act 40 CFR 258.54 "Detection Monitoring Program" in developing the *Detection Monitoring Plan* and used guidelines established in ASTM D 6312-98 "Standard Guide for Developing Appropriate Statistical Approaches for Ground-Water Detection Monitoring Programs" in creating the *Detection Monitoring Plan* for this project.

The State of Alaska, Department of Environmental Conservation (ADEC), Solid Waste Management Program recognizes the ASTM D 6312-98 procedure as a valid approach when applied to landfills and solid waste disposal sites. See Appendix A for a discussion of this procedure and Appendix B for example calculations.

According to the 18 AAC 60.820, groundwater monitoring and corrective action is required for all solid waste disposal facilities with eight exceptions. The CMS Palmer monofill is granted exception to groundwater monitoring and corrective action under 18 AAC 60.820 number 8, which grants exception to "a Class II MSWLF inert waste monofill located in an area that receives 25 inches or less in total precipitation each year". The CMS Palmer monofill will contain inert waste and is located in an area with less than 25 inches of total precipitation each year. According to www.usclimatedata.com, Palmer, Alaska receives 15.8 inches of precipitation each year.

Environmental stewardship is important to CMS. Though not required by regulations, as a good faith effort and in response to concerns, CMS will monitor groundwater on their site to detect potential unanticipated impacts to the groundwater in time to take corrective action to ensure a release does not occur.

This plan includes the use of two down-gradient monitoring wells and one up gradient well (see Figure 2) to obtain a statistically representative model.

The groundwater monitoring plans includes initial baseline sampling followed with detection monitoring after two quarterly baseline sampling events. Detection monitoring is defined in ASTM D 6312-98 as *"ground water monitoring that is intended to detect a potential impact from a facility by testing for statistically significant changes in geochemistry in a down gradient monitoring well relative to background levels"*. After baseline sampling is complete, a hierarchical analysis will be conducted and prediction limits will be calculated for one or two analytes that would be indicators used to predict a potential for a release. Subsequent detection monitoring will continue to monitor these indicator analytes to identify the potential for a release and the possible source.

2. Monitoring Wells

2.1. Locations

Figure 2 shows the location of the two proposed down-gradient wells and the one proposed up-gradient well. The well locations were chosen to provide the best locations for the detection of a release (the down-gradient wells) and to monitor up gradient background groundwater characteristics. Figure 2 shows the monitoring wells in the project area.

2.2. Installation Procedures

Well installation followed the guidelines established in the ADEC – SPAR document Monitoring Well Guidance, updated November 2011. This document fulfills the regulatory requirements of 18 AAC 75 and 18 AAC 78 for monitoring well design, construction, installation, maintenance, and decommissioning. Monitoring wells were constructed at least four feet below the top of the water table with 10 foot screens bedded in sand. The wells will be constructed at least four feet below the top of the water table. Bentonite chips or grout was used to seal the well/aquifer from meteoric water/potential surface contaminates traveling along the casing. Figure 3 illustrates the typical well installation procedures used for this project.

3. Water Quality Monitoring

3.1. Aquifer Productivity and Quality

The CMS Palmer Monofill will use a 35 acre area with a design capacity of 2.2 million cubic yards for inert construction debris. This debris will be screened to remove recyclable and hazardous materials. Both regulated and non-regulated asbestos containing materials (NON-RACM) will be disposed in the monofill. The ACM will be placed in a designated cell and covered daily. When the cell is complete, its limits will be surveyed and recorded. TERRASAT investigated bore hole logs of eight previously drilled bore holes on the property, logged by Shannon and Wilson, Inc. (see Figure 5 for a list of bore hole logs). The eight wells were constructed in the unconfined aquifer with water levels varying from 3 to 35 feet below ground surface (BGS). Generally, the water table is encountered closest to the surface near the man made ponds on the site and deepens toward the southwest. Wells N-15 and N-20, which are the most down-gradient wells on the property in the past, did not encounter groundwater. N-20 was drilled 41 feet and N-15 was drilled 120 feet. TERRASAT'S opinion is monofill operations as designed, with at least 10 feet of undisturbed soil separation above the water table will have no impact on productivity of the unconfined aquifer.

3.2. Baseline Monitoring

This monitoring plan proposes to sample a baseline suite of analytes at the three designated monitoring wells. Baseline monitoring will consist of selected analytes listed in "Table J – Optional Monitoring Constituents and Parameters" of the 18 AAC 60. After three years of baseline sampling, CMS will potentially reduce the suite of analytes for a detection monitoring plan by following ADEC accepted procedures. Figure 4 lists the baseline suite of analytes.

3.3. Detection Monitoring

The results of principal component analyses of baseline data will lead to a determination that some constituents best represent the characteristics of the water table aquifer. From these principal components, a list of constituents will be chosen as *potential* indicators, based on their score within a statistical principal component matrix.

After potential indicator constituents are selected using principal component analysis of baseline data, a further reduced list of indicator constituents will be selected that are statistically valid to provide early warning, should a release occur during monofill operations. For each constituent chosen to be included in the final indicator list, a prediction limit will be calculated based on available sampling results. Monitoring will include pH and conductivity as well as those constituents determined by baseline sampling to be valid indicator analytes for this project.

This plan is designed as an early detection program for potential releases. The plan's creation and implementation is based on the following actions:

- ◊ Creating a database of baseline sampling results
- ◊ Evaluating subsurface conditions at study area
- ◊ Determining the statistical distribution of sample results
- ◊ Selecting appropriate indicator constituents to be monitored for the detection of a release
- ◊ Determining prediction limits of indicator constituents
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- ◊ Implementing a release investigation if verification sampling suggest a release
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3.4. Sampling Frequency

Constituent sampling will be conducted on a bi-annual basis, spring and fall, to assure that variability of ground water is being evaluated (see Appendix C Table 1). Groundwater level measurements will be collected and recorded for the three designated monitoring wells. Initially water level measurements will be collected approximately weekly from monitoring wells until October. After that time, water level will be monitored monthly. Less frequent water level monitoring will be conducted after one year. See Appendix C Table 2 for water level measurement monitoring schedule. CMS will report the sampling annually to the applicable regulatory agency and if a release is confirmed.

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Unless evidence of a release occurs, water quality monitoring will cease one year after the monofill is no longer in use. If a release occurs, then water quality monitoring may be required as part of a long-term remediation plan.

4. Release Actions

If analyte concentrations exceed the prediction limits, verification re-sampling will be conducted in the wells that exceed the prediction limit. If verification re-sampling confirms a release, a release investigation will be initiated. The release investigation may use the baseline-full suite of constituents for comparison with existing background data. The appropriate agencies will be contacted if the results are above the background prediction limit or the drinking water standard. If baseline data shows a analyte is above the drinking water standard naturally, it will be statistically evaluated using Shewart-CUSUM control charts that indicate anthropogenic input based on the analytes seasonal trends.

Please contact us at (907) 344-9370 if you have any questions or would like further information.

Prepared by:

Jeremy Stariwat

Project Geologist

Approved by:

Dan Young

Certified Professional Geologist, #7811

Figures

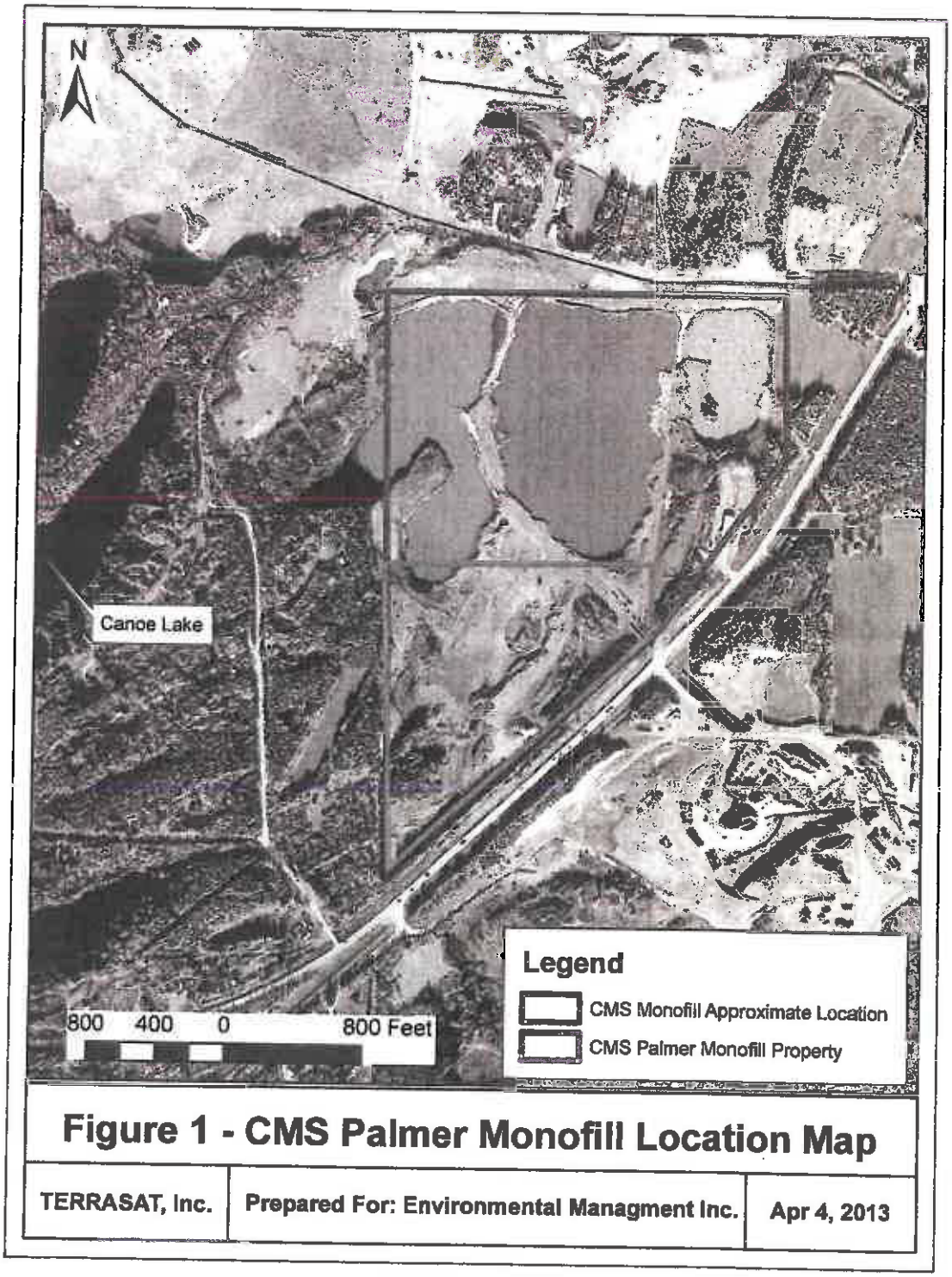

Figure 1 - CMS Palmer Monofill Location Map

TERRASAT, Inc.	Prepared For: Environmental Managment Inc.	Apr 4, 2013

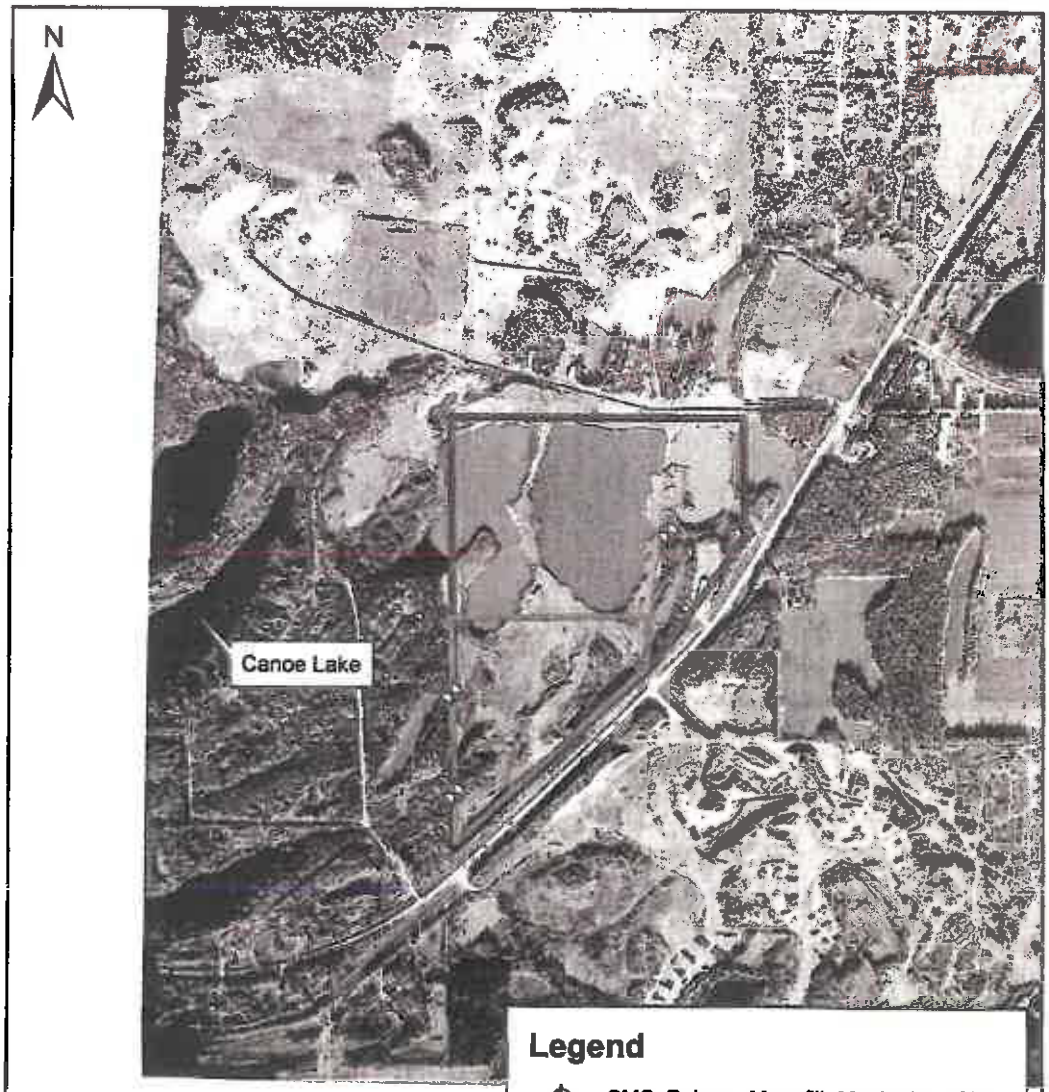

Figure 2 - CMS Palmer Monofill Monitoring Well Location Map

TERRASAT, Inc.	**Prepared For: Environmental Managment Inc.**	**Apr 19, 2013**

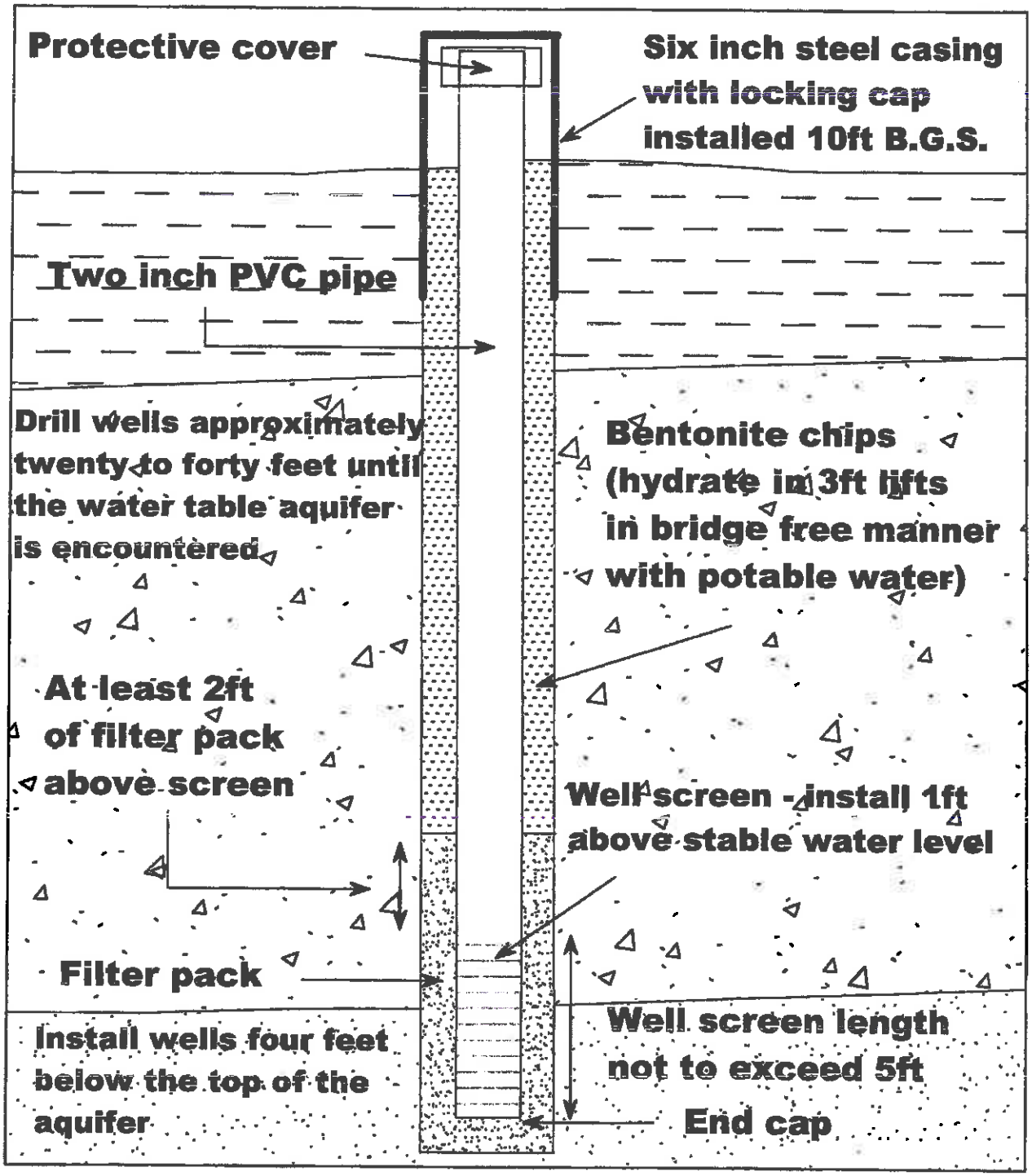

Figure 3 Monitoring Well Cross Section Detail

TERRASAT, Inc.	Prepared For: Environmental Management Inc.	Not to Scale	April 8, 2013

Figure 4 - Baseline Suite of Analytes

ANALYTE	Drinking Water Standards (ppb)
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Phosphorus (P)	NRI
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P:\2013 Projects\21311 - Palmer gravel extraction pit monitoring - Environmental Manag Inc. Larry Helgenson\CMS Monofill Monitoring Plan - MatSu Borough\Figures\Figure 4 - Baseline Suite of Analytes - MatSu

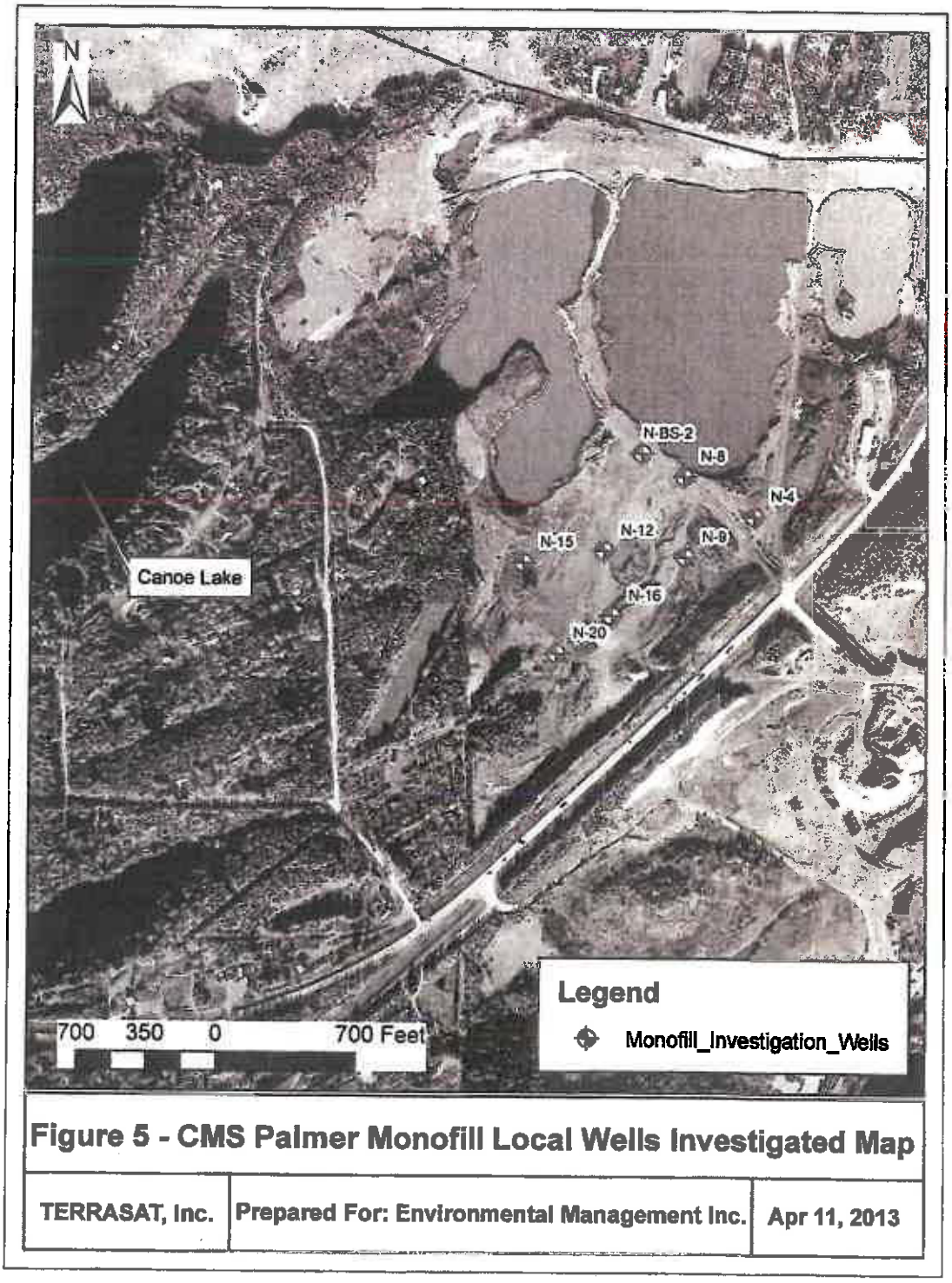

Figure 5 - CMS Palmer Monofill Local Wells Investigated Map

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Appendix A

ADEC Assessment versus Detection Monitoring Plan

Alaska Department of Environmental Conservation

Division of Environmental Health

Solid Waste Management Program Offices

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Juneau Office:
410 Willoughby Ave
Suite 303
Juneau, AK 99801
(907) 465-5160
FAX (907) 465-5362

Anchorage Office:
555 Cordova Street
Anchorage, AK 99501
(907) 269-7802
FAX (907) 269-7600

Fairbanks Office:
610 University Ave
Fairbanks, AK 99709
(907) 451-2108
FAX (907) 451-2188

Soldotna Office:
43335 Kalifornsky
Beach Road, Suite 11
Soldotna, AK 99669
(907) 262-5210
FAX (907) 262-2294

Detection vs. Assessment Monitoring At Municipal Landfills

April 2009

Many landfills in the state of Alaska are required to conduct groundwater monitoring to ensure that the landfill is not affecting groundwater quality. There are actually two types of groundwater monitoring and this fact sheet explains the difference between the two types.

Detection Monitoring
Most landfills are doing what is called detection monitoring, which is intended to "detect" if the landfill is impacting groundwater quality.

Concentrations of substances in ground water tend to fluctuate. One or two measurements that exceed background levels don't necessarily mean the landfill is impacting the groundwater. Analysts must look at all the data to determine if there has been a 'statistically significant' increase in pollution.

An important aspect of detection monitoring is that the analytical results of the monitoring are not compared to water quality standards. This is because the purpose of the monitoring is strictly to determine if there is an impact, which is defined as a statistically significant change in the concentration of one or more parameters.

So, rather than comparing to water quality standards, the analytical results are compared to background concentrations: the concentrations that would normally be found in groundwater in that area. If detection monitoring documents a statistically significant increase above background concentrations that is caused by the landfill, then the landfill operator must begin assessment monitoring.

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Compared to detection monitoring, assessment monitoring includes a longer list of required analyses, more frequent monitoring, and the monitoring results are compared to an applicable water quality standard. For more information on these standards, see the *"Water Quality Standards for Groundwater Monitoring"* fact sheet.

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Appendix B

Example Calculations of Prediction Limits for Detection Monitoring

Prediction Limit for Next Measurement

$\mu := 3.29$ Mean

$\sigma := 1.72$ Standard deviation

$k := 18$ k is the number of comparisons (sampling stations times constituents)

$n := 18$ Number of background measurements

$df := n - 1$ Degrees of freedom

$t_{.95} := qt(.95, df)$ Student's T for 95%

$$PL := \mu + t_{.95} \cdot \sigma \cdot \sqrt{1 + \frac{1}{n}}$$

$PL = 6.364$ Upper prediction limit for the next single measurement from a normal distribution. Use this for detection.

Prediction Limit for Verification Resample

$$PL_{1\_of\_1} := \mu + t_{1\_of\_1} \cdot \sigma \cdot \sqrt{1 + \frac{1}{n}} \qquad PL_{1\_of\_2} := \mu + t_{1\_of\_2} \cdot \sigma \cdot \sqrt{1 + \frac{1}{n}}$$

$$PL_{2\_of\_2} := \mu + t_{2\_of\_2} \cdot \sigma \cdot \sqrt{1 + \frac{1}{n}}$$

$PL_{1\_of\_1} = 6.3$ Upper prediction limit for one of one verification resamples

$PL_{1\_of\_2} = 5.247$ Upper prediction limit for the first verification resample or one of two verification resamples

$PL_{2\_of\_2} = 6.636$ Upper prediction limit for the first one or two of two verification resamples

ASTM D 6312-98 (2005), Standard Guide for Developing Appropriate Statistical Approaches for Ground Water Monitoring Programs

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Page 1 of 2

α is the false positive rate

t is the one-sided (1-α)*100% point on the Student's T distribution with n-1 degrees of freedom

$$\alpha_{1\_of\_1} := \left(1 - .95^{\frac{1}{k}}\right)^{\frac{1}{2}} \qquad t_{1\_of\_1} := qt\left(1 - \alpha_{1\_of\_1}, df\right)$$

$$\alpha_{1\_of\_2} := \left(1 - .95^{\frac{1}{k}}\right)^{\frac{1}{3}} \qquad t_{1\_of\_2} := qt\left(1 - \alpha_{1\_of\_2}, df\right)$$

$$\alpha_{2\_of\_2} := \sqrt{1 - .95^{\frac{1}{k}}} \cdot \sqrt{\frac{1}{2}} \qquad t_{2\_of\_2} := qt\left(1 - \alpha_{2\_of\_2}, df\right)$$

Appendix C

CMS Palmer Monofill Groundwater Monitoring Shedule

Appendix C: CMS Palmer Monofill Ground Water Monitoring Schedule

Table 1: Schedule of Constituent Monitoring for CMS Palmer Monofill

Year	Month	Constituent List	Wells
2013 - 2014	**May or June 2013	Baseline	ALL three monitoring wells
Duration of Project*	April	Detection-Indicator	ALL three monitoring wells
	October	Detection-Indicator	ALL three monitoring wells

*Constituents will be monitored as indicated for the duration of the project and for three years after the project terminates
** The two rounds of baseline samples have been taken at the time of this monitoring plan

Table 2: Schedule of Water Level Monitoring for CMS Palmer Monofill

Year	Dates of Monitoring	Water Level Measuring Frequency	Wells
2013-2014	April until October	Bi-Monthly, Approximately	ALL three monitoring wells
	October until April	Monthly	ALL three monitoring wells
Duration of Project*	Duration of project after April 2014	As deemed appropriate	ALL three monitoring wells

* Water level will be monitored as indicated for one year

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CENTRAL MONOFILL SERVICES

CONDITIONAL USE PERMIT APPLICATION

SUPPLEMENTAL INFORMATION

MAY 14, 2014

CENTRAL MONOFILL SERVICES

Anchorage
311 N. Sitka Street
Anchorage, AK 99501

Fairbanks
1301 Wells Street
Fairbanks, AK 99701

Matanuska - Susitna Borough
Development Services

MAY 14 2014

Received

May 14, 2014

Susan Lee
Planning and Land Use Department
Matanuska-Susitna Borough
350 East Dahlia Avenue
Palmer, Alaska 99645

Reference: **Conditional Use Permit Application – Request for Additional Information #1** Location: 17N02E18C010 & 17N02E19B006

Dear Ms. Lee:

In response to your request of February 13, 2014, Central Monofill Services, (CMS), submits the information below and attached, to provide clarifications and answer your questions in regards to our Conditional Use Permit Application. CMS has had additional modeling and testing performed by multiple experts in the field since the January submission of our application. This additional information is summarized below and attached. Amended pages to our original application are attached and addressed below. We would appreciate a quick processing of this application and should you have further questions please feel free to call or email them to accelerate the process. The additional information and clarifications provided for further support the finding that our CUP application meets the requirements of 17.60 and a CUP should be granted.

Questions and comments by the Matanuska Susitna Borough, (MSB), consultant J.A. Munter Consulting, Inc. (Munter), appears to raise a concern to Munter's, full understanding of the industry and regulatory structure. The waste industry is one of the most heavily regulated in the country. On a federal level the Environmental Protection Agency (EPA) and Occupational Safety Health Administration (OSHA) regulate nearly all aspects of the demolition, removal, processing and disposal of wastes. At the state level the Alaska Department of Environmental Conservation (ADEC) further regulates the identification and disposal of wastes throughout the state of Alaska. These regulations have been formed through years of federal and state research. The ADEC has established standards that can be used throughout Alaska regardless of local geology or climate. Most local authorities in Alaska lack the resources necessary to establish their own independent monofill or landfill regulations and even if they did the operator would still have to obtain the ADEC permits. As an example of operations under the current system, the MSB Central Landfill is designed to the ADEC standards and has both a lined Municipal Solid Waste (MSW) landfill and unlined C&D monofill

safely operating. MSB has not needed to issue specific regulations or operating conditions to protect the safety and health of the community.

The CMS monofill design and CUP application depends on meeting the ADEC standards to protect the health and safety of the public. During the June 3rd, 2013 Planning Commission hearing, MSB Assistant Borough Attorney, Lisa Richard made the following legal opinion to the planning commission "Taking all those things into consideration you must make a finding that the conditional use permit will not be harmful to the public health, safety, convenience and welfare the DEC is not required to make that finding before they can grant their permit." This opinion appears to directly contradict the ADEC Solid Waste Program regulations and standards that were developed specifically to, as stated in the ADEC mission statement, "Conserving, improving and protecting Alaska's natural resources and environment to enhance the health, safety, economic and social well-being of Alaskans." More specifically the mission statement for the ADEC, Solid Waste Program: "We are committed to protecting public Health and the environment through ensuring effective solid waste management, which includes landfills, treatment systems, and solid waste storage facilities."

The applicant should not have to prove the science used to develop state and federal regulations. Our facility has been designed to meet the standards established by the ADEC, a department charged with protecting public health. An Alaskan Professional Engineer designed the facility to these standards and placed his Professional Registration stamp on the design. Attached to the original CUP application and further addressed and attached are models and calculations showing the proposed facility can be operated without being harmful to the public health and safety. Due to the technical nature of these models and calculations, CMS requests a meeting with MSB staff and our professionals in which we can cover this information and answer any further questions staff may have.

The letter of February 13 is formatted as 26 numbered bullet points. Our response is in the order of the points followed with supplemental information:

1. *"The Borough hired J.A Munter Consulting, Inc. to review the application material. A copy of Munter's report, dated February 7, 2014, is attached for your review and comments. In addition to specific issues outlined below, address all issues raised in the Munter report."*

   Please see the attached response to the Munter report by Environmental Management Inc., Maddox and Associates, TERRASAT, Inc. and AlaskChem Engineering. In general, the Munter report is an opinion and provides no empirical evidence in objection to the Monofill portion of our submission. Attachments (1,2,3,4)

   Munter's review of the Initial Maddox report fails to take into consideration the criteria and procedures established in the CUP application. It does not appear Munter reviewed or understood the CUP application or ADEC standards. Munter takes very broad generalizations to the function of the monofill,

most of which contradict both the modeling performed for this facility and actual real world data from existing facilities throughout Alaska and elsewhere. Examples provided by Maddox for the Seward Landfill and Merrill Field Landfills, as well as AlaskChem's findings on MSB Landfills support the CMS design as being able to protect the health and safety of the public.

Munter's main contention is the large quantities of contaminated leachate he alleges will develop from the monofill and flow off site. Munters contention is disproved by the facts, modeling and calculations performed by the subject matter experts, and shown in the attached documents. With the combination of limited annual precipitation, seasonally frozen ground, evapotranspiration effects, run-off of precipitation and numerous other factors discussed in the attached monofill analysis there is very little transmission of water through the monofill, thus not creating the quantities of leachate Munter suggests. As shown in the attached documents, if minor amounts of leachate were generated it is not expected to contain harmful concentrations of contaminants.

Risks associated with earthquakes and neighboring gravel extraction in the groundwater table were evaluated and found not to have an impact on the monofill. These events may lead to short term changes in the water table but nothing that would reach the waste or saturate any waste in the monofill. Even modeling the upper limit of risks the monofill does not create a public health or safety hazard. The attached professional reports describe this in much more detail.

Leachate is produced by water contacting a soluble material for a sufficient duration causing the soluble to go into solution in the water, or an organic material decaying into leachate. The CMS facility will take primarily post recycling building debris. The 3" and smaller material is screened into a recycled product leaving a 3" to 12" typical size residual waste to be buried in the monofill. A 3" to 12" piece of building debris is not very soluble. Imagine a book size piece of carpet. Carpet in your home and carpet buried in a monofill do not dissolve into the limited water and decay extremely slowly. Carpet is inert, it does not turn to leachate. An example of a material decaying into leachate is fruit and vegetable matter that has high water content and rapidly decays. Fruit and vegetable matter is not inert and has to go to a municipal waste landfill, whereas the inert carpet and other building debris can go into a monofill.

Comparisons Munter draws between the proposed CMS facility and other prior landfill studies conducted in the lower 48 do not take into account several important factors. The type of waste in most of the facilities studied was unknown. Some landfills studied were actually Municipal Solid Waste (MSW) landfills or started as unlined MSW landfill before becoming inert debris fills. Many of the landfills studied were legacy landfills going back to a time before recycling and when very little inspection or control of the waste took place. This is a stark contrast to the facility proposed where all inbound materials are inspected and processed before disposal. Many materials that have caused concern for leachate production in the past are removed from the waste in the proposed facility. Examples include metals and sheetrock. Munters concerns over sulfate caused by gypsum/sheetrock do not take into consideration the large quantities of sheet rock removed from the waste and recycled by

CRS. Some former studies have shown elevated levels of heavy metals but again in this proposed facility metal is removed as it has a recycled commodity value.

On page 6 of the Munter review he states

The proposed CMS facility meets the ADEC required 500' separation distance to surrounding wells. Munter agrees in the concept of ADEC established drinking water well separation distances. These 100' minimum well and septic separation distances are established by the ADEC to protect the health and safety of the public, the same as the 500' separation distances ADEC has established between monofills and drinking water wells. These ADEC separation distances (500' between an inert waste monofill and water well) are all designed in and accounted for in the CMS proposed facility. Further, the professionally performed models of the CMS facility that are attached confirm that the separation distances established by ADEC are more than sufficient to protect the health and safety of the public.

2. "The application material states *"There are three industrial ponds located on the northern half of the property which cover 66 of the acres". "Of the remaining 52 acres, the monofill footprint is proposed to be 35.5 acres with 16.5 acres used for recycling operations". "The CUP is needed for 52 acres of the property"*. The site plan does not depict the conditionally permitted area. The proposed permitted area is irregular and does not correspond to lot lines. A surveyed delineation of the 52 acre boundary must be shown on the site plan. MSB 17.60.040(B) *Site Plan* requires *"the specific location of the use or uses to be made of the development shall be submitted with the application"*

See page A-2 Site Plan Drawing which shows a hatched area labeled as the "Material Storage and Recycling Areas" the Monofill area is circled with a heavy line. These are the "specific locations" of the uses submitted that make up the 52 acre specific location of the conditionally permitted area. For clarity see Attachment 5, which has this entire 52 acre area shaded and labeled as the "conditionally permitted area". Please replace page A-2 of our CUP package with Attachment 5 revised drawing. The proposed permitted area is irregular and does not correspond to lot lines in order to meet appropriate set back requirements. CMS did not see a requirement for the area to be regular in shape or along lot lines.

CMS is unclear of the MSB statement A "surveyed delineation" must be shown. 17.60.040(B) does not say a "surveyed delineation". The Site Plan shows the required "specific locations" and these could be surveyed onto the site for construction. The Site Plan shows the area bounded by property lines on the

west, south and east sides. The north side is bounded by off sets from the ponds or off sets from the closest section lines.

3. "Do you have a drainage plan for this site? If so, provide a copy. For example, what direction will material flow off the monofill? What direction will surface water be draining during construction of the monofill? MSB code section 17.60.040(B) Site Plan, states that "drainage" must be shown on the site plan."

See the original CUP package, Page A-4 Site Plan drawing. Note 7 states "Surface water drains perpendicular to the contour lines shown." The contour lines are shown on this drawing as well as the drainage basin, meeting the requirement to show drainage. Also see Page A-8 Cross sections, note 4 and the drawing for additional drainage shown. All drainage remains on site. In order to help clarify the site drainage, we have included Attachment 6, Sheet 8 Drainage Plan which has flow arrows shown.

4. "Is there a SWPPP (Storm Water Pollution Prevention Plan) for this site? If not, explain why one is not required?"

A SWPPP is not required for this site. A "No Exposure Certification" for exclusion from the NPDES industrial storm water permitting requirements is in place for this site. Please see the attached certificate from ADEC, Attachment 8.

5. "Please address the State of Alaska, Department of Transportation's plans for widening the Glenn Highway and placing an intersection at Colleen Street and how that might affect this project."

To our knowledge, ADOT has not issued a final design plan or begun ROW acquisition. However, in the event that project is funded and proceeds, and in the event the final design calls for condemnation of some of our property, as indicated in our proposal at page 21, we would maintain visual screening in compliance with MSB 17.60.110 by either moving the earthen berm, or installing a continuous, solid fence, depending on how much land was condemned. To the extent the final ADOT plans call for condemning an amount of land that would encroach on the proposed area of the monofill itself, we would reduce the size of the monofill accordingly, leaving adequate land to be able to maintain code compliant visual screening. We would not expand any of the other boundaries. To the extent the final ADOT plans conflict with our proposed entrance, we would, in consultation with and approval of ADOT, move the entrance to allow for the most efficient and safe traffic flow.

6. "Provide a copy of the wetlands review performed by Hemlock Scientific, as addressed on Page 15 of 38 of the application material."

As requested the Hemlock Scientific wetland review is attached, Attachment 9.

7. "Page 16 of 38 states "Water level data is being shared with Alaska Department of Natural Resources for regional study of ground water table elevations". Provide a copy of all water level data that you have submitted to ADNR in regard to this project."

CMS has authorized ADNR access to the existing groundwater monitoring wells. ADNR is measuring water levels and collecting data from these wells. Any water level data taken by ADNR has not been provided to CMS to date. Water level data taken by CMS is contained within the Maddox document Attachment B and Attachment G of our original submission. An updated water level table is also included in EMI's response, Attachment 1, described in response to question 1.

8. "Page 17 of 38 states "Alaska Department of Environmental Conservation (ADEC) reviewed the CMS Monofill Permit application for this site and has approved the permit conditioned upon receipt of the MSB CUP". ADEC has indicated to the borough that the permit has not been approved (See attached e-mail from ADEC). Please clarify and provide a copy of any approved ADEC permit."

As stated in your email of January 22, 2014 from Lori Aldrich, ADEC has reviewed the application and determined it met the requirements for an inert monofill, this led to them posting public notice. On April 15th, 2013 we received the attached email from Nathaniel Emery with ADEC that stated, "I spoke with the MatSu Borough and looks like their process is much further out. Because you can't do much without their green light, we probably won't race to issue this permit but so far we feel the application is complete and nobody has presented any information for us to be suspicious of the proposal." Both emails agree that we have met the requirements of an inert monofill. ADEC could issue the permit but it would be conditioned upon having any locally required permits, in this case the MSB CUP. The ADEC permit has not been written, however we have confirmation from both of these ADEC staff that our application meets the requirements for an inert monofill and has been through the public comment period. See Attachment 10. The MSB CUP can be granted with it conditioned upon having the final ADEC permit.

9. "Page 21 of 38 states "The adjoining residential lots are screened from view of the property by trees". Page 28 of 38 states "The vegetation that is remaining on site is the forest located along the top of the mined banks and helps create a visual barrier between the public and the CUP activities. The existing trees will he left in place and used as a visual and noise buffer". The monofill goes to the top of the bluff. It is not appropriate to use adjacent properties for the buffer. Any buffer should be located on your property. Provide a plan for buffering the neighboring properties as the monofill is built up and out towards those properties."

All buffering is on CMS property, page 21 of 38 under Visual screening states, "The adjoining residential lots are screened from view of the property by trees." The visual screening trees are on CMS property. The property line is surveyed and is located in the trees. The CMS trees were left along the property line

by the prior property owner for the same reason, to screen the property for material extraction. Page A-3 Existing Conditions and Page A-4 Site plan show the property line along the top of the bluff. Please see Page 20-21 and 28 of 38 as well as Drawings; Page A-5 Typical Sections, Page A-7 Operations Plan and Page A-8 Cross Sections for the plan submitted to provide additional buffering when the fill exceeds the height of the existing terrain. This additional buffering is constructed when the cell berms are built. These buffers are all on CMS property. The final height of the fill does not exceed the height of the trees along most of the western property boundary adjoining residential lots. Also see paragraph 3 on Page 27 of 38. Attachment 7 is a revised sheet 6 to further clarify. Please replace page A-8 in our original CUP package with Attachment 7 a revised drawing. Per 17.60 screening is only required to the public ROW which for this site is only the southern property line along the Glenn highway.

This picture shows the Anchorage Regional Landfill along the Glenn Highway where closed cells exceed the height of surrounding trees. This is an example of the proposed visual screening. A vegetated slope creates the visual screening from the highway when the facility grows over the trees. For reference a photo of the proposed CMS site is shown on page 20 of 38 in the CUP application package.

For reference the above photo is an aerial of the Anchorage Regional Landfill that depicts the magnitude of that landfill and how it is screened from view of the public ROW in the preceding image.

10. *"Page 22 of 38 states "per the ADEC permit municipal and household waste will not he accepted at the facility". Provide a specific list of materials that can be accepted at the facility. For example, are the following items part of the residual material being deposited in the monofill: pressure treated wood, containers that contain residual materials, drywall, lead paint, formaldehyde containing materials, glues, mastics, and adhesives. What is the volume of residual material accepted? Are residues not considered hazardous due to their volume compared to the total cumulative volume?"*

Materials that can be accepted by this monofill are described in the State of Alaska's Solid Waste regulations, 18 AAC 60. (Attachment 11) It is not practical to provide a specific list of materials that can be accepted. Nearly everything used to construct a building is included. For example dried glues, mastics and adhesives are included as part of demolition debris, as well as hundreds of other materials used in the construction of buildings. All these materials will be accepted at the monofill in limited

quantities, and it would be near impossible to list all of the combinations of material. All of the material brought in will be considered inert non-hazardous residual material. Prohibited items are listed on page 5 of 12 of the facility Operations Plan that was submitted to ADEC for approval. See Attachment 12. Liquid wastes are not accepted at CRS or CMS. Containers of paint, glue, adhesive, wood preservative etc. are not accepted for disposal.

For comparison see the Attachment 13 "Acceptable Waste Policy" for the MSB Central Landfill. Construction and Demolition (C&D) debris is defined for the MSB Central Landfill as *"C & D is waste material generated during the construction or demolition of a structure. This typically includes wood, bricks, rubble, drywall, roofing materials, tiles and concrete."* and shown in Attachment 14. Theses described C&D debris are placed in an unlined monofill at the Central Landfill which was designed to the same standards as the proposed CMS facility.

Concerns raised of Formaldehyde containing materials are addressed in Attachment 3, page 9, but were found to rapidly biodegrade and not be of concern.

See also Attachment 22 for a characterization of C&D debris prepared for the EPA.

11. "Page 22 of 38 states "Loads hauled into the facility that have not been previously inspected by CRS personnel will be dumped onto a lined pad for inspection". Page 35 of 38, #4, also states "All waste delivered directly to the monofill is first placed within a lined area and inspected". Page 29 Sequence of Fill does not address the separate inspection area. It states that trucks will place their loads in the operational cell. Page 37 of 38, # 12, does not discuss this lined inspection pit as a non-permeable surface at the site. Clarify these inconsistencies and explain what is the actual process. Is the lined pad non-permeable? In addition, will this inspection pad be moved around the site or will it remain in the same place so that it can be shown on the site plan?"

Page 29 Sequence of Fill does not address the inspection pad as this paragraph is intended to cover the construction of the cells and not necessarily the flow of the material getting to the cells. The truck dumping in the cell per Sequence of fill could be a truck hauling from the recycle facility that was previously inspected or a load hauled from the inspection pad on site.

To clarify, there would be two waste streams entering the facility. One stream is the material hauled from a CRS operation that has already been inspected and processed. The second waste stream is material hauled from known customers that has not yet been inspected by CRS. See Attachment M, page 28 of the CUP application for this flow process and re-attached to this response as Attachment 21. Materials that have not been previously inspected are initially dumped on the impermeable inspection pad where they are inspected, recyclable material is removed and remaining non-recyclable material placed in the active monofill cell. Upon inspection, if prohibited materials are found they will be properly segregated from the waste, packaged for transport and disposed of at a properly permitted facility. Any

contamination of the soil cover on the inspection pad will be tested and cleaned up as part of the prohibited material removal. The cost for the cleanup and testing is passed onto the customer.

Page 37 of 38, #12 was intended to indicate the permanently placed impermeable surfaces. Such as paved parking areas. The impermeable inspection pad will be moved as needed during operations of the monofill and considered temporary. This could be added to the areas discussed under #12 if the MSB intent was for this to cover all impermeable surfaces.

The last sentence of Paragraph 3, page 22 of 38 states "This inspection pad will be near the working area of the landfill and relocated as the cells and working area move within the monofill."

12. Page 22 of 38 discusses the inspection pad that will be capped with 2" of soil. What is the plan for disposal of this soil? Will this soil be tested prior to its disposal or use? What is the plan for managing the run-off coming from the inspection area?"

The inspection pad will be an active operation. If something is dumped on it that could contaminate the soil it will be found during the inspection process and properly removed and cleaned up. At this point the customer that delivered the prohibited material would be charged the cleanup cost. This active process of inspection and cleanup will maintain the soil in a clean condition such that when it comes time to move the inspection pad, the capping soil could be used elsewhere in the facility for berms or intermediate cover without further testing.

An example of this process would be if a roll off container was dumped on the inspection pad and the inspector found bags of household trash. These bags and any affected soil would be immediately removed from the inspection pad to a municipal waste dumpster for proper disposal at an offsite MSW Landfill and the customer charged.

Run off from the inspection pad would be no different than the natural process elsewhere on the monofill. The inspection pad is maintained in a clean state with no prohibited materials allowed to remain on the pad, keeping any water on the inspection pad from being contaminated.

13. "Page 22 of 38 discusses the careful handling of "hazardous wastes". The proposed monofill proposes to exclude "hazardous waste". It is not clear what this means and in particular, that all waste that may be hazardous to water supplies will be excluded. Provide a specific list of everything that is tested for in the Building Material Survey."

A typical Hazardous Building Material Survey checks for all potentially hazardous building materials that should be identified and, if required by regulators, removed prior to demolition. Suspect items typically include the following materials:

- Items coated with lead based paint

- asbestos in insulation, ceiling or floor tiles, and grout
- mercury in switches, thermostats, electronics, fluorescent bulbs and other equipment
- chlorofluorocarbons (CFCs) or other harmful chemicals in old refrigerators, air conditioners and aerosol cans
- polychlorinated biphenyls (PCBs) in transformers, lubricants, paints, and sealants
- radioactive sources such as exit signs
- potentially toxic household or agricultural chemicals, including certain paints, cleaning products and pesticides
- if the building has unusual equipment or materials stored in drums or tanks, these would be removed or checked for hazardous materials before demolition

Page 22 of 38, Health and Safety review discusses materials that are not supposed to be delivered or disposed of at the CMS facility but shows measures are in place to inspect loads and remove these materials so they are not improperly handled or disposed of.

14. "Page 22 of 38 states that CRS and CMS have specific policies outlined in the Operations Plan. Provide a copy of the CRS and CMS Operations Plan."

A copy of the Operations Plan for this Facility is attached. See Attachment 12.

15. "Pages 22 -23 of 38 states in part "suspect materials delivered to CRS are tested and, if found, removed from the waste stream... ". What criteria will be used to determine suspect materials?"

There are a variety of things that could cause a material to be suspect. In addition to Asbestos Inspectors Certification, inspectors will be certified as Hazardous Waste Operations and Emergency Response - First Responder Awareness Level under 29 CFR 1910.120. The training for this certification includes all the topics listed in the regulation such as recognition of suspect materials, the health hazards associated with those materials, and initiating the appropriate response to the situation. Annual refresher training is required to keep this certification current. Additionally when a customer provides a Hazardous Building Material Survey (HBMS) for a demolition load, and a required certification of removal, the HBMS is used to identify suspect materials to look for in that customer's loads to verify they were in fact removed. See Attachment A, Page 10 of the CUP application for a process drawing.

16. "Page 23 of 38 states "suspect material will be tested in accordance with regulatory required test methods to identify hazardous materials content, if any". How regularly will Toxicity Characteristic Leaching Procedure (TCLP) occur? Does visually seeing paint make it "suspect"? Will any materials with lead paint be accepted?"

There are many factors that contribute to the decision of when TCLP tests will be conducted. The age of the facility and the results of the hazardous building materials survey are the two primary factors in determining if a TCLP is warranted. Production of lead-based paints were restricted by the Consumer

Product Safety Commission in 1978. Therefore old buildings constructed before that time will be checked more carefully for lead-based paint. Materials from a new building may not be checked for lead based paint because of the low likelihood of the paint being present. Any building that has lead-based paint identified in the hazardous building materials survey will have a TCLP test completed on the waste. If the concentration of lead is not considered hazardous, based on the federal standards listed in 40 CFR 261, then this limited quantity of lead-based paint will be accepted at this monofill. If the concentration is too high, the material will not be accepted unless the lead based paint is removed and the material retested for verification.

17. "Page 23 of 38 regarding asbestos. Asbestos will be placed in plastic bags which heavy equipment can perforate. Asbestos does not dissolve, however, it does become easily airborne. The fences proposed to stop blowing trash on a windy day will do nothing to stop asbestos. What type of fence will surround the asbestos cell? What is your policy for handling RACM during the wind?"

Please carefully read the second paragraph on Page 23 of 38 and item 9, Page 36 of 38. The difference in RACM and Non-RACM is important.

Per federal regulation RACM is packaged in double bags and placed in a manner, in the RACM asbestos cell, as to not compromise the integrity of the packaging. This may be by hand, pallets placed with a forklift, etc. Once placed in the cell the cover soil is placed in a manner that the equipment does not contact the packaging. The soil is placed to protect the packaging. The RACM cell is fenced with chain link. The RACM will never be exposed to the air or wind to be blown. This would be a violation of federal regulations.

Non-RACM has the asbestos bound within a matrix that prevents it from becoming air borne. An example of Non-RACM is a glue or mastic on concrete. Unless it is mechanically being removed from the concrete it can't become airborne. This material is delivered in a damp state, placed and covered daily.

For comparison see Attachment 18, page 3 for the MSB Central Landfill requirements for Asbestos Cell requirements.

Per page 18 of 38, if winds exceed sustained 20 mph, material will not be dumped at the monofill.

18. "Page 30 of 38 states "Other materials deposited into the monofill are placed within the cells and will be covered intermittently, however, not necessarily daily". Page 18 of 38 states "Regularly covering the waste with soil further prevents blowing debris". What is meant by "covered intermittently" and "regularly covering"?"

As stated in the fourth paragraph page 30 of 38, per the ADEC permit RACM and Non-RACM is covered daily, "other" materials will be covered as needed. Some materials will be susceptible to blowing and others would not. For example chunks of concrete could be left uncovered for months with no danger

of creating blowing debris and could actually be used as cover of other materials more susceptible to blowing. Materials with a lot of loose light components or sheets of materials would be very susceptible to blowing and may need to be covered daily. Therefore we used the term "covered intermittently" to describe materials being covered daily to weekly or intermittently as needed. Page 18 of 38 "regularly covering" is in the context of keeping things covered to reduce blowing debris. Any covering weekly would be regular covering. This may be supplemented with "cover intermittently", less than the regular weekly cover. For comparison see Attachment 18 and the permit requirement for the MSB Central Landfill to cover the C&D material monthly.

19. "Page 31 of 38 states "the ADEC permit requires the owner to provide bonding or other financial assurance to cover the cost of monofill closure ". CMS also claims that it has "sufficient Environmental and Pollution Insurance to cover this project". Provide copies of the bond, insurance policy and certificate of insurance."

Policies specific to this facility will not be provided until issuance of the CUP. There is a substantial cost to pay for the bond and insurance for this facility and it would be unreasonable to pay for these before issuance of the CUP. The Bond will be in the amount required by ADEC. E&P insurance will be $1 million single with a minimum $5 million aggregate. See Attachment 15 for a sample copy of a CMS certificate of insurance.

20. *"Page 34 of 38 Hours of Operation. How will CMS be handling hours of operation during the Alaska State Fair?"*

CMS will coordinate with the State Fair and be flexible to curtail operations during the fair as to not impede fair traffic or delay our trucks. It is unreasonable at this time to place any specific conditions on this as we can't forecast how future highway capacity improvements, traffic routing or other factors may affect traffic during the fair.

21. *"What will be the actual maximum height of the finished monofill above the bottom of the cell?"*

See page A-8 Palmer Monofill Cross Sections that shows the maximum finished elevation of the monofill at 162' Above Sea Level. For reference the adjacent Glenn Highway has an average finish elevation of 117' Above Sea Level, so the maximum height will be a little more than 40 feet above the Glenn Highway. The existing tree covered berm along the Glenn Highway has an average elevation of 130' Above Sea Level, with 20' and taller trees growing on top of that. If you are asking what the maximum depth of the monofill is, it would be 75' with an average depth of 50'. The max height of any individual sub cell is 15'.

22. "What is the maximum square footage that will be exposed and not covered at any one time during the operation of the monofill?

25,000 square feet

23. "Has the site been evaluated for impacts that would occur from a large earthquake, including, but not limited to susceptibility to liquefaction, potential changes in hydrology, i.e. raised water levels, and impacts on the tire bale structure?

Yes, seismic evaluations of the site have been completed. Attachment 16. Northern Geotechnical Engineering, Inc. (NGE) has completed a seismic analysis showing the monofill structure can be constructed to be seismically stable with slopes as steep as 1.2H:1V using tire bales and geogrid. They also evaluated the shallower slope of 2H:1V slope used in the design for this project which will be more stable. See Attachment 16. The existing site is not vulnerable to significant impacts from a large earthquake due to topography, soil types or ground water. The ground water is below the relatively flat bottom of the monofill, so there are no saturated soils that could liquefy and the flat bottom does not have areas for material to slough to. The monofill is designed with setbacks keeping the monofill away from the ponds so even if a slope were to fail the waste material would not reach the ponds.

The AlaskChem Engineering report referenced in the response to #1 evaluates changes in hydrology and water levels in the area from the 1964 earthquake. While there were significant short term impacts to some wells in the general area, there were no long term changes attributable to the earthquake.
The Brailey Hydrologic Consultants, Groundwater Modeling Report for Anchorage Sand & Gravel was also reviewed, Attachment 20. The modeling performed for future mining activities adjacent to the proposed site does not show any long term adverse impacts to the proposed CMS site.

24. *"What is the fire preparedness plan for this site? What would the impacts from a fire and how would you address them?"*

See the Fire Risk section page 17 of 38 of the CUP application and the Operations plan Attachment 12. In the unlikely event of a fire heavy equipment on site can be used to expose a fire by digging it out or to place soil over a fire to starve it out. A pump and hose will be on site in the event of the need to pump water on a fire. A 10,000 gallon water storage tank is staged on site. All trucks, equipment and recycle facilities at the proposed site will be equipped with fire extinguishers.

The impacts of a fire on the monofill would be minimal. The monofill as designed has fire breaks around the sub cells that would keep a fire from spreading beyond a single sub cell within the site. As designed the monofill has more than 32 separate cells each of which will be constructed from multiple smaller sub cells. See Page A-7, A-8, A-9 drawings for cell layout and pages 28-30 for monofill construction plan.

The health hazards associated with a house or other building fire are far worse than a fire in the proposed monofill. Although the material in the monofill is generally used building material, the same as what you would find in a common building, the waste placed in the proposed monofill is inspected, screened and processed removing any flammable liquids, explosive materials, hazardous waste or other highly combustible materials that are common to a residence or commercial structure. The waste in this monofill is tightly compacted with very little oxygen or air movement which would burn slow allowing it to be extinguished before it spreads. A fire in this monofill would present much less risk than a normal structure fire where flammable liquids, ammunition, etc. could be present.

25. "Based on the application material and information in the February 7, 2014 Munter report, staff has determined that a Core Area Conditional Use Permit is required, per the requirements of MSB 17.61. Page 3 of 14 of Munter's report states in part "...it would be reasonable to assume that there will be a sufficient amount of waste accumulated to generate leachate that will exceed one or more drinking water Maximum Contaminant Levels." In addition the report states in part "...it is highly likely to result in measurable increases in contaminants beneath the facility and/or some distance down gradient." A Core Area Conditional Use Permit application form is attached for your use."

Based on our previous meetings with staff and analysis of the Code it was determined that the 17.61 Core Area Permit was not required. The proposed operation does not handle materials in regulated quantities over any of the thresholds listed in 17.61 that would trigger the requirement for a 17.61 application.

The Munter report makes unsubstantiated assumptions that contradict actual calculated data in the attached reports performed by subject experts. We fail to see where any of Munters opinions or assumptions trigger any MSB requirements of a Core Area Permit. The Maddox report and other expert opinions attached contradict Munter's assumption with calculated data showing no contaminated water runoff or other discharges that are likely to violate state water quality standards or negatively impact groundwater or surface water quality beyond adjacent property lines.

ADEC Solid Waste Program regulations and standards were developed specifically to, as stated in the ADEC mission statement, "Conserving, improving and protecting Alaska's natural resources and environment to enhance the health, safety, economic and social well-being of Alaskans." More specifically the mission statement for the ADEC, Solid Waste Program states: "We are committed to protecting public Health and the environment through ensuring effective solid waste management, which includes landfills, treatment systems, and solid waste storage facilities." The proposed recycle facility and monofill are designed to these standards and as evidenced by the attachments meets these standards. The Munter assumptions and apparent MSB position that this facility possesses a health risk contradicts an entire state agency, with a specific program, that is charged with regulating landfills and further contradicts the findings of four subject matter experts whose reports are attached.

17.61.100(B) Activities excluded from conditional use permit requirements under this chapter include: (7) building materials

If this determination was made based on Munters comments paragraph 2, page 12 of 14, then it should be disregarded. "In response to the question: Will the granting of the conditional use permit be harmful to the public health, safety, convenience and welfare?(page 1 of 3 of the MSB CUP application), the applicant answered "yes"." Munter is in error as that yes as entered in the form only signifies "yes" that an explanation is attached.

A 17.61 application would not be consistent with prior 17.60 CUPs that have been granted by the MSB and were discussed with MSB staff prior to submission. An example discussed was the Tri-Metal 17.60 CUP for a facility located off Knik Goose Bay Road, Attachment 19. This facility proposed to store and process scrap metals, building materials etc. This site, located along Knik Arm, adjoins the water. Similar health and safety concerns were raised during public comment at the CUP hearing and were not found to be sufficient grounds to trigger a 17.61 application. The Tri-Metal 17.60 CUP for a similar operation at a very environmentally sensitive site was granted without the conjecture and assumptions being made of the CMS application.

26. "Staff is currently researching whether or not the tire bale walls and monofill constitute a structure and are subject to the setback requirements in MSB 17.55 -Setbacks. We will forward our determination to you as soon as it is complete."

Per 17.55.004 Definitions "the following are not considered structures unless specifically addressed by code: fences; retaining walls..." The Tire Bales are used within the facility as retaining walls to reinforce slopes around the facility. Slope stability analysis of these retaining walls was performed and attached as Attachment 16. Per ADEC requirements waste material that makes up the monofill is maintained at a minimum of 50' setback from the property line.

The additional review, engineering and modeling performed by experts in this field and attached has determined that there will possibly be no Leachate generated let alone contaminated leachate leaving the site. Further the review found other similar monofill sites in Alaska that were monitored and had higher risk waste buried within that have not generated contaminated leachate. This supports the ADEC regulations that do not require ground water monitoring for an inert material monofill. For this reason CMS is removing the ground water monitoring program from our application. Please insert Attachment 17 as replacement to page 16 in our original CUP application package, also remove Attachment N. further, Attachment 5 replaces page A-2 and Attachment 7 replaces page A-8.

The MSB does not have building codes let alone landfill/monofill codes. The ADEC has developed the standards this facility has been designed to, based upon Alaska climatology and geology.

The proposed CMS recycle facility and monofill meets the MSB 17.60 requirements as shown on pages 31 thru 34 of our original CUP application and further supported with the multitude of pages of additional documents. Assertions made by the MSB consultant, Munter, about the health and safety impacts of the monofill are refuted with facts in the attached documents that show issuance of the CUP will not be harmful to public health and safety. For Munter to say that this monofill as designed and proposed is a health hazard is opinion, not fact based and contradicts without support ADEC/EPA regulations as well as established professional models.

The MSB operates a monofill designed and constructed to the same ADEC standards, but operated with much less control of the incoming waste than the proposed CMS facility. See Attachment 18 for a copy of the MSB Solid Waste permit, November 19, 2010 for the Central Landfill lined Municipal Waste Cell and unlined C&D cell. Assertions that the CMS facility will be a health hazard would mean the MSB facility is a health hazard which is not the case. The attached review by AlaskChem Engineering which includes the study of water test results from the MSB Central Landfill further substantiates the ADEC design standards are appropriate to this locale. The Central Landfill operated unlined Municipal Waste cells in the 80's and 90's which are now closed and still unlined. Recent groundwater monitoring of this site shows no concentrations exceeding groundwater protection standards.

Attached are reviews/responses from two Professional Engineers and two Professional Geologists considered experts in the respective fields and their substantial supporting data. Their conclusions include;

- "this monofill was designed to meet the established state and federal codes which were developed to protect both human health and the environment."
- "the proposed monofill will not pose a threat to the underlying aquifer."
- "In conclusion, the proposed monofill appears to be protective of groundwater sources if the monofill is constructed as modeled in the conceptual model."
- "the proposed monofill will not cause recognized adverse health impacts from contamination of groundwater."
- "The CMS system appears to be superior to other current C&D monofill systems for its ability to further reduce lifecycle health risks and enhance end use value."

The neighbors may not like the stigma associated with the waste and recycling business, but current design standards, state and federal regulations, conceptual models, engineering and historical data all show this CUP can be granted without adverse impacts to the public or environment.

The information needed for MSB staff to support our CUP application has been provided but may need further clarification for staff due to the technical nature of this information. This is a likely reason why the State of Alaska has a special program to manage solid waste so that every local agency does not

have to be an expert in the field. CMS respectfully requests a meeting with MSB staff and our subject matter experts to go through this information and address any further concerns you may have.

Hopefully, this response clarifies our CUP application and answers your questions. I can be reached by cell at 350-6062 or email shane@cei-alaska.com if any further questions exist.

Sincerely,

Shane Durand

Central Monofill Services, Inc.
Conditional Use Permit Application
Response to Request for Additional Information #1
Page 19

List of Attachments

Attachment Description	Attachment Number
Environmental Management Inc.	1
Maddox and Associates	2
TERRASAT, Inc. Munter review response Vadose Zone and Groundwater modeling	3
AlaskChem Engineering	4
Revised Drawings	
Site Plan Sheet A	5
Sheet 8 Drainage Plan	6
Figure 6 Monofill Cross Section	7
ADEC No Exposure Certificate	8
Hemlock Scientific Review	9
ADEC email on permit	10
ADEC Solid Waste Regulations 18 AAC 60	11
CMS Operations Plan	12
MSB Central Landfill Acceptable Waste Policy	13
MSB Construction and Demolition Material	14
Willis Certificate of Insurance	15
Northern Geotechnical Engineering Analysis	16
Amended CUP Pages	17
ADEC Solid Waste Permit for MSB Central Landfill	18
17.60 CUP application for Tri-Metal, 2011	19
Brailey Hydrological Consultants, Groundwater Modeling Report, AS&G Palmer Pit	20
Material Flow Diagram	21
Characterization of Building Related C&D	22

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ATTACHMENT 1

ENVIRONMENTAL MANAGEMENT INCORPORATED

Matanuska-Susitna Borough
Development Services

MAY 14 2014

Received

April 23, 2014

Shane Durand
Central Monofill Services
311 N. Sitka Street
Anchorage, AK 99501

RE: Central Monofill Services Conditional Use Permit Application, CMS Recycling Facility, Palmer, Alaska

Subj: Response to Matanuska-Susitna Borough's Request for More Information

This letter is in response to Matanuska-Susitna Borough's (MSB) request for more information dated February 13, 2014. In that letter they requested the issues raised in J.A. Munter Consulting, Inc.'s February 7, 2014, report be addressed. Mr. Munter raised a lot of concerns. I am responding as the engineer in responsible charge of the design of the monofill and so will address the concerns raised by Mr. Munter where I am most qualified to respond.

First off, I want to clearly state that this monofill was designed to meet the established state and federal codes which were developed to protect both human health and the environment. Mr. Munter developed a report that implies more stringent but unspecified standards are required, uses illogical arguments, and presents a strong bias and obstructionist attitude against the monofill. While he may have some valid points they are lost in the bias demonstrated throughout the report. The following comments address some of his issues in more detail.

In order to construct and manage landfills in a practical manner, the regulatory agencies have established specific design standards depending on the toxicity and potential hazards associated with the waste placed in the landfill. It is not reasonable or practical for a government to require all wastes be placed in a landfill that can safely contain all types of toxic and hazardous wastes. For example, because of the stringent standards required for landfills to safely dispose of hazardous waste, there are no RCRA Subtitle C hazardous waste landfills in the State of Alaska. As another example the municipal waste part of the Central Landfill is lined but the inert waste part is not lined. In my professional opinion, it is only appropriate to evaluate this landfill against the standards that are in place to regulate inert landfills. Mr. Munter seems to disagree with this approach to landfill design. He implies the current standards are not appropriate for inert waste disposal but does not offer any alternative standards to use. For example on page 6 he states, *"In this situation, if the MSB decides, after an appropriate decision-making process, that sulfate levels are important to local well owners, then it would not seem to make any difference what the USEPA thinks is suitable for public water systems."* Mr. Munter's statement implies that the established standards may not be acceptable or appropriate for the design of this monofill, and the implication is the Borough should not approve any inert monofill until appropriate standards are established by MSB or some developer designs a landfill to meet Mr. Munter's unknown and unspecified

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standards. The design and planned operations of this monofill have gone beyond the minimum regulatory requirements in order to provide a safe system to store inert wastes. It is interesting to note that while he states on page 2 of his report, "*At least 27 states now require groundwater monitoring from such landfills in increasing recognition of their potential to contaminate groundwater,*" Mr. Munter ignores Alaska's ground monitoring requirements. Alaska is often listed as one of states that require ground water monitoring, since they require ground water monitoring of inert landfills when there is significant rainfall in the area. I think his approach and wording in his review presents a strong negative bias towards the monofill.

Another example of an apparent bias is Mr. Munter's approach towards Mr. Maddox. Due to the Borough's previously expressed concerns about the Alaska established standards not being sufficient (for example the 10 foot of separation from the ground water to the monofill), Central Monofill Services (CMS) hired an expert in landfill design and assessment, to review my design for this monofill. They found Mr. Steve Maddox, a certified professional geologist and hydrogeologist with several years' experience doing assessments at more than 50 landfills. He was contracted to conduct an independent review of the design. Mr. Munter's report primarily focused on the Maddox and Associates, Inc. report which evaluated this submitted monofill design with respect to the potential impacts to the ground water. Mr. Munter's apparent bias against Mr. Maddox shows up on the first page of his report where he seems critical of Mr. Maddox for not doing a site visit from California as part of his review. While site visits can be helpful, Mr. Maddox's task was to review the available data. Mr. Maddox was not hired for his expertise in Alaska. I have been practicing environmental engineering in Alaska for over twenty years, and have completed designs on multiple landfills. Since the Alaska standards were placed in doubt, CMS thought it would be appropriate to have an expert with experiences at multiple landfills and in many regions of the country to review our design. Rather than complete an unbiased review of Mr. Maddox's findings, Mr. Munter tries to discredit him at the start.

His next point on the first page is another attempt to discredit Mr. Maddox by presenting an irrelevant argument. He raised a concern that the site conceptual model Mr. Maddox developed to help evaluate the landfill site, does not meet the Alaska Department of Environmental Conservations (ADEC) guidelines for developing a Conceptual Site Model (CSM) for evaluating contaminated sites. Conceptual models are commonly used by professionals throughout the engineering and science fields to help understand what is happening in a particular situation. The value of a site conceptual model is based on the use of sound modeling principals in developing and applying the results of the model. ADEC's CSM guidelines were developed for the specific purpose of helping ADEC project managers better understand the characteristics of a contaminated site. Mr. Munter's implication that Mr. Maddox's model is not valid because it does not follow ADEC's guidelines is totally unfounded. Either Mr. Munter has a personal agenda or he is not able to see the difference between two valid modeling paradigms. (Note Logic texts have a specific term for the practice of comparing two unrelated models and then subsequently tearing down one model (Maddox's SCM) against the concepts and regulations of the other (ADECs CSM). It is called a "Straw Man" argument. A fallacy that occurs when the arguer misinterprets an opponent's position for the purpose of more easily attacking it, demolishes the misinterpreted argument, and then proceeds to conclude that the original argument has been demolished. I don't know if Mr. Munter is intentionally using a "Straw Man" or if he is unaware of the

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details of what he is talking about.) Having presented this basic background describing my concern of Mr. Munter's apparent bias, I will go on to address some of the specific issues Mr. Munter has raised.

Use of the Terms Hazardous and Inert: Mr. Munter makes the point that there are multiple definitions of these terms depending on who is using them and in what context they are being used. I agree. For example, a mother with a 3-year old would likely consider a 2x4 with shape nails sticking out hazardous for her child to play with. While this might seem to be an absurd example of what might be considered hazardous when we are talking about construction debris, it makes the point that these terms need to be appropriately defined if we are going to use them in our design or in the review of the design. Without using a common definition of the terms, statements like Mr. Munter's on page 3: "*it is difficult for the Borough to know or be assured that all materials that are potentially hazardous are appropriately excluded*" are generalizations that have no valid practical meaning. There will be 2x4's with sharp nails in the in the waste. That fact that someone considers 2x4's with sharp nails as being potentially hazardous, does not mean that it is hazardous waste. To avoid confusion and since we are dealing with waste here, I think the most appropriate definitions of these terms come from the regulations that have been promulgated to ensure proper handling of waste.

The Alaska Statutes Sec. 46.03.900 has the following definition for hazardous waste:

(9) "hazardous waste" means a waste or combination of wastes that because of quantity, concentration, or physical, chemical, or infectious characteristics may

(A) cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible or incapacitating reversible illness; or

(B) pose a substantial present or potential hazard to human health or the environment when improperly managed, treated, stored, transported, or disposed of;

The federal regulations define hazardous waste in 40 CFR 261.3 by listing the specific criteria that should be used to determine if a waste is hazardous or not. The federal definition is specific enough that a waste can be evaluated against legal standards to determine if it is a hazardous waste or not and therefore is the most common legal definition used in the United States.

The Alaska definition is more vague and open to interpretation on what is considered "substantial." I think everyone will agree that a 2x4 with a sharp nail would not pose a "substantial" present or future hazard to human health and therefore should not be considered hazardous waste. However, in more complex situations a more specific definition is needed. The federal definition in the regulations more clearly defines specific characteristics of wastes that will be a substantial hazard to human health and the environment. The submitted operational procedures developed for this landfill as described in the submitted plan will prevent hazardous waste, as defined by the federal government, from being placed in the landfill.

Mr. Munter also has issues with use of the term inert. He says that the definition used by Mr. Maddox for "inert waste" is reasonable but then goes on to express concern with this definition. On page 2 he says that inert waste materials put in the landfill will eventually rot, decay, and leach, implying they are not inert. While this may or may not be a true statement, it is hard to dispute because of his use of the term eventually. It is hard for someone to predict what will happen to those materials in tens, hundreds or even thousands of years. Without significant levels of moisture in the landfill, the rate of rot and decay will be very slow. The landfill is designed to minimize the moisture levels in the material, so that the rate of decay and rot will be very slow and will not significantly impact any leachate, if there is any leachate at all that leaves the monofill. Many of the materials placed in the landfill will likely still be around hundreds of years from now in a similar form to what they were when originally placed in the monofill.

CRS Residual Material Sample Testing Results: Mr. Munter is incorrect on how to interpret the results of the testing that was completed on the residual material generated at the CRS processing facility. He implied that the results could be used to represent the leachate coming from the landfill and that this leachate could be directly, without any dilution, found in a drinking water well over 500 feet down gradient from the monofill. The implications he presented are very misleading.

We elected to use the Synthetic Precipitation Leaching Procedure (SPLP) to check for potential contaminates of concern from the waste. SPLP is a well-established testing procedure that is an EPA approved method to test wastes. Mr. Munter seemed concerned that this well established method has limits of quantification that are above EPA's Maximum Contaminant Levels (MCL) for drinking water. The method is not designed to test water for drinking standards. It is designed to identify contaminates that may be of potential concern in waste water. In some states these results can be compared to that state's risk based standards to see if the material can be left in the ground indefinitely without imposing a risk to human health and the environment. Alaska does not have any established standards to directly compare with the SPLP results, therefore the results should not be used in a direct comparison to any specific Alaska standard. As my earlier remarks suggested either Mr. Munter is not familiar with current industry standards and is unaware of this EPA approved testing procedure or he has a distinct agenda and is a biased reviewer. The University of Florida, conducted a study to determine the risk of metals leaching from the fine residue from C&D recycling operations similar to ones the CRS is running. In the study 46 SPLP tests were completed on samples from 13 different facilities. The conclusion of the SPLP testing in the study was that none of the results exceeded Florida's Risk Based water quality standards. (Townsend, 2004) Please note that the SPLP results in the study did exceed federal drinking water standards; however, SPLP results should not be compared directly to drinking water standards.

I am providing the following summary of the SPLP testing procedure to help everyone understand how to interpret those results. In order to maximize the leaching potential from the waste and hence identify compounds of potential concern, the SPLP procedure requires the waste be reduced in size to particles that are less than 1 cm. (Note that this is the same size reduction procedure that is required for the more common Toxic Characteristic Leaching

Procedure (TCLP) which is used to test materials to determine if they are hazardous.) For example, a small piece of demolition material that is 6"x2"x4" must be reduced in size to pieces smaller than 1 cm in any dimension. The exposed surface area of this material is increased by close to a 1000 times by this process, creating a significant increase in the rate of leaching. This material is then placed in a container of acidic water and agitated for 18 hours to further enhance any potential leaching that might occur. This water is then tested for various compounds of concern to see if any have leached out of the material and into the liquid. In other words, the SPLP test determines what compounds have a potential to leach in an acidic saturated environment that is being continually agitated. This landfill has been specifically designed so that the waste will never stay in a saturated condition, so it is unfounded and unrealistic to say the SPLP results would represent the leachate from the monofill.

He presents another unrealistic interpretation on page 3 when he says that if this artificially created leachate with a sulfate level of close to 600 mg/L appeared in a well, it would be a problem to that well owner. While this statement by itself is true, it also implies that this leachate could come from the monofill magically appearing in a drinking water well several feet away. I know of no way in the real world where a leachate could be transported by nature at full strength to a well more than 500 feet away. Mr. Munter appears to be comparing unrelated data and standards in an unscientific manner in order to influence uninformed readers.

Water Monitoring Plan : CMS provided a practical ground water monitoring plan to verify that the monofill is not impacting the ground water. The plan was developed using detection monitoring principles that are described in ASTM, EPA and ADEC documents. Mr. Munter raised several concerns about the plan, which may be valid if this was a municipal waste landfill. However, I am not sure if any monitoring plan for this landfill would satisfy him. Based on further review of the site specific conditions by the hydrologists, we have found the probability of creating a leachate that will impact the ground water is so low that ground water monitoring is not necessary. Therefore I recommend the submitted ground monitoring plan be withdrawn and not implemented.

Design of the Bottom of the Cells: Mr. Munter expressed concern that a seasonal high water table has not been established for the site. We have water level data from all four seasons with over 20 events covering April 24, 2013, to April 15, 2014. We plan to continue to collect water data, continually updating our data set. The bottom of the monofill cells will be established based on all of the water data we have collected up to the time of construction of that cell. The seasonal high water table shown on Figure 6 (page A-8 in application package) is based on all the water data collected through April 15, 2014. This will be used for final design for construction unless a higher water table is measured between now and the time of construction. By the time of construction we will have more than a full year of monitoring data available for review.

In conclusion, I find it interesting that Mr. Munter claims Mr. Maddox's conclusions are unfounded and then Mr. Munter makes some very illogical arguments to come to his own conclusions. For example, he first wants us to assume that (1) *"even small percentages of leachable wastes in the 2 million cubic yards of waste will result in measurable quantities of*

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contamination," in other words he is stating any leachate from the monofill will have measurable quantities of contamination. Mr. Munter than restates the initial assumption with more precise drinking water regulation wording that (2) *"there will be a sufficient amount of waste accumulated to generate leachate that will exceed one or more drinking water Maximum Contaminant Levels."* From these assumptions Mr. Munter makes a concluding assumptive prediction that (3) *"it is highly likely to result in measurable increase in contaminants beneath the facility."* and (4) *"for some distance down gradient."* Mr. Munter assumes 1 and 2 and predicts that 3 and 4 will follow. This is neither a sound argument nor a factual claim, just speculation. When the conclusion of an argument rests on an alleged chain reaction, and there is not sufficient evidence to necessitate the casual links in the argument the arguer is making a slippery slope fallacy -- a fallacy of unfounded induction.

I hope that my response to Mr. Munter's comments and the concerns of the MSB provide a better understanding of the final design criteria used for this inert waste monofill. I have shown the obstructionist and bias of Mr. Munter, through the use of his speculative arguments and in the techniques at which he employs them to further obfuscate the permit application review process. The health and safety concerns of the MSB are my concerns too. We have a vested interest in not allowing hazardous waste into the monofill and to design the monofill to meet the current regulatory standards.

Sincerely,
ENVIRONMENTAL MANAGEMENT, INC.

Larry Helgeson, P.E.
V.P., Consulting

Reference:
Timothy Townsend, Thabet Tolaymat, Kevin Leo, Jenna Jambeck, (Department of Environmental Engineering Sciences, University of Florida, P.O. Box 116450 Gainesville, FL 32611-6450) Heavy metals in recovered fines from construction and demolition debris recycling facilities in Florida, Science of the Total Environment 332 (2004) 1 – 11

Attached: Ground Water Level Data – CMS Palmer Monofill Site 4/15/14

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Ground Water Level Data - CMS Palmer Monofill Site

Location ID	Date	Ground Elevation (ft.)	Depth to Ground Water (ft)	Water Elevation [1]
MW #1	4/24/2013	98.3	6.3	92.0
MW #1	4/30/2013	98.3	6.3	92.0
MW #1	5/13/2013	98.3	6.0	92.3
MW #1	5/20/2013	98.3	6.0	92.2
MW #1	6/3/2013	98.3	6.0	92.3
MW #1	6/14/2013	98.3	6.3	92.0
MW #1	6/22/2013	98.3	6.4	91.9
MW #1	7/1/2013	98.3	6.3	91.9
MW #1	7/23/2013	98.3	6.4	91.9
MW #1	7/29/2013	98.3	6.3	91.9
MW #1	8/30/2013	98.3	6.1	92.2
MW #1	10/9/2013	98.3	6.0	92.3
MW #1	10/23/2013	98.3	6.0	92.2
MW #1	10/29/2013	98.3	5.9	92.3
MW #1	11/12/2013	98.3	6.0	92.3
MW #1	11/27/2013	98.3	6.1	92.2
MW #1	1/23/2014	98.3	5.2	93.1
MW #1	2/28/2014	98.3	6.0	92.2
MW #1	3/28/2014	98.3	6.0	92.2
MW #1	4/15/2014	98.3	6.0	92.2
MW #2	4/24/2013	111.4	26.9	84.5
MW #2	4/30/2013	111.4	26.9	84.5
MW #2	5/13/2013	111.4	26.8	84.7
MW #2	5/20/2013	111.4	26.8	84.6
MW #2	6/3/2013	111.4	26.7	84.7
MW #2	6/14/2013	111.4	26.8	84.6
MW #2	6/22/2013	111.4	26.9	84.6
MW #2	7/1/2013	111.4	26.9	84.5
MW #2	7/23/2013	111.4	26.9	84.5
MW #2	7/29/2013	111.4	26.9	84.5
MW #2	8/30/2013	111.4	26.7	84.7
MW #2	10/9/2013	111.4	26.5	84.9
MW #2	10/23/2013	111.4	26.5	84.9
MW #2	10/29/2013	111.4	26.5	84.9
MW #2	11/12/2013	111.4	26.4	85 0
MW #2	11/27/2013	111.4	26.5	84.9
MW #2	1/23/2014	111.4	26.4	85.0
MW #2	2/28/2014	111.4	26.5	85.0
MW #2	3/28/2014	111.4	26.5	84.9
MW #2	4/15/2014	111.4	26.6	84.9

Data collected by Environemtnal Manangement, Inc.

Ground Water Level Data - CMS Palmer Monofill Site

Location ID	Date	Ground Elevation (ft.)	Depth to Ground Water (ft)	Water Elevation [2]
MW #3	4/24/2013	112.9	37.5	75.4
MW #3	4/30/2013	112.9	37.6	75.2
MW #3	5/13/2013	112.9	37.3	75.6
MW #3	5/20/2013	112.9	37.3	75.5
MW #3	6/3/2013	112.9	37.2	75.7
MW #3	6/14/2013	112.9	36.9	75.9
MW #3	6/22/2013	112.9	36.9	75.9
MW #3	7/1/2013	112.9	36.9	76.0
MW #3	7/23/2013	112.9	36 9	76 0
MW #3	7/29/2013	112.9	36.9	76.0
MW #3	8/30/2013	112.9	37.0	75.9
MW #3	10/9/2013	112.9	37.0	75.8
MW #3	10/23/2013	112.9	37.0	75.8
MW #3	10/29/2013	112.9	37.0	75.8
MW #3	11/12/2013	112.9	37.1	75.8
MW #3	11/27/2013	112.9	37.1	75.8
MW #3	1/23/2014	112.9	37.1	75.8
MW #3	2/28/2014	112.9	37.0	75.9
MW #3	4/15/2014	112.9	36.9	75.9
MW #4	4/24/2013	110.6	26.3	84.3
MW #4	4/30/2013	110.6	26.3	84.3
MW #4	5/10/2013	110.6	26.1	84.5
MW #4	5/20/2013	110.6	26.2	84.3
MW #4	6/3/2013	110.6	26.1	84.5
MW #4	6/14/2013	110.6	26.1	84.5
MW #4	6/22/2013	110.6	26.2	84.4
MW #4	7/1/2013	110.6	26.2	84.4
MW #4	7/23/2013	110.6	26.4	84.2
MW #4	7/29/2013	110.6	26.4	84.2
MW #4	8/30/2013	110.6	26.4	84.2
MW #4	10/9/2013	110.6	26.1	84.5
MW #4	10/23/2013	110.6	26.2	84.4
MW #4	10/29/2013	110.6	26.1	84.5
MW #4	11/12/2013	110.6	26.1	84.5
MW #4	11/27/2013	110.6	26.1	84.5
MW #4	1/23/2014	110.6	26.0	84.6
MW #4	2/28/2014	110 6	25.9	84.7
MW #4	3/28/2014	110.6	25.9	84.6
MW #4	4/15/2014	110.6	26.0	84.6

Data collected by Environemtnal Manangement, Inc.

Ground Water Level Data - CMS Palmer Monofill Site

Location ID	Date	Ground Elevation (ft.)	Depth to Ground Water (ft)	Water Elevation [1]
MW #5	4/24/2013	102.9	16.9	86.0
MW #5	4/30/2013	102.9	16.8	86.1
MW #5	5/10/2013	102.9	16.6	86.3
MW #5	6/3/2013	102.9	16.2	86.7
MW #5	6/14/2013	102.9	16.3	86.5
MW #5	6/22/2013	102.9	16.5	86.3
MW #5	7/1/2013	102.9	16.8	86.1
MW #5	7/23/2013	102.9	17.1	85.7
MW #5	7/29/2013	102.9	17.3	85.5
MW #5	8/30/2013	102.9	17.5	85.4
MW #5	10/9/2013	102.9	17.1	85.8
MW #5	10/23/2013	102.9	17.1	85.7
MW #5	11/12/2013	102.9	17.0	85.8
MW #5	11/27/2013	102.9	17.0	85.8
MW #5	1/23/2014	102.9	16.8	86.1
MW #5	2/28/2014	102.9	16.4	86.4
MW #5	3/28/2014	102.9	16.5	86.4
MW #5	4/15/2014	102.9	16.5	86.4
MW #6	4/24/2013	94.5	8.8	85.7
MW #6	4/30/2013	94.5	8.8	85.8
MW #6	5/13/2013	94.5	8.4	86.2
MW #6	5/20/2013	94.5	8.2	86.4
MW #6	6/14/2013	94.5	8.3	86.3
MW #6	6/22/2013	94.5	8.5	86.1
MW #6	7/1/2013	94.5	8.7	85.8
MW #6	7/23/2013	94.5	9.0	85.5
MW #6	7/29/2013	94.5	9.3	85.3
MW #6	8/30/2013	94.5	9.4	85.2
MW #6	10/9/2013	94.5	9.1	85.5
MW #6	10/23/2013	94.5	9.1	85.5
MW #6	10/29/2013	94.5	9.0	85.5
MW #6	11/12/2013	94.5	9.0	85.6
MW #6	11/27/2013	94.5	9.0	85.6
MW #6	1/23/2014	94.5	8.7	85.8
MW #6	2/28/2014	94.5	8.4	86.2
MW #6	3/28/2014	94.5	8.4	86.1
MW #6	4/15/2014	94.5	8.4	86.1

Data collected by Environemtnal Manangement, Inc.

Ground Water Level Data - CMS Palmer Monofill Site

Location ID	Date	Ground Elevation (ft.)	Depth to Ground Water (ft)	Water Elevation [1]
MW #7	4/24/2013	97.0	5.1	91.8
MW #7	4/30/2013	97.0	5.1	91.9
MW #7	5/13/2013	97.0	5.0	92.0
MW #7	5/20/2013	97.0	5.0	92.0
MW #7	6/14/2013	97.0	5.1	91.9
MW #7	6/22/2013	97.0	5.1	91.9
MW #7	7/1/2013	97.0	5.1	91.9
MW #7	7/23/2013	97.0	5.1	91.9
MW #7	7/29/2013	97.0	5.0	92.0
MW #7	8/30/2013	97.0	4.9	92.1
MW #7	10/9/2013	97.0	4.7	92.2
MW #7	10/23/2013	97.0	4.8	92.2
MW #7	10/29/2013	97.0	4.7	92.2
MW #7	11/12/2013	97.0	4.7	92.2
MW #7	11/27/2013	97.0	4.8	92.2
MW #7	1/23/2014	97.0	4.6	92.4
MW #7	2/28/2014	97.0	4.6	92.4
MW #7	3/28/2014	97.0	4.6	92.3
MW #7	4/15/2014	97.0	4.7	92.3

Notes:

1. Elevations use the vertical datum NAVD 88, with an accuracy of +/-0.1 ft.

green shading — High water table in 7/1/13 Contour Map

blue shading — High water level since measurements started. Value will be used to determine the bottom of the cells.

Data collected by Environemtnal Manangement, Inc.

ATTACHMENT 2

MADDOX & ASSOCIATES
Geologists (RG, CEG, CHG)
Engineers
Environmental Services

Matanuska - Susitna Borough
Development Services
MAY 14 2014
Received

Property Transaction Screens
• ASTM E 1528
Environmental Site Assessments
• Phase I-ASTM E 1527
Subsurface Site Characterization
• Phase II
Landfill Investigations
• Landfill Gas
• Groundwater
Site Remediation-Soil/Groundwater
• Phase III
UST Management/Removal
Geotechnical & Geophysical Invest.

May 13, 2014

RESPONSE TO SELECTED PORTIONS OF THE J.A. MUNTER CONSULTING, INC. LETTER TO MS. SUSAN LEE, DATED FEBRUARY 7, 2014

The responses in this document will follow the section/page/paragraph structure used by James A. Munter (JAM) in his February 7, 2014 letter to Ms. Susan Lee, of the Planning Department of the Matanuska-Susitna Borough. This is difficult in some places, due to JAM's tendency to jump around and stray from the stated section/subject content.

Some of JAM's comments are not pertinent and there will be no response to them; additionally, some of JAM's comments will be the subject of response by others.

QUALIFYING STATEMENT BY MADDOX & ASSOCIATES:

The primary and most basic contention by James A. Munter Consulting, Inc. is that the proposed monofill will produce large volumes of hazardous leachate that will grossly contaminate the underlying aquifer. The response contained herein to JAM's extensive critique of the Maddox & Associates December 13, 2013 report addresses the bulk of JAM's criticisms, most of which are not of a significant magnitude. One single, major fact is extensively presented and documented herein--that is that the proposed monofill, near Palmer, Alaska is located in a semi-arid climate where the balance between the annual precipitation and the annual evaporation precludes the formation of any significant volume of leachate. Any minor volumes of leachate that may be produced in the monofill will not have the ability to cause a significant impact on the underlying aquifer. Modeling by Mr. Dan Young, of Terrasat Environmental, will be presented separately to substantiate this fact.

On February 18, 2014, Steve Maddox spoke to Ms. Lori Aldrich, of the ADEC, and asked her why the ADEC does not have any problem with the construction of the proposed Palmer monofill. Her primary response was that the monofill met all of ADEC's regulations and based upon the semi-arid climate and the local geology/hydrogeology, they do not expect the monofill to produce significant leachate, or possibly no leachate at all. A complete summary of this conversation is provided on pages 29, 30, and 31 of this document.

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PAGE 3 INTRODUCTION

JAM is concerned by the fact that M&A has not worked previously in Alaska. That is true. The simplest response to JAM's criticism is to point out that the majority of our work has been done in Southern California, where, although the temperatures are not similar, the annual precipitation is essentially the same. More to the point, the sediments in Southern California are very similar to those in the Palmer, Alaska area. The comparisons are as follows:

- Palmer sediments: Glacial outwash sediments composed primarily of sands and gravels, transported and laid down by running water (from melting glaciers).

- Southern California sediments: A large portion of the sediments found in Southern California are composed of sands and gravels, typically found in alluvial fans or alluviated lowlands, deposited by running water.

Additionally, M&A has also worked in the following areas containing glacial topography such as is found in the area of the proposed monofill:

- Michigan;
- Ohio;
- Illinois;
- Iowa;
- Washington.

M&A is well-experienced working in sedimentary deposits of all types. We are geologists. We do not need to be in a particular locale to have an effective appreciation and understanding of the nature of the rocks and sediments in that area. To-date, our professional opinion is that a site visit has not been necessary to properly evaluate and reach an understanding of the nature of the geology in the area of the proposed monofill.

SECTION 2.2 SITE CONCEPTUAL MODEL

A response to JAM's criticisms of M&A's Site Conceptual Model is not critical to the decision whether or not to allow construction of the proposed monofill. The sections that follow Section 2.2 are adequate to do so.

PAGE 4 LAST PARAGRAPH

JAM's critique of this portion of the M&A document covers approximately two pages, so each of his pertinent paragraphs will be the subject of our response.

Paragraph 1:

This comparison to other monofills does not take into account that CRS actively removes large quantities of drywall from the waste stream for recycling. It is our understanding that drywall is recycled into soil amendment or animal bedding and used at local farms,. This changes the waste composition from historical monofills that may have had elevated sulfate levels.

At landfills that do not initially remove the drywall from the waste stream, it is true that drywall will decompose if placed in a subsurface landfill environment where significant volumes of water can percolate through it, resulting in the liberation of sulfate. However, as described in considerable detail later in the present document, no significant water will be available to percolate through the inert refuse, nor to "pond" at any level within the refuse mass. Therefore, drywall, if it were to be present in the waste stream at the proposed Palmer monofill, would not degrade and potentially impact the aquifer.

Paragraph 2:

Other constituents that will comprise the inert materials to be deposited with the proposed monofill would leach-out some constituents if subjected to a significant volume of infiltrating or ponding water, but such volumes of percolating water will not be present in the proposed monofill. Other states have significantly different climate and geology fro the proposed site, making additional monitoring necessary. As has been shown, it is not a state or federal regulatory requirement at the proposed site. Based upon the engineering procedures performed particular to this proposed site, it is not necessary.

Paragraph 3:

JAM refers to the study conducted for the USEPA by ICF, Inc. in 1995 in which they conclude that there are a total of seven constituents found in inert landfills that are "problematic". He states that a total of 11 C&D landfills were used in the study--in actuality, they used a total of 21 C&D landfills for their study. Munter lists the following contaminants that the USEPA found to be problematic:

- iron;
- manganese;
- total dissolved solids;
- other metals (additional metals on the USEPA list were cadmium and lead);
- organic compounds (organic compounds on the USEPA list were 2,2-Dichloroethane and Methylene chloride).

Munter also included the following constituents as being considered problematic by the EPA, but they actually were not included in the EPA's list of problematic contaminants:

- sulfate (this was not on the USEPA list);

- arsenic (not on the USEPA list);

Clearly, JAM did not read the USEPA document carefully.

It should also be noted that iron, manganese, and other metals that have been found to be problematic are typical to appliances and other metals that, in the past, and at other sites, have been buried. The proposed monofill is taking in post recycling waste; this waste has been processed to remove metals, appliances, etc. for their commodity value. It would, therefore, be reasonable to expect much lower concentrations of these materials in the inert materials to be deposited in the proposed monofill.

Paragraph 4:

JAM refers to the study by the state of Ohio EPA (June 12, 2009). He points out that in their study they found some inert landfill leachates that contained contaminants that would violate Ohio discharge limits to groundwater and surface water from organic compounds, metals, and inorganic compounds. They state that their study indicates that both municipal solid waste (MSW) and inert waste (C&DD) may produce leachates that are a threat to human health.

The Ohio EPA goes on to state that the degree of risk associated with the threat from a release of either type of leachate is dependent upon:

How the material in the landfill was disposed-

It is not clear precisely what this means, but M&A takes it to mean the nature of the materials disposed in the monofill. As stated in the Operations Plan for the proposed monofill (and on page 6 of the M&A report dated December 13, 2013), the product to be disposed is the by-product of the CRS recycling facility in Anchorage, Alaska. The material brought to the CRS will be both manually and mechanically sorted, screened, and processed through to ensure that the material is free of hazardous material, and putrescible material and/or liquids. The materials will be shredded and these inert products will be placed in a trailer and hauled to the monofill in Palmer. Thus, every effort is made to ensure that no materials that may produce a harmful leachate will be present in the monofill.

The location of the landfill-

The proposed monofill will be located in an area of relatively low precipitation, with the base of the refuse a minimum of 10-feet above the seasonal high water table.

Site conditions-

The monofill will be located in a semi-arid environment, where the annual precipitation and annual evaporation are essentially equal. Under these climatic conditions,

particularly when precipitation is less than 15.75-inches per year (described later in this document), leachate is not formed in a landfill.

Operations-

The operational procedures are described, in detail, in the Operations Plan contained in the CUP application, but the following is a general summary of the way the monofill will be operated:

The inert material will be placed to fill the natural and manmade dry voids of the property and take advantage of all the onsite features such as existing material berms and valleys.

Before any waste material is placed in the monofill, the bottom layer of the cells will be established using groundwater information. The bottom cell will be located a minimum of 10 feet above the established seasonal high-water levels.

A total of 10 main cells main will be constructed over the life of the monofill; the cells will be identified as A through I. The first cell to be constructed will be Cell A or B, with the rest of the cells being constructed in the order which best facilitates progress of the filling operations.

After each cell lift is filled completely, a bulldozer will spread 6"-12" of excess soil, strippings, and non-organic overburden on top of the cell's inert debris, creating a fire barrier.

As the top sections of the monofill are completed to final height, 24-inches of native or imported soil will be spread over the top to serve as a final cap and to allow the re-establishment of vegetation on the site within a reasonable period of time.

Slopes will be established as the monofill is constructed to maintain structural stability of the filled materials and to establish the necessary surface drainage to divert as much surface water as possible off of the monofill surface and thus minimize the amount of potential infiltration of water into the inert debris. The slopes will be 2:1 at their steepest when reinforced with tire bales, and 3:1 or less everywhere else. These are slopes of significant grade:

- 2:1 = 50% grade
- 3:1 = 33% grade

Where present, such grades will greatly facilitate the flow of water from the monofill surface, thus significantly reducing the amount of infiltration into the refuse.

Alaska State requirements are met for inert landfill with respect to the following:

- Minimum separation from water table of 10 feet
- No liner required

Leachate Management-

As described, in detail, in a later section of this document, based upon the location and climatic conditions in the area of the proposed monofill, the formation of leachate is unlikely and not anticipated. Therefore, it is doubtful that leachate management will be required.

Closure-

The landfill will be closed per ADEC regulations. Their closure regulations are more than adequate to insure successful closure.

Post Closure Care-

The CUP application discusses, in detail, the more than adequate post closure care that will be provided for the monofill.

Circumstances surrounding the site, which often change over time-

The procedures that will be followed during landfilling operations and those to be followed after site closure are described in the CUP application.

***EXAMPLE OF A STUDY OF LEACHATE PRODUCED BY LAND-DISPOSED RESIDENTIAL WASTE**

The Journal of Environmental Engineering (2002) conducted a study of the nature of leachate produced from residential construction waste. The procedure and results were as follows:

Four test-cells were excavated, lined, and filled with solid waste from C&D activities. Leachate samples were collected and analyzed for a number of water quality parameters over a 6-month period. No volatile or semi-volatile organic compounds were detected at elevated constituent levels in the leachate. Inorganic ions were found to account for the bulk of the pollutant mass leached. Calcium and sulfate were the predominant ions in the leachate, resulting from the dissolution of gypsum drywall. The concentrations of several leachate constituents were found to exceed water quality standards. These constituents included aluminum, arsenic, calcium, manganese, iron, sulfate, and TDS. Arsenic was the only primary MCL exceeded. The arsenic was concluded to be from chromated copper arsenate (CCA) treated wood. The potential risk of impacting groundwater was examined by comparing the measured constituent concentrations with the water quality standards to assess the amount of dilution and attenuation needed in the groundwater so that water quality standards would not be exceeded. The water quality standards exceed by the greatest magnitude as manganese, followed by iron.

It is apparent that unless C&D materials are not screened carefully, as was apparently the case in the Ohio EPA study, typical C&D materials GENERALLY do not produce

harmful leachates. The arsenic detected, was in this test, from treated wood that was not excluded from the test inert refuse.

PARAGRAPH 5

JAM states that many of the wastes proposed for the monofill, including wood, drywall, carpet, and probably tire bales are not geologically stable in the Palmer area; waste breakdown will inevitably result in dissolution and entrainment of waste constituents in leachate if water flows through the waste.

As stated above, leachate is not likely to be generated in the monofill. The lack of the large volumes of percolating water which, if present, would accomplish JAM's envisioned dissolution and entrainment of waste constituents, is described in our response to his critique of Section 7.2, pages 17-20 contained later in this document.

PARAGRAPHS 6 THROUGH 10

JAM repeatedly comes back to his assertion that the inert waste contained in the proposed monofill will be infiltrated by LARGE VOLUMES of precipitation, thus leaching large amounts of hazardous materials from the INERT waste. Please refer to a later section in this document, SECTION 7.2 PAGES 17-20 for a refutation of this contention. JAM's assertions are not supported by the evaluation/analyses performed.

PAGE 5 PARAGRAPH 2

ADEC regulations for inert landfills require a minimum distance of 10-feet between the bottom of the refuse and the recorded historic high water table. The on-site groundwater monitoring wells were installed in April 2013. The initial water levels were measured on 4/24/13, with the most recent round of measurements conducted on 1/23/14. It is a fact that there are not multiple years of data available to determine the historical high groundwater elevations within the subject site, but nine months of data have been collected to date. It is significant that, for the three wells that lie under the footprint of the proposed monofill (MW#2--MW#4), which can be utilized to indicate the depth to water beneath the refuse, the minimum depth to water of 25.99 feet was recorded in well MW#4 (1/23/14). The greatest depth to water recorded occurred on April30, 2013 in MW#3 (37.61 feet).

It is also significant to note that higher than normal precipitation occurred in the years 2011, 2012 and 2013 (**Appendix A**). Based upon this fact, it is reasonable to rely on the historical recorded site groundwater levels to determine historical high groundwater levels beneath the proposed monofill site.

PAGE 5 PARAGRAPH 3

JAM states that even though Secondary MCLs are only suggested levels and are not enforceable, this fact is misleading. He cites, as an example, the compound sulfate and

its possible effects on local residents and, particularly on their visitors whom may be negatively affected by excess sulfate in drinking water supplied by their hosts.

The levels of sulfate detected in the three samples of shredded typical inert materials that were subject to leaching ranged from 520 mg/L to 673 mg/L. JAM states that, at levels above 600 mg/L, sulfate in drinking water will cause laxative effects and impart a noticeable taste to the water. It should be noted that the SPLP leaching method used by SGS Laboratories to perform the leaching tests on the shredded monofill materials utilized the addition of a measured volume of a solution of acetic acid and water which, of necessity, was held in contact with the inert refuse materials for a specified period of time to attempt to leach out any soluble constituents. These concentrations will never be produced under the natural conditions that are present in the subsurface landfill environment for the following reasons:

- Acidic conditions similar to those prepared in the solutions used in the SPLP leaching procedure will not be present in the monofill environment;
- Based upon the lack of available percolating water due to the equality of the precipitation/evaporation balance, the inert refuse will not be subjected to saturation and, thus, significant leaching.
- No liner will be present at the bottom of the refuse to impede and pond any liquids that, by chance, may pass through the refuse.

The World Health Organization (WHO) published a background document in 2004 for development of WHO "Guidelines for Drinking Water Quality". They stated that cathartic effects are commonly reported by people consuming drinking-water containing sulfate concentrations exceeding 600 mg/L. The also stated that it is reported that humans can adapt to higher concentrations with time (USEPA, 1985).

The WHO document reports that there are sub-populations that may be more sensitive to the cathartic effects of exposure to high concentrations of sulfate. Children, transients, and the elderly are such populations because of the potentially high risk of dehydration from diarrhea that may be produced by high levels of sulfate in drinking water (USEPA, 1999 a,b).

In a field study that was carried out to examine the risks for diarrhea in infants exposed to tap water containing sulfate with a median concentration of 264 mg/L and a range up to 2,787 mg/L, compared with the risks for those not using tap water or using low-sulfate tap water, there was no significant association between sulfate ingestion and the incidence of diarrhea for the range of concentrations studied (USEPA, 1998 a).

The WHO stated that review of the literature and a study to experimentally determine a sulfate dose that would induce effects in adults concluded that it was not possible to set a health-based standard for sulfate in drinking water and this confirmed the conclusions of other workers such as Backer (2000) and Backer, et. al. (2001). They concluded that existing data do not identify a level of sulfate in drinking water that is likely to cause adverse human health effects.

Mr. Dan Young has conducted vadose zone modeling to predict the likelihood of increased concentrations of sulfate entering the groundwater beneath the proposed monofill. His conclusions were that there will be no significant increase in sulfate concentrations entering the groundwater and none beyond the monofill boundaries. His modeling result will be submitted separately.

PAGE 5 PARAGRAPH 5

JAM again states that M&A's conclusion that "it is not likely that a significant volume of liquids will pass through the monofill bottom into the water table" is not considered reliable. This position is refuted in M&A's response to JAM's critique of Section 7.2, pages 17-20 of M&A's December 13, 2013 report, contained later in the present response document. Briefly, the Palmer site is located in a semi-arid climate, with an annual volume of precipitation that is essentially matched by the annual volume of evaporation. Numerous investigators (references contained at the end of this document) have studied the production of leachate in landfills located in semi-arid climates and have concluded, that, generally, when the annual precipitation is less than 15.75-inches no leachate is produced--some authors use the figure of approximately 19-inches as the cutoff value. The average annual precipitation rate measured at the Matanuska AES (since 1917) indicates that the annul precipitation in the area of the proposed monofill is approximately 15-inches.

PAGE 5 PARAGRAPH 6

JAM stated that he did not find any evidence that groundwater modeling results were used to determine the proper location of "guard wells" downgradient of the monofill. One year of groundwater monitoring will be conducted in the existing on-site wells in order to collect sufficient data to determine if it will be necessary to construct down gradient guard wells.

The groundwater monitoring wells that have been constructed at the site were installed to:

- Determine the depth to groundwater beneath the base of the refuse in the proposed monofill in order to meet the ADEC requirement to maintain a 10-foot buffer zone between the refuse and the water table;
- Collect data for modeling.

Modeling results have indicated that there will be no contaminant plume extending down gradient from the landfill mass. Therefore, it is not expected that additional down gradient wells will be required.

PAGE 6 PARAGRAPH 1

JAM's comments are not valid. The Site Conceptual Model section in the M&A report dated December 13, 2013 contains data pertinent to the conclusions developed following an extensive evaluation of conditions at the site and adjacent areas. Those conclusions indicated that, as the result of the relative precipitation/evaporation balance, no leachate would be produced. As such, there are no pathways that are likely to impact human health.

PAGE 7 PARAGRAPH 2

Landfill regulations do not typically list the large numbers of materials that are allowed, but just those that are prohibited. If, at some future time, the ADEC lists additional materials that are prohibited, or limits materials that are allowed, the CMS acceptance criteria will be modified accordingly.

PAGE 7 PARAGRAPH 4

Others will respond to JAM's critique.

PAGE 7 PARAGRAPH 9

JAM's critique appears to state that the grade of the final monofill cap of 2% to 3%, which is certainly not a steep surface, and will be conducive to groundwater recharge and downward percolation of precipitation through the refuse. This is a simple concept and incorrect.

It is incorrect particularly at landfills located in a semi-arid climate. In *"Guidance Note on Leachate Management for Municipal Solid Waste Landfills"*, by The International Bank for Reconstruction and Development/World Bank (1999), the amount of leachate produced in semi-arid climates and the geometry and progressive evolution of a landfill during filling is described.

The World Bank publication evaluates the potential for production of leachate as follows:

Leachate is generated primarily from precipitation and thus is principally influenced by climatic conditions such as rain and respiration. In arid climates, virtually no excess leachate occurs; in semi-arid areas, leachate may be generated irregularly or only at certain times of the year. For arid and semi-arid areas, the quantity of leachate generated may be insignificant and may have no unacceptable impact on the environment; therefore, leachate management may be limited.

Also, the quantity of leachate generated varies significantly from open cells to closed cells. Therefore, the evolution of leachate quantity throughout the lifetime (i.e., from the first cell to the final cover of the entire disposal area) of the landfill should be reflected in leachate quantity estimates.

As cells are completed and there is no working face, infiltration will decrease significantly. So, as each cell is completed, and the vegetative cover established, the volume of infiltration will be significantly reduced. As vegetative cover is added, most precipitation will evaporate. On page 20, it states, "A final top cover may be used to control the volume of leachate generated. A simple top cover with vegetation will reduce infiltration through evaporation."

As the landfill expands and more cells are completed with the final vegetative cover, the volume of infiltration will be reduced. The volume of potential infiltration will be very low to begin with, and will be further reduced as the landfill evolves, CELL BY CELL.

The conclusions of the World Bank study are applicable to the Palmer site, based upon the semi-arid climate and the mechanics of the monofill construction.

PAGE 10 PARAGRAPH 1

JAM states that, "This section does not address changes in water levels caused by gravel mining." He appears to have missed Section 6.2, on page 11, that discusses, in detail, the conclusions of his April 2010 report for the Matanuska-Susitna Borough titled "*Potential Hydrologic Effects of Gravel Extraction South of Palmer, Alaska*". In that report he concludes that gravel mining close to the proposed monofill site could have the effect of lowering the water table several feet over an extended area. The monofill site will lie within the area of projected water table decline. If JAM is correct, the lowering of the water table would aid in maintaining the 10-foot minimum separation required for the monofill by the ADEC.

PAGE 13 PARAGRAPH 5

Section 6.3 of the M&A report dated December 13, 2013 titled "Water Quality in the Ponds Located Within the Site" contains data to indicate that the relative lack of contamination in the ponds supports the fact that the site has not been contaminated by the previous industrial activities conducted at the site. The ponds are directly connected to the groundwater beneath the site, with groundwater flowing into them from the up gradient direction and out of them in the down gradient direction. They are, in effect, windows into the groundwater beneath the site. Based upon the southwesterly direction of groundwater flow, any areas of contaminated soil present in the northern 2/3 of the property should be reflected in poor water quality in the ponds.

The contents of this section of the M&A report are not critical to approval of the CUP application for the monofill construction. JAM's inclusion of this section in his critique was not critical to approval of the CUP application.

PAGE 14 PARAGRAPH 2

Please see the EMI response attached for an explanation of the SPLP testing.

PAGE 14 PARAGRAPH 3

Please see the EMI response attached for an explanation of the SPLP testing.

PAGE 15 PARAGRAPH 1

JAM's criticisms of Secondary MCLs have been previously addressed in this document; the potential effects of sulfate in drinking water have also been addressed in this response.

SECTION 7.1.1 PAGES 15-17

JAM refers to studies by the Ohio EPA, the USEPA, and the State of Wyoming, each of which were discussed in the M&A report of December 13, 2013. He particularly refers to the Ohio EPA study that states that C&D leachate is not expected to meet water quality standards for discharge to groundwater. He states that, "The take-away messages from these three studies seem to be that C&D leachate should be considered a pollutant, this pollutant should be expected from C&D landfills that generate leachate (repeat?), and that good management practices can be helpful in reducing the impact of the leachate."

The potential for the generation of leachates containing hazardous substances from inert landfills is directly dependent upon the effectiveness of the screening that is done prior to landfilling of the materials. This is one of the conclusions of the Ohio EPA report in their statement that "good management practices" are necessary to reduce the impact of leachate. Central Monofill Services has a very efficient screening process to remove all hazardous materials prior to accepting them for landfilling. This screening process is described in detail in their Operations Plan contained in their CUP application. This process was described in M&A's December 13, 2013 report. The concerted effort to screen-out all hazardous materials from the refuse accepted for landfilling reduces, to the greatest extent possible, the possibility of materials being landfilled that could produce leachate of harmful composition. However, as shown by the fact that the proposed site is located in a semi-rid climate, and the relative balance between the annual precipitation/evaporation volume, there will not be enough infiltration to produce leachate.

The position adopted by the ADEC is that, based upon all of the site factors, including material screening and the lack of leachate production in semi-arid climates (annual precipitation/annual evaporation approximately equal), the proposed monofill, in its present design, will not pose a threat to public health.

The National Demolition Association document titled *"Demolition Contractors Manage and Dispose of Waste Responsibly"* (February 1995), contains data that indicate that

many landfills that are presently labeled as "inert landfills" are actually sites that, prior to being converted to inert waste disposal sites, were municipal solid waste disposal sites. They point out that, in many instances, it is difficult for researchers to discover this fact when compiling leachate-composition data. Therefore, leachate-quality data for many inert landfills may be biased toward hazardous compositions.

Of primary importance is the fact that, as described later in this document, little or no hazardous leachate will be produced by the proposed monofill. Modeling completed by others will be submitted to substantiate this fact.

SECTION 7.2, PAGES 17-20:

- Page 17/paragraph 6: JAM states that Maddox & Associates, Inc. (M&A) incorrectly used the term rainfall to represent all of the liquid that has the potential to infiltrate into the subsurface at the proposed monofill site. In the initial sentence of paragraph 6, the term "precipitation" is used and the follow-up use of the term "rainfall" should be understood as "precipitation". M&A, being a Southern California firm, does not typically get involved with differentiating between the two terms. However, on November 26, 2013 M&A spoke to Mr. Rick Thoman, Climate Sciences & Services Manager of the National Oceanic and Atmospheric Administration (NOAA), at the NOAA National Weather Service Alaska Region Forecast Office (907-458-3716). Mr. Thoman explained that, "Precipitation is the total of rainfall plus the melted snow that hits the ground and is available for potential infiltration or runoff." Runoff of precipitation is an important factor in the reduction of infiltration. It is facilitated by such factors as composition of cover materials, compaction of materials, and slope, among others.

  M&A also called and spoke to a supervisor at the Alaska Department of Transportation and Public Facilities, Mr. Jack Stickle (907-209-0240), and asked for a definition of the term "precipitation" with regard to rainfall and snow. Mr. Stickle essentially replied as had Mr. Thoman.

  Thus, M&A, does, indeed, understand the whole meaning of "precipitation", and in every portion of the M&A report dated December 13, 2013 that was the implied meaning of the words in question.

In response to the remainder of JAM's comments pertaining to Section 7, pages 17-20, the following section contains a discussion of the potential for infiltration of precipitation at the proposed monofill site, expanded beyond that contained in the M&A report dated December 13, 2013.

POTENTIAL FOR INFILTRATION OF PRECIPITATION INTO THE SUBSURFACE AND PRODUCTION OF LEACHATE AT THE PROPOSED MONOFILL SITE:

Semi-Arid Climate and Potential for Leachate Production:

The area of the proposed monofill, near Palmer, Alaska, is located in a semi-arid climate. The climate of an area is a primary factor which determines the amount of leachate produced in a landfill or monofill.

The production of leachate in a landfill is governed by two primary factors:

- The annual precipitation;
- The amount of annual evaporation and evapotranspiration.

The net difference between annual precipitation and annual evapotranspiration is the amount of water left over, and available for possible infiltration through the refuse--this water has the potential to become leachate. This general calculation is called the water balance. When the two factors are close in value, the potential for the production of leachate is low.

The annual precipitation in the area of the proposed monofill is stated by some to be just short of 15.0 inches per year, and some values given are just over 15.0-inches per year. M&A utilized annual precipitation data from the Matanuska AES Weather Station, operated by the Alaska Climate Research Center, which determined an annual precipitation rate of 15.32-inches over the period 7/4/1917 through 12/31/2005. This is the value selected for our calculations for the proposed monofill site. The table from the Matanuska AES Weather Station is contained in **Appendix B.**

According to Green, Bertetti, and Hernandez (2012) a semi-arid climate is defined as one having an average annual precipitation of less than 50 cm/year (19.7 inches). They state that "recharge approaches zero when precipitation decreases below about 43 cm/year (16.9 inches)".

As stated above, the site of the proposed monofill, near Palmer, Alaska is located in a semi-arid climate, with an annual precipitation of approximately 15.32-inches per year.

Aljaradin and Perrson (2012) state that, "For climates where annual precipitation is less than 400 mm (15.75-inches), virtually all precipitation is evapotranspirated. In cases where no significant leachate is produced, it may be possible to relax the standards required for the design of a landfill by omitting the leachate collection system and under-liner."

Data provided by Aljaradin and Perrson indicate that in climates with an annual precipitation rate of approximately 15.0-inches per year, such as at the Palmer monofill location, the production of leachate is unlikely.

Johannessen (1999) states that, "Non-control of the potential release of leachate may be applied to inert waste landfills (i.e., for construction waste or soil) and to MSW landfills in arid climates."

In Johannessen's paper, which was prepared and published by The World Bank, he further states that in semi-arid areas, leachate may be generated irregularly or only at certain times of the year. He also states that, "For arid and semi-arid areas, the quantity of leachate generated may be insignificant and may have no unacceptable impact on the environment; therefore, leachate management may be limited."

Johannessen points out that the quantity of leachate generated varies significantly from open cells to closed cells. Therefore, the evolution of leachate quantity throughout the lifetime (i.e., from the first cell to the final cover of the entire disposal area) of the landfill should be reflected in leachate quantity estimates.

The most vulnerable portion of the monofill at any one time is the "working face" the area within a cell where active filling is taking place and heavy equipment is compacting and covering the refuse; in the instance of the proposed monofill the working face would typically cover an area of approximately 120 feet by 50 feet. As cells are completed and there is no working face, the potential for infiltration will decrease significantly. Stoller states that, "In humid regions, keeping water received as precipitation from reaching interred wastes can be a formidable problem, but in arid or semi-arid areas, a natural ecosystem analogue provides a simple and elegant solution. Because the potential to evaporate water far exceeds the amount of water received as precipitation, many arid (and semi-arid) land ecosystems return all of the water received to the atmosphere via evapotranspiration. The soil serves as a reservoir, temporarily storing precipitation that is not immediately evaporated. In turn, plants extract that water from the soil and return it to the atmosphere.

With the establishment of a vegetative cover as each cell is completed and the monofill expands, the volume of infiltration will be significantly reduced. The development of a vegetative cover will result in increased evaporation (evapotranspiration) and the minimal (to none) infiltration that may be present to begin with will be reduced to essentially nothing as the landfill evolves, cell by cell. The valley floor is naturally wooded by white spruce, birch, and aspen on the better drained and sandy soils, while the ground cover consists of ferns, currants, high-and low-brush cranberries, wild rose, horsetail, blue-top, and dwarf dogwood. Establishment of the native ground cover flora on the final cap of each cell would result in increased evaporation, and thus, reduced potential for infiltration.

EXAMPLE: The Effect of Rainfall V/S Evaporation on the production of Leachate at Three Landfills Located in Various Climates

Peirce, Weiner, and Vesilind (1997) state that the amount of leachate produced by a landfill is difficult to predict. They state that the only available method is water balance. The water entering a landfill must equal the water flowing out of the landfill--the leachate. They calculated the water balance for three landfills, located in Cincinnati, Orlando, and Los Angeles. As a result, they stated that, clearly, Los Angeles landfills may virtually never produce leachate, while the other two produced a significant amount of leachate. The following table is reproduced from page 171:

Table 13-2. Percolation in Three Landfills

Percolation Location	Precipitation P (in.)	Runoff Coefficient R	Evapotranspiration E (in.)	*Total Percolation (in.)
Cincinnati	40.35	0.15	22.36	8.39
Orlando	52.83	0.07	46.14	2.76
Los Angeles	14.88	0.12	13.15	0

*total percolation is defined by the authors as the amount of leachate produced.

It is very significant to note that, even though the annual precipitation in Orlando is approximately 24% higher than that in Cincinnati, the amount of leachate produced by the Cincinnati landfill is three times that produced in the Orlando landfill--this is due to the much greater amount of evapotranspiration that occurs in the Orlando area. The total annual precipitation in an area is not the only important factor that determines the amount of leachate produced in a landfill--evapotranspiration is of equal importance.

It is also significant that, for Los Angeles, the precipitation and the evapotranspiration are very close in value, and thus there is no production of leachate. Los Angeles is located in a semi-arid climate, with an annual precipitation value (14.88-inches) very similar to that of the Palmer area. As stated above, the annual precipitation in Palmer is approximately 15.32-inches, and so both are located in semi-arid climates. As in the case of Los Angeles, the value of the annual precipitation and evapotranspiration in Palmer are similar in magnitude:

- Palmer area annual precipitation: 15.32-inches
- Palmer area annual evapotranspiration: 13.968-inches

Case Study of a Landfill Located in a Semi-Arid Climate: Palos Verdes Landfill, Los Angeles, California:

The data presented in this section is taken from, "Remedial Investigation Report Palos Verdes Landfill, Volume I", prepared for Department of Toxic substances Control Cal/EPA by Sanitation Districts of Los Angeles County, June 1995.

The Palos Verdes Landfill (PVLF)is located in the south-central portion of Los Angeles County, on the Palos Verdes Peninsula. The total landfilled area is 173-acres.

Site History:

The landfill is located at the site of old mining and quarrying operations. The materials mined were sand and gravel and diatomaceous earth. Landfilling operations were conducted from May 1957 through December 1980. The landfill was closed in 1981.

Groundwater Contaminant Transport Modeling:

The objective of the groundwater contaminant transport modeling, described in Appendix E.1.3 of the report, was to develop an analytical tool based on the geologic conditions around the PVLF such that the current and future concentrations of chemicals in groundwater could be reasonably estimated and then used for a baseline health risk assessment. To provide technical support for the risk assessment, hydrogeologic modeling was conducted to simulate the groundwater flow, and contaminant transport modeling was conducted to simulate movement of chemicals between the landfill and potential receptors and to estimate concentrations of chemicals in groundwater at those points.

Because of the complex geologic conditions at the PVLF, simplifying assumptions were necessary to facilitate mathematical solutions of the transport equations. The assumptions made in the development of the groundwater transport model, however, were designed to result in the development of modeled chemicals such that the model could be used to evaluate health risks associated with the groundwater transport pathway based on the maximum expected concentrations. For example, the actual field groundwater monitoring data (discussed in section 3.6 of the report) did not detect any leachate formation and release from the PVLF. But the contaminant transport model constructed assumed continuous release of all modeled water quality parameters and used the information as an initial condition for long term predictive analysis. The purpose of the unrealistic assumption was to investigate the health risk associated with the worst case scenario of groundwater contamination.

The program used to conduct the modeling as called "Hydrologic Evaluation of Landfill Performance (HELP)". The following table from Appendix E.1.3 contains the average monthly precipitation at the landfill over the period 1939--1990:

Table E.1.2 (1939–1990)

Month	Average Precipitation (inches)
January	3.30
February	2.94
March	2.24
April	1.12
May	0.16
June	0.03
July	0.00
August	0.08
September	0.22
October	0.40
November	1.91
December	2.28
Total	14.68

The results of the groundwater modeling are shown in the following table:

HELP MODELING RESULTS

LOCATION	[1]TOP DECK	[2]TOP DECK
Percolation (in.)/Percent of precipitation	0.0004/0.00	0.001/0.01

[1]Sandy clay

[2]Silty clay

As can be seen, the amount of predicted leachate, expressed as a percentage of the total percolation ranges from 0.0004-inch to 0.001-inch, essentially zero. As the physical field investigation, which consisted of over 50 monitoring wells, indicated, no leachate was detected to have been produced in the Palos Verdes Landfill. It is apparent that this landfill does not produce leachate in real-life, nor is any leachate production predicted in a very conservative model. The primary controlling factors are:

- Relatively low annual precipitation;
- Annual evapotranspiration that is essentially equal to the annual precipitation.

Both of these primary factors are typical of a semi-arid climate.

Comparison of Moisture Content of Refuse in Landfills Located in Semi-Arid Climates V/S Landfills Located in Areas of Relatively High Annual Precipitation:

M&A has drilled and installed landfill gas (LFG) extraction wells in landfills located over most of the United states and in Canada. Steve Maddox was the geologist who logged each of these borings. The observed moisture content of the refuse encountered was significantly lower in areas with a semi-arid climate, such as Southern California, than that in refuse encountered within areas of high annual precipitation, such as the Mid-West, Northeast, and the Gulf Coast. A few examples follow:

Semi-Arid Locations:

- Mountaingate Landfill--Located in the foothills above UCLA (Los Angeles, CA), the refuse observed during methane gas extraction well drilling was slightly damp, to damp. Very little decomposition of the cellulose materials was observed.
- Olinda Landfill--This landfill is located in Orange County (just east of Los Angeles), in the Puente Hills. The refuse encountered in the LFG extraction wells during drilling was damp to slightly moist, with little decomposition noted.
- Operating Industries Landfill--Located in Monterey Park, immediately east of the metropolitan area of Los Angeles; during drilling this landfill produced damp refuse showing little decomposition until the bottom of the refuse was reached at 300+ feet, where some liquids had perched on an underlying siltstone stratum.
- Penrose Landfill--The Penrose Landfill is located in the San Fernando Valley, of the greater Los Angeles area. The refuse encountered in this landfill was, typically, damp and showed little decomposition.
- Southside Landfill--The Southside Landfill is located in Spokane, Washington, in a semi-arid climate with 16.5 inches of annual precipitation. The refuse encountered during drilling LFG wells in this landfill was typical for a semi-arid area--it was only slightly damp and showed only moderate decomposition.

Summary: In our experience, the landfills located in semi-arid areas exhibited only slight moisture content and the level of decomposition was slight. This was true even for the landfill located at a fairly high latitude, in Spokane, Washington.

Areas of Relatively High Annual Precipitation:

- 31st Street Landfill, Chicago, Ill. (37 inches annual precipitation)--The refuse encountered during LFG well installation was "sloppy" wet, and showed significant decomposition.
- Holloway Landfill, Detroit, Michigan (32 inches annual precipitation)--The Holloway Landfill refuse was wet and significantly decomposed.
- Miron Company Landfill, Montreal, Canada (40 inches of annual precipitation)--The Miron Company Landfill exhibited refuse that was significantly wet and in a state of advanced decomposition.

- McCarty Road Landfill, Houston, Texas (50 inches precipitation annually)--As with the other landfills located in climates with a high level of annual precipitation, the McCarty Road Landfill refuse was wet and decomposed.

Summary: Experience drilling in landfills located in areas of relatively high annual precipitation indicates that the refuse, particularly those materials composed of cellulose, are typically very moist to wet and in an advanced stage of decomposition.

Winds-A Major Factor in the Occurrence of Evaporation in the Matanuska Valley--a Semi-Arid Area:

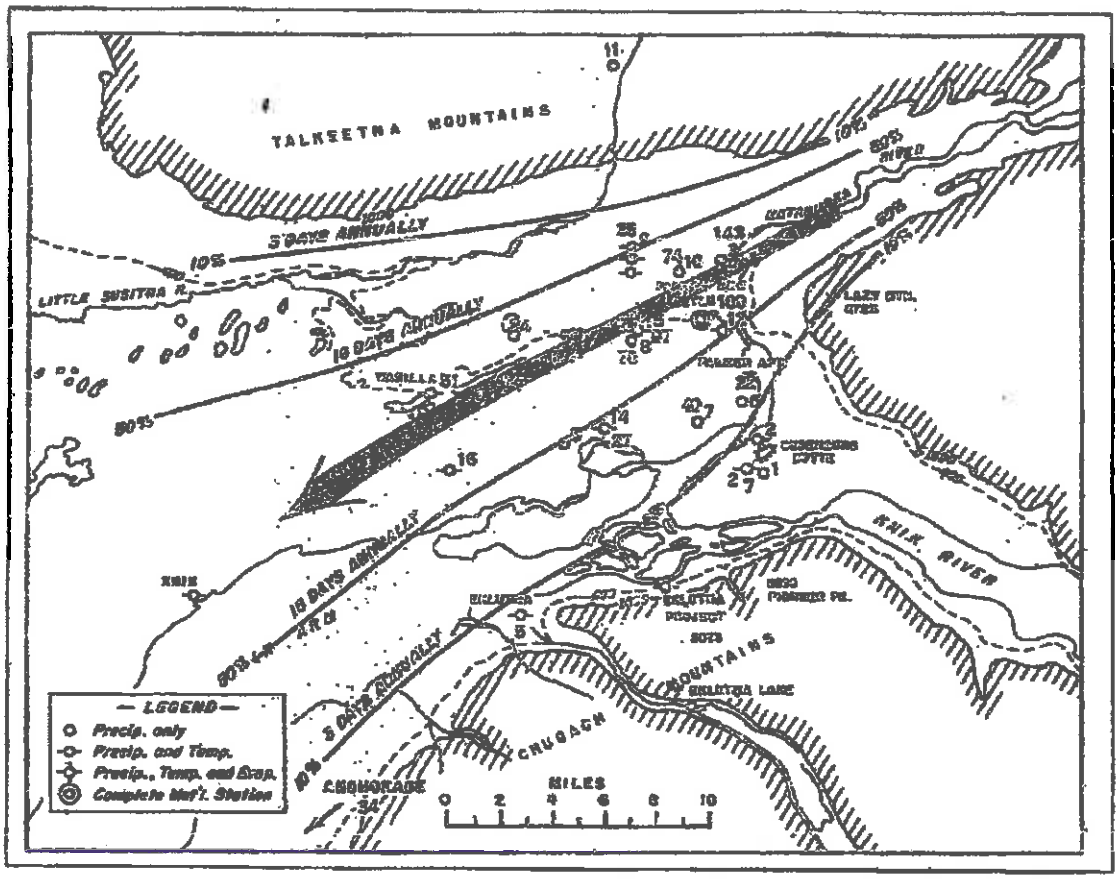
Much of the data contained in this section are derived from *"The Climate of the Matanuska Valley"*, U.S. Department of Commerce, Weather Bureau, Technical Paper No. 27, March 1956. The study is based primarily on about 34 years of record from the Matanuska Agricultural Experiment Station (Matanuska AES) and also an average of more than 11 years of record for Matanuska No. 2, No. 9, No. 12, , No. 15, Wasilla (No. 13), and Eklutna (established at the Anchorage Hydroelectric Power Plant in May 1941). The Matanuska AES is located approximately 2.5 miles to the west of the proposed monofill site.

Due to its unique location and surrounding topography, the Matanuska Valley is the site of winds that are particular to it. The Chugach Mountains to the south and east, with peaks ranging from 7,000 to 10,000 feet, form an effective barrier to all flow of moist Pacific air except from the southwest over Cook Inlet. The Alaska Range and the Talkeetna Mountains to the north prevent the flow of air masses from the north. The surrounding mountains and the topography of the valley floor serve to channel the local valley winds: the persistent, cold, gusty, northeasterly "Matanuska Winds", and the warm, generally ephemeral, southeasterly "Knik Winds". Each of these winds remove a significant amount of moisture from the valley surface by evaporation.

Both the Matanuska Winds and the Knik Winds are caused by a strong pressure gradient when the gradient becomes properly aligned with the respective river valleys.

Matanuska Winds:

The Matanuska Wind path extends west-southwest over the lake chain into the Wasilla area. As shown in Figure 1 (Figure 18 from Technical Paper 27), the axis of the wind path comes out of the canyon of the Matanuska River and flows in a southwesterly direction through Palmer and Wasilla, and on toward Anchorage. Although the heavy arrow shows the axis or the most frequent path of the Matanuska wind, the wind does not always follow the same channel but varies somewhat with the direction of the gradient. These winds facilitate a significant amount of evaporation of moisture from the Matanuska Valley, particularly in the area of the proposed monofill (near Station 14, Matanuska AES). Trainer (1960) states that it is an autumn and winter wind and



TAKEN FROM: "THE CLIMATE OF THE MATANUSKA VALLEY", TECHNICAL PAPER 27, U.S. DEPARTMENT OF COMMERCE, WEATHER BUREAU, MARCH 1956

MADDOX & ASSOCIATES, INC. 39371 SAN THOMAS CT. MURRIETA, CA 92562 (951) 605-1100	MATANUSKA - SUSITNA VALLEY ALASKA	FIGURE 1 PERCENTAGE OF NUMBER OF DAYS OF MATNUSKA WINDS REPORTED AT NO.12 AND MATANUSKA WIND PATH	DATE: 04/09/14 SCALE: AS SHOWN REVISED:

sometimes blows almost continuously for several days or longer. Weather Bureau records indicate gusts reaching 50 miles per hour during the more severe storms.

Knik Winds:

Figure 2 (Figure 23 of Technical Paper 27) shows the approximate path of the Knik Wind. The most frequent path of the Knik Wind is down the Knik River with the width of the wind path limited primarily to the width of the river bed. This most frequent occurrence of the Knik Wind is evidenced by clouds of dust on the lower Knik River flats (Figures 3 and 3A), but causes little damage and is generally felt only at the Knik River bridge and a few farms immediately adjacent to the river in the vicinity of the bridge; it requires little gradient and is generally spent by the time it reaches Knik Arm. As can be seen in Figure 2, this wind does not typically flow far out into, and through, the Matanuska Valley as does the Matanuska Wind, but there is still a strong flow by the time it reaches the area of the proposed monofill. As occurs with the Matanuska Winds, the Knik Winds remove, by evaporation, a significant amount of moisture from the area of the monofill (near the Matanuska AES).

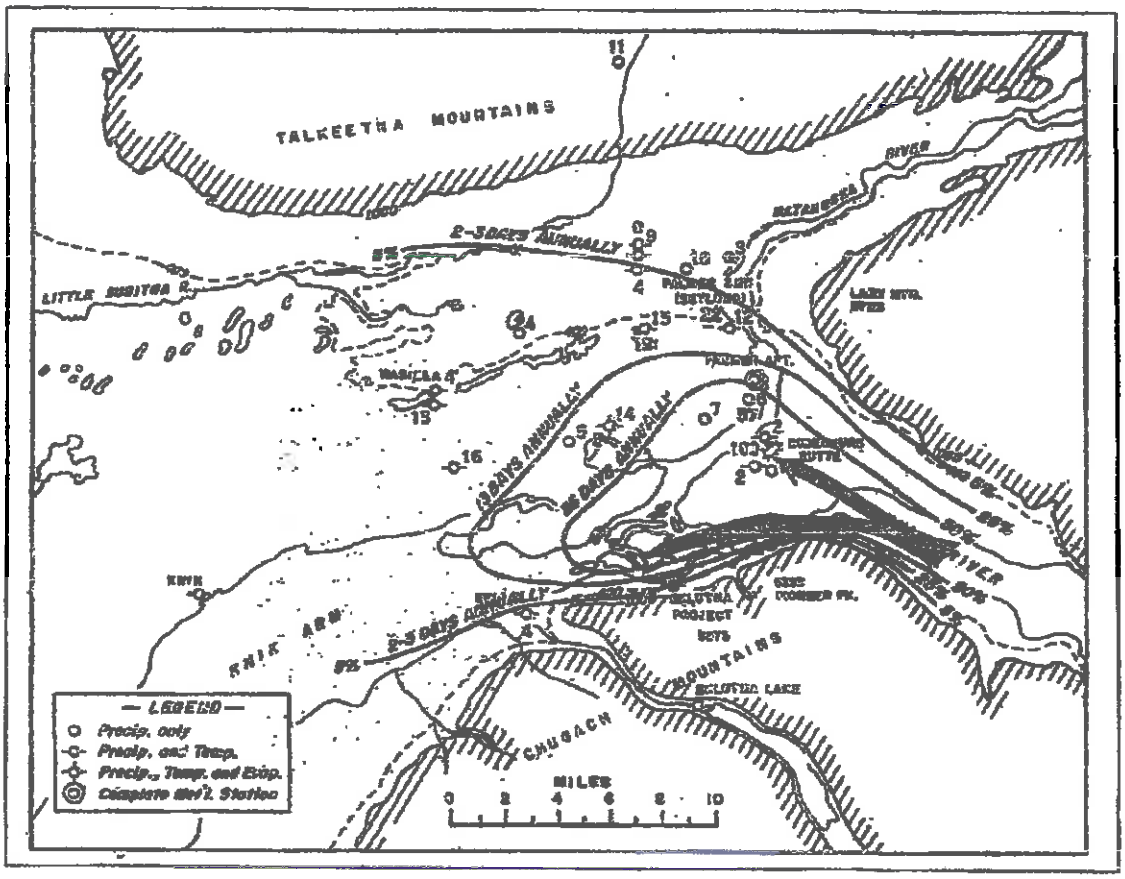
Effect of Winds on Evaporation in the Matanuska Valley

Correlation of average monthly evaporation and wind movement in the Matanuska Valley is shown in Table A (Table 8 of Technical Paper 27):

Table A
Average Monthly Evaporation and Wind Movement at Matanuska AES, 1929-1952

EVAPORATION & WIND VALUES	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER
AVERAGE EVAPORATION (IN.)	4.86	4.29	4.17	2.91	1.78	0.92
Average length of record (yrs.)	1	10	13	18	12	2
AVERAGE WIND SPEED (MPH)	4.3	3.5	2.7	2.4	3.0	4.2
Average length of record (yrs.)	5	14	13	18	14	7

Only months for which complete evaporation data were available were used to compile this table. For the many years over the period covered by this table, ice forming in the evaporation pan prevented complete evaporation measurements during the seasons when freezing occurred. This is reflected by the fact that the soils in the area of the Matanuska AES are usually frozen from October and into April/May (Appendix D), as would be the water in the evaporation pan. Consequently, the average length of record for the months



TAKEN FROM: "THE CLIMATE OF THE MATANUSKA VALLEY", TECHNICAL PAPER 27, U.S. DEPARTMENT OF COMMERCE, WEATHER BUREAU, MARCH 1956

MADDOX & ASSOCIATES, INC. 39371 SAN THOMAS CT. MURRIETA, CA 92562 (951) 805-1100	MATANUSKA - SUSITNA VALLEY ALASKA	FIGURE 2 PERCENTAGE OF NUMBER OF DAYS OF KNIK WINDS REPORTED AT NO.2 AND KNIK WIND PATH	DATE: 04/09/14 SCALE: AS SHOWN REVISED:

Matanuska River, spring dust storm near Palmer, Alaska

Matanuska River, spring dust storm near Palmer, Alaska

TAKEN FROM: INTERNET - PHOTOS BY KATIE EBERHART, 2005

MADDOX & ASSOCIATES, INC. 39371 SAN THOMAS CT. MURRIETA, CA 92562 (951) 695-1100	MATANUSKA - SUSITNA VALLEY ALASKA	FIGURE 3 KNIK WINDS BLOWING IN MATANUSKA - SUSITNA VALLEY	DATE: 04/09/14 SCALE: AS SHOWN REVISED:

Matanuska River, spring dust storm near Palmer, Alaska

Matanuska River, spring dust storm near Palmer, Alaska

TAKEN FROM: INTERNET - PHOTOS BY KATIE EBERHART, 2003

MADDOX & ASSOCIATES, INC. 39371 SAN THOMAS CT. MURRIETA, CA 92562 (951) 805-1100	MATANUSKA - SUSITNA VALLEY ALASKA	FIGURE 3A KNIK WINDS BLOWING IN MATANUSKA - SUSITNA VALLEY	DATE: 04/09/14 SCALE: AS SHOWN REVISED:

of May and October were only 1 to 2 years, and, typically, no evaporation data were measured from November through April. On the other hand, evaporation data were available for long periods of years for the months during which the soils were not frozen.

As can be seen, the highest evaporation rates occurred during the months when the average wind speed was highest. Exceptions were during September and October, but the soils were typically frozen or near-frozen during those months, thus reducing the rate of evaporation. It should be noted that, even though the evaporation pan can't be used to reliably calculate the amount of evaporation that occurs when the soil is frozen, and therefore no measured data are available, the process of evaporation continues, albeit at a reduced rate, during the winter months.

It is apparent that winds are a major factor in the balance between precipitation and evaporation that determines whether, or how much, leachate is produced in a landfill. The winds in the semi-arid Matanuska Valley, both the Matanuska Wind and the Knik Wind, are a major factor in reducing the amount of precipitation that is available to infiltrate into the proposed monofill. The addition of regular, systematic winds to an area with a semi-arid climate such as is present in the Matanuska Valley further reduces the likelihood of leachate production in a landfill. Trainer (1960) states that the Knik Wind is relatively warm, and in the late winter and spring it brings mild weather and in many years it removes much of the snow cover from the area before the ground begins to thaw. The net effect of this is to remove snow that, if it melted in place, would be available to infiltrate into the subsurface, thus further reducing the amount of precipitation in the ratio of precipitation versus evaporation that determines the potential for leachate production.

It is apparent that JAM is overstating the potential volume of precipitation that is available for infiltration into the planned monofill, considering the local climate at its proposed location.

Specific Factors Affecting the Potential for the Production of Leachate at the Palmer Monofill Site:

The potential for the production of leachate at the Palmer monofill site is low. This is based upon the following facts:

- The proposed monofill site is located in a semi-arid climate:

  As noted above, the relatively low annual precipitation is less than that which is indicative of a semi-arid climate (≤19.7-inches). Leachate production is uncommon in semi-arid climates.

- The annual precipitation is relatively low:

  The annual precipitation is approximately 15.32-inches and, according to Aljaradin and Perrson, most all precipitation is lost to evaporation below a value of approximately 15.75-inches.

- The annual evapotranspiration is approximately equal to the annual precipitation:

  Please see **Appendix C** for evapotranspiration data collected by the weather station designated Matanuska AES, operated by the Alaska Climate Research Center. This station is located approximately 2.5-miles to the west of the proposed monofill site, just north of the intersection of Parks Highway and Glenn Highway.

  Reference to the data contained in **Appendix C** will indicate that, over the period from 1917 through 2005, the annual rate of evaporation was 17.46-inches. Although this value exceeds the amount of annual precipitation during the same period, the actual amount of evaporation is slightly less. The data sheet contained in **Appendix C** contains the following discussion of the values measured:

  "Standard daily pan evaporation is measured using the four-foot diameter Class A evaporation pan. The pan water level reading is adjusted when precipitation is measured to obtain the actual evaporation. Most Class A pans are installed above ground, allowing effects such as radiation on the side walls and heat exchanges with the pan material. These effects tend to increase the evaporation totals. The amounts can then be adjusted by multiplying the totals by 0.70 or 0.80 to more closely estimate the evaporation from naturally existing surfaces such as a shallow lake, wet soil, or other moist natural surfaces."

  Based upon the fact that the location is in a semi-arid zone, and published data state that "For climates where annual precipitation is less than 400 mm (15.75-inches), virtually all precipitation is evapotranspirated.", a factor of 0.80 was used and the corrected annual evaporation was calculated to be approximately 14.0-inches.

  Additionally, data obtained from the Matanuska AES over a recent 30-year period (1982-2012) indicate a total precipitation of 15.9-inches and a corrected evaporation of 14.7, a slightly smaller delta than for the period 1917-2005. These data are contained in **Appendix A.**

  Many stations do not measure pan evaporation during winter months. A "0.00" indicates no measurement is taken." Reference to the evaporation data sheet contained in **Appendix C** will indicate that no measurements are taken from October through April--during this period the ground is frozen. It is possible that, were evaporation measurements to be taken during this seven-month period, the total evaporation would be even greater. Sublimation data are not available, but moisture is lost from snow and ice during winter months by this process.

  A major contributing factor to the relatively high evaporation rate in the area of the proposed monofill are the winds that are native to the area. These winds, the

Matanuska Wind and the Knik Wind, when blowing, have been shown to result in increased evaporation from both the soils and the flora.

- The ground is frozen during a significant portion of the year:

Data from the Matanuska AES and the National Climatic Data Center, NOAA Satellite and Information Service are contained in **Appendix D.** These data indicate that there is a 90% chance that the soil in the Palmer area is frozen from approximately September 30 through May 30 of each year.

Discussions with professionals in the Palmer area indicate the following:

The soil temperatures can reach 32 degrees F. or colder. The Palmer soils tend to be coarse-grained. When the clasts are below 32 degrees F. the soil voids are unsaturated, thus somewhat permeable. As snow melts (middle winter and in the spring), water percolates downward and refreezes. This process creates impermeable soils. During spring melt, runoff can exceed 5 to 10-yer storm events, because the soil is nearly impermeable until it thaws. Thus, very little infiltration occurs during the long period during which the soils are frozen.

Reference to the average precipitation rates for an average year in the Palmer area indicates that a total of approximately 8.51-inches of precipitation occurs during the period that the soils are frozen--this represents approximately one-half of the annual precipitation.

It is apparent that with the volume of precipitation that is lost for potential infiltration due to yearly frozen soil conditions, the amount of evaporation greatly exceeds the volume of water that is available for infiltration, and thus impedes the production of leachate.

- No significant period of residency of liquids within monofill materials:

The majority of the soils underlying the proposed monofill are composed of glacial outwash sands and gravels. The hydraulic conductivity of these materials is fairly high, and they conduct liquids readily. A percolation test was conducted on July 1, 2013 and the results indicated soil permeabilities (hydraulic conductivity) in the footprint of the proposed monofill ranging from 6.0×10^{-3} cm/sec (clean sand) to 5.2×10^{-4} cm/sec (silty sand). These sediments allow for the rapid transmission of percolating water (See **Appendix E** for percolation test report).

Percolation testing of residual materials at the Birchwood Monofill, Chugiak, Alaska indicated an average hydraulic conductivity of approximately 2.0×10^{-2} cm/sec (**Appendix F**). The monofill materials are typical of those that will be deposited at the Palmer monofill. Any water that may penetrate through the proposed final cap ($K \sim 1.1 \times 10^{-4}$ cm/sec) will encounter the significant increase in

hydraulic conductivity of the monofill materials (a hundred-fold increase), resulting in a significant increase in travel velocity by the water. This increased velocity will allow infiltration without saturation. As a result, the water will pass rapidly down through the inert refuse material.

It is also possible that, with the establishment of a plant community on the monofill cap, the plant roots will be restricted to the less permeable and more moist cap soils, and evapotranspiration will remove the water before it can reach the more permeable inert materials. The mechanics of this process are outlined in the "intrusion barrier" concept described in the report by Stoller-Eser for the U.S. Department of Energy (2000).

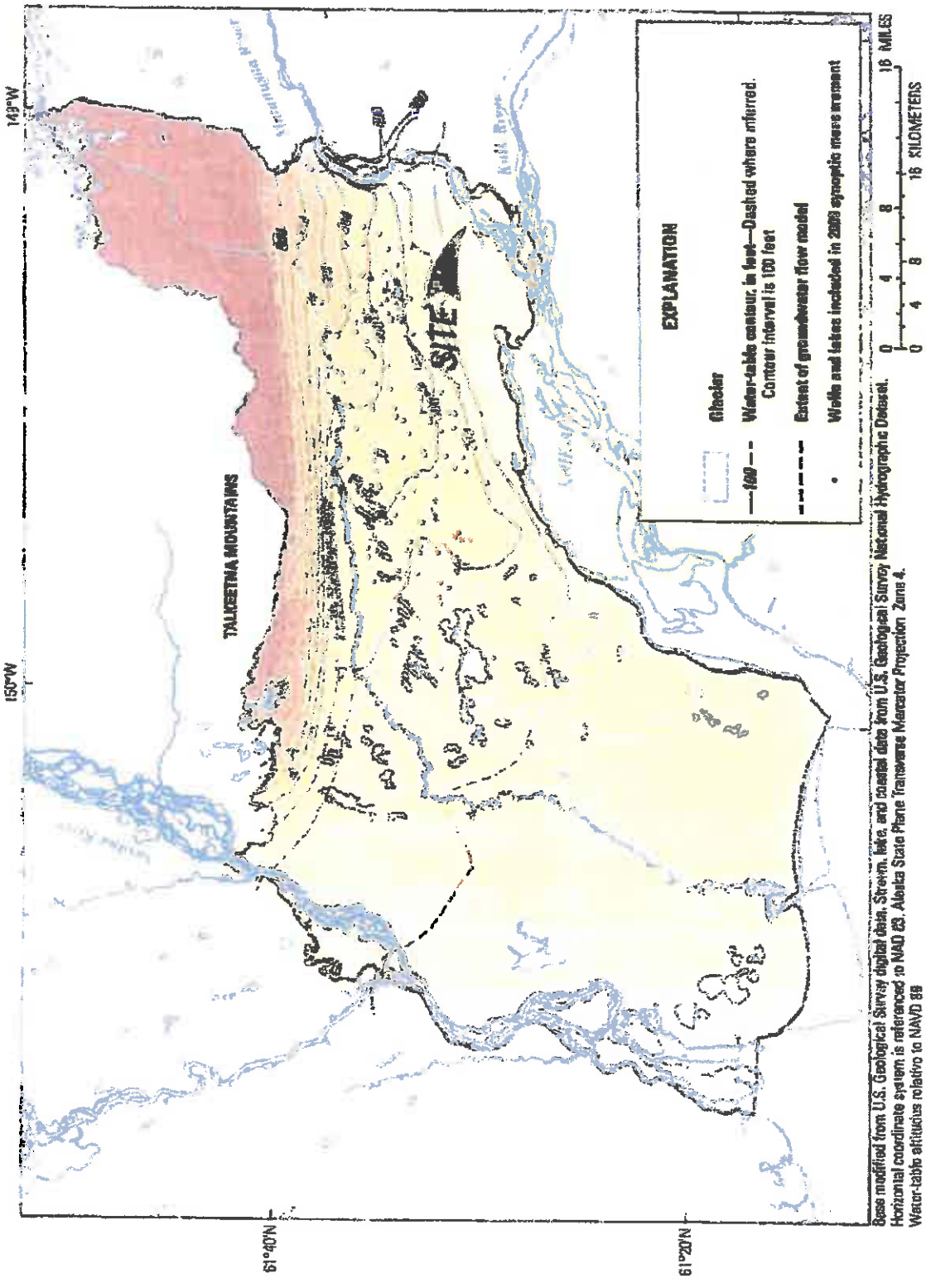
Due to the fact that the monofill will not have an under-liner, if any liquids did reach the bottom of the inert refuse, they would pass, essentially unimpeded, into the underlying natural soils. Any such liquid would, as described above, have had no residence time during which it could pond at the bottom of the landfilled materials. Thus, there would be no prolonged period of time during which the liquids would remain in contact with the inert refuse prior to passing on through the monofill bottom and into the underlying natural materials. This lack of ponding-time would result in the extraction of the minimum amount of constituents from the inert refuse.

- <u>No significant recharge in area of monofill:</u>

  JAM's position is that significant recharge of the aquifer occurs in the area of the proposed monofill. This is not true for the following reasons:

  -The precipitation that would be available to recharge the aquifer is greatly reduced by the significant evaporation that occurs and, at most, would amount to very little.

  -Kikuchi (2013) indicates that flow through the groundwater system is driven primarily by RECHARGE in the Little Susitna River Valley, located approximately 20-miles to the north of the Palmer area, following generally north to south flowpaths in the area surrounding Wasilla and transitioning to northeast to southwest flow paths in the area of Big Lake. Groundwater flow in the site area is primarily to the south and west, from the foothills of the Talkeetna Mountains, to discharge along the Matanuska River and its contributing sloughs and tributaries (Figure 4). Kikuchi (2013) states, on page 1, that, "Water moves quickly through the groundwater system. The groundwater system quickly returns to long-term average conditions following variability due to seasonal or interannual changes in precipitation." This is primarily in reference to precipitation changes in the RECHARGE area (which is not located in the Palmer area), by definition. Reference to Figure 4 will show the dense network of tributary streams flowing down from the southerly foothills of the Talkeetna Mountains, and into the Little Susitna River, whose headwaters are the result of



MADDOX & ASSOCIATES, INC. 39371 SAN THOMAS CT. MURRIETA, CA 92562 (951) 805-1100	MATANUSKA - SUSITNA VALLEY ALASKA	FIGURE 4 UPDATED WATER-TABLE CONTOUR MAP AND LOCATIONS OF 2009 SYNOPTIC WATER-LEVEL MEASUREMENTS	DATE: 04/09/14 SCALE: AS SHOWN REVISED:

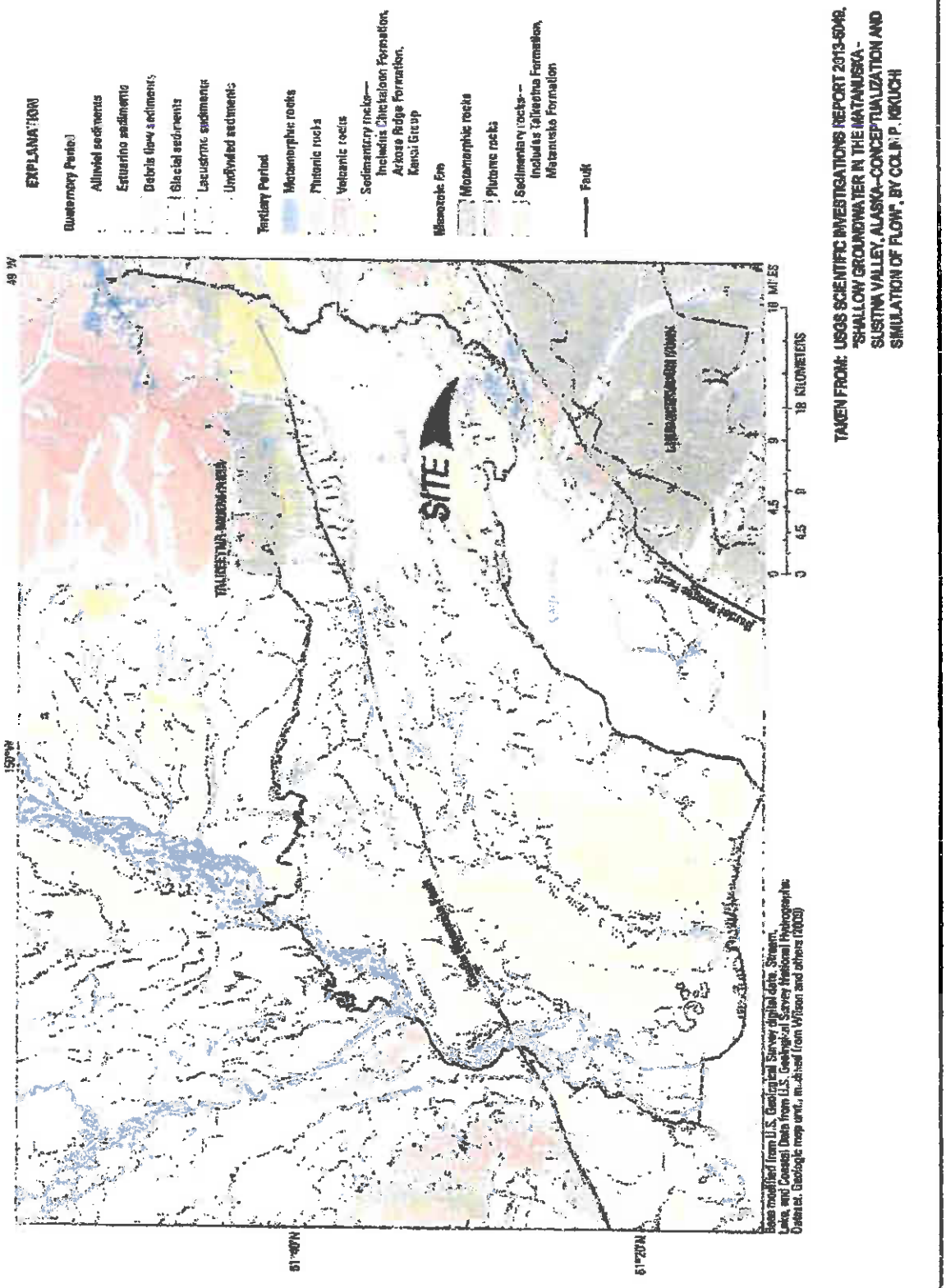
outflow from glaciers located to the northeast of the Talkeetna Mountains (also shown on Figure 4). Reference to Figure 5 will indicate that this area of recharge for the Matanuska-Susitna Valley is underlain by extremely permeable geologic materials (glacial sediments and alluvial sediments). Water flowing from the Talkeetna Mountains and into the Little Susitna River, including the water in the river, easily percolates down into these very permeable sediments, resulting in a regional flow of groundwater directly to the area near the mouth of the Matanuska River and the easterly end of the Knik Arm--this is graphically illustrated on Figure 4.

As discussed, the area in which the bulk of the groundwater recharge occurs to the glacial outwash sands and gravels that comprise the aquifer in the area of the proposed monofill lies approximately 20-miles to the north, along the Little Susitna River, at the base of the Talkeetna Mountains. This fact, along with the fact that precipitation and evaporation amounts are essentially equal in the monofill area, is in direct contradiction to JAM's statements that as many as 1-5 inches of groundwater recharge will occur at the location of the proposed monofill. He states that, for the 30+ acre surface area at the top of the fill structure, this translates to 800,000 to 4 million gallons per year of infiltration and thus, the same volume of leachate. If that were to be true, then the water balance (precipitation v/s evaporation) that indicates very little or no infiltration into the monofill indicated by the 88 years (1917-2005) of meteorological data collected by the Matanuska AES (Appendix B) is incorrect. This is unlikely. JAM implies that that local precipitation provides significant recharge to the local aquifer, and that is incorrect.

EXAMPLE OF IMPACT ON GROUNDWATER BY LEACHATE PRODUCED AT AN ALASKA MONOFILL LOCATED IN AN AREA OF HIGH PRECIPITATION AND LOW EVAPORATION

M&A reviewed the leachate-production potential for an existing monofill presently in operation at Seward, Alaska, on the Kenai Peninsula, and it's impact on the underlying aquifer. The Seward Monofill/Landfill (SMF) is owned by the Kenai Peninsula Borough Solid Waste Department. It is located at 3200 Diamond Boulevard, three miles north of downtown Seward, in the NE 1/4 of Section 28, T1N, R1E, S.M. AK. The current ADEC Permit, SWZA031-17, expires in April 2017. M&A contacted the Environmental Coordinator for the monofill, Lainie Hughes, on both March 7, 2014 and March 21, 2014 for pertinent data pertaining to the monofill-Ms. Hughes' telephone number is 907-262-9667. Ms. Hughes summarized the monofill and surrounding area as follows:

- The SMF is located immediately adjacent to, and downgradient of, a closed (1993) municipal solid waste (MSW) landfill;
- Both the SMF and the MSW landfills are unlined;
- Sampled groundwater monitoring wells are located upgradient (1 well: MW-4) and downgradient (1 well: MW-6). An additional well (MW-1), also located downgradient, is used only for water depth measurements.



MADDOX & ASSOCIATES, INC. 39371 SAN THOMAS CT. MURRIETA, CA 92562 (951) 805-1100	MATANUSKA - SUSITNA VALLEY ALASKA	FIGURE 5 HYDROGEOLOGIC FRAMEWORK OF THE MATNUSKA - SUSITNA VALLEY, ALASKA	DATE: 04/09/14 SCALE: AS SHOWN REVISED:

- No contaminants of concern have historically been detected in the wells above EPA Water Quality Standards, since monitoring began in 1989;
- Neither the closed MSW landfill nor the SMF are lined;
- Ms. Hughes stated that they do not have a groundwater contamination problem at the SMF site.

The Kenai Peninsula Borough Solid Waste Department web site contains a description of the SMF (Appendix G). The SMF is located along the edge of the Resurrection River in an area of high water table and highly permeable soils. The site was originally established by the City of Seward and operated as an open landfill for many years. The Borough assumed site operations in 1974 and operated it as the Seward Landfill. In 1919, due to initial space limitations, it was turned into a transfer facility (STF) with wastes hauled to the Central Peninsula Landfill (CPL). This proved too costly, so the original inert landfill site was enlarged in area and, in 1997 the SNF began operation.

The monofill accepts inert waste such as appliances, scrap metal, junk vehicles, construction demolition (C/D), and some landscaping and wood (L/W). Wood wastes received at the site are burned several times a year.

The groundwater monitoring wells are sampled once annually, and sampling is contracted-out to Shannon & Wilson, Anchorage, Alaska. Ms. Hughes supplied M&A with a copy of the most recent round of monitoring, conducted on October 29, 2013 (Appendix H). The October 29, 2013 monitoring round consisted of water level measurements from the three wells (MW-1, MW-4, and MW-6), and analytical sample collection from two wells (MW-4 and MW-6). The depth to water is approximately 9-feet below the ground surface in the immediate area of the SMF, with a southeasterly groundwater flow direction; the SMF is immediately downgradient from the closed MSW landfill.

Groundwater samples were collected from wells MW-4 and MW-6, and analyzed for "key indicator parameters" (essentially general minerals), 16 total metals, and 48 volatile organic compounds (VOCs). Water quality standards used to evaluate the results were:

- EPA 40 Code of Federal Regulation (CFR), Part 141 maximum contaminant levels (MCLs) (July 2009);
- ADEC 18 Alaska Administration Code (AAC) 80 drinking water MCLs (August 2012; and
- ADEC 18 AAC 80 secondary MCLs (August 2012).

Analytical Results:

Key indicator parameters were not detected in the SMF wells at concentrations greater than their respective water quality standards.

Detectable concentrations of 14 metals were reported in SMF groundwater. Iron and manganese concentrations in samples from wells MW-4 and MW-6 exceeded their

respective water quality standards, and arsenic and lead concentrations in the sample from MW-4 essentially equaled their water quality standards. Although three VOCs were detected, none of them exceeded their water quality standards.

It is of note that the two metals detected above their MCLs, Iron and Manganese, are reported by the USEPA to be present in most inert landfills. They have Secondary MCLs, and are not considered a threat to human health, public safety, or the environment. As the SMF Environmental Coordinator, Lainie Hughes, stated, there is not a groundwater contamination problem at the monofill site.

COMMENT:

Pertinent facts pertaining to the Seward Monofill (SMF):

- The Seward Monofill (SMF) is located in a Maritime climatic zone, with an average of 70.45 inches per year of precipitation (**Appendix I**), approximately five-times that of the Palmer area;
- The SMF is located immediately adjacent to, and downgradient of, a closed, unlined MSW landfill;
- The SMF is unlined;
- Groundwater occurs less than 10-feet below the base of the inert refuse;
- A considerable volume of leachate is undoubtedly produced by the SMF due to the extremely high annual precipitation rate;
- Even with the production of a considerable volume of leachate from the SMF, the aquifer, lying less than 10-feet below the base of the inert refuse, is not impacted by contamination that would present a threat to human health, public safety, or the environment.

This monofill is located approximately 120 miles to the south of the proposed monofill site. Based upon data available from the Kenai Peninsula Borough Solid Waste Department, it does not appear that there is a procedure in place nearly as comprehensive as that which will be in place at the Palmer monofill to exclude hazardous materials. Yet, with extremely high annual precipitation, no liners, and the presence of a closed MSW landfill immediately upgradient, the undoubtedly high volume of leachate produced by the SMF is not a threat to the shallow aquifer beneath the monofill. This is a very reliable example of a real-life, Alaskan monofill (containing inert refuse) that, even under extreme climatic conditions, and copious leachate production, does not contaminate the aquifer that is present at only about 9-feet below the inert refuse.

SECTION 7.3, PAGES 20-21:

We will assume JAM's estimated groundwater flow volume beneath the proposed monofill site, of 4.0 million gallons per day, to be an acceptable value. He does not appear to consider this volume of water flowing daily beneath the proposed monofill site to be a significant factor in determining the impact of any leachate possibly produced by the monofill.

The tremendous volume of water flowing beneath the monofill site each day will certainly be a significant factor when determining the effect of any leachate that may pass through the monofill and into the aquifer.

Consideration should be given to the process that occurs when any solute (leachate) is added to this aquifer. The following description is taken from Driscoll (1986). Once in the aquifer, the primary driving force for contaminant movement is created by the hydraulic gradient that produces groundwater flow. Contaminants entering the groundwater system are thus carried downgradient, forming a contaminant plume. This type of contaminant movement is called "advection". Other factors also influence the shape of the plume, including two types of "HYDRODYNAMIC DISPERSION"- mechanical mixing and molecular diffusion. These two processes cause a spreading (dispersion) of the contaminants over a much larger area than advection alone would produce and, consequently, a DILUTION of the contaminants away from the source area.

Fetter (1980) describes HYDRODYNAMIC DISPERSION as the process by which groundwater containing a solute (as is leachate) is diluted with uncontaminated groundwater as it moves through an aquifer.

On page 340, Fetter states that in a natural flow situation, there can be dispersion both longitudinally and laterally. A solute (leachate) being introduced into a groundwater flow field from a continuous point source results in a plume extending parallel to the direction of flow. The solute is less concentrated at the margins of the plume, but the concentration increases toward the source. Due to HYDRODYNAMIC DISPERSION, the plume will expand in three dimensions to fill a larger volume, but with a lower solute concentration.

The rate of advance of the contaminant front is retarded if there is a reaction between the solute and the other groundwater constituents, or if adsorption of the solute occurs. The plume of solute will then spread more slowly, and the concentration will be lower than those of an equivalent nonreactive solute.

When the tremendous flow of groundwater beneath the site is considered, and the fact that any leachate that may be produced would be of very small volume (or none), advection and hydrodynamic dispersion would dilute and reduce the concentration of any leachate that may exit the bottom of the monofill to extremely low levels--these concentrations would likely be below levels of detection.

MADDOX & ASSOCIATES CONVERSATION WITH LORI ALDRICH, OF ADEC, FEBRUARY 18, 2014

On February 18, 2014 Steve Maddox called Lori Aldrich and asked her the following question:

"Why doesn't ADEC have any problem with the construction of the proposed monofill at Palmer?"

During the conversation that followed Ms. Aldrich stated the following:

1. It meets all of the State regulations.

2. ADEC put the original CUP out for public comments and received NONE.

3. The only requirement that she insisted on was that a 10-foot separation be maintained at all times between the refuse and the underlying groundwater. She wants to see a final demonstration of this separation.

4. Only inert refuse will be placed in the monofill.

5. She visited the Birchwood site (the material to be deposited at the Palmer monofill site), near Chugiak, and examined the residual waste at that location--she says that it will make excellent cover material for the following reasons:

   a. It will compact well.

   b. It will efficiently retard the infiltration of precipitation.

6. Due to the "sub-desert" climate, with little annual precipitation, she believes that VERY LITTLE leachate will be produced by the monofill.

7. ADEC does not require groundwater monitoring for inert landfills in areas where precipitation is less than 25-inches annually--the Palmer area has approximately 15-inches annually. THEY DO NOT EXPECT THE PRODUCTION OF MUCH LEACHATE AT THE PALMER MONOFILL SITE.

8. If ADEC felt that the Palmer monofill would present a threat to groundwater, they would require groundwater monitoring--they do not require monitoring at this proposed site.

9. The gleaning of deleterious/hazardous materials from the refuse by CRS prior to landfilling at the Palmer site will prevent the introduction of hazardous compounds into the underlying aquifer, if conducted per their Operations Plan.

Additionally, I asked her if she thought that significant recharge to the aquifer presently occurs at the site of the proposed monofill (as implied by James Munter), or if the very significant volume of groundwater (>6,000,000 gallons per day) that passes under the monofill site results from recharge at a significant distance from the site. She agreed with me that only a small amount of recharge is due to on-site precipitation, and that most of the recharge occurs in the surrounding mountains (the Talkeetna Mountains). She agreed that even under current conditions, without the presence of the proposed monofill

structure, the local recharge volume to the aquifer (through the on-site sands and gravels) is minimal and insignificant. She further agreed that if the very small volume of leachate that may pass into the aquifer from the monofill were added to the tremendous volume of groundwater passing beneath the site daily, it would essentially amount to a "spit-in-the-ocean"--this was my phrasing, but Ms. Aldrich agreed with it.

Ms. Aldrich stated that her comments could be discussed with others, as she was a public employee.

SECTION 8.0 GROUNDWATER MODELING PAGES 21-25

Mr. Dan Young, of Terrasat Environmental has conducted additional contaminant transport modeling. It will be submitted separately.

GUARD WELLS PAGE 26

The subject of guard wells has been previously addressed in this document.

SECTION 9 CONCLUSIONS

To address JAM's response to M&A's Conclusions Section would be repetitious, so we will not do so.

CONCLUDING PARAGRAPH

JAM stated that M&A's concluding paragraph in the December 13, 2013 report stating that the proposed facility "will not pose a threat to the underlying aquifer" is not sufficiently supported by data or analysis and should not be relied upon.

In actuality, the majority of JAM's critique of the December 13, 2013 is not supported by fact. The responses provided in the present document support the conclusion that the proposed monofill will not pose a threat to the underlying aquifer.

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APPENDIX A:

MATANUSKA AES PRECIPITATION/EVAPORATION 1982--2012

STATION	STATION_	DATE	CLDD	DPNP	DPNT	HTDD	DT70	DX32
COOP:505	MATANUS	198201	0	-85	-84	1907	0	31
COOP:505	MATANUS	198202	0	6	-52	1427	0	23
COOP:505	MATANUS	198203	0	0	20	1169	0	10
COOP:505	MATANUS	198204	0	0	-29	937	0	3
COOP:505	MATANUS	198205	0	-12	-21	616	0	0
COOP:505	MATANUS	198206	0	-68	-16	343	5	0
COOP:505	MATANUS	198207	0	99	-16	279	4	0
COOP:505	MATANUS	198208	0	-153	3	292	6	0
COOP:505	MATANUS	198209	0	109	6	491	0	0
COOP:505	MATANUS	198210	0	88	-85	1203	0	12
COOP:505	MATANUS	198211	0	12	-2	1328	0	13
COOP:505	MATANUS	198212	0	-16	85	1349	0	17
COOP:505	MATANUS	198301	0	-31	31	1564	0	22
COOP:505	MATANUS	198302	0	-35	29	1217	0	14
COOP:505	MATANUS	198303	0	-53	58	1077	0	6
COOP:505	MATANUS	198304	0	-23	17	797	0	0
COOP:505	MATANUS	198305	0	-62	12	518	0	0
COOP:505	MATANUS	198306	0	-40	4	289	8	0
COOP:505	MATANUS	198307	0	-110	-8	238	9	0
COOP:505	MATANUS	198308	0	227	-12	324	3	0
COOP:505	MATANUS	198309	0	-29	-34	614	0	0
COOP:505	MATANUS	198310	0	84	-1	948	0	2
COOP:505	MATANUS	198311	0	-82	49	1153	0	14
COOP:505	MATANUS	198312	0	-89	45	1499	0	23
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COOP:505	MATANUS	198404	0	17	9	823	0	0
COOP:505	MATANUS	198405	0	10	-8	581	0	0
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COOP:505	MATANUS	198412	0	20	52	1477	0	21
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COOP:505 MATANUS	198601	0	0	134	1239	0	18
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COOP:505 MATANUS	198610	0	1	29	851	0	1
COOP:505 MATANUS	198611	0	30	25	1230	0	13
COOP:505 MATANUS	198612	0	20	166	1119	0	11
COOP:505 MATANUS	198701	0	31	119	1287	0	14
COOP:505 MATANUS	198702	0	-27	33	1065	0	9
COOP:505 MATANUS	198703	0	-45	31	1149	0	6
COOP:505 MATANUS	198704	0	-62	24	775	0	0
COOP:505 MATANUS	198705	0	16	6	532	1	0
COOP:505 MATANUS	198706	0	4	-16	350	1	0
COOP:505 MATANUS	198707	4	3	-10	248	5	0
COOP:505 MATANUS	198708	0	-62	10	255	8	0
COOP:505 MATANUS	198709	0	-5	-20	362	0	0
COOP:505 MATANUS	198710	0	2	36	831	0	2
COOP:505 MATANUS	198711	0	3	30	1214	0	16
COOP:505 MATANUS	198712	0	-22	41	1512	0	25
COOP:505 MATANUS	198801	0	-50	51	1500	0	23
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COOP:505 MATANUS	198809	0	10	-13	553	0	0
COOP:505 MATANUS	198810	0	19	-22	1010	0	3
COOP:505 MATANUS	198811	0	-32	-37	1416	0	22
COOP:505 MATANUS	198812	0	34	75	1406	0	18
COOP:505 MATANUS	198901	0	-8	-131	2068	0	28
COOP:505 MATANUS	198902	0	-41	-53	1447	0	21
COOP:505 MATANUS	198903	0	-53	-15	1299	0	16
COOP:505 MATANUS	198904	0	-53	29	762	0	0
COOP:505 MATANUS	198905	0	139	-5	571	0	0
COOP:505 MATANUS	198906	0	-8	-2	308	8	0
COOP:505 MATANUS	198907	0	-77	7	192	18	0
COOP:505 MATANUS	198908	0	123	20	220	11	0
COOP:505 MATANUS	198909	0	11	19	455	0	0
COOP:505 MATANUS	198910	0	82	-22	1009	0	6
COOP:505 MATANUS	198911	0	0	-53	1465	0	19
COOP:505 MATANUS	198912	0	19	128	1240	0	12

COOP:505 MATANUS	199001	0	51	10	1626	0	21
COOP:505 MATANUS	199002	0	65	-171	1785	0	26
COOP:505 MATANUS	199003	0	-2	34	1149	0	6
COOP:505 MATANUS	199004	0	-45	38	734	0	0
COOP:505 MATANUS	199005	0	79	33	456	0	0
COOP:505 MATANUS	199006	3	-46	28	221	11	0
COOP:505 MATANUS	199007	0	-229	20	150	15	0
COOP:505 MATANUS	199008	0	-59	19	225	10	0
COOP:505 MATANUS	199009	0	259	19	455	0	0
COOP:505 MATANUS	199010	0	-92	-20	1005	0	3
COOP:505 MATANUS	199011	0	-11	-134	1706	0	28
COOP:505 MATANUS	199012	0	224	2	1633	0	26
COOP:505 MATANUS	199101	0	-46	12	1620	0	23
COOP:505 MATANUS	199102	0	-30	-4	1312	0	16
COOP:505 MATANUS	199103	0	21	7	1232	0	11
COOP:505 MATANUS	199104	0	-58	34	744	0	0
COOP:505 MATANUS	199105	0	-55	11	523	3	0
COOP:505 MATANUS	199106	0	-125	21	240	13	0
COOP:505 MATANUS	199107	0	97	-6	238	7	0
COOP:505 MATANUS	199108	0	-156	-7	306	1	0
COOP:505 MATANUS	199109	0	-42	27	433	0	0
COOP:505 MATANUS	199110	0	21	-31	1039	0	6
COOP:505 MATANUS	199111	0	-42	9	1276	0	18
COOP:505 MATANUS	199112	0	40	71	1415	0	20
COOP:505 MATANUS	199201	0	-1	90	1375	0	20
COOP:505 MATANUS	199202	0	83	-69	1546	0	25
COOP:505 MATANUS	199203	0	-5	0	1258	0	10
COOP:505 MATANUS	199204	0	-20	-11	881	0	2
COOP:505 MATANUS	199205	0	-1	-14	602	2	0
COOP:505 MATANUS	199206	0	-8	9	275	11	0
COOP:505 MATANUS	199207	0	-22	8	184	10	0
COOP:505 MATANUS	199208	0	-138	0	286	2	0
COOP:505 MATANUS	199209	0	-36	-92	790	0	0
COOP:505 MATANUS	199210	0	63	-35	1051	0	5
COOP:505 MATANUS	199211	0	-6	24	1229	0	15
COOP:505 MATANUS	199212	0	-24	-8	1662	0	27
COOP:505 MATANUS	199301	0	77	-8	1624	0	23
COOP:505 MATANUS	199302	0	66	19	1246	0	14
COOP:505 MATANUS	199303	0	-4	34	1092	0	3
COOP:505 MATANUS	199304	0	-53	60	674	0	0
COOP:505 MATANUS	199305	0	25	45	418	7	0
COOP:505 MATANUS	199306	0	-73	24	244	10	0
COOP:505 MATANUS	199307	9	-151	31	127	17	0
COOP:505 MATANUS	199308	2	31	25	212	10	0
COOP:505 MATANUS	199309	0	146	-1	514	1	0
COOP:505 MATANUS	199310	0	8	32	857	0	1
COOP:505 MATANUS	199311	0	55	29	1262	0	14
COOP:505 MATANUS	199312	0	133	97	1256	0	16

COOP:505 MATANUS	199401	0	-68	74	1365	0	24
COOP:505 MATANUS	199402	0	-62	-17	1347	0	23
COOP:505 MATANUS	199403	0	44	-15	1245	0	15
COOP:505 MATANUS	199404	0	-53	31	761	0	2
COOP:505 MATANUS	199405	0	-69	14	516	0	0
COOP:505 MATANUS	199406	1	34	26	239	8	0
COOP:505 MATANUS	199407	3	-149	14	178	12	0
COOP:505 MATANUS	199408	0	-81	27	204	14	0
COOP:505 MATANUS	199409	0	-99	5	499	0	0
COOP:505 MATANUS	199410	0	15	-15	1003	0	9
COOP:505 MATANUS	199411	0	0	-71	1561	0	25
COOP:505 MATANUS	199412	0	0	-5	1576	0	23
COOP:505 MATANUS	199501	0	-21	-2	1304	0	16
COOP:505 MATANUS	199502	0	2	6	1274	0	16
COOP:505 MATANUS	199503	0	77	-88	1472	0	21
COOP:505 MATANUS	199504	0	-36	54	692	0	0
COOP:505 MATANUS	199505	0	-47	31	483	1	0
COOP:505 MATANUS	199506	2	8	14	273	7	0
COOP:505 MATANUS	199507	0	67	5	202	10	0
COOP:505 MATANUS	199508	0	-44	7	236	5	0
COOP:505 MATANUS	199509	0	128	49	383	0	0
COOP:505 MATANUS	199510	0	-86	34	849	0	1
COOP:505 MATANUS	199511	0	-89	-8	1372	0	22
COOP:505 MATANUS	199512	0	-111	23	1489	0	20
COOP:505 MATANUS	199601	0	-60	-129	2007	0	29
COOP:505 MATANUS	199602	0	144	-53	1501	0	24
COOP:505 MATANUS	199603	0	18	26	1119	0	3
COOP:505 MATANUS	199604	0	-44	21	790	0	3
COOP:505 MATANUS	199605	0	-65	26	477	5	0
COOP:505 MATANUS	199606	3	-116	24	246	11	0
COOP:505 MATANUS	199607	0	-78	14	174	13	0
COOP:505 MATANUS	199608	0	24	1	284	3	0
COOP:505 MATANUS	199609	0	-166	-21	574	2	0
COOP:505 MATANUS	199610	0	60	-119	1321	0	17
COOP:505 MATANUS	199611	0	62	-51	1500	0	27
COOP:505 MATANUS	199612	0	-104	-33	1664	0	27
COOP:505 MATANUS	199701	0	-69	-3	1609	0	21
COOP:505 MATANUS	199702	0	-53	141	904	0	1
COOP:505 MATANUS	199703	0	-37	-12	1236	0	10
COOP:505 MATANUS	199704	0	-17	44	722	0	0
COOP:505 MATANUS	199705	0	153	20	496	4	0
COOP:505 MATANUS	199706	12	-49	33	227	13	0
COOP:505 MATANUS	199707	2	-33	34	114	19	0
COOP:505 MATANUS	199708	3	276	24	218	11	0
COOP:505 MATANUS	199709	0	-117	28	432	0	0
COOP:505 MATANUS	199710	0	4	-59	1139	0	11
COOP:505 MATANUS	199711	0	120	72	1132	0	14
COOP:505 MATANUS	199712	0	0	4	1555	0	21

COOP:505 MATANUS	199801	0	-80	7	1575	0	27
COOP:505 MATANUS	199802	0	-62	76	1078	0	7
COOP:505 MATANUS	199803	0	-53	36	1087	0	7
COOP:505 MATANUS	199804	0	0	32	761	0	1
COOP:505 MATANUS	199805	0	-8	-12	596	0	0
COOP:505 MATANUS	199806	0	76	4	305	10	0
COOP:505 MATANUS	199807	1	-110	5	200	6	0
COOP:505 MATANUS	199808	0	59	-19	344	2	0
COOP:505 MATANUS	199809	0	-101	4	500	0	0
COOP:505 MATANUS	199810	0	-95	24	880	0	0
COOP:505 MATANUS	199811	0	0	17	1286	0	18
COOP:505 MATANUS	199812	0	0	-37	1676	0	30
COOP:505 MATANUS	199901	0	0	-56	1784	0	27
COOP:505 MATANUS	199902	0	-31	-140	1693	0	23
COOP:505 MATANUS	199903	0	-52	1	1198	0	13
COOP:505 MATANUS	199904	0	-25	-7	877	0	2
COOP:505 MATANUS	199905	0	89	-6	577	4	0
COOP:505 MATANUS	199906	0	-28	22	249	11	0
COOP:505 MATANUS	199907	3	-34	5	202	13	0
COOP:505 MATANUS	199908	4	187	11	254	7	0
COOP:505 MATANUS	199909	0	-45	13	475	0	0
COOP:505 MATANUS	199910	0	26	6	934	0	4
COOP:505 MATANUS	199911	0	-87	-13	1382	0	20
COOP:505 MATANUS	199912	0	22	-20	1525	0	21
COOP:505 MATANUS	200001	0	151	-17	1654	0	23
COOP:505 MATANUS	200002	0	9	78	1117	0	11
COOP:505 MATANUS	200003	0	0	48	1048	0	4
COOP:505 MATANUS	200004	0	-33	32	758	0	0
COOP:505 MATANUS	200005	0	20	-5	574	0	0
COOP:505 MATANUS	200006	0	-57	15	270	7	0
COOP:505 MATANUS	200007	0	-26	-3	225	4	0
COOP:505 MATANUS	200008	0	-16	-14	332	3	0
COOP:505 MATANUS	200009	0	51	-19	569	0	0
COOP:505 MATANUS	200010	0	-126	3	943	0	4
COOP:505 MATANUS	200011	0	0	102	1042	0	10
COOP:505 MATANUS	200012	0	0	115	1199	0	12
COOP:505 MATANUS	200101	0	0	156	1113	0	11
COOP:505 MATANUS	200102	0	0	50	1159	0	15
COOP:505 MATANUS	200103	0	-25	31	1100	0	13
COOP:505 MATANUS	200104	0	-28	18	801	0	0
COOP:505 MATANUS	200105	0	22	-22	626	1	0
COOP:505 MATANUS	200106	1	-65	36	208	17	0
COOP:505 MATANUS	200107	0	155	-3	227	3	0
COOP:505 MATANUS	200108	2	-129	23	220	6	0
COOP:505 MATANUS	200109	0	-52	10	480	0	0
COOP:505 MATANUS	200110	0	-32	-49	1106	0	13
COOP:505 MATANUS	200111	0	-36	-43	1477	0	24
COOP:505 MATANUS	200112	0	-11	-74	1796	0	23

COOP:505 MATANUS	200201	0	143	92	1296	0	14
COOP:505 MATANUS	200202	0	-19	37	1203	0	17
COOP:505 MATANUS	200203	0	51	-52	1350	0	16
COOP:505 MATANUS	200204	0	43	-56	986	0	3
COOP:505 MATANUS	200205	2	-15	14	490	6	0
COOP:505 MATANUS	200206	0	-51	0	293	4	0
COOP:505 MATANUS	200207	1	-80	16	154	17	0
COOP:505 MATANUS	200208	4	229	5	257	7	0
COOP:505 MATANUS	200209	0	69	12	479	0	0
COOP:505 MATANUS	200210	0	73	89	688	0	0
COOP:505 MATANUS	200211	0	-86	159	854	0	5
COOP:505 MATANUS	200212	0	0	78	1276	0	19
COOP:505 MATANUS	200301	0	0	65	1374	0	16
COOP:505 MATANUS	200302	0	5	136	921	0	7
COOP:505 MATANUS	200303	0	0	-2	1196	0	9
COOP:505 MATANUS	200304	0	-25	16	767	0	0
COOP:505 MATANUS	200305	0	15	6	512	1	0
COOP:505 MATANUS	200306	1	-55	10	261	6	0
COOP:505 MATANUS	200307	18	2	30	127	16	0
COOP:505 MATANUS	200308	4	-34	12	239	6	0
COOP:505 MATANUS	200309	0	-125	3	506	0	0
COOP:505 MATANUS	200310	0	-37	67	756	0	0
COOP:505 MATANUS	200311	0	105	-12	1371	0	17
COOP:505 MATANUS	200312	0	0	-11	1554	0	22
COOP:505 MATANUS	200401	0	0	-62	1771	0	25
COOP:505 MATANUS	200402	0	0	85	1102	0	11
COOP:505 MATANUS	200403	0	2	-12	1226	0	16
COOP:505 MATANUS	200404	0	-9	16	774	0	2
COOP:505 MATANUS	200405	0	-8	41	406	3	0
COOP:505 MATANUS	200406	5	-106	36	185	19	0
COOP:505 MATANUS	200407	13	-120	34	110	17	0
COOP:505 MATANUS	200408	12	4	49	135	22	0
COOP:505 MATANUS	200409	0	82	-33	623	0	0
COOP:505 MATANUS	200410	0	0	42	630	0	0
COOP:505 MATANUS	200412	0	0	75	1284	0	17
COOP:505 MATANUS	200501	0	52	31	1483	0	23
COOP:505 MATANUS	200502	0	-1	33	1213	0	12
COOP:505 MATANUS	200503	0	81	52	1030	0	7
COOP:505 MATANUS	200504	0	-39	35	714	3	0
COOP:505 MATANUS	200505	0	-5	43	401	4	0
COOP:505 MATANUS	200506	1	38	28	212	11	0
COOP:505 MATANUS	200507	5	145	24	130	19	0
COOP:505 MATANUS	200508	2	58	17	217	9	0
COOP:505 MATANUS	200509	0	160	26	438	0	0
COOP:505 MATANUS	200510	0	-100	19	904	0	4
COOP:505 MATANUS	200511	0	0	-61	1514	0	26
COOP:505 MATANUS	200512	0	-84	95	1225	0	12

COOP:505 MATANUS	200601	0	-43	-66	1787	0	29
COOP:505 MATANUS	200602	0	47	31	1216	0	13
COOP:505 MATANUS	200603	0	-17	-43	1325	0	17
COOP:505 MATANUS	200604	0	27	-11	652	0	0
COOP:505 MATANUS	200605	0	-72	18	476	9	0
COOP:505 MATANUS	200606	0	106	-8	314	2	0
COOP:505 MATANUS	200607	0	-123	-3	211	12	0
COOP:505 MATANUS	200608	0	464	-20	335	3	0
COOP:505 MATANUS	200609	0	-90	18	463	0	0
COOP:505 MATANUS	200610	0	7	51	807	0	5
COOP:505 MATANUS	200611	0	-94	-121	1696	0	29
COOP:505 MATANUS	200612	0	0	39	1395	0	21
COOP:505 MATANUS	200701	0	0	1	1579	0	24
COOP:505 MATANUS	200702	0	-88	-33	1400	0	24
COOP:505 MATANUS	200703	0	0	-160	1689	0	29
COOP:505 MATANUS	200704	0	-22	21	754	0	0
COOP:505 MATANUS	200705	0	68	7	511	0	0
COOP:505 MATANUS	200706	5	-117	9	271	10	0
COOP:505 MATANUS	200707	2	-37	-3	212	9	0
COOP:505 MATANUS	200708	2	-104	18	216	8	0
COOP:505 MATANUS	200709	0	149	14	471	0	0
COOP:505 MATANUS	200710	0	1	7	946	0	0
COOP:505 MATANUS	200711	0	0	105	1018	0	9
COOP:505 MATANUS	200712	0	0	17	1469	0	23
COOP:505 MATANUS	200801	0	0	-35	1690	0	24
COOP:505 MATANUS	200802	0	1	-43	1490	0	18
COOP:505 MATANUS	200804	0	0	-33	919	0	2
COOP:505 MATANUS	200805	0	-33	-10	550	0	0
COOP:505 MATANUS	200806	0	19	-26	370	0	0
COOP:505 MATANUS	200807	0	60	-33	302	3	0
COOP:505 MATANUS	200808	0	-85	-11	305	0	0
COOP:505 MATANUS	200809	0	-58	3	507	0	0
COOP:505 MATANUS	200810	0	-69	-57	1141	0	12
COOP:505 MATANUS	200811	0	-14	-16	1381	0	21
COOP:505 MATANUS	200812	0	0	-63	1715	0	26
COOP:505 MATANUS	200901	0	42	-40	1707	0	23
COOP:505 MATANUS	200902	0	-22	-52	1455	0	23
COOP:505 MATANUS	200903	0	19	-65	1393	0	21
COOP:505 MATANUS	200904	0	-16	-14	858	0	2
COOP:505 MATANUS	200905	0	8	17	481	3	0
COOP:505 MATANUS	200906	0	-63	-5	309	5	0
COOP:505 MATANUS	200907	10	-155	25	133	16	0
COOP:505 MATANUS	200908	0	-56	-12	309	3	0
COOP:505 MATANUS	200909	0	-97	9	488	0	0
COOP:505 MATANUS	200910	0	-90	65	759	0	0
COOP:505 MATANUS	200911	0	25	-31	1427	0	19
COOP:505 MATANUS	200912	0	14	25	1440	0	18
COOP:505 MATANUS	201001	0	-64	5	1561	0	26

COOP:505 MATANUS	201002	0	0	77	1089	0	12
COOP:505 MATANUS	201003	0	0	3	1180	0	10
COOP:505 MATANUS	201004	0	-16	8	797	0	0
COOP:505 MATANUS	201005	0	-56	14	486	5	0
COOP:505 MATANUS	201006	0	21	-4	305	3	0
COOP:505 MATANUS	201007	0	106	-20	266	3	0
COOP:505 MATANUS	201008	0	-7	4	258	6	0
COOP:505 MATANUS	201009	0	-186	6	496	0	0
COOP:505 MATANUS	201010	0	-89	43	830	0	0
COOP:505 MATANUS	201011	0	74	55	1164	0	15
COOP:505 MATANUS	201012	0	-71	-97	1823	0	29
COOP:505 MATANUS	201101	0	-19	48	1428	0	0
COOP:505 MATANUS	201102	0	-14	-43	1426	0	0
COOP:505 MATANUS	201103	0	-15	-23	1253	0	0
COOP:505 MATANUS	201104	0	-28	7	796	0	0
COOP:505 MATANUS	201105	0	-35	4	520	3	3
COOP:505 MATANUS	201106	0	53	-7	314	1	1
COOP:505 MATANUS	201107	0	-74	-4	214	9	9
COOP:505 MATANUS	201108	0	137	-16	324	1	1
COOP:505 MATANUS	201109	0	-196	6	497	0	0
COOP:505 MATANUS	201110	0	9	23	850	0	0
COOP:505 MATANUS	201111	0	-6	-96	1620	0	0
COOP:505 MATANUS	201112	0	167	59	1335	0	0
COOP:505 MATANUS	201201	0	0	-147	0	0	28
COOP:505 MATANUS	201202	0	71	68	1155	0	10
COOP:505 MATANUS	201203	0	-3	-98	1494	0	22
COOP:505 MATANUS	201204	0	-6	9	790	0	0
COOP:505 MATANUS	201205	0	2	-23	606	0	0
COOP:505 MATANUS	201206	0	21	-12	327	5	0
COOP:505 MATANUS	201207	0	-89	-22	268	5	0
COOP:505 MATANUS	201208	0	28	-7	295	3	0
COOP:505 MATANUS	201209	0	178	3	508	0	0
COOP:505 MATANUS	201210	0	48	-12	1000	0	8
COOP:505 MATANUS	201211	0	0	-46	1470	0	28

DT00	DT32	DP01	DP05	DP10	MMXP	MMNP	TEVP	TEVP(inch
23	31	0	0	0	0	0	0	0
15	28	2	1	0	0	0	0	0
0	26	0	0	0	0	0	0	0
0	26	2	0	0	0	0	0	0
0	11	2	0	0	0	0	0	0
0	0	3	0	0	688	499	442	4.42
0	0	11	2	0	722	532	460	4.6
0	0	4	0	0	706	518	287	2.87
0	3	9	2	0	557	440	216	2.16
5	29	8	0	0	0	0	0	0
6	29	4	0	0	0	0	0	0
8	29	3	0	0	0	0	0	0
				1982 Total Evap for Year (inches)				14.05
13	31	0	0	0	0	0	0	0
8	25	2	0	0	0	0	0	0
0	31	0	0	0	0	0	0	0
0	24	1	0	0	0	0	0	0
0	6	0	0	0	0	0	0	0
0	0	3	0	0	745	516	520	5.2
0	0	6	0	0	730	544	379	3.79
0	0	12	3	0	668	498	264	2.64
0	12	8	1	0	556	417	143	1.43
0	25	5	2	0	0	0	0	0
0	30	2	0	0	0	0	0	0
9	31	0	0	0	0	0	0	0
				1983 Total Evap for Year (inches)				13.06
12	30	4	0	0	0	0	0	0
9	29	3	0	0	0	0	0	0
0	26	0	0	0	0	0	0	0
0	23	4	0	0	0	0	0	0
0	16	4	0	0	0	0	0	0
0	0	6	0	0	730	509	457	4.57
0	0	12	1	0	715	543	275	2.75
0	4	6	2	1	677	509	301	3.01
0	7	4	2	0	582	425	194	1.94
0	25	1	0	0	0	0	0	0
5	30	1	0	0	0	0	0	0
9	30	6	0	0	0	0	0	0
				1984 Total Evap for Year (inches)				12.27
0	26	4	0	0	0	0	0	0
16	28	3	0	0	0	0	0	0
3	31	2	0	0	0	0	0	0
2	30	0	0	0	0	0	0	0
0	16	2	0	0	605	410	439	4.39
0	0	2	0	0	657	466	423	4.23
0	0	5	1	0	733	538	408	4.08
0	0	9	2	0	663	489	257	2.57
0	8	9	2	0	0	0	0	0
6	26	1	0	0	0	0	0	0
24	30	0	0	0	0	0	0	0
4	28	1	0	0	0	0	0	0

				1985 Total Evap for Year (inches)				15.27
0	29	1	1	1	0	0	0	0
8	27	5	0	0	0	0	0	0
7	31	4	0	0	0	0	0	0
3	28	0	0	0	0	0	0	0
0	8	0	0	0	0	0	0	0
0	0	2	0	0	695	485	544	5.44
0	0	7	2	1	717	533	396	3.96
0	0	6	0	0	645	483	273	2.73
0	4	9	1	0	585	431	145	1.45
0	19	6	0	0	0	0	0	0
5	29	4	0	0	0	0	0	0
1	26	5	0	0	0	0	0	0
				1986 Total Evap for Year (inches)				13.58
4	29	3	0	0	0	0	0	0
0	28	2	0	0	0	0	0	0
4	25	0	0	0	0	0	0	0
0	23	0	0	0	0	0	0	0
0	5	4	0	0	604	420	380	3.8
0	0	5	0	0	638	464	394	3.94
0	0	8	1	0	711	530	365	3.65
0	0	7	1	0	692	507	321	3.21
0	9	5	2	0	532	395	166	1.66
0	20	4	0	0	0	0	0	0
1	30	5	0	0	0	0	0	0
6	30	2	0	0	0	0	0	0
				1987 Total Evap for Year (inches)				16.26
6	31	1	0	0	0	0	0	0
2	25	2	0	0	0	0	0	0
0	29	2	1	0	0	0	0	0
0	17	2	0	0	0	0	0	0
0	3	1	0	0	0	0	0	0
0	0	6	0	0	702	486	433	4.33
0	0	4	0	0	708	543	317	3.17
0	0	6	1	0	668	492	329	3.29
0	9	5	2	0	564	400	210	2.1
0	27	5	0	0	0	0	0	0
6	30	4	0	0	0	0	0	0
8	30	5	0	0	0	0	0	0
				1988 Total Evap for Year (inches)				12.89
22	31	2	0	0	0	0	0	0
12	28	1	0	0	0	0	0	0
5	31	0	0	0	0	0	0	0
0	20	0	0	0	0	0	0	0
0	6	6	0	0	0	414	0	0
0	0	3	2	0	704	486	503	5.03
0	0	7	0	0	750	537	455	4.55
0	0	9	2	1	680	524	306	3.06
0	3	11	1	0	556	439	165	1.65
0	24	8	1	0	0	0	0	0
11	30	5	0	0	0	0	0	0
2	29	5	0	0	0	0	0	0

				1989 Total Evap for Year (inches)				14.29
13	29	5	0	0	0	0	0	0
21	28	5	0	0	0	0	0	0
1	29	1	0	0	0	0	0	0
0	26	1	0	0	0	0	0	0
0	6	4	0	0	0	0	0	0
0	0	4	0	0	764	510	433	4.33
0	0	0	0	0	763	531	447	4.47
0	0	7	0	0	696	500	344	3.44
0	0	12	3	1	542	424	202	2.02
0	27	1	0	0	0	0	0	0
15	29	3	0	0	0	0	0	0
13	31	7	2	0	0	0	0	0
				1990 Total Evap for Year (inches)				14.26
16	29	0	0	0	0	0	0	0
12	22	1	0	0	0	0	0	0
1	30	2	0	0	0	0	0	0
0	16	0	0	0	0	0	0	0
0	4	1	0	0	0	0	0	0
0	0	2	0	0	735	480	581	5.81
0	0	9	2	0	702	516	374	3.74
0	0	3	0	0	658	481	348	3.48
0	1	5	1	0	564	418	220	2.2
0	26	4	1	1	0	0	0	0
5	29	2	0	0	0	0	0	0
5	31	3	0	0	0	0	0	0
				1991 Total Evap for Year (inches)				15.23
2	29	3	0	0	0	0	0	0
14	29	2	1	1	0	0	0	0
6	27	2	0	0	0	0	0	0
0	26	1	0	0	0	0	0	0
0	12	3	0	0	613	400	578	5.78
0	0	6	0	0	704	486	505	5.05
0	0	9	0	0	706	535	402	4.02
0	0	4	0	0	637	492	320	3.2
0	17	7	1	0	0	0	0	0
0	27	3	1	1	0	0	0	0
6	27	4	0	0	0	0	0	0
12	31	2	0	0	0	0	0	0
				1992 Total Evap for Year (inches)				16.05
13	31	7	0	0	0	0	0	0
8	25	3	1	0	0	0	0	0
0	30	2	0	0	0	0	0	0
0	15	0	0	0	0	0	0	0
0	0	3	1	0	700	442	513	5.13
0	0	4	0	0	747	491	530	5.3
0	0	2	0	0	741	541	542	5.42
0	0	7	1	0	0	0	404	4.04
0	7	12	2	0	0	0	164	1.64
0	19	7	0	0	0	0	0	0
5	29	5	0	0	0	0	0	0
2	31	5	2	1	0	0	0	0

				1993 Total Evap for Year (inches)				21.53
2	29	0	0	0	0	0	0	0
9	27	0	0	0	0	0	0	0
4	28	4	0	0	0	0	0	0
0	20	0	0	0	0	0	0	0
0	4	0	0	0	0	0	518	5.18
0	0	7	0	0	732	506	475	4.75
0	0	2	0	0	739	535	467	4.67
0	0	4	1	0	710	522	394	3.94
0	3	4	1	0	569	408	248	2.48
1	22	4	2	0	0	0	0	0
11	29	3	0	0	0	0	0	0
13	31	5	2	0	0	0	0	0
				1994 Total Evap for Year (inches)				21.02
12	30	2	0	0	0	0	0	0
6	26	2	0	0	0	0	0	0
11	29	4	1	0	0	0	0	0
0	14	1	0	0	0	0	0	0
0	2	1	0	0	0	0	0	0
0	0	4	1	0	713	486	476	4.76
0	0	7	1	0	716	543	445	4.45
0	0	8	0	0	703	503	305	3.05
0	0	6	1	1	535	456	177	1.77
0	22	3	0	0	0	0	0	0
7	30	1	0	0	0	0	0	0
10	29	0	0	0	0	0	0	0
				1995 Total Evap for Year (inches)				14.03
22	31	1	0	0	0	0	0	0
10	29	8	0	0	0	0	0	0
1	31	2	0	0	0	0	0	0
0	20	1	0	0	0	0	0	0
0	6	0	0	0	0	0	0	0
0	0	1	0	0	732	486	588	5.88
0	0	3	2	0	713	526	500	5
0	0	8	1	0	655	480	324	3.24
0	6	4	0	0	569	393	0	0
10	30	4	1	1	0	0	0	0
12	30	5	1	0	0	0	0	0
18	31	0	0	0	0	0	0	0
				1996 Total Evap for Year (inches)				14.12
11	30	0	0	0	0	0	0	0
0	23	1	0	0	0	0	0	0
0	31	1	0	0	0	0	0	0
0	18	2	0	0	0	0	0	0
0	7	7	1	1	632	415	0	0
0	0	3	0	0	735	493	515	5.15
0	0	9	0	0	750	534	481	4.81
0	0	9	4	2	685	511	341	3.41
0	3	4	1	0	566	416	269	2.69
0	30	4	1	0	0	0	0	0
3	25	6	1	1	0	0	0	0
12	30	3	1	1	0	0	0	0

				1997 Total Evap for Year (inches)				16.06
10	31	0	0	0	0	0	0	0
2	26	0	0	0	0	0	0	0
4	26	0	0	0	0	0	0	0
0	17	0	0	0	0	0	0	0
0	7	1	0	0	585	394	0	0
0	0	8	1	0	664	489	443	4.43
0	0	3	0	0	718	514	397	3.97
0	1	10	2	0	647	457	298	2.98
0	3	6	0	0	543	391	191	1.91
0	24	2	0	0	0	0	0	0
1	29	0	0	0	0	0	0	0
12	31	2	1	0	0	0	0	0
				1998 Total Evap for Year (inches)				13.29
18	31	3	0	0	0	0	0	0
16	28	1	0	0	0	0	0	0
3	29	0	0	0	0	0	0	0
0	25	1	0	0	0	0	0	0
0	11	3	2	0	632	403	535	5.35
0	0	4	0	0	713	499	499	4.99
0	0	11	0	0	718	535	407	4.07
0	0	8	2	1	682	493	319	3.19
0	2	9	0	0	553	410	194	1.94
0	22	6	0	0	0	0	0	0
7	30	0	0	0	0	0	0	0
17	28	3	1	0	0	0	0	0
				1999 Total Evap for Year (inches)				19.54
14	30	5	1	1	0	0	0	0
0	28	2	1	0	0	0	0	0
1	25	2	0	0	0	0	0	0
0	22	1	0	0	0	0	0	0
0	10	2	1	0	630	389	522	5.22
0	0	3	1	0	723	487	555	5.55
0	0	7	0	0	709	519	351	3.51
0	1	11	0	0	647	460	311	3.11
0	9	8	2	0	0	0	0	0
0	24	1	0	0	0	0	0	0
0	24	1	0	0	0	0	0	0
0	30	3	2	0	0	0	0	0
				2000 Total Evap for Year (inches)				17.39
0	25	5	1	0	0	0	0	0
2	27	5	0	0	0	0	0	0
0	28	2	0	0	0	0	0	0
0	25	1	0	0	0	0	0	0
0	11	5	0	0	597	375	407	4.07
0	0	4	0	0	754	506	589	5.89
0	0	11	3	0	676	516	349	3.49
0	0	3	0	0	686	503	317	3.17
0	3	3	2	0	553	398	213	2.13
4	24	5	0	0	0	0	0	0
9	30	2	0	0	0	0	0	0
18	30	3	0	0	0	0	0	0

				2001 Total Evap for Year (inches)				18.75
7	28	5	1	0	0	0	0	0
4	28	2	0	0	0	0	0	0
3	31	3	1	0	0	0	0	0
0	26	3	0	0	0	0	0	0
0	9	2	0	0	632	399	521	5.21
0	0	4	0	0	691	471	485	4.85
0	0	5	0	0	712	512	493	4.93
0	0	10	3	1	659	475	331	3.31
0	4	12	2	0	544	405	155	1.55
0	9	6	1	0	0	0	0	0
0	17	1	0	0	0	0	0	0
5	26	0	0	0	0	0	0	0
				2002 Total Evap for Year (inches)				19.85
4	31	1	0	0	0	0	0	0
0	24	2	0	0	0	0	0	0
2	30	2	0	0	0	0	0	0
0	20	1	0	0	0	0	0	0
0	3	4	0	0	604	385	456	4.56
0	0	1	1	0	697	478	526	5.26
0	0	8	1	0	724	516	517	5.17
0	0	8	1	0	645	475	351	3.51
0	6	4	0	0	557	374	251	2.51
0	19	4	0	0	0	0	0	0
9	27	5	1	0	0	0	0	0
10	29	3	0	0	0	0	0	0
				2003 Total Evap for Year (inches)				21.01
16	31	2	0	0	0	0	0	0
2	28	3	0	0	0	0	0	0
1	31	1	0	0	0	0	0	0
2	16	1	0	0	0	0	0	0
0	1	3	0	0	624	429	431	4.31
0	0	1	0	0	720	481	543	5.43
0	0	5	0	0	723	516	553	5.53
0	0	4	3	0	709	487	491	4.91
0	11	9	3	0	510	351	348	3.48
0	17	10	1	1	0	0	0	0
5	29	5	0	0	0	0	0	0
				2004 Total Evap for Year (inches)				44.87
7	29	3	1	0	0	0	0	0
6	28	2	0	0	0	0	0	0
0	24	6	1	0	0	0	0	0
0	18	0	0	0	0	0	0	0
0	1	3	0	0	629	420	620	6.2
0	0	5	1	0	730	511	609	6.09
0	0	8	1	1	734	534	559	5.59
0	0	10	0	0	701	512	340	3.4
0	0	9	3	1	549	434	226	2.26
0	20	2	0	0	0	0	0	0
7	29	4	0	0	0	0	0	0
5	26	1	0	0	0	0	0	0
				2005 Total Evap for Year (inches)				23.54

16	31	2	0	0	0	0	0	0
8	26	4	0	0	0	0	0	0
4	31	1	0	0	0	0	0	0
0	25	3	0	0	0	0	0	0
0	3	0	0	0	647	461	588	5.88
0	1	6	2	0	676	510	554	5.54
0	0	2	0	0	739	532	789	7.89
0	0	15	6	1	652	493	396	3.96
0	1	6	1	0	594	427	0	0
0	18	7	0	0	0	0	0	0
20	30	0	0	0	0	0	0	0
6	30	8	2	0	0	0	0	0
				2006 Total Evap for Year (inches)				23.27
9	30	3	0	0	0	0	0	0
10	20	0	0	0	0	0	0	0
23	31	2	0	0	0	0	0	0
0	18	1	0	0	0	0	0	0
0	2	5	0	0	664	446	517	5.17
0	0	1	0	0	716	526	588	5.88
0	0	8	0	0	708	585	494	4.94
0	0	2	1	0	691	555	392	3.92
0	3	14	1	0	573	482	299	2.99
0	28	5	1	0	0	0	0	0
0	25	6	1	1	0	0	0	0
6	31	2	0	0	0	0	0	0
				2007 Total Evap for Year (inches)				22.9
16	30	7	0	0	0	0	0	0
12	25	2	0	0	0	0	0	0
0	27	1	1	0	0	0	0	0
0	5	1	0	0	0	0	0	0
0	0	6	0	0	670	507	504	5.04
0	0	10	1	0	701	536	391	3.91
0	0	6	0	0	684	548	295	2.95
0	6	3	1	0	571	456	214	2.14
1	29	4	0	0	0	0	0	0
8	30	2	0	0	0	0	0	0
18	31	4	0	0	0	0	0	0
				2008 Total Evap for Year (inches)				36.94
12	27	5	0	0	0	0	0	0
12	28	2	0	0	0	0	0	0
6	30	3	0	0	0	0	0	0
0	27	2	0	0	0	0	0	0
0	8	3	0	0	663	432	609	6.09
0	0	4	0	0	712	504	457	4.57
0	0	1	1	0	747	540	424	4.24
0	0	7	0	0	659	492	0	0
0	5	6	0	0	555	424	245	2.45
0	15	4	0	0	0	0	0	0
8	29	4	0	0	0	0	0	0
6	28	5	1	0	0	0	0	0
				2009 Total Evap for Year (inches)				17.35
9	31	0	0	0	0	0	0	0

0	26	5	0	0	0	0	0	0
4	29	1	0	0	0	0	0	0
0	19	2	0	0	0	0	0	0
0	6	0	0	0	0	0	0	0
0	0	4	1	0	0	0	0	0
0	0	8	1	1	0	0	0	0
0	0	7	1	0	668	513	-5	-0.05
0	6	2	0	0	579	419	151	1.51
0	17	2	0	0	0	0	0	0
0	30	4	0	0	0	0	0	0
22	31	4	0	0	0	0	0	0
				2010 Total Evap for Year (inches)				1.46
0	0	2	0	0	0	0	0	0
0	0	3	0	0	0	0	0	0
0	0	2	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
3	3	1	0	0	631	405	579	5.79
1	1	4	2	0	668	482	372	3.72
9	9	7	0	0	398	516	346	3.46
1	1	10	2	1	322	472	0	0
0	0	2	0	0	535	392	231	2.31
0	0	3	1	0	0	0	0	0
0	0	3	0	0	0	0	0	0
0	0	10	1	0	0	0	0	0
				2011 Total Evap for Year (inches)				15.28
23	29	2	0	0	0	0	0	0
3	27	6	0	0	0	0	0	0
13	31	2	0	0	0	0	0	0
0	25	2	0	0	0	0	0	0
0	10	2	0	0	595	379	0	0
0	0	5	0	0	648	486	363	3.63
0	0	4	0	0	661	501	374	3.74
0	0	7	1	1	664	525	297	2.97
0	5	10	2	2	580	487	160	1.6
0	23	3	1	1	0	0	0	0
10	30	0	0	0	0	0	0	0
				2012 Total Evap for Year (inches)				27.22
				30 year, yearly average TEVP				18.34

EMXP	MXSD	DSNW	TPCP	TPCP (incl TSNW	EMXT	EMNT	MMXT
2	1	27	2	0.02	4	31	-28	132
55	1	7	72	0.72	8	53	-19	237
9	3	10	9	0.09	23	46	1	351
22	3	4	45	0.45	30	52	7	422
27	0	0	61	0.61	0	61	25	550
36	0	0	96	0.96	0	76	33	632
84	0	0	342	3.42	0	78	37	646
47	0	0	121	1.21	0	72	39	653
76	0	0	337	3.37	0	66	28	562
49	6	24	223	2.23	206	48	-11	334
27	7	30	101	1.01	146	45	-16	288
38	7	28	73	0.73	37	47	-15	284
	Total Precip for Year (inches)			14.82				
8	1	8	16	0.16	28	40	-21	227
18	4	22	31	0.31	38	45	-12	294
0	1	12	0	0	0	47	4	395
15	0	0	40	0.4	5	61	23	494
8	0	0	12	0.12	0	69	29	587
43	0	0	119	1.19	0	78	35	661
26	0	0	140	1.4	0	75	40	665
60	0	0	465	4.65	0	75	35	634
53	1	1	204	2.04	10	60	23	527
87	6	7	226	2.26	115	55	13	422
10	6	22	20	0.2	38	51	2	347
6	2	12	10	0.1	20	49	-13	247
	Total Precip for Year (inches)			12.83				
20	4	26	95	0.95	118	48	-25	235
24	7	29	73	0.73	180	43	-21	253
4	5	6	6	0.06	6	52	9	438
18	3	9	80	0.8	80	57	19	459
31	0	0	84	0.84	0	66	24	583
40	0	0	178	1.78	0	74	35	649
76	0	0	276	2.76	0	75	44	649
114	0	0	246	2.46	0	75	28	645
65	0	0	183	1.83	0	66	27	590
33	0	0	44	0.44	0	58	6	437
11	0	0	13	0.13	0	41	-8	258
28	8	24	119	1.19	126	43	-11	247
	Total Precip for Year (inches)			13.97				
18	3	9	75	0.75	65	47	11	396
16	7	14	58	0.58	100	42	-16	211
14	2	19	38	0.38	53	45	-2	355
5	1	9	10	0.1	19	51	-5	377
12	0	0	46	0.46	0	72	25	552
22	0	0	88	0.88	0	73	33	608
59	0	0	148	1.48	0	78	44	678
60	0	0	299	2.99	0	71	38	622
68	0	0	359	3.59	0	67	27	554
45	1	2	59	0.59	5	53	-4	380
4	1	1	4	0.04	8	44	-12	210
15	1	1	46	0.46	9	51	-3	366

	Total Precip for Year (inches)			12.3				
109	2	4	129	1.29	32	43	3	320
38	4	4	120	1.2	74	49	-21	313
33	8	8	91	0.91	129	46	-19	325
5	6	13	6	0.06	8	58	-6	395
7	0	0	18	0.18	0	72	29	584
25	0	0	48	0.48	0	83	35	655
183	0	0	416	4.16	0	78	41	667
47	0	0	190	1.9	0	70	35	623
92	0	0	333	3.33	0	65	23	565
38	0	0	143	1.43	0	67	10	462
48	4	5	132	1.32	48	55	-13	320
40	6	14	119	1.19	127	51	-2	363
	Total Precip for Year (inches)			17.45				
30	7	21	106	1.06	106	48	-21	313
25	2	6	39	0.39	34	44	4	353
8	1	1	8	0.08	11	50	-5	367
1	0	0	1	0.01	2	58	20	490
28	0	0	90	0.9	0	70	28	569
45	0	0	163	1.63	0	70	38	609
80	0	0	253	2.53	0	81	41	649
61	0	0	176	1.76	0	76	36	662
57	0	0	229	2.29	0	66	23	546
48	0	0	144	1.44	0	55	12	480
31	6	29	106	1.06	175	42	0	317
33	10	31	77	0.77	142	44	-20	240
	Total Precip for Year (inches)			13.95				
12	3	29	27	0.27	44	41	-16	254
34	4	12	66	0.66	92	43	-14	316
76	2	7	101	1.01	43	46	16	397
18	2	1	52	0.52	22	54	12	460
24	0	0	48	0.48	0	67	27	584
46	0	0	181	1.81	0	75	36	633
45	0	0	160	1.6	0	75	41	656
59	0	0	234	2.34	0	74	38	643
80	0	0	243	2.43	0	64	23	565
48	1	3	161	1.61	44	54	13	399
19	6	18	70	0.7	127	44	-15	256
43	10	31	133	1.33	240	45	-22	293
	Total Precip for Year (inches)			14.76				
28	6	31	69	0.69	133	40	-40	86
18	5	28	25	0.25	40	40	-21	246
0	3	19	0	0	0	46	-5	340
9	0	0	10	0.1	0	59	21	492
49	0	0	213	2.13	0	65	30	559
67	0	0	151	1.51	0	78	37	648
38	0	0	173	1.73	0	82	42	692
106	0	0	361	3.61	0	76	42	659
51	0	0	244	2.44	0	68	29	577
56	8	13	224	2.24	139	55	4	400
32	7	30	114	1.14	112	42	-18	241
22	5	24	118	1.18	115	47	-23	328

	Total Precip for Year (inches)			17.02				
39	11	31	128	1.28	236	43	-24	207
44	17	28	131	1.31	262	45	-28	126
43	14	28	51	0.51	77	49	-1	385
13	3	1	18	0.18	33	60	22	522
40	0	0	153	1.53	0	69	28	604
35	0	0	113	1.13	0	80	42	680
8	0	0	21	0.21	0	81	45	710
46	0	0	179	1.79	0	81	37	676
100	0	0	492	4.92	0	68	33	569
10	1	6	50	0.5	17	50	8	409
37	8	18	91	0.91	147	35	-26	169
80	19	31	323	3.23	339	37	-28	205
	Total Precip for Year (inches)			17.6				
9	22	31	31	0.31	69	46	-15	206
10	8	28	36	0.36	87	50	-21	277
16	6	30	74	0.74	96	44	-3	344
3	1	4	5	0.05	0	57	21	479
18	0	0	19	0.19	0	72	31	588
14	0	0	34	0.34	0	80	35	675
74	0	0	347	3.47	0	75	42	650
26	0	0	82	0.82	0	71	35	641
53	0	0	191	1.91	0	66	31	582
100	9	17	163	1.63	110	54	7	403
18	6	24	60	0.6	99	44	-5	295
32	10	31	139	1.39	260	40	-10	262
	Total Precip for Year (inches)			11.81				
25	10	31	76	0.76	104	43	-3	273
130	20	29	149	1.49	185	40	-17	204
13	21	13	48	0.48	34	49	-26	331
20	0	0	43	0.43	4	57	5	459
23	0	0	73	0.73	0	72	21	561
33	0	0	151	1.51	0	79	32	658
43	0	0	228	2.26	0	78	46	669
36	0	0	100	1	0	72	42	629
59	0	0	197	1.97	0	62	15	475
120	4	5	205	2.05	50	53	3	387
30	5	23	96	0.96	98	47	-8	309
14	5	22	75	0.75	83	46	-20	188
	Total Precip for Year (inches)			14.41				
29	20	31	157	1.57	221	41	-29	215
61	15	28	133	1.33	129	46	-33	282
20	7	29	49	0.49	82	47	10	381
2	0	0	3	0.03	0	62	24	531
60	0	0	104	1.04	0	78	33	625
18	0	0	86	0.86	0	76	39	675
22	0	0	77	0.77	0	83	45	712
90	0	0	258	2.58	0	78	38	661
85	0	0	389	3.89	0	70	25	555
30	3	3	153	1.53	30	58	14	447
37	7	17	154	1.54	129	46	-18	296
121	11	31	244	2.44	155	49	-1	316

	Total Precip for Year (inches)			18.07				
7	6	31	12	0.12	35	50	-3	268
5	1	3	5	0.05	0	49	-6	241
27	11	25	97	0.97	153	49	-11	327
2	0	0	3	0.03	0	62	7	491
7	0	0	10	0.1	0	68	31	573
42	0	0	193	1.93	0	81	37	671
37	0	0	79	0.79	0	78	42	679
56	0	0	146	1.46	0	77	36	681
55	0	0	144	1.44	0	68	25	572
51	7	16	160	1.6	115	59	0	399
29	10	29	123	1.23	197	43	-18	211
73	18	31	205	2.05	235	41	-20	226
	Total Precip for Year (inches)			11.77				
31	12	31	59	0.59	72	42	-23	224
32	12	28	69	0.69	90	49	-12	270
51	19	31	130	1.3	200	54	-15	282
12	5	7	20	0.2	0	62	27	501
13	0	0	32	0.32	0	76	32	598
54	0	0	167	1.67	0	81	36	651
60	0	0	295	2.95	0	74	44	660
43	0	0	183	1.83	0	76	40	656
213	0	0	371	3.71	0	66	37	596
25	1	1	59	0.59	10	57	19	450
10	1	1	10	0.1	11	49	-3	278
0	0	0	0	0	0	46	-21	245
	Total Precip for Year (inches)			13.95				
11	1	8	20	0.2	20	35	-22	89
45	19	25	211	2.11	322	38	-22	222
46	16	30	71	0.71	46	50	-1	382
12	1	1	12	0.12	15	58	17	478
9	0	0	14	0.14	0	76	25	621
33	0	0	43	0.43	0	80	37	677
56	0	0	150	1.5	0	79	42	683
66	0	0	251	2.51	0	71	33	646
16	0	0	77	0.77	0	72	24	549
111	8	19	205	2.05	82	52	-10	326
70	14	28	161	1.61	201	45	-12	221
6	15	31	7	0.07	23	36	-14	210
	Total Precip for Year (inches)			12.22				
9	2	31	11	0.11	30	44	-30	207
14	2	9	14	0.14	28	47	13	385
11	2	5	16	0.16	37	42	2	340
19	1	1	39	0.39	16	61	17	502
113	0	0	232	2.32	0	74	29	601
37	0	0	110	1.1	0	83	34	685
39	0	0	195	1.95	0	79	46	705
121	0	0	503	5.03	0	78	41	669
50	0	0	126	1.26	0	68	31	596
60	1	3	149	1.49	12	52	2	365
100	6	10	219	2.19	81	50	-10	332
150	5	30	226	2.26	133	41	-18	235

	Total Precip for Year (inches)			18.4				
0	5	31	0	0	1	39	-19	227
5	2	28	5	0.05	15	43	-1	352
0	2	13	0	0	0	53	-3	392
2	0	0	2	0.02	2	62	21	477
45	0	0	71	0.71	0	66	27	543
55	0	0	235	2.35	0	77	40	633
38	0	0	118	1.18	0	78	41	671
73	0	0	286	2.86	0	75	31	618
25	0	0	142	1.42	0	64	26	567
19	0	0	50	0.5	0	54	12	451
8	5	20	23	0.23	65	47	-1	292
55	18	31	101	1.01	226	37	-14	165
	Total Precip for Year (inches)			10.33				
31	17	31	70	0.7	141	39	-31	168
20	13	28	36	0.36	18	41	-41	153
1	6	21	1	0.01	5	49	-9	343
27	4	5	31	0.31	49	58	13	453
53	0	0	148	1.48	0	74	22	573
39	0	0	131	1.31	0	79	38	667
30	0	0	194	1.94	0	81	40	668
175	0	0	394	3.94	0	78	40	648
44	0	0	198	1.98	0	69	27	559
42	3	7	173	1.73	49	52	11	416
6	4	19	12	0.12	22	40	-6	266
83	8	4	133	1.33	103	52	-17	212
	Total Precip for Year (inches)			15.21				
108	20	31	231	2.31	326	40	-17	187
65	22	29	76	0.76	55	47	3	346
19	6	26	31	0.31	58	46	-1	384
18	1	2	23	0.23	16	64	24	490
64	0	0	99	0.99	0	66	26	577
59	0	0	102	1.02	0	76	35	662
40	0	0	202	2.02	0	74	42	649
32	0	0	211	2.11	0	74	31	632
70	0	0	294	2.94	0	62	24	548
19	3	2	19	0.19	28	52	9	421
33	1	6	33	0.33	4	49	9	372
91	6	11	158	1.58	60	47	2	338
	Total Precip for Year (inches)			14.79				
65	3	9	169	1.69	43	45	2	355
44	12	28	140	1.4	130	43	-2	320
10	4	13	28	0.28	42	44	10	350
11	2	2	28	0.28	21	58	15	472
15	8	2	101	1.01	85	72	25	544
48	0	0	94	0.94	0	78	37	668
63	0	0	383	3.83	0	72	46	642
32	0	0	98	0.98	0	78	41	661
91	0	0	191	1.91	0	65	29	582
27	8	15	113	1.13	98	61	-6	366
40	8	30	63	0.63	37	41	-8	235
48	18	31	100	1	140	49	-27	156

	Total Precip for Year (inches)			15.08				
80	8	14	216	2.16	90	44	-14	298
40	6	28	51	0.51	40	40	-8	301
60	8	19	99	0.99	133	41	-2	319
33	5	5	86	0.86	3	56	6	409
20	0	0	59	0.59	0	78	24	605
20	0	0	86	0.86	0	80	37	643
49	0	0	137	1.37	0	81	44	700
136	0	0	462	4.62	0	82	40	657
71	0	0	318	3.18	0	67	19	575
73	0	0	219	2.19	0	59	25	494
17	0	0	28	0.28	5	56	13	421
4	2	20	14	0.14	38	52	-12	299
	Total Precip for Year (inches)			17.75				
28	4	29	36	0.36	45	43	-6	299
31	0	0	75	0.75	0	48	12	386
18	2	3	37	0.37	35	47	-13	353
13	0	0	15	0.15	0	55	11	497
24	0	0	89	0.89	0	70	31	580
64	0	0	82	0.82	0	77	36	654
62	0	0	219	2.19	0	85	46	709
55	0	0	199	1.99	0	81	41	658
48	0	0	124	1.24	0	66	26	577
44	0	0	109	1.09	0	68	21	482
57	21	15	199	1.99	252	46	-14	261
32	22	29	71	0.71	102	42	-15	232
	Total Precip for Year (inches)			12.55				
25	11	27	45	0.45	33	43	-28	175
25	8	19	50	0.5	61	47	0	345
14	3	17	50	0.5	90	46	-5	332
28	3	5	34	0.34	16	56	-5	482
12	0	0	66	0.66	0	72	32	618
15	0	0	31	0.31	0	84	40	695
26	0	0	97	0.97	0	83	48	710
88	0	0	237	2.37	0	84	39	728
93	0	0	331	3.31	0	64	24	543
113	4	5	276	2.76	56	53	19	445
32	10	28	124	1.24	109	49	-7	311
	Total Precip for Year (inches)			25.98				
53	5	3	125	1.25	11	49	-11	237
36	5	20	69	0.69	61	42	-12	296
55	8	11	129	1.29	98	48	5	389
3	6	4	4	0.04	0	73	18	514
0	0	0	69	0.69	0	73	31	632
58	0	0	175	1.75	0	80	39	679
150	0	0	362	3.62	0	78	46	701
0	0	0	291	2.91	0	82	39	671
115	0	0	409	4.09	0	64	33	581
22	0	0	46	0.46	0	54	11	435
41	14	21	131	1.31	127	44	-15	214
21	8	10	37	0.37	0	47	-13	328
	Total Precip for Year (inches)			16.47				

12	6	16	30	0.3	80	35	-25	151
48	5	14	117	1.17	135	48	-18	300
25	5	17	31	0.31	46	43	-12	318
13	3	3	70	0.7	54	50	16	453
2	0	0	2	0.02	0	79	29	609
54	0	0	243	2.43	0	71	31	639
36	0	0	94	0.94	0	76	42	667
150	0	0	697	6.97	0	74	39	610
53	0	0	159	1.59	0	66	32	585
32	3	5	153	1.53	48	67	19	454
0	3	15	0	0	0	33	-13	178
70	12	17	262	2.62	312	43	-6	279
	Total Precip for Year (inches)			18.58				
18	18	31	107	1.07	208	46	-28	212
3	8	26	4	0.04	10	56	-19	249
22	6	31	36	0.36	40	36	-15	218
21	4	5	21	0.21	0	60	11	490
37	0	0	143	1.43	0	68	28	579
12	0	0	20	0.2	0	81	38	663
48	0	0	180	1.8	0	78	44	659
62	0	0	129	1.29	0	78	42	670
62	0	0	392	3.92	0	68	32	572
50	0	0	147	1.47	0	52	16	423
101	4	3	210	2.1	1	47	8	367
25	6	8	59	0.59	55	45	-17	257
	Total Precip for Year (inches)			14.48				
25	14	29	114	1.14	183	48	-16	198
28	6	18	71	0.71	45	43	-23	234
67	1	2	96	0.96	88	58	12	433
41	0	0	41	0.41	0	66	30	585
36	0	0	156	1.56	0	69	41	601
56	0	0	277	2.77	0	74	39	621
38	0	0	148	1.48	0	68	39	631
59	0	0	193	1.93	0	63	26	550
18	2	7	77	0.77	44	52	0	355
31	6	19	80	0.8	122	40	-9	265
15	12	31	59	0.59	130	34	-25	176
	Total Precip for Year (inches)			27.6				
41	10	17	115	1.15	94	52	-29	181
19	6	28	48	0.48	79	39	-17	219
24	11	31	67	0.67	112	43	-13	292
10	1	2	27	0.27	5	64	14	453
30	0	0	82	0.82	0	72	30	618
15	0	0	74	0.74	0	79	35	642
50	0	0	62	0.62	0	82	44	705
43	0	0	177	1.77	0	76	38	639
44	0	0	152	1.52	0	67	27	571
15	0	0	56	0.56	0	61	22	476
32	5	22	119	1.19	113	40	-18	251
55	16	28	135	1.35	185	40	-8	251
	Total Precip for Year (inches)			11.14				
8	9	27	9	0.09	27	38	-8	224

40	8	24	125	1.25	133	52	1	325
17	7	23	31	0.31	87	46	-8	350
12	2	2	27	0.27	26	64	19	463
7	0	0	18	0.18	0	77	28	604
58	0	0	158	1.58	0	74	36	624
106	0	0	323	3.23	0	76	44	631
55	0	0	226	2.26	0	74	40	643
31	0	0	63	0.63	0	67	27	577
21	1	3	57	0.57	14	61	15	455
47	3	14	168	1.68	50	45	4	317
12	5	15	50	0.5	82	44	-12	142
	Total Precip for Year (inches)			12.55				
20	6	2	54	0.54	83	480	-18	259
19	7	3	56	0.56	95	420	-13	231
17	5	1	33	0.33	47	470	-1	336
7	1	1	15	0.15	14	550	19	474
25	0	0	39	0.39	0	770	26	592
80	0	0	190	1.9	0	730	32	625
24	0	0	143	1.43	0	750	44	659
114	0	0	370	3.7	0	700	37	620
37	0	0	53	0.53	0	630	26	564
88	0	0	155	1.55	8	520	11	438
17	5	5	88	0.88	155	360	-18	192
78	8	8	288	2.88	188	470	-7	281
	Total Precip for Year (inches)			14.84				
26	14	5	0	0	150	42	-25	90
39	8	6	141	1.41	209	43	-1	330
32	13	2	45	0.45	79	46	-10	279
18	4	1	37	0.37	28	61	17	489
38	0	0	76	0.76	0	65	19	545
34	0	0	158	1.58	0	77	37	622
49	0	0	128	1.28	0	75	43	634
119	0	0	262	2.62	0	72	41	639
131	0	0	426	4.26	0	63	24	550
146	1	0	194	1.94	11	59	6	406
0	0	0	0	0	0	35	-9	233
	Total Precip for Year (inches)			29.51				
	30 year, yearly average TPCP			15.94				

MMNT	MNTM	TWND
-62	35	0
40	139	0
188	270	0
248	335	0
348	449	0
435	534	1359
472	559	787
456	555	628
404	483	1054
185	260	0
122	205	0
135	210	0
62	145	0
132	213	0
208	301	0
299	382	0
373	489	0
440	551	788
477	571	666
453	544	647
358	443	542
263	343	0
176	262	0
82	165	0
62	146	0
54	154	0
261	350	0
288	374	0
337	460	0
438	544	709
487	568	272
459	552	869
371	481	625
243	340	0
83	171	0
96	172	0
247	322	0
24	118	0
185	270	0
185	281	0
337	445	1572
415	512	1109
492	585	772
439	531	700
368	461	0
180	280	0
-7	102	0
210	288	0

176	248	0
108	211	0
112	219	0
198	297	0
356	470	0
448	552	1215
486	577	581
461	542	697
380	473	618
283	373	0
155	238	0
209	286	0
152	233	0
181	267	0
180	274	0
283	389	0
376	474	1156
453	531	1177
489	569	411
469	568	404
368	457	906
289	380	0
198	243	0
81	161	0
75	165	0
160	238	0
258	328	0
296	376	0
389	487	0
457	545	831
493	575	527
454	549	764
362	484	931
245	322	0
93	176	0
96	195	0
-120	-17	0
16	131	0
116	220	0
295	394	0
367	463	0
441	545	956
480	586	617
493	576	544
414	496	598
244	322	0
78	160	0
168	248	0

41	124	0
-101	13	0
168	277	0
283	403	0
398	501	0
470	575	373
488	599	631
473	575	639
422	496	939
239	324	0
-11	79	0
38	122	0
46	126	0
83	180	0
156	250	0
318	399	0
370	479	0
460	568	0
491	571	620
457	548	1046
425	504	1422
222	313	0
148	222	0
120	191	0
134	204	0
25	115	0
155	243	0
249	354	0
347	454	1617
453	556	0
505	587	0
482	556	0
294	385	0
230	309	0
165	237	0
36	112	0
34	125	0
124	203	0
209	295	0
315	423	0
401	513	572
459	567	477
505	609	496
499	580	471
397	476	423
297	372	0
159	228	0
166	242	0

145	207	0
93	167	0
165	246	0
296	384	0
390	482	998
466	569	506
504	592	411
483	582	347
391	482	345
250	325	0
44	128	0
54	140	0
38	131	0
113	192	0
54	173	0
333	417	0
399	499	0
463	557	541
505	583	251
467	562	212
453	526	544
298	374	0
104	191	0
81	168	0
-62	4	0
39	131	0
192	287	0
290	384	0
366	494	0
456	567	1358
500	592	996
466	556	803
363	456	777
116	221	0
75	148	0
13	112	0
52	130	0
264	325	0
158	249	0
312	407	0
375	488	1522
466	576	914
519	612	809
488	579	727
413	505	922
197	281	0
210	271	0
62	149	0

53	140	0
172	262	0
202	297	0
312	395	0
368	456	824
461	547	156
495	583	151
454	536	271
394	481	530
277	364	0
140	216	0
31	108	0
-19	75	0
-66	44	0
180	262	0
259	356	0
351	462	782
482	585	144
495	583	84
484	566	134
410	490	251
276	348	0
106	188	0
37	125	0
44	116	0
178	232	0
234	309	0
300	395	0
348	463	1700
453	558	1202
500	575	741
450	541	944
367	458	0
264	343	0
229	301	0
182	260	0
223	289	0
148	234	0
234	292	0
289	381	0
348	446	1442
470	579	931
507	575	602
494	578	750
392	487	862
215	291	0
77	156	0
-15	71	0

163	231	0
136	219	0
105	212	0
228	319	0
375	490	1377
457	550	930
497	599	809
473	565	553
401	488	716
357	426	0
305	363	0
172	236	0
109	204	0
250	318	0
171	262	0
285	391	1975
384	482	1706
466	590	1312
517	613	1088
485	572	1225
381	479	1328
325	404	0
122	192	0
62	147	0
-21	77	0
186	267	0
172	252	0
299	391	0
415	517	1327
480	588	1353
523	617	1480
489	609	1013
337	440	1059
313	379	0
155	233	0
102	170	0
133	215	0
242	316	0
305	410	0
405	519	1621
476	578	1355
513	607	1146
482	577	927
422	502	1155
277	356	0
72	143	0
177	253	0

-6	73	0
126	213	0
123	221	0
274	364	0
379	494	2081
445	542	1401
492	580	1140
470	540	1103
402	494	1124
321	388	0
-12	83	0
115	197	0
67	140	0
48	149	0
-11	104	0
302	396	0
387	463	1346
455	559	1523
500	580	699
486	578	728
407	490	856
264	344	906
250	309	0
93	175	0
9	104	0
38	136	0
250	342	0
367	466	2485
447	524	1363
479	550	715
467	549	512
408	479	1029
204	280	0
111	188	0
14	95	0
17	99	0
40	130	0
105	199	0
269	361	0
367	493	1493
448	545	1137
511	608	1554
457	548	932
399	485	960
328	402	0
95	173	0
115	183	0
63	144	0

193	259	0
183	267	0
302	383	0
376	490	0
468	546	0
494	563	0
485	564	859
387	482	1050
304	380	0
201	259	0
-21	61	0
115	187	0
46	139	0
149	244	0
290	382	161
368	480	2059
461	543	1228
489	579	1122
467	544	1281
400	482	1450
288	363	284
23	108	0
152	217	0
-105	-5	0
169	250	0
53	166	0
279	384	0
361	453	0
454	538	1133
488	561	1420
466	553	1002
407	479	2034
243	325	0
82	158	0

APPENDIX B:

MATANUSKA AES AVERAGE PRECIPITATION 7/4/1917–12/31/2005

MATANUSKA AES, ALASKA (505733)

Period of Record Monthly Climate Summary

Period of Record : 7/ 4/1917 to 12/31/2005

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (F)	21.7	27.6	34.6	46.1	58.1	65.8	67.6	65.1	56.6	43.0	28.9	22.3	44.8
Average Min. Temperature (F)	4.7	9.9	16.1	27.3	36.2	44.4	48.1	46.2	38.6	27.1	13.3	6.2	26.5
Average Total Precipitation (in.)	0.85	0.70	0.51	0.44	0.73	1.37	2.21	2.57	2.47	1.50	0.95	1.03	15.32
Average Total SnowFall (in.)	8.1	8.4	6.1	2.1	0.2	0.0	0.0	0.0	0.1	4.1	8.0	10.3	47.4
Average Snow Depth (in.)	4	5	2	1	0	0	0	0	0	1	2	4	2

Percent of possible observations for period of record.
Max. Temp.: 96.6% Min. Temp.: 96.6% Precipitation: 96.5% Snowfall: 95.8% Snow Depth: 89%
Check Station Metadata or Metadata graphics for more detail about data completeness.

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APPENDIX C:

MATANUSKA AES AVERAGE EVAPORTION 1917--2005

Evaporation Stations

Standard daily pan evaporation is measured using the four-foot diameter Class A evaporation pan. The pan water level reading is adjusted when precipitation is measured to obtain the actual evaporation. Most Class A pans are installed above ground, allowing effects such as radiation on the side walls and heat exchanges with the pan material. These effects tend to increase the evaporation totals. The amounts can then be adjusted by multiplying the totals by 0.7 or 0.80 to more closely estimate the evaporation from naturally existing surfaces such as a shallow lake, wet soil or other moist natural surfaces.

Many stations do not measure pan evaporation during winter months. A "0.00" total indicates no measurement is taken.

Stations marked with an asterisk (*) have estimated totals computed from meteorological measurements using a form of the Penman equation.

Click on a State:

ALASKA

MONTHLY AVERAGE PAN EVAPORATION (INCHES)

	PERIOD OF RECORD	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
BROOKS RIVER	1917-1993	0.00	0.00	0.00	0.00	3.01	2.48	1.88	1.63	0.73	0.00	0.00	0.00	9.72
CENTRAL 2	1962-2005	0.00	0.00	0.00	0.77	3.00	3.97	3.00	2.43	2.17	0.00	0.00	0.00	12.39
COPPER CENTER	1961-1987	0.00	0.00	0.00	0.00	3.00	4.03	4.06	3.14	1.71	0.00	0.00	0.00	11.54
JUNEAU AP	1949-2005	0.00	0.00	0.00	0.00	3.33	3.29	3.92	3.11	1.82	0.00	0.00	0.00	12.17
MATANUSKA AES	1917-2005	0.00	0.00	0.00	0.00	4.21	4.44	3.92	3.05	1.83	0.00	0.00	0.00	17.46
MC GRATH WB AIRPORT	1931-2005	0.00	0.00	0.00	0.00	4.20	4.42	3.65	2.29	1.40	0.00	0.00	0.00	15.96
MCKINLEY PARK	1949-2005	0.00	0.00	0.00	0.00	3.07	2.96	2.55	1.75	0.53	0.00	0.00	0.00	10.79
OIL WELL ROAD E P	1967-1974	0.00	0.00	0.00	0.00	3.00	5.17	3.83	2.81	1.40	0.00	0.00	0.00	13.21
OLD EDGERTON	1970-1996	0.00	0.00	0.00	0.00	3.91	3.56	4.16	3.04	1.65	0.00	0.00	0.00	16.72
PALMER AP&S	1949-2005	0.00	0.00	0.00	0.00	4.44	4.71	4.12	2.96	1.75	0.00	0.00	0.00	17.98
RAMPART 2	1965-1978	0.00	0.00	0.00	0.00	4.22	4.56	3.59	1.56	1.54	0.00	0.00	0.00	16.47
COLLEGE UNIV EXP STN	1931-2005	0.00	0.00	0.00	0.00	4.25	5.04	4.56	2.82	1.36	0.00	0.00	0.00	18.05

ARIZONA

MONTHLY AVERAGE PAN EVAPORATION (INCHES)

	PERIOD OF RECORD	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
BARTLETT DAM	1939-2005	3.82	4.92	7.10	10.02	13.77	16.21	15.56	13.95	12.10	9.66	5.86	4.47	117.54
BLACK RIVER PUMPS	1948-2005	0.00	0.00	0.00	6.93	9.03	10.12	7.98	7.62	5.70	3.14	0.00	0.00	50.52
DAVIS DAM # 2	1951-1977	7.49	7.96	9.78	12.78	16.71	19.48	19.87	17.91	14.64	12.03	8.40	7.69	154.32
DAVIS DAM	1948-1951	3.54	5.13	7.67	9.30	11.35	13.33	13.14	12.13	9.51	7.24	5.26	3.66	101.52
DOUGLAS	1948-2005	0.00	0.00	0.00	11.34	13.19	13.55	12.66	10.27	8.16	6.34	0.00	0.00	75.63
FLAT VALLEY	1965-2005	0.00	0.00	0.00	0.00	5.26	7.37	6.03	4.91	3.35	0.00	0.00	0.00	27.52
GRAND CANYON NATL PARK	1957-1977	0.00	0.00	0.00	0.00	6.94	10.15	9.79	8.12	6.83	4.91	0.00	0.00	46.74
GRAND CANYON N P 2	1978-2005	0.00	0.00	0.00	0.00	7.36	9.50	8.34	7.29	6.10	4.45	0.00	0.00	44.04
HANLEY LAKE	1967-1998	0.00	0.00	0.00	0.00	7.57	8.55	6.89	5.01	4.68	0.00	0.00	0.00	33.17
HARRY FLEMS SCHOOL	1951-1975	0.00	3.66	5.15	9.10	12.23	15.14	12.37	10.88	9.40	6.54	3.28	2.14	89.77
HC MART 3 W	1933-2005	0.00	0.00	0.00	0.00	7.85	8.75	6.60	5.91	4.90	3.57	0.00	0.00	37.56
HCSA	1836-2005	3.03	4.32	6.11	8.83	11.93	12.67	13.10	11.87	9.69	6.82	4.13	2.96	95.39
HOGALES 6 W	1952-2005	3.59	4.46	7.01	9.35	11.11	13.31	13.03	8.28	9.06	7.17	4.49	3.57	91.20
PARK	1957-2005	0.00	2.66	5.24	8.27	10.72	12.86	13.06	11.38	8.42	5.13	2.29	0.00	80.17
ROOSEVEL. 1 NW	1905-2005	2.41	3.54	5.90	8.64	11.99	14.00	14.36	12.27	10.10	6.78	3.68	2.32	96.49
SACATON	1908-2005	3.85	5.15	7.51	10.06	13.56	14.09	13.69	12.05	10.10	7.91	4.84	3.63	107.40
SAFFORD AGRICULTRL CTR	1948-2005	2.63	3.83	7.74	10.54	13.81	15.38	13.13	10.68	8.73	5.90	3.26	2.52	97.07
SAN CARLOS RESERVOIR	1949-2005	2.35	3.27	5.66	8.40	11.70	13.94	13.43	11.44	9.23	6.31	3.53	2.12	91.30
SIERRA ANCHA	1973-1979	2.59	2.93	4.86	6.42	8.97	10.94	10.37	8.88	8.00	6.22	3.56	2.39	75.35
SNOWFLAKE 15 W	1965-1998	0.00	0.00	0.00	0.00	11.03	14.39	11.29	9.12	7.96	6.45	3.48	0.00	63.63
STEWART MOUNTAIN	1948-2005	3.52	4.56	6.94	10.04	13.11	14.27	14.44	13.10	10.62	7.95	4.53	3.08	106.33
TEMPE A S U	1952-2005	1.56	2.53	4.79	7.04	9.14	10.85	10.39	9.02	7.63	5.16	2.56	1.14	71.73
TUCSON (WAY OF ARIZONA)	1984-2005	3.25	4.57	6.95	9.94	12.81	14.91	13.17	11.65	10.35	7.91	4.75	3.37	105.31
TUCSON U OF ARIZ # 1	1917-2005	3.94	4.69	7.52	10.87	14.14	16.51	14.61	12.17	10.71	8.05	4.93	3.25	115.07
WALNUT AP	1961-2005	1.95	2.77	4.51	6.41	12.69	14.94	15.26	13.31	10.06	7.06	3.69	2.47	1.3.12
WHITERIVER 1 SW	1903-2005	1.59	2.91	5.84	8.71	9.92	11.70	7.40	8.17	7.68	5.87	3.57	2.54	77.43
WINSLOW 6 S	1942-1960	3.11	4.03	7.00	9.96	12.40	13.90	11.19	9.81	9.56	7.52	4.31	2.84	95.78
YUMA CITRUS STATION	1929-2005	3.56	4.39	6.81	9.17	11.75	13.19	13.85	12.28	9.51	6.81	4.43	3.37	99.11

CALIFORNIA

MONTHLY AVERAGE PAN EVAPORATION (INCHES)

	PERIOD OF RECORD	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
ANTIOCH PUMP PLANT 3	1955-2005	1.17	1.99	4.15	6.27	8.96	10.84	11.00	10.06	7.77	4.91	2.97	1.92	71.11
AUBURN DAM PROJECT	1972-1984	1.42	1.99	3.13	4.89	7.75	10.08	11.66	10.79	7.88	5.00	1.97	1.36	67.91

Evaporation Stations

Standard daily pan evaporation is measured using the four-foot diameter Class A evaporation pan. The pan water level reading is adjusted when precipitation is measured to obtain the actual evaporation. Most Class A pans are installed above ground, allowing effects such as radiation on the side walls and heat exchanges with the pan material. These effects tend to increase the evaporation totals. The amounts can then be adjusted by multiplying the totals by 0.7 or 0.8 to more closely estimate the evaporation from naturally existing surfaces such as a shallow lake, wet soil or other moist natural surfaces.

Many stations do not measure pan evaporation during winter months. A "0.00" total indicates no measurement is taken.

Stations marked with an asterisk (*) have estimated totals computed from meteorological measurements using a form of the Penman equation.

Click on a State:

17.46 in x 0.8 = 13.968 = 14.0

ALASKA

MONTHLY AVERAGE PAN EVAPORATION (INCHES)

	PERIOD OF RECORD	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
BROOKS RIVER	1967-1990	0.00	M...	0.00	0.00	0.00	2.48	2.83	1.63	0.73	0.00	0.00	0.00	7.72
CENTRAL 3	1962-2005	0.00	0.00	0.00	0.00	0.00	3.97	4.30	2.43	2.12	0.00	0.00	0.00	11.59
COPPER CENTER	1981-1992	0.00	0.00	0.00	0.00	0.00	6.03	4.96	3.14	1.71	0.00	0.00	0.00	14.84
JUNEAU AP	1949-2005	0.00	0.00	0.00	0.00	3.33	3.29	3.82	3.14	1.82	0.00	0.00	0.00	14.69
KATABUKNA AES	1917-2005	0.00	0.00	0.00	0.00	1.22	4.44	3.92	3.05	1.83	0.00	0.00	0.00	17.46
MC GRATH MB AIRPORT	1939-2005	0.00	0.00	0.00	0.00	4.20	4.48	3.65	2.29	1.40	0.00	0.00	0.00	15.06
MCKINLEY PARK	1949-2005	0.00	0.00	0.00	0.00	1.02	2.96	2.55	1.75	0.53	0.00	0.00	0.00	8.79
OIL WELL ROAD E P	1967-1974	0.00	0.00	0.00	0.00	0.00	5.17	3.82	2.51	1.49	0.00	0.00	0.00	13.11
OLD EDGERTON	1970-1998	0.00	0.00	0.00	0.00	3.31	4.56	4.16	3.04	1.65	0.00	0.00	0.00	16.72
PALMER AES	1949-2005	0.00	0.00	0.00	0.00	4.44	4.71	4.10	2.96	1.75	0.00	0.00	0.00	17.96
RUSTAD 1	1963-1979	0.00	0.00	0.00	0.00	4.23	4.56	3.99	2.86	1.54	0.00	0.00	0.00	16.62
COLLEGE UNIV EXP STN	1931-2005	0.00	0.00	0.00	0.00	4.25	5.01	4.56	2.82	1.31	0.00	0.00	0.00	16.75

ARIZONA

MONTHLY AVERAGE PAN EVAPORATION (INCHES)

	PERIOD OF RECORD	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
BARTLETT DAM	1939-2005	3.92	4.92	7.40	10.03	13.07	16.21	15.56	13.95	12.10	9.66	5.86	4.47	127.54
BLACK RIVER PUMPS	1948-2005	3.09	4.03	6.03	8.33	9.83	10.12	7.99	7.00	5.70	3.94	2.83	2.63	77.53
DAVIS DAM # 2	1958-1977	3.49	4.45	6.75	10.78	14.71	19.48	19.87	17.91	14.64	12.03	8.40	7.80	150.53
DAVIS DAM	1945-1961	3.54	4.13	7.67	9.50	11.33	13.36	13.14	12.15	9.51	7.24	5.38	3.89	101.53
DOUGLAS	1948-2005	0.00	0.00	0.00	11.23	13.13	13.55	10.66	10.37	8.18	6.44	0.00	0.00	73.63
DUNT VALLEY	1939-2005	0.00	0.00	1.50	0.00	5.46	7.37	6.03	4.91	3.35	0.00	0.00	0.00	28.63
GRAND CANYON NAVL PARK	1957-1977	0.00	0.00	0.00	0.00	6.94	10.65	8.79	8.12	6.83	4.91	0.00	0.00	46.24
GRAND CANYON N P 2	1978-2005	0.00	0.00	0.00	0.00	7.46	9.80	8.94	7.23	6.10	4.45	0.00	0.00	43.98
HAWLEY LAKE	1967-1986	0.00	0.00	0.00	0.00	7.67	8.55	6.89	5.48	4.68	0.00	0.00	0.00	33.27
HUNT FARMS SCHOOL	1951-1975	0.00	3.68	5.15	9.18	12.23	15.14	12.97	10.91	9.40	6.54	3.26	2.16	90.77
HUNT MARY 2	1993-2005	0.00	3.00	5.00	9.00	7.86	8.25	6.10	5.94	4.90	3.90	0.00	0.00	57.58
MESA	1897-2005	3.03	4.07	6.41	8.54	11.33	12.67	12.10	11.87	9.69	6.81	4.14	2.96	94.36
NOGALES 6 N	1951-2005	3.59	4.48	7.01	9.35	11.91	12.31	10.00	8.20	8.06	7.17	4.49	3.57	91.14
PAGE	1957-2005	0.00	0.00	5.84	8.27	10.72	12.06	11.96	11.38	8.42	5.33	2.29	0.00	75.97
ROOSEVELT 1 WNW	1935-2005	2.44	3.54	5.91	8.54	11.42	14.50	14.36	12.27	10.10	6.78	3.64	2.32	96.01
SACATON	1908-2005	3.93	5.15	7.51	10.06	13.56	14.07	13.69	12.05	10.20	7.91	4.94	3.63	107.42
SAFFORD AGRICULTRL CTR	1948-2005	2.63	3.65	5.14	10.54	13.81	15.36	13.13	10.68	8.73	5.90	3.29	2.52	97.57
SAN CARLOS RESERVOIR	1948-2005	3.25	3.97	5.36	8.47	11.70	13.91	13.43	11.10	9.73	6.31	3.53	2.19	91.30
SIERRA ANCHA	1913-1977	2.19	2.93	4.51	6.73	7.97	10.91	10.39	8.93	6.80	6.22	3.30	2.37	75.39
SNOWFLAKE 15 W	1965-1989	0.00	0.00	0.00	0.00	11.03	14.36	11.29	9.12	7.96	5.45	3.40	0.00	63.83
STEWART MOUNTAIN	1963-2005	3.52	4.57	6.94	11.34	13.11	14.27	11.41	13.19	10.69	7.95	4.53	3.08	106.23
TEMPE A S U	1953-2005	1.56	2.93	4.79	7.01	9.44	10.85	10.79	9.92	7.67	5.14	2.56	1.44	74.03
TUCSON UNIV OF ARIZONA	1894-2005	3.25	4.57	6.91	9.18	12.87	14.91	13.17	11.65	10.35	7.87	4.73	3.37	103.51
TUCSON U OF ARIZ 2	1982-2005	2.96	4.03	7.03	9.57	11.41	15.51	14.01	12.17	10.71	8.05	4.93	3.23	111.77
WAINWAY	1961-2005	1.05	2.17	3.30	5.19	12.82	11.94	10.26	13.37	10.06	7.06	3.29	2.60	92.18
WINTERS TOWER 1 SW	1900-2005	1.67	2.94	5.84	8.31	9.93	11.70	9.48	8.17	7.68	5.87	3.51	2.54	77.65
YUMA 6 SW	1942-1980	3.12	4.03	7.04	9.98	11.40	13.90	11.19	9.84	9.56	7.51	4.21	2.91	95.75
YUMA CITRUS STATION	1920-2005	3.58	4.36	6.81	9.17	11.75	13.15	13.85	12.29	9.51	6.91	4.43	3.37	99.11

CALIFORNIA

MONTHLY AVERAGE PAN EVAPORATION (INCHES)

	PERIOD OF RECORD	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
ANTIOCH PUMP PLANT 3	1935-1975	1.17	1.99	4.25	6.21	8.96	10.14	11.50	10.06	7.77	4.91	.07	1.22	71.17

AUBURN DAM PROJECT	1972-1984	1.42	1.89	3.13	4.89	7.73	10.03	11.66	10.70	8.08	5.00	1.97	1.36	67.91
AVENAL 9 SSE	1955-1961	1.80	2.93	6.23	9.39	12.96	16.73	18.67	16.37	12.61	8.05	3.59	2.44	112.01
BACKUS RANCH	1948-1963	2.85	3.86	6.77	9.80	12.59	15.93	16.92	15.95	12.19	8.01	4.25	2.98	112.20
BEAUMONT PUMPING PLANT	1948-1975	2.90	3.29	4.09	5.03	6.40	9.15	10.64	9.97	7.90	5.07	3.22	2.90	70.35
BEAUMONT 1 E	1948-2001	3.10	3.73	4.99	5.23	7.60	9.31	10.97	10.66	9.85	6.53	5.16	3.95	80.08
BERRYESSA LAKE	1957-1970	1.53	2.15	3.79	5.52	8.90	11.60	13.22	12.06	8.67	5.72	2.48	1.66	77.[illegible]
BOCA	1948-2005	0.00	0.00	0.00	0.00	6.83	8.32	10.31	9.09	6.48	4.32	0.00	0.00	45.25
BRANNAN ISLAND	1963-1977	1.15	1.74	4.36	7.03	10.49	12.39	13.51	12.02	9.03	4.80	1.83	1.08	79.43
CACHUMA LAKE	1952-2005	2.44	3.53	4.41	6.01	7.55	8.56	9.50	8.98	7.09	5.42	3.49	2.79	69.68
CAMP PARDEE	1949-2005	0.72	1.12	2.32	[illegible]	7.34	9.43	11.17	9.50	6.51	3.77	1.40	0.72	57.98
CHICO EXPERIMENT STN	1906-2005	1.26	2.13	3.82	5.63	9.28	10.11	11.49	9.71	7.36	4.46	2.09	1.30	68.63
CHULA VISTA	1948-2005	2.81	3.45	4.03	6.36	6.76	6.96	7.53	7.48	6.21	5.02	3.58	2.78	62.77
COW CREEK	1941-1961	3.21	5.62	9.76	13.98	17.25	21.37	21.89	20.17	15.36	10.71	4.91	3.25	148.15
DAVIS 1 WSW	1917-2005	1.49	2.34	4.51	7.13	10.19	12.13	12.77	11.28	9.08	6.35	2.89	1.45	81.61
DEATH VALLEY	1961-2005	3.93	5.38	9.10	13.00	16.75	19.11	20.98	18.96	13.95	9.78	5.54	3.75	140.14
DUTTONS LANDING	1955-1977	1.42	2.09	3.87	5.70	7.74	9.34	9.34	8.27	6.75	4.65	2.25	1.46	62.86
FALL RIVER MILLS INT LAKE	1949-2005	0.00	[illegible]	2.47	5.80	7.54	9.48	12.14	10.57	7.59	3.78	1.12	[illegible]	60.51
FERNDALE 2 NW	1963-1973	0.70	1.17	2.26	3.21	3.95	4.38	4.45	4.07	3.59	2.06	1.04	0.72	31.64
FOLSOM DAM	1959-1993	0.92	1.36	3.47	5.21	8.07	9.91	11.12	9.93	7.45	4.89	2.06	1.25	66.18
FRIANT GOVERNMENT CAMP	1948-2005	1.46	2.12	3.62	5.89	9.42	12.07	13.96	12.47	9.00	5.76	2.61	1.37	79.95
GRIZZLY ISLAND REFUGE	1971-1977	1.45	2.25	4.03	5.72	8.07	9.52	10.69	8.93	6.88	4.33	2.10	1.55	65.79
HETCH HETCHY	1931-2005	0.00	0.00	[illegible]	3.84	5.31	7.34	8.78	7.86	5.85	3.23	[illegible]	[illegible]	43.95
INDIO FIRE STATION	1927-2005	2.95	4.38	7.15	9.90	12.73	14.65	16.95	13.59	10.90	7.60	3.98	2.69	[illegible]
KETTLEMAN CITY 1 SSW	1955-2005	1.73	2.99	5.81	8.32	11.75	14.27	16.11	14.74	10.82	7.36	3.46	[illegible]	99.03
KNIGHTS FERRY 2 ESE	1959-1977	1.00	1.69	3.14	5.65	8.54	10.14	11.60	10.31	7.74	4.62	2.69	1.00	68.[illegible]
LAKE PILLSBURY 2	1964-1970	0.58	1.42	3.01	4.62	7.11	9.38	10.31	9.35	6.93	3.61	1.19	0.87	57.68
LAKESHORE 2	1948-1972	1.09	1.65	2.97	4.73	6.15	7.43	5.71	9.79	6.44	3.40	1.41	0.95	54.40
LAKE SOLANO	1975-2005	1.48	2.27	4.39	6.66	9.24	11.24	11.53	9.86	7.58	5.25	2.59	1.67	73.76
LAKE SPAULDING	1914-2003	0.00	0.00	0.00	0.00	1.57	6.52	8.16	6.78	4.56	1.98	0.00	0.00	32.55
LAKE SPAULDING DAM	1955-1971	0.00	0.00	0.00	0.00	7.20	9.98	13.38	11.85	8.94	6.64	0.00	0.00	56.99
LITTLE PANOCHE DET DAM	1960-1975	2.77	2.89	5.87	9.33	14.56	16.21	18.45	16.63	12.46	7.60	3.04	1.78	110.75
LODI	1948-2005	1.19	1.95	3.81	6.71	9.60	9.92	10.63	9.11	6.68	4.08	1.86	1.07	64.92
LOS BANOS DET RESV	1969-2005	1.57	2.71	5.44	9.34	14.18	16.58	17.85	15.63	11.67	7.49	3.34	1.82	107.82
MANDEVILLE ISLAND	1955-1965	1.13	2.38	[illegible]	6.95	8.55	10.44	11.22	9.71	7.41	5.12	2.47	1.13	71.25
MANTECA	1965-1977	1.20	1.71	4.04	6.33	9.24	10.53	11.64	10.22	7.19	4.13	1.78	1.16	69.17
MARKLEY COVE	1970-2005	1.03	1.51	3.03	4.90	7.33	9.60	10.82	9.45	6.99	4.35	1.75	1.01	61.67
MOJAVE	1949-2005	0.00	4.65	6.45	9.97	13.59	15.33	17.21	16.00	11.83	8.28	4.76	3.52	111.59
MONTICELLO DAM	1957-1970	1.02	1.23	3.24	4.95	7.35	9.36	11.20	10.07	7.56	4.62	1.96	1.08	64.47
NACIMIENTO DAM	1957-1978	1.53	2.20	3.93	5.53	7.92	9.85	11.28	10.43	7.76	5.16	2.57	1.66	69.86
NEWARK	1948-2005	1.71	2.15	3.16	5.76	7.77	8.64	9.04	8.03	6.64	4.52	2.31	1.55	62.37
NEW MELONES DAM	1979-1992	1.34	2.25	3.56	5.97	9.16	11.85	13.73	13.39	8.86	5.75	2.37	1.28	79.37
NEW MELONES DAM HQ	1992-2005	1.30	1.83	3.45	5.25	7.94	10.23	12.73	11.72	8.71	5.57	2.23	1.19	71.61
OAKDALE WOODWARD DAM	1948-1967	1.05	1.72	3.42	5.47	9.95	11.88	14.23	12.22	8.53	5.52	2.10	1.02	76.07
PLACERVILLE IFG	1955-1991	1.53	1.67	2.72	3.95	5.84	7.79	9.41	8.45	6.62	3.93	1.87	1.51	55.32
RIVERSIDE CITRUS EXP ST	1949-2005	3.32	3.59	4.86	6.28	7.33	8.59	10.88	10.28	7.84	5.85	2.81	3.03	75.66
SALT SPRINGS PWR HOUSE	1942-1996	1.84	2.47	3.27	4.86	6.49	7.92	10.30	9.95	7.89	5.18	2.68	2.26	65.11
SAN LUIS DAM	1963-2005	1.41	2.49	5.31	8.67	13.14	15.75	18.38	16.68	12.01	7.42	3.02	1.56	105.84
SHASTA DAM	1949-2005	1.50	2.98	3.17	5.05	7.28	9.16	11.36	10.36	7.55	4.85	2.29	1.62	66.30
STOCKTON WOMRY BRIDGE	1955-1965	0.72	1.58	3.87	5.97	8.47	10.95	10.82	9.56	6.60	3.93	1.70	0.74	64.91
TAHOE	1914-2005	0.00	0.00	0.00	0.00	4.27	5.23	5.98	5.35	3.16	1.57	0.00	0.00	25.56
TRACY PUMPING PLANT	1955-2005	1.53	2.47	5.30	8.20	12.01	14.89	16.92	14.55	10.64	6.57	2.93	1.48	97.48
TRINITY DAM VISTA POINT	1959-1973	0.00	0.00	2.83	3.98	6.56	8.32	10.67	9.15	5.97	2.74	0.57	0.85	51.64
TRINITY RIVER HATCHERY	1974-2005	0.58	1.00	2.77	4.43	6.71	8.32	9.71	8.91	6.15	3.20	0.99	0.51	53.25
TULELAKE	1932-2005	0.00	0.00	0.73	4.56	7.55	8.39	9.52	8.53	6.80	3.49	0.00	0.00	48.84
TURNTABLE CREEK	1948-1969	1.38	2.60	3.76	5.26	5.32	8.29	10.23	9.90	8.35	5.71	3.08	2.37	67.84
TWITCHELL DAM	1962-2005	3.08	3.33	4.47	5.59	7.36	8.33	9.22	8.69	7.42	5.92	4.07	3.11	73.71
WALNUT GROVE	1953-1961	1.52	2.90	4.74	5.73	7.76	10.04	10.22	8.81	6.40	3.60	2.10	1.32	65.15
WARM SPRINGS DAM	1973-1998	1.17	1.33	3.23	5.37	7.83	9.33	10.04	9.49	6.58	4.59	2.10	1.17	61.73
WHISKEYTOWN RESERVOIR	1960-2005	0.97	1.23	2.51	4.05	6.11	8.05	10.04	8.80	6.25	3.40	1.14	0.78	53.53
WILLOW CREEK 1 NW	1968-2005	0.58	1.22	1.61	2.74	4.73	6.50	7.53	6.05	3.79	1.94	0.75	0.92	38.69

COLORADO

MONTHLY AVERAGE PAN EVAPORATION (INCHES)

	PERIOD OF RECORD	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
AKRON 4 E	1919-2002	0.00	0.00	0.95	7.30	9.29	11.43	13.26	11.16	9.09	6.16	0.00	0.07	67.69
ALAMOSA WSO AP	1948-2005	0.00	0.00	[illegible]	7.06	9.01	10.08	9.16	7.81	6.40	4.39	0.00	0.00	53.9[illegible]
ARBOLES	1957-1963	0.00	0.00	0.00	5.41	7.95	9.36	9.78	9.61	6.52	0.00	0.00	0.00	47.83
BONNY LAKE	1949-2005	0.00	0.00	[illegible]	7.26	8.69	10.96	11.78	10.61	8.13	6.12	4.57	0.00	68.01
CLIMAX	1919-2005	0.00	0.00	0.00	0.00	0.00	5.36	5.32	4.44	3.41	0.00	0.00	0.00	18.53
CONEJOS 3 NNW	1949-1960	0.00	0.00	0.00	5.30	7.14	7.67	7.41	6.87	7.19	5.74	0.00	0.00	48.32
ESTES PARK	1948-1994	0.00	0.00	0.00	5.78	5.26	7.09	7.13	6.15	5.04	4.04	0.00	0.00	40.19
FORT COLLINS	1900-2005	0.00	0.00	2.50	1.52	5.12	6.32	6.92	6.07	4.74	3.07	1.48	0.00	41.0[illegible]
GRAND JUNCTION WALKER	1900-2005	0.00	0.00	4.67	8.53	12.18	15.96	16.53	14.02	10.98	7.05	2.42	0.00	92.34
GRAND JUNCTION 6 ESE	1962-2005	0.00	0.00	0.00	6.60	9.29	11.77	13.01	10.74	7.48	4.65	2.09	0.00	66.1[illegible]
GRAND LAKE 6 SSW	1948-2005	0.00	0.00	0.00	0.00	4.92	7.75	7.01	6.79	5.24	2.10	0.00	0.00	35.51
GREEN MOUNTAIN DAM	1948-2005	0.00	0.00	0.00	0.00	4.96	6.56	6.93	5.90	4.65	2.90	0.00	0.00	31.[illegible]
JOHN MARTIN DAM	1941-2005	0.00	0.00	6.40	8.04	9.67	11.30	12.31	10.28	7.82	5.61	2.78	0.00	74.[illegible]
LAKE GEORGE 8 SW	1948-2003	0.00	0.00	0.00	0.00	5.15	[illegible]	7.39	6.02	5.72	0.00	0.00	0.00	32.54
MEREDITH	1963-2005	0.00	0.00	0.00	0.00	7.69	8.26	8.34	6.96	5.25	3.21	0.00	0.00	39.71
MONTROSE 1	1948-1981	1.61	1.49	3.21	5.69	7.49	9.47	9.04	7.39	5.54	3.45	1.61	1.26	57.45
PLATORO	1949-1991	0.00	0.00	0.00	0.00	5.86	8.10	6.57	5.24	5.52	3.33	0.00	0.00	34.61
PUEBLO WSO AP	1954-2005	0.00	0.00	0.00	6.71	9.90	11.51	12.14	10.41	8.17	6.14	0.00	0.00	66.58

PUEBLO CITY RESERVOIR	1978-1971	0.00	0.13	0.86	4.85	9.81	10.39	10.60	8.85	7.43	5.30	2.99	2.71	74.63
PUEBLO RESERVOIR	1975-2005	0.01	0.00	0.00	7.12	9.34	10.87	11.56	9.92	7.90	5.88	0.00	0.00	62.67
PUEBLO 6 SSW	1.71-1985	0.00	0.00	4.52	7.47	8.57	10.55	11.30	9.40	7.13	5.53	0.00	0.00	64.17
SAN LUIS LAKES 3W	1948-1955	0.00	0.00	4.79	6.07	8.51	9.66	8.49	7.77	6.57	4.53	0.00	0.00	56.32
SPRINGFIELD 7 NNW	1956-2002	0.00	0.00	0.00	7.25	9.73	11.64	12.69	11.23	8.53	6.29	4.57	0.00	72.09
SUGARLOAF RESERVOIR	1948-2005	0.00	0.00	1.01	3.11	5.10	7.03	6.15	4.97	3.15	2.93	0.00	0.00	25.23
TRINIDAD LAKE	1989-2005	0.00	0.00	0.00	6.75	9.04	10.35	9.88	8.27	7.65	6.17	3.92	2.41	64.44
TWIN LAKES RESERVOIR	1949-2005	0.00	0.00	0.00	0.00	6.93	8.65	7.92	6.79	5.33	3.96	0.00	0.00	39.58
VALLECITO DAM	1948-2005	0.00	0.00	1.07	3.02	5.29	6.22	6.03	5.31	4.39	3.04	1.60	0.00	35.67
WASTE WEIR GAP 3 W	1948-1972	0.00	0.00	0.00	0.00	6.69	7.90	7.15	5.81	5.30	2.61	0.00	0.00	35.46
WALSH 1 W	1951-2005	0.00	0.00	1.10	3.00	10.78	12.35	13.76	11.63	9.42	6.88	0.00	0.00	68.80
WIGGINS 7 SW	1960-1971	0.00	0.00	0.00	6.82	8.50	6.42	9.07	8.09	5.87	4.22	2.23	0.00	54.12

[illegible]

MONTHLY AVERAGE PAN EVAPORATION (INCHES)

	PERIOD OF RECORD	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
HILO WSO AP 87	1948-2005	5.13	4.17	5.15	5.11	5.76	6.49	6.44	6.13	5.40	5.37	4.06	4.66	64.49
HONOLULU OBSRVY 702.2	1962-2005	6.72	5.23	7.01	7.84	8.03	9.41	10.10	10.09	8.83	7.68	5.94	5.00	90.85
LIHUE WSO AP 1020.1	1950-2005	6.63	6.22	7.61	8.22	9.21	9.85	10.40	10.21	9.16	9.04	6.27	5.67	98.01
U S MAGNETIC OBSERVATO	1979-1982	4.18	4.58	5.17	7.07	7.07	8.18	8.15	5.21	7.34	6.17	4.41	4.85	76.77

PACIFIC ISLANDS

MONTHLY AVERAGE PAN EVAPORATION (INCHES)

	PERIOD OF RECORD	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
GUAM WSMO	1945-2005	6.98	6.00	6.00	7.98	7.20	6.38	6.23	5.53	4.68	4.70	0.03	0.00	49.15
GUAM WSMO	1957-1996	5.34	6.07	7.38	7.82	7.72	6.92	6.92	5.78	5.15	5.36	5.42	5.74	74.73
JOHNSTON ISLAND WSO AIR	1950-2004	8.69	8.76	10.29	10.28	10.78	11.43	11.53	10.92	9.81	9.53	8.19	8.75	116.80
MARCUS ISLAND WB	1953-1968	6.31	8.56	9.66	9.70	10.71	9.40	9.69	9.40	8.22	7.46	5.91	6.01	36.22
N. EL PASO WSO AIRPORT	1956-2005	7.98	6.17	6.04	5.85	5.94	6.66	6.69	5.72	7.36	8.08	7.13	9.12	84.51
WAKE ISLAND WSO AP	1953-2004	0.00	0.00	0.00	7.57	8.10	5.89	3.00	0.00	3.00	0.00	0.00	0.00	13.46
YAP ISLAND WSO AIRPORT	1953-2005	6.31	6.20	7.37	7.40	6.37	5.51	5.61	5.68	5.61	5.85	5.50	5.09	73.84

IDAHO

MONTHLY AVERAGE PAN EVAPORATION (INCHES)

	PERIOD OF RECORD	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
ABERDEEN EXPERIMENT STN	1914-2005	0.00	0.00	0.00	0.00	7.46	8.91	10.18	9.40	6.91	3.85	0.00	0.00	46.95
ARROWROCK DAM	1916-2005	0.00	0.00	0.00	0.00	5.94	7.53	10.18	8.93	5.75	2.65	0.00	0.00	40.98
BLACKFOOT DAM	1948-1971	0.00	0.00	0.00	0.00	0.00	7.56	9.19	7.42	3.97	0.00	0.00	0.00	28.14
CAREY 2 E	1948-2004	0.00	0.00	0.00	5.62	7.09	7.92	10.50	8.44	5.86	4.57	0.00	0.00	50.00
ISLAND PARK	1937-2005	0.00	0.00	0.00	0.00	0.00	4.78	8.58	5.69	0.00	0.00	0.00	0.00	17.05
MILTON PUMPING STN	1935-2005	0.00	0.00	0.00	0.00	5.97	7.41	8.70	7.80	5.35	3.02	0.00	0.00	42.53
MACKAY 4 NW	1965-1988	0.00	0.00	0.00	0.00	6.81	8.38	10.23	8.73	6.32	0.00	0.00	0.00	40.59
MINIDOKA DAM	1947-2005	0.00	0.00	0.00	0.79	8.17	10.76	13.01	11.48	8.26	4.62	2.31	0.00	68.34
MOSCOW UNIV OF IDAHO	1893-2005	0.00	0.00	3.22	5.83	6.66	6.53	8.51	8.23	5.29	3.03	2.85	0.00	49.00
PRIEST RIVER	1947-1993	0.00	0.00	0.00	4.01	5.54	7.04	9.38	8.32	5.48	3.38	0.00	0.00	43.37
PARMA EXPERIMENT STN	1922-2005	0.00	0.00	0.00	0.00	6.26	9.05	10.41	9.47	6.38	0.00	0.00	0.00	49.49
REXBURG RICKS COLLEGE	1977-2005	0.00	0.00	0.00	0.00	5.59	7.29	8.36	7.36	5.23	0.00	0.00	0.00	34.53
SANDPOINT EXPERMNT STN	1910-2005	0.00	0.00	0.00	0.00	4.96	5.51	7.47	6.78	4.47	0.00	0.00	0.00	29.17
TWIN FALLS WSO	1963-2005	0.00	0.00	0.00	5.80	8.09	9.15	10.24	9.09	6.85	4.25	0.77	0.00	54.51

MONTANA

MONTHLY AVERAGE PAN EVAPORATION (INCHES)

	PERIOD OF RECORD	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
BIRD 4 NW	1918-2005	0.00	0.00	0.00	0.00	5.00	5.61	6.87	5.90	4.06	0.00	0.00	0.00	27.44
BOZEMAN MONTANA ST UNIV	1892-2005	0.00	0.00	0.00	3.34	5.58	6.03	8.34	7.17	4.57	2.62	0.00	0.00	37.65
BOZEMAN 3 W EXP FARM	1966-2005	0.00	0.00	0.00	4.24	5.68	6.62	8.19	7.73	4.88	2.99	0.00	0.00	40.33
CANYON FERRY DAM	1948-1957	0.00	0.00	0.00	0.00	7.19	7.13	8.17	7.41	5.50	3.11	0.00	0.00	38.50
CANYON FERRY DAM	1967-1996	0.00	0.00	0.00	3.18	5.04	6.21	7.91	7.04	4.18	1.93	0.00	0.00	35.49
DILLON WSCO	1895-2003	0.00	0.00	0.00	3.05	4.72	5.32	6.41	5.45	3.48	2.04	0.00	0.00	31.27
FORT ASSINNIBOINE	1917-2005	0.00	0.00	0.00	4.54	6.43	7.30	8.86	8.14	5.00	0.00	0.00	0.00	40.25
FORT PECK	1918-1956	0.00	0.00	0.00	0.00	5.99	8.17	9.54	8.01	5.36	4.25	0.00	0.00	41.32
FORT PECK POWER PLANT	1956-2005	0.00	0.00	0.00	0.00	7.31	8.45	10.42	9.81	5.83	3.53	0.00	0.00	45.37
HUNGRY HORSE DAM	1948-2005	0.00	0.00	0.00	0.00	4.83	5.62	7.11	6.63	3.46	1.37	0.00	0.00	29.72
HUNTLEY EXPERIMENT ST	1911-2005	0.00	0.00	0.00	5.03	6.71	7.40	8.50	8.15	5.10	0.00	0.00	0.00	41.27
LONESOME LAKE	1948-1981	0.00	0.00	0.00	0.00	7.42	7.50	9.25	8.31	5.70	0.00	0.00	0.00	38.28
MALTA 7 E	1973-2005	0.00	0.00	0.00	4.47	6.50	6.51	7.61	6.04	4.17	1.34	0.00	0.00	36.64

MEDICINE LAKE 3 SE	1911-2005	0.00	0.00	0.00	0.00	7.44	7.69	9.62	9.19	5.36	0.00	0.00	0.00	39.30
LOCCASTA EXPERIMENT STN	1909-2005	0.00	0.00	0.00	4.35	6.57	7.72	9.66	9.21	5.39	0.00	0.00	0.00	43.92
SIDNEY	1910-2005	0.00	0.00	0.00	3.90	5.63	6.44	6.93	5.45	2.89	1.81	0.00	0.00	33.14
TIBER DAM	1952-2005	0.00	0.00	0.00	0.00	4.52	6.46	7.45	5.56	4.34	0.00	0.00	0.00	28.52
VALIER	1911-2005	0.00	0.00	0.00	0.00	5.30	6.49	7.33	5.62	4.72	0.00	0.00	0.00	29.53
WESTERN AG RESEARCH CNT	1965-2005	0.00	0.00	0.00	0.00	5.08	5.03	7.26	6.07	4.34	2.25	0.00	0.00	30.13
YELLOWTAIL DAM	1948-2005	0.00	0.00	0.00	0.00	6.94	5.84	10.60	9.74	6.54	4.86	0.00	0.00	47.36

NEVADA

MONTHLY AVERAGE PAN EVAPORATION (INCHES)

	PERIOD OF RECORD	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
BOULDER CITY	1931-2004	3.71	4.58	7.56	10.67	13.79	15.67	16.45	14.41	11.51	8.11	4.87	3.69	116.62
CALIENTE	1928-2005	0.00	0.00	3.97	6.82	9.57	12.58	12.12	9.41	6.19	3.35	1.91	0.00	65.63
DESERT NATIONAL WILDLIFE RANGE	1968-1980	0.00	0.00	5.14	5.08	8.69	10.40	12.24	11.91	8.69	4.81	1.73	0.00	67.35
FALLON EXPERIMENT STN	1950-1992	1.34	2.23	4.39	6.11	7.70	9.91	9.47	8.62	6.10	3.00	1.91	1.37	62.50
LAMONTON	1948-2005	3.00	0.00	0.00	7.18	9.14	11.58	13.75	12.02	7.83	4.51	2.09	0.00	68.81
LOGANDALE	1968-1992	2.55	3.61	5.26	8.96	12.44	14.20	14.38	12.07	8.67	7.66	3.86	2.62	96.55
LUBY 8 NE	1948-2005	0.00	0.00	0.00	3.12	7.09	9.30	10.54	9.37	6.51	3.95	0.00	0.00	51.46
RYE PATCH DAM	1948-2005	0.00	0.00	3.72	5.83	7.94	9.23	11.15	10.06	6.95	4.30	0.77	0.00	59.98
SILVERPEAK	1967-2005	0.00	3.84	7.26	10.13	13.80	16.31	17.08	15.92	11.92	6.38	2.94	0.00	106.11
WONA LAKE	1957-2005	0.00	0.01	0.00	7.28	9.31	10.74	12.68	11.56	8.80	5.95	2.79	0.00	69.98

NEW MEXICO

MONTHLY AVERAGE PAN EVAPORATION (INCHES)

	PERIOD OF RECORD	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
ABIQUIU DAM	1957-2005	0.00	0.00	5.06	7.43	9.35	11.39	10.67	9.10	7.23	5.30	3.13	2.22	81.15
AGRICULTURAL COLLEGE	1892-1959	3.71	4.90	7.69	10.20	6.65	13.05	12.33	11.16	8.34	6.28	4.35	2.89	93.06
ALAMOGORDO DAM	1939-1975	3.75	4.25	6.21	11.35	12.89	14.43	13.66	11.59	9.17	7.19	4.89	3.46	104.81
ANIMAS	1923-2005	3.67	4.91	8.19	10.74	12.36	14.28	11.60	11.07	8.54	6.71	4.69	3.61	101.68
ARTESIA 6 S	1914-2005	4.38	3.63	7.25	7.56	10.11	12.13	10.86	10.44	9.36	6.34	3.12	0.97	87.68
BITTER LAKES NL REFUGE	1950-2005	2.67	3.93	6.81	9.63	11.31	12.62	11.98	10.16	8.02	5.85	3.53	2.50	88.79
BOSQUE DEL APACHE	1914-2005	3.7	4.50	7.76	10.10	11.61	13.13	12.56	10.36	8.03	6.25	3.66	2.54	92.51
BRANTLEY DAM	1987-2005	4.65	3.00	6.62	11.77	14.61	15.46	14.19	12.22	9.80	7.97	5.77	4.04	109.48
CABALLO DAM	1938-2005	4.42	5.10	8.56	11.37	12.09	14.60	13.08	11.35	9.06	7.27	4.78	3.43	107.15
CAPULIN NATL MONUMENT	1966-1979	0.00	0.00	0.00	0.00	9.06	10.57	9.71	9.18	7.65	0.00	0.00	0.00	46.19
CLOVIS 13	1929-2005	3.03	4.12	6.63	8.78	10.15	11.45	11.65	9.55	7.61	5.78	3.95	3.21	86.68
COCHITI DAM	1975-2005	0.00	4.14	6.48	8.48	11.07	12.95	12.58	10.62	8.91	6.29	3.94	2.79	88.01
CONCHAS DAM	1937-2005	0.00	0.00	7.35	8.10	10.29	11.60	11.57	10.06	8.24	6.16	4.04	2.79	80.99
EAGLE NEST	1937-2005	0.00	0.00	0.00	4.30	7.67	7.80	7.37	5.87	5.30	4.31	0.00	0.00	42.96
EL VADO DAM	1923-2005	0.00	0.00	3.61	5.43	7.46	8.84	8.62	6.91	5.66	2.61	1.72	0.30	51.39
ELEPHANT BUTTE DAM	1913-2005	3.69	4.87	8.61	12.22	14.94	16.37	14.15	12.05	9.78	7.70	4.91	3.34	112.61
ESTANCIA	1914-2005	0.00	0.00	3.26	6.78	9.56	9.27	9.61	7.10	5.04	3.82	2.62	0.00	56.03
FARMINGTON AG SCIENCE C	1976-2005	0.00	0.00	7.01	7.97	10.04	10.00	10.52	10.70	8.15	5.41	0.00	0.00	66.81
FLORIDA	1939-1992	3.54	4.81	8.10	10.94	13.03	14.87	11.84	10.10	8.51	5.50	4.57	3.11	99.93
GALLUP RAN SER STN	1966-1975	0.00	0.00	0.00	6.62	9.32	12.12	10.50	9.79	7.85	5.07	2.20	0.00	63.15
JEMEZ DAM	1953-2005	0.00	0.00	0.00	8.91	10.27	13.65	14.29	11.45	9.80	6.70	3.65	0.72	82.04
LORDSBURG EXP RANGE	1935-2005	2.50	4.12	7.24	10.06	11.94	12.25	10.88	8.52	7.82	5.71	3.63	2.50	98.12
LOGAN 1	1914-2005	0.00	0.00	0.00	8.47	9.35	11.63	10.75	8.88	6.83	5.00	1.98	0.00	63.73
LAKE AVALON	1913-1979	4.49	5.33	9.42	13.36	14.31	15.16	14.14	12.33	9.25	7.26	4.68	4.20	112.63
LAKE MC MILLAN	1941-1969	0.00	0.00	0.00	10.73	8.14	14.26	13.38	13.45	10.35	6.15	0.00	0.00	79.51
LOS LUNAS 3 SSW	1923-2005	1.10	2.91	5.27	7.77	9.74	10.49	10.03	8.67	5.58	4.64	2.75	2.35	73.17
MORIARTY	1948-1984	3.00	5.67	7.82	11.07	13.37	15.44	13.07	11.32	8.97	7.20	4.32	2.84	101.81
NAVAJO DAM	1963-2005	0.00	0.00	0.00	6.58	9.10	11.07	11.24	9.66	7.22	4.74	0.00	0.00	59.51
PONTALES 7 NNW	1934-1960	3.16	4.57	8.74	9.55	12.72	15.16	11.44	9.28	7.95	5.51	4.15	3.53	99.13
ROOD RANGER STN	1954-2005	0.00	0.00	0.00	7.84	9.02	10.61	8.25	6.97	6.12	5.14	2.65	0.00	56.72
ROSWELL WSO AIRPORT	1897-1972	0.00	0.00	0.00	11.28	0.00	15.07	12.11	12.63	7.92	6.57	4.65	4.51	75.96
SANTA FE	1867-1972	0.00	0.00	3.00	7.28	8.73	10.93	8.95	8.20	7.15	5.10	2.50	0.00	62.97
SANTA FE 2	1978-2005	0.00	0.00	0.00	7.10	9.76	11.31	10.36	9.20	7.81	5.08	0.00	0.00	60.24
SHIPROCK	1926-2005	0.00	0.00	0.00	7.04	10.7	11.44	13.17	10.89	9.80	6.54	0.00	0.00	73.16
SOCORRO	1914-2005	0.00	0.00	4.03	7.38	9.17	9.35	8.56	7.57	5.75	4.14	0.00	0.00	56.41
STATE UNIVERSITY	1959-2005	3.01	4.33	7.60	9.71	11.03	12.91	12.05	10.31	8.1	6.17	3.85	2.79	92.91
SUMNER LAKE	1921-2003	0.00	0.00	7.23	10.22	12.05	13.54	13.36	11.16	9.02	6.97	4.92	3.17	92.01
TUCUMCARI 4 NE	1904-2005	0.00	0.00	0.03	9.83	11.53	12.81	13.00	11.13	8.96	6.71	0.00	0.00	74.30
UTE DAM	1965-2005	4.39	4.91	7.53	8.71	10.71	10.48	10.92	9.42	7.5	6.03	4.98	3.04	89.41

OREGON

MONTHLY AVERAGE PAN EVAPORATION (INCHES)

	PERIOD OF RECORD	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
ASTOR EXPERIMENT STN	1948-1972	0.56	0.96	1.87	2.93	3.75	3.95	4.65	4.10	2.95	1.65	0.87	0.46	27.15
BEND 7 NW	1991-2005	0.00	0.00	0.00	4.25	6.21	6.69	8.66	7.91	5.41	0.00	0.00	0.00	39.13
CORVALLIS STATE UNIV	1949-2005	0.00	0.00	1.79	2.91	4.59	5.86	7.70	7.07	5.06	2.33	0.96	0.00	36.31

COTTAGE GROVE DAM	1913-2005	0.00	1.37	2.16	3.07	4.55	5.60	7.75	6.70	4.17	2.06	0.82	0.00	38.46
DETROIT DAM	1954-2005	0.19	1.16	1.69	2.83	4.38	5.90	7.68	6.64	4.24	2.05	0.88	0.46	37.78
DORENA DAM	1948-2005	0.00	1.01	1.94	2.95	4.98	6.11	8.19	7.15	4.66	2.01	0.00	0.00	39.00
FERN RIDGE DAM	1963-2005	0.39	0.79	1.92	3.17	5.09	6.21	8.12	7.09	4.76	2.21	0.67	0.34	40.70
HERMISTON 2 S	1920-1997	0.00	0.00	3.41	5.43	7.91	9.67	11.32	9.66	6.32	3.97	0.00	0.00	57.72
HOOD RIVER EXP STN	1938-2005	0.00	0.00	0.00	0.00	6.45	6.90	7.81	7.04	3.32	0.00	0.00	0.00	35.52
KLAMATH FALLS AGR STN	1948-2004	0.70	1.31	2.81	4.72	7.21	7.79	10.24	9.41	6.31	4.37	0.00	0.67	55.54
LOOKOUT POINT DAM	1955-2005	0.00	1.76	2.29	3.10	4.67	5.77	7.69	6.89	4.45	1.96	1.01	0.00	39.59
MADRAS 4 NE	1952-2005	0.07	0.00	0.06	4.72	7.12	8.46	10.23	8.17	6.31	3.16	1.70	0.00	50.27
MILLHEUP BRANCH EXP STN	1943-2005	0.00	0.00	0.00	5.62	7.71	8.24	11.06	9.57	6.17	3.14	0.72	0.00	52.09
VOLTAGE 2 NW	1959-2005	0.00	0.00	0.00	4.37	6.22	7.67	9.55	8.52	5.86	3.19	0.00	0.00	45.41
REDMOND EXP STN	1937-2005	0.53	1.02	2.28	3.56	5.29	5.54	8.24	6.78	4.05	1.81	0.76	0.44	41.29
SALEM	1928-2005	0.00	0.74	2.96	5.11	7.74	9.11	12.34	11.18	7.15	3.56	0.00	0.00	59.61
S WILLAMETTE EXP STN	1963-2005	0.63	1.18	2.29	3.31	5.15	6.01	7.10	6.78	4.68	2.39	1.05	0.57	41.84
SCHILL BIKE LAND FAM	1948-1980	0.00	0.00	0.00	0.02	3.17	4.13	5.54	3.01	1.90	0.67	0.00	0.00	19.32
SCHILL LAKE WATER FAM	1945-1959	0.00	0.00	0.00	0.00	1.87	2.71	3.97	4.01	3.44	2.02	0.00	0.00	18.02
SELTON DAM	1958-2005	0.00	0.00	0.00	4.47	6.77	8.26	9.90	8.12	5.02	2.69	0.00	0.00	45.30
SENDLETON BR EXP STN	1956-2005	0.00	0.00	3.41	5.09	6.03	8.82	11.78	10.85	7.02	3.70	0.00	0.00	57.69
SUMMER LAKE 4 S	1957-2005	0.00	0.00	0.00	5.19	7.28	8.71	10.60	9.79	6.48	3.89	1.90	0.00	53.71
SWIO EXP STN	1928-2005	0.00	0.00	0.00	3.16	4.80	6.00	7.49	6.80	4.32	2.74	0.00	0.00	35.31
WARM SPRINGS RESERVOIR	1931-1974	0.00	0.00	0.00	4.82	7.21	8.66	11.73	10.19	6.77	3.69	0.00	0.00	52.90
WICKIUP DAM	1961-2005	0.00	0.00	0.00	3.99	5.14	6.46	7.89	6.84	4.68	2.46	0.00	0.00	36.56
WINCHESTER	1950-2005	0.00	0.00	0.00	3.05	3.75	5.51	6.93	6.38	4.51	1.32	0.00	0.00	35.75
WINCHESTER 3 W F ST	1931-1987	0.91	0.96	2.96	3.61	5.11	6.52	8.48	8.07	6.94	2.40	1.07	0.97	45.53

UTAH

MONTHLY AVERAGE PAN EVAPORATION (INCHES)

	PERIOD OF RECORD	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
ARCHES NAT'L PARK HQ	1960-2005	0.00	0.00	0.00	7.44	9.01	12.33	12.94	11.15	8.16	4.73	0.00	0.00	65.56
BEAR RIVER PAV	1962-1996	0.00	0.00	0.00	6.27	10.17	12.59	13.86	12.20	7.83	3.89	0.00	0.00	67.90
BEAR RIVER REFUGE	1948-1964	0.00	0.00	0.00	4.80	7.21	8.68	10.46	9.30	6.13	3.27	1.27	0.00	51.10
BRYCE CANYON NAT'L PRK	1971-1979	0.00	0.00	0.00	5.10	6.86	7.96	8.07	7.21	5.39	0.00	0.00	0.00	35.30
FARMINGTON USU FLD STN	1948-2005	0.00	0.00	0.00	0.00	7.33	8.35	9.25	8.62	4.68	2.97	0.00	0.00	39.15
FERRON	1948-2005	0.00	0.00	0.00	5.20	5.66	8.06	6.58	6.39	5.49	3.53	0.00	0.00	40.21
FISH SPRINGS REFUGE	1960-2005	0.00	0.00	0.00	7.02	10.70	12.90	15.02	13.39	9.92	5.84	0.00	0.00	74.80
FLAMING GORGE	1957-2005	0.00	0.00	0.00	5.04	6.23	8.70	9.71	8.52	5.76	3.54	0.00	0.00	48.01
FORT DUCHESNE	1894-2005	0.00	0.00	0.00	5.06	7.41	9.61	9.06	7.98	5.57	3.35	0.00	0.00	47.01
GREEN RIVER AVIATION	1893-2005	0.00	0.00	0.00	6.07	8.17	9.29	9.49	7.97	5.74	3.52	1.60	0.00	51.75
GUNNISON	1956-1990	0.00	0.00	0.00	5.10	7.23	8.70	9.65	8.26	6.33	3.81	0.00	0.00	48.76
HEIT	1949-1962	0.00	0.00	0.00	7.84	11.76	14.10	14.01	12.44	8.34	4.86	1.94	0.00	75.31
LOGAN USU EXP STN	1950-1978	0.00	0.00	0.00	4.01	5.85	7.05	8.37	7.50	5.02	2.92	0.00	0.00	40.85
LOGAN 5 SW EXP FARM	1969-2005	0.00	0.00	3.30	4.57	6.57	8.48	10.05	8.93	5.99	3.51	0.00	0.00	51.89
MANILA	1952-2005	0.00	0.00	0.00	0.00	7.31	9.66	9.93	8.37	6.50	3.63	0.00	0.00	45.36
MERICAN FAT	1948-2005	0.00	0.00	6.51	8.48	11.99	14.42	14.87	12.48	9.37	5.52	2.25	0.00	85.66
MILFORD	1906-2005	0.00	0.00	0.00	7.47	10.22	13.54	15.47	13.24	9.88	6.16	2.32	0.00	78.30
MOAB	1889-2005	0.00	0.00	4.19	7.29	10.41	13.02	12.72	10.75	7.66	4.25	2.26	0.00	71.56
MORGAN	1948-2005	0.00	0.00	0.00	4.94	6.96	7.30	9.07	8.01	6.15	3.74	0.00	0.00	46.17
PIUTE D 4	1948-1971	0.00	0.00	0.00	0.00	7.71	9.98	10.13	9.00	6.98	4.60	0.00	0.00	48.00
PROVO AIRPORT	1941-1953	0.00	0.00	2.91	6.03	8.12	9.62	8.98	8.36	6.09	3.41	0.00	0.00	53.13
PROVO BYU	1950-2005	0.00	0.00	3.59	4.91	6.91	8.77	9.85	9.76	5.59	2.93	0.00	0.00	49.81
PROVO RADIC FARM	1952-1977	0.00	0.00	0.00	0.00	8.94	9.82	9.32	7.88	5.40	3.21	1.53	0.00	45.80
ST GEORGE	1862-2005	0.00	0.00	4.57	7.36	10.01	12.22	13.17	11.55	8.22	4.83	2.68	0.00	74.68
SALTAIR SALT PLANT	1956-1991	0.00	0.00	3.66	6.20	9.19	11.02	14.40	12.67	8.58	4.86	2.32	0.00	73.76
SCOFIELD DAM	1948-1991	0.00	0.00	0.00	0.00	5.52	7.64	9.29	6.94	5.13	3.90	0.00	0.00	37.62
SEVIER DRY LAKE	1987-1993	0.00	0.00	2.93	6.33	13.52	16.06	18.32	0.00	0.00	0.00	0.00	0.00	57.16
S.RAMBERRY RESERVOIR EA	1956-1977	0.00	0.00	0.00	0.70	5.12	7.25	7.87	7.31	5.68	3.02	0.00	0.00	36.37
UTAH LAKE LEHI	1928-2003	0.00	0.00	2.77	5.19	7.11	8.60	9.61	8.58	6.10	3.81	1.42	0.00	53.39
VERNAL AIRPT	1928-2005	0.00	0.00	0.00	5.07	6.41	7.48	8.64	8.34	4.68	2.92	0.00	0.00	43.75
WASHITA DAM	1955-2005	0.00	0.00	0.00	5.00	6.79	8.79	7.41	6.59	4.70	3.19	0.00	0.00	34.86

WASHINGTON

MONTHLY AVERAGE PAN EVAPORATION (INCHES)

	PERIOD OF RECORD	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
BELLINGHAM 2 N	1948-1982	0.00	0.00	0.00	2.75	4.59	5.35	6.28	5.56	3.34	1.12	0.00	0.00	29.09
BELLINGHAM 3 SSW	1950-2005	0.00	0.00	0.00	3.00	3.77	4.69	5.31	4.70	2.65	1.39	0.00	0.00	25.31
BOPPS LAKE	1931-1967	0.00	0.00	0.00	0.00	4.01	4.13	5.58	4.53	3.19	2.34	0.00	0.00	23.78
CENTRAL 2 E	1950-2003	0.00	0.00	0.00	5.43	8.35	9.19	11.90	10.77	6.00	3.00	0.00	0.00	54.22
ELLOPIA 6 W	1954-1973	0.00	0.00	3.23	5.46	6.61	7.73	9.36	7.56	4.93	2.45	0.00	0.00	48.16
ELLOPIA 8 WSW	1974-2005	0.00	0.00	0.00	4.44	6.10	7.05	8.07	7.04	4.44	2.00	0.00	0.00	38.81
LAKE TACHES	1931-1997	0.00	0.00	0.00	2.35	3.72	4.02	6.12	5.12	3.20	0.00	0.00	0.00	25.11
LIND 3 NE EXP STN	1931-2005	0.00	0.00	0.00	5.35	8.02	9.40	12.02	10.44	6.87	2.59	0.00	0.00	54.63
MOSES LAKE 3 E	1943-1979	0.00	0.00	0.00	5.51	7.59	8.78	10.29	8.10	5.53	2.79	0.00	0.00	48.50
OROVILLE 1 S	1950-1976	0.00	0.00	0.00	4.49	5.87	6.36	7.42	6.22	4.58	1.99	0.00	0.00	36.58
OTHELLO 6 ESE	19 1-2002	0.00	0.00	0.00	5.40	7.80	9.00	10.77	9.14	6.12	2.92	0.00	0.00	59.95
PROSSER 4 NE	1931-2005	0.00	0.00	2.49	4.86	6.97	7.50	8.61	7.00	4.73	2.48	0.80	0.60	45.82
PUYALLUP 2 W EXP ST	1931-1995	0.00	0.71	1.58	2.46	3.97	4.63	5.61	4.97	2.92	1.28	0.01	0.00	28.74
QUINCY 1 S	1941-2005	0.00	0.00	0.00	5.76	8.05	9.10	10.20	8.02	5.52	2.60	0.00	0.00	48.15

RIMROCK TIETON DAM	1947-1977	0.00	0.00	0.00	0.00	5.35	7.03	15.47	6.71	3.75	1.63	0.00	0.00	39.88
SEATTLE MAPLE LEAF R	1941 1960	0.61	0.82	1.80	3.26	4.64	5.12	6.70	5.19	3.49	1.63	0.74	0.53	34.52
SPOKANE WSO AIRPORT	1889-2005	0.00	0.00	0.00	4.66	7.27	8.57	11.28	10.22	6.41	0.00	0.00	0.00	48.71
WALLA WALLA 3 W ENT LA	1931-1962	0.00	0.00	0.00	4.79	6.26	7.61	9.72	7.95	4.75	2.5	0.00	0.00	43.69
WENATCHEE EXP STA	1950-1997	0.00	0.00	0.00	4.74	6.87	7.87	9.38	7.83	4.19	0.00	0.00	0.00	40.88
WHITMAN MISSION	1962-2005	0.00	0.00	0.00	4.58	6.58	8.17	10.34	9.07	5.52	2.06	0.00	0.00	47.11
WIND RIVER	1931-1977	0.00	0.00	0.00	2.92	4.19	5.64	6.25	4.97	3.31	1.62	0.00	0.00	27.79
YAKIMA WSO AP	1946-2005	0.00	0.00	0.00	5.27	7.62	9.71	10.42	9.29	5.95	0.00	0.00	0.00	47.21

WYOMING

MONTHLY AVERAGE PAN EVAPORATION (INCHES)

	PERIOD OF RECORD	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
ANCHOR DAM	1961-1979	0.00	0.00	0.00	0.00	6.46	7.57	9.66	8.31	5.95	3.33	0.00	0.00	41.28
ARCHER	1948-2005	0.00	0.00	0.00	3.66	5.71	7.08	9.36	7.94	5.94	4.45	0.00	0.00	43.08
BOYSEN DAM	1948-2005	0.00	0.00	0.00	5.44	6.72	8.24	9.86	9.08	5.92	3.20	0.00	0.00	48.46
PARSON	1915-2005	0.00	0.00	0.00	0.00	7.45	9.35	10.67	8.71	5.53	3.80	0.00	0.00	45.76
GILLETTE 3 SSE	1925-2005	0.00	0.00	0.00	4.50	6.40	7.50	9.88	9.44	6.18	4.36	2.39	0.00	50.67
GREEN RIVER	1915-2005	0.00	0.00	0.00	0.00	8.22	9.71	11.08	9.80	6.82	4.62	0.00	0.00	50.25
HEART MOUTAIN	1949-2005	0.00	0.00	0.00	3.60	5.82	6.37	7.35	6.67	4.37	3.13	0.00	0.00	37.51
KEYSTONE DAM	1949-1959	0.00	0.00	0.00	4.39	6.00	7.25	9.53	8.31	6.04	3.68	0.00	0.00	46.59
LARAMIE 2 WW	1966-2005	0.00	0.00	0.00	0.00	8.21	10.25	10.71	9.58	7.48	4.75	0.00	0.00	51.10
LOCKOUT 14 NE	1948-1965	0.00	0.00	0.00	0.00	7.50	11.32	10.89	10.40	7.76	3.30	0.00	0.00	51.17
NORTON 1 NW	1949-1968	0.00	0.00	0.00	3.91	5.55	6.73	8.27	7.31	4.96	3.35	0.00	0.00	40.12
PATHFINDER DAM	1910-1991	0.00	0.00	3.30	5.77	6.76	8.76	11.53	9.75	7.17	4.95	2.81	0.00	59.04
SEMINOE DAM	1948-2005	0.00	0.00	0.00	0.00	5.24	7.27	8.99	9.12	5.59	0.00	0.00	0.00	36.21
SHERIDAN FIELD STP	1920-2005	0.00	0.00	0.00	3.55	6.29	7.68	10.21	9.73	6.14	0.00	0.00	0.00	44.11
WHALEN DAM	1949-1981	0.00	0.00	3.33	5.17	7.48	9.00	10.29	9.09	5.24	4.18	0.00	0.00	54.78

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APPENDIX D:

MATANUSKA AES FREEZE/FROST OCCURRENCE DATA

Freeze / Frost Occurrence Data

All probabilities in whole percent. See notes for probability level description.

- Indicates the probability of occurrence of threshold temperature is less than indicated probability.

State And Station Name	Threshold (F)	Spring (Date) Probability Level (1)			Fall (Date) Probability Level (2)			Freeze Free Period (Days) Probability Level (3)			Probability Level (4)
Alaska		90	50	10	10	50	90	10	50	90	
ANCHORAGE INTL AP	36	May14	May24	Jun03	Aug28	Sep12	Sep27	130	110	90	60
	32	Apr28	May08	May19	Sep10	Sep23	Oct07	154	137	120	53
	28	Apr14	Apr24	May05	Sep19	Oct01	Oct13	178	159	141	44
ANDERSON LAKE	36	May23	Jun12	Jul02	Aug11	Aug27	Sep13	106	75	46	66
	32	May11	May30	Jun17	Aug25	Sep13	Oct02	134	105	78	55
	28	Apr20	May07	May25	Sep07	Sep25	Oct13	171	140	109	45
ANNETTE AP	36	Apr20	May06	May23	Sep28	Oct11	Oct25	182	157	132	33
	32	Mar30	Apr16	May02	Oct12	Oct27	Nov11	217	194	171	20
	28	Feb21	Mar15	Apr06	Oct22	Nov11	Dec02	271	241	211	10
AUKE BAY	36	May04	May19	Jun04	Sep19	Oct03	Oct16	155	136	115	49
	32	Apr17	May09	May19	Sep23	Oct12	Oct31	190	161	133	35
	28	Mar28	Apr12	Apr28	Oct09	Nov01	Nov25	234	203	171	21
BARROW AP	36	Jul29	Jul31	Aug01	Jul29	Aug03	Aug08	9	2	0	95
	32	Jul24	Jul26	Aug01	Jul25	Aug06	Aug21	25	10	0	86
	28	Jun06	Jun29	Jul21	Aug01	Aug23	Sep14	90	55	19	73
BEAVER FALLS	36	Apr26	May14	Jun02	Sep27	Oct12	Oct29	173	150	126	43
	32	Apr06	Apr21	May07	Oct12	Oct29	Nov15	217	190	163	26
	25	Mar05	Mar24	Apr12	Oct29	Nov15	Dec10	269	235	202	11
BERS FARM	36	May20	Jun05	Jun21	Aug17	Aug31	Sep14	111	86	60	62
	32	May08	May22	Jun04	Aug23	Sep12	Sep28	137	112	88	54
	28	Apr24	May07	May20	Sep06	Sep22	Oct08	162	137	113	46
BETHEL AP	36	May22	Jun09	Jun27	Aug19	Sep03	Sep19	111	86	61	68
	32	May16	May28	Jun10	Aug31	Sep14	Sep28	127	108	89	61
	28	May04	May15	May26	Sep11	Sep25	Oct09	150	132	115	52
BETTLES AP	36	May18	Jun14	Jul11	Aug06	Aug18	Aug31	98	65	31	70
	32	May05	May28	Jun22	Aug13	Aug27	Sep09	118	89	60	65
	28	May01	May13	May24	Aug27	Sep10	Sep25	137	120	103	60
BIG DELTA ALLEN AAF	36	May17	Jun01	Jun17	Aug15	Aug23	Aug31	102	82	63	66
	32	May06	May22	Jun07	Aug20	Aug31	Sep10	118	100	81	61
	28	Apr29	May09	May19	Aug28	Sep15	Oct02	149	128	106	55
COLD BAY AP	36	May24	Jun14	Jul06	Aug27	Sep16	Oct06	123	93	63	59
	32	May09	May25	Jun11	Sep17	Oct03	Oct20	156	130	104	41
	28	Apr22	May07	May21	Oct06	Oct21	Nov03	189	166	143	27
COLLEGE OBSERVATORY	36	May16	Jun07	Jun30	Aug12	Aug23	Sep02	104	75	47	69
	32	May12	May25	Jun07	Aug17	Aug30	Sep13	114	97	79	64
	28	May04	May13	May21	Aug28	Sep13	Sep28	140	122	104	58
COLLEGE 5 NW	36	May15	Jun01	Jun18	Aug13	Aug26	Sep08	108	85	62	66
	32	May09	May18	May27	Aug24	Sep08	Sep23	129	112	96	61
	28	Apr22	May06	May20	Sep04	Sep18	Oct03	157	135	112	55
COOPER LAKE PROJECT	36	May24	Jun10	Jun26	Aug26	Sep09	Sep24	118	91	65	63
	32	Apr30	May21	Jun10	Sep07	Sep23	Oct09	152	124	97	51
	28	Apr17	May03	May18	Sep19	Oct06	Oct23	183	156	128	38

CORDOVA AP	36	May29	Jun17	Jul06	Aug16	Aug30	Sep13	99	74	48	59
	32	May11	May21	Jun01	Sep02	Sep15	Sep29	132	116	100	45
	28	Apr18	May05	May21	Sep14	Sep28	Oct11	169	145	121	33
EIELSON FIELD	36	May15	May30	Jun14	Aug17	Aug27	Sep06	109	89	68	67
	32	May03	May15	May26	Aug25	Sep04	Sep15	128	112	96	61
	28	Apr22	May05	May17	Aug30	Sep15	Oct01	154	133	111	55
ELFIN COVE	36	May07	May17	May27	Sep24	Oct11	Oct28	188	146	125	45
	32	Apr06	Apr24	May13	Oct05	Oct26	Nov16	213	184	155	25
	28	Mar08	Mar28	Apr17	Oct24	Nov19	Dec16	274	236	198	12
FAIRBANKS INTL AP	36	May15	May24	Jun02	Aug17	Aug28	Sep08	112	96	79	66
	32	May07	May15	May23	Aug26	Sep08	Sep21	132	115	99	61
	28	Apr21	May03	May15	Sep03	Sep19	Oct05	158	138	119	55
GLACIER BAY	36	May13	May29	Jun14	Sep07	Sep23	Oct09	140	116	93	55
	32	Apr23	May07	May20	Sep20	Oct08	Oct26	177	154	130	40
	28	Mar21	Apr11	May01	Sep28	Oct26	Nov23	237	198	159	21
GLEN ALPS	36	May31	Jun17	Jul03	Aug13	Aug29	Sep13	98	73	46	69
	32	May12	May30	Jun16	Aug24	Sep10	Sep28	128	103	78	61
	28	Apr22	May10	May29	Sep08	Sep23	Oct09	161	135	109	51
GLENNALLEN KCAM	36	Jul14	Jul26	Aug07	Jul31	Aug05	Aug10	24	10	0	78
	32	Jun30	Jul17	Aug03	Aug01	Aug10	Aug19	46	23	1	72
	28	Jun02	Jun24	Jul15	Aug07	Aug16	Aug26	77	53	28	64
GULKANA AP	36	Jun13	Jul06	Jul29	Aug01	Aug11	Aug21	61	36	10	72
	32	May22	Jun12	Jul03	Aug07	Aug19	Aug31	91	67	44	65
	28	May09	May23	Jun05	Aug19	Aug31	Sep12	120	100	79	58
HOMER AP	36	May13	Jun09	Jun30	Aug24	Sep08	Sep22	117	90	63	61
	32	May04	May20	Jun05	Sep11	Sep24	Oct06	150	127	103	49
	28	Apr14	May01	May18	Sep21	Oct03	Oct15	177	155	132	36
ILIAMNA AP	36	May18	Jun01	Jun15	Aug25	Sep12	Sep30	128	102	77	61
	32	May02	May17	Jun01	Sep12	Sep24	Oct05	149	129	109	49
	28	Apr15	May02	May20	Sep19	Oct03	Oct17	176	153	130	39
INTRICATE BAY	36	Jun10	Jul01	Jul22	Aug04	Aug17	Aug29	73	46	19	68
	32	May29	Jun17	Jul08	Aug14	Aug31	Sep17	102	74	46	54
	28	May13	May27	Jun10	Sep03	Sep17	Oct01	132	112	92	43
JUNEAU INTL AP	36	May07	May25	Jun12	Aug31	Sep18	Oct07	145	116	86	49
	32	Apr22	May08	May24	Sep15	Oct04	Oct22	176	148	120	35
	28	Mar24	Apr14	May05	Sep25	Oct16	Nov07	216	185	151	22
KENAI MUNICIPAL AP	36	May27	Jun23	Jul19	Aug08	Aug25	Sep12	97	63	29	65
	32	May11	May26	Jun10	Aug23	Sep08	Sep26	132	105	78	56
	28	Apr16	May05	May24	Sep06	Sep22	Oct09	167	139	111	45
KING SALMON AP	36	Jun05	Jun23	Jul11	Aug11	Aug29	Sep15	94	66	38	66
	32	May14	May29	Jun13	Aug23	Sep10	Sep29	131	103	76	54
	28	Apr24	May10	May26	Sep06	Sep22	Oct08	159	134	109	43
KITOI BAY	36	May23	Jun06	Jun21	Aug29	Sep15	Oct02	123	100	76	58
	32	May02	May18	Jun03	Sep15	Sep27	Oct10	152	131	110	45
	28	Apr09	May01	May23	Sep27	Oct10	Oct24	180	162	134	26
KOTZEBUE WIEN AP	36	Jun11	Jun24	Jul07	Aug20	Sep05	Sep20	94	72	50	74
	32	May31	Jun11	Jun21	Sep03	Sep18	Oct03	117	99	81	67
	28	May17	May30	Jun12	Sep13	Sep25	Oct07	136	117	98	62
LITTLE PORT WALTER	36	May10	May26	Jun12	Sep20	Oct04	Oct17	149	129	110	46
	32	Apr15	May03	May21	Oct02	Oct24	Nov14	205	173	141	29
	28	Feb23	Mar23	Apr21	Oct27	Nov19	Dec11	277	240	203	12
MATANUSKA AES	36	May22	Jun04	Jun17	Aug18	Sep01	Sep15	109	88	68	63
	32	May11	May20	May30	Aug26	Sep14	Sep30	137	116	94	56
	28	Apr20	May04	May19	Sep11	Sep24	Oct07	164	142	119	47
MCGRATH AP	36	May18	Jun08	Jun29	Aug10	Aug22	Sep04	99	75	50	68
	32	May08	May21	Jun02	Aug19	Sep02	Sep15	122	103	84	62
	28	Apr26	May07	May18	Sep02	Sep16	Oct01	150	131	113	55

WHITES CROSSING	36	Jun04	Jun24	Jul15	Aug06	Aug17	Aug28	81	53	26	69
	32	May23	Jun05	Jun17	Aug12	Aug29	Sep15	105	85	64	63
	28	May08	May19	May30	Aug24	Sep10	Sep27	135	113	90	56
WRANGELL AP	36	Apr19	May17	Jun15	Sep08	Oct04	Oct29	183	139	94	43
	32	Mar27	Apr26	May26	Sep27	Oct20	Nov12	222	176	130	28
	28	Feb28	Mar28	Apr25	Oct19	Nov09	Nov30	268	225	182	17

Notes:

(1) Probability of later date in spring (thru Jul 31) than indicated.

(2) Probability of earlier date in fall (beginning Aug 1) than indicated.

(3) Probability of longer than indicated freeze free period.

(4) Probability of Freeze/Frost in the yearly period (percent of days with temperatures at or below the threshold temperature).

The sunrise/set charts don't say anything about sunniness or cloudiness, just when the sun up or down.

Frost Dates

A majority of USA stations have freeze/frost data. The percentages indicate how likely it is that a frost will occur.

For **autumn** the percentages show the likelihood of the first frost before the the given date. For example, a 10% value for September 30th means that there is a 10% chance that there will be a frost before that date. This is the same as saying there is a 90% chance that the first frost of the year will occur on or after that date.

For spring the percentages show the likelihood of that the last frost before the given date. For example, a 90% value for March 1 means that there is a 90% chance that there will be no more frost after this. In other words there is only a 10% chance that another frost will occur that year.

For some warm locations, the before and after dates are close together and may occur in the same season, usually winter.

Rankings & Extremes

Rankings are based on annual averages. Not every station reports every statistic, so the rankings are based only on those that do report. For example, if a station doesn't report high temperature, it is not ranked for that.

We'll add some ranking lists to these pages in the near future.

Heating and Cooling Degree Days

These are derived from the temperature data. Simply put, they show how hard your furnace or air conditioner has to work to maintain a comfortable interior temperature. See the Wikipedia entry for more detail.

Suggestions?

Please [redacted] if you have any problems, questions, comments, or suggestions.

[redacted]

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MATANUSKA AES, Alaska, USA:

Search

Mar 7:
Obama Reduces Amount Homeowners Owe

Calculate New House Payment

Scroll down to see the all the data on which the charts are based. Also see Explanation, background, and discussion.

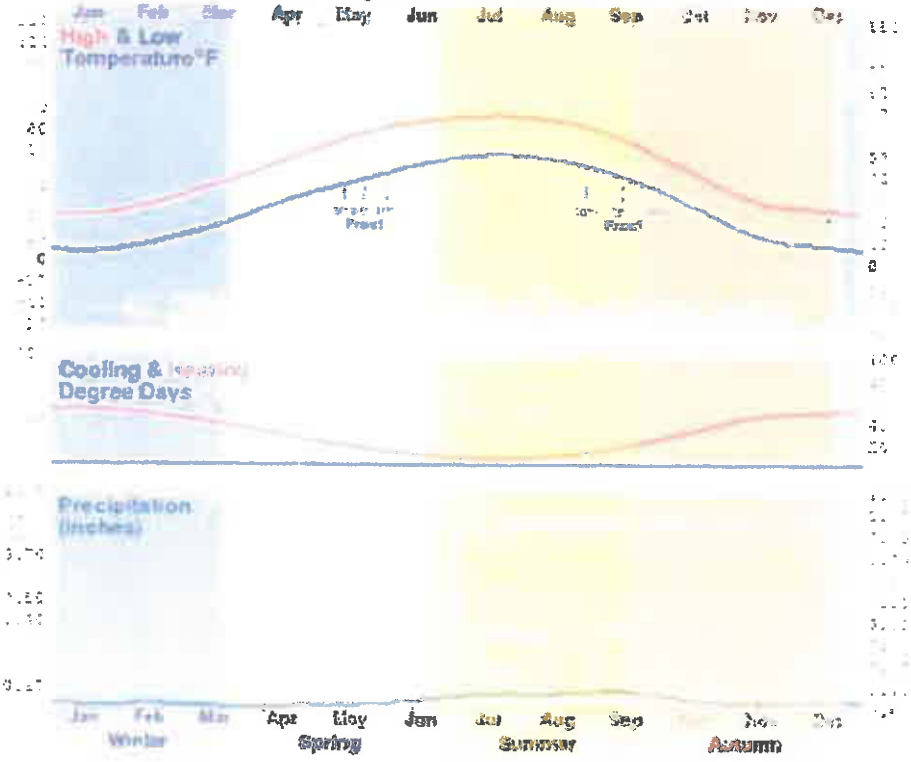
Global Warming/Climate Change for MATANUSKA AES, Alaska, USA

One predicted temperature increase is

See About the Global Warming Data for more information about this prediction.

Matanuska Aes, AK

Latitude: 61°33'29" Longitude: -149°15'07" Elevation: 172' ID: 505733



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APPENDIX E:

PERCOLATION TEST DATA FOR PROPOSED PALMER MONOFILL SITE

ENVIRONMENTAL MANAGEMENT INCORPORATED

July 10, 2013

Central Monofill Services
311 N. Sitka Street
Anchorage, AK 99501
Attn: Shane Durand

RE: **CMS Proposed Monofill Site, Palmer Alaska**

Subj: **Insitu Soil Percolation Tests**

This letter describes the results of the preliminary percolation tests performed on July 1, 2013, at the proposed Palmer Monofill site. Aaron Acena of Environmental Management, Inc. (EMI) conducted the tests under the oversight of Larry Helgeson. The standard 6-inch falling head pressure test that is recommended by ADEC was used to complete the tests. Boreholes were dug to a depth of approximately 2' in 3 areas on the property which appeared to represent "native" soil conditions on site that would be found under the monofill. Holes 1 and 2 were located within 50 ft. of each other on the south end of the property and a 3rd hole was dug closer to the west/central area of the property in a flattened zone. Holes were prepped with 2 inches of gravel at the base and allowed to soak for 1-2 hours before the test. Hole 3 exhibited water movement that qualified as ready to test "as is" without soaking. Holes 1 and 2 indicated additional soaking would be required before a percolation test could be finalized. The final percolation rate will likely be slower than the preliminary tests indicate. Preliminary percolation rates were taken from an average of the last three readings taken from each hole and are listed in Table 1.

Table 1

Location ID	Percolation Rate (min/in)
Hole 1	41
Hole 2	81
Hole 3	7

Sincerely,
Environmental Management, Inc.

Aaron Acena
Environmental Geologist

Larry Helgeson, PE
Principal

Attached:
Figure1: Test Locations
Photo Log

206 E. FIREWEED LANE, SUITE 201 ◦ ANCHORAGE, AK 99503-2703
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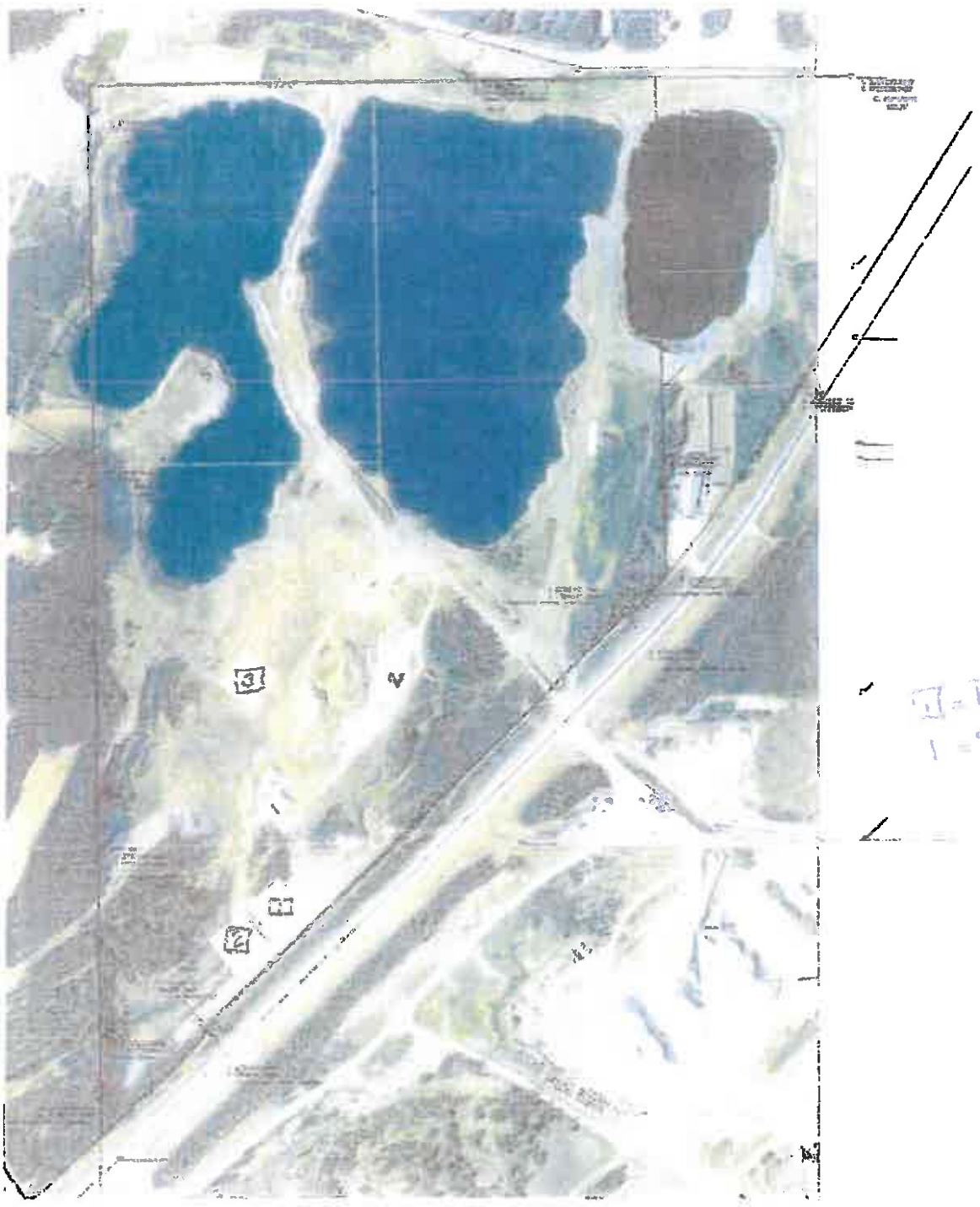
www.emi-alaska.com

w/ soil sample locations



Proposed CMS Monofill, Palmer, AK
Photo Log

Photo 1: Hole 1 showing immediately surrounding soils.

Photo 2: Hole 2 showing the surrounding area to the south

Photo 3: Hole 3 and the surrounding area.

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APPENDIX F:

PERCOLATION TEST DATA RESULTS FOR CRS RESIDUAL MATERIAL AT BIRCHWOOD LANDFILL

Perc Test Results
CRS residual material at Brichwood Landfill

11/15/2013
Hole 1 Size of hole: bottom 40-45 inches: 7.5"x7", middle 36 - 40 inches 9.5"x8"
Hole 1 top 30-36 inches > 300 sq in (note levels are reference a fixed point)

Test 1 3:32

Time min	sec	Water Level inches		Perc rate min/inch
0	:00	37	1/4	
1	:10	39	9/16	0.5
2	:00	40	7/16	1.0
3	:00	41	1/8	1.5
4	:00	41	15/16	1.2
5	:00	42	9/16	1.5
6	:00	43	3/16	1.6

Test 2 3:41

Time min	sec	Water Level inches	
0	:00	38	#
1	:00	38	7/8
2	:10	39	11/16
3	:00	40	1/8
4	:00	40	11/16
5	:00	41	1/4
6	:00	41	11/16
7	:00	42	3/16

Test 3 3:57

Time min	sec	Water Level inches		Perc rate min/inch
0	:00	37	#	
1	:13	37	7/8	1.4
2	:00	38	5/16	1.8
3	:00	38	7/8	1.8
4	:00	39	3/8	2.0
5	:00	39	15/16	1.8
6	:00	40	3/8	2.3
7	:00	40	13/16	2.3
9	:00	41	7/8	1.9

Test 4 4:02

Time min	sec	Water Level inches	
0	:00	37	1/8
2	:00	38	1/4
4	:00	39	1/4
6	:00	40	1/16
8	:00	40	15/16
10	:00	41	9/16

Hole 1 11/15/2013

Test 5 11:30

Time min	sec	Water Level inches		Perc rate min/inch
0	:00	35	1/8	
5	:00	38	#	1.7
8	:30	39	3/8	2.5
11	:30	40	3/8	3.0
15	:30	42	11/16	1.7

Test 6 11:47

Time min	sec	Water Level inches	
0	:00	37	1/4
5	:00	39	1/8
11	:00	41	3/16

Hole 2 * 11:47

Time min	sec	Water Level inches	
1	:30	40	1/4
2	:30	42	1/2
3	:45	44	1/4

*Hole 2 was filled two more times and the water drained out in less than 5 minutes each time.
Hole two was approximately 6 " in diameter from 9" to 15" below the ground surface (surface@32 in.)

Perc rate min/inch
1.1
1.4
1.9
1.8
1.8
2.3
2.0

Perc rate min/inch
1.8
2.0
2.5
2.3
3.2

Perc rate min/inch
2.7
2.9

Perc rate min/inch
0.4
0.7

APPENDIX G;

SEWARD MONOFILL DATA SHEET

Kenai Peninsula Borough
Solid Waste Department

47140 East Poppy Lane Soldotna, Alaska 99669 • (907) 262-9667 • (907) 262-6090 Fax

SOLID WASTE

- About Us
- Fees
- Location Details
- Locations Listing
- Programs
- Resources
- Rules

KPB DEPARTMENT MENU

- Home
- Assembly / Clerk
  - Elections
- Assessing
- Capital Projects
- Coastal Management
- Economic Analysis
- Emergency Management
- Finance
  - Sales Tax
  - Property Tax
- Geographic Information
- Human Resources
- Land Management
- Legal
- Maintenance
- Mayor's Office
- Planning
- Purchasing
- Risk Management
- River Center
  - Flood Plain Office
- Road Service Area
- Service Areas
- Solid Waste

SEWARD MONOFILL/LANDFILL (SMF)

(907) 224-5327

Open Monday thru Saturday from 8:00 AM to 5:45 PM & Sunday from Noon to 4:00 PM

Closed New Year's Day, Thanksgiving Day and Christmas Day

Location & Permits
The SMF is located at 3200 Dimond Blvd., 3 miles north of downtown Seward, in the NE ¼ of Sec. 28, T1N, R1E, S.M., AK. The current ADEC Permit, SWZA031-17, expires in April 2017.

Background
The site was originally established by the City of Seward and operated as an open landfill for many years. The Borough assumed site operations in 1974 and operated it as the Seward Landfill. Due to space limitations, in 1991 it was determined that the landfill should be relocated. Several locations were considered but all were either publicly opposed to or not suitable for landfill use. It was ultimately deemed the best course of action to close the landfill, open a Transfer Facility and haul the Municipal solid waste to the Central Peninsula Landfill. At first the majority of inert waste was hauled from Seward to the CPL but this proved too costly. The SMF began operating in 1997 as a cost effective alternative. The site sits on a 10-acre Borough owned parcel and includes the old landfill, Seward Transfer Facility (STF) and buffer property. The SMF serves about 5,000 year-round residents from Seward to Moose Pass along with numerous summer fishing businesses and cruise ships.

Construction
The SMF is located along the edge of the Resurrection River in an area of high water table and highly permeable soils. A dike was constructed along the river in 1979 and a 1,200-foot extension added in 1991 to protect the closed landfill from flooding during heavy rains.

No contracted construction was required since the areas to be utilized were already well established.

Operations
An Operator under contract to the Borough operates the site in conjunction with the STF. The Operator is responsible for supplying the equipment, manpower and supplies necessary to perform all operation and maintenance of the monofill in a safe and orderly manner. Contracted services include monitoring activities during operating hours, screening waste for hazardous waste exclusion, conducting litter cleanup, snow removal, access road maintenance and managing the monofill.

The Monofill accepts inert waste such as appliances, scrap metal, junk vehicles, Construction Demolition (C/D), and some Landscaping and Wood (L/W). Wood wastes received at the site are burned several times a year. Refrigerators and freezers are either placed in the SMF or stockpiled at the STF and shipped to recycle markets after refrigerants are removed. The removal and hauling of junk vehicles is the sole responsibility of the Operator.

Operational hours are Monday through Saturday from 8:00 AM to 5:45 PM and Sunday from Noon to 4:00 PM. An estimated 3,100 cubic yards is consumed annually with a projected life of 25 more years.

Monitoring
Borough staff samples three monitoring wells around the monofill perimeter annually in accordance with the ADEC permit. The Operator screens for hazardous and other types of waste for exclusion.

Fees
SMF does not have scales and charges commercial vehicles for specific waste items based on volume with a 250 cubic yard limit per job. Fees also apply to the hazardous waste management of CESQG waste. Households are not charged fees.

See "Rules" for a list of currently accepted materials and rates.

Rules

Waste Segregation

Solid Waste Director
Jack Maryott

Environmental Coordinator
Lanie Hughes

Contract Administrator
Jed Painter

Administrative Assistant/
Contract Administrator
vacant

Secretary
Nancy Saylor

CPL Manager
Brian Conrad

Contact Us:
47140 East Poppy Lane
Soldotna, Alaska 99669
Telephone: (907) 262-9667
Fax: (907) 262-6090
jmaryott@borough.kenai.ak.us

APPENDIX H:

SHANNON & WILSON GROUNDWATER MONITORING REPORT FOR SEWARD MONOFILL

Water Monitoring Program
2013 Annual Monitoring Event
Kenai Peninsula Borough
Seward Monofill
Seward, Alaska

December 2013

Submitted To:
Kenai Peninsula Borough
Solid Waste Department
47140 East Poppy Lane
Soldotna, Alaska 99669-9731

By:
Shannon & Wilson, Inc.
5430 Fairbanks Street, Suite 3
Anchorage, Alaska 99518
(907) 561-2120
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32-1-17590-004

TABLE OF CONTENTS

		Page
1.0	INTRODUCTION	1
2.0	BACKGROUND	1
	2.1 Location	1
	2.2 Operational History	1
	2.3 Monitoring Program Overview	1
3.0	OCTOBER 2013 WATER MONITORING	2
	3.1 Groundwater Flow Data	2
	3.2 Groundwater Sampling	2
4.0	LABORATORY ANALYSES	3
	4.1 Analytical Testing Parameters	3
	4.2 Discussion of Analytical Results	3
	4.2.1 Key Indicator Parameters	3
	4.2.2 Total Metals	4
	4.2.3 Volatile Organic Compounds	4
5.0	STATISTICAL ANALYSIS	4
	5.1 Background and Compliance Wells	4
	5.2 Statistical Methodologies	4
	5.3 Statistical Analyses Summary	5
6.0	QUALITY CONTROL	6
	6.1 Quality Control Samples	6
	6.2 Data Quality Objectives	6
	6.2.1 Precision	6
	6.2.2 Accuracy	7
	6.2.3 Completeness	7
7.0	SUMMARY AND CONCLUSIONS	7
8.0	CLOSURE/LIMITATIONS	8
9.0	REFERENCES	9

LIST OF TABLES

1	Water Sampling Log
2	Analytical Results
3	Quality Control Data
4	Prediction Limit Detection Monitoring Parameters Exceeding Upper Prediction Limit

LIST OF FIGURES

1	Vicinity Map
2	Site Plan
3	Monitoring Well Hydrographs

LIST OF APPENDICES

A	Field Water Sampling Logs
B	Results of Analytical Testing by Energy Laboratories, Inc. of Billings, Montana and SGS North America, Inc. of Anchorage, Alaska
C	Historical Analytical Results
D	Graphs of Selected Constituent Concentrations
E	Summary of Well Statistics
F	Important Information about your Geotechnical/Environmental Report

ACRONYMS AND ABBREVIATIONS

AAC	Alaska Administrative Code
ADEC	Alaska Department of Environmental Conservation
CFR	Code of Federal Regulation
COD	Chemical Oxygen Demand
DQO	Data Quality Objectives
Energy	Energy Laboratories, Inc.
EPA	Environmental Protection Agency
KPB	Kenai Peninsula Borough
LCS	Laboratory Control Sample
MCLs	Maximum Contaminant Levels
MS/MSD	Matrix Spike/Matrix Spike Duplicate
QAPjP	Quality Assurance Project Plan
QC	Quality Control
RCRA	Resource Conservation and Recovery Act
RPD	Relative Percent Difference
SGS	SGS North America Inc. of Anchorage, Alaska
SMF	Seward Monofill
SMCLs	Secondary Maximum Contaminant Levels
SwdLF	Seward Landfill
TDS	Total Dissolved Solids
TOC	Total Organic Carbon
TSS	Total Suspended Solids
VOCs	Volatile Organic Compounds

WATER MONITORING PROGRAM
2013 ANNUAL MONITORING EVENT
KENAI PENINSULA BOROUGH
SEWARD MONOFILL
SEWARD, ALASKA

1.0 INTRODUCTION

This report presents the results of our October 2013 groundwater monitoring at the Kenai Peninsula Borough's (KPB) Seward Monofill (SMF) in Seward, Alaska. Monitoring activities were conducted in accordance with our March 2008 Quality Assurance Project Plan (QAPjP). This is the 2013 annual round of monitoring, and was conducted by Shannon & Wilson on October 29, 2013.

This report summarizes the results of our field work, laboratory analysis, and data interpretation. Written authorization to proceed with these services, received in the form of a purchase order dated July 17, 2013, was provided by KPB Solid Waste Department.

2.0 BACKGROUND

2.1 Location

The SMF is an active inert waste landfill located in Seward, Alaska. The facility is located approximately 3 miles north of Seward, within the northeast 1/4 of Section 28, Township 1 North, Range 1 West, Seward Meridian, Alaska. The Resurrection River borders the site to the northeast. A vicinity map showing the project location is included as Figure 1.

2.2 Operational History

The SMF is adjacent to the Seward Landfill (SwdLF), which was established by the City of Seward in the late 1950's and operated as an open dump for numerous years. Operation of the landfill was assumed by the KPB in 1974, and it was closed in 1993. The SMF was opened in 1997 to accept inert waste including wood, land clearing debris, large scrap metal, vehicles, and construction and demolition debris. The site is a 5-acre portion of a larger Borough parcel, operated in conjunction with the Seward Transfer Facility. The remaining portion of the Borough parcel consists of the closed SwdLF, a shooting range, and buffer property. The SMF operates under ADEC Solid Waste Permit SWZA031-17, expiring April 30, 2017.

2.3 Monitoring Program Overview

Annual water monitoring is presently conducted for two on-site monitoring wells. The monitoring consists of water depth measurements and water sample collection from Monitoring Wells MW-4 and MW-6. Water depth measurements are also collected from

Monitoring Well MW-1. Monitoring Wells MW-1 and MW-4 were installed in 1989; and Monitoring Well MW-6 was installed in 1997. Baseline data for this report consist of historical sample results dating back to July 1993 for Well MW-4 and November 1997 for Well MW-6.

Well MW-4 serves as a background well and is located northwest of the monofill boundary. Well MW-6 serves as the compliance well and is located southeast of the monofill boundary.

The Alaska Department of Environmental Conservation (ADEC) requested in a January 9, 2007 letter that future SMF monitoring reports include statistical analysis. Results of the statistical analyses are included in Appendix E.

3.0 OCTOBER 2013 WATER MONITORING

The SMF monitoring event was conducted on October 29, 2013 and consisted of water level measurements from three wells (MW-1, MW-4, and MW-6) and analytical sample collection from two wells (MW-4 and MW-6).

3.1 Groundwater Flow Data

Groundwater elevations were measured in the monitoring wells at the site on October 29, 2013. The depth to water was measured by inserting an electronic water-level indicator into the monitoring well casings. The top of the well casings serve as the reference points for depth to water measurements, which were recorded to the nearest 0.01 foot. The water-level indicator was decontaminated prior to insertion into each well. The depths to water in the monitoring wells are listed in Table 1.

The groundwater flow direction, determined using water depth and survey data from the SMF wells, is to the southeast at a gradient of approximately 0.2 percent which is consistent with historical results. The approximate groundwater flow direction is shown in Figure 2. Hydrographs depicting historical water level trends for Monitoring Wells MW-1, MW-4, and MW-6 are included in Figure 3.

3.2 Groundwater Sampling

Prior to sample collection, the wells were purged of at least three well volumes with disposable bailers. Purgewater was discharged directly to the ground surface. Water quality parameters, including temperature, pH, and specific conductance, were measured after removal of each well volume using a portable Hanna field instrument. As a quality control measure, one duplicate groundwater sample, designated Sample MW-7, was collected from compliance Well MW-6. The purging and sampling details and final water quality readings are listed in Table 1, and field water sampling logs are included in Appendix A.

Analytical groundwater samples were placed in laboratory-supplied containers with the appropriate preservatives. The volatile sample vials were filled first with zero headspace to minimize the loss of volatile compounds. The turbidity samples were delivered to SGS North America Inc. (SGS) of Anchorage, Alaska using chain-of-custody procedures. The remaining

analytical samples were placed in a chilled cooler and delivered by overnight courier to Energy Laboratories, Inc. (Energy) of Billings, Montana using chain-of-custody procedures.

4.0 LABORATORY ANALYSES

The laboratory results are summarized in Table 2, with laboratory data reports included in Appendix B. Historical analytical results are included in Appendix C, and graphs of historical and current analytical results are included in Appendix D.

4.1 Analytical Testing Parameters

The groundwater samples collected from Monitoring Wells MW-4 and MW-6 were analyzed for key indicator parameters, 16 total metals, and 48 volatile organic compounds (VOCs). The key indicator parameter list for this site consists of alkalinity, chemical oxygen demand (COD), chloride, conductivity, cyanide, nitrate as nitrogen, pH, sulfate, total dissolved solids (TDS), total organic carbon (TOC), total suspended solids (TSS), and turbidity. The total metals list for this site consists of arsenic, barium, cadmium, calcium, chromium, copper, iron, lead, manganese, mercury, nickel, potassium, selenium, silver, sodium, and zinc.

4.2 Discussion of Analytical Results

Although not required for detection monitoring, SMF groundwater results are compared water quality standards as a means of providing additional information regarding SMF groundwater quality. The analytical results are compared to the following federal and state groundwater quality standards:

- Environmental Protection Agency (EPA) 40 Code of Federal Regulation (CFR) Part 141 maximum contaminant levels (MCLs) (July 2009);
- ADEC 18 Alaska Administration Code (AAC) 80 drinking water MCLs (August 2012); and
- ADEC 18 AAC 80 secondary MCLs (SMCLs) (August 2012).

The following sections summarize the current analytical sampling results, with an emphasis on detected concentrations that exceed water quality standards.

4.2.1 Key Indicator Parameters

Key indicator parameters were not detected in the SMF wells at concentrations greater than their respective water quality standards. The laboratory, however, reported the highest values to date for alkalinity in Well MW-6. Conversely, TSS and turbidity concentrations in Well MW-6 remained less than historical average concentrations. Cyanide was not detected in the wells for the third consecutive sampling event. In Well MW-6, alkalinity, conductivity, and sulfate show increasing trends, while decreasing trends are observed in TDS concentrations. Other key indicator parameters are consistent with historical concentrations.

4.2.2 Total Metals

In accordance with EPA requirements, the water samples for the metals were not filtered in the field prior to analysis; therefore, metals are reported as "total" concentrations. Detectable concentrations of 14 metals were reported in SMF groundwater.

Iron and manganese concentrations in samples from Wells MW-4 and MW-6 exceed their respective water quality standards, and arsenic and lead concentrations in the sample from background Well MW-4 equal or exceed the water quality standards. Calcium and sodium concentrations in Well MW-6 show increasing trends, whereas concentrations of chromium and nickel in background Well MW-4 show decreasing trends. The remaining metal concentrations reported for the wells are within historical range.

4.2.3 Volatile Organic Compounds

Three VOCs were detected in the October 2013 samples from SMF. Estimated (J-flagged) concentrations of dichlorodifluoromethane and 1,1,1-trichloroethane were measured in the primary and duplicate samples from Well MW-6. This is the first event where concentrations of dichlorodifluoromethane and 1,1,1-trichloroethane were detected at the site. Trichlorofluoromethane was measured in the primary and duplicate samples from Well MW-6 and Well MW-4. However, the reported concentrations are within historical range and generally the same order of magnitude as values reported in prior sampling events. No other VOCs were detected in background Well MW-4 or compliance Well MW-6.

5.0 STATISTICAL ANALYSIS

The regulations require statistical analyses of laboratory data. Both historical and current water quality data were used for the statistical evaluation. The objectives of the statistical analyses of the SMF groundwater data are to evaluate concentration trends in the site's wells, statistically quantify groundwater characteristics upgradient and downgradient of the monofill, and select appropriate statistical procedures for future analyses. In the context of the detection monitoring program, the statistical analyses are used to determine if target analyte concentrations downgradient of the landfill statistically exceed those measured in designated background well.

5.1 Background and Compliance Wells

The statistical analysis dictates that individual monitoring wells are designated as compliance wells or background wells. Based on groundwater flow data, Well MW-4 is upgradient of the monofill mass and is representative of background conditions. As shown on Figure 2, Well MW-6 is downgradient of the monofill mass and is designated as the compliance well.

5.2 Statistical Methodologies

Statistical methodologies used to analyze the groundwater data from SMF are in accordance with 18 AAC 60.830 and are based on guidance documents issued by the EPA (EPA 2009). The

prediction limit method is used to statistically evaluate constituents in the background and compliance monitoring wells at SMF. A summary of well statistics is included as Appendix E.

The first step of the statistical evaluation was to summarize the sample size and percentage of non-detectable results for each constituent from the eight wells, to identify statistical procedures. Descriptive statistics including maximum value, minimum value, mean, standard deviation, skewness, and probability correlation. Because the project data are likely to be log-normal, the descriptive statistics listed in the summary of well statistics in Appendix E were also calculated after transforming the data to the natural logs of the concentrations.

The groundwater detection monitoring procedure adopted for the KPB database consists of calculating an upper prediction limit at the 5 percent significance level (α) from background well data for each parameter. If the background well data are approximately normally or log-normally distributed, a parametric upper prediction limit is calculated; otherwise, a non-parametric upper prediction limit is calculated. The non-parametric upper prediction limit defaults to using the maximum background level as the prediction limit. If the percentage of non-detects in the background well data are between 15 and 50 percent and the data are approximately normally or log-normally distributed, the Kaplan-Meier adjustment for non-detects is used to calculate the mean and standard deviation of the data. If the percentage of non-detects exceeds 50 percent, non-parametric prediction limit methods are used. The prediction limits value represent the anticipated ("predicted") range of future measurements within the specified confidence level.

The current sampling round values from the compliance wells are compared to the upper prediction limit (1-of-1 test in the *Unified Guidance* terminology). If the current analyte concentration for a given compliance well exceeds the upper prediction limit, we conclude that there is statistical evidence of an increase over background levels at that well.

5.3 Statistical Analyses Summary

Table 4 lists those parameters and compliance wells that statistically exceed background concentrations, using Monitoring Well MW-4 as the background well. It is noted that a parameter for a given compliance well will not be considered to statistically exceed background concentrations unless that parameter is detected in the current sample from that well.

Based on our analyses, four parameters statistically exceed background concentrations. The individual parameters are the KIPs alkalinity, calcium, conductivity, and sulfate, all of which appear to be showing increasing trends in the compliance well.

The trichlorofluoromethane and chloride concentrations are qualitatively greater than background concentrations but do not exhibit a statistical variance due to elevated background hits for each of the parameters in the background well. However, these compounds may be considered to exceed background levels using the double quantification rule (See Section 6.2.2 of the *Unified Guidance*):

6.0 QUALITY CONTROL

Quality control (QC) measures are conducted in general accordance with the 2013 SMF QAPjP, and the data quality objectives (DQO) are outlined in the SMF and project laboratory's QAPjP.

6.1 Quality Control Samples

Data quality for this project was assessed using field QC samples and internal laboratory procedures. The field and laboratory data collected during the current monitoring period were checked for accuracy and precision. Field QC included one duplicate analytical sample and one trip blank. Internal procedures employed by the laboratory included method blanks, laboratory control samples (LCS), matrix spikes/matrix spike duplicates (MS/MSD), and surrogates. LCS, MS/MSD, and surrogate quality assurance data and qualifiers not meeting laboratory's DQO are noted in the laboratory reports included in Appendix B.

The project laboratory prepared a trip blank sample that accompanied the sample containers during transport. No VOCs were detected in the trip blank, suggesting that the samples were not cross-contaminated during storage or transport.

Method blanks were prepared and analyzed by the project laboratory. Iron, lead, zinc, turbidity, and TSS were reported in the method blank. None of the project sample concentrations for these analytes was within five times the concentration reported in the method blank; therefore the data are considered usable.

6.2 Data Quality Objectives

Analytical data are checked for accuracy, precision, and completeness to assess compliance with numerical DQO specified in the QAPjP. The review includes field duplicate samples, LCS, MS/MSDs, and surrogate spikes, as applicable.

6.2.1 Precision

Precision is evaluated by the relative percent difference (RPD) values for the duplicate analytical samples and MS/MSD samples. The numerical DQO for precision is 30 percent RPD.

The precision results for the primary and duplicate analytical samples, Samples MW-6 and MW-7, respectively, are shown in Table 3. The RPDs for turbidity, arsenic, barium, chromium, iron, manganese, mercury, and zinc are greater than 30 percent. The metals results are within the range of historical results, and concentrations for the duplicate sample are within two times the concentrations reported for the primary sample. Therefore, the data are considered useable for the intended purpose.

The RPD values for the MS/MSD samples were reviewed. The RPDs for the MS/MSD samples are less than 30 percent.

6.2.2 Accuracy

Accuracy was evaluated using the percent recoveries reported by the laboratories for surrogate spikes, matrix spikes, and laboratory control spike samples. The DQO is +/-30 percent (70 to 130 percent recovery) for metals, and are analyte-specific for VOCs and other analytes.

The laboratory data reports indicate that the LCS and/or LCSD recoveries are within the project DQOs. The MS and/or MSD recoveries for calcium, iron, and cyanide are outside their respective DQOs. The calcium and iron concentrations reported in the project samples are within historical range, and cyanide was not detected in the project samples. The other reported MS/MSD recoveries are within the project DQOs. Therefore, the project results are considered useable.

6.2.3 Completeness

The completeness DQO is 95 percent. Based on the precision and accuracy reported for the project data, the October 2013 data satisfy the completeness DQO.

7.0 SUMMARY AND CONCLUSIONS

Groundwater elevations, water quality measurements, and analytical samples were collected from Monitoring Wells MW-4 and MW-6 during the 2013 annual monitoring event. A water level measurement was also collected from Monitoring Well MW-1. The data indicate that the groundwater flow direction at the site is generally to the southeast.

Iron and manganese concentrations in samples from the background and compliance wells exceed applicable water quality standards, and arsenic and lead concentrations equal or exceed applicable water quality standards in the sample from the background well. Key indicator parameters were not detected at concentrations greater than the applicable water quality standards. The samples contained a total of three VOCs. This is the first SMF sampling event in which dichlorodifluoromethane and 1,1,1-trichloroethane have been detected. Trichlorofluoromethane was detected in both background and compliance wells at concentrations within historical range. No VOCs exceed the water quality standards.

In accordance with requirements for the site's detection monitoring program, statistical analysis was conducted to evaluate potential differences between parameter concentrations in designated compliance and background wells. Statistical analyses conducted using the historical monitoring well data indicated that five parameters statistically exceed background concentrations. None of the reported concentrations of these parameters exceeds water quality standards.

The next monitoring event is scheduled for October 2014. In accordance with the ADEC's October 7, 2013 letter, analytical samples will be collected from Wells MW-1, MW-4, and MW-6.

8.0 CLOSURE/LIMITATIONS

This report was prepared for the exclusive use of our client and their representatives. The findings we have presented within this report are based on limited research, sampling, and analyses. As a result, the analyses and sampling performed can only provide you with our professional judgment as to the environmental characteristics of this site, and in no way guarantee that an agency or its staff will reach the same conclusions as Shannon & Wilson, Inc. In addition, the tests were intended to detect the absence or presence of only those parameters for which analyses were performed. No conclusions are inferred as to the presence or absence of compounds other than those for which tests were performed. The data presented in this report should be considered representative of the time of our site assessment. Changes due to natural forces or human activity can occur on the site. In addition, changes in government codes, regulations, or laws may occur. Because of such changes beyond our control, our observations and interpretations may need to be revised.

Copies of documents that may be relied upon by our client are limited to the printed copies (also known as hard copies) that are signed or sealed by Shannon & Wilson with a wet, blue ink signature. Files provided in electronic media format are furnished solely for the convenience of the client. Any conclusion or information obtained or derived from such electronic files shall be at the user's sole risk. If there is a discrepancy between the electronic files and the hard copies, or you question the authenticity of the report please contact the undersigned.

Shannon & Wilson has prepared the attachment in Appendix F, "Important Information About Your Geotechnical/Environmental Report," to assist you and others in understanding the use and limitations of our reports.

You are advised that various state and federal agencies (ADEC, EPA, etc.) may require the reporting of this information. Shannon & Wilson does not assume the responsibility for reporting these findings and therefore has not, and will not, disclose the results of this study except upon your authorization or as required by law.

We appreciate this opportunity to be of service. Please contact Shayla Marshall or the undersigned at (907) 561-2120 with questions or comments concerning the contents of this report.

SHANNON & WILSON, INC.

Erika J Knight

Erika Knight
Environmental Scientist

Matthew Hemry, P.E.
Vice President

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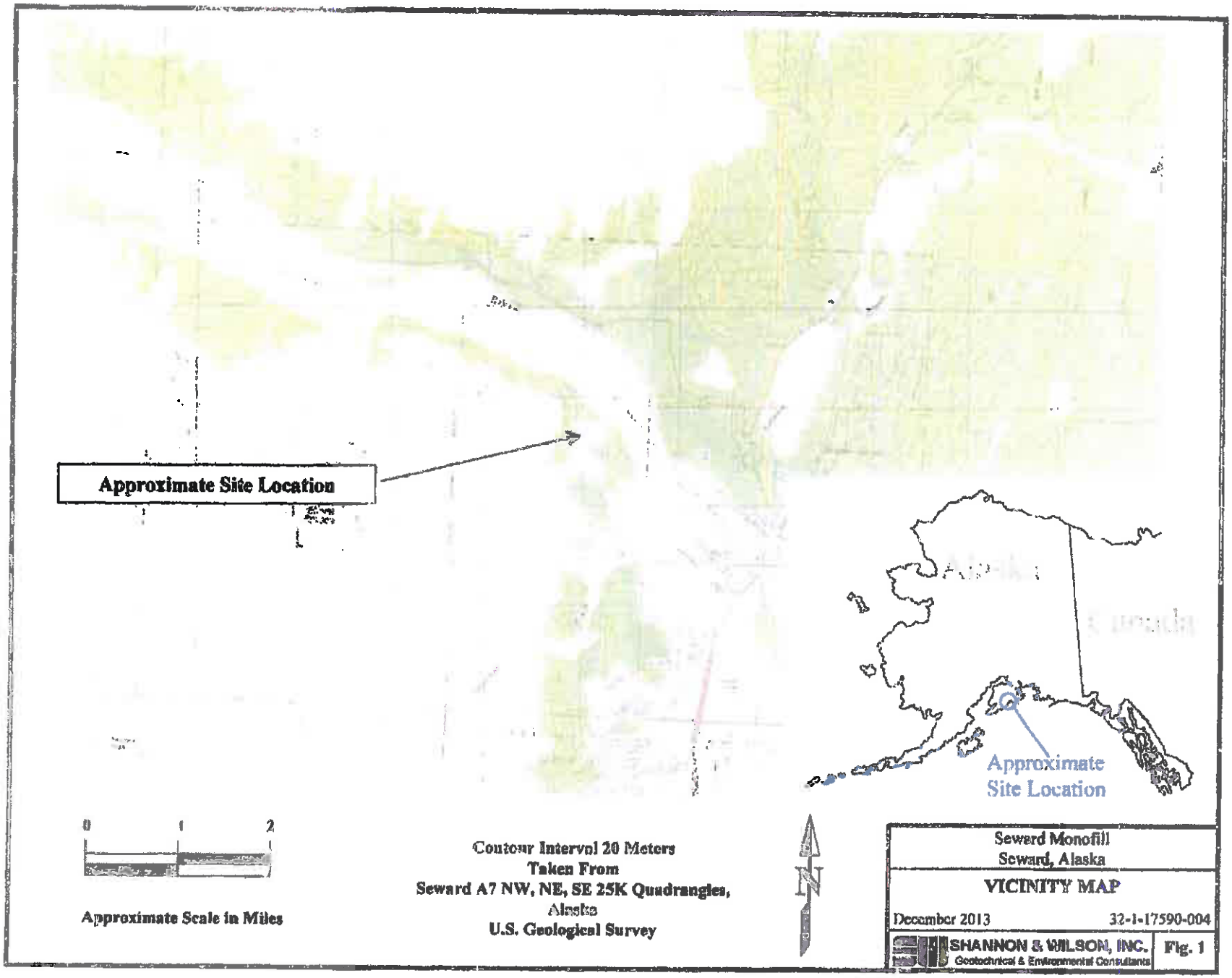
Approximate Site Location
Approximate
Site Location
0
1
2
Approximate Scale in Miles
Contour Interval 20 Meters
Taken From
Seward A7 NW, NE, SE 25K Quadrangles,
Alaska
U.S. Geological Survey
N
Seward Monofill
Seward, Alaska
VICINITY MAP
December 2013
32-1-17590-004
SHANNON & WILSON, INC.
Geotechnical & Environmental Consultants
Fig. 1

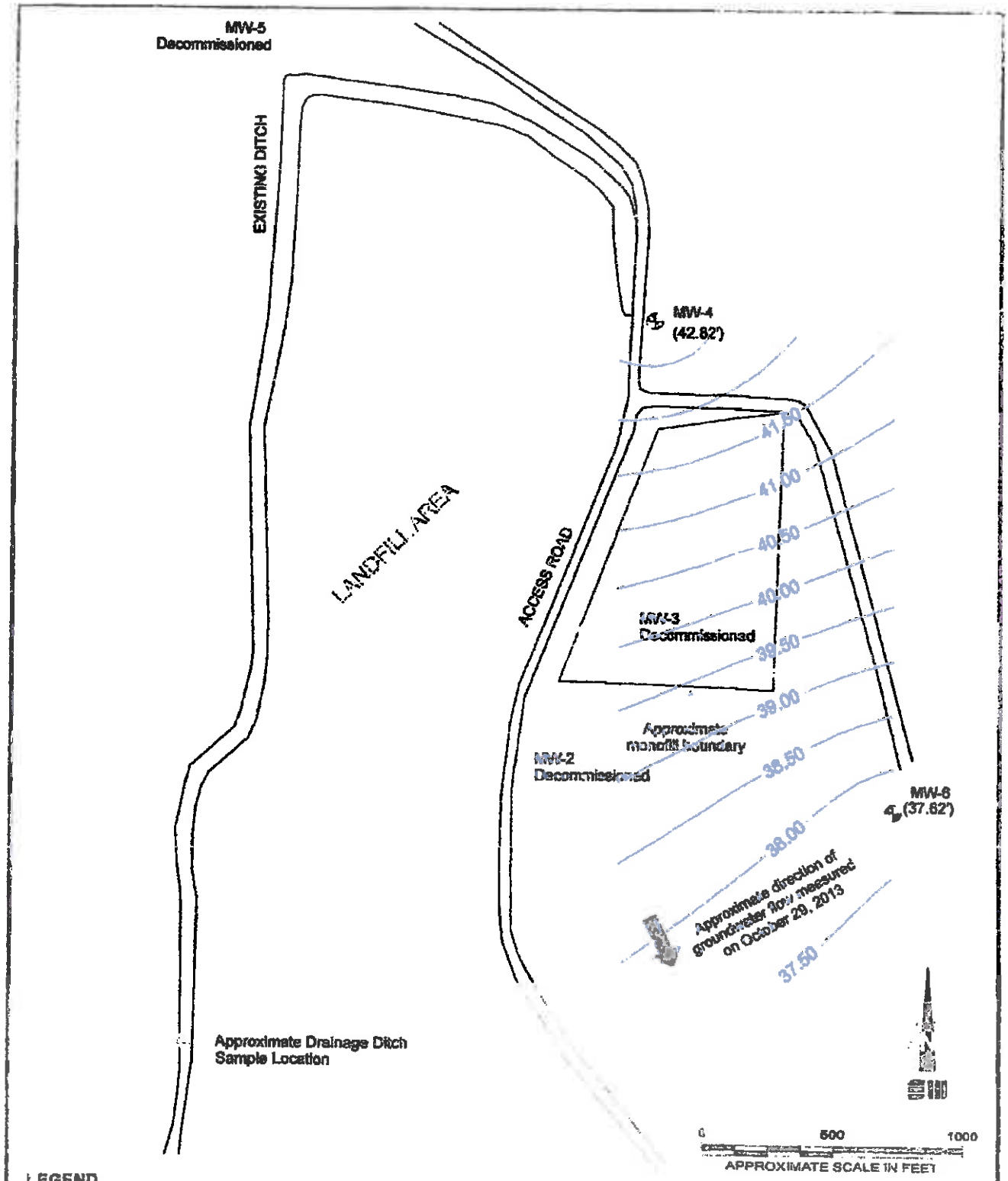
MW-5
Decommissioned
EXISTING DITCH
LANDFILL AREA
ACCESS ROAD
MW-4
(42.82')
41.50
41.00
40.50
40.00
39.50
39.00
38.50
38.00
37.50
MW-3
Decommissioned
Approximate monofill boundary
MW-2
Decommissioned
MW-6
(37.62')
Approximate direction of groundwater flow measured on October 29, 2013
Approximate Drainage Ditch Sample Location
0
500
1000
APPROXIMATE SCALE IN FEET
LEGEND
MW-4 Approximate location of Monitoring Well MW-4; Well included in Seward Monofill analytical monitoring program
MW-1 Approximate location of monitoring wells not included in the Seward Monofill analytical monitoring program
(37.09') Groundwater elevation above mean sea level measured in feet, measured on October 29, 2013.
39.5 Estimated location of equipotential line of potentiometric surface with elevation of 39.5 feet on October 29, 2013.
MW-1
(37.09')
Seward Monofill
Seward, Alaska
SITE PLAN
December 2013
32-1-17590-004
SHANNON & WILSON, INC.
Geotechnical & Environmental Consultants
Fig. 2

FIGURE 3
MONITORING WELL HYDROGRAPHS

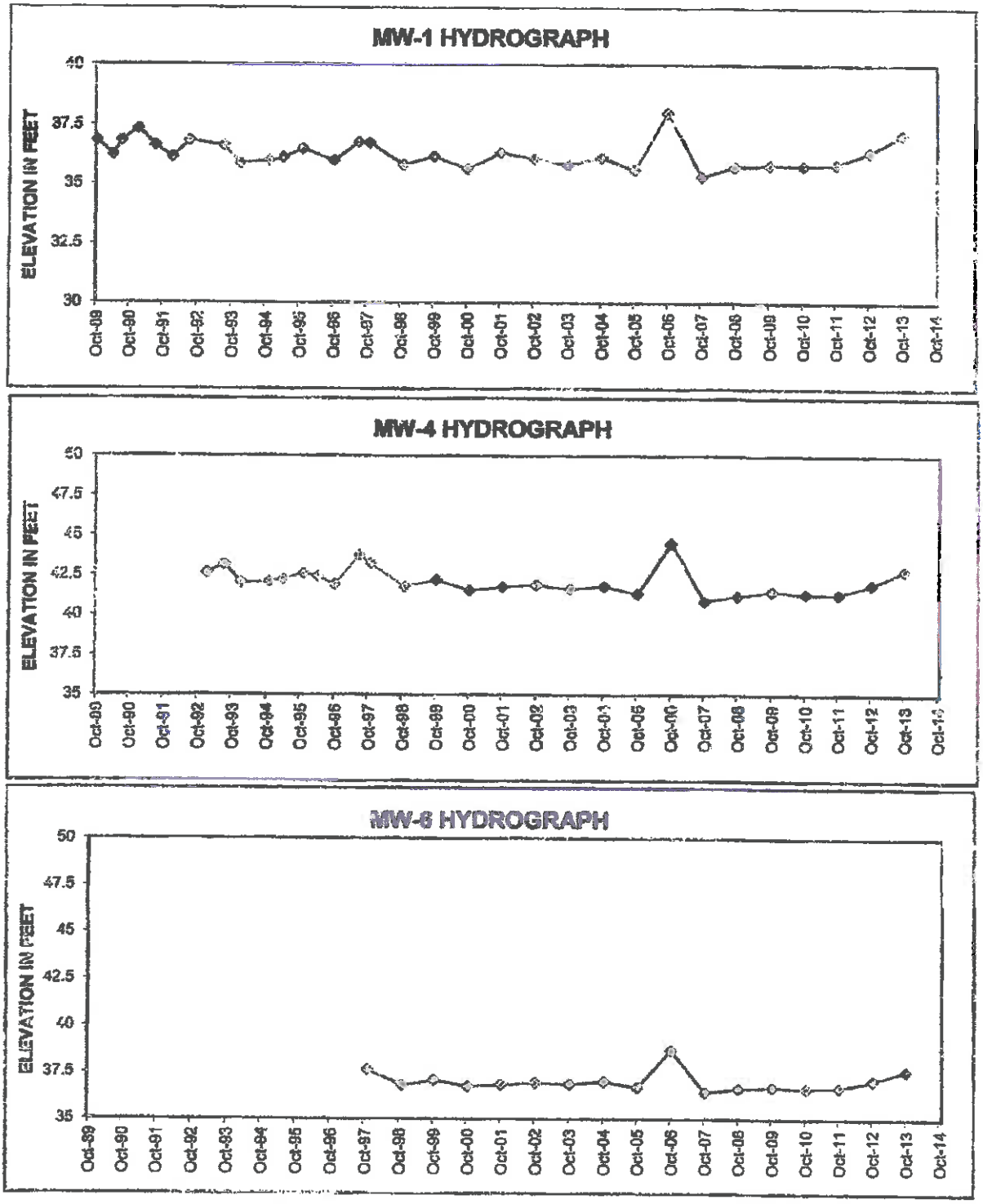

TABLE 1
WATER SAMPLING LOG

Monitoring Well Number	MW-1	MW-4	MW-6
Water Level Measurement Data			
Date Water Level Measured	10/29/2013	10/29/2013	10/29/2013
Time Water Level Measured	11:15	11:32	11:41
MP Elevation, ft	41.31	53.07	45.88
Depth to Water Below MP, ft	4.22	10.25	8.26
Water Level Elevation, ft	37.09	42.82	37.62
Purging Data			
Date Sampled	-	10/29/2013	10/29/2013
Time Sampled	-	13:29	12:10
Depth to Water Below MP, ft	-	10.25	8.26
Total Depth of Well Below MP, ft	-	16.95	17.81
Water Column in Well, ft	-	6.70	9.55
Gallons per foot	-	0.16	0.16
Gallons in Well	-	1.07	1.53
Total Gallons Pumped/Bailed	-	3.4	4.7
Purging Method	-	Disp. Bailer	Disp. Bailer
Sampling Method	-	Disp. Bailer	Disp. Bailer
Diameter of Well Casing	-	2-inch	2-inch
Water Quality Data			
Temperature, °C	-	5.7	3.7
Specific Conductance, µmhos/cm	-	139	547
pH, standard units	-	6.91	6.56
Remarks	Water level only		Duplicate designated MW-7

Sampling Personnel: Dane Palmer

Notes: Water quality parameters were measured with a Hanna water quality meter.

- = Not Applicable
°C = Degrees Celsius
ft = Feet
MP = Measuring Point
µmhos/cm = Micromhos per Centimeter

SHANNON & WILSON, INC.

TABLE 2
ANALYTICAL RESULTS

Parameter	Method*	Water Quality Standard	Sample Number (See Table 1, Figure 2, and Appendix B)			
			Background Well	Compliance Well		Quality Control
			MW-4	MW-6	MW-7~	Trip Blank
Key Indicator Parameters						
Alkalinity - mg/L	SM 2320 B	NA	68	161	164	-
Chemical Oxygen Demand (COD) - mg/L	EPA 410.4	NA	9.0	ND [5.0]	8.0	-
Chloride - mg/L	EPA 300.0	250 mg/L (2)	1.9	7.7	7.7	-
Conductivity - µmhos/cm	SM 2510 B	NA	149	596	593	-
Cyanide - mg/L	Kelada mod	0.2 mg/L (1)	ND [0.005]	ND [0.005]	ND [0.005]	-
Nitrate as Nitrogen - mg/L	EPA 353.2	10 mg/L (1)	0.22	0.29	0.29	-
pH - standard units (SU)	SM 4500H	6.5-8.5 su (2)	7.2 H	7.4 H	7.4 H	-
Sulfate - mg/L	EPA 300.0	250 mg/L (2)	6.2	140	140	-
Total Dissolved Solids (TDS) - mg/L	SM 2540 C	500 mg/L (2)	71	378	378	-
Total Organic Carbon (TOC) - mg/L	SM 5310 C	NA	2.1	1.4	1.4	-
Total Suspended Solids (TSS) - mg/L	SM 2540 D	NA	510	152	140	-
Turbidity - NTU	SM20 2130B	NA	800	15.0	8.10	-
Total Metals						
Arsenic - mg/L	EPA 200.8	0.01 mg/L (1)	0.01	0.006	0.004 J	-
Barium - mg/L	EPA 200.7	2 mg/L (1)	0.09 J	0.2	0.1	-
Cadmium - mg/L	EPA 200.7	0.005 mg/L (1)	ND [0.001]	ND [0.001]	ND [0.001]	-
Calcium - mg/L	EPA 200.7	NA	34	117	118	-
Chromium - mg/L	EPA 200.7	0.1 mg/L (1)	0.02	0.008 J	0.005 J	-
Copper - mg/L	EPA 200.7	1.0 mg/L (2)	0.07	0.04	0.03	-
Iron - mg/L	EPA 200.7	0.3 mg/L (2)	21	12	7.6	-
Lead - mg/L	EPA 200.8	0.015 mg/L (1)	0.02	0.01	0.009 J	-
Manganese - mg/L	EPA 200.7	0.05 mg/L (2)	0.5	0.6	0.4	-
Mercury - mg/L	EPA 245.1	0.002 mg/L (1)	0.0001 J	0.00006 J	0.00004 J	-
Nickel - mg/L	EPA 200.7	NA	0.03	0.01	0.01	-
Potassium - mg/L	EPA 200.7	NA	2.3	3.8	3.0	-
Selenium - mg/L	EPA 200.8	0.05 mg/L (1)	0.0006 J	0.0008 J	0.0007 J	-
Silver - mg/L	EPA 200.7	0.1 mg/L (2)	ND [0.005]	ND [0.005]	ND [0.005]	-
Sodium - mg/L	EPA 200.7	NA (2)	2.3	8.6	8.5	-
Zinc - mg/L	EPA 200.7	5 mg/L (2)	0.09	0.05	0.03	-
Volatile Organic Compounds (VOCs)						
Dichlorodifluoromethane - µg/L	EPA 8260B	NA	ND [1.0]	0.13 J	0.13 J	ND [1.0]
1,1,1-Trichloroethane - µg/L	EPA 8260B	200 µg/L	ND [1.0]	0.19 J	0.20 J	ND [1.0]
Trichlorofluoromethane - µg/L	EPA 8260B	NA	0.24 J	3.2	3.2	ND [1.0]
Other VOCs - µg/L	EPA 8260B	NA	ND	ND	ND	ND

Notes:
- * = See Appendix B for compounds tested, methods, and reporting limits
- (1) = EPA or ADEC Maximum Contaminant Level (MCL)
- (2) = ADEC Secondary MCL (SMCL) limit
- ~ = Duplicate of Sample MW-6
- NA = Not applicable
- ND = Not detected
- ND [5.0] = Analyte not detected at or above the laboratory reporting limit of 5.0 mg/L or µg/L as appropriate
- J = Estimated value. The analyte was present but at a concentration less than the reporting limit
- NTU = Nephelometric turbidity units
- mg/L = Milligrams per liter
- µg/L = Micrograms per liter
- µmhos/cm = Micromhos per centimeter
- 21 = Reported concentration equals or exceeds the water quality standard
- H = Analysis performed past the recommended hold time

APPENDIX I:

SEWARD MONOFILL PRECIPITATION DATA

U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data, and Information Service

Monthly Climatological Summary
(1983)

National Climatic Data Center
Federal Building
151 Patton Avenue
Asheville, North Carolina 28801
www.ncdc.noaa.gov

Station: SEWARD AIRPORT, AK US

GHCND:USW00026438
Elev: 23 ft. Lat: 60.126° N Lon: 149.417° W

Data	Temperature (°F)											Precipitation (in.)						
Elem->	MMXT	MMNT	MNTM	HTDD	CLDD	EMXT	EMNT	DT90	DX32	DT32	DT00	TPCP	EMXP	TSNW	MXSD	DP01	DP05	DP10
Month	Mean Max.	Mean Min.	Mean	Heating Degree Days	Cooling Degree Days	Highest	Lowest	Number Of Days				Total	Greatest Observed	Snow, Sleet, Hail		Number Of Days		
								Max>=90°	Max<=32°	Min<=32°	Min<=0°			Total Fall	Max Depth	>=.10	>=.50	>=1.0
1	30.6	22.3	26.4	1192.5	0.0	45	0	0	12	26	1	5.29	1.13	7.0	4	9	4	2
2	36.0	26.4	31.3	944.8	0.0	45	12	0	9	17	0	5.50	1.23	3.5	4	13	3	1
3	42.1	31.1	36.5	679.7	0.0	49	19	0	0	17	0	1.57	0.51	5.0	6	6	1	0
4	44.8	34.5	39.7	757.8	0.0	59	26	0	0	9	0	5.94	1.47	6.4	3	15	4	1
5	51.4	41.4	46.4	574.4	0.0	61	34	0	0	0	0	3.89	0.66	0.0	0	11	1	0
6	59.0	47.7	53.4	347.6	0.0	70	42	0	0	0	0	1.86	0.42	0.0	0	5	0	0
7	63.7	51.6	57.6	227.3	0.5	75	48	0	0	0	0	2.19	1.19	0.0	0	4	1	1
8	62.2	49.3	55.8	287.5	3.6	80	43	0	0	0	0	5.20	2.23	0.0	0	7	4	1
9	53.4	42.3	47.8	511.9	0.0	64	30	0	0	2	0	5.94	1.13	0.0	0	10	5	2
10	44.6	35.4	39.9	774.4	0.0	53	26	0	0	10	0	11.84	2.32	7.1	7	14	9	4
11	39.4	31.1	35.2	892.6	0.0	48	19	0	3	17	0	14.87	2.43	14.8	12	16	10	6
12	32.7	25.2	28.9	1116.7	0.0	40	11	0	16	27	0	2.26	0.66	4.1	11	5	3	0
Summary	46.7	36.5	41.6	8507.2	4.1	80	11	0	40	125	1	66.15	2.43	47.9	12	117	46	18

U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data, and Information Service

Monthly Climatological Summary (1984)

National Climatic Data Center
Federal Building
151 Patton Avenue
Asheville, North Carolina 28801
www.ncdc.noaa.gov

Station: **SEWARD AIRPORT, AK US**

GHCND:USW00026438
Elev: 23 ft. Lat: 60.128° N Lon: 149.417° W

Data	Temperature (°F)											Precipitation (in.)						
Elem->	MMXT	MMNT	MNTM	HTDD	CLDD	EMXT	EMNT	DT90	DX32	DT32	DT00	TPCP	EMXP	TSNW	MXSD	DP01	DP05	DP10
Month	Mean Max.	Mean Min.	Mean	Heating Degree Days	Cooling Degree Days	Highest	Lowest	Number Of Days				Total	Greatest Observed	Snow, Sleet, Hail		Number Of Days		
								Max>=90°	Max<=32°	Min<=32°	Min<=0°			Total Fall	Max Depth	>=.10	>=.50	>=1.0
1	33.3	23.4	28.4	1133.8	0.0	45	2	0	12	25	0	11.22	3.17	6.2	2	11	7	3
2	32.5	20.3	26.4	1115.6	0.0	43	-1	0	13	29	2	3.96	0.59	41.5	18	11	2	0
3	43.0	32.4	37.8	844.6	0.0	47	27	0	0	16	0	11.69	2.86	2.2	10	16	7	4
4	44.6	31.6	38.1	803.7	0.0	51	24	0	0	20	0	6.93	0.96	7.0	1	13	5	0
5	53.8	38.7	46.2	590.9	0.0	63	33	0	0	0	0	2.47	0.48	0.0	0	8	0	0
6	60.3	46.9	53.6	339.8	0.0	68	42	0	0	0	0	0.78	0.27	0.0	0	3	0	0
7	62.4	50.5	56.5	268.2	5.2	77	45	0	0	0	0	0.69	0.32	0.0	0	3	0	0
8	63.9	49.6	56.8	254.5	4.7	80	35	0	0	0	0	6.30	2.92	0.0	0	9	2	2
9	55.9	44.1	50.0	449.5	0.0	66	36	0	0	0	0	10.51	3.03	0.0	0	12	9	1
10	45.0	34.8	39.9	775.4	0.0	52	25	0	0	11	0	9.11	1.91	0.6	0	11	8	3
11	34.5	24.8	29.7	1056.4	0.0	44	13	0	10	29	0	3.83	2.49	1.1	1	6	1	1
12	36.5	26.4	31.5	1038.1	0.0	44	9	0	8	21	0	4.20	1.50	3.8	7	5	3	2
Summary	47.1	35.3	41.2	8658.5	9.9	80	-1	0	43	151	2	71.77	3.17	62.4	18	108	44	16

PLANNING COMMISSION NOVEMBER 7, 2016

U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data, and Information Service

Monthly Climatological Summary
(1985)

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151 Patton Avenue
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Station: **SEWARD AIRPORT, AK US**

GHCND:USW00026438
Elev: 23 ft. Lat: 60.128° N Lon: 149.417° W

Data	Temperature (°F)											Precipitation (in.)						
Elem->	MMXT	MMNT	MNTM	HTDD	CLDD	EMXT	EMNT	DT90	DX32	DT32	DT00	TPCP	EMXP	TSNW	MXSD	DP01	DP05	DP10
Month	Mean Max.	Mean Min.	Mean	Heating Degree Days	Cooling Degree Days	Highest	Lowest	Number Of Days				Total	Greatest Observed	Snow, Sleet, Hail		Number Of Days		
								Max>=90°	Max<=32°	Min<=32°	Min<=0°			Total Fall	Max Depth	>=.10	>=.50	>=1.0
1	41.0	32.9	36.9	888.3	0.0	47	23	0	1	13	0	12.67	2.14	0.0	0	19	6	5
2	28.2	18.7	23.4	1161.9	0.0	42	5	0	17	24	0	1.39	0.68	10.9	9	3	1	0
3	36.9	27.5	32.2	1016.6	0.0	42	15	0	2	30	0	4.55	0.89	34.1	18	10	4	0
4	38.8	25.7	32.2	960.5	0.0	48	5	0	7	19	0	0.57	0.17	3.0	14	2	0	0
5	50.4	38.1	44.2	642.6	0.0	64	32	0	0	1	0	15.95	5.64	0.0	0	10	4	3
6	56.5	43.9	50.2	444.6	2.2	79	39	0	0	0	0	2.08	0.80	0.0	0	6	1	0
7	60.8	50.2	55.4	294.5	0.0	73	44	0	0	0	0	1.99	0.71	0.0	0	6	1	0
8	60.3	48.6	54.5	325.1	0.0	71	43	0	0	0	0	3.43	0.81	0.0	0	10	2	0
9	55.6	44.6	50.0	445.7	0.0	70	35	0	0	0	0	4.33	1.43	0.0	0	8	2	2
10	40.5	30.0	35.2	920.2	0.0	55	11	0	6	16	0	2.09	0.98	2.7	2	5	2	0
11	30.7	22.1	26.4	1156.7	0.0	42	9	0	15	29	0	0.54	0.45	10.6	10	1	0	0
12	39.0	32.0	35.6	912.1	0.0	47	16	0	2	13	0	19.66	2.64	1.7	3	19	12	8
Summary	44.9	34.5	39.7	9168.8	2.2	79	5	0	50	142	0	69.25	6.54	63.0	18	99	35	16

PLANNING COMMISSION NOVEMBER 7, 2016

U.S. Department of Commerce
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National Environmental Satellite, Data, and Information Service

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(1986)

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Station: SEWARD AIRPORT, AK US

GHCND:USW00026438
Elev: 23 ft. Lat: 60.128° N Lon: 149.417° W

Date	Temperature (°F)											Precipitation (in.)						
Elem->	MMXT	MMNT	MNTM	HTDD	CLDD	EMXT	EMNT	DT90	DX32	DT32	DT00	TPCP	EMXP	TSNW	MXSD	DP01	DP05	DP10
Month	Mean Max.	Mean Min.	Mean	Heating Degree Days	Cooling Degree Days	Highest	Lowest	Number Of Days				Total	Greatest Observed	Snow, Sleet, Hail		Number Of Days		
								Max>=90°	Max<=32°	Min<=32°	Min<=0°			Total Fall	Max Depth	>=.10	>=.50	>=1.0
1	37.2	30.2	33.8	967.9	0.0	44	22	0	2	22	0	15.43	4.10	17.5	11	18	5	4
2	33.4	22.5	28.0	1094.3	0.0	47	3	0	10	22	0	6.89	2.41	14.5	10	9	3	3
3	36.5	24.3	30.4	1072.1	0.0	48	8	0	11	28	0	0.66	0.24	4.7	4	3	0	0
4	41.0	29.1	35.1	897.3	0.0	56	10	0	5	16	0	0.33	0.09	2.3	2	0	0	0
5	53.2	39.9	46.6	570.2	0.0	66	35	0	0	0	0	1.22	0.36	0.0	0	5	0	0
6	56.7	46.8	51.8	390.4	7.2	82	40	0	0	0	0	1.19	0.29	0.0	0	5	0	0
7	61.2	51.1	56.1	272.9	0.2	75	44	0	0	0	0	2.27	1.07	0.0	0	6	1	1
8	56.5	48.7	52.7	381.1	0.0	65	43	0	0	0	0	7.89	1.45	0.0	0	17	5	2
9	55.4	46.4	50.9	419.2	0.0	67	33	0	0	0	0	3.08	1.05	0.0	0	7	1	1
10	48.2	37.4	42.8	686.9	0.0	54	25	0	0	5	0	23.99	15.05	0.0	0	14	8	3
11	37.9	29.3	33.6	940.0	0.0	50	12	0	8	17	0	9.35	1.69	7.0	5	12	7	4
12	38.8	31.5	35.1	925.0	0.0	47	24	0	1	18	0	10.06	2.80	6.7	12	19	14	7
Summary	46.3	36.4	41.4	8557.3	7.4	82	3	0	37	130	0	90.39	15.05	52.7	12	115	42	25

U.S. Department of Commerce
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GHCND:USW00026438
Elev: 23 ft. Lat: 60.128° N Lon: 149.417° W

Date	Temperature (°F)											Precipitation (in.)						
Elem->	MMXT	MMNT	MNTM	HTDD	CLDD	EMXT	EMNT	DT90	DX32	DT32	DT00	TPCP	EMXP	TSNW	MXSD	DP01	DP05	DP10
Month	Mean Max.	Mean Min.	Mean	Heating Degree Days	Cooling Degree Days	Highest	Lowest	Number Of Days				Total	Greatest Observed	Snow, Sleet, Hail		Number Of Days		
								Max>=90°	Max<=32°	Min<=32°	Min<=0°			Total Fall	Max Depth	>= 10	>=.50	>=1.0
1	36.7	28.8	32.7	998.6	0.0	45	9	0	6	13	0	14.64	1.99	13.4	9	18	12	5
2	38.5	30.4	34.5	854.3	0.0	44	23	0	0	10	0	6.56	2.24	3.9	2	12	6	1
3	39.0	27.9	33.4	946.8	0.0	47	11	0	6	17	0	4.21	1.12	2.1	0	9	3	1
4	46.8	33.8	40.3	741.1	0.0	53	27	0	0	8	0	4.54	0.86	6.5	3	12	3	0
5	52.2	41.0	46.6	566.8	0.0	68	37	0	0	0	0	4.74	2.09	0.0	0	7	2	1
6	54.3	45.5	49.8	451.4	0.0	62	43	0	0	0	0	5.77	1.23	0.0	0	13	3	1
7	61.7	51.4	56.5	274.0	13.9	81	46	0	0	0	0	0.97	0.29	0.0	0	3	0	0
8	62.4	50.9	56.7	256.1	0.0	72	46	0	0	0	0	0.93	0.36	0.0	0	3	0	0
9	54.9	44.8	49.8	454.5	0.0	62	35	0	0	0	0	10.48	3.63	0.0	0	17	6	2
10	44.8	37.9	41.4	730.4	0.0	54	23	0	0	4	0	20.69	3.83	0.0	0	18	15	5
11	37.8	30.6	34.2	922.7	0.0	48	21	0	4	16	0	4.01	1.28	7.9	3	8	2	1
12	32.2	23.0	27.5	1121.2	0.0	41	11	0	15	28	0	6.24	2.24	20.6	10	8	4	2
Summary	46.8	37.2	42.0	8320.1	13.9	81	6	0	31	105	0	83.70	3.83	54.4	10	128	56	19

..3/22/2014

U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data, and Information Service

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GHCND:USW00026438
Elev: 23 ft. Lat: 60.120° N Lon: 149.417° W

Date	Temperature (°F)											Precipitation (in.)						
Elem->	MMXT	MMNT	MNTM	HTDD	CLDD	EMXT	EMNT	DT90	DX32	DT32	DT00	TPCP	EMXP	TSNW	MXSD	DP01	DP05	DP10
Month	Mean Max.	Mean Min.	Mean	Heating Degree Days	Cooling Degree Days	Highest	Lowest	Number Of Days				Total	Greatest Observed	Snow, Sleet, Hail		Number Of Days		
								Max>=90°	Max<=32°	Min<=32°	Min<=0°			Total Fall	Max Depth	>=.10	>=.50	>=1.0
1	33.8	26.4	30.2	1078.9	0.0	43	8	0	9	23	0	8.30	2.59	8.2	8	10	6	2
2	37.6	28.4	32.9	926.3	0.0	43	9	0	3	16	0	7.17	2.19	10.1	5	17	3	2
3	40.1	32.2	36.1	893.3	0.0	48	25	0	0	14	0	5.36	0.62	5.2	4	16	2	0
4	43.2	34.2	38.7	767.7	0.0	51	28	0	0	6	0	8.02	2.11	18.0	8	10	7	2
5	51.8	40.3	46.0	586.1	0.0	64	32	0	0	1	0	1.14	0.33	0.0	0	3	0	0
6	58.3	46.8	52.5	370.4	0.0	72	42	0	0	0	0	1.06	0.33	0.0	0	3	0	0
7	60.3	51.6	55.9	278.8	0.0	69	49	0	0	0	0	0.56	0.25	0.0	0	2	0	0
8	59.7	49.5	54.5	321.5	0.0	72	45	0	0	0	0	7.59	1.97	0.0	0	17	5	1
9	54.0	42.8	48.4	497.7	0.0	63	36	0	0	0	0	7.37	1.25	0.0	0	16	7	1
10	44.1	36.5	40.3	764.5	0.0	55	30	0	0	7	0	7.38	1.23	0.0	0	16	5	3
11	35.4	27.1	31.3	1009.8	0.0	46	12	0	8	22	0	2.23	0.88	5.5	5	3	2	0
12	33.6	24.1	28.8	1118.9	0.0	41	-8	0	9	21	1	12.79	1.49	13.5	12	19	10	6
Summary	46.0	36.7	41.3	8635.9	0.0	72	-8	0	29	110	1	69.94	2.59	61.5	12	132	47	17

U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data, and Information Service

Monthly Climatological Summary (1969)

National Climatic Data Center
Federal Building
151 Patton Avenue
Asheville, North Carolina 28801
www.ncdc.noaa.gov

Station: SEWARD AIRPORT, AK US

GHCND:USW00026436
Elev: 23 ft. Lat: 60.128° N Lon: 149.417° W

Date	Temperature (°F)											Precipitation (in.)						
Elem->	MMXT	MMNT	MNTM	HTDD	CLDD	EMXT	EMNT	DT90	DX32	DT32	DT00	TPCP	EMXP	TSNW	MXSD	DP01	DP05	DP10
Month	Mean Max.	Mean Min.	Mean	Heating Degree Days	Cooling Degree Days	Highest	Lowest	Number Of Days				Total	Greatest Observed	Snow, Sleet, Hail		Number Of Days		
								Max>=90°	Max<=32°	Min<=32°	Min<=0°			Total Fall	Max Depth	>=.10	>=.50	>=1.0
1	20.7	10.4	15.6	1531.6	0.0	36	-15	0	24	30	8	3.59	1.36	27.5	10	8	3	1
2	32.7	21.2	27.0	1083.3	0.0	42	-5	0	6	25	2	0.49	0.30	0.0	3	1	0	0
3	38.5	25.9	32.2	1017.7	0.0	50	13	0	3	20	0	0.14	0.06	0.0	0	0	0	0
4	46.2	34.7	40.5	736.7	0.0	59	1	0	0	8	0	6.48	2.04	0.0	0	8	4	3
5	52.5	41.9	47.1	550.1	0.0	67	36	0	0	0	0	3.51	0.81	0.0	0	10	1	0
6	55.8	47.1	51.4	405.7	0.0	72	42	0	0	0	0	4.03	0.86	0.0	0	11	3	0
7	62.6	53.4	58.1	223.9	9.7	80	46	0	0	0	0	4.45	1.08	0.0	0	11	3	1
8	59.7	52.5	56.1	273.1	0.0	72	44	0	0	0	0	11.72	4.17	0.0	0	14	5	2
9	55.4	46.2	50.7	410.4	0.0	65	38	0	0	0	0	12.53	1.91	0.0	0	16	10	5
10	43.5	35.4	39.4	790.2	0.0	51	24	0	1	10	0	14.20	2.84	0.3	0	17	9	6
11	31.6	22.8	27.3	1130.2	0.0	46	5	0	13	24	0	4.42	1.01	10.1	5	10	5	1
12	37.0	29.8	33.4	977.2	0.0	44	11	0	4	14	0	10.74	1.50	5.5		16	9	5
Summary	44.7	35.1	39.9	9110.1	9.7	80	-15	0	51	131	10	76.30	4.17	43.4	10	120	52	24

U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data, and Information Service

Monthly Climatological Summary
(1990)

National Climatic Data Center
Federal Building
151 Patton Avenue
Asheville, North Carolina 28801
www.ncdc.noaa.gov

Station: SEWARD AIRPORT, AK US

GHCND:USW00026436
Elev: 23 ft. Lat: 60.128° N Lon: 149.417° W

Data	Temperature (°F)											Precipitation (in.)						
Elem->	MMXT	MMNT	MNTM	HTDD	CLDD	EMXT	EMNT	DT90	DX32	DT32	DT00	TPCP	EMXP	TSNW	MXSD	DP01	DP05	DP10
Month	Mean Max.	Mean Min.	Mean	Heating Degree Days	Cooling Degree Days	Highest	Lowest	Number Of Days				Total	Greatest Observed	Snow, Sleet, Hail		Number Of Days		
								Max>=90°	Max<=32°	Min<=32°	Min<=0°			Total Fall	Max Depth	>=.10	>=.50	>=1.0
1	28.8	19.2	24.1	1269.0	0.0	39	2	0	16	25	0	6.10	0.93	23.7	21	12	6	0
2	23.4	12.6	18.0	1316.2	0.0	39	1	0	22	27	0	2.65	0.70	7.2	17	3	2	0
3	40.3	29.5	34.9	930.1	0.0	48	18	0	2	22	0	3.72	1.16	1.2	9	7	3	1
4	48.9	35.2	42.1	687.2	0.0	60	29	0	0	6	0	0.98	0.25	1.1	1	3	0	0
5	51.8	41.7	46.8	564.3	0.0	62	35	0	0	0	0	3.71	0.81	0.0	0	10	2	0
6	59.4	49.1	54.1	323.8	0.0	71	45	0	0	0	0	2.69	0.78	0.0	0	7	2	0
7	59.5	51.6	55.6	290.9	0.0	65	49	0	0	0	0	6.01	1.63	0.0	0	11	5	2
8	63.1	52.0	57.6	238.3	9.7	66	45	0	0	0	0	2.45	0.83	0.0	0	7	2	0
9	54.9	45.7	50.2	441.5	0.0	68	30	0	0	1	0	12.70	1.62	0.0	0	17	13	4
10	43.0	34.2	38.5	818.5	0.0	50	23	0	0	8	0	6.09	1.88	0.0	0	10	3	2
11	28.0	18.8	23.5	1242.5	0.0	44	-2	0	17	27	1	0.74	0.65	6.0	8	2	1	0
12	32.7	23.0	27.9	1150.7	0.0	40	0	0	12	27	1	3.47	1.07	24.3	9	8	2	1
Summary	44.5	34.4	39.4	9273.0	9.7	88	-2	0	69	143	2	51.21	1.88	65.5	21	102	41	10

PLANNING COMMISSION NOVEMBER 7, 2016

U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data, and Information Service

Monthly Climatological Summary (1991)

National Climatic Data Center
Federal Building
151 Patton Avenue
Asheville, North Carolina 28801
www.ncdc.noaa.gov

Station: SEWARD AIRPORT, AK US

GHCND:USW00026438
Elev: 23 ft. Lat: 60.128° N Lon: 149.417° W

Date	Temperature (°F)											Precipitation (in.)						
Elem->	MMXT	MMNT	MNTM	HTDD	CLDD	EMXT	EMNT	DT90	DX32	DT32	DT00	TPCP	EMXP	TSNW	MXSD	DP01	DP05	DP10
Month	Mean Max.	Mean Min.	Mean	Heating Degree Days	Cooling Degree Days	Highest	Lowest	Number Of Days				Total	Greatest Observed	Snow, Sleet, Hail		Number Of Days		
								Max>=90°	Max<=32°	Min<=32°	Min<=0°			Total Fall	Max Depth	>=.10	>=.50	>=1.0
1																		
2	33.3	23.2	28.2	1028.2	0.0	46	4	0	11	20	0	5.00	1.36	20.6	14	12	3	3
3	37.8	27.0	32.4	978.3	0.0	45	14	0	1	24	0	3.02	1.04	20.5	22	5	2	1
4	41.7	34.2	37.9	811.1	0.0	48	28	0	0	8	0	5.78	1.06	2.0	2	17	6	1
5	47.8	39.0	43.5	665.8	0.0	70	32	0	0	1	0	6.70	1.44	0.0	0	15	5	1
6	55.0	45.7	50.4	457.0	0.0	72	37	0	0	0	0	2.99	1.16	0.0	0	7	2	1
7	57.9	49.5	53.6	346.4	0.0	74	43	0	0	0	0	2.30	1.04	0.0	0	7	1	1
8	59.0	49.6	54.3	330.1	0.0	68	44	0	0	0	0	4.02	0.75	0.0	0	9	3	0
9	53.1	45.7	49.3	467.8	0.0	60	41	0	0	0	0	13.74	2.01	0.0	0	19	11	5
10	44.2	35.1	39.7	783.7	0.0	49	26	0	0	6	0	4.25	0.91	0.0	0	9	5	0
11	36.8	30.6	34.7	908.3	0.0	48	16	0	3	20	0	4.11	0.90	7.4	6	7	4	0
12	32.5	24.8	28.8	1123.9	0.0	41	15	0	10	30	0	11.63	1.57	33.6	30	17	8	4
Summary	45.8	36.8	41.2	7883.6	0.0	74	4	0	25	108	0	65.46	2.01	84.1	30	124	50	17

U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data, and Information Service

Monthly Climatological Summary
(1992)

National Climatic Data Center
Federal Building
151 Patton Avenue
Asheville, North Carolina 28801
www.ncdc.noaa.gov

Station: **SEWARD AIRPORT, AK US**

GHCND:USW00026436
Elev: 23 ft. Lat: 60.120° N Lon: 149.417° W

Data	Temperature (°F)											Precipitation (in.)						
Elem->	MAXT	MINT	MNTM	HTDD	CLDD	EMXT	EMNT	DT90	DX32	DT32	DT00	TPCP	EMXP	TSNW	MXSD	DP01	DP05	DP10
Month	Mean Max.	Mean Min.	Mean	Heating Degree Days	Cooling Degree Days	Highest	Lowest	Number Of Days				Total	Greatest Observed	Snow, Sleet, Hail		Number Of Days		
								Max>=90°	Max<=32°	Min<=32°	Min<=0°			Total Fall	Max Depth	>=.10	>=.50	>=1.0
1	34.0	26.8	30.4	1071.0	0.0	43	17	0	9	22	0	3.86	2.01	11.9	27	13	5	4
2	28.8	19.4	24.1	1183.5	0.0	40	5	0	20	26	0	4.32	0.81	17.5	24	10	3	0
3	34.0	25.5	29.8	1080.8	0.0	41	2	0	5	16	0	7.64	0.95	6.3	16	17	7	0
4	45.9	32.7	39.2	771.3	0.0	56	18	0	0	12	0	1.15	0.45	0.0	10	4	0	0
5	53.1	39.7	46.4	573.8	0.0	69	31	0	0	1	0	0.56	0.22	0.0	0	3	0	0
6	56.7	46.2	51.4	403.9	0.0	73	41	0	0	0	0	1.13	0.31	0.0	0	3	0	0
7	58.8	51.8	55.4	297.4	0.0	74	47	0	0	0	0	2.73	1.25	0.0	0	6	1	1
8	56.7	48.9	52.7	376.7	0.0	74	44	0	0	0	0	7.37	1.48	0.0	0	15	4	3
9	50.2	38.5	44.2	619.4	0.0	65	30	0	0	5	0	2.10	0.86	0.0	0	4	2	0
10	41.2	31.8	36.5	883.6	0.0	51	21	0	2	16	0	6.12	1.49	2.0	2	9	5	4
11	37.6	30.0	33.8	935.1	0.0	50	15	0	7	16	0	14.64	2.52	9.0	4	19	10	4
12	31.3	21.7	26.6	1189.4	0.0	43	10	0	16	28	0	4.08	1.16	9.5	7	7	4	1
Summary	44.0	34.4	39.2	9395.9	0.0	74	2	0	59	148	0	60.80	2.52	56.2	27	108	41	17

PLANNING COMMISSION NOVEMBER 7, 2016

U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data, and Information Service

Monthly Climatological Summary (1993)

National Climatic Data Center
Federal Building
151 Patton Avenue
Asheville, North Carolina 28801
www.ncdc.noaa.gov

Station: SEWARD AIRPORT, AK US

GHCND:USW00026438
Elev: 23 ft. Lat: 60.120° N Lon: 149.417° W

Data	Temperature (°F)												Precipitation (in.)						
Elem->	MMXT	MMNT	MNTM	HTDD	CLDD	EMXT	EMNT	DT90	DX32	DT32	DT00	TPCP	EMXP	TSNW	MXSD	DP01	DP05	DP10
Month	Mean Max.	Mean Min.	Mean	Heating Degree Days	Cooling Degree Days	Highest	Lowest	Number Of Days				Total	Greatest Observed	Snow, Sleet, Hail		Number Of Days		
								Max>=90°	Max<=32°	Min<=32°	Min<=0°			Total Fall	Max Depth	>=.10	>=.50	>=1.0
1	29.5	20.3	25.2	1295.3	0.0	40	3	0	12	29	0	3.38	0.79	16.3	10	11	2	0
2	34.2	26.2	30.2	973.1	0.0	46	2	0	8	13	0	8.67	2.12	13.0	17	14	6	2
3	39.9	30.2	35.1	826.5	0.0	50	20	0	0	17	0	4.20	1.28	7.6	9	11	3	1
4	46.8	36.3	41.5	703.8	0.0	59	32	0	0	4	0	4.67	0.55	0.0	0	15	2	0
5	54.5	43.5	49.1	491.9	0.0	76	38	0	0	0	0	2.28	0.96	0.0	0	8	1	0
6	58.1	47.8	52.9	347.4	0.0	70	40	0	0	0	0	1.36	0.59	0.0	0	3	1	0
7	64.4	54.1	59.4	195.7	20.0	82	46	0	0	0	0	2.44	0.99	0.0	0	6	1	0
8	61.2	53.6	57.4	280.0	17.3	82	47	0	0	0	0	12.22	2.24	0.0	0	11	6	6
9	53.2	46.0	49.6	429.1	0.0	60	34	0	0	0	0	15.23	3.25	0.0	0	13	9	6
10	47.5	38.5	43.0	660.4	0.0	58	28	0	0	4	0	6.50	1.54	0.0	0	11	5	3
11	39.0	28.8	33.8	933.3	0.0	48	10	0	3	17	0	10.36	3.50	5.0	2	12	7	3
12	37.9	26.4	33.3	964.6	0.0	48	18	0	5	24	0	13.13	1.89	16.4	7	17	10	4
Summary	47.2	37.8	42.5	8151.1	37.3	82	2	0	28	107	0	84.52	3.50	58.3	17	132	55	25

U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data, and Information Service

Monthly Climatological Summary (1994)

National Climatic Data Center
Federal Building
151 Patton Avenue
Asheville, North Carolina 28801
www.ncdc.noaa.gov

3/22/2014

Station: SEWARD AIRPORT, AK US

GHCND:USW00026438
Elev: 23 ft. Lat: 60.128° N Lon: 149.417° W

Data	Temperature (°F)											Precipitation (in.)						
Elem->	MMXT	MMNT	MNTM	HTDD	CLDD	EMXT	EMNT	DT90	DX32	DT32	DT00	TPCP	EMXP	TSNW	MXSD	DP01	DP05	DP10
Month	Mean Max.	Mean Min.	Mean	Heating Degree Days	Cooling Degree Days	Highest	Lowest	Number Of Days				Total	Greatest Observed	Snow, Sleet, Hail		Number Of Days		
								Max>=90°	Max<=32°	Min<=32°	Min<=0°			Total Fall	Max Depth	>=.10	>=.50	>=1.0
1	34.7	26.6	30.7	1027.8	0.0	51	3	0	5	24	0	6.94	3.25	1.2	8	11	3	3
2	29.3	16.3	22.8	1095.3	0.0	48	-5	0	19	22	3	3.44	1.28	11.0	11	6	3	1
3	34.3	24.3	29.7	1095.5	0.0	46	0	0	9	24	1	4.49	0.79	2.5	17	11	3	0
4	45.5	33.6	39.6	760.0	0.0	60	18	0	1	10	0	6.67	0.78	0.7	1	14	6	0
5	49.1	39.4	44.2	641.0	0.0	61	33	0	0	0	0	0.34	1.80	0.0	0	15	8	1
6	59.7	46.9	53.4	336.8	0.7	81	40	0	0	0	0	1.48	0.33	0.0	0	6	0	0
7	60.4	49.8	55.2	302.2	0.5	75	44	0	0	0	0	2.45	0.82	0.0	0	5	1	0
8	65.1	51.4	58.3	218.4	13.9	79	40	0	0	0	0	2.10	1.99	0.0	0	1	1	1
9	56.3	41.7	48.9	479.1	0.0	67	32	0	0	2	0	10.01	1.64	0.0	0	13	10	4
10	43.3	33.3	38.3	826.7	0.0	53	14	0	2	12	0	9.72	1.81	0.0	0	14	7	3
11	31.3	21.6	26.4	1116.9	0.0	42	1	0	17	26	0	4.44	1.80	8.4	5	6	3	1
12	31.6	22.5	27.1	1134.5	0.0	42	4	0	15	26	0	9.44	1.64	39.1	25	15	6	3
Summary	46.1	34.0	39.6	9034.2	15.1	81	-5	0	68	146	4	71.52	3.25	62.9	25	117	51	17

U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data, and Information Service

Monthly Climatological Summary (1995)

National Climatic Data Center
Federal Building
151 Patton Avenue
Asheville, North Carolina 28801
www.ncdc.noaa.gov

Station: **SEWARD AIRPORT, AK US**

GHCND:USW00026438
Elev: 23 ft. Lat: 60.126° N Lon: 149.417° W

Date	Temperature (°F)											Precipitation (in.)						
Elem->	MMXT	MMNT	MNTM	HTDD	CLDD	EMXT	EMNT	DT90	DX32	DT32	DT00	TPCP	EMXP	TSNW	MXSD	DP01	DP05	DP10
Month	Mean Max.	Mean Min.	Mean	Heating Degree Days	Cooling Degree Days	Highest	Lowest	Number Of Days				Total	Greatest Observed	Snow, Sleet, Hail		Number Of Days		
								Max>=90°	Max<=32°	Min<=32°	Min<=0°			Total Fall	Max Depth	>=.10	>=.50	>=1.0
1	32.0	23.2	27.5	1158.5	0.0	44	3	0	12	23	0	6.06	1.63	9.2	10	10	4	2
2	32.7	21.9	27.3	1053.9	0.0	48	0	0	13	22	1	3.60	1.25	5.5	4	7	2	1
3	32.5	18.7	25.5	1219.5	0.0	52	0	0	13	28	1	4.79	1.83	5.7	12	4	4	2
4	46.4	37.0	41.7	697.7	0.0	63	32	0	0	2	0	5.23	0.99	0.0	1	12	5	0
5	49.1	40.8	44.8	622.8	0.0	66	38	0	0	0	0	9.30	2.25	0.0	0	14	5	3
6	56.3	47.5	52.0	393.8	4.1	80	39	0	0	0	0	3.26	1.11	0.0	0	5	2	1
7	58.8	51.8	55.2	283.3	0.0	74	48	0	0	0	0	3.87	0.77	0.0	0	9	3	0
8	61.2	51.8	56.5	266.0	2.7	74	48	0	0	0	0	2.60	0.67	0.0	0	7	2	0
9	54.5	48.2	51.3	406.8	0.0	61	38	0	9	3	0	29.72	9.81	0.0	0	19	14	8
10	46.0	37.8	41.9	715.1	0.0	58	30	0	0	5	0	9.28	1.29	0.0	1	16	8	3
11	33.4	25.2	29.3	1067.4	0.0	42	15	0	13	25	0	0.93	0.22	0.0	0	4	0	0
12	33.3	26.8	30.0	1081.1	0.0	47	4	0	9	13	0	6.05	1.41	0.0	0	9	4	1
Summary	44.7	35.9	40.2	8967.9	6.8	80	4	0	60	121	2	84.70	9.81	20.4	12	116	53	21

U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data, and Information Service

Monthly Climatological Summary (1996)

National Climatic Data Center
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www.ncdc.noaa.gov

Station: SEWARD AIRPORT, AK US

GHCND:USW00026438
Elev: 23 ft. Lat: 60.128° N Lon: 149.417° W

Date	Temperature (°F)											Precipitation (in.)						
Elem->	MMXT	MMNT	MNTM	HTDD	CLDD	EMXT	EMNT	DT90	DX32	DT32	DT00	TPCP	EMXP	TSNW	MXSD	DP01	DP05	DP10
Month	Mean Max.	Mean Min.	Mean	Heating Degree Days	Cooling Degree Days	Highest	Lowest	Number Of Days				Total	Greatest Observed	Snow, Sleet, Hail		Number Of Days		
								Max>=90°	Max<=32°	Min<=32°	Min<=0°			Total Fall	Max Depth	>=.10	>=.50	>=1.0
1	24.3	15.3	19.8	1401.5	0.0	40	2	0	22	29	0	0.20	0.08	0.0	0	0	0	0
2	30.6	19.4	25.0	1158.3	0.0	41	5	0	16	28	0	10.05	4.09	37.2	50	13	5	2
3	41.5	29.5	35.6	911.7	0.0	50	24	0	0	26	0	0.89	0.37	0.1	21	4	0	0
4	45.0	33.4	39.2	773.1	0.0	55	24	0	0	11	0	3.07	0.64	3.3	2	10	1	0
5	56.8	42.4	49.6	473.8	0.0	73	35	0	0	0	0	1.03	0.39	0.0	0	3	0	0
6	59.6	48.2	54.0	331.9	0.0	73	42	0	0	0	0	2.64	0.81	0.0	0	6	1	0
7	61.0	52.2	56.7	250.8	9.2	79	46	0	0	0	0	1.61	0.46	0.0	0	7	0	0
8	61.7	49.8	55.8	284.0	0.0	72	46	0	0	0	0	3.36	0.63	0.0	0	9	2	0
9	54.5	41.7	48.2	504.2	0.0	73	34	0	0	0	0	4.05	1.20	0.0	0	10	2	1
10	39.9	30.0	34.9	930.6	0.0	55	16	0	12	16	0	2.72	1.54	0.0	0	4	2	1
11	34.3	25.9	30.2	1043.6	0.0	48	10	0	13	25	0	1.61	0.74	0.1	2	3	1	0
12	31.1	20.1	25.6	1219.7	0.0	43	6	0	15	27	0	2.12	0.90	16.6	12	3	1	0
Summary	45.0	34.0	39.5	9283.1	9.2	79	2	0	77	182	0	33.35	4.09	59.5	50	72	15	4

U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data, and Information Service

Monthly Climatological Summary (1997)

National Climatic Data Center
Federal Building
151 Patton Avenue
Asheville, North Carolina 28801
www.ncdc.noaa.gov

Station: SEWARD AIRPORT, AK US

GHCND:USW00026438
Elev: 23 ft. Lat: 60.128° N Lon: 149.417° W

Date	Temperature (°F)											Precipitation (in.)						
Elem->	MMXT	MMNT	MNTM	HTDD	CLDD	EMXT	EMNT	DT90	DX32	DT32	DT00	TPCP	EMXP	TSNW	MXSD	DP01	DP05	DP10
Month	Mean Max.	Mean Min.	Mean	Heating Degree Days	Cooling Degree Days	Highest	Lowest	Number Of Days				Total	Greatest Observed	Snow, Sleet, Hail		Number Of Days		
								Max>=90°	Max<=32°	Min<=32°	Min<=0°			Total Fall	Max Depth	>=.10	>=.50	>=1.0
1	30.9	22.1	26.4	1191.6	0.0	45	-7	0	13	21	2	6.57	1.84	10.9	6	10	4	2
2	36.5	32.7	35.6	822.2	0.0	44	24	0	0	10	0	8.54	2.82	2.2	3	13	7	2
3	36.5	24.1	31.3	1045.3	0.0	48	14	0	7	31	0	1.24	0.54	0.1	1	3	1	0
5	58.8	40.1	49.5	464.0	0.0	72	32	0	0	1	0	2.20	1.23	0.0	0	4	1	1
6	64.8	48.9	56.9	271.1	9.2	84	41	0	0	0	0	1.80	0.33	0.0	0	8	0	0
7	62.6	51.4	57.0	247.3	0.0	72	44	0	0	0	0							
8	63.9	50.2	57.0	244.6	0.0	73	43	0	0	0	0							
9	60.1	45.3	53.2	306.4	0.0	70	33	0	0	0	0	10.78	2.92	0.0	0	15	12	11
10	48.2	34.3	41.2	451.1	0.0	58	26	0	0	6	0	3.01	1.12	0.5	0	7	2	1
11	39.0	30.0	34.5	914.4	0.0	52	14	0	3	19	0							
12	30.2	18.0	24.1	1267.6	0.0	42	5	0	17	30	0							
Summary	48.7	35.9	42.3	7225.6	9.2	84	-7	0	40	119	2	42.14	2.92	13.7	6	60	27	17

U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data, and Information Service

Monthly Climatological Summary (1998)

National Climatic Data Center
Federal Building
151 Patton Avenue
Asheville, North Carolina 28801
www.ncdc.noaa.gov

Station: SEWARD AIRPORT, AK US

GHCND:USW00026436
Elev: 23 ft. Lat: 60.128° N Lon: 149.417° W

Date	Temperature (°F)											Precipitation (in.)						
Elem->	MMXT	MMNT	MNTM	HTDD	CLDD	EMXT	EMNT	DT90	DX32	DT32	DT00	TPCP	EMXP	TSNW	MXSD	DP01	DP05	DP10
Month	Mean Max.	Mean Min.	Mean	Heating Degree Days	Cooling Degree Days	Highest	Lowest	Number Of Days				Total	Greatest Observed	Snow, Sleet, Hail		Number Of Days		
								Max>=90°	Max<=32°	Min<=32°	Min<=0°			Total Fall	Max Depth	>=.10	>=.50	>=1.0
1	33.8	24.1	28.9	1116.0	0.0	42	3	0	12	26	0	1.87	0.77	18.0	13	6	1	0
2	38.5	28.6	33.6	876.6	0.0	46	18	0	3	19	0							
3	41.4	29.7	35.6	812.1	0.0	53	15	0	1	17	0	6.37	1.21	9.5	7	12	6	3
4	45.7	33.1	39.4	765.5	0.0	65	27	0	0	11	0	14.79	2.97	17.0	5	16	11	4
5	49.6	37.4	43.5	662.8	0.0	80	32	0	0	2	0	11.43	3.45	4.0	2	18	6	2
6	59.0	45.3	52.2	383.9	0.5	73	40	0	0	0	0	4.98	1.71	0.0	0	8	3	2
7	62.2	48.9	55.6	291.1	1.1	79	46	0	0	0	0	3.07	0.49	0.0	0	9	0	0
8	59.5	45.9	52.9	372.8	0.0	71	38	0	0	0	0	6.59	1.52	0.0	0	13	6	1
9	54.7	41.5	48.0	505.3	0.0	65	34	0	0	0	0	7.71	2.62	0.0	0	11	4	3
10	46.0	34.9	40.5	761.2	0.0	59	24	0	0	12	0	9.95	2.23	0.2	0	13	7	4
11	36.9	27.7	32.4	979.6	0.0	50	8	0	7	21	0	8.63	2.70	12.5	3	12	4	3
12	29.8	20.1	25.0	1239.7	0.0	40	10	0	18	31	0	5.52	2.98	61.0	36	6	3	1
Summary	46.5	34.8	40.6	8868.8	1.6	79	3	0	41	139	0	80.91	3.45	122.2	36	124	51	23

U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data, and Information Service

Monthly Climatological Summary (1999)

National Climatic Data Center
Federal Building
151 Patton Avenue
Asheville, North Carolina 28801
www.ncdc.noaa.gov

Station: SEWARD AIRPORT, AK US

GHCND:USW00026438
Elev: 23 ft. Lat: 60.128° N Lon: 149.417° W

Date	Temperature (°F)											Precipitation (in.)						
Elem->	MMXT	MMNT	MNTM	HTDD	CLDD	EMXT	EMNT	DT90	DX32	DT32	DT00	TPCP	EMXP	TSNW	MXSD	DP01	DP05	DP10
Month	Mean Max.	Mean Min.	Mean	Heating Degree Days	Cooling Degree Days	Highest	Lowest	Number Of Days				Total	Greatest Observed	Snow, Sleet, Hail		Number Of Days		
								Max>=90°	Max<=32°	Min<=32°	Min<=0°			Total Fall	Max Depth	>=.10	>=.50	>=1.0
1	27.5	16.3	21.9	1392.5	0.0	41	-6	0	16	30	2	6.73	1.72	29.0	32	10	6	3
2	23.2	12.0	17.6	1325.3	0.0	39	-15	0	18	27	7	3.59	1.95	12.9	24	5	2	1
3	35.6	23.2	29.5	1098.7	0.0	45	3	0	8	28	0	6.39	1.01	45.5	35	12	5	1
4	43.3	30.6	37.0	839.3	0.0	55	18	0	1	16	0	4.60	1.43	23.7	28	13	2	1
5	53.8	37.6	45.7	598.1	0.0	70	31	0	0	1	0	2.05	0.66	0.0	0	7	1	0
6	59.2	44.8	52.0	377.5	0.0	74	37	0	0	0	0	1.23	0.31	0.0	0	5	0	0
7	64.4	52.3	58.3	228.8	23.8	87	46	0	0	0	0	1.30	0.21	0.0	0	7	0	0
8	61.2	49.3	55.2	301.5	0.0	75	42	0	0	0	0	4.32	0.64			10	3	0
9	54.9	44.2	49.6	430.2	0.0	63	34	0	0	0	0	9.51	1.41		0	15	9	3
10	42.6	31.8	37.2	860.2	0.0	52	19	0	5	18	0	6.56	1.16			11	3	1
11	35.4	25.5	30.6	1032.3	0.0	45	11	0	9	22	0	4.95	1.10	21.5	16	11	3	1
12	30.9	19.6	25.2	1232.5	0.0	47	4	0	14	28	0	13.87	3.46	34.5	16	12	7	4
Summary	44.4	32.2	38.3	9656.0	23.8	87	-15	0	71	170	9	65.10	3.46	167.1	35	118	44	15

U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data, and Information Service

Monthly Climatological Summary
(2000)

National Climatic Data Center
Federal Building
151 Patton Avenue
Asheville, North Carolina 28801
www.ncdc.noaa.gov

Station: SEWARD AIRPORT, AK US

GHCND:USW00026436
Elev: 23 ft. Lat: 60.128° N Lon: 149.417° W

Data	Temperature (°F)											Precipitation (in.)						
Elem->	MAXT	MMNT	MNTM	HTDD	CLDD	EMXT	EMNT	DT90	DX32	DT32	DT00	TPCP	EMXP	TSNW	MXSD	DP01	DP05	DP10
Month	Mean Max.	Mean Min.	Mean	Heating Degree Days	Cooling Degree Days	Highest	Lowest	Number Of Days				Total	Greatest Observed	Snow, Sleet, Hail		Number Of Days		
								Max>=90°	Max<=32°	Min<=32°	Min<=0°			Total Fall	Max Depth	>=.10	>=.50	>=1.0
1	26.6	17.2	21.9	1333.3	0.0	39	4	0	20	29	0	6.56	1.76	49.8	40	13	5	4
2	37.4	28.9	33.1	921.6	0.0	43	16	0	1	20	0	7.25	1.34	18.3	30	13	6	3
3	39.6	30.6	35.1	924.5	0.0	45	12	0	0	20	0	5.61	1.10	16.6	16	13	4	1
4	46.6	34.0	40.3	740.9	0.0	61	29	0	0	12	0	3.14	1.11	2.5	6	6	2	2
5	54.3	40.1	47.3	547.6	0.0	65	33	0	0	0	0	1.52	0.33	0.0	0	5	0	0
6	57.6	43.5	50.5	433.6	0.0	67	30	0	0	1	0	2.89	0.66	0.0	0	6	3	0
7	59.9	48.7	54.3	330.5	0.0	71	44	0	0	0	0	4.30	0.86	0.0	0	13	2	0
8	64.2	49.3	56.8	255.4	2.2	74	44	0	0	0	0	4.47	1.36	0.0	0	8	3	2
9	57.6	43.3	50.4	435.2	0.0	65	39	0	0	0	0	3.93	1.20	0.0	0	8	3	1
10	45.3	34.9	40.1	772.6	0.0	52	28	0	0	10	0	9.90	1.42	1.0	0	17	9	4
11	41.9	31.6	36.9	844.7	0.0	48	22	0	0	14	0	14.42	2.42	6.5	0	15	11	6
12	39.2	30.2	34.7	907.2	0.0	45	15	0	2	20	0	15.62	2.81	11.5	9	22	11	6
Summary	47.5	36.0	41.8	8447.1	2.2	74	4	0	23	126	0	81.41	2.81	106.1	40	139	59	29

U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data, and Information Service

Monthly Climatological Summary (2001)

National Climatic Data Center
Federal Building
151 Patton Avenue
Asheville, North Carolina 28801
www.ncdc.noaa.gov

Station: SEWARD AIRPORT, AK US

GHCND:USW00028438
Elev: 23 ft. Lat: 60.128° N Lon: 149.417° W

Data	Temperature (°F)											Precipitation (in.)						
Elem->	MMXT	MMNT	MNTM	HTDD	CLDD	EMXT	EMNT	DT90	DX32	DT32	DT00	TPCP	EMXP	TSNW	MXSD	DP01	DP05	DP10
Month	Mean Max.	Mean Min.	Mean	Heating Degree Days	Cooling Degree Days	Highest	Lowest	Number Of Days				Total	Greatest Observed	Snow, Sleet, Hail		Number Of Days		
								Max>=90°	Max<=32°	Min<=32°	Min<=0°			Total Fall	Max Depth	>=.10	>=.50	>=1.0
1	38.3	30.2	34.2	952.4	0.0	48	19	0	2	19	0	22.33	3.74	15.4	6	21	13	9
2	37.6	26.6	32.4	981.8	0.0	47	16	0	1	22	0	7.76	2.02	27.2	16	11	7	2
3	39.2	28.9	34.0	927.7	0.0	46	15	0	1	20	0	6.92	1.83	19.7	14	11	5	2
4	45.9	32.2	39.0	777.6	0.0	57	26	0	0	15	0	5.57	1.65	0.0	8	9	4	2
5	51.8	37.8	44.8	626.0	0.0	67	29	0	0	4	0	2.36	1.19	3.6	0	7	1	1
6	63.7	47.5	55.6	286.3	4.7	76	41	0	0	0	0	0.63	0.32	0.0	0	3	0	0
7	60.8	49.8	55.2	299.2	0.0	69	46	0	0	0	0	5.03	1.80	0.0	0	13	1	1
8	63.1	50.5	56.8	250.9	0.0	75	46	0	0	0	0	6.44	1.67	0.0	0	9	4	3
9	55.8	43.5	49.6	460.3	0.0	64	38	0	0	0	0	7.78	2.12	0.0	0	16	4	1
10	40.8	30.2	35.4	913.0	0.0	54	16	0	3	17	0	6.40	1.34	1.2	1	11	6	1
11	35.4	25.0	30.2	1041.1	0.0	49	12	0	9	23	0	2.72	0.76	19.4	7	9	1	0
12	27.9	16.3	22.1	1327.1	0.0	49	-1	0	19	25	3	13.20	5.02	6.1	6	6	6	3
Summary	46.7	34.9	40.8	8742.6	4.7	76	-1	0	36	146	3	97.16	5.02	92.6	19	126	52	25

U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data, and Information Service

Monthly Climatological Summary (2002)

National Climatic Data Center
Federal Building
151 Patton Avenue
Asheville, North Carolina 28801
www.ncdc.noaa.gov

Station: SEWARD AIRPORT, AK US

GHCND:USW00026438
Elev: 23 ft. Lat: 60.128° N Lon: 149.417° W

Date	Temperature (°F)											Precipitation (in.)						
Elem->	MMXT	MMNT	MNTM	HTDD	CLDD	EMXT	EMNT	DT90	DX32	DT32	DT00	TPCP	EMXP	TSNW	MXSD	DP01	DP05	DP10
Month	Mean Max.	Mean Min.	Mean	Heating Degree Days	Cooling Degree Days	Highest	Lowest	Number Of Days				Total	Greatest Observed	Snow, Sleet, Hail		Number Of Days		
								Max>=90°	Max<=32°	Min<=32°	Min<=0°			Total Fall	Max Depth	>=.10	>=.50	>=1.0
1	34.5	25.9	30.2	1078.0	0.0	43	4	0	9	23	0	12.26	3.08	7.1	4	18	6	4
2	34.7	24.1	29.5	993.8	0.0	42	7	0	6	26	0	9.18	1.63	40.4	24	17	7	3
3	36.0	22.6	29.3	1105.6	0.0	43	9	0	7	28	0	1.71	0.76	6.5	18	4	1	0
4	43.3	27.9	35.6	881.3	0.0	56	15	0	1	22	0	0.98	0.42	0.0	7	3	0	0
5	55.2	39.7	47.5	541.3	0.0	72	32	0	0	1	0	1.08	0.28	0.0	0	5	0	0
6	67.0	45.5	51.3	413.8	0.7	78	41	0	0	0	0	2.26	0.74	0.0	0	6	2	0
7	62.2	50.0	56.1	276.5	1.8	83	44	0	0	0	0	2.03	0.82	0.0	0	5	1	0
8	61.0	50.0	55.6	292.7	0.0	74	41	0	0	0	0	5.10	0.80	0.0	0	11	5	0
9	55.4	44.4	49.8	452.2	0.0	69	32	0	0	1	0	12.38	2.75	0.0	0	14	9	4
10	49.3	39.6	44.4	636.7	0.0	54	31	0	0	3	0	22.19	3.68	0.0	0	18	14	9
11	43.5	36.5	39.9	748.3	0.0	51	27	0	0	5	0	24.42	4.03	0.0	0	23	14	11
12	35.2	27.9	31.6	1034.6	0.0	49	8	0	10	20	0	9.10	2.52	14.8	9	13	5	2
Summary	47.3	36.2	41.7	8454.8	2.3	83	4	0	33	129	0	102.69	4.03	68.8	24	137	64	33

U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data, and Information Service

Monthly Climatological Summary (2003)

National Climatic Data Center
Federal Building
151 Patton Avenue
Asheville, North Carolina 28801
www.ncdc.noaa.gov

Station: SEWARD AIRPORT, AK US

GHCND:USW00026438
Elev: 23 ft. Lat: 60.128° N Lon: 149.417° W

Date	Temperature (°F)											Precipitation (in.)						
Elem->	MMXT	MMNT	MNTM	HTDD	CLDD	EMXT	EMNT	DT90	DX32	DT32	DT00	TPCP	EMXP	TSNW	MXSD	DP01	DP05	DP10
Month	Mean Max.	Mean Min.	Mean	Heating Degree Days	Cooling Degree Days	Highest	Lowest	Number Of Days				Total	Greatest Observed	Snow, Sleet, Hail		Number Of Days		
								Max>=90°	Max<=32°	Min<=32°	Min<=0°			Total Fall	Max Depth	>=.10	>=.50	>=1.0
1	37.2	26.6	32.0	1022.9	0.0	50	3	0	6	20	0	5.43	1.10	1.0	6	12	4	1
2	39.0	31.8	35.4	828.5	0.0	46	19	0	2	12	0	14.91	3.90	7.0	5	13	8	4
3	38.8	24.3	31.5	1003.5	0.0	77	3	0	6	28	0	2.32	1.39			4	1	1
4	48.6	34.5	41.5	703.6	0.0	68	21	0	0	7	0	2.93	1.10	0.0	3	6	2	1
5	54.0	39.4	46.6	550.6	0.0	64	33	0	0	0	0	4.46	1.81	0.0	0	5	2	2
6	57.2	45.1	51.3	396.0	0.0	76	40	0	0	0	0	2.50	0.83	0.0	0	7	1	0
7	63.9	52.9	58.3	216.7	14.8	82	44	0	0	0	0	2.02	0.85	0.0	0	6	1	0
8	62.1	50.4	56.3	276.6	8.1	81	42	0	0	0	0	10.43	1.73	0.0	0	14	10	3
9	56.7	41.9	49.3	469.1	0.0	68	33	0	0	0	0	7.36	3.21	0.0	0	7	5	3
10	48.4	38.7	43.5	643.9	0.0	60	29	0	0	4	0	11.36	1.57	0.0	0	17	8	6
11	33.1	25.0	29.1	1076.0	0.0	46	12	0	12	21	0	3.73	0.94	13.1	12	9	1	0
12	32.0	22.3	27.1	1133.8	0.0	41	4	0	12	27	0	12.81	4.25	47.3	22	14	5	3
Summary	47.6	36.1	41.8	8325.2	22.9	82	3	0	39	119	0	80.24	4.25	68.4	22	114	48	24

U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data, and Information Service

Monthly Climatological Summary (2004)

National Climatic Data Center
Federal Building
151 Patton Avenue
Asheville, North Carolina 28801
www.ncdc.noaa.gov

Station: SEWARD AIRPORT, AK US

GHCND:USW00026438
Elev: 23 ft. Lat: 60.128° N Lon: 149.417° W

Data	Temperature (°F)											Precipitation (in.)						
Elem->	MMXT	MMNT	MNTM	HTDD	CLDD	EMXT	EMNT	DT90	DX32	DT32	DT00	TPCP	EMXP	TSNW	MXSD	DP01	DP05	DP10
Month	Mean Max.	Mean Min.	Mean	Heating Degree Days	Cooling Degree Days	Highest	Lowest	Number Of Days				Total	Greatest Observed	Snow, Sleet, Hail		Number Of Days		
								Max>=90°	Max<=32°	Min<=32°	Min<=0°			Total Fall	Max Depth	>=.10	>=.50	>=1.0
1	27.3	14.9	21.0	1380.6	0.0	44	-4	0	22	29	4	3.33	1.10	24.0	21	7	2	1
2	36.5	29.3	33.8	902.2	0.0	46	13	0	2	21	0	10.74	2.63	8.5	23	12	9	3
3	35.8	24.3	29.8	1086.8	0.0	48	10	0	8	27	0	5.02	1.50	9.5	16	10	3	1
4	45.1	32.7	39.0	780.1	0.0	59	10	0	0	14	0	11.74	5.45	0.5	11	12	5	2
5	57.6	42.6	50.2	458.3	0.0	83	35	0	0	0	0	1.87	0.54	0.0	0	4	2	0
6	61.2	47.8	54.5	312.6	0.0	75	43	0	0	0	0	4.64	2.23	0.0	0	3	2	2
7	64.8	53.1	59.0	214.0	27.4	85	44	0	0	0	0	4.43	1.25	0.0	0	7	3	1
8	68.2	53.1	60.6	152.6	17.8	80	45	0	0	0	0	1.51	0.48	0.0	0	5	0	0
9	54.9	42.3	48.6	492.5	0.0	63	33	0	0	0	0	7.68	1.93	0.0	0	9	6	3
10	46.8	37.4	42.1	707.9	0.0	54	28	0	0	6	0	11.41	2.71	0.0	0	11	9	5
11	37.4	26.8	32.0	986.6	0.0	45	10	0	4	28	0	13.67	3.11	14.0		14	8	4
12	34.3	24.1	29.1	1074.8	0.0	43	12	0	9	27	0	9.39	1.46	25.0	15	14	8	4
Summary	47.6	35.7	41.6	8529.4	45.2	85	-4	0	45	150	4	85.33	5.45	81.5	23	108	56	26

PLANNING COMMISSION NOVEMBER 7, 2016

U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data, and Information Service

Monthly Climatological Summary (2005)

National Climatic Data Center
Federal Building
151 Patton Avenue
Asheville, North Carolina 28801
www.ncdc.noaa.gov

Station: SEWARD AIRPORT, AK US

GHCND:USW00026438
Elev: 23 ft. Lat: 60.128° N Lon: 149.417° W

Date	Temperature (°F)											Precipitation (in.)						
Elem->	MMXT	MMNT	MNTM	HTDD	CLDD	EMXT	EMNT	DT90	DX32	DT32	DT00	TPCP	EMXP	TSNW	MXSD	DP01	DP05	DP10
Month	Mean Max.	Mean Min.	Mean	Heating Degree Days	Cooling Degree Days	Highest	Lowest	Number Of Days				Total	Greatest Observed	Snow, Sleet, Hail		Number Of Days		
								Max>=90°	Max<=32°	Min<=32°	Min<=0°			Total Fall	Max Depth	>=.10	>=.50	>=1.0
1	35.6	24.6	30.2	1076.9	0.0	55	3	0	10	21	0	5.82	1.94	6.5	8	7	4	2
2	34.3	24.1	29.1	1002.1	0.0	43	3	0	8	24	0	5.24	1.12	14.5	9	10	6	1
3	41.4	29.5	35.4	916.6	0.0	50	19	0	0	22	0	4.93	1.21	7.0	7	8	4	1
4	49.5	34.2	41.7	695.2	0.0	74	22	0	0	10	0	6.55	1.74	0.0	0	8	4	3
5	55.9	40.6	48.2	517.1	0.0	67	31	0	0	2	0	2.75	0.57			10	1	0
6	62.1	48.2	55.0	296.5	0.0	73	40	0	0	0	0	1.63	0.50	0.0	0	4	1	0
7	64.6	51.6	58.1	209.7	0.0	73	47	0	0	0	0	2.38	1.05	0.0	0	7	1	1
8	64.4	51.1	57.7	224.3	1.6	80	43	0	0	0	0	2.77	0.71			6	2	0
9	59.2	45.1	52.2	346.0	0.0	69	34	0	0	0	0	6.98	1.18			13	7	1
10	45.7	35.1	40.3	762.1	0.0	52	24	0	0	11	0	5.58	1.87			9	5	1
11	30.6	22.6	26.6	1151.3	0.0	44	14	0	18	27	0	2.10	1.35			3	1	1
12	38.8	30.6	34.7	939.2	0.0	49	11	0	5	12	0	11.03	2.44	0.0	0	10	6	3
Summary	48.5	36.4	42.4	8137.0	1.6	80	3	0	41	129	0	57.76	2.44	28.0	9	103	44	14

PLANNING COMMISSION NOVEMBER 7, 2016

U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data, and Information Service

Monthly Climatological Summary (2006)

National Climatic Data Center
Federal Building
151 Patton Avenue
Asheville, North Carolina 28801
www.ncdc.noaa.gov

3/22/2014

Station: SEWARD AIRPORT, AK US

GHCND:USW00026439
Elev: 23 ft. Lat: 60.128° N Lon: 149.417° W

Date	Temperature (°F)											Precipitation (in.)						
Elem->	MMXT	MMNT	MNTM	HTDD	CLDD	EMXT	EMNT	DT90	DX32	DT32	DT00	TPCP	EMXP	TSNW	MXSD	DP01	DP05	DP10
Month	Mean Max.	Mean Min.	Mean	Heating Degree Days	Cooling Degree Days	Highest	Lowest	Number Of Days				Total	Greatest Observed	Snow, Sleet, Hail		Number Of Days		
								Max>=90°	Max<=32°	Min<=32°	Min<=0°			Total Fall	Max Depth	>=.10	>=.50	>=1.0
1	28.1	16.5	21.4	1306.2	0.0	42	-4	0	19	28	5	2.37	0.91	13.2	15	7	1	0
2	34.2	23.2	28.8	1013.8	0.0	42	4	0	9	22	0	8.71	2.33	24.0	16	10	6	3
3	36.7	23.4	30.0	1082.7	0.0	47	9	0	11	29	0	2.22	0.39	10.1	11	3	3	0
4	43.7	31.1	37.4	826.7	0.0	51	23	0	0	18	0	3.99	0.91	13.9	5	9	2	0
5	54.5	40.3	47.3	547.0	0.5	76	32	0	0	1	0	1.31	0.36	0.0	0	6	0	0
6	58.8	46.6	52.7	366.5	0.0	70	41	0	0	0	0	3.78	1.15	0.0	0	7	4	1
7	60.1	48.6	54.3	329.4	0.0	76	43	0	0	0	0	2.07	0.49	0.0	0	5	0	0
8	59.7	49.6	54.7	318.1	0.0	78	45	0	0	0	0	6.90	1.10	0.0	0	14	5	2
9	55.2	43.5	49.5	485.7	0.0	66	38	0	0	0	0	10.95	1.96	0.0	0	16	8	5
10	45.7	36.0	40.8	745.6	0.0	56	28	0	1	11	0	22.16	5.32	1.0	1	15	13	9
11	26.1	14.4	20.3	1339.4	0.0	39	5	0	23	30	0	0.58	0.53	6.0	4	1	1	0
12	34.9	25.9	30.4	1037.2	0.0	44	11	0	8	23	0	9.52	2.08	20.5	15	12	7	5
Summary	44.6	33.3	39.0	9380.3	0.5	78	-4	0	71	162	5	74.56	5.32	85.7	15	105	50	25

U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data, and Information Service

Monthly Climatological Summary (2007)

National Climatic Data Center
Federal Building
151 Patton Avenue
Asheville, North Carolina 28801
www.ncdc.noaa.gov

Station: SEWARD AIRPORT, AK US

GHCND:USW00026438
Elev: 23 ft. Lat: 60.128° N Lon: 149.417° W

Date	Temperature (°F)											Precipitation (in.)						
Elem->	MMXT	MMNT	MNTM	HTDD	CLDD	EMXT	EMNT	DT90	DX32	DT32	DT00	TPCP	EMXP	TSNW	MXSD	DP01	DP05	DP10
Month	Mean Max.	Mean Min.	Mean	Heating Degree Days	Cooling Degree Days	Highest	Lowest	Number Of Days				Total	Greatest Observed	Snow, Sleet, Hail		Number Of Days		
								Max>=90°	Max<=32°	Min<=32°	Min<=0°			Total Fall	Max Depth	>=.10	>=.50	>=1.0
1	28.4	18.5	23.4	1288.6	0.0	43	-2	0	17	26	4	9.13	1.61	35.6	32	14	8	3
2	33.4	22.3	27.9	1039.7	0.0	50	6	0	12	25	0	2.60	1.50	3.3	18	3	2	1
3	26.2	13.1	20.7	1372.5	0.0	45	2	0	21	31	0	0.50	0.23	12.5	22	2	0	0
4	44.6	33.8	39.4	768.2	0.0	67	22	0	0	10	0	5.79	1.35	1.5	6	11	4	2
5	51.3	38.8	45.0	617.0	0.0	61	32	0	0	2	0	1.89	0.66	0.0	0	5	1	0
6	56.3	44.2	50.4	439.2	0.0	72	38	0	0	0	0	2.86	0.77	0.0	0	7	3	0
7	61.2	50.2	55.6	289.2	0.5	75	41	0	0	0	0	1.57	0.37	0.0	0	5	0	0
8	62.8	50.7	56.8	255.6	3.2	77	43	0	0	0	0	3.37	0.83	0.0	0	9	1	0
9	56.1	45.0	50.5	432.9	0.0	65	38	0	0	0	0	7.41	2.57	0.0	0	13	4	2
10	44.2	34.5	39.4	792.5	0.0	53	27	0	0	10	0	7.17	2.75	0.0	0	13	4	1
11	38.1	30.0	34.0	926.8	0.0	50	22	0	1	23	0	23.70	3.71	7.9	15	20	15	9
12	32.9	23.5	28.2	1136.7	0.0	42	5	0	11	30	0	7.89	1.38	18.9	12	12	7	2
Summary	44.8	33.7	39.3	9357.9	3.7	77	-2	0	62	157	4	73.90	3.71	79.7	32	114	49	20

U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data, and Information Service

Monthly Climatological Summary (2003)

National Climatic Data Center
Federal Building
151 Patton Avenue
Asheville, North Carolina 28801
www.ncdc.noaa.gov

Station: SEWARD AIRPORT, AK US

GHCND:USW00026438
Elev: 23 ft. Lat: 60.128° N Lon: 149.417° W

Date	Temperature (°F)											Precipitation (in.)						
Elem->	MMXT	MMNT	MNTM	HTDD	CLDD	EMXT	EMNT	DT90	DX32	DT32	DT00	TPCP	EMXP	TSNW	MXSD	DP01	DP05	DP10
Month	Mean Max.	Mean Min.	Mean	Heating Degree Days	Cooling Degree Days	Highest	Lowest	Number Of Days				Total	Greatest Observed	Snow, Sleet, Hail		Number Of Days		
								Max>=90°	Max<=32°	Min<=32°	Min<=0°			Total Fall	Max Depth	>=.10	>=.50	>=1.0
1	27.5	16.7	22.1	1326.6	0.0	44	1	0	22	31	0	2.27	0.36	36.3	30	10	0	0
2	29.8	16.0	23.9	1191.2	0.0	43	-8	0	13	26	3	9.10	1.69	34.9	34	13	7	4
3	37.4	27.0	32.2	1014.3	0.0	42	20	0	3	27	0	8.76	2.02	19.8	25	14	4	3
4	41.0	28.9	34.9	900.4	0.0	59	12	0	0	25	0	4.10	1.00	11.5	20	9	2	1
5	51.8	38.7	45.1	611.5	0.0	85	33	0	0	0	0	2.48	1.10	0.0	0	8	1	1
6	54.7	43.5	49.1	476.3	0.0	63	39	0	0	0	0	1.60	0.53	0.0	0	6	1	0
7	58.6	47.7	53.2	353.7	0.0	72	42	0	0	0	0	3.50	0.94	0.0	0	7	3	0
8	59.7	46.0	53.8	345.1	0.0	70	42	0	0	0	0	1.43	0.38	0.0	0	5	0	0
9	51.8	42.8	47.3	526.5	0.0	67	32	0	0	1	0	16.31	2.00	0.0	0	22	11	7
10	41.9	29.1	36.6	911.9	0.0	50	15	0	2	24	0	8.01	1.67			8	4	3
11	32.4	23.5	28.0	1108.6	0.0	42	16	0	14	25	0	3.48	0.60			10	2	0
12	28.0	16.9	23.5	1286.1	0.0	38	4	0	21	30	0	1.36	0.51			5	1	0
Summary	42.9	31.9	37.4	10056.2	0.0	72	-8	0	75	193	3	80.40	2.02	102.5	34	117	36	19

U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data, and Information Service

Monthly Climatological Summary (2009)

National Climatic Data Center
Federal Building
151 Patton Avenue
Asheville, North Carolina 28801
www.ncdc.noaa.gov

Station: SEWARD AIRPORT, AK US

GHCND:USW00026438
Elev: 23 ft. Lat: 60.128° N Lon: 149.417° W

Data	Temperature (°F)											Precipitation (in.)						
Elem->	MMXT	MMNT	MNTM	HTDD	CLDD	EMXT	EMNT	DT90	DX32	DT32	DT00	TPCP	EMXP	TSNW	MXSD	DP01	DP05	DP10
Month	Mean Max.	Mean Min.	Mean	Heating Degree Days	Cooling Degree Days	Highest	Lowest	Number Of Days				Total	Greatest Observed	Snow, Sleet, Hail		Number Of Days		
								Max>=90°	Max<=32°	Min<=32°	Min<=0°			Total Fall	Max Depth	>=.10	>=.50	>=1.0
1	26.4	16.2	21.2	1363.2	0.0	50	-4	0	19	28	5	9.70	3.68			9	5	3
2	30.0	19.2	24.6	1128.1	0.0	39	1	0	15	26	0	1.04	0.48			4	0	0
3	33.8	22.8	28.4	1134.9	0.0	42	9	0	9	31	0	1.19	0.34			5	0	0
4	43.0	29.7	36.3	857.3	0.0	53	17	0	0	22	0	1.99	0.48			6	0	0
5	53.2	38.3	45.9	592.7	0.0	68	30	0	0	2	0	1.26	0.42			3	0	0
6	67.4	43.7	50.5	490.9	0.0	76	36	0	0	0	0	1.87	0.64			4	2	0
7	62.2	49.6	55.9	291.8	14.2	85	42	0	0	0	0	9.85	1.58			12	8	6
8	58.4	47.5	53.4	356.4	0.0	68	40	0	0	0	0	3.79	0.69			9	2	0
9	54.7	42.3	48.6	492.5	0.0	66	32	0	0	3	0	3.59	0.51			12	1	0
10	47.8	38.7	43.3	672.3	0.0	57	27	0	0	6	0	7.84	1.67			14	6	3
11	32.2	23.2	27.7	1116.7	0.0	47	9	0	10	26	0	7.53	1.44			10	6	4
12	33.4	23.0	28.2	1136.0	0.0	44	1	0	14	25	0	5.69	2.31			10	3	1
Summary	44.5	32.8	38.7	9565.8	14.2	85	-4	0	66	169	5	55.24	3.58			93	33	17

U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data, and Information Service

Monthly Climatological Summary (2010)

National Climatic Data Center
Federal Building
151 Patton Avenue
Asheville, North Carolina 28801
www.ncdc.noaa.gov

Station: SEWARD AIRPORT, AK US

GHCND:USW00026438
Elev: 23 ft. Lat: 60.128° N Lon: 149.417° W

Date	Temperature (°F)											Precipitation (in.)						
Elem->	MMXT	MMNT	MNTM	HTDD	CLDD	EMXT	EMNT	DT90	DX32	DT32	DT00	TPCP	EMXP	TSNW	MXSD	DP01	DP05	DP10
Month	Mean Max.	Mean Min.	Mean	Heating Degree Days	Cooling Degree Days	Highest	Lowest	Number Of Days				Total	Greatest Observed	Snow, Sleet, Hail		Number Of Days		
								Max>=90°	Max<=32°	Min<=32°	Min<=0°			Total Fall	Max Depth	>=.10	>=.50	>=1.0
1	33.6	24.6	29.1	1108.1	0.0	47	15	0	13	30	0	1.44	0.37			7	0	0
2	37.0	26.2	31.6	932.6	0.0	50	13	0	7	25	0	7.57	2.46			10	3	2
3	37.0	25.0	31.1	1051.7	0.0	48	4	0	7	30	0	3.86	0.59			10	3	0
4	43.2	31.8	37.6	823.3	0.0	52	21	0	0	18	0	5.34	0.71			14	5	0
5	53.6	38.7	46.2	580.5	0.0	66	30	0	0	4	0	1.97	0.81			5	1	0
6	58.3	45.3	50.7	424.1	0.0	73	36	0	0	0	0	1.87	0.31			8	0	0
7	57.2	47.7	52.5	387.0	0.0	67	39	0	0	0	0	4.72	0.91			10	4	0
8	60.6	48.7	54.7	277.6	0.0	75	44	0	0	0	0	4.03	1.41			10	2	1
9	59.9	43.9	52.0	390.2	0.0	73	30	0	0	2	0	2.87	1.24			4	2	1
10	45.5	35.1	40.3	713.5	0.0	52	27	0	0	6	0	9.82	2.49			13	6	3
11	37.0	28.0	32.5	973.1	0.0	44	17	0	6	19	0	5.46	1.36			11	6	1
12	28.4	18.5	22.5	1318.1	0.0	40	8	0	26	31	0	3.57	1.85			4	3	2
Summary	45.6	34.5	40.1	9979.8	0.0	75	4	0	59	165	0	52.51	2.49			106	35	10

U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data, and Information Service

Monthly Climatological Summary (2013)

National Climatic Data Center
Federal Building
151 Patton Avenue
Asheville, North Carolina 28801
www.ncdc.noaa.gov

Station: SEWARD AIRPORT, AK US

GHCND:USW00026436
Elev: 23 ft. Lat: 60.128° N Lon: 149.417° W

Date	Temperature (°F)											Precipitation (in.)						
Elem->	MMXT	MMNT	MNTM	HTDD	CLDD	EMXT	EMNT	DT90	DX32	DT32	DT00	TPCP	EMXP	TSNW	MXSD	DP01	DP05	DP10
Month	Mean Max.	Mean Min.	Mean	Heating Degree Days	Cooling Degree Days	Highest	Lowest	Number Of Days				Total	Greatest Observed	Snow, Sleet, Hail		Number Of Days		
								Max>=90°	Max<=32°	Min<=32°	Min<=0°			Total Fall	Max Depth	>=.10	>=.50	>=1.0
1	34.6	25.7	30.0	1078.8	0.0	45	2	0	8	24	0	8.88	1.25			13	9	2
2	36.5	26.4	31.5	937.8	0.0	44	16	0	3	20	0	5.67	1.00			16	3	1
3	35.2	25.3	30.2	1075.0	0.0	42	8	0	9	26	0	6.15	1.07			10	6	1
4	40.1	27.0	33.6	961.6	0.0	51	10	0	5	24	0	0.69	0.48			2	0	0
5	51.6	36.9	44.2	640.6	0.0	80	30	0	0	6	0	5.74	1.76			10	4	1
6	64.0	47.1	55.6	289.1	10.3	88	35	0	0	0	0	1.02	0.30			4	0	0
7	65.3	52.2	58.8	207.7	15.6	81	47	0	0	0	0	5.20	2.17			5	4	3
8	60.4	50.9	55.6	266.2	0.0	69	44	0	0	0	0	10.72	2.28			16	6	3
9	55.0	45.3	50.2	443.0	0.0	65	34	0	0	0	0	11.22	1.78			14	9	4
10	48.9	38.3	43.5	661.9	0.0	58	30	0	0	3	0	16.83	2.65			21	15	5
11	36.1	27.0	31.6	1000.8	0.0	48	11	0	8	22	0	2.85	0.97			8	3	0
12	32.5	21.2	26.8	1152.4	0.0	52	4	0	13	29	0	0.96	0.41			2	0	0
Summary	46.7	35.3	41.0	8745.9	26.1	88	2	0	46	164	0	78.01	2.77			119	59	20

U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data, and Information Service

Monthly Climatological Summary (2014)

National Climatic Data Center
Federal Building
151 Patton Avenue
Asheville, North Carolina 28801
www.ncdc.noaa.gov

Station: SEWARD AIRPORT, AK US

GHCND:USW00026430
Elev: 23 ft. Lat: 60.128° N Lon: 149.417° W

Date	Temperature (°F)											Precipitation (in.)						
Elem->	MNXT	MMNT	MNTM	HTDD	CLDD	EMXT	EMNT	DT90	DX32	DT32	DT00	TPCP	EMXP	TSNW	MXSD	DP01	DP05	DP10
Month	Mean Max.	Mean Min.	Mean	Heating Degree Days	Cooling Degree Days	Highest	Lowest	Number Of Days				Total	Greatest Observed	Snow, Sleet, Hail		Number Of Days		
								Max>=90°	Max<=32°	Min<=32°	Min<=0°			Total Fall	Max Depth	>=.10	>=.50	>=1.0
1	41.2	30.4	35.8	845.5	0.0	61	13	0	2	16	0	12.39	3.31			19	10	1
Summary	41.2	30.4	35.8	845.5	0.0	61	13	0	2	16	0	12.39	3.31			19	10	1

REPORT SUBMITTAL

All work performed during the planning of this project, the interpretation of data collected, and the preparation of this report was done according to the accepted standards of the profession. Tot the best of my knowledge, all of the data presented in this report are accurate. The stated conclusions are based upon a finite amount of data available– additional data, if available, may result in modification of some of the conclusions presented herein.

Respectfully submitted,

Steve Maddox

Steve Maddox, CA PG 4814/CHG 298; AZ PG 52982

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ATTACHMENT 3

TERRASAT, INC.
4203 Iowa Drive, Anchorage, Alaska 99517 (907) 344-9370 Fax: (907) 243-7870
Geological Consulting • Environmental Restoration • Regulatory Compliance

May 5, 2014

Matanuska - Susitna Borough
Development Services
MAY 1 4 2014
Received

Shane Durand
Central Monofill Services
311 N. Sitka Street
Anchorage, Alaska 99501

RE: CMS Conditional Use Permit Response to J.A. Munter Consulting, Inc. Application Review of February 7, 2014

At your request, TERRASAT reviewed comments from the Borough's consultant. The following is a summary and response of Mr. Munter's comments.

On page 1, Mr. Munter states "there is no specific mention of having worked in Alaska", referring to Mr. Maddox. Mr. Maddox is evaluating the hydrogeology of Palmer's pro-glacial outwash, which behaves like braided river deposits. Similar deposits occur around the world and are very common in California, where Mr. Maddox lives.

Mr. Munter (pg. 1) states, "The site conceptual model in this report does not comply with Alaska guidance...". The ADEC guidance for conceptual models was never intended to be used for groundwater modeling. The ADEC conceptual site model guidance is designed to help ADEC staff in Contaminated Sites determine how to close a contaminated site. Mr. Maddox's report generally follows the American Society of Testing Materials guidance (D5447-04), Application of a Groundwater Flow Model to a Site-Specific Problem. The Maddox and Associates report clearly states their assumptions and provides the conceptual data required to verify their calculations.

On page 2, Mr. Munter confuses the issue about the definition of inert. ADEC, in their solid waste regulations 18AAC60, defines inert waste (pg. 109) to mean "solid waste that has a low potential to pollute air or water, and that does not normally attract wildlife". Their definition goes on to include construction and demolition waste. This is the correct, regulatory definition to use when regulating the proposed monofill.

Mr. Munter states, "Other materials disposed of at inert monofills will eventually rot, decay and leach constituents into groundwater". Mr. Munter fails to provide facts to support his claim.

1. He provides no scientific basis to support his statement.

2. Decision makers deserve facts and a technical basis to understand processes.
3. Agricultural Experimental Station weather station data show evaporation is greater than precipitation in the Palmer area.

Mr. Munter's statement is inconsistent with these facts.

Mr. Munter (pg. 2) summarizes a 1995 study conducted for the EPA. The report states:

> "Most of this information was compiled from the literature by the National Association of Demolition Contractors (NADC); a small number of other readily available sources were used as well. These source documents provide only snapshots of the C&D waste stream in specific locations and at specific points"

The processes at the studied sites are different from the proposed conditional use permit in Palmer. The studied sites did not show that hazardous materials were removed from the construction and demolition waste. One of the sites was in Florida, which has a subtropical climate. Another site was in Vermont with a maritime climate. The comparison of different waste deposited in different climates with different geology is inappropriate to understand the physical process that will occur in Palmer.

Mr. Munter goes on to discuss an Ohio study. Ohio has a much different climate than Palmer. More importantly, the geology is much different in Ohio, where continental glaciation dominated. In Palmer, alpine-type glaciers dominated, leaving massive sand and gravel deposits to form aquifers. These massive sand and gravel aquifers have a high capacity flow, creating significant dilution of potential leachate. In Ohio, leachate would be expected to develop, because of the higher precipitation rates and longer season of thawed ground. Ohio leachate would also be expected to have higher concentrations because the massive sand and gravel aquifers are not present.

TERRASAT investigated the uncontrolled Poppy Lane landfill near Kenai, Alaska in 1986. This landfill is in outwash sand and gravel deposit, like the Palmer site. The climate in Kenai is similar to Palmer. TERRASAT located buried drums and directed excavations to exhume and examine the drums. We found little evidence of leachate formation in the landfill. We found cardboard milk cartons that had printing and photos as clear as cartons on grocery store shelves. The landfill was dry. The leachate we found was from decayed food, which is not part of C&D waste. These factual findings show what happens in a setting similar to Palmer.

Mr. Munter (bottom of page 2) discusses stability of wastes and entrainment of leachate if water flows through the waste. Stability is important when building on top of a landfill or emplacing a landfill next to a bluff. The Palmer monofill will be covered with topsoil and planted grass. The monofill is designed to have an 18-inch thick silt cap to prevent water from running through the waste. Mr. Munter's comments about stability are not relevant for this conditional use permit.

On the top of page 3, Mr. Munter attempts to redefine hazardous waste. Both EPA and ADEC have regulations preventing disposal of hazardous waste. By trying to redefine the meaning of hazardous, Mr. Munter is attempting to confuse decision makers rather than helping them make informed decisions.

Mr. Munter states, "Building fires are known to create compounds adverse to public health". He provides no information to support his opinion. He also fails to provide a significant nexus that this type of material will be included in the monofill. More importantly, Mr. Munter fails to discuss actual conditions that are likely to occur within a monofill with an 18-inch silt cap in a semi-arid climate with more evaporation than precipitation.

Mr. Munter offers an opinion that leachate will result in measurable quantities of contamination. No facts are offered to support this statement. Since Mr. Munter failed to provide a technical basis for his opinions, TERRASAT used Mr. Munter's estimates of groundwater conditions to test his opinion and provides an evaluation of his assumptions (refer to the appendix). We found that Mr. Munter's assumptions are without merit. Our conclusions are included in the appendix, along with calculations that support our conclusions.

Mr. Munter states the seasonal high groundwater level has not been determined at the site. To his credit, he most likely has not seen the data. Water level measurements for the last 12 months show that the seasonal variations are in the one-foot range. The monofill will be at least 10 feet above the water table, eliminating saturated conditions. Capillary rise in the bottom, fine-grained sands, is less than 16 inches (Todd and Mays, 2005, pg. 48, Groundwater Hydrology, 3rd Ed.)

Mr. Munter discusses sulfate concentrations and suggests that people may get sick. We evaluated this claim with a mass balance equation using hydraulic conductivity parameters provided in Mr. Munter's review. We used his infiltration value and his aquifer thickness. These calculations show that sulfate concentrations, in his worst case, will be less than 2 mg / liter (refer to the appendix). We wonder, if Mr. Munter's figures show sulfate concentrations could increase by 2 mg / liter, why is he discussing this non-issue? Refer to the appendix for the mass balance calculations.

Mr. Munter states (pg. 3) "it would be reasonable to assume that there will be a sufficient amount of waste accumulated to generate leachate that will exceed one or more drinking water maximum contaminant levels". No evidence or facts are provided. No technical basis is provided. This is just "assumed". We tested this assumption with Mr. Munter's site parameters and found this assumption is false (refer to the mass balance calculations in the appendix).

On page 4, Mr. Munter states "is not considered reliable" referring to the following opinion of Maddox and Associates. The Maddox and Associates

statement was "it is not likely that a significant volume of liquids will pass through the monofill bottom into the water table". Weather station records show that infiltration is likely less than one inch per year. An 18-inch silt cap will provide an infiltration barrier, reducing infiltration to less than one inch per year. High evaporation rates, documented at two local weather stations, show evaporation either exceeds precipitation or is nearly the same as precipitation, shows that infiltration will be minimal, and very likely less than the range Mr. Munter provides. Using Mr. Munter's site parameters in a mass balance equation shows that Mr. Munter's statement is unreliable and wrong. We believe opinions should be supported with facts and a technical basis. Refer to the appendix for the technical evaluation of Mr. Munter's opinion.

At the bottom of page 5, Mr. Munter states "analytes do not encompass all of the water quality parameters that have been known to exceed water quality standards". He then offers total dissolved solids as an example. How is this useful to a reviewer or decision maker? This statement is like saying Mr. Munter omitted "blank", therefore all of his statements should be considered inaccurate. We evaluated each parameter Mr. Munter mentioned in his review with a mass balance equation (refer to the appendix). None of them exceeded water quality standards. Without Mr. Munter disclosing the basis for his statement, everyone should question the validity of his statement.

In a separate paper, TERRASAT evaluates the physical processes that occur in the subsurface, beginning with climate, infiltration, and leaching. Many of the potential leachates are cations or organic chemicals. These substances absorb to soil particles and carbon in the landfill. The cations form complex relations with soil particles. These processes are more abundant in organic rich soils, like a monofill with ground wood fragments. We found that if leachate were to occur in the monofill, the physical migrations would likely mitigate mobilization of contaminants before they reach ground water.

At the bottom of page 6, Mr. Munter suggests there could be parallels between monofills and septic systems. He continues to discuss separation distances. We agree. We used ADEC's mass balance model to calculate compliance with water quality standards at a separation of 50 feet from the proposed monofill. Each analyte tested showed that compliance would be achieved within 50 feet of the monofill (results are presented in a separate paper). ADEC's standard is 500 feet of separation for a landfill to a Class A water well.

Mr. Munter discusses precipitation and infiltration on page 8. He bases infiltration on the amount of precipitation. Mr. Munter is incorrect because infiltration is a function of precipitation, evaporation, evapotranspiration, vegetation inception, root uptake, soil type, vegetation type, vegetation cover or density and soil type. Infiltration is also a function of antecedent soil moisture and runoff. Ignoring these physical processes in the Palmer area and basing infiltration on one parameter is just plain wrong.

On page 7, Mr. Munter states the final cap materials for this monofill will be local sand and gravel. Engineers from EMI designed an 18-inch silt cap to cover the monofill, overlain with 6 inches of topsoil. Maddox and Associate's statement is correct and Mr. Munter's statement is factually incorrect.

The last paragraph of page 7 discusses Darcy's law and makes assumptions about saturated hydraulic conductivity and 5 inches of water passing through the monofill. Darcy's law applies to saturated flow and it is inappropriately applied here. The monofill and its cap will be in an unsaturated condition, called the vadose zone or unsaturated zone, which is above the water table. TERRASAT describes the process of infiltration in a separate paper, along with calculations using the Green-Amp equation, developed for unsaturated flow. Mr. Munter's five inches of infiltration is unrealistic to expect, based on applying an 18-inch thick silt cap for a cover and having an evaporation rate that is higher than the precipitation rate. Mr. Munter's assumptions are inconsistent with the facts and he inappropriately applies Darcy's law to describe unsaturated flow.

At the bottom of page 10, Mr. Munter states the conceptual model of Maddox and Associates does not support their conclusion. Mr. Munter provides no basis for his statement. We found the conceptual model of Maddox and Associates clear and we used their conceptual model to independently determine the validity of their modeling results. While Mr. Munter disagrees with their result, he offers no basis for his disagreement and he offers no alternate conclusion.

In summary, J.A. Munter Consulting, Inc. raises concerns that have little to no merit. We tested his assumptions and found his conclusions about water quality exceedances are invalid. For many of his opinions, he offers no facts or technical basis. We believe reviewers and decision makers require facts and a technical basis to make informed decisions. We believe Mr. Munter's review, for the most part, is wrong or misleading. His review will likely frustrate decision makers who require facts and a fair evaluation.

Sincerely,

Dan Young, President of TERRASAT Inc.
Professional Hydrogeologist, Certified Professional Geologist

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Palmer Monofill -- Monofill Infiltration Calculations Using Estimates from J.A. Munter Consulting, Inc, February 12, 2014 Letter Report

Introduction

Mr. Munter provides an opinion that leachate from the proposed monofill will be above drinking water standards for sulfate. He also opines "the usefulness of the SPLP leaching test results is limited by the unusually high Limits of Quantification reported by the lab. He claims that iron concentrations could be as high as 50 mg/l. Mr. Munter (page 6) claims that arsenic concentrations could be as high as 0.250 mg/l. On page 10, he claims benzene concentrations could be as high as 80 micrograms per liter.

This calculation sheet uses Mr. Munter's estimates of groundwater flow, infiltration, and opinions about sulfate, arsenic, iron and benzene to verify if his opinions are valid.

Assumptions

Mr. Munter appears to assume that sulfate concentrations from laboratory leaching testing will have a significant deleterious impact on down-gradient water well users. Mr. Munter's estimates are provided in the input section, along with page references and comments. He further assumes that laboratory values in a saturated container with acid added equate to leachate that would originate in an unsaturated condition without the addition of acid. We disagree.

Mr. Munter further assumes that infiltration rates will range between 1 inch per year and 5 inches per year. Both of those values are tested below with sulfate. Since the higher infiltration rate produces higher final groundwater concentrations, calculations for arsenic, iron and benzene will use the higher infiltration rate.

Mr. Munter provides a background groundwater flow rate of 4,000,000 per day (pg. 11). He does not provide the basis for this value. Mr. Munter, (pg. 9) discusses a transmissivity of 100,000 sq. ft./ day for an aquifer thickness of 200 feet, concluding this equates to a hydraulic conductivity of 500 ft per day. Using Mr. Munter's K value of 500 ft/day, a thickness of 120 feet, a cross-sectional area of 1,200 ft. and a gradient of 0.008 ft/ft, the base groundwater flow would be 4,433,543 gallons per day. This higher flow rate results in lower concentrations.

Inputs

$Q_b := 4000000 \cdot \frac{gal}{day}$

Background groundwater flow, from Munter, Feb 7, 2014, pg 9, 4th paragraph

$Q_{i\_low} := 1 \cdot \frac{in}{yr} \cdot 30 \cdot acre = 814629 \ \frac{gal}{yr}$

Low infiltration rate, through monofill, from Munter, Feb 7, 2014, pg 9, 3rd paragraph

$Q_{i\_high} := 5 \cdot \frac{in}{yr} \cdot 30 \cdot acre = 4073143 \ \frac{gal}{yr}$

High infiltration rate of 5 in/yr, through monofill, from Munter, Feb 7, 2014, pg 9, 3rd paragraph. This value is much too high according to the AES climatic station, which shows that evaporation is greater than precipitation and therefore overestimates the final concentration.

$C_{SO4} := 673 \ \frac{mg}{l}$

Highest sulfate concentration from SPLP leachate test. This value is much greater than could be expected from a monofill in a semi-arid climate and the resulting moisture in the unsaturated zone and therefore greatly over estimates the final concentration (page 3, last paragraph).

$C_{arsenic} := 0.250 \cdot \frac{mg}{l}$

Arsenic concentration suggested by Munter, Feb 7, 2014, pg 6, first paragraph.

$C_{iron} := 0.050 \cdot \frac{mg}{l}$ Iron concentration suggested by Munter, Feb 7, 2014, pg 5, last paragraph.

$C_{benzene} := 0.08 \cdot \frac{mg}{l}$ Benzene concentration suggested by Munter, Feb 7, 2014, pg 10, 3rd paragraph (80 micrograms/ liter=0.08 mg/l).

Analysis

$Sulfate_{low\_i} := \frac{Q_{i\_low} \cdot C_{SO4}}{Q_b + Q_{i\_low}}$ Final sulfate concentration with one inch of infiltration per year. This is a basic mass balance equation.

$Sulfate_{high\_i} := \frac{Q_{i\_high} \cdot C_{SO4}}{Q_b + Q_{i\_high}}$ Final sulfate concentration with five inches of infiltration per year. MCL= 250 mg/l

$Arsenic_{high\_i} := \frac{Q_{i\_high} \cdot C_{arsenic}}{Q_b + Q_{i\_high}}$ Final concentration for arsenic with 5 inches of infiltration per year. Compliance level is 0.010 mg/l.

$Iron_{high\_i} := \frac{Q_{i\_high} \cdot C_{iron}}{Q_b + Q_{i\_high}}$ Final concentration for iron with 5 inches of infiltration per year.

$Benzene_{high\_i} := \frac{Q_{i\_high} \cdot C_{benzene}}{Q_b + Q_{i\_high}}$ Final concentration for benzene with 5 inches of infiltration per year.

Results

$Sulfate_{low\_i} = 0.375 \frac{mg}{l}$ Compliance level is 250 mg/l

$Sulfate_{high\_i} = 1.871 \frac{mg}{l}$ Compliance level is 250 mg/l

$Arsenic_{high\_i} = 0.0007 \frac{mg}{l}$ Compliance level is 0.010 mg/l

$Iron_{high\_i} = 0.00014 \frac{mg}{l}$ Compliance level is 0.3 mg/l

$Benzene_{high\_i} = 0.00022 \frac{mg}{l}$ Compliance level is 0.005 mg/l

Conclusions

Mr. Munter's opinions about groundwater contamination are invalid at the proposed Palmer monofill site. Results from mass balance calculations, using Mr. Munter's aquifer properties, show that groundwater will not be significantly impacted.

Mr. Munter's opinions about inappropriate LOQ's are tested and the results show that his opinions are meaningless. As an example: If iron was present at the LOQ level, the level in the groundwater would be 1/ 2,143 of the compliance level.

Mr. Munter's opinions about sulfate leachate impacting drinking water are invalid. The highest calculated value of 1.87 mg/l should be lower because Mr. Munter underestimated groundwater flow and overestimated sulfate leaching. A more realistic sulfate concentration, using a leachate concentration of 200 mg/l and background base flow of 4,433,543 gal/day would result in a concentration of 0.1 mg/l. The deleterious effect of such a low concentration using Mr. Munter's assumptions (either 1.87 or 0.5 mg/l) is insignificant to human health or the environment. The existing background level is 47 mg/l and a compliance level of 250 mg/l.

The results of the above calculations show that the contamination issues raised by Mr. Munter are not based on fact or sound science.

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TERRASAT, INC.
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Geological Consulting • Environmental Restoration • Regulatory Compliance

May 12, 2014

Shane Durand
Central Monofill Services
311 N. Sitka Street
Anchorage, Alaska 99501

RE: CMS Conditional Use Permit Vadose Zone and Groundwater Modeling Results

At your request, TERRASAT evaluated infiltration processes and potential leachate fate and transport through the proposed monofill at your Palmer property. We extended the leachate model to include groundwater migration to the property boundary, fifty feet down gradient of the proposed monofill.

Introduction

The purpose and goal of this investigation and modeling is to allow decision makers an opportunity to understand the physical processes that occur from infiltration into topsoil, silt caps, and into the proposed monofill. Three models are presented to describe the physical infiltration processes. The first model is a conceptual model that follows ASTM Standard D5447-04 (2010). The purpose of the conceptual model is to illustrate some of the physical processes that occur, as well as to show model inputs. In this case, the ASTM standard is much more appropriate for a conceptual model than using the ADEC model that is designed for closing out contaminated sites.

The second model predicts how infiltration migrates through various layers of the proposed monofill. This model supports the conceptual model and shows decision-makers where water flows and how it flows. This model is commonly used to evaluate infiltration and to determine stormwater runoff. The Green-Amp equation, developed in 1911, provides an understanding of the infiltration process.

The third model is an analytical mass balance model based on ADEC's leach field model for nitrate evaluation. This model is used to predict nitrate concentrations, in a steady-state environment, down gradient at a receptor. ADEC uses this mass balance model to permit leach fields as well as to protect down gradient drinking water users. We use this model to predict the potential

fate of contaminants that could exist within the proposed monofill. Limitations of this model are discussed elsewhere in this report in the limitations section.

Model functions

The conceptual model is used to visually explain infiltration and migration routes and processes. Model inputs are provided to understand the analytical and mass balance model.

The Green-Amp equation is used to show infiltration rates through the protective silt cap and into the first layer of the monofill. Infiltration rates vary depending on the soil properties. The upper layers of the conceptual model show the results of the Green-Amp modeling. Results of this model also explain why minimal leaching is expected from the monofill.

The mass balance model predicts long-term steady-state results at a compliance point or receptor. In this case, the compliance point or receptor is the down gradient property boundary. Analytes, or potential pollutants, were identified earlier in a SPLP laboratory leaching procedure. Two potential contaminants of concern were identified, one being sulfate and the other is manganese. Additional analytes that were below the detection limit are modeled, using an assumed concentration because no evidence exists to demonstrate that these concentrations exist. The assumed concentration is the Limit of Quantification value from the SPLP leachate testing. Results of this model, being conservative, show the maximum concentrations down gradient at the property boundary. The results predict the likelihood that analytes will comply with ADEC's drinking water standards.

General setting

The general setting for the proposed monofill is within the confines of a former gravel extraction site. The design requires a minimum of 10 feet of soil separating the monofill from the existing water table. Existing soil consists of primarily a well-drained sand. If fill is required, on-site soil material will be used such as a well-drained sand or possibly silty sand.

Seven monitoring wells were installed previously at the site. Groundwater levels were measured in July 2013 and at other times during the last 12 months. The water table generally fluctuates less than one foot. The general gradient trends south by southwest, with a gradient of 0.008 feet per feet, measured in July 2013. This groundwater gradient corresponds with the April 30, 2013 water table gradient of 0.006. The unconfined aquifer that underlies the proposed monofill consists of sand and gravel with a relatively high hydraulic conductivity. The sand and gravel deposits are the result of a previous glacier, with the site being at the terminus of a glacier. Photo interpretation shows crevasse fills from the terminus of a glacier, and evidence of massive pro-glacial runoff creating gravel fluvial deposits down gradient. Water is supplied to this aquifer primarily by infiltration from the Matanuska River.

Conceptual model

Climatic Data

The Palmer Alaska Experiment Station summarizes climatic data from 1982 through 2012. They report an average annual total precipitation of 15.94 inches and a yearly total evaporation of 18.34 inches. These measurements suggest that infiltration is -2.4 inches per year. Another way of interpreting this data is that soil infiltration does not occur.

The Palmer Job Corp has precipitation data for the periods of 1993 to 1997 and 2004 to 2012. The average precipitation for this 14-year set of data is 15.63 inches per year. This average is very close to the 15.94-inch average at the Alaska Experimental Station. The Palmer Job Corp measured evaporation rates for 1993 to 1997. The Palmer Job Corp average yearly total evaporation rate was 15.57 inches, suggesting soil infiltration could be 0.06 inches per year.

In summary, existing records suggest infiltration is minimal or non-existent. The processes of water infiltration are discussed below.

Physical soil processes

Horton and Jury, 2004, (pg. 102) describe water infiltration mass balance processes as precipitation enters topsoil. Central Monofill Services already designed a monofill cover with an 18-inch thick silt cap that is overlain with 6-inches of topsoil and planted with grass. The first process that occurs during a rainfall event is the vegetation incepts some or all of the rainfall. Rainfall in excess of inception reaches the soil and begins to infiltrate.

We assume the topsoil will be a mixture of silt, sand, organics and clay. We assume this topsoil has the texture and properties of a loam, which is a mixture of the above-mentioned materials. Sandy loam and loamy sand have a slightly lower effective porosity, so our assumption is reasonable to model infiltration into the topsoil. A loam topsoil is likely to have dual porosity. The first type of porosity is the void space between the soil particles. The second type of porosity is root cavities, insect burrows, worm burrows and other cavities left by micro-arthropods. Textbook values for total porosity of loam average 0.463. Since some of the voids are not connected, the average effective porosity is 0.434 (Todd and Mays, 2005, pg. 138). The effective porosity matches our modeling with RETC software, developed by M.Th. van Genuchten and others, 1991, for the EPA. The purpose of RETC is to simulate additional soil properties and develop a soil-water retention curve.

As water infiltrates into these voids, some of the voids fill up becoming matric water and some of the voids have trapped air and prevent infiltration into the voids. Matric water remains available for plant root uptake and later evaporation and transpiration. Water in excess of the matric water storage and inception process is taken up by plant roots, with some of the water being evaporated by

the plants (evapotranspiration) and some of the water evaporates into the air. Water in excess of these processes migrates deeper into the soil.

If infiltration rates are slower than a rainfall event, the excess rainfall begins to runoff at the surface. For a mass balance, we now describe outflow. Six-inches of soil with an effective porosity of 0.434 will require 2.6 inches of precipitation infiltration to saturate the topsoil. A statistical 10-year, 24-hour storm event is likely to produce 2.5 inches of precipitation (TR-47, 1963). Larger storms will likely have significant surface runoff, restricting infiltration. A 10-year event means ten storms of this magnitude are predicted to occur within a one-hundred-year time interval.

What happens to infiltration in excess of the above processes? The excess eventually reaches the silt horizon below the topsoil. Some of the water infiltrates into the silt layer, with the remainder running off at the topsoil-silt soil interface. The saturated hydraulic conductivity of the topsoil is higher than the silt hydraulic conductivity, thus creating a preferential pathway along the top of the silt. These processes are graphically displayed in the appendix listed as Conceptual models. Please note that Theta-S (θ_s) is the saturated porosity and Theta-R (θ_r) is the residual water content of a drained soil, calculated using RETC software.

What happens during winter and spring during breakup? Winter conditions typically bring frozen soil during October and freezing soil conditions prevail until April and even early May. Because the silt cap will have small pores or voids, soil moisture will quickly seal off the voids during winter conditions. Thus, this layer becomes impermeable for at least 6 months of the year. During breakup, the upper topsoil thaws before the deeper silt. Therefore, if infiltration from snowmelt occurs, the saturated bottom layer of the topsoil will runoff, above the frozen silt, reducing or eliminating infiltration into the frozen impermeable silt. Typically, during breakup, top soil remains frozen while snow melts and runoff occurs beneath the snow but above the topsoil.

Soil properties

The first page of the conceptual model in the appendix shows soil properties of the upper two layers, the topsoil and silt cap. Soil properties measured at Terra Firma are shown on the graphical model. The topsoil properties are computed with RETC software using dual porosity fitted to the Mualem model. Mualem's equation considers the soil as two bundles of capillary tubes connected in a series (Radcliffe and Simunek, 2010, pp. 99-100). The van Genuchten retention function is commonly coupled with the model of Mualem to calculate the unsaturated hydraulic conductivity based on the effective saturation. The results were compared to text book values for confirmation of the validity of the results. (Schwartz and Zhang, 2003, pg. 140, Radcliffe and Simunek, 2010, pg. 90, and Todd and Mays, 2005, pg. 130).

Deeper soil properties are shown on the second page of the conceptual model. Saturated hydraulic conductivities (k or K_{sat}) were measured in a permeameter at the lab of Terra Firma, in Anchorage. Silt was compacted to 80% before testing. This reasonable compaction likely represents actual site conditions. The migration path is shown on the conceptual model, if infiltration occurs. Aquifer properties are discussed in the next section.

Aquifer system

Monitoring and observation wells exist up gradient and down gradient of the proposed monofill in an unconfined aquifer. Water levels from April 30, 2013 were contoured and show a groundwater gradient of 0.006 ft. per ft. migrating south-south west. Water level data from June 2013 shows a similar trend with a gradient of 0.008 ft./ft.

Six available water well logs from the area around Canoe Lake show depths to aquifers ranging from 80 to 191 feet deep. Four of these aquifers show evidence that they are confined aquifers with static water levels at the time of drilling above the top of the aquifer. We chose to represent the aquifer thickness as 57 feet thick, based on average thickness of Brailey Hydrologic Consultants, 2011, figure 4, layer 1. Data is not available to support a thicker aquifer. A thicker aquifer would result in more dilution of the final modeling results. We assume that the lateral boundaries of the unconfined aquifer are infinite, with respect to the effects of our analytical model. While the occurrence of bedrock may create a lateral boundary, the distance is great enough to ignore for the purposes of our model.

Brailey Hydrologic Consultants, 2011, reports that an aquifer test was conducted on a pond adjacent to the Palmer pit and determined that the hydraulic conductivity of the unconfined aquifer ranges between 700 and 1,000 feet per day. TERRASAT conducted modeling in 2012 and used a hydraulic conductivity of 1,400 feet per day, calibrated to a former pond breach and the rise in Canoe Lake. J.A. Munter (2014) stated the aquifer hydraulic conductivity should be 500 feet per day but withheld a basis for this value. We believe an appropriate hydraulic conductivity is more than 1,000 feet per day but we choose to use 500 feet per day for our model to avoid arguments. A value of 1,000 feet per day, more realistic, would result in significant reduction of contaminant concentrations down gradient from the proposed monofill if leachate ever reaches the aquifer.

Infiltration Modeling

Assuming water infiltrates through the topsoil and into the 18-inch thick silt cap, what processes occur and what is the likelihood that leachate will form and migrate? Flow in the silt cap is by the process of unsaturated flow, meaning the soil voids do not fully saturate. Infiltration in the unsaturated zone is commonly modeled with the Green-Amp equation, developed in 1911 (Todd and Mays, 2005, pp. 134-139 and others).

TERRASAT used the Green-Amp equation to show infiltration rates and depth *vs.* time for the silt cap and the underlying residual C&D waste material within the proposed monofill. We found nine hours are required to migrate water through the topsoil, to reach a depth of 6 inches, during a typical Alaskan rainfall event. These results are consistent with experiments done in a local garden where a series of soil tensiometers were deployed to measure soil moisture at depths of 6 inches, 12 inches and 18 inches. Results from 10 years of monitoring revealed that vegetation inception prevented rainfall from reaching 6 inches deep after a week of rainfall in the wettest time of year.

If we ignore the topsoil, and assume precipitation reaches the silt cap instantaneously, a 24-hour storm event would infiltrate 8.8 inches into the 18-inch thick silt cap. Sixty two (62) hours are required to infiltrate through the silt cap. During the 62 hours, capillary pressures in the silt are great enough to move some of that water back up to the surface of the silt, where root uptake occurs, plus evaporation and evapotranspiration. Todd and Mays, 2005, pg. 49, state that actual capillary rise in silt ranges from 3.3 feet to 6.6 feet, much greater than the thickness of the silt cap. The results of this modeling show that very little water will infiltrate through the silt cap, in the 6 months the cap is thawed.

Combining the topsoil and silt cap, 62 + 9 = 71 hours are required to infiltrate a storm event into the residual waste. During that time, evaporation, evapotranspiration, root uptake, capillary pressure and runoff events occur, reducing the amount of water available for infiltration through the silt cap. One point worth making is that infiltration, if it occurs, is episodic, in pulses, most likely at the end of summer in the wettest time of the year. This means that flow in the unsaturated zone is transient and not steady state (continuous flow).

Since some water could infiltrate into the residual waste, we use the Green-Amp equation to describe the infiltration process within a 15-foot thick residual waste layer. Results are shown in the Appendix under the Green-Amp Modeling section. The results show that infiltration would move through 15 feet of residual waste within 4.8 hours. More importantly, this is unsaturated flow. Therefore, little time is available to leach metals or organics from the residual waste. These results explain why leachate formation is minimal to non-existent in monofills that occur in arid and semi-arid regions.

Mass Balance Model from ADEC

TERRASAT presents a third modeling evaluation of leachate moving through the monofill and down gradient to the property boundary. This model is different from the Green-Amp equation in several ways. The first difference is that the mass balance simulates leachate movement along with water flow. The second difference is the mass balance assumes saturated flow through the monofill. The mass balance also includes groundwater flow.

We made several assumptions for the mass balance model and the model itself makes assumptions. We assume, for the sake of modeling, that 2 inches of precipitation can migrate through the monofill. As discussed in the conceptual model, under the climate subheading, this value is high, resulting in higher concentrations than should be expected. The Green-Amp model shows that small amounts of water can get into the residual waste, probably much less than 2 inches.

The mass-balance model assumes saturated flow, which will not occur in a well-drained soil like residual waste in a monofill. More than 240 inches of precipitation would be required to saturate the monofill, if water could not flow out of the fill. Two hundred and 40 inches of precipitation per year is unreasonable to expect, when the annual precipitation is a mere 15 inches.

The next assumption is that the monofill occupies 35 acres and is mature. This is a worst-case scenario, where the maximum amount of fill is in the ground. We also assume that the compliance point is 50 feet down gradient from the monofill. A greater distance would provide more aquifer dilution, reducing the concentration at the compliance point. We should point out that the nearest house is more than 500 feet away, in a different aquifer, and not directly down gradient. Aquifer diffusion and dispersion processes would provide significantly more dilution 500 feet away than the results we derive.

We assume that the hydraulic conductivity of the underlying aquifer is 500 feet per day. Our opinion is that the hydraulic conductivity is greater than 1,000 feet per day, evidenced by aquifer testing and by calibrated modeling. The result of using 500 feet per day will bias the results to create a higher contaminant concentration at the ultimate receptor, the property boundary. We chose this value as a concession to avoid disputing the conductivity with J.A. Munter, who stated he thinks 500 feet per day is reasonable, even though he offered no evidence.

Aquifer thickness for our modeling is 57 feet thick. This value is the average thickness of Brailey's cross section in his model. This thickness is likely realistic, based on available data. However, some existing well logs show an aquifer that is nearly 300 feet deep. A 300-foot thick aquifer would add significant amounts of dilution. We chose to use a value that we believe is representative, even if the result is a higher contaminant concentration at the property boundary.

Mass Balance Limitations

This model assumes that leachate does not react during migration, thus over estimating concentrations at the down-gradient measuring point. The model assumes aquifer dispersion is 1.5 times the aquifer thickness. This may overestimate the results or under estimate results. Unconsolidated aquifers flow in three dimensions, longitudinal, transverse and vertical. ADEC's mass balance model accounts for the dispersion by the 1.5 times aquifer thickness.

The mass balance model assumes that the leaching and resulting plume migrate at a steady state. Climatic data and the Green-Amp model show that flow is transient, rather than steady state. With steady state, the model assumes leachate migrates continuously, resulting in higher concentrations than should be expected in this setting.

The reason we chose this model, considering its unfavorable bias to elevated results, is because this is a great screening tool. If results are elevated, more complex models can be used that consider reactions of contaminants, like biodegradation, partitioning, cation exchange, degassing and chemical reaction. The ADEC uses this model to screen for worst-case scenarios when nitrate is leached into the ground, and they ignore denitrification, degassing and bioaccumulation in their screening. Therefore, we believe this model is appropriate for a screening tool.

Contaminants of concern

Sulfate and manganese had elevated concentrations from three laboratory leachate evaluations. The laboratory procedure saturates a sample for 18 hours, adds acid to the liquid, and agitates the sample. This process is intended to create leaching in an environment that is much more aggressive than a monofill. We already demonstrated that saturation will not occur within the unsaturated zone. We also demonstrated, with the Green-Amp model, that moisture is exposed to residual waste for less than 5 hours for each cell, minimizing the potential for leachate formation.

Additional potential contaminates are evaluated with the ADEC mass balance model. These potential contaminates, shown below, are evaluated because the laboratory SPLP limits of quantification were above drinking water standards. We found no evidence to believe that these analytes had measurable concentrations, let alone that they were as high as the limits of quantification. We modeled these analytes as a screening tool, to determine if they could pose a risk to drinking water at the property boundary.

Table 1, possible contaminates of concern

Analyte	Concern
Arsenic	LOQ was 0.25 micrograms per liter
Benzene	LOQ was 0.8 mg per liter
Cadmium	LOQ was 0.1 mg per liter
Chromium	LOQ was 0.2 mg per liter
Iron	LOQ was 50 mg per liter
Pentachlorophenol	LOQ was 0.61 mg per liter
Formaldehyde	Discussed separately

Results

Mass balance screening results are shown in Appendix C, Loading from Leach Field Model. With the exception of cadmium, the above analytes, when screened

at the concentrations equaling the limits of quantification from laboratory SPLP testing, show compliance with drinking water standards at the down-gradient property boundary.

Cadmium was the exception, when modeled at the LOQ concentration. This analyte increased 0.15 micrograms per liter. While this increase is minimal, we need to consider that we are assuming that cadmium concentrations exist at the level of the LOQ. This is an assumption made for the purpose of screening or modeling. The model excludes cation fixation processes, which are very high in organic soils, like residual C&D (construction and demolition) waste with wood fragments. Cadmium is likely immobile in the monofill or at least has a very low mobility (Dragun, 1988, pg. 156 and 178).

Formaldehyde was considered for modeling until we conducted research on the fate and transport of this analyte. Neither ADEC nor the EPA has standards for formaldehyde in drinking water. According to the United States National Library of Medicine's Toxicology Data Network

> "**Formaldehyde** readily biodegrades under both aerobic and anaerobic conditions in the environment (SRC). **Formaldehyde** in aqueous effluent was degraded by activated sludge and sewage in 48-72 hr(7-11). In a die-away test using water from a stagnant lake, degradation was complete in 30 and 40 hrs under aerobic and anaerobic conditions, respectively".

If formaldehyde is present in C&D residual waste, it will be in a gaseous form. That means the total mass of formaldehyde is minimal. Without water saturation in the monofill, no significant mechanism exists to transfer the gases into the moisture that occasionally will move through the landfill. Because of the rapid degradation, if formaldehyde exists, we expect it to completely degrade before it reaches the property boundary.

Sensitivity analysis

We used reasonable parameters for our mass balance model where possible. The remaining assumptions were conservative, resulting in elevated concentrations. The results show that none of the analytes are a concern at concentrations from the LOQ of the laboratory leaching procedures. Therefore, sensitivity analyses were not conducted. If we were to conduct these sensitive analyses, values that are more liberal would be used, such as a higher hydraulic conductivity and less infiltration. The results would still show that concentrations at the property boundary would be less than our screening results.

Summary and conclusions

Three models were evaluated to explain the physical processes of water infiltration into the proposed monofill. The conceptual model shows the configuration of the monofill, the parameters that control infiltration and the infiltration pathways. We learned that existing climatic records show infiltration is unlikely to occur. If some infiltration occurs, the amount will be minor and much less than the 2 inch value we modeled. Vegetation inception prevents some rain from infiltrating the first layer of top soil.

Results from the Green-Amp model show infiltration is a slow process in both the top soil and the silt cap. Many storms without evaporation are required to infiltrate small amounts of water into the ground. Some of the infiltrated water is evaporated, some is stored as matric water for later plant use, and some comes back to the top soil by capillary pressures. For any water that migrates below the silt cap, the water will move through a residual waste cell in hours, as an unsaturated flow. This means little time is available to form leachate.

ADEC's leachate screening model shows that analytes, above detection limits from leachate studies, will be in compliance with ADEC drinking water standards. The leaching testing procedure requires water saturation, the addition of acid, and agitation to generate leachate. Those processes are absent in an unsaturated monofill.

Physical processes, such as cation fixation, sorption, and biodegradation will further reduce risks of leachate migration. In conclusion, the proposed monofill appears to be protective of groundwater sources if the monofill is constructed as modeled in the conceptual model.

Sincerely,

Dan Young

Dan Young, President,
TERRASAT, Inc

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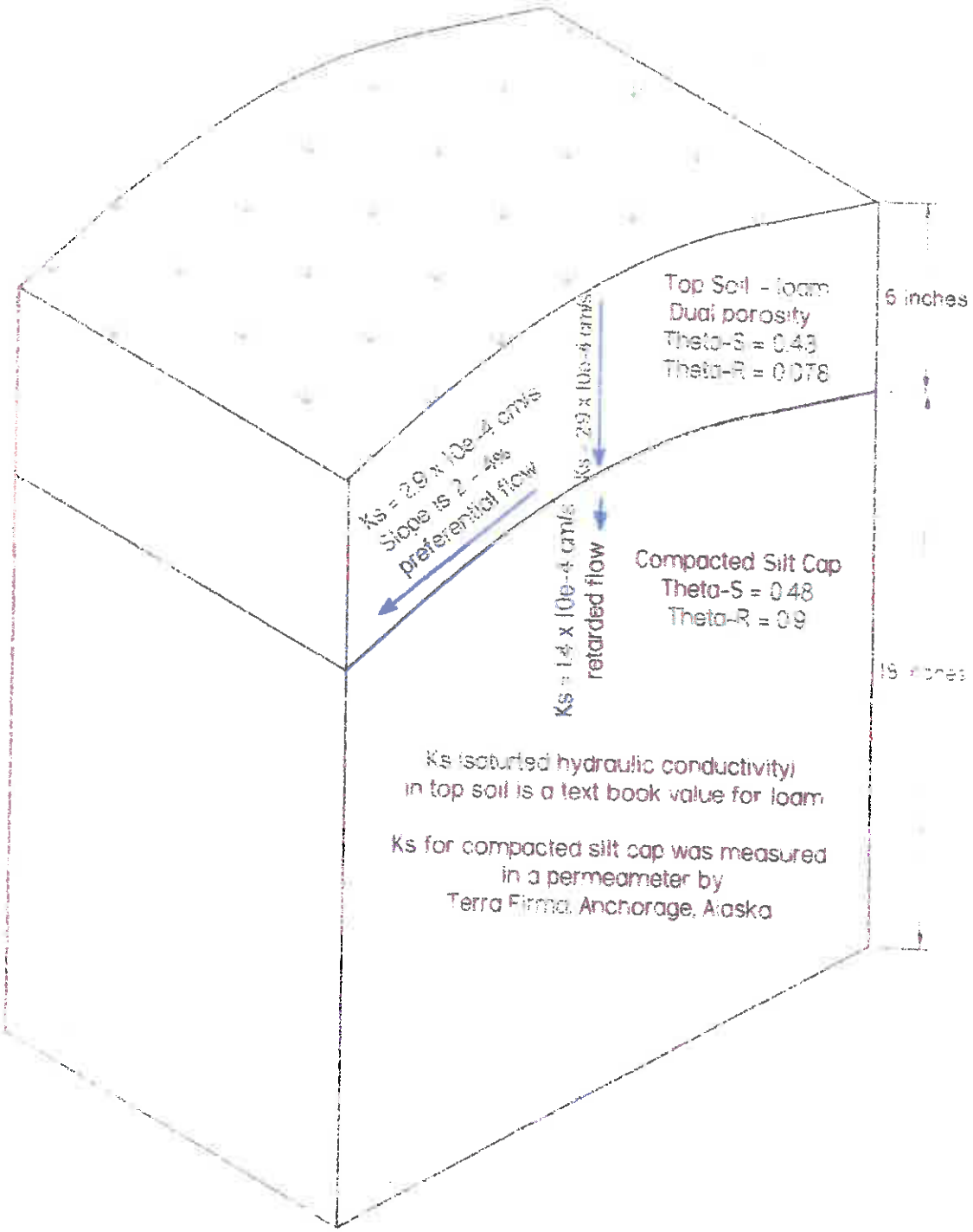
Appendices

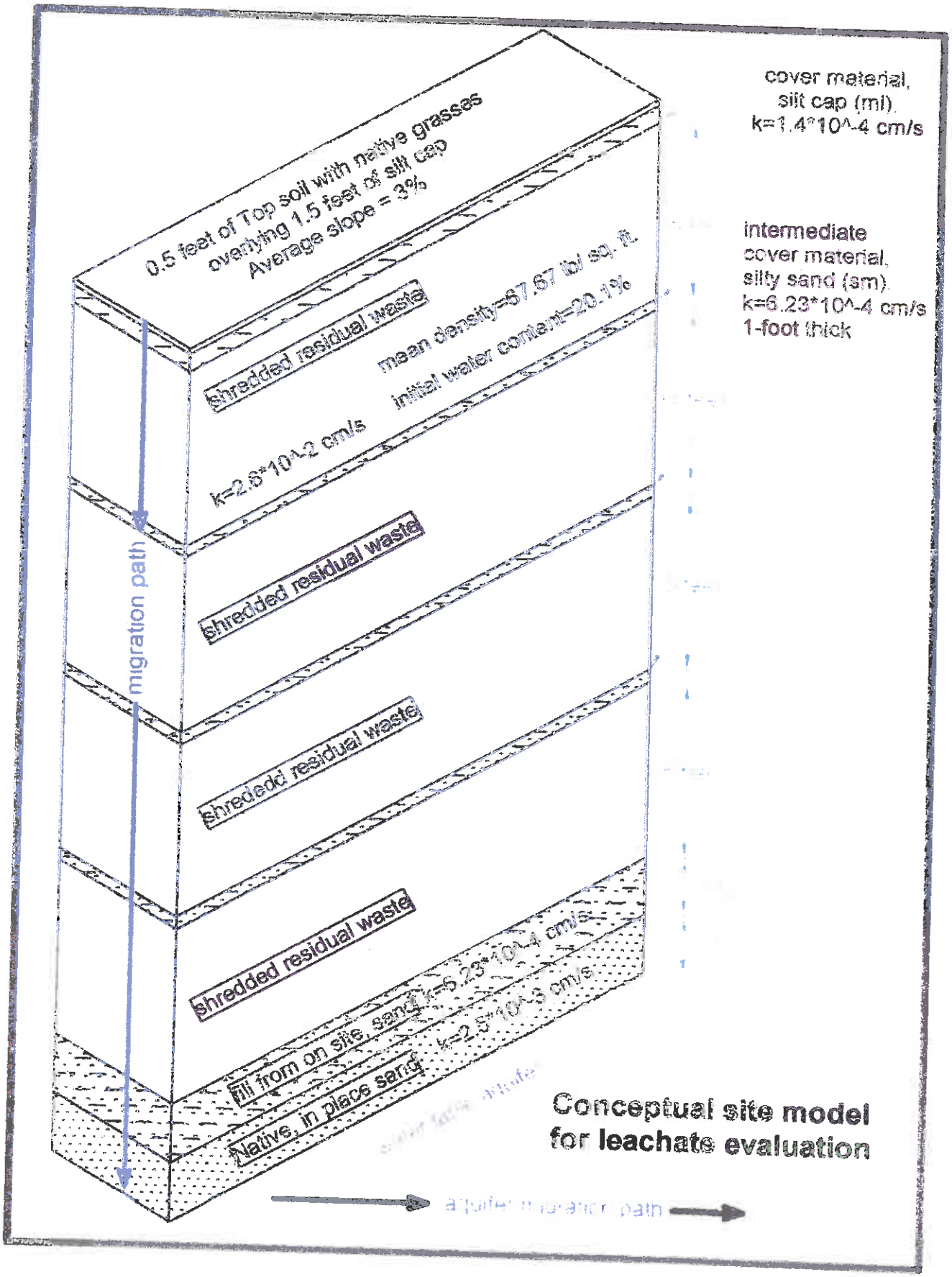
Appendix A Conceptual Model

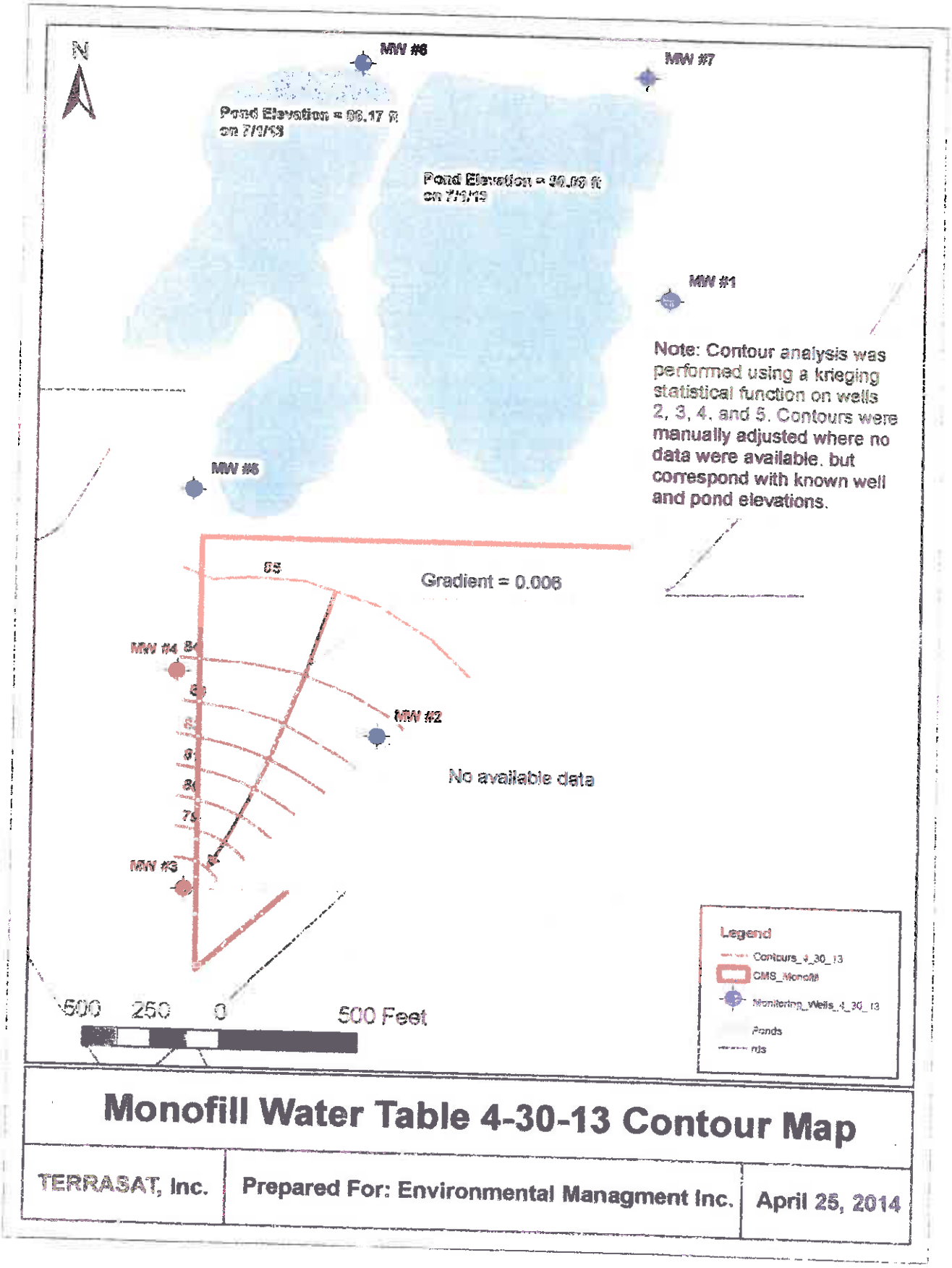
Appendix B Green-Amp Model

Appendix C Loading From Leachate Field Model

Appendix A - Conceptual Model


Top Soil - loam
Dual porosity
Theta-S = 0.43
Theta-R = 0.078
6 inches
Ks = 2.9 x 10e-4 cm/s
Slope is 2 - 4%
preferential flow
Ks = 2.9 x 10e-4 cm/s
Ks = 1.4 x 10e-4 cm/s
retarded flow
Compacted Silt Cap
Theta-S = 0.48
Theta-R = 0.9
Ks (saturted hydraulic conductivity)
in top soil is a text book value for loam
Ks for compacted silt cap was measured
in a permeameter by
Terra Firma, Anchorage, Alaska


0.5 feet of Top soil with native grasses
overlying 1.5 feet of silt cap
Average slope = 3%
cover material,
silt cap (ml),
k=1.4*10^-4 cm/s
intermediate
cover material,
silty sand (sm),
k=6.23*10^-4 cm/s
1-foot thick
shredded residual waste
mean density=67.67 lb/ sq. ft.
initial water content=20.1%
k=2.6*10^-2 cm/s
shredded residual waste
shredded residual waste
shredded residual waste
migration path
fill from on site, sand, k=6.23*10^-4 cm/s
Native, in place sand, k=2.5*10^-3 cm/s
Conceptual site model
for leachate evaluation
aquifer migration path



Monofill Water Table 4-30-13 Contour Map

TERRASAT, Inc.	Prepared For: Environmental Managment Inc.	April 25, 2014

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Appendix B – Green-Amp Model

Green-Amp Infiltration Equation
CRS Monofil 18-Inch Silt Cap

$\theta_s := .486$ Saturated moisture content, calculated with RetC, also table 3.12.1

$\psi := 16.68 \cdot cm$ wetting front soil suction head (textbook value for silt loam with K=.65 cm/hr, which equals 1.8*10^-4 cm/s)

$K := 1.4 \cdot 10^{-4} \cdot \frac{cm}{s}$ saturated hydraulic conductivity, measured by Terra Firma

$S_r := .09$ residual moisture content, calculated with RetC for typical antecedent moisture. If recent rain, this value would be higher and less infiltration would occur.

$\Delta\theta := (1 - S_r) \cdot \theta_s = 0.442$

$t := 62 \cdot hr$ duration

Solve for F, cumulative depth

$F := .3 \cdot cm$

$$F = K \cdot t + \psi \cdot \Delta\theta \cdot ln\left(1 + \frac{F}{\psi \cdot \Delta\theta}\right)$$

$cumulative_{depth} := \mathbf{find}(F) = 18.01\ in$

$$f := K \cdot \left(1 + \frac{\Delta\theta \cdot \psi}{cumulative_{depth}}\right) = 0.23\ \frac{in}{hr}$$

f is the infiltration rate

results

time (hr)	F (in)	f (in/hr)
.1	.35	1.83
.2	.51	1.34
.3	.63	1.12
.4	.73	.985
.5	.83	.90
1	1.21	.675
2	1.79	.52
5	3.10	.38
10	4.83	.32
15	6.34	.29
20	7.74	.27
24	8.81	.26
48	14.8	.24
62	18.0	.23

Source: David Todd and Larry Mays, 2005, Groundwater Hydrology, 3rd Ed., John Wiley and Sons, pps. 134-139. See also: Phillip Bedient and Wayne Huber, 1992, Hydrology and Flood Plain Analysis, 2nd. Ed., Addison Wesley Publishers, pps. 53-59. When ponding is measurable,see: Ferguson, Bruce K., 1994, Stormwater Infiltration, Lewis Publishers, pps. 99-115.

Green-Amp Infiltration Equation
CRS Monofill Residual Waste Material

$\theta := .11$ Saturated moisture content, calculated with RetC, also table 3.12.1

$\psi := 1.95 \cdot cm$ wetting front soil suction head (textbook value for sand with K=94 cm/hr, which equals 2.6*10^-2 cm/s)

$K := 2.6 \cdot 10^{-2} \cdot \frac{cm}{s}$ saturated hydraulic conductivity, measured by Terra Firma

$S_r := .201$ residual moisture content, measured by Terra Firma

$\Delta\theta := (1 - S_r) \cdot \theta = 0.328$

$t := .1 \cdot hr$ duration

Solve for F, cumulative depth

$F := .3 \cdot in$

$$F = K \cdot t + \psi \cdot \Delta\theta \cdot ln\left(1 + \frac{F}{\psi \cdot \Delta\theta}\right)$$

$cumulative_{depth} := \mathbf{find}(F) = 0.4\ ft$

results

$time$ (hr)	F (ft)	f $\left(\frac{in}{hr}\right)$
.1	0.4	41.5
.2	0.8	39.4
.3	1.1	38.7
.4	1.4	38.2
.5	1.7	38.0
1	3.3	37.4
2	6.4	37.2
4.8	15.0	37.0

$$f := K \cdot \left(1 + \frac{\Delta\theta \cdot \psi}{cumulative_{depth}}\right) = 11.5\ \frac{in}{hr}$$

f is the infiltration rate

Source: David Todd and Larry Mays, 2005, Groundwater Hydrology, 3rd Ed., John Wiley and Sons, pps. 134-139. See also: Phillip Bedient and Wayne Huber, 1992, Hydrology and Flood Plain Analysis, 2nd. Ed.. Addison Wesley Publishers, pps. 53-59. When ponding is measurable,see: Ferguson, Bruce K., 1994, Stormwater Infiltration, Lewis Publishers, pps. 99-115.

Appendix C Loading From Leachate Field Model

Arsenic Loading from Leach Field Model

Mass balance inputs for concentrations from laboratory leaching.
Calculations are based on ADEC mass balance model for septic leach fields.

$C_b := 36.1 \cdot \frac{\mu g}{l}$

Arsenic concentration in background water supply (measured from monitoring well testing)

$C_{leach} := .25 \cdot \frac{\mu g}{l}$

Hypothetically assume arsenic leaches at the LOQ Level (Level of Quantification during leachate testing). No lab data exists to validate arsenic levels would ever reach this hypothetical elevated level

$C_{infiltration} := 0 \cdot \frac{mg}{l}$

Arsenic concentration in rainfall

Leach Field design inputs

$Q_{leach} := \frac{2.0 \cdot in \cdot 35 \cdot acre}{yr} = 5204 \ \frac{gal}{day}$

Monofill effluent (2.0 in / yr infiltration) * 35 acres, total area. Two inches of infiltration is likely higher than expected (discussed in text portion of this report)

Aquifer characteristics

$k := 500 \cdot \frac{ft}{day}$

Hydraulic conductivity (based on J.A. Munter, Feb 2014, and aquifer testing by AS&G.

$b := 57 \cdot ft$

Aquifer thickness. This value is an average thickness based on modeling by Brailey Hydrologic Consultants, figure 4, layer 1, September 30, 2011. A larger thickness will create more dilution at the property boundary and lower concentrations.

$Width := \sqrt{35 \cdot acre} = 1235 \ ft$

width of existing leach field

$Area := Width \cdot b \cdot 1.5$

crossectional area of leach field * 1.5 to account for lateral dispersion and diffusion of sulfate in groundwater (following ADEC)

$Area = 105571 \ ft^2$

Cross sectional area of aquifer allowing for transverse dispersivity

$i := 0.008$

Gradient of aquifer, measured in July 2013 downgradient of ponds.

Precipitation infiltration

$i_{infiltration} := \frac{2 \cdot in}{yr} = (4.563 \cdot 10^{-4}) \ \frac{ft}{day}$

Weather records from both the Palmer Job Corps and the Alaska Extension Service show less than 1 inch of precipitation is available for infiltration. Refer to text for discussion.

$x := 50 \cdot ft$

Distance from source to receptor (property boundary)

$Area_{infiltration} := x \cdot Width$

Assumes infiltration between leach field and receptor provides infiltration to the underlying water-table aquifer

$Q_i := Area_{infiltration} \cdot i_{infiltration} = 211 \ \frac{gal}{day}$

Infiltration down gradient of monofill, between monofill and property boundary.

Results

$Q_b := k \cdot i \cdot Area = 422283 \ \frac{ft^3}{day}$

$$C_r := \frac{Q_b \cdot C_b + (Q_{leach} \cdot C_{leach}) + Q_i \cdot C_{infiltration}}{Q_b + Q_{leach} + Q_i}$$

$C_r = 36.04 \ \frac{\mu g}{l}$

Arsenic concentration at nearest receptor where $x = 50 \ ft$. The ADEC drinking water standard is 10 μg/l. Note that arsenic is already above the drinking water limit in natural concentrations and that adding more water, as infiltration, actually dilutes arsenic at the compliance point, the property boundary.

Benzene Loading from Leachfield

Mass balance inputs for concentrations from laboratory leaching. Calculations are based on ADEC mass balance model for septic leach fields.

$C_b := 0 \cdot \frac{mg}{l}$

Benzene concentration in background water suppiy (measured from monitoring well testing)

$C_{leach} := .08 \cdot \frac{mg}{l}$

Benzene Limit of Quantification for laboratory leachate proceedures. Actual on-site concentrations will be lower than this value because the soils are unsaturated and the laboratory saturated the samples for 18 hours. Benzene was not detected during all three leachate tests, so we are hypothesizing that it could be present at the lab limit of quantification only to determine what if is present.

$C_{infiltration} := 0 \cdot \frac{mg}{l}$

Benzene concentration in rainfall

Leach Field design inputs

$Q_{leach} := \frac{2 \cdot in \cdot 35 \cdot acre}{yr} = 5204 \ \frac{gal}{day}$

Monofill effluent (2in / yr infiltration) * 35 acres, total area. Two inches of infiltration is likely higher than expected (discussed in text portion of this report).

Aquifer characteristics

$k := 500 \cdot \frac{ft}{day}$

Hydraulic conductivity (based on J.A. Munter, Feb 2014 and aquifer testing by AS&G.

$b := 57 \cdot ft$

Aquifer thickness. This value is an average thickness based on modeling by Brailey Hydrologic Consultants, figure 4, layer 1, September 30, 2011. A larger thickness will create more dilution at the property boundary and lower concentrations.

$Width := \sqrt{35 \cdot acre} = 1235 \ ft$

width of existing leach field

$Area := Width \cdot b \cdot 1.5$

crossectional area of leach field * 1.5 to account for lateral dispersion and diffusion of sulfate in groundwater (following ADEC)

$Area = 105571 \ ft^2$

Cross sectional area of aquifer allowing for transverse dispersivity

$i := 0.008$

Gradient of aquifer, measured in July 2013 down gradient of the ponds

Precipitation infiltration

$i_{infiltration} := \frac{2 \cdot in}{yr} = 0 \ \frac{ft}{day}$

Weather records from both the Palmer Job Corps and the Alaska Extension Service show less than 1 inch of precipitation is available for infiltration. Refer to text for discussion

$x := 50 \cdot ft$

Distance from source to receptor (property boundary)

$Area_{infiltration} := x \cdot Width$

Assumes infiltration between leach field and receptor provides infiltration to the underlying water-table aquifer

$Q_i := Area_{infiltration} \cdot i_{infiltration} = 211 \ \frac{gal}{day}$

Infiltration down gradient of monofill, between monofill and property boundary.

Results

$Q_b := k \cdot i \cdot Area = 422283 \ \frac{ft^3}{day}$

$$C_x := \frac{Q_b \cdot C_b + (Q_{leach} \cdot C_{leach}) + Q_i \cdot C_{infiltration}}{Q_b + Q_{leach} + Q_i}$$

$C_x = 0.1 \ \frac{\mu g}{l}$

Benzene concentration at nearest receptor where $x = 50 \ ft$. The ADEC drinking water standard is 5 μg/l. The receptor is the property boundary. Partitioning processes, including adsorption and biological degredation would reduce this concentration to much less than shown.

Cadmium Loading from Leachfield

Mass balance inputs for concentrations from laboratory leaching. Calculations are based on ADEC mass balance model for septic leach fields.

$C_b := 10.9 \cdot \frac{\mu g}{l}$ Cadmium concentration in background water supply (measured from monitoring well testing)

$C_{leach} := 0.1 \cdot \frac{mg}{l}$ Hypothetically assume Cadmium leaches at the LOQ Level (Level of Quantification during leachate testing). No lab data exists to validate Cadmium levels would ever reach this hypothetical level.

$C_{infiltration} := 0 \cdot \frac{mg}{l}$ Cadmium concentration in rainfall

Leach Field design inputs

$Q_{leach} := \frac{2 \cdot in \cdot 35 \cdot acre}{yr} = 5204 \frac{gal}{day}$ Monofill effluent (2.0 in / yr infiltration) * 35 acres, total area. Two inches of infiltration is likely higher than expected (discussed in text portion of this report).

Aquifer characteristics

$k := 500 \cdot \frac{ft}{day}$ Hydraulic conductivity (based on J.A. Munter, Feb 2014, and aquifer testing by AS&G.

$b := 57 \cdot ft$ Aquifer thickness. This value is an average thickness based on modeling by Brailey Hydrologic Consultants, figure 4, layer 1, September 30, 2011. A larger thickness will create more dilution at the property boundary and lower concentrations.

$Width := \sqrt{35 \cdot acre} = 1235\ ft$ width of existing leach field

$Area := Width \cdot b \cdot 1.5$ crossectional area of leach field * 1.5 to account for lateral dispersion and diffusion of sulfate in groundwater (following ADEC)

$Area = 105571\ ft^2$ Cross sectional area of aquifer allowing for transverse dispersivity

$i := 0.008$ Gradient of aquifer, down gradient of the ponds, measured in July 2013.

Precipitation infiltration

$i_{infiltration} := \frac{2 \cdot in}{yr} = (4.563 \cdot 10^{-4}) \frac{ft}{day}$ Weather records from both the Palmer Job Corps and the Alaska Extension Service show less than 1 inch of precipitation is available for infiltration. Refer to text for discussion.

$x := 50 \cdot ft$ Distance from source to receptor (property boundary)

$Area_{infiltration} := x \cdot Width$ Assumes infiltration between leach field and receptor provides infiltration to the underlying water-table aquifer

$Q_i := Area_{infiltration} \cdot i_{infiltration} = 211 \frac{gal}{day}$ Infiltration down gradient of monofill, between monofill and property boundary

Results

$Q_h := k \cdot i \cdot Area = 422283 \frac{ft^3}{day}$

$$C_x := \frac{Q_h \cdot C_b + (Q_{leach} \cdot C_{leach}) + Q_i \cdot C_{infiltration}}{Q_h + Q_{leach} + Q_i}$$

$C_x = 11.05 \frac{\mu g}{l}$ Cadmium concentration at nearest receptor where $x = 50\ ft$. The ADEC drinking water standard is 0.005 mg/l. Note that Cadmium is already above the drinking water limit in natural concentrations. Adding a hypothetical amount of 100 micrograms per liter with inflitration increases the concentration by 0.16 micrograms per liter at the property boundary. This increase does not consider the cation fixation which reduces mobility. Cation exchange is very high in organic soils, like residual C&D material with wood fragments. Clays have a CEC rate between 5-60, where organic soils are greater than 200, meaning **cadmium is likely immobile in the monofill**. James Dragum, The Soil Chemistry of Hazardous Materials, 1988, pg 156. Cd has a low mobility (pg 178).

Chromium Loading from Leachfield

Mass balance inputs for concentrations from laboratory leaching. Calculations are based on ADEC mass balance model for septic leach fields.

$C_b := 86.9 \cdot \frac{\mu g}{l}$ Chromium concentration in background water supply (measured from monitoring well testing)

$C_{leach} := .2 \cdot \frac{mg}{l}$ Hypothetically assume Chromium leaches at the LOQ Level (Level of Quantification during leachate testing). No lab data exists to validate Chromium levels would ever reach this hypothetical level

$C_{infiltration} := 0 \cdot \frac{mg}{l}$ Chromium concentration in rainfall

Leach Field design inputs

$Q_{leach} := \frac{2.0 \cdot in \cdot 35 \cdot acre}{yr} = 5204 \ \frac{gal}{day}$ Monofill effluent (2.0 in / yr infiltration) * 35 acres. total area Two inches of infiltration is likely higher than expected (discussed in text portion of this report).

Aquifer characteristics

$k := 500 \cdot \frac{ft}{day}$ Hydraulic conductivity (based on J.A. Munter, Feb 2014 and aquifer testing by AS&G.

$b := 57 \cdot ft$ Aquifer thickness. This value is an average thickness based on modeling by Brailey Hydrologic Consultants; figure 4, layer 1, September 30, 2011. A larger thickness will create more dilution at the property boundary and lower concentrations.

$Width := \sqrt{35 \cdot acre} = 1235 \ ft$ width of existing leach field

$Area := Width \cdot b \cdot 1.5$ crossectional area of leach field * 1.5 to account for lateral dispersion and diffusion of sulfate in groundwater (following ADEC)

$Area = 105571 \ ft^2$ Cross sectional area of aquifer allowing for transverse dispersivity

$i := 0.008$ Gradient of aquifer, measured in July 2013.

Precipitation infiltration

$i_{infiltration} := \frac{2.0 \cdot in}{yr} = 0.0005 \ \frac{ft}{day}$ Weather records from both the Palmer Job Corps and the Alaska Extension Service show less than 1 inch of precipitation is available for infiltration. Refer to text for discussion.

$x := 50 \cdot ft$ Distance from source to receptor (property boundary)

$Area_{infiltration} := x \cdot Width$ Assumes infiltration between leach field and receptor provides infiltration to the underlying water-table aquifer

$Q := Area_{infiltration} \cdot i_{infiltration} = 211 \ \frac{gal}{day}$ Infiltration down gradient of monofill, between monofill and property boundary.

Results

$Q_b := k \cdot i \cdot Area = 422283 \ \frac{ft^2}{day}$

$$C_x := \frac{Q_b \cdot C_b + (Q_{leach} \cdot C_{leach}) + Q_i \cdot C_{infiltration}}{Q_b + Q_{leach} + Q_i} \qquad Zx$$

$C_x = 0.09 \ \frac{mg}{l}$ Chromium **concentration at nearest receptor** where $x = 50 \ ft$. The ADEC drinking water standard is 0.1 mg/l.

Iron Loading from Leachfield

Mass balance inputs for concentrations from laboratory leaching.
Calculations are based on ADEC mass balance model for septic leach fields.

$C_b := 76.4 \cdot \frac{mg}{l}$ Iron concentration in background water supply (measured from monitoring well testing)

$C_{leach} := 50 \cdot \frac{mg}{l}$ Hypothetically assume iron leaches at the LOQ Level (Level of Quantification during leachate testing). No lab data exists to validate iron levels would ever reach this hypothetical level

$C_{infiltration} := 0 \cdot \frac{mg}{l}$ iron concentration in rainfall

Leach Field design inputs

$Q_{leach} := \frac{2.0 \cdot in \cdot 35 \cdot acre}{yr} = 5204 \ \frac{gal}{day}$ Monofill effluent (2.0 in / yr infiltration) * 35 acres, total area. Two inches of infiltration is likely higher than expected (discussed in text portion of this report)

Aquifer characteristics

$k := 500 \cdot \frac{ft}{day}$ Hydraulic conductivity (based on J.A. Munter, Feb 2014 and aquifer testing by AS&G.

$b := 57 \cdot ft$ Aquifer thickness. This value is an average thickness based on modeling by Brailey Hydrologic Consultants, figure 4, layer 1, September 30, 2011. A larger thickness will create more dilution at the property boundary and lower concentrations.

$Width := \sqrt{35 \cdot acre} = 1235 \ ft$ width of existing leach field

$Area := Width \cdot b \cdot 1.5$ crossectional area of leach field * 1.5 to account for lateral dispersion and diffusion of sulfate in groundwater (following ADEC)

$Area = 105571 \ ft^2$ Cross sectional area of aquifer allowing for transverse dispersivity

$i := 0.008$ Gradient of aquifer, measured in July 2013, down gradient of ponds.

Precipitation infiltration

$i_{infiltration} := \frac{2 \cdot in}{yr} = (4.563 \cdot 10^{-4}) \ \frac{ft}{day}$ Weather records from both the Palmer Job Corps and the Alaska Extension Service show less than 1 inch of precipitation is available for infiltration. Refer to text for discussion.

$x := 50 \cdot ft$ Distance from source to receptor (property boundary)

$Area_{infiltration} := x \cdot Width$ Assumes infiltration between leach field and receptor provides infiltration to the underlying water-table aquifer

$Q_i := Area_{infiltration} \cdot i_{infiltration} = 211 \ \frac{gal}{day}$ Infiltration down gradient of monofill. between monofill and property boundary

Results

$Q_b := k \cdot i \cdot Area = 422283 \ \frac{ft^3}{day}$

$$C_T := \frac{Q_b \cdot C_b + (Q_{leach} \cdot C_{leach}) + Q_i \cdot C_{infiltration}}{Q_b + Q_{leach} + Q_i}$$

$C_T = 76.4 \ \frac{mg}{l}$

Iron concentration at nearest receptor where $x = 50 \ ft$. The ADEC secondary drinking water standard is 0.3 mg/l. Note that iron is already above the secondary drinking water limit in natural concentrations and that adding infiltration with a hypothetical concentration of 50 mg per liter has no increase in concentration at the property boundary.

Manganese Loading from Leach Field Model

Mass balance inputs for concentrations from laboratory leaching. Calculations are based on ADEC mass balance model for septic leach fields.

$C_b := 4386 \cdot \frac{\mu g}{l}$ Manganese concentration in background water supply (measured from monitoring well testing)

$C_{leach} := .384 \cdot \frac{mg}{l}$ Highest manganese concentration detected out of three laboratory leachate procedures. Actual on-site concentrations will be lower than this value because the soils are unsaturated, have minimal exposure to water and the laboratory saturated the samples for 18 hours

$C_{infiltration} := 0 \cdot \frac{mg}{l}$ Manganese concentration in rainfall

Leach Field design inputs

$Q_{leach} := \frac{2.0 \cdot in \cdot 35 \cdot acre}{yr} = 5204 \ \frac{gal}{day}$ Monofill effluent (2.0 in / yr infiltration) * 35 acres, total area Two inches of infiltration is likely higher than expected (discussed in text portion of this report)

Aquifer characteristics

$k := 500 \cdot \frac{ft}{day}$ Hydraulic conductivity (based on J A. Munter, Feb 2014 and aquifer testing by AS&G

$b := 57 \cdot ft$ Aquifer thickness. This value is an average thickness based on modeling by Brailey Hydrologic Consultants, figure 4, layer 1, September 30, 2011. A larger thickness will create more dilution at the property boundary and lower concentrations.

$Width := \sqrt{35 \cdot acre} = 1235 \ ft$ width of existing leach field

$Area := Width \cdot b \cdot 1.5$ crossectional area of leach field * 1.5 to account for lateral dispersion and diffusion of sulfate in groundwater (following ADEC)

$Area = 105571 \ ft^2$ Cross sectional area of aquifer allowing for transverse dispersivity

$i := 0.008$ Gradient of aquifer, measured in July 2013, downgradient of ponds.

Precipitation infiltration

$i_{infiltration} := \frac{2 \cdot in}{yr} = (4.563 \cdot 10^{-4}) \ \frac{ft}{day}$ Weather records from both the Palmer Job Corps and the Alaska Extension Service show less than 1 inch of precipitation is available for infiltration. Refer to text for discussion.

$x := 50 \cdot ft$ Distance from source to receptor (property boundary)

$Area_{infiltration} := x \cdot Width$ Assumes infiltration between leach field and receptor provides infiltration to the underlying water-table aquifer

$Q_i := Area_{infiltration} \cdot i_{infiltration} = 211 \ \frac{gal}{day}$ Infiltration down gradient of monofill, between monofill and property boundary.

Results

$Q_b := k \cdot i \cdot Area = 422283 \ \frac{ft^3}{day}$

$$C_x := \frac{Q_b \cdot C_b + (Q_{leach} \cdot C_{leach}) + Q_i \cdot C_{infiltration}}{Q_b + Q_{leach} + Q_i}$$

$C_x = 4.3791 \ \frac{mg}{l}$

Manganese concentration at nearest receptor where $x = 50 \ ft$. The ADEC drinking water standard is 0.05 mg/l. Note that manganese is already above the drinking water limit in natural concentrations and that adding infiltration actually dilutes manganese at the compliance point, the property boundary.

Sulfate Loading from Leachfield

Mass balance inputs for concentrations from laboratory leaching. Calculations are based on ADEC mass balance model for septic leach fields.

$C_b := 47.1 \cdot \frac{mg}{l}$

Sulfate concentration in background water supply (measured from monitoring well testing)

$C_{leach} := 200 \cdot \frac{mg}{l}$

Sulfate concentration below monofill (assumed). Laboratory proceedures for leaching produced concentrations as high as 673 mg/l. The process saturated the residual waste sample for 18 hours and added acid to increase the leaching. The monofil will be in an unsaturated soil, without the addition of acid. Thus, leaching is not expected For the purpoose of modeling, we assume that 200 mg/l could leach. This concentration is much higher than what is expected.

$C_{infiltration} := 0 \cdot \frac{mg}{l}$

Sulfate concentration in rainfall

Leach Field design inputs

$Q_{leach} := \frac{2 \cdot in \cdot 35 \cdot acre}{yr} = 5204 \ \frac{gal}{day}$

Monofill effluent (2.0 in / yr infiltration) * 35 acres, total area. Two inches of infiltration is likely higher than expected (discussed in text portion of this report)

Aquifer characteristics

$k := 500 \cdot \frac{ft}{day}$

Hydraulic conductivity (based on J.A. Munter, Feb 2014, and aquifer testing by AS&G.

$b := 57 \cdot ft$

Aquifer thickness. This value is an average thickness based on modeling by Brailey Hydrologic Consultants, figure 4, layer 1, September 30, 2011. A larger thickness will create more dilution at the property boundary and lower concentrations.

$Width := \sqrt{35 \cdot acre} = 1235 \ ft$

width of existing leach field

$Area := Width \cdot b \cdot 1.5$

crossectional area of leach field * 1.5 to account for lateral dispersion and diffusion of sulfate in groundwater (following ADEC)

$Area = 105571 \ ft^2$

Cross sectional area of aquifer allowing for transverse dispersivity

$i := 0.008$

Gradient of aquifer, down gradient of the ponds, measured in July 2013.

Precipitation infiltration

$i_{infiltration} := \frac{2 \cdot in}{yr} = (4.563 \cdot 10^{-4}) \ \frac{ft}{day}$

Weather records from both the Palmer Job Corps and the Alaska Extension Service show less than 1 inch of precipitation is available for infiltration. Refer to text for discussion.

$x := 50 \cdot ft$

Distance from source to receptor (property boundary)

$Area_{infiltration} := x \cdot Width$

Assumes infiltration between leach field and receptor provides infiltration to the underlying water-table aquifer

$Q_i := Area_{infiltration} \cdot i_{infiltration} = 211 \ \frac{gal}{day}$

Results

$Q_h := k \cdot i \cdot Area = 422283 \ \frac{ft^3}{day}$

$$C_x := \frac{Q_h \cdot C_b + (Q_{leach} \cdot C_{leach}) + Q_i \cdot C_{infiltration}}{Q_h + Q_{leach} + Q_i}$$

$C_x = 47.3 \ \frac{mg}{l}$

Sulfate concentration at nearest receptor where $x = 50 \ ft$. This is an increase of 0.2 mg/l over the background concentration of 47.1 mg/l. The ADCE drinking water standard is 250 mg/l.

Pentachlorophenol Loading from Leachfield

Mass balance inputs for concentrations from laboratory leaching. Calculations are based on ADEC mass balance model for septic leach fields.

$C_b := 0 \cdot \frac{mg}{l}$ — Pentachlorophenol concentration in background water supply (measured from monitoring well testing)

$C_{leach} := .61 \cdot \frac{mg}{l}$ — Pentachlorophenol Limit of Quantification for laboratory leachate proceedures. Actual on-site concentrations will be lower than this value because the soils are unsaturated and the laboratory saturated the samples for 18 hours

$C_{infiltration} := 0 \cdot \frac{mg}{l}$ — Pentachlorophenol concentration in rainfall

Leach Field design inputs

$Q_{leach} := \frac{2.0 \cdot in \cdot 35 \cdot acre}{yr} = 5204 \ \frac{gal}{day}$ — Monofill effluent (3.03 in / yr infiltration) * 35 acres, total area. Two inches of infiltration is likely higher than expected (discussed in text portion of this report).

Aquifer characteristics

$k := 500 \cdot \frac{ft}{day}$ — Hydraulic conductivity (based on J.A. Munter, Feb 2014 and aquifer testing by AS&G.

$b := 57 \cdot ft$ — Aquifer thickness. This value is an average thickness based on modeling by Bralley Hydrologic Consultants, figure 4, layer 1, September 30, 2011. A larger thickness will create more dilution at the property boundary and lower concentrations.

$Width := \sqrt{35 \cdot acre} = 1235 \ ft$ — width of existing leach field

$Area := Width \cdot b \cdot 1.5$ — crossectional area of leach field * 1.5 to account for lateral dispersion and diffusion of sulfate in groundwater (following ADEC)

$Area = 105571 \ ft^2$ — Cross sectional area of aquifer allowing for transverse dispersivity

$i := 0.008$ — Gradient of aquifer, down gradient of the ponds, measured in July 2013.

Precipitation infiltration

$i_{infiltration} := \frac{2 \cdot in}{yr} = (4.563 \cdot 10^{-4}) \ \frac{ft}{day}$ — Weather records from both the Palmer Job Corps and the Alaska Extension Service show less than 1 inch of precipitation is available for infiltration. Refer to text for discussion.

$x := 50 \cdot ft$ — Distance from source to receptor (property boundary)

$Area_{infiltration} := x \cdot Width$ — Assumes infiltration between leach field and receptor provides infiltration to the underlying water-table aquifer

$Q_i := Area_{infiltration} \cdot i_{infiltration} = 211 \ \frac{gal}{day}$ — Infiltration down gradient of monofill, between monofill and property boundary.

Results

$Q_b := k \cdot i \cdot Area = 422283 \ \frac{ft^3}{day}$

$$C_x := \frac{Q_b \cdot C_b + (Q_{leach} \cdot C_{leach}) + Q_i \cdot C_{infiltration}}{Q_b + Q_{leach} + Q_i}$$

$C_x = 1 \ \frac{\mu g}{l}$

Pentachlorophenol concentration at nearest receptor where $x = 50 \ ft$. The ADEC drinking water standard is 1 μg/l. The receptor is the property boundary. (Partitioning processes, including adsorption and biological degredation would reduce this concentration to less than shown). Therefore, if Pentachlorophenol is present at the LOQ, ADEC compliance concentrations could be exceeded, ignoring partitioning processes and biodegredation. (see next page for discussion of partitioning processes).

Partitioning of Pentachlorophenol between solid and liquid and retardation factor in groundwater

Variables:

$Conc := 1 \cdot \frac{\mu g}{L}$ Contaminant concentration, hypothetical, assumed LOQ from leaching test results, after migrating through the monofill (see previous page).

$\phi := 28\%$ Porosity (%), estimated for hydraulic conductivity of 1.4* 10 ^-2 cm/s

$Carbon := .23$ Carbon fraction (%), measured by Terra Firma

$\rho_b := .803 \cdot \frac{gm}{cm^3}$ Soil bulk density of residual waste, compacted. Terra Firma

$Vol := 1 \cdot L$ Volume (litre)

$K_{oc} := (1.115 \cdot 10^3) \frac{l}{kg}$ US EPA, 1996, Soil Screening Guidance: Technical Background Document, 2nd Edition. Page C-5, pH=6.2, which is water pH in local Palmer groundwater.

Partioning coefficient

$K_d := K_{oc} \cdot Carbon = 256.45 \frac{l}{kg}$ Liquid *concentration*

$X := K_d \cdot Conc = 2.565 \cdot 10^{-7}$ *Sorbed· soil· concentration*, mg/kg

$M_s := X \cdot Vol \cdot \rho_b = (2.059 \cdot 10^{-4})\ gm$ Mass in soil

$M_l := Conc \cdot Vol \cdot \phi = (2.8 \cdot 10^{-7})\ gm$ Mass in Liquid

$\%liquid := \frac{M_l \cdot 100}{M_s + M_l} = 0.136$ Percentage of total contaminant mass in aqueous phase

$R := 1 + \frac{\rho_b \cdot (K_d)}{\phi} = 736$ Retardation factor (this substance is slightly mobile in this environment). One molecule would require 70 years to travel 500 feet, assuming no biodegradation occurs within 70 years.

$\%liquid \cdot Conc = 0.1 \frac{\mu g}{l}$ Final concentration of Pentachlorophenol after leaching with two inches of infiltration. ADEC MCL is 1.0 $\frac{\mu g}{l}$. Actual value would be less because less infiltration is available.

sources: Kuo, Jeff, 1998, Practical Design Calculations for Groundwater and Soil Remediation, CRC Press, p. 45, and National Library of Medicine, Hazardous Substance Data Bank.

TERRASAT, Inc.

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ATTACHMENT 4

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Matanuska - Susitna Borough
Development Services
MAY 14 2014
Received

May 6, 2014

Shane Durand
Central Monofill Services
311 N. Sitka Street
Anchorage, AK 99501

Re: **Response to MSB's Information Request; CMS Conditional Use Permit (CUP)**

At your request, I have researched the issues regarding the proposed Central Monofill Services (CMS) monofill and prepared this response. There has been considerable conflicting information presented. While professionals in DEC and other jurisdictions familiar with the type of screening, recycling, and monofill proposed may concur the risks are sufficiently low, MSB staff, potentially impacted neighbors, and friends need more information to resolve apparent conflicts. I am glad you agreed to comply with their request.

To prepare this response, I reviewed the submittals, replies, comments, and rebuttals in the MSB CUP record, their referenced documents, studies of risks and management of construction and demolition (C&D) landfills, and local hydrological and soils studies, including conversations with the authors. New investigations included examining historical groundwater monitoring data for seven select local wells and correlating to precipitation and the Matanuska River, correlating leachate collection at the MSB Central Landfill with precipitation and established models, and determining the timing of recent groundwater level maxima.

Our Dumps and Landfills, Past and Future:

To envision where we're going, we should review our past:

- Until the late 60's, we threw garbage, autos, railcars, whatever, over the bluff to the Matanuska R. Sometimes we'd burn it first; no oversight, anything goes[i].
- Barney Anderson and son Dale had a local garbage pickup service and dump located on his property north of and adjacent to the proposed monofill[ii]. Owner oversight and limited access helped exclude disposals of what we now recognize as potentially hazardous waste, and regular burning limited the total volume.
- In 1976, EPA's RCRA hazardous waste regulations became law and we slowly reduced the amount we used and threw away. Increased expense of legally disposing hazardous wastes put pressure on unmonitored landfills, such as at the Butte and Big Lake.
- MSB opened the central landfill (CLF) in 1980[iii]; all waste was put in an unlined pit with moderate oversight. By the early 90's, programs were in place to collect household and conditionally exempt hazardous wastes. Individual loads at the scale house or transfer stations are rarely inspected. Downgradient monitoring wells were installed in 1993.
- Recent CLF groundwater monitoring[iv] shows several parameters statistically exceed background, mostly chlorinated solvents and fuel constituents. No concentrations currently exceed site groundwater protection standards.
- In 2004, the first lined cell at the CLF opened, with additional cells in 2008 and 2010.

- The huge costs of building and operating lined cells prompted CLF to divert inert wastes of various categories to an unlined C&D cell, which has no directly downgradient monitoring wells. The consumer characterizes each load with limited inspection by the MSB. Side streams include appliances and large metal pieces.
- Alaska Demolition opened a C&D monofill in Palmer in 2004; no liner or monitoring wells were required. Waste characterizations primarily rely on pre-demolition surveys to remove hazards, and jobsite salvage of large components is promoted.

The MSB C&D cell and lined mixed waste cells are rapidly reaching capacity; bids for planning new cells, closing existing cells, and managing leachate were solicited this year. The much larger Alaska Demolition monofill has seven years remaining. Another C&D monofill will come to the valley soon, whether at the proposed site or elsewhere. We should expect it to be a step forward, while extending the life of the CLF for disposal of mixed domestic and unsorted wastes.

The importance of intensive recycling and processing should not be underestimated. The close inspection and segregation of small portions, necessary for maximum recycling value, removes for proper disposal far more incompatible wastes than bulk handling can. This results from a combination of management policies, such as routine demolition site inspections and developing suitable recycling and disposal categories. The multiple inspection/removal processes, followed by handpicking on a conveyor line, is highly effective. It is also more flexible, enabling easy addition of segregation categories as materials, markets, and regulations change.

Shredding residue remaining after removing side streams provides structural uniformity enabling more precise and durable cell caps that can more readily shed water to percolation basins. A more stable final cover enables higher value end uses, increasing the owners' commitment.

Important features of the CMS proposal compared to older C&D monofill systems include:

- The superior ability of the recycling process to identify and segregate materials not suitable for placing in the monofill, need special treatment, or for cost recovery.
- Greater flexibility to adapt to new wastes, regulations, and market conditions.
- Processing provides more uniform and stable material, enabling enhanced runoff control during lift construction and final cap.
- Overall, the recycling and processing system lowers monofill life cycle risks and provides a more usable and valuable end product.

Impacts to Drinking Water (see Appendix 1):

The CUP application stated "*...monofill will not present a threat to groundwater...*" Such absolute statements are no more defensible than "*this landfill will generate toxic leachate that you will drink*". MSB staff needs more local evidence to sort out the conflicting claims.

The root of the controversy is the annual precipitation contribution to groundwater at the site, from which potential impacts of leachate can be calculated and mitigated. Mr. Munter stated[v]:

"There is significant annual precipitation in the Palmer area. It is sufficient to support mature deciduous and coniferous forest, hundreds if not thousands of household water supply-wells, numerous municipal and irrigation wells, non-irrigated agriculture..."

To investigate this claim and provide details of nature and quantities of groundwater recharge from precipitation, I performed the research described in Appendix 1. Summary results include:

- Elevated bedrock under the city of Palmer prevents groundwater recharge from the Matanuska R.; recharge from precipitation is inadequate to support productive wells.

- For the area south of Palmer, detailed local studies and data show inflow from the Matanuska R. is the primary source of the abundant groundwater, which flows southwest from near the airport, under the Springer Rd. area, and into the river floodplain south of the monofill site.

- A regional groundwater investigation prepared for the MSB in 1991, co-authored by Munter with no fieldwork, mistakenly showed groundwater south of Palmer flowing southeast towards the river. This study appears to be the major source of groundwater controversy.

- Extensive climate and soils studies for the valley note a precipitation deficit in the Springer Rd. area, which increases to a precipitation surplus further west in the valley and at higher elevations. A similar study noted that groundwater recharge from precipitation followed a similar pattern, indicating the proposed site has approximately 1.4 inches/year recharge.

- I researched well level monitoring data and compared it to precipitation and Matanuska R. flood stage. This allowed comparisons of influences from the Matanuska R. and precipitation events (i.e., long term, prior season, fall peaks, and run-on) on each well. I selected seven wells near the proposed site and the period from 1956-1965, as the most complete and reliable data sets, each having 1-5 records per month. I confirmed locations and features with property owners, and visited the sites. For each well series, I tried to identify patterns or anomalies with a water level rise of 1 ft or more above the background noise, then compared them to the corresponding or prior precipitation (monthly or annual) and the Matanuska R. flow. Observations include:
  - The wells showed varied water level responses to monthly or annual precipitation and to seasons, as well as different responses in co-located aquifers.
  - Woods' north well rose and fell within one month of the Matanuska flood stages, indicating the river is the primary groundwater source east of the monofill site.
  - Winter and spring runoff collected in depressions upgradient of three of the wells was the presumed cause of the great majority of distinct level rises.
  - The non-responsiveness to seasonal precipitation shown by the deep wells indicates recharge occurred long ago (as indicated by isotope analyses) and in the distant slopes and foothills, which have far greater precipitation and percolation.
  - The high correlation between proximity to catch basins and groundwater recharge indicates the importance of runoff. These wells were (are still) in primarily agricultural settings, cleared, level to hilly, planted with hay or other crops, and designed to retain moisture to the extent possible to minimize irrigation needs.

- The effects of the 1964 earthquake on well water levels are also described in Appendix 1:
  - The wells varied from no visible response, to rising 30 ft or falling 23 ft the day of the earthquake and recovering all or most within a couple months. One well fell 23 ft then began recovery before the earthquake.
  - There are no known reports of the 1964 earthquake on the area's groundwater, and the USGS hydrology department was unaware of this data.

- I cannot detect any long term groundwater changes attributable to the earthquake.

- I investigated leachate generation at the CLF and compared conditions with the proposed monofill to estimate percolation under similar and alternate design goals. Methods and data are presented in Appendix 1 and summary results include:
  - Percolation for the CLF apparently validated the Deep Percolation Model for the CLF location near the upper edge of the 1.5-4 inches/yr groundwater recharge zone.
  - The proposed monofill location is at the upper edge of the 0-1.4 inches/yr zone.
  - CLF cells have very porous gravel surface; monofill lift and final caps designed to shed water can reduce the percolation below the modeled 1.4 in/yr.

- I researched various sources to determine the current groundwater levels at the proposed monofill site compared to historical levels in nearby aquifers. All sources indicate 2013 to early 2014 had very high groundwater, and some sources indicate this period had the highest levels in 35 years of observation. This provides greater confidence for designing the monofill base.

Reply to Comments:

I investigated the comments by MSB staff provided on 2/13/14; except for #s 1 and 25, I concur with staff these are valid requests for clarification, which I expect will be in CMS's response.

MSB staff requested you address issues raised in the J. A. Munter Consulting, Inc. review of 2/7/14 (MSB comments #s 1 and 25). I have investigated and sorted them into related issues.

- Hydrology and groundwater recharge:

  The multiple lines of evidence from many diverse sources presented in Appendix 1 and summarized above disputes Munter's fundamental conjecture that the abundant groundwater is produced by local precipitation. Overlooking the Matanuska River's recharge contribution and attributing it instead to local precipitation severely jeopardizes his subsequent groundwater or percolation conjectures.

  Another significant oversight is not recognizing the importance of runoff for groundwater recharge in the catch basins and percolation reduction elsewhere.

- Comparative references:

  The studies he referenced are outdated, but highlight design and O&M deficiencies corrected by latest generation C&D monofills. The 1995 study included mixed waste and pre-RCRA disposals. The 2009 Ohio study included a variety of landfills, many accepting out-of-state pulverized loads with different definitions of C&D materials or procedures, if any, for pre-screening, segregation, or recycling. This waste was placed in uncapped lined pits where leachate in extended contact with waste was often recirculated. These wet pits often became festering anoxic stews in hot weather, and are good examples of bad designs.

  Munter did not attempt to compare the proposed monofill design and O&M with standards of the many other states that allow modern C&D monofills without liners. These states typically have stringent requirements for screening with multiple subcategories of C&D permits

depending on materials allowed and siting. The proposed monofill operation would apparently be welcome in these states, too, especially as the proposed screening segregates most of the gypsum and the cell construction reduces the already low percolation.

- Fate and effect modeling:

As previously described, I do not agree with Munter's basic assumptions of local groundwater source or precipitation recharge. He offers no empirical basis for his comments regarding modeling, calculations of percolation, runoff, or groundwater transport.

I do agree with Munter that the contaminant fate and transport model example used by Maddox & Associates (M&A) could be improved. Simple 2D models that do not account for the complex attenuation of mixtures often overestimate distance traveled and time to naturally attenuate by orders of magnitude. They should be used only to show a particular risk is *de minimis*, but not to quantify its magnitude or spatial extent. For instance, a large diesel spill could result in a groundwater plume with several times the benzene concentration M&A modeled, but there are apparently no diesel spills with a groundwater plume anywhere close to a mile long in the DEC contaminated sites database[vi]. A 4-phase model[vii] would be more useful, but only after calibrating inputs to site conditions. PCE and DCA were common pre-RCRA chlorinated solvents, closely regulated now, and easily screened out along with other liquids. A more meaningful exercise would model more common C&D constituents, such as sulfate.

- Health risk characterization:

Munter makes a convincing case that C&D waste can present health risks; that should only be the first step in developing a conceptual site model (CSM). Assessing and quantifying these risks is necessary in order to control and reduce them. Any CSM is continuously updated through design, construction, monitoring, closure, and post-closure. Unlike the contaminated sites program guidance Munter cited, the facility CSM is intended to first prevent risks to human health, with contingencies to mitigate design or O&M mishaps.

Health risk characterization and mitigation steps include:

- Exclusion of inappropriate wastes: Industry and regulators have developed (and continuously update) a long list of wastes to exclude. Regulatory programs, pre-demolition assessments, operator training, and tools to identify specific wastes help avoid those problematic wastes, while assessment tools such as SPLP provide feedback of effectiveness, and lead to process/assessment modifications if needed.
- Precipitation percolates through the cell, then through the minimum 10 ft silty soil buffer where some of the dissolved substances are removed and some reach groundwater. As with septic systems, leachate concentrations when exiting the monofill or first meeting groundwater do not indicate a threshold health risk.
- Between the cell and the monitoring wells, leachate constituents will be adsorbed, degraded, and diluted. Typically, constituents will be compared to groundwater protection standards, and mitigation and/or further assessment implemented as required by DEC to prevent health impacts to receptors.
- If human health impacts appear likely, providing water from the city main running along the highway places an easily implemented upper bound on health risks.

Summary:

Based on these investigations, I believe the proposed monofill will not cause recognized adverse health impacts from contamination of groundwater. There appears to be robust groundwater at the site primarily supplied from the Matanuska R. and the Talkeetna Mtn. foothills. The estimated 1.4 inches/yr recharge from precipitation in this area is a minor contribution.

The recycling and material processing system enables more confident risk reduction through enhanced inspection, and more precise monofill construction allowing cell design to increase runoff and end use value. Taken together, the low local groundwater recharge from precipitation coupled with the proposed recycling and monofill system effectively reduce the major health risk, contamination of drinking water. I presume clarifications and the other potential problems raised by MSB staff will be addressed in CMS's response.

There is no perfect industrial location or way to eliminate risks. Here, area climate reduces groundwater risks. The CMS system appears to be superior to other current C&D monofill systems for its ability to further reduce life cycle health risks and enhance end use value.

Please call me if you have any questions about this report.

Sincerely,

Ralph Hulbert

Ralph Hulbert, P.E.

Att: Appendix 1, Infiltration, Percolation, and Recharge (includes references, figures, photos)

---

[i] Personal recollection; River dumps were 50's kids' playgrounds; scavenging, plinking, trouble.

[ii] Mary Ann Anderson and Dale Anderson; personal communications.

[iii] CLF staff; CLF Quick Stats 2012, unpublished.

[iv] Shannon & Wilson, Inc.; Groundwater Monitoring Program, Second Quarter 2013, Matanuska Susitna Borough Central Landfill; September 2013.

[v] Munter, J.A.; Review of an application for a Conditional Use Permit for a proposed monofill near Palmer, Alaska; 2/7/2014.

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[vii] Implementing Guidance for the Method 3 Hydrocarbon Risk Calculator, 2011; http://dec.alaska.gov/spar/csp/guidance/hrc/HRC%20Guidance.pdf.

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Appendix 1
Infiltration, Percolation, and Groundwater Recharge near Palmer

This study examines the relationship between precipitation and groundwater recharge in the area south and west of Palmer pertinent to the monofill proposed by CMS. Sources include large and small-scale hydrological studies, climate data, long time residents, and previously unpublished data compilations. This information is intended to help land use planners and developers resolve conflicts and better assess and mitigate risks to drinking water.

1. Area-wide Factors

A well may tap groundwater that fell as precipitation recently nearby or decades ago and far away. The high production wells south of Palmer tap groundwater that recently came from the Matanuska River, which fell as rain and snow on distant mountains and glaciers. Wells further west tap aquifers primarily recharged by precipitation that fell several years ago in the upper Wasilla Cr. drainage. Amount of groundwater recharged by local precipitation varies by region, smaller scale drainage features, and type of engineered surface.

Assessing and mitigating potential health risks from contaminants leaching from the monofill requires careful evaluation of the following processes:

Precipitation:

There are three nearby weather stations currently listed by NOAA[i], with data also available from the Western Regional Climate Center[ii] (see Figure 1 for current locations):

- "Experiment Farm", id505733, (Matanuska AES); the 1922-2013 precipitation average is 15.27 inches, and the 2004-2013 precipitation average is 14.97 inches.
- "Job Corp", id506870, (Palmer AAES, various locations); the 1948-2013 precipitation average is 15.73 inches, and the 2004-2013 average is 18.19 inches.
- "Palmer Airport", id506867, ~1/2 mile from Job Corp, has been collecting data since 2002. The 9-year precipitation average is 10.91 inches.

The large variation in recent annual precipitation between nearby sites merits examination. Precipitation increases with elevation, but this would not explain the difference between the Airport and Job Corps sites. The state climatologist[iii] suggests the Airport's exposed location contributes to under-measuring precipitation. Rain or snow will fall more in the lees than on the windswept areas. November 2010 was windy and wet; the Airport reported wind every day, 14 days with gusts >20 mph, 18 days with rain or snow, but only measured 0.62 inches of precipitation. Meanwhile, the Job Corps station (more sheltered) measured 11.04 inches and the Experiment Farm (moderate exposure) measured 1.68 inches. The proposed monofill site is slightly lower elevation and exposed to wind, indicating more similarity to the Experiment Farm and the Airport.

Infiltration and Percolation:

Soil scientists' distinction of infiltration from percolation: "The downward entry of water into the immediate surface of soil or other material; as contrasted with percolation, which is movement of water through soil layers or material… The rate can be limited by the infiltration capacity of the soil or the rate at which water is applied at the surface[iv]."

Low permeability or frozen soils have low infiltration rates. Precipitation exceeding the infiltration rate will either remain at the surface or run off. Once water has entered the soil and saturated a particular soil stratum, water will percolate through that stratum at a rate determined by the effective permeability. When a deeper stratum of lower permeability (aquitard) is encountered, the process repeats.

Runoff and Run-on:

These factors are controlled by topography and surface type, and determine locations of groundwater recharge. The largest runoff factor is whether soil is frozen. Winter Chinooks routinely exceed storm drain and ditch capacities, fill depressions, and leave fields bare (see Photos). Runoff is less during the growing season when vegetation or forest mulch slows runoff allowing more evapotranspiration and infiltration.

Managing precipitation is a mature science; agriculture, road building, city design, and landfills may have different goals and practices, but use the same fundamentals. Each project has to design for the predicted precipitation patterns, runoff pathways, and destinations.

Evapotranspiration:

Water in the soil is lost to the atmosphere by evaporation from the surface and transpiration by plant uptake and vapor transport from deeper strata. Taken together, evapotranspiration returns most of the annual precipitation back to the atmosphere. The NRCS chief soil scientist[v] described the Palmer terrace as having a measured average annual deficit of 4 inches of precipitation, while the soil moisture balance becomes increasingly positive with higher precipitation to the north and west. The net precipitation deficit generally applies to a "fully vegetated land surface abundantly supplied with water".

Evapotranspiration models are based on landforms, temperature, and precipitation averages for an area. A large factor in evapotranspiration is wind, especially the spring and summer Knik winds, but is not well documented or included in the interpolative models. Figures 2 and 3 show Matanuska and Knik wind frequencies respectively[vi].

Groundwater Recharge:

Precipitation that does not run off or return to the atmosphere percolates through the soil and recharges groundwater. Figure 4 shows predicted annual groundwater recharge in the core area[vii]. The report author[viii] described the regional scale model used inputs from the NRCS Soil Survey, but not wind. In general, this figure corresponds to NRCS' Soil Survey that measured precipitation deficits in the Palmer terrace and surpluses at higher elevations.

Figure 4 indicates the MSB Central Landfill is near the upper edge of the 1.5-4 inch recharge, while the proposed monofill is at the upper edge of the 0-1.4 inch zone.

Groundwater can still be recharged by precipitation in areas with net deficits. Runoff will exacerbate precipitation deficit from runoff areas, but cause recharge in the catch basins. Short-term elevation rises of the groundwater can be observed in wells near the basins.

Precipitation recharge of 0-1.4 inches in the Palmer terrace can not account for the very high groundwater withdrawals, which include city wells, high irrigation consumption, and outflow streams south of the terrace. There is a simple explanation.

2. Hydrology Studies

Despite several hydrology studies in the proposed monofill area, disagreement remains regarding aquifers, flow directions, and sources of groundwater, especially under the Palmer terrace (Springer Rd. system). Multiple lines of evidence are provided below.

History of Major Discrepancies

USGS under Frank Trainer compiled the first comprehensive Palmer area hydrology studies, starting in the late 1940's. These included interviews with homesteaders and well drillers to locate and describe all the known wells, the forerunner of WELTS[ix]. USGS then began regular water level monitoring in numerous wells and the Matanuska River east of Palmer. After two years of draught and two of high precipitation, Trainer[x] provided observations of two wells near the site:

> "Water-level recovery is most complete in the Woods well; this well is on the extensive terrace south of Palmer, where the water table is controlled by the Matanuska River.
>
> Data for the Linn well, … suggest slight recovery during the late spring of 1950 before further decline. Each well shows partial recovery during the summer of 1951.
>
> The Linn well is on a hill but the ground-water level is probably controlled by the water table beneath the alluvial flat west of Matanuska; hence the water-level fluctuation in the Linn well, like that in the Woods well, is relatively slight.
>
> The rapid decline and slow recovery of ground-water levels, as shown by these data, suggest that annual additions to the groundwater body represent only a small proportion of the annual precipitation received in the agricultural area"

A subsequent USGS report[xi] described the relatively flat Palmer terrace as recent glacial outwash. The southern terrace receives much of its recharge from the Matanuska R. with wells in thick sandy gravel potentially suitable for irrigation. The northeastern terrace overlays shallow bedrock and till with no river recharge, resulting in mostly inadequate wells. The area west of the Palmer terrace is described as irregular and complex mixtures of glacial

till ("hardpan") overlaid by or including layers of gravel outwash. Wells are sometimes constructed in shallow unconfined perched aquifers, but deeper wells often tap confined or artesian aquifers, especially the higher producers (city wells #1 & 3 on Scott Rd.).

A borough sponsored regional groundwater study[xii], prepared by J. Jokela, James Munter, and James Evans in 1991, used surface water body elevations and well drillers' logs to plot groundwater contours. There was no fieldwork or apparent attempt to check if the wells tapped the same aquifer. This study grouped the Palmer terrace with Lazy Mt., presuming the source of groundwater at both locations is local precipitation. Flow directions were drawn toward the Matanuska R., southeast in the southern Palmer terrace (as marked on Figure 1), ignoring Trainer's observations. This mistake is far more than missing a local groundwater flow direction by 90°; this area has very productive wells for irrigation and city supply, and identifying its groundwater source is critical. If groundwater flows southeast, its source must be extremely high local precipitation recharge (absent in adjacent areas), while a southwest flow with the Matanuska R. as the source explains the abundance.

Published Smaller Scale Hydrological Studies:

Additional hydrological studies help clarify groundwater sources and flow directions. Locations of these studies are shown on Figure 1.

- The MSB Central Landfill has performed quarterly groundwater monitoring since 1986, currently monitoring 14 wells on a rotating basis. These are constructed in the unconfined aquifer of 3-67 ft thickness in highly permeable sands and gravel; groundwater flow direction is due south. Background arsenic concentration was 0.11 mg/l (drinking water Maximum Contaminant Levels are 0.01 mg/l). This aquifer lies on confining silt/clay layer 45-100+ ft thick. Most neighboring domestic wells draw from a deeper confined aquifer[xiii]. Figure 5 shows the contour map.

- The City of Palmer needed more water than was available from city wells #1-3 west of town, which draw from artesian aquifers, the deepest at 660 ft. Well #4 was then located south of Palmer in an unconfined aquifer at 103 ft, ~40 ft below the level of the Matanuska to the east. The 1200 gpm flow rate was limited by pump capacity. TERRASAT[xiv] mapped the bedrock under the city, confirming that it limited groundwater recharge in the city core (northern terrace). Bedrock was at 180 ft under well #4, allowing river recharge. Concurrent level measurements from nine wells showed flow was west-southwest (see Figure 6). Well #5 was drilled next to #4 with similar high productivity.

- The City of Palmer mapped groundwater[xv] near the wastewater treatment plant where groundwater from the southern terrace re-enters the Matanuska floodplain. Figure 7 shows groundwater flowing to the southwest. Robust springs occur along the bluff, coalescing into several streams winding southwest across the currently abandoned floodplain. The WWTP discharges to a stream that has a mean flow of 11.9 million gallons per day[xvi] after collecting water from only 3300 ft along the bluff. These consistent springs support huge spawning salmon returns; the 6-year average of 8763 counted spawners[xvii] in this stream exceeds Wasilla Cr. or any other Matanuska tributary.

- Extensive groundwater modeling conducted at the Anchorage Sand and Gravel[xviii] pit found that groundwater just north of the proposed monofill was recharged both from higher elevations to the north and from the Matanuska (Palmer terrace). A defining feature is a bedrock dike separating High Ridge and Baird lakes from Canoe and Irene lakes. This bedrock also limited the westward erosion of the ancient crevasse-moraine system by the more recent Matanuska R. Figure 8 shows groundwater contours indicating southeast flow, which then curves southwest around the bedrock.

- Environmental Management, Inc. and TERRASAT are currently monitoring the area around the proposed monofill, and their final reports have not been reviewed.

- Isotopic analyses of groundwater allow calculation of its apparent age (time since it fell as precipitation) and relation to other groundwater. Roy Glass[xix] tested groundwater from 16 wells in the valley, including city well #4 and Woods' north well, both in the southern Palmer terrace; water ages were 0.3 and 0.8 years respectively, by far the youngest of any wells sampled and consistent with river recharge. Wells north and west of the Palmer terrace had groundwater ages from 13 to 27 years, indicating a long travel time from the upland sources with little dilution from fresh precipitation.

These smaller scale studies reinforce Trainer's concept of the southern Palmer terrace recharged primarily from the Matanuska while the hilly terrain to the west is recharged from precipitation falling at higher elevations to the north. However, more information is needed to quantify relative contributions of precipitation to groundwater at the monofill scale.

Well Level Responses to Precipitation, Runoff, and River Flooding:

I researched historical USGS well monitoring data[xx], and compared fluctuations in levels to precipitation and Matanuska R. flood stages[xxi]. This allowed comparisons of influences from the Matanuska R. and precipitation events (i.e., long term, prior season, fall peaks, and run-on) for each well, from which I hoped to ascertain influences on recharge.

The seven wells selected (shown on Figure 1 and Photos) and the period from 1956-1965, appeared to be the most complete and reliable long-term data sets, each having 1-5 records per month. I confirmed locations and features with property owners[xxii] and DNR[xxiii], reviewed historical aerial photos, examined the well logs[xxiv], and visited the sites.

Figure 9 is an Excel generated chart showing the well levels, monthly precipitation, and Matanuska R. flood stage for the 1956-1965 period. Well level fluctuations and seasonal relationships were examined. In order to include data on a single chart, each well series was shown at an arbitrary datum above sea level (i.e., groundwater level -100 ft). Precipitation from the Palmer AAES (Job Corp) station is shown in inches times five. The Matanuska river flow was used, since the gauge level was not reported for several years, and shown in 1000s cubic feet per second, with zero floe offset on the chart to base 30.

For each well series, patterns or anomalies with a water level rise of 1 ft or more above the background noise were compared to the corresponding precipitation (prior or current monthly) and the Matanuska R. flow. Each anomalous water level fluctuation was tagged according to season when the rise began, to irrigation, or Matanuska, if clear. The wells showed varied water level responses to monthly or annual precipitation and to seasons, including different aquifers at the same location. Characteristics of individual wells were then analyzed:

- Woods' north well was in a flat field with no nearby depressions, 83 ft deep, finished in coarse sand and gravel. Levels rose 1-3 ft each of the ten years, beginning the rise, cresting, and falling within one month of similar stages of the Matanuska flooding. The summer precipitation was not as similar in timing and magnitude. There were two milder winter and one spring rises. Isotopic analyses showed this was Matanuska R. water.

- Woods' south well was located in a field on the edge of a depression where runoff from nearby fields still collects. It was drilled through sandy clay (glacial till) into bedrock at 264-282 ft and screened at 109 ft in a thin layer of gravel with sand. This till apparently restricted lateral recharge from the Matanuska, resulting in a greater influence from local recharge. There were five rises that occurred in winter, three in spring and four in fall; all of these occurred at times unlikely to have crops in the fields and when runoff was more likely. The highest rises were in winter, presumably from snowmelt.

- Linn's well is adjacent to a depression in an area of rolling hills, 108 ft deep. Rises occurred three times in spring, once in winter, and twice in fall.

- Three wells (NW Exp Farm wells 1-3) were co-located in a single well house at the edge of a field below a bluff, drilled to 295, 259, and 313 ft respectively, each apparently drawing from different aquifers. The deeper two wells usually showed a level decrease when the other was used for irrigation, and showed parallel increases twice in spring and once in fall, with the deeper well lagging by almost a month. Five events showed no correlation between wells. The shallow well #2 was artesian, with approximately 10 ft higher water level than the other two wells; it showed barely perceptible flutter when the deeper wells were pumping for irrigation, but no apparent response to seasonal precipitation. This well showed a gradual variation of ~1.5 ft over periods of about 8-13 years (extended series to 1993), while wells #1 and #3 had periods of about six years.

- Another well (SE Exp Farm) in the same field, but closer to upgradient catch basins, was hand dug to 40 ft. It had only minor variations, with two spring and three winter rises.

Summary observations regarding well groundwater level fluctuations from this data include:

- The correlation of level fluctuation with river stages at Woods' N well corroborates isotopic analyses showing the Matanuska R. is the primary groundwater source.

- There were approximately 37 groundwater rises not attributable to the Matanuska; 29 occurred in winter or spring, 8 in late fall, but none clearly related to the high July-August precipitation (which also coincided with high evapotranspiration).

- Three of the wells were downgradient of catch basins; they accounted for 23 of the distinct rises, generally greater magnitude than other wells (except Woods' N well).

- The high correlation between proximity to catch basins and groundwater recharge indicates the importance of runoff. These wells were (are still) in primarily agricultural settings, cleared, level to hilly, planted with hay or other crops, and where retaining moisture to minimize irrigation needs is important.

- Local recharge from precipitation is primarily in depressions and ditches that collect runoff, even from relatively flat fields with very little slope.

- The non-responsiveness to seasonal precipitation shown by the deep wells indicates most recharge occurred long ago (as indicated by isotope analyses) and as far as the Talkeetna Mts., where there is far greater precipitation and percolation.

The effects of the 1964 earthquake on well water levels:

- Woods' N well had no apparent fluctuation.

- Woods' S well water level rose 30 ft, was erratic for a month, and then dropped to the original level after four months.

- The four wells at the Experiment farm dropped from 2-20 ft, and recovered all or most within weeks or a couple months.

- The Linn well was unique; water levels fell 23 ft in December and January preceding the earthquake, recovered 15 ft before the quake, then rose and fell for the last two records. This well apparently was reused, but is now abandoned.

- There are no known reports of the 1964 earthquake on the area's groundwater, and the USGS hydrology department was unaware of this well data. I cannot detect any long-term changes attributable to the earthquake.

Examination of MSB CLF Leachate Collection Relative to Precipitation:

I investigated leachate generation at the MSB Central Landfill (CLF) and compared conditions with the proposed monofill to estimate percolation under similar conditions and alternate design goals. CLF installed the first lined cell and began collecting leachate in 2004, then added additional cells in 2008 and 2010. Leachate volume hauled to Anchorage was divided by collection area to derive the inches per year of percolation.

Annual and monthly precipitation was obtained from the three nearby NOAA weather stations, Experiment Farm, Job Corp, and Palmer Airport. Figure 10 shows the spreadsheet calculation results of percolation per year, corresponding precipitation at each station, and ratio of percolation to precipitation. The average reported precipitation varied considerably

from year to year and between stations. The Job Corp data yielded the lowest standard deviation for the percolation/precipitation ratio, and was presumed to best fit the location.

Summary results include:

- Percolation varied between 2.57 and 4.79 inches/yr. The average for nine years was 3.67 inches /yr and 4.35 inches/yr for 2010-2013. Average precipitation for these periods was 115% and 136% of the Job Corp station long term average.

- The Deep Percolation Model (see Figure 4) places the CLF location near the upper edge of the 1.5-4 inches/yr groundwater recharge zone for an average precipitation year. Adjusting each percolation average by its corresponding ratio to long term precipitation, the long term average percolation is 3.2 inches per year for each period. This apparently validates the model for this area and by extension to the adjacent proposed monofill location, which is at the upper edge of the 0-1.4 inches/yr zone.

- The CLF cells are surfaced with very porous sandy gravel daily cover and not intended to shed water. A monofill designed to shed water with intermediate caps at each lift logically could reduce cell percolation through the proposed monofill to less than the 1.4 inches/yr predicted by the model. An engineered final cap installed when closed would further reduce percolation.

Current Stage of Groundwater Level at Proposed Monofill Site:

Given the multi-year fluctuations in groundwater levels, it is important to estimate the relative groundwater level stage. This requires examining historical maxima and minima of groundwater levels and related factors in both the Palmer terrace and northwest of the site. Lines of evidence, in order of increasing historical span, include:

- Brailey Hydrologic Consultants reported groundwater monitoring above and below the excavated ponds from 2002-2010 and Dowl HKM[xxv] reported monitoring pond levels from 2007 to 2012 showing similar levels and seasonal fluctuations when data overlapped. EMI continued the monitoring of the ponds; the highest levels for the west pond were in 2013, and apparently are now decreasing.

- The City of Palmer has recorded stream flow at the WWTP monthly since 2007 and intermittently since 2001. This stream drains a portion of the Palmer terrace, related to the major groundwater source on the northeast side of the monofill. During summer, overflow or groundwater from the floodplain can swell the creek, but in winter this creek gets groundwater from the northeast. Figure 12 shows the creek flow, Matanuska R. flow, and precipitation for 2007- 4/2014. This shows 2013 had the highest levels in this period.

- The highest average groundwater levels from quarterly monitoring of the 12 active CLF wells (records extend to 1991) occurred during late 2013[xxvi].

- I've observed levels of the spring-fed pond adjacent to my house ~5 miles north of the proposed monofill since 1979. The winter of 2013-2014 had the highest level, ~1 ft above the previous highest year. Water level has dropped ~8 inches since January.

- Groundwater level maxima spanning a longer period can be inferred from the tree line abutting marshes surrounding local lakes. During seasons of low water, the marsh is colonized by trees which die when the water rises. Where water covers the ground surface during a large part of the growing season, birch or white spruce rarely survive to maturity. Baird Lake elevation varies 3.5 - 4 ft[xxvii], and the northeast bay is sometimes a separate lake when the water is low. On 4/26/14, the lake level had submerged ground supporting alder, and had reached the line of mature birch (see Photos, p 3).

These lines of evidence indicate the winter of 2013-2014 is close to a multi-decadal high groundwater level in both the Wasilla Cr. and Palmer terrace watersheds upgradient of the proposed monofill site.

Further discussion and summary of this appendix is included in the report.

Attached:

Figures 1 - 13
Photographs 1 - 24

References, Appendix 1

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[xix] Glass, R.L., 2001, Ground-water quality in the Cook Inlet Basin, Alaska, 1999: U.S. Geological Survey Water-Resources Investigations Report 01-4208.

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[xxv] Hulteen, Kurt R., P.E; letter to Cobb, Charles, P.E., DNR; 3/26/2012.

[xxvi] Shannon & Wilson; op. cit.

[xxvii] Larry Vasanoja, Marcella Hartley, Dale Anderson; personal communications.

USGS Monitored Wells with >10 years Level Data:
W1: "Woods' N Well", USGS #SA01700209CCCB1
W2: "Woods' S Well", USGS #SA01700217AADD1
W3: "Linn's Well", USGS #SA01700115DBDA1
W4: "Exp Farm SE Well", USGS site 1700115BDAB1
W5: "Exp Farm NW Well #1", USGS #SA01700115BACD1
W5: "Exp Farm NW Well #2", USGS #SA01700115BACD2
W5: "Exp Farm NW Well #3", USGS #SA01700115BACD3

NOAA Weather Stations:
P1: Palmer Job Corp (Palmer AAES)
P2: Experiment Farm (Matanuska AES)
P3: Palmer Airport

USGS Gauges:
G1: Matanuska R. at Old Glenn Hwy.
G2: Wasilla Cr. at Palmer Fishhook Rd.

Hydrology Study Areas and Groundwater Flow Directions:
(boxes and arrows)
1. MSB Central Landfill; Shannon & Wilson (see Figure 5)
2. City of Palmer Wells 4 & 5; TERRASAT (see Figure 6)
3. City of Palmer WWTP; HDL (see Figure 7)
4. AS&G Pit; Brailey Hydrologic Consultants (see Figure8)
5. Proposed Monofill; EMI and TERRASAT (see separate reports)
6. Matanuska Watershed Flow; Jokela, Munter, Evans; 1990

Figure 1 Locations

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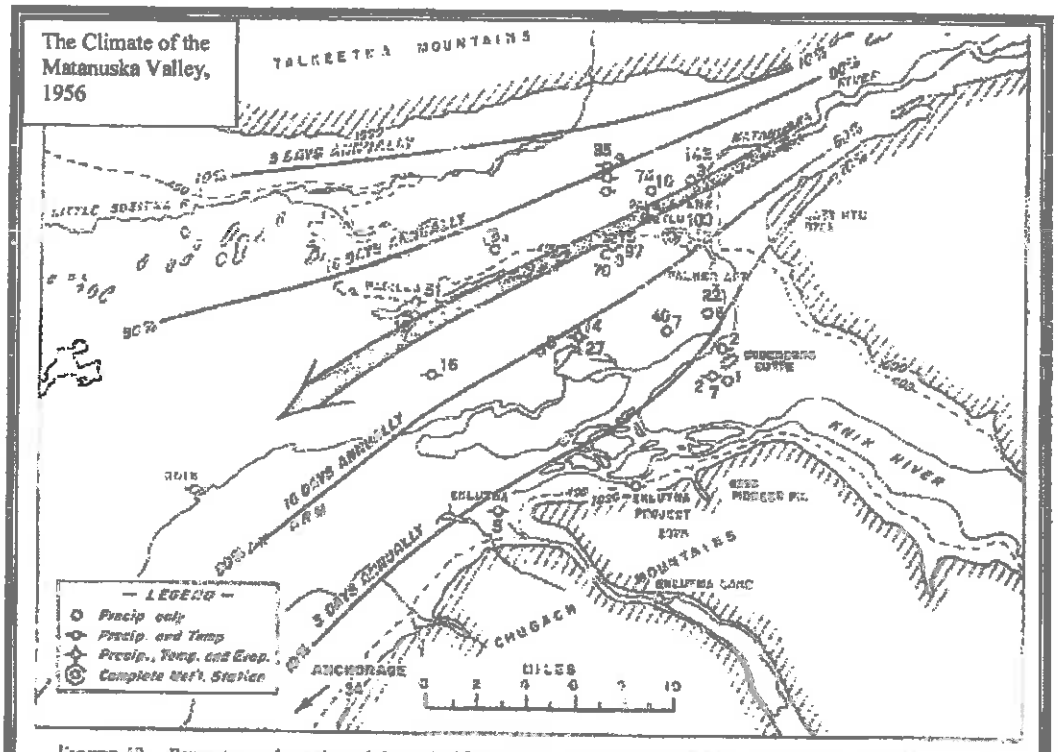


FIGURE 12.—Percentage of number of days of "Matanuska" winds reported at No. 28, and Matanuska wind path.

AlaskChem Engineering 4/29/14 **Figure 2 Matanuska Wind Frequency**

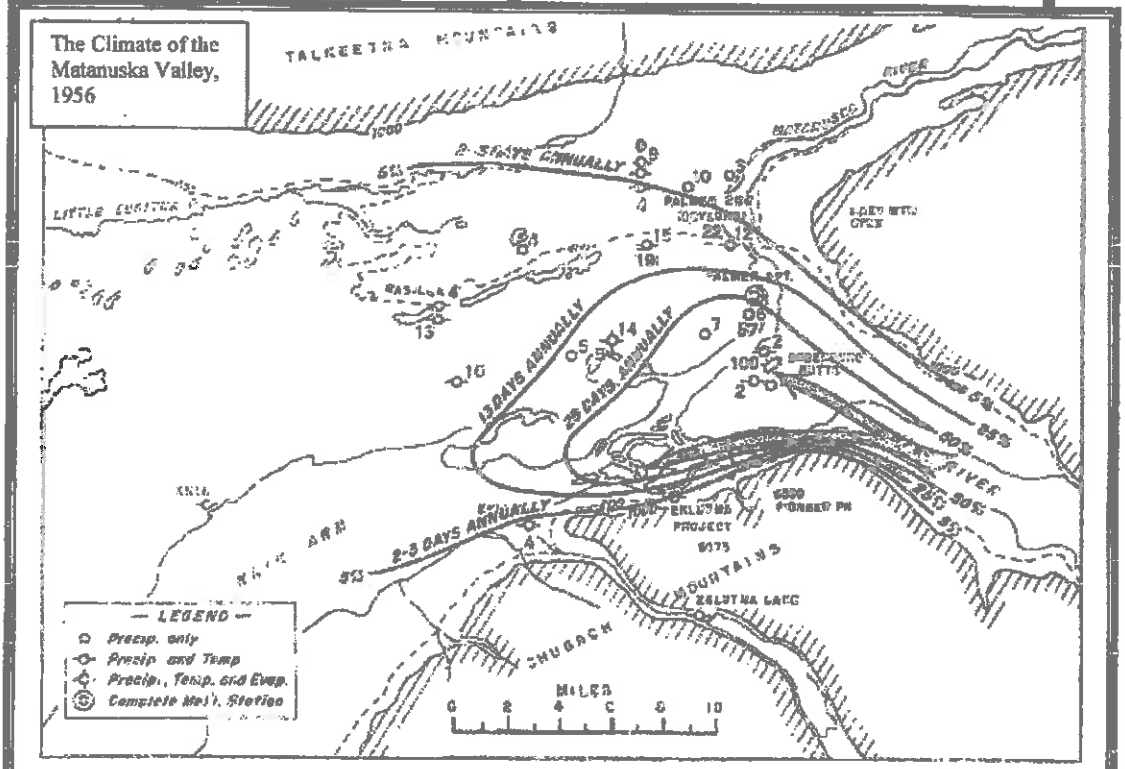
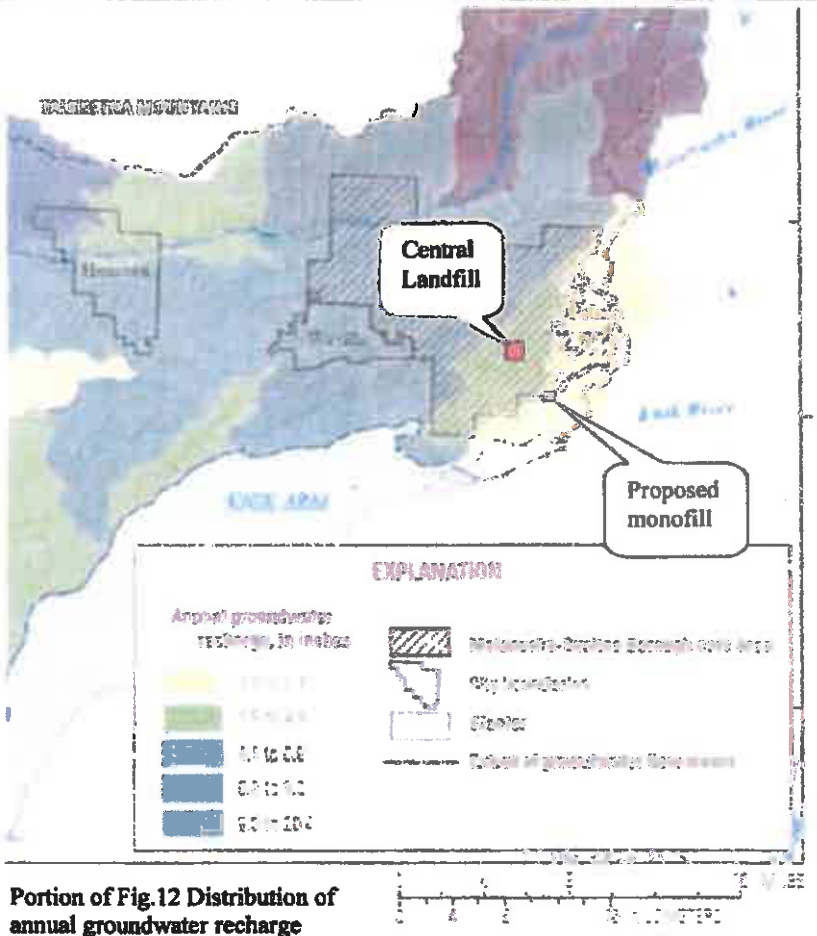


FIGURE 28.—Percentage of number of days of Knik winds reported at No. 8, and Knik wind path (July 1942–December 1948).

AlaskChem Engineering 4/29/14 **Figure 3 Knik Wind Frequency**



Portion of Fig.12 Distribution of annual groundwater recharge using the Deep Percolation Model (Vaccaro 2007); Shallow Ground-water in the Matanuska-Susitna Valley; Kikuchi, 2013

Figure 4 Groundwater Recharge

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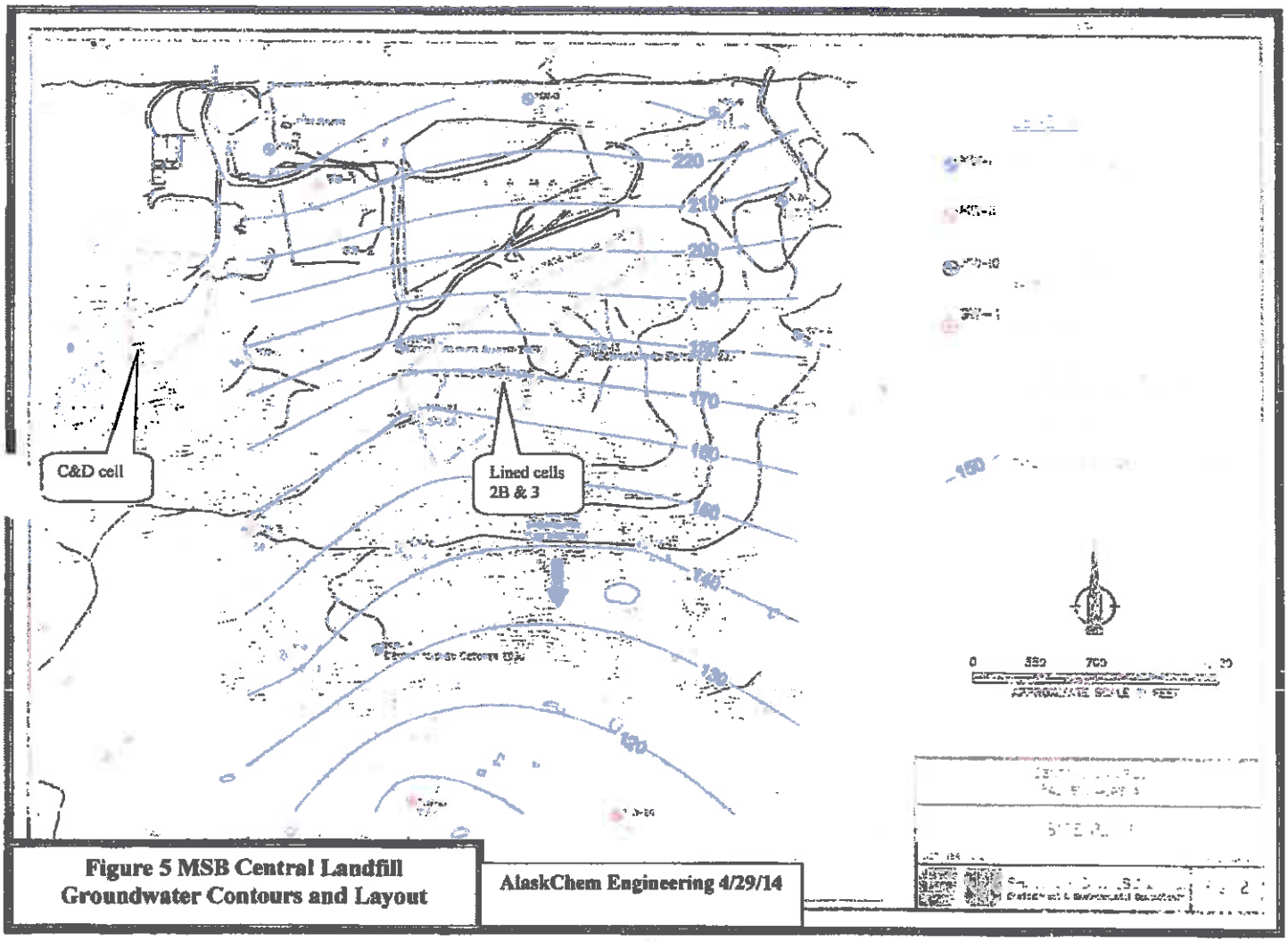

Figure 5 MSB Central Landfill Groundwater Contours and Layout

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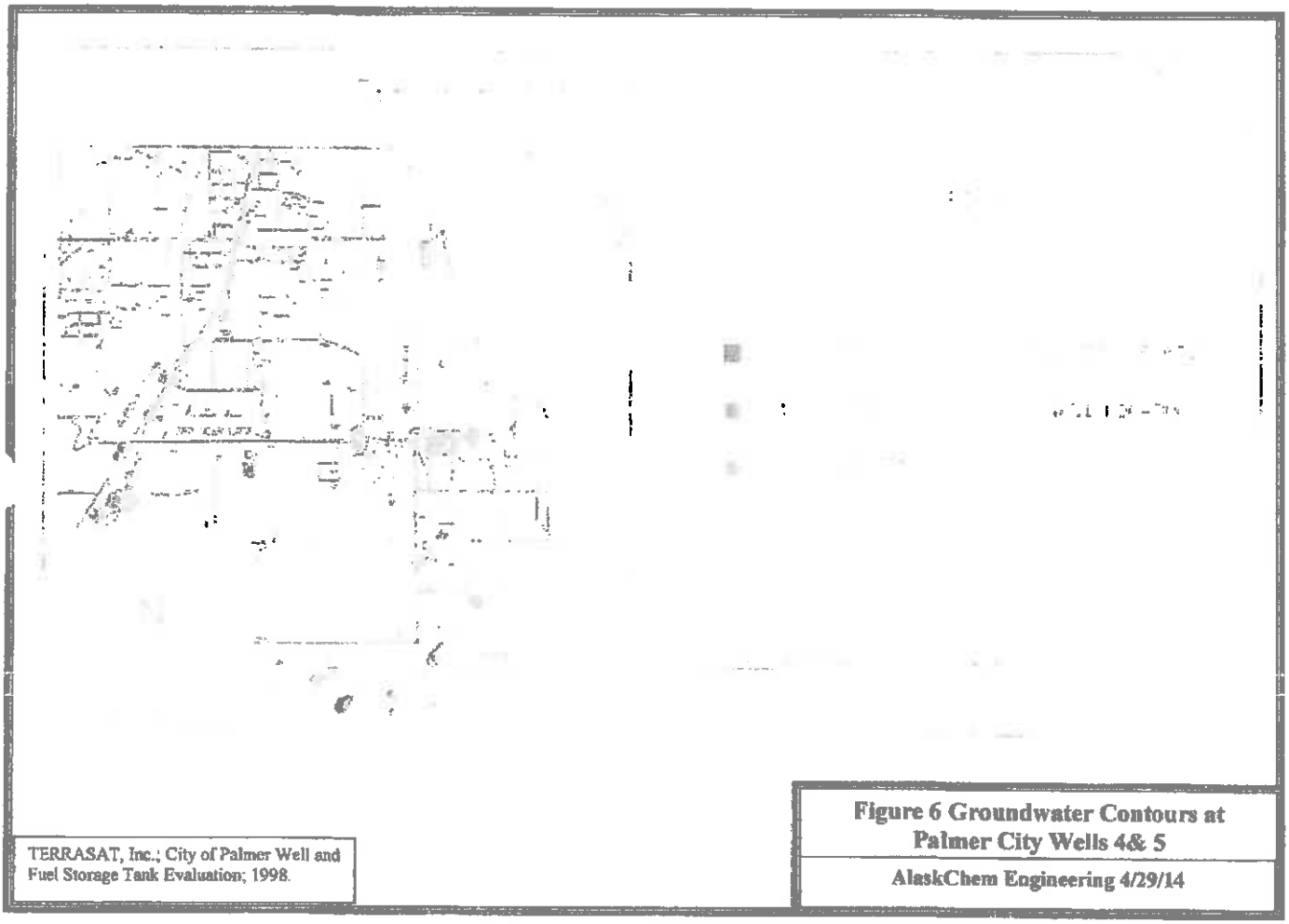

TERRASAT, Inc.; City of Palmer Well and Fuel Storage Tank Evaluation; 1998.

Figure 6 Groundwater Contours at Palmer City Wells 4& 5

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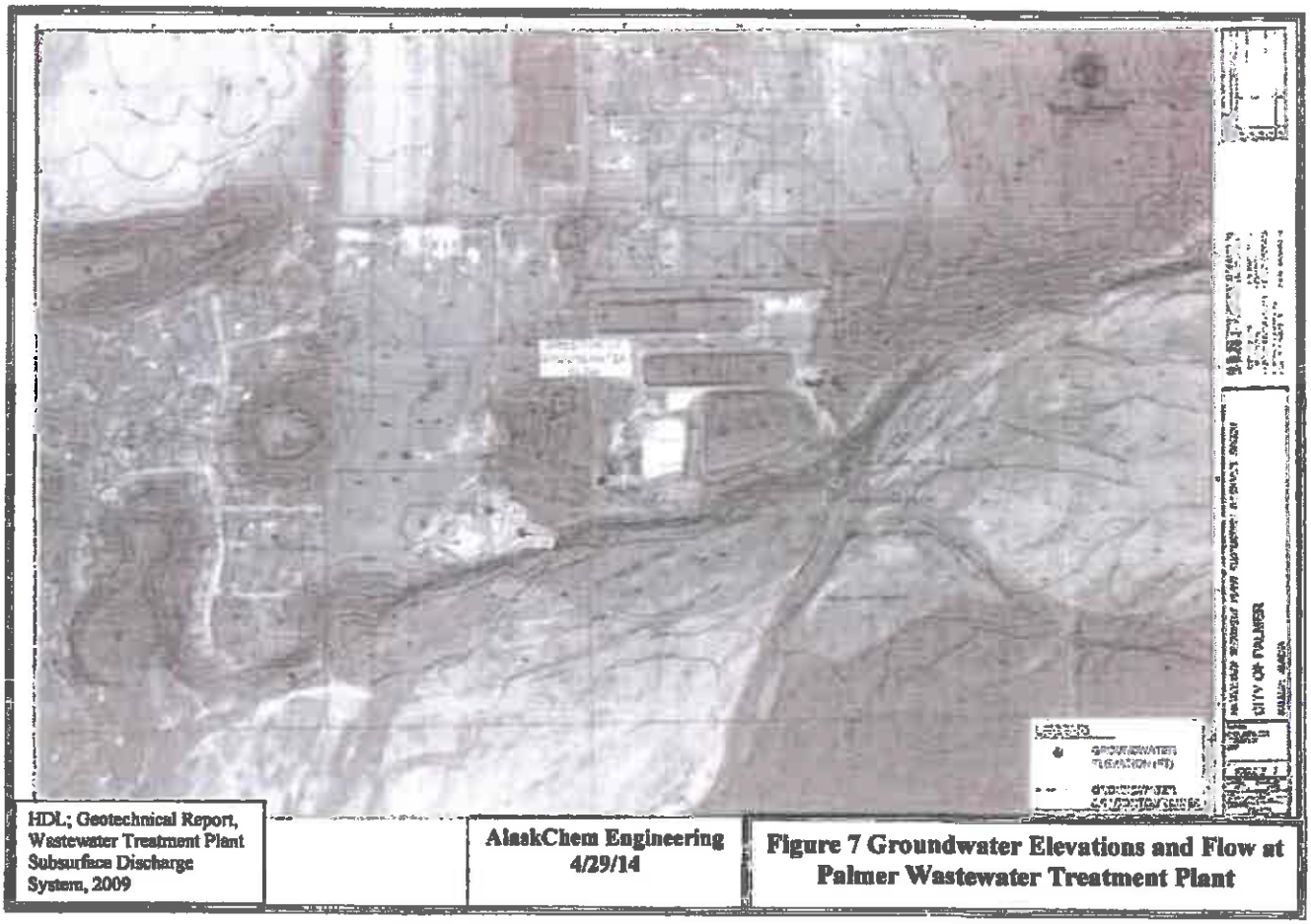
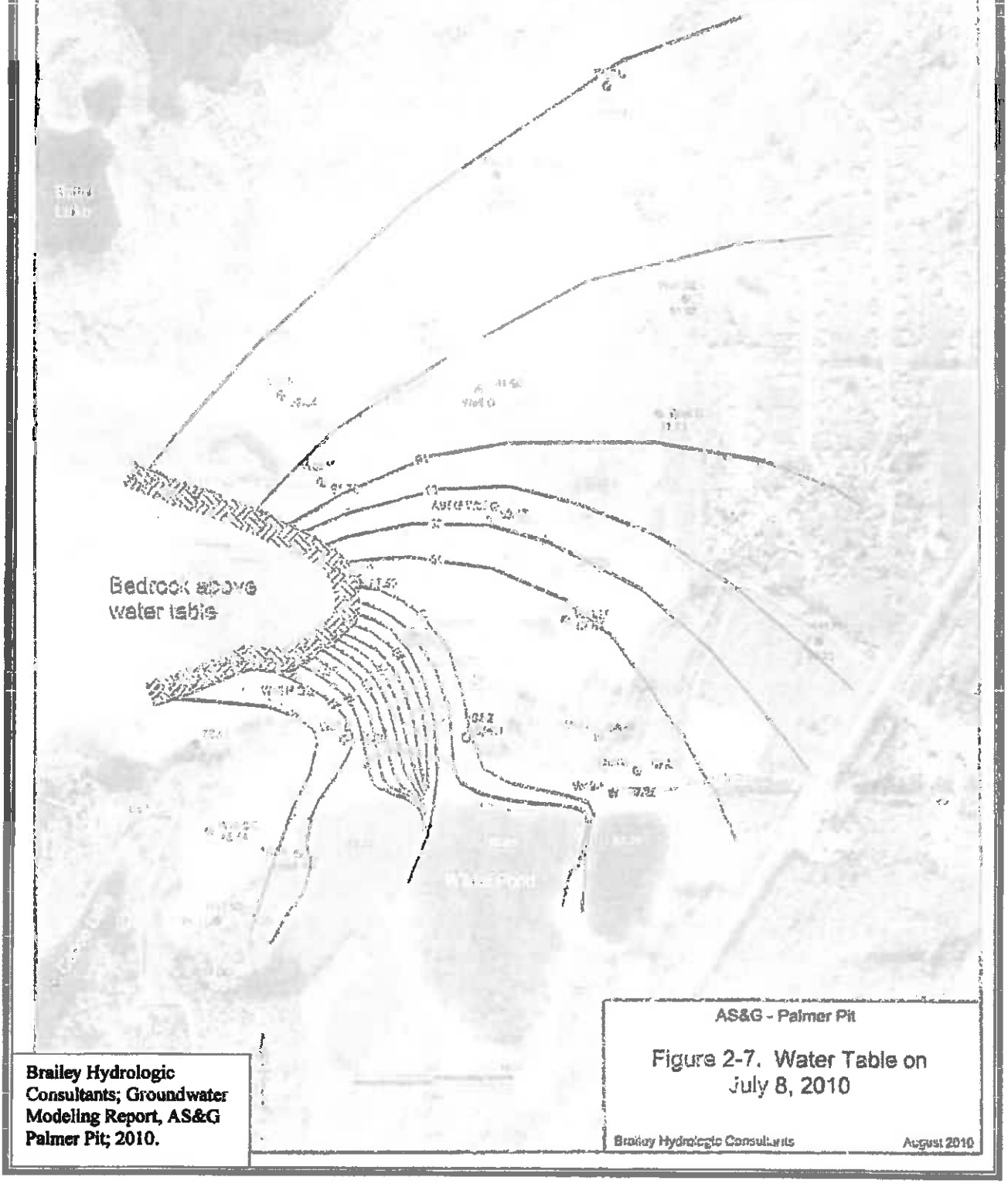


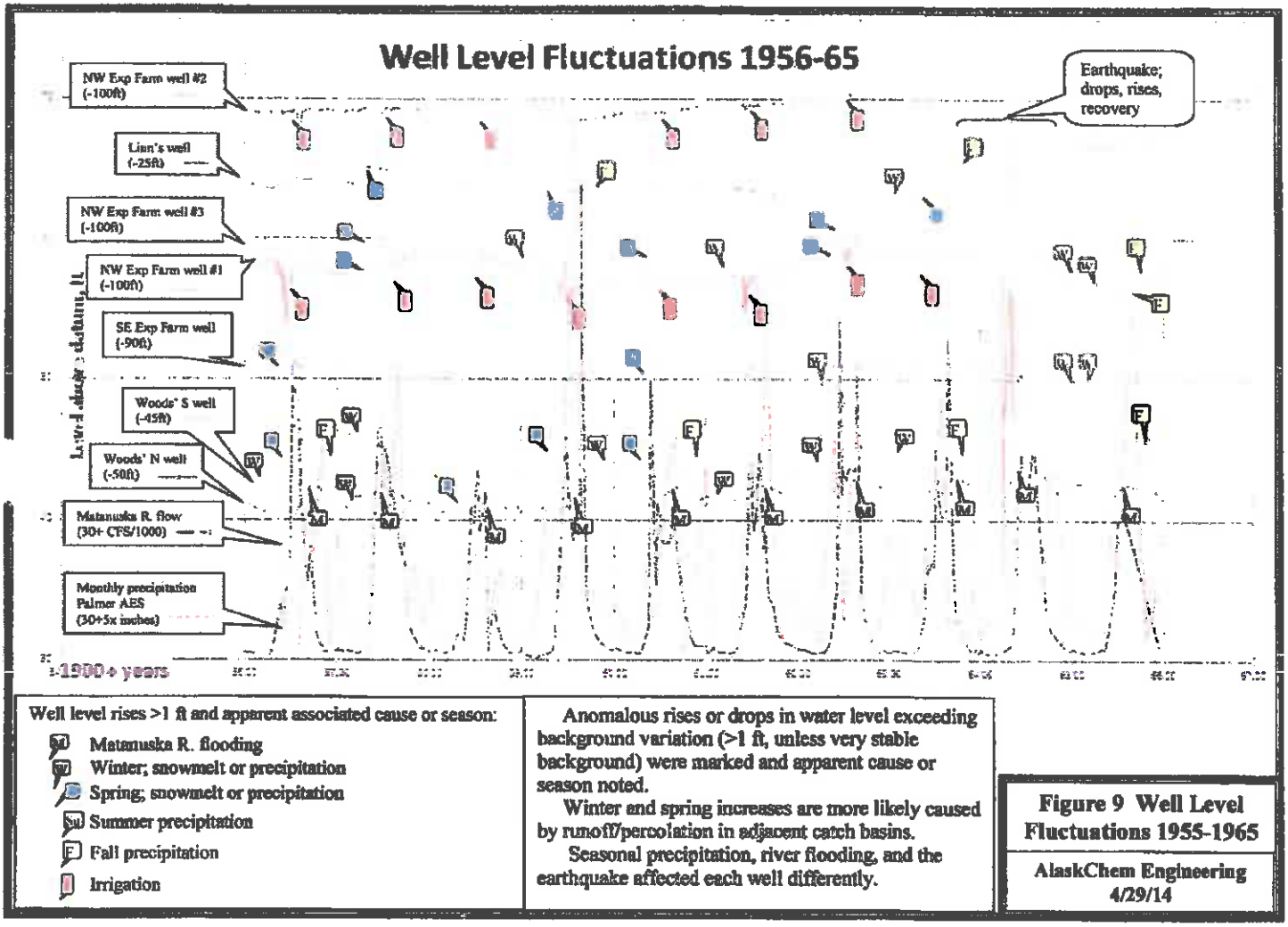
HDL; Geotechnical Report, Wastewater Treatment Plant Subsurface Discharge System, 2009	AlaskChem Engineering 4/29/14	**Figure 7 Groundwater Elevations and Flow at Palmer Wastewater Treatment Plant**

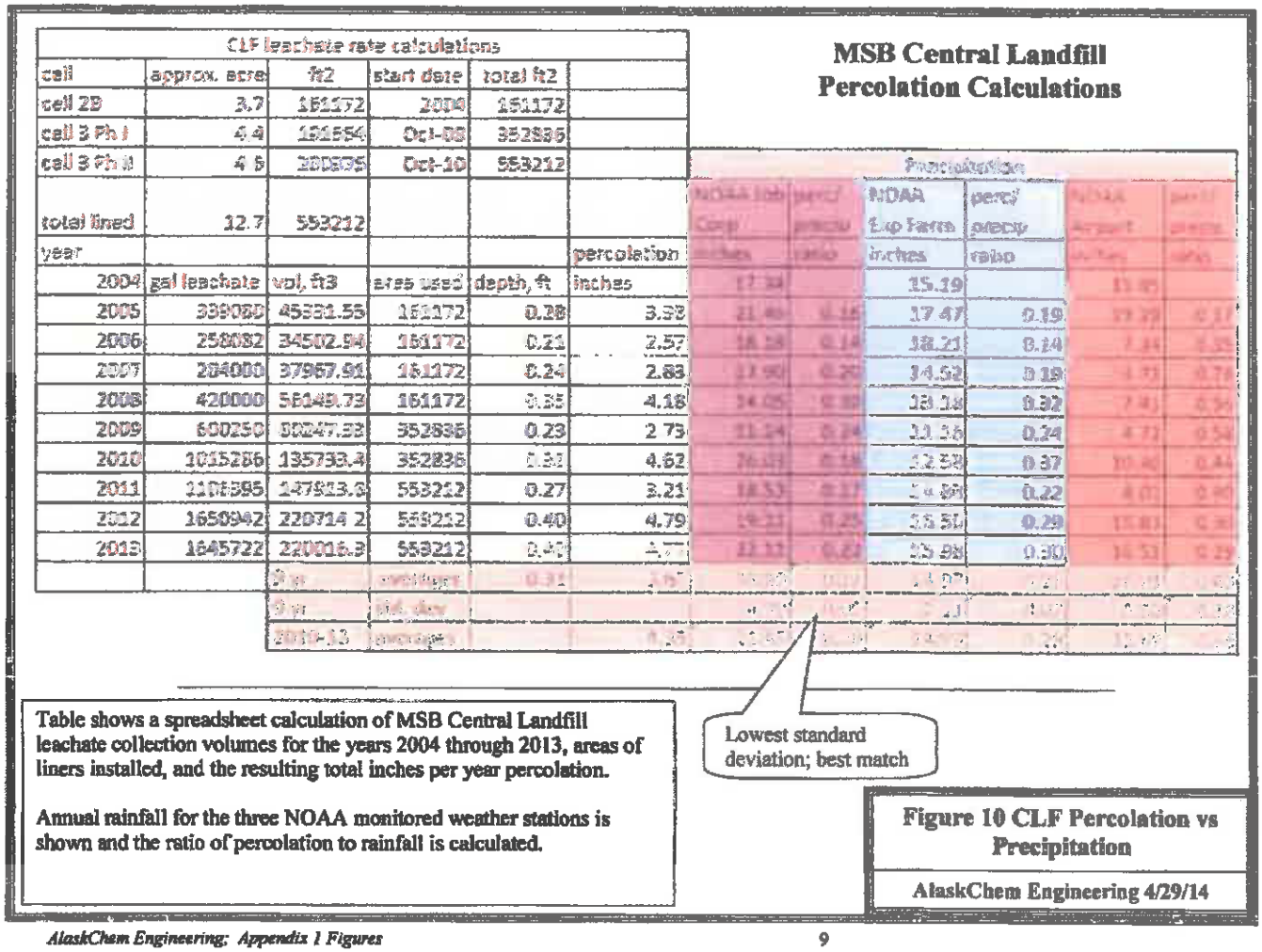
Figure 8 Groundwater Elevations and Flow North of Proposed Monofill

AlaskChem Engineering 4/29/14



Brailey Hydrologic Consultants; Groundwater Modeling Report, AS&G Palmer Pit; 2010.


Well Level Fluctuations 1956-65
NW Exp Farm well #2 (-100ft)
Linn's well (-25ft)
NW Exp Farm well #3 (-100ft)
NW Exp Farm well #1 (-100ft)
SE Exp Farm well (-90ft)
Woods' S well (-45ft)
Woods' N well (-50ft)
Matanuska R. flow (30+ CFS/1000)
Monthly precipitation Palmer AES (30+5x inches)
Water level above datum, ft
1900+ years
Earthquake; drops, rises, recovery
Well level rises >1 ft and apparent associated cause or season:
Matanuska R. flooding
Winter; snowmelt or precipitation
Spring; snowmelt or precipitation
Summer precipitation
Fall precipitation
Irrigation
Anomalous rises or drops in water level exceeding background variation (>1 ft, unless very stable background) were marked and apparent cause or season noted.
Winter and spring increases are more likely caused by runoff/percolation in adjacent catch basins.
Seasonal precipitation, river flooding, and the earthquake affected each well differently.
Figure 9 Well Level Fluctuations 1955-1965
AlaskChem Engineering
4/29/14



CLF leachate rate calculations

cell	approx. acre	ft2	start date	total ft2	
cell 2B	3.7	161172	2004	161172	
cell 3 Ph I	4.4	191554	Oct-08	352836	
cell 3 Ph II	4.5	200376	Oct-10	553212	
total lined	12.7	553212			
year					percolation
2004	gal leachate	vol, ft3	area used	depth, ft	inches
2005	339080	45331.55	161172	0.28	3.38
2006	258082	34502.94	161172	0.21	2.57
2007	284000	37967.91	161172	0.24	2.83
2008	420000	56149.73	161172	0.35	4.18
2009	600250	80247.33	352836	0.23	2.73
2010	1015286	135733.4	352836	0.38	4.62
2011	1108595	148213.8	553212	0.27	3.21
2012	1650942	220714.2	553212	0.40	4.79
2013	1645722	220016.3	553212	0.40	4.77
		0 yr	average	0.31	3.71
		0 yr	std. dev		
		2010-13	average	0.39	4.69

MSB Central Landfill Percolation Calculations

Precipitation			
NOAA lab Comp inches	percip ratio	NOAA Exp Farm inches	percip ratio
17.34		15.19	
21.40	0.16	17.47	0.19
18.28	0.14	18.21	0.14
13.90	0.20	14.52	0.19
14.05	0.30	13.18	0.32
11.24	0.24	11.36	0.24
26.03	0.18	12.58	0.37
18.53	0.17	14.89	0.22
19.21	0.25	16.50	0.29
17.33	0.27	15.98	0.30

Table shows a spreadsheet calculation of MSB Central Landfill leachate collection volumes for the years 2004 through 2013, areas of liners installed, and the resulting total inches per year percolation.

Annual rainfall for the three NOAA monitored weather stations is shown and the ratio of percolation to rainfall is calculated.

Lowest standard deviation; best match

Figure 10 CLF Percolation vs Precipitation

AlaskChem Engineering 4/29/14

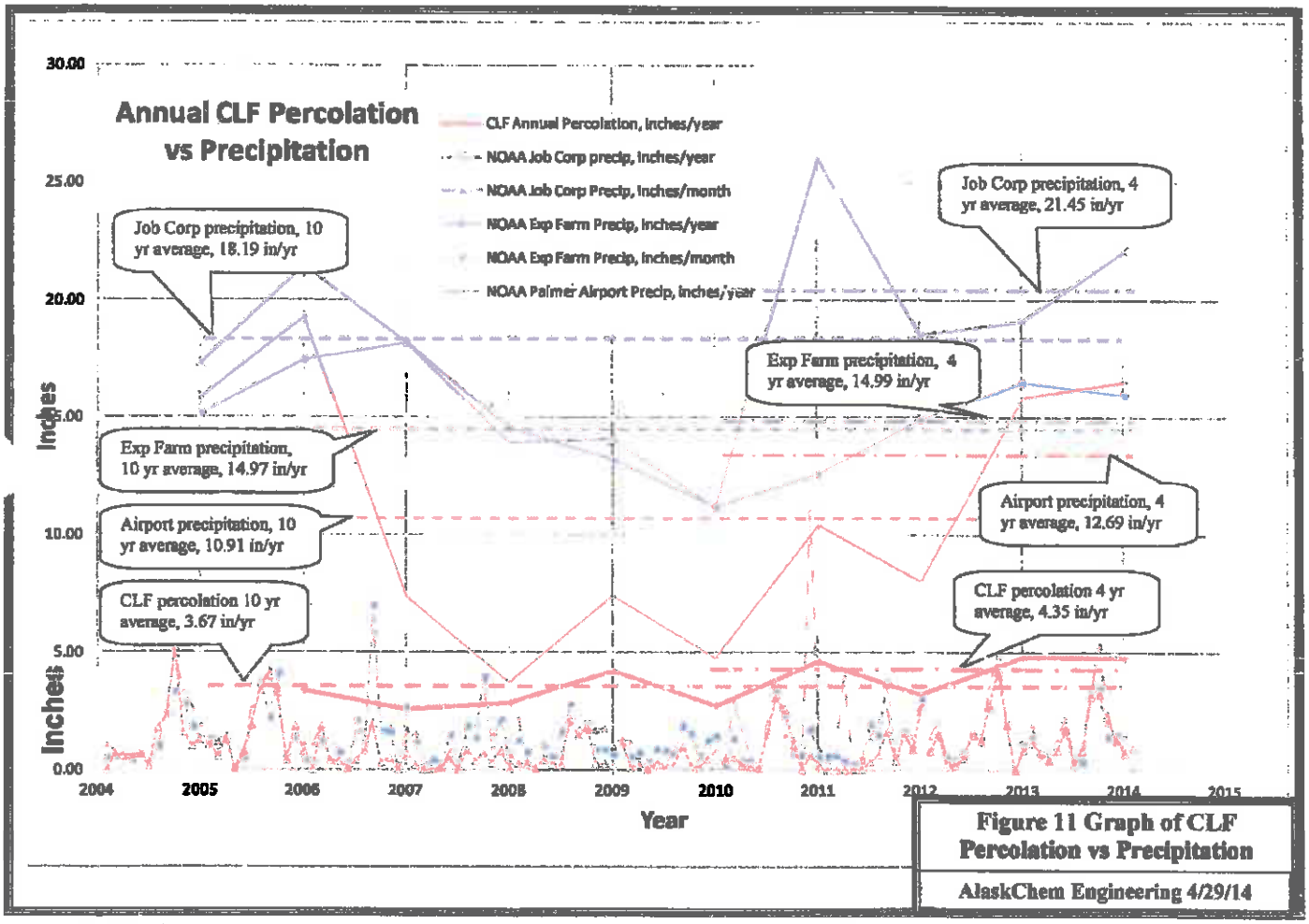


Figure 11 Graph of CLF Percolation vs Precipitation

AlaskChem Engineering 4/29/14

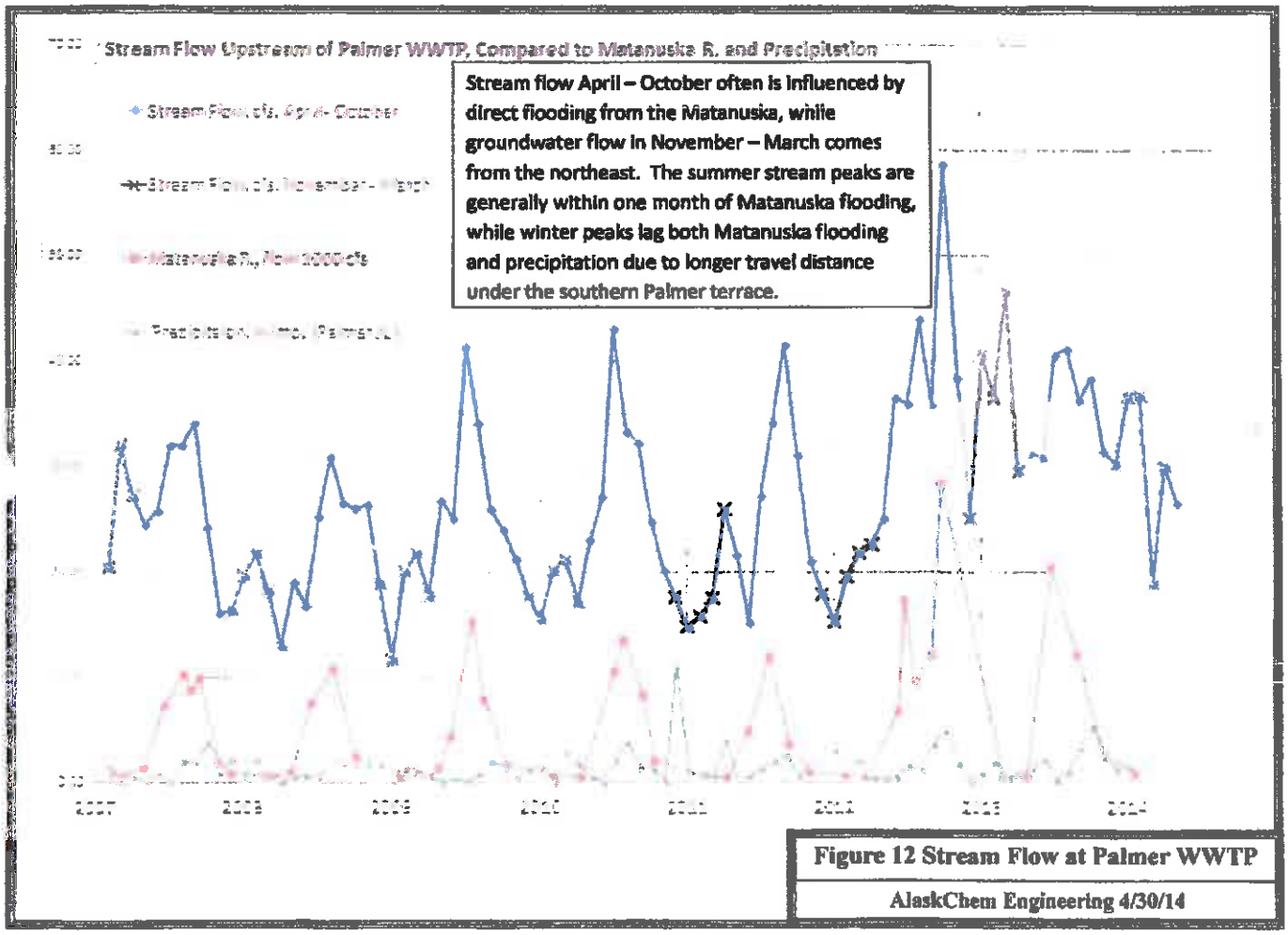
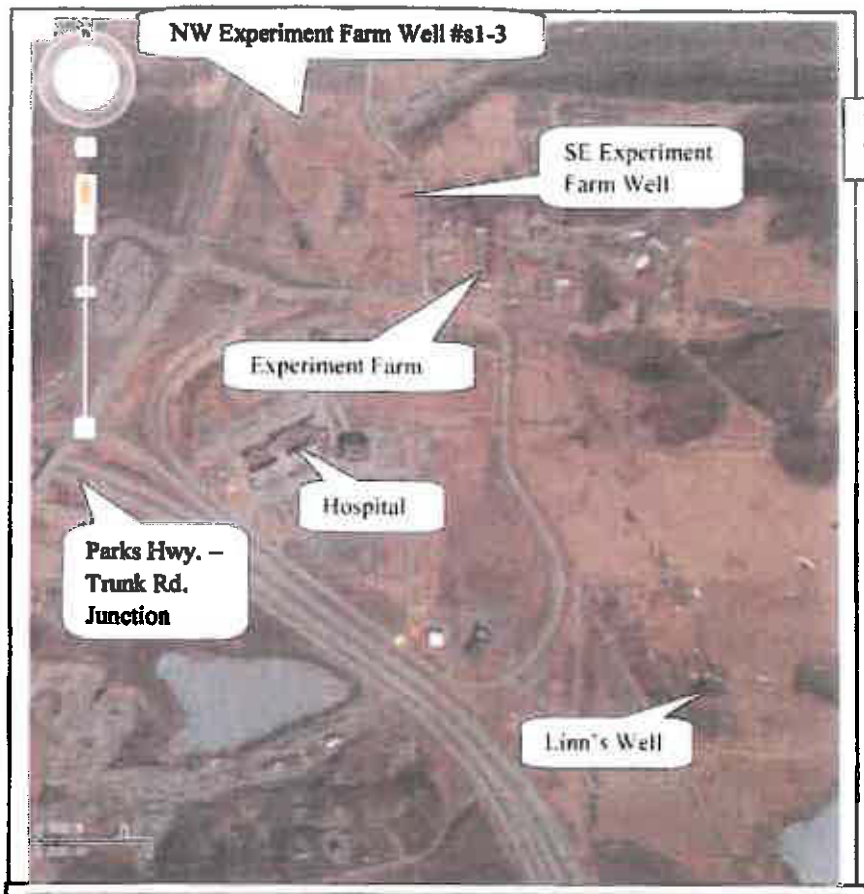


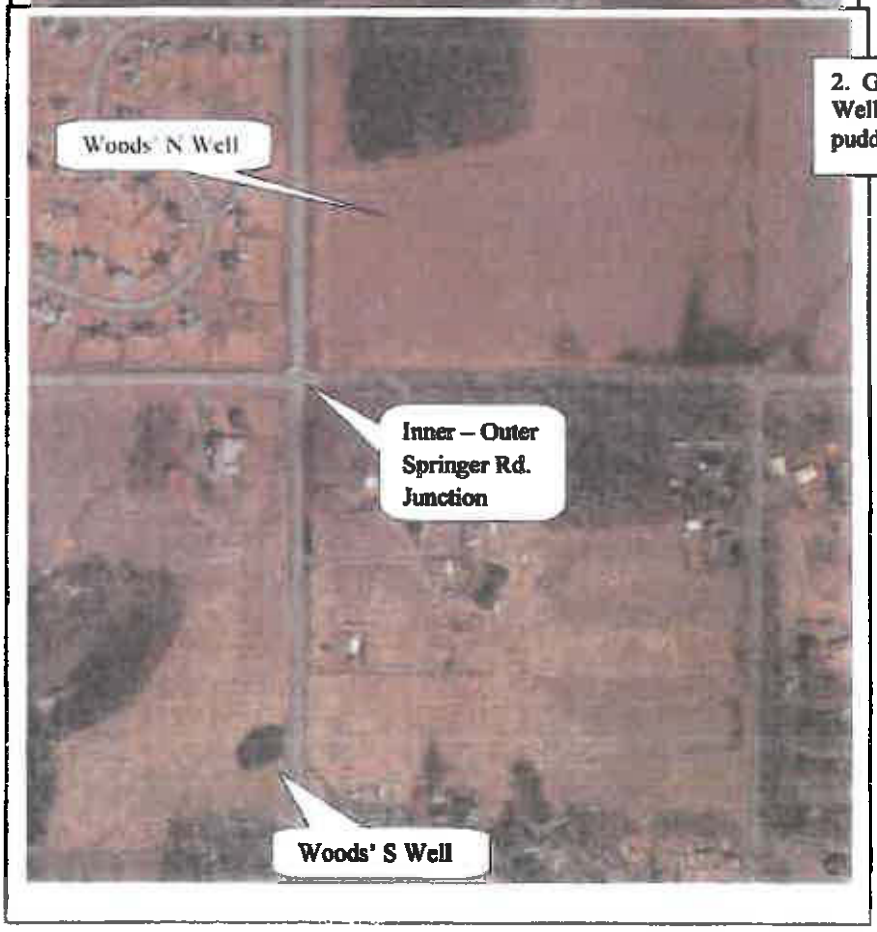
Figure 12 Stream Flow at Palmer WWTP

AlaskChem Engineering 4/30/14

Appendix 1 Photos page 1

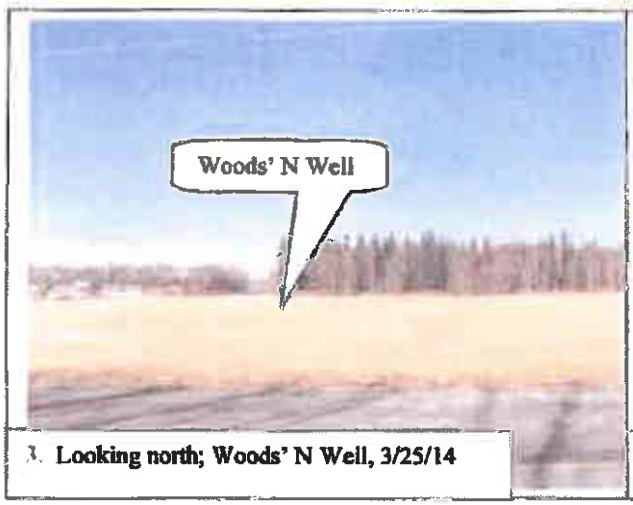


1. Google aerial (4/14/11) Well locations

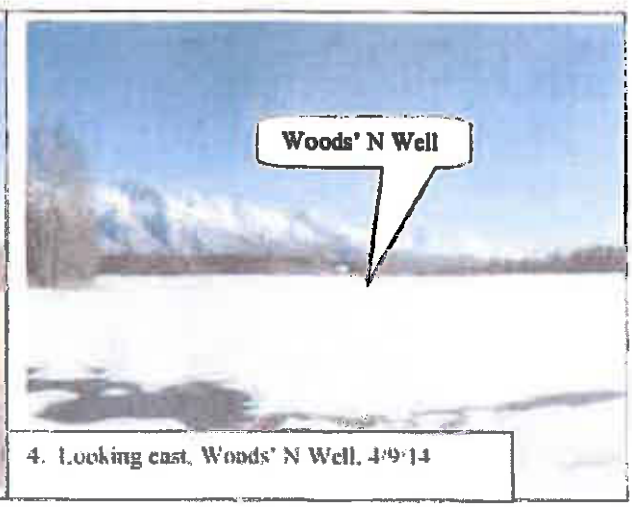


2. Google aerial (4/14/11) Well locations; note melt puddles in fields and ditches

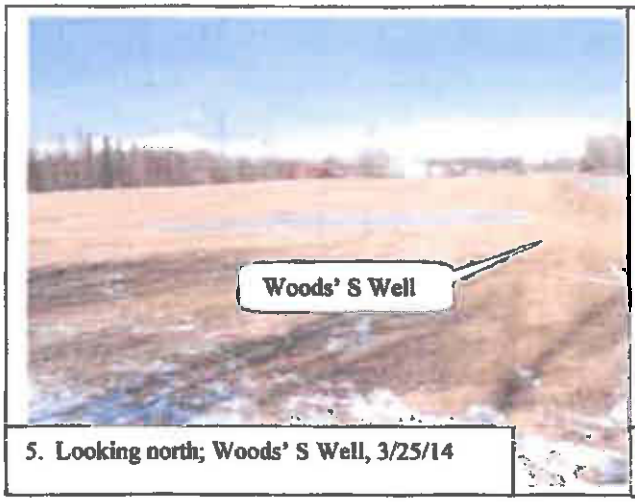
Appendix 1 Photos page 2



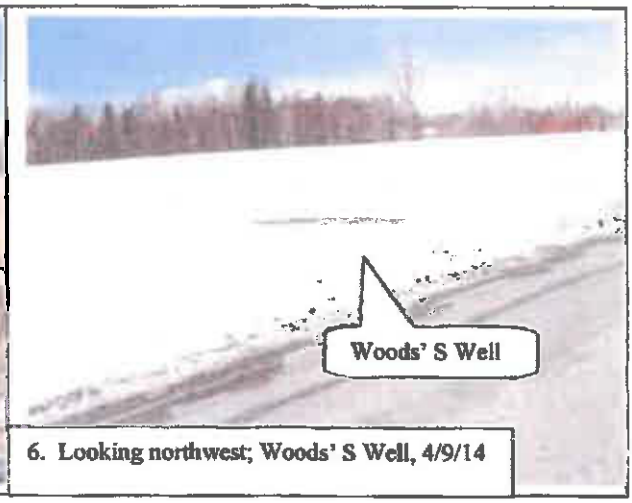
3. **Looking north; Woods' N Well, 3/25/14**



4. Looking east, Woods' N Well, 4/9/14

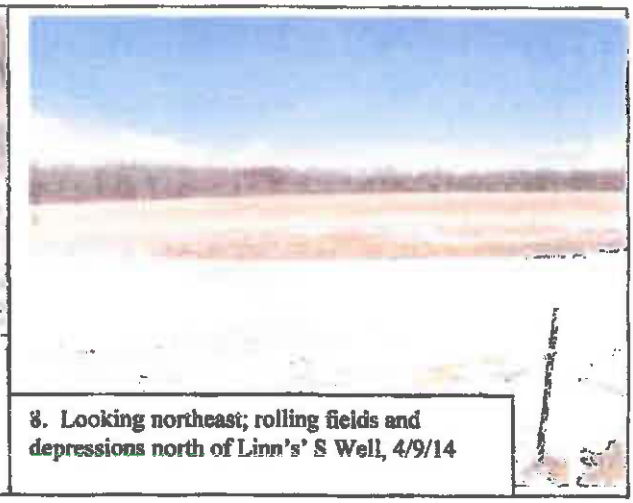


5. **Looking north; Woods' S Well, 3/25/14**



6. **Looking northwest; Woods' S Well, 4/9/14**

7. **Looking northwest; Linn's' S Well, 4/9/14**



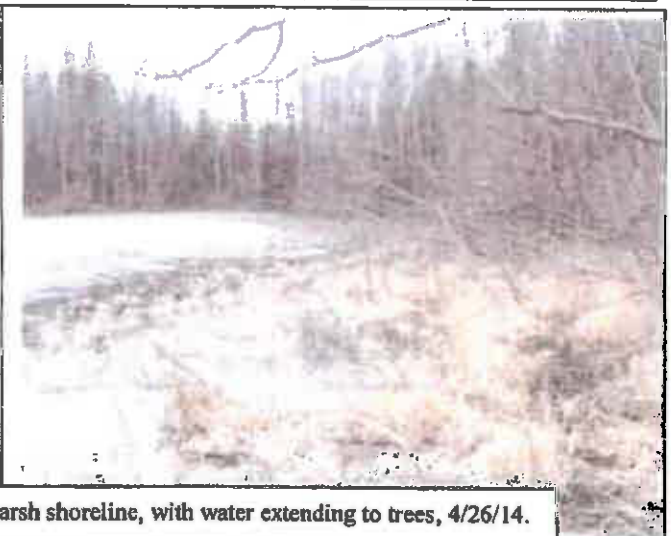
8. **Looking northeast; rolling fields and depressions north of Linn's' S Well, 4/9/14**

9. Springer Rd.; ditches with runoff from field, 4/9/14

Baird Lake, photos 10-13, lies upgradient of the proposed monofill. Photo 10 is a 1939 aerial showing the northeast bay of the lake at high water, and photo 11 shows it at relatively low water with only a narrow stream remaining between the bay and lake. Larry Vasanoja and his sister Marcella described playing there in the late 1930's, and recalled Baird's descriptions of the first structures built by the original homesteader; his mule shed was close to the lake, which rose and submerged the lower log courses. The log corduroy roadbed across the mouth of the bay allowed driving a wagon to the spring; it was submerged ~ 4 ft in 1936-38. Marcella showed me the site much later; there was no water connection between the bay and lake.

Photos 12-13 show the bay, with water extending to the trees, relatively close to the 1939 outline.

10-11. NE bay of Baird's Lk. Left, USDA aerial from October 1939; right Google aerial from 4/14/11



12-13. NW bay of Baird's Lk. Lake has flooded marsh shoreline, with water extending to trees, 4/26/14.

13. Proposed monofill site; silty soil, 8/20/13

14. Proposed monofill site; silty gravel bank, 8/20/13

15. Proposed monofill site; silty sandy soil, 8/20/13

16. Proposed monofill site; silty sandy soil, 8/20/13

17. Proposed monofill site; runoff puddle on compacted silty soil, 8/20/13

18. Proposed monofill site; silty gravel bank, 8/20/13

19. MSB CLF; coarse clean gravel daily cover enhances infiltration, 4/15/14

20. MSB CLF; daily cover laid flat over lined cell 3, no runoff observed from cells, 4/15/14

21. MSB CLF; lifts are not designed to shed water, foreground and left await final cover, 4/15/14

22. MSB CLF C&D cell; unsorted loads deposited with minimal inspection, 4/15/14

23. MSB CLF C&D cell; unsorted loads include non-construction inert waste, 4/15/14

24. MSB CLF C&D cell; appliances and large metal pieces are segregated for recycling. Refrigerants are first removed. Scavenging is allowed with permission, 4/15/14

ATTACHMENT 5

CENTRAL MONOFILL SERVICES

CONDITIONAL USE PERMIT APPLICATION

2014

NOTE:

1. CONTOURS SHOWN ARE 2' MINOR AND 10' MAJOR.
2. ALL SLOPES AND SURFACES WILL BE REVEGETATED WITH GRASS.

MATERIAL STORAGE AND RECYCLING AREAS (MINIMUM 25' SETBACK FROM ALL OPEN WATER)

MONOFILL

52 ACRES OF CONDITIONALLY PERMITTED AREA

400 0 200 400 800

GRAPHIC SCALE (IN FEET)

North

PROPERTY LINE (TYP.)

GRAVEL POND

GRAVEL POND

MONOFILL AREA TO BE RECLAIMED INTO OPEN AREA USE. POTENTIALLY AGRICULTURE OR RECREATIONAL LAND.

470'

SECTION LINE & QUARTER SECTION LINE (TYP). (SEE FIGURE 1 FOR TOWNSHIP, RANGE AND SECTION)

ACCESS ROAD TO REMAIN FOR USE

POND LIMITS

SCALE, SCALE HOUSE, AND FIELD OFFICE

GRAVEL POND

360'

GLENN HIGHWAY

FUTURE STORAGE OR SHOP BUILDINGS

LANDSCAPING AREA

DRIVEWAY ACCESS POINT
2 - 15' WIDE ONE WAY ENTRANCE/EXIT ROADS
WITH GATED ENTRY AND SECURITY FENCE

Matanuska - Susitna Borough
Development Services
MAY 14 2014
Received

CENTRAL MONOFILL SERVICES
PALMER MONOFILL
PALMER , AK

CONDITIONAL USE PERMIT
SITE PLAN

ENVIRONMENTAL MANAGEMENT INCORPORATED

PREPARED: LMR
DRAWN: LMR
REVIEWED: SD
DATE: 2/14/14

SHEET: A
OF 1 SHEETS

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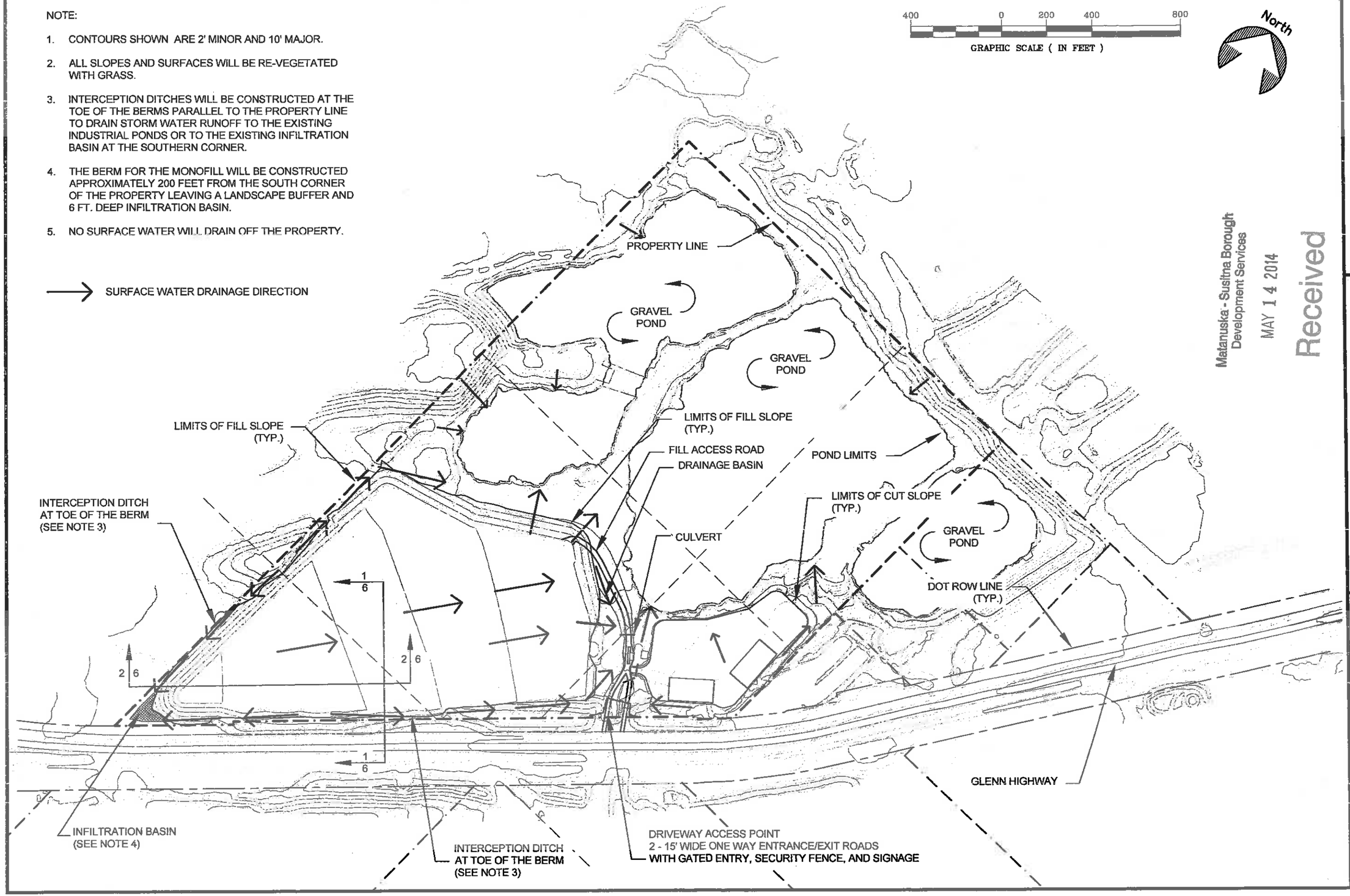
ATTACHMENT 6

NOTE:

1. CONTOURS SHOWN ARE 2' MINOR AND 10' MAJOR.
2. ALL SLOPES AND SURFACES WILL BE RE-VEGETATED WITH GRASS.
3. INTERCEPTION DITCHES WILL BE CONSTRUCTED AT THE TOE OF THE BERMS PARALLEL TO THE PROPERTY LINE TO DRAIN STORM WATER RUNOFF TO THE EXISTING INDUSTRIAL PONDS OR TO THE EXISTING INFILTRATION BASIN AT THE SOUTHERN CORNER.
4. THE BERM FOR THE MONOFILL WILL BE CONSTRUCTED APPROXIMATELY 200 FEET FROM THE SOUTH CORNER OF THE PROPERTY LEAVING A LANDSCAPE BUFFER AND 6 FT. DEEP INFILTRATION BASIN.
5. NO SURFACE WATER WILL DRAIN OFF THE PROPERTY.

→ SURFACE WATER DRAINAGE DIRECTION



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MAY 14 2014
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CENTRAL MONOFILL SERVICES
PALMER MONOFILL
PALMER, AK

DRAINAGE PLAN

ENVIRONMENTAL MANAGEMENT INCORPORATED

PREPARED: LMR
DRAWN: LMR
REVIEWED: LAH
DATE: 3/3/14

SHEET: 8

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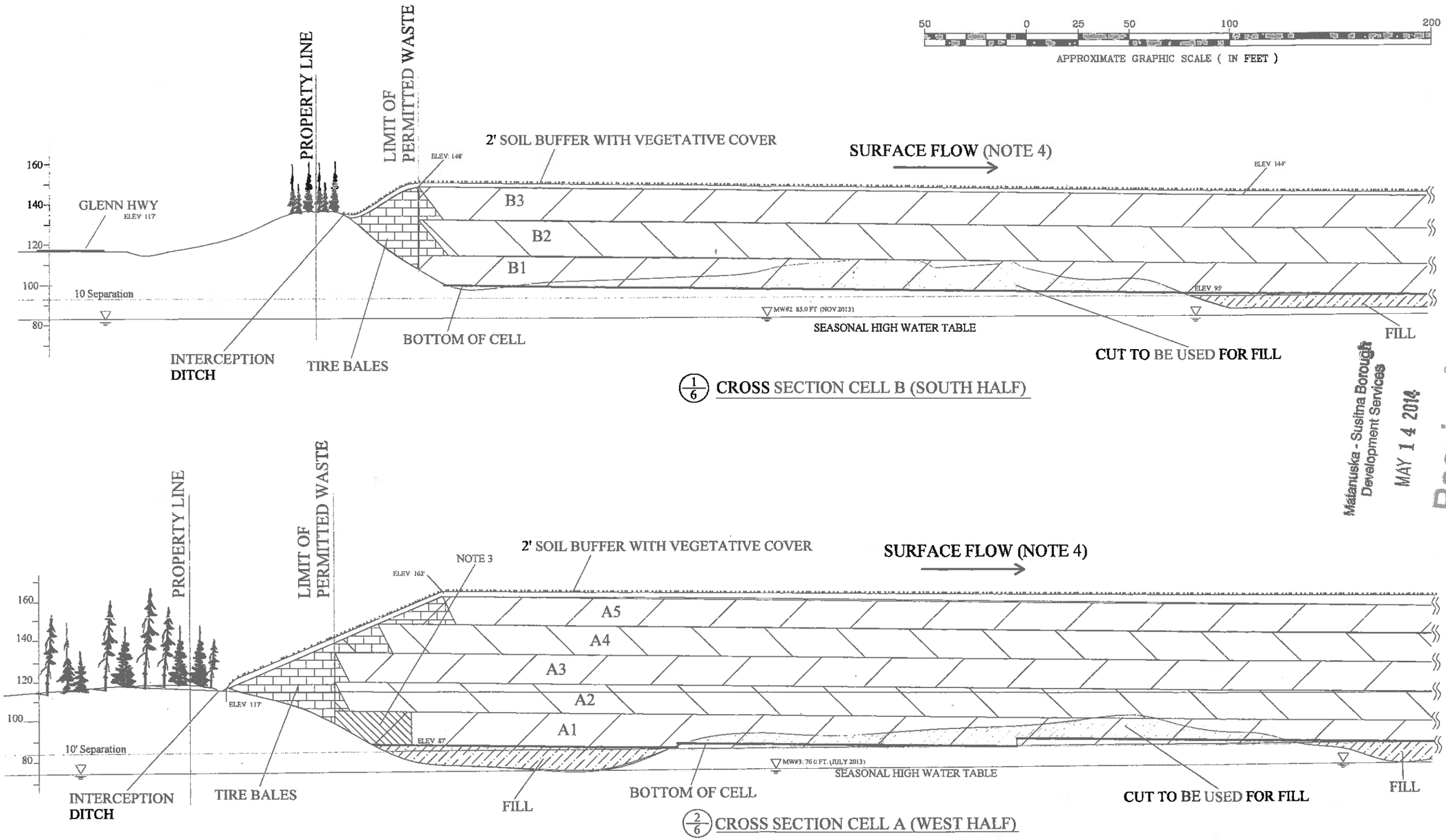
ATTACHMENT 7



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NOTES
1. THE VERICAL DATUM TO BE USED FOR CONSTRUCTION WILL BE NAVD 88. THE DATUM IS A GOOD FIT WITH THE MAT SU BOROUGH PROVIDED LIDAR DATA. NOTE: THERE IS APPROXIMATELY A 6.5 FOOT DIFFERENCE BETWEEN THIS DATUM AND THE DATUM THAT WAS USED FOR ORIGINAL DESIGNS.
2. A MINIMUM OF 10 FOOT SEPERATION WILL BE KEPT BETWEEN THE RECORDED SEASONAL HIGH WATER TABLE AND THE BOTTOM OF THE CELLS.
3. INTIALLY WASTE WILL BE PLACED IN THE BOTTOM LAYER STARTING AS SHOWN HERE. ONCE THE FINAL HEIGHT OF THE LAYER IS REACHED A CAP OF LOW PERMIABLE SOILS WILL BE PLACED OVER THE WASTE.
4. THE CELLS WILL BE CONSTRUCTED SO THAT STORM WATER WILL ALWAYS MOVE AWAY FROM THE WORKING FACE OF THE CELL. THE TOPS OF THE ACTIVE CELL LAYER WILL BE CROWNED TO MOVE WATER TO THE SIDES OF THE CELL.

PALMER MONOFILL
PALMER, AK

PALMER MONOFILL CROSS SECTION

ENVIRONMENTAL MANAGEMENT INCORPORATED

PREPARED: LAH
DRAWN: ADA
REVIEWED: LAH
DATE: 5/5/14

FIGURE
6

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ATTACHMENT 8

THE STATE of ALASKA
GOVERNOR SEAN PARNELL

Department of Environmental Conservation

DIVISION OF WATER
Wastewater Discharge Authorization Program

555 Cordova Street
Anchorage, Alaska 99501-2617
Main: 907.269.6285
Fax: 907.334.2415
www.dec.alaska.gov/water/wwdp

Matanuska - Susitna Borough
Development Services
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June 3, 2013

Company: Central Recycling Services
ATTN: Shane Durand, Secretary/Treasurer
2400 Railroad Ave.
Anchorage, AK 99501

Facility: Central Monofill Services
2480 and 2560 S. Glenn Highway
Palmer, AK 99645

This letter acknowledges that you have submitted a complete No Exposure Certification for exclusion from the NPDES industrial storm water permitting requirements. This facility has been granted exclusion from permitting under the terms and conditions imposed by the DEC's Storm water Multi-Sector General Permit (MSGP). Exclusion for this site began on **June 3, 2013.**

As stated above, this letter acknowledges receipt of a complete No Exposure Certification. However, it is not a DEC determination of the validity of the information you provided. Your eligibility for exclusion is based on the validity of the certification you provided. Your signature on the No Exposure Certification form certifies that you have read, understood, and are implementing all of the applicable requirements. An important aspect of this certification requires that you correctly determine whether you are eligible for exclusion.

Please note that a complete No Exposure Certificate must be submitted every five years. If conditions change resulting in the exposure of materials and activities to storm water, you must obtain coverage under an NPDES storm water permit immediately.

An electronic copy of the MSGP and additional storm water guidance material can be viewed and downloaded on the Alaska DEC's storm water website at www.dec.alaska.gov/water/wnpspc/stormwater/Index.htm.

If you have any questions regarding your No Exposure Certification or other questions concerning the MSGP, please call the ADEC contact: William Ashton (907)269-6283.

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ATTACHMENT 9

Matanuska - Susitna Borough
Development Services

MAY 1 4 2014

Received

Hemlock Scientific, LLC
199 Comfort Lane
Indian, AK 99540
(907) 350-3880
pat@hemlockscientific.com
www.hemlockscientific.com

May 13, 2013

Shane Durand
Central Environmental Inc.
311 N. Sitka St.
Anchorage, AK 99501
Shane@cei-alaska.com

Re: Clean Water Act Jurisdiction
Palmer Monofill Site (Section 18, T17N, R2E, SM; N61.55° W149.17°)

Mr. Durand,

This brief report summarizes my evaluation of the potential jurisdictional status under the Clean Water Act of the Palmer Monofill Site located in the Matanuska-Susitna Borough, Alaska.

The site includes an inactive gravel mine (pit). The gravel mine was originally excavated from uplands and was in operation for many years until ceasing at an unknown date. Portions of the inactive gravel pit have accumulated water and developed vegetation cover that indicates the development of wetlands. Most wetlands and waters generally are covered under the jurisdiction of the Clean Water Act, regulated by the Department of the Army, Corps of Engineers and the Environmental Protection Agency (EPA). Some waters and wetlands are not jurisdictional due to their lack of connection with navigable waterways that flow to the sea or tributaries of these. Jurisdictional status is also linked to interstate commerce and in cases where a water or wetland provides significant contribution to interstate commerce (e.g., fishing, bird watching, boating, etc.), jurisdiction can be demonstrated.

There are no flowing streams or rivers in proximity to the site; the nearest is Spring Creek located about 1 mile to the south and the Matanuska River located about a 1 mile to the southeast. There are lakes in the area, the nearest to the site include Bradley Lake located approximately 1,800 feet southwest and Canoe Lake located west of the site about 1,800 feet of the flooded portion of the gravel mine. There are no streams, canals, ditches, or other features that provide a continuous surface connection between the flooded gravel pit and the lakes, the Matanuska River, or Spring Creek.

The evaluation of potential Clean Water Act jurisdiction is based on the published guidance of the Department of the Army, Corps of Engineers[1]. The guidance identifies the wetlands and waters that are considered jurisdictional, which include:

- Traditional Navigable Waters (TNWs);
- Wetlands adjacent to traditional navigable waters;
- Non-navigable tributaries of TNWs that are relatively permanent waters (RPWs)[2];
- Wetlands that directly abut such tributaries.

[1] Clean Water Act Jurisdiction Following the U.S. Supreme Court's Decision in Rapanos v. United States & Carabell v. United States. December 02, 2008. Obtained online at www.usace.army.mil/Missions/CivilWorks/RegulatoryProgramandPermits/RelatedResources/CWAGuidance.aspx

[2] Typically flow year-round or have continuous flow at least seasonally (e.g., typically three months).

Other wetlands and waters must be demonstrated to have a significant nexus with TNWs to qualify for jurisdiction. A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by any wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical and biological integrity of downstream traditional navigable waters. Significant nexus also includes consideration of ecologic factors including the following: the potential of tributaries to carry pollutants and flood waters to TNWs; provision of aquatic habitat that supports a TNW; potential of wetlands to trap and filter pollutants or store flood waters; and maintenance of water quality in TNWs.

The jurisdictional guidance also clarifies the geographic features generally are not jurisdictional waters, including swales or erosional features (e.g. . gullies, small washes characterized by low volume, infrequent, or short duration flow); ditches (including roadside ditches) excavated wholly in and draining only uplands and that do not carry a relatively permanent flow of water; non-navigable tributaries that are not relatively permanent.

Although the guidance does not specifically address gravel pits excavated from uplands that have flooded, evaluation of the site indicates that waters and associated wetlands at the site are in fact not jurisdictional because these are *intrastate, isolated* waters. There is no continuous surface connection with the nearest TNWs (Bradley Lake and Canoe Lake), which without a connection are too distant from the site (1,800 feet) to provide significant aquatic habitat support to these TNWs. The waters and wetlands within the flooded gravel pits do not contribute to interstate commerce through recreation or other activities. Therefore, the aquatic features within the partially-flooded gravel pits at the site are not jurisdictional under the Clean Water Act.

Conclusions

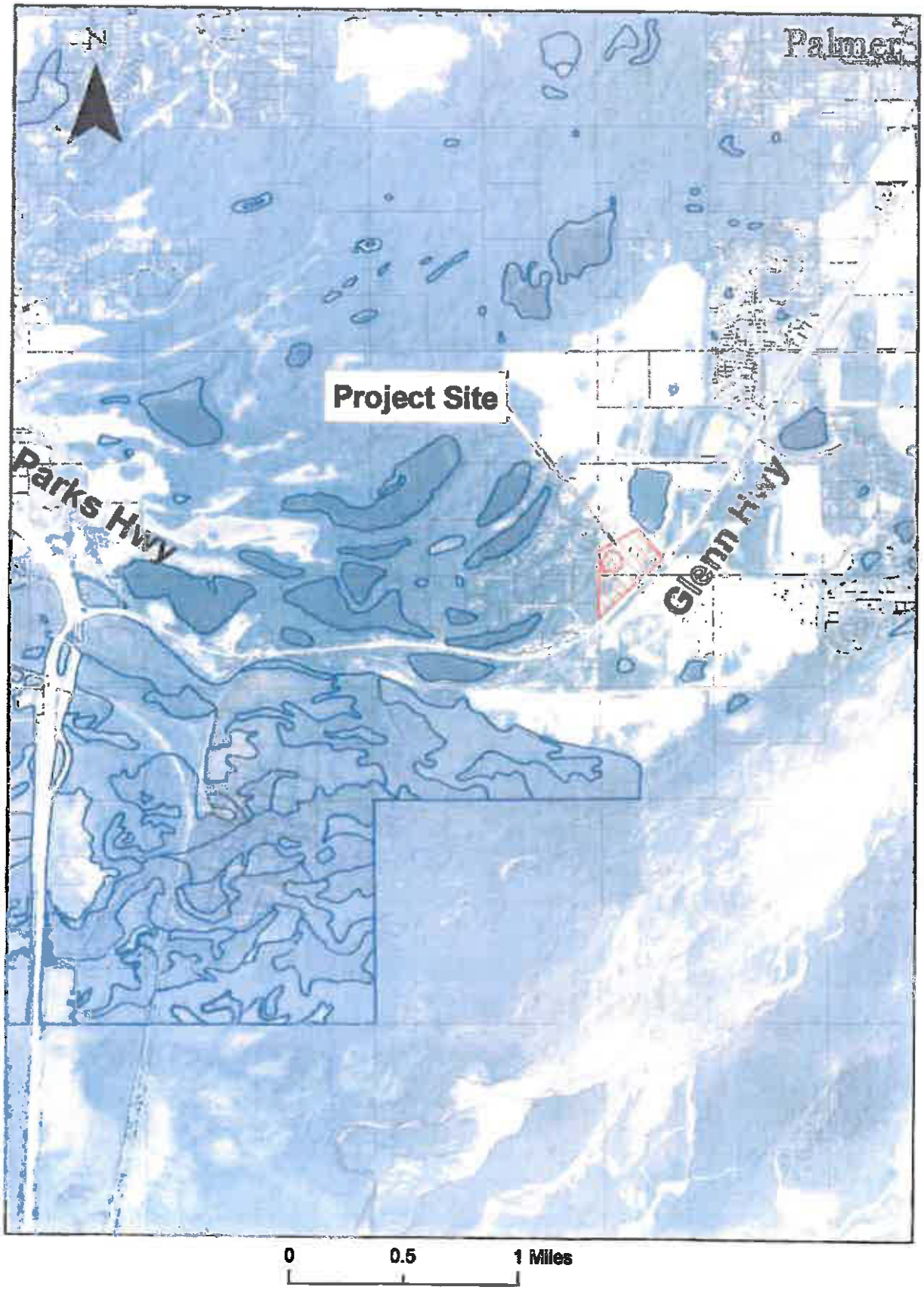
The potential Clean Water Act jurisdictional status of the partially-flooded gravel pits located at the proposed Palmer Monofill Site has been evaluated and determined to be negative. The aquatic features including surface water and wetlands within the pits are *intrastate, isolated* waters and therefore are not jurisdictional.

This determination is preliminary and has not been corroborated with the Corps of Engineers, who make final determinations of jurisdiction under the Clean Water Act.

Please feel free to contact me if you have questions or comments.

Sincerely,
Hemlock Scientific, LLC

Patrick Athey
Wetland Scientist
pat@hemlockscientific.com


N
Palmer
Project Site
Parks Hwy
Glenn Hwy
0
0.5
1 Miles

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ATTACHMENT 10

Shane Durand

.rom: Emery, Nathaniel G (DEC) <nathaniel.emery@alaska.gov>
Sent: Monday, April 15, 2013 12:53 PM
To: Shane Durand
Subject: RE: News on Public Comment

I spoke with the MatSu Borough and looks like their process is much further out. Because you can't do much without their green light, we probably won't race to issue this permit but so far we feel the application is complete and nobody has presented any information for us to be suspicious of the proposal.

Nate

Matanuska - Susitna Borough
Development Services

MAY 1 4 2014

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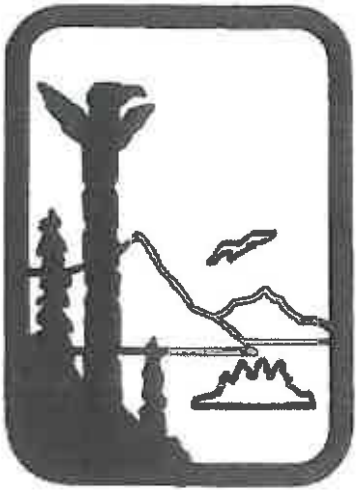
ATTACHMENT 11

DEPARTMENT OF

ENVIRONMENTAL CONSERVATION



Matanuska - Susitna Borough
Development Services
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18 AAC 60

Solid Waste Management

As amended through April 12, 2013

Sean Parnell
Governor

Larry Hartig
Commissioner

THE REGULATIONS REPRODUCED HERE HAVE BEEN PROVIDED BY THE DEPARTMENT OF ENVIRONMENTAL CONSERVATION AS A PUBLIC COURTESY. WHILE EVERY EFFORT HAS BEEN MADE TO ASSURE THE ACCURACY OF THE REPRODUCED VERSION, THE DEPARTMENT OF ENVIRONMENTAL CONSERVATION CANNOT GUARANTEE ITS ABSOLUTE ACCURACY. PAPER COPIES OF THE REGULATIONS AS ORIGINALLY FILED BY THE LIEUTENANT GOVERNOR ARE AVAILABLE FROM THE DEPARTMENT OF ENVIRONMENTAL CONSERVATION.

THE REGULATIONS HAVE AN EFFECTIVE DATE OF APRIL 12, 2013, ARE IN REGISTER 206, AND WILL APPEAR IN OFFICIAL PUBLISHED FORM IN THE JULY 2013 SUPPLEMENT TO THE ALASKA ADMINISTRATIVE CODE.

TABLE OF CONTENTS

ARTICLE 1. GENERAL STANDARDS, REQUIREMENTS, AND LIMITATIONS 2
18 AAC 60.005. PURPOSE AND APPLICABILITY 2
18 AAC 60.007. SOLID WASTES USED AS FILL 4
18 AAC 60.008. BENEFICIAL USE 7
18 AAC 60.010. ACCUMULATION, STORAGE, AND TREATMENT 7
18 AAC 60.015. TRANSPORT 11
18 AAC 60.020. HAZARDOUS WASTE 11
18 AAC 60.025. POLLUTED SOIL 11
18 AAC 60.030. MEDICAL WASTE 13
18 AAC 60.035. VEHICLES AND CONSTRUCTION EQUIPMENT 14
18 AAC 60.040. WELLHEAD PROTECTION 14

ARTICLE 2. WASTE DISPOSAL PERMIT 15
18 AAC 60.200. PERMIT REQUIREMENT 15
18 AAC 60.203. DESIGN APPROVAL 18
18 AAC 60.205. [REPEALED] 19
18 AAC 60.207. OPERATION UNDER A COMPREHENSIVE SOLID WASTE MANAGEMENT PERMIT 19
18 AAC 60.210. PERMIT APPLICATION 19
18 AAC 60.211. CLASS III COMMUNITY MSWLF PERMIT APPLICATION 21
18 AAC 60.213 RESEARCH, DEVELOPMENT AND DEMONSTRATION PERMIT 23
18 AAC 60.215. PERMIT ISSUANCE 25
18 AAC 60.217. SEPARATION FROM GROUNDWATER 26
18 AAC 60.220. ACCESS REQUIREMENTS 26
18 AAC 60.225. SURFACE WATER REQUIREMENTS 27
18 AAC 60.227. LANDFILLS LOCATED ON PERMAFROST 28
18 AAC 60.228. EXEMPTIONS FOR FREEZEBACK LANDFILLS 28
18 AAC 60.230. DISEASE VECTOR, WILDLIFE, AND DOMESTIC ANIMAL CONTROL 29
18 AAC 60.233. CONTROLLING IMPACTS OUTSIDE FACILITY BOUNDARIES. 29
18 AAC 60.235. RECORDKEEPING REQUIREMENTS 29
18 AAC 60.240. PROCEDURES TO EXCLUDE RECEIPT OF HAZARDOUS WASTE 30
18 AAC 60.243. INTERMEDIATE COVER 31
18 AAC 60.245. PROMPT CLOSURE 31
18 AAC 60.250. EXISTING PERMITS AND PERMIT RENEWAL 31
18 AAC 60.255. GENERAL PERMIT 32
18 AAC 60.260. PERMIT TERMINATION AND MODIFICATION 34
18 AAC 60.265. PROOF OF FINANCIAL RESPONSIBILITY 35
18 AAC 60.270. TERMINATION OF POST-CLOSURE OBLIGATIONS 35

ARTICLE 3. MUNICIPAL SOLID WASTE LANDFILLS 37
18 AAC 60.300. PURPOSE, SCOPE, AND APPLICABILITY; CLASSES OF MSWLF 37
18 AAC 60.305. AIRPORT SAFETY 39
18 AAC 60.310. FLOODPLAINS 40
18 AAC 60.315. WETLANDS 40
18 AAC 60.320. FAULT AREAS, SEISMIC IMPACT ZONES, AND UNSTABLE AREAS 41
18 AAC 60.325. [REPEALED] 42

18 AAC 60.330. DESIGN STANDARDS 42
18 AAC 60.333. AIR QUALITY CONTROL 43
18 AAC 60.335. MINIMUM OPERATOR QUALIFICATIONS FOR A CLASS I MSWLF 43
18 AAC 60.340. COVER MATERIAL, REQUIREMENTS FOR A CLASS I OR CLASS II MSWLF 44
18 AAC 60.345. COVER MATERIAL, WORKING FACE, AND LITTER CONTROL REQUIREMENTS FOR A CLASS III MSWLF 44
18 AAC 60.350. CONTROL OF EXPLOSIVE GASES 45
18 AAC 60.355. OPEN BURNING 46
18 AAC 60.360. LIQUIDS RESTRICTIONS 46
18 AAC 60.365. CO-DISPOSAL OF SEWAGE SOLIDS 46
18 AAC 60.370. [REPEALED] 47
18 AAC 60.375. CORRECTIVE ACTION AT A MSWLF 48
18 AAC 60.380. MSWLF RECORDKEEPING REQUIREMENTS 48
18 AAC 60.385. CLOSURE OF EXISTING MSWLF 48
18 AAC 60.390. CLOSURE STANDARDS FOR A CLASS III MSWLF 49
18 AAC 60.395. CLOSURE STANDARDS FOR A CLASS I OR CLASS II MSWLF 49
18 AAC 60.396. POST-CLOSURE CARE REQUIREMENTS FOR A CLASS III MSWLF 51
18 AAC 60.397. POST-CLOSURE CARE REQUIREMENTS FOR A CLASS I OR CLASS II MSWLF 52
18 AAC 60.398. FINANCIAL ASSURANCE FOR A CLASS I OR CLASS II MSWLF 53

ARTICLE 4. MONOFILLS 54
18 AAC 60.400. APPLICABILITY 54
18 AAC 60.410. LOCATION STANDARDS 55
18 AAC 60.420. OPERATIONS 55
18 AAC 60.430. DRILLING WASTE 55
18 AAC 60.440. CLOSURE OF INACTIVE RESERVE PITS 63
18 AAC 60.450. ASBESTOS 69
18 AAC 60.455. MINING WASTE 71
18 AAC 60.460. INERT WASTE 71
18 AAC 60.470. SEWAGE SOLIDS 72
18 AAC 60.480. WOOD WASTE 77
18 AAC 60.485. INDUSTRIAL SOLID WASTE 77
18 AAC 60.490. CLOSURE DEMONSTRATION AND POST-CLOSURE CARE 78
18 AAC 60.495. [REPEALED] 79

ARTICLE 5. LAND APPLICATION OF BIOSOLIDS 80
18 AAC 60.500. APPLICABILITY 80
18 AAC 60.505. GENERAL REQUIREMENTS 81
18 AAC 60.510. PERMIT APPLICATION 82

ARTICLE 6. USER FEES 86
18 AAC 60.700. FEE REQUIREMENTS 86
18 AAC 60.720. [REPEALED] 90
18 AAC 60.730. FEE APPEAL PROCEDURES 91

ARTICLE 7. MONITORING AND CORRECTIVE ACTION REQUIREMENTS 92

18 AAC 60.800. VISUAL AND AIR MONITORING 92
18 AAC 60.810. SURFACE WATER MONITORING 93
18 AAC 60.815. CORRECTIVE ACTION FOR PROBLEMS DISCOVERED DURING VISUAL AND SURFACE WATER MONITORING OR DURING AN INSPECTION 94
18 AAC 60.820. GROUNDWATER MONITORING AND CORRECTIVE ACTION 95
18 AAC 60.825. GROUNDWATER MONITORING SYSTEMS 97
18 AAC 60.830. GROUNDWATER SAMPLING AND ANALYSIS 99
18 AAC 60.840. PARAMETERS FOR SURFACE WATER MONITORING AND GROUNDWATER DETECTION MONITORING 102
18 AAC 60.850. DETECTION MONITORING PROGRAM 105
18 AAC 60.860. ASSESSMENT MONITORING AND CORRECTIVE ACTION 107

ARTICLE 8. GENERAL PROVISIONS 108
18 AAC 60.900. WAIVERS 108
18 AAC 60.990. DEFINITIONS 108

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Chapter 60. Solid Waste Management.

Article

1. General Standards, Requirements, and Limitations (18 AAC 60.005 - 18 AAC 60.040)
2. Waste Disposal Permit (18 AAC 60.200 - 18 AAC 60.270)
3. Municipal Solid Waste Landfills (18 AAC 60.300 - 18 AAC 60.398)
4. Monofills (18 AAC 60.400 - 18 AAC 60.495)
5. Land Application of Biosolids (18 AAC 60.500 - 18 AAC 60.510)
6. User Fees (18 AAC 60.700 - 18 AAC 60.730)
7. Monitoring and Corrective Action Requirements (18 AAC 60.800 - 18 AAC 60.860)
8. General Provisions (18 AAC 60.900 - 18 AAC 60.990)

Editor's note: Some regulations in this chapter, which was reorganized and revised in 1996, were further changed, effective 10/29/98, and distributed in Register 148, January 1999.

The regulations in this chapter, effective 1/28/96, and distributed in Register 137, constitute a comprehensive reorganization and revision of this material. They replace all previous regulations in this chapter that were repealed simultaneously with the adoption of these regulations. The history line at the end of each section does not reflect the history of the replaced provisions before 1/28/96, nor is the section numbering related to the numbering before that date. Some section numbers in this revision were used in previous versions, but the current sections with those numbers are not necessarily related to the previous section numbers. Previous versions of this chapter, and amendments to those versions, may be reviewed at the Office of the Lieutenant Governor and may be found at Register 47, effective 7/19/73; Register 67, effective 8/21/78; Register 88, effective 10/9/83; Register 103, effective 9/20/87.

As of Register 151 (October 1999), the functions of the former Department of Community and Regional Affairs were transferred to other state agencies. Revisions to regulations to reflect changes in state agencies' names were made by the regulations attorney in accordance with ch. 58, SLA 1999 and AS 44.62.125(b)(6).

Article 1. General Standards, Requirements, and Limitations.

Section

05. Purpose and applicability
07. Solid waste used as fill
08. Beneficial use
10. Accumulation, storage, and treatment
15. Transport
20. Hazardous waste
25. Polluted soil
30. Medical waste
35. Vehicles and construction equipment
40. Wellhead protection

18 AAC 60.005. Purpose and applicability. (a) The purpose of this chapter is to promote cost-effective, environmentally-sound solid waste management and to ensure that landfills are designed, built, and operated to minimize health and safety threats, pollution, and nuisances. Each type of solid waste that is disposed in a landfill must be placed only in a landfill that meets the standards for that type of waste.

(b) Except as described in (c) of this section, this chapter applies to any person who accumulates, stores, transports, treats, or disposes of solid waste. The general requirements of 18 AAC 60.005 - 18 AAC 60.265 and 18 AAC 60.800 - 18 AAC 60.860 supplement the specific requirements for

(1) municipal solid waste landfills (MSWLF) as covered by 18 AAC 60.300 - 18 AAC 60.398;

(2) monofills as covered by 18 AAC 60.400 - 18 AAC 60.495; and

(3) land application of biosolids as covered by 18 AAC 60.500 - 18 AAC 60.510.

(c) The following wastes and materials, if disposed of or used as described in this subsection, are exempt from the requirements of this chapter unless mixed with nonexempt waste, there is a public health, safety, or welfare threat or environmental problem associated with management of the waste or material, or the waste or material is being managed in a manner that causes or contributes to a nuisance:

(1) landclearing waste, including excavated dirt, rock, soil, butt ends, stumps, and other similar waste;

(2) tree limbs and other foliage or woody debris, sometimes referred to as "slash," in a timber harvest area;

(3) bricks, mortar, and Portland cement type concrete, including reinforcing steel that cannot be easily removed;

(4) crumb rubber used in asphalt paving;

(5) crushed glass;

(6) domestic wastewater, nondomestic wastewater, and other wastes that are subject to a permit under AS 46.03, 18 AAC 72, or 33 U.S.C. 1342 (Federal Water Pollution Control Act, sec. 402), as amended through August 21, 1998;

(7) septage or septic tank pumpings that contain less than five percent solids by weight regulated under 18 AAC 72;

(8) waste rock from a mining operation;

(9) tailings from placer mining that have not been amalgamated or chemically treated; other mine tailings are regulated under 18 AAC 60.455;

(10) mining waste regulated by the Federal Surface Mining Control and Reclamation Act of 1977, 30 U.S.C. 1201 - 30 U.S.C. 1328, as amended through August 21, 1998, and by the Alaska Surface Coal Mining Control and Reclamation Act (AS 27.21), as amended through August 21, 1998;

(11) wood waste generated in amounts less than 10 cubic yards yearly, or in larger amounts if the conditions listed in this paragraph are met; wood waste that does not meet these conditions is regulated under 18 AAC 60.005 - 18 AAC 60.265, 18 AAC 60.480, and 18 AAC 60.800 - 18 AAC 60.990; the conditions that must be met are, as follows:

(A) the wood waste is used to construct roads, building pads, or parking areas;

(B) the use of wood will not diminish the life span or capabilities of the project when compared with other materials typically used in such projects;

(C) the project complies with the water quality standards in 18 AAC 70; and

(D) the wood waste in the project is no more than 10 feet thick at any location;

(12) source, special nuclear, or byproduct material as defined in 42 U.S.C. 2014 (Atomic Energy Act), as amended through August 21, 1998;

(13) crushed asphalt pavement used

(A) in a building pad or parking area as road base, or pavement; or

(B) as a material to construct a containment berm for a tank farm;

(14) any treated waste allowed by the department to be managed as exempt waste under 18 AAC 60.005(e);

(15) soil containing a hazardous substance that does not meet the definition of "polluted soil" in 18 AAC 60.990;

(16) other solid wastes and materials placed on the land which meet the conditions established in 18 AAC 60.007.

(d) A treatment works designed to treat less than five tons of waste daily or 10 tons in a single batch is exempt from the requirements of this chapter unless it causes or contributes to a threat to public health, safety, or welfare, or the environment or unless the works is operated in a manner that causes or contributes to a nuisance.

(e) If a person treats a waste and demonstrates to the department's satisfaction that the potential for a release of hazardous constituents is eliminated by the treatment and the treated waste will not present a threat to the public health, safety, or welfare, or to the environment, the department will allow the treated waste to be managed as an inert waste under 18 AAC 60.460 or an exempt waste under (c) of this section. The operator of the treatment works must

(1) secure the approval of the department before handling the waste as inert or exempt under this subsection; and

(2) keep records demonstrating that all waste managed under this subsection was treated in the manner on which the approval was based. (Eff. 1/28/96, Register 137; am 10/29/98, Register 148; am 7/11/99, Register 151; am 9/7/2002, Register 163)

Authority:	AS 44.46.020	AS 46.03.100	AS 46.03.810
	AS 46.03.010	AS 46.03.110	AS 46.06.080
	AS 46.03.020	AS 46.03.800	

18 AAC 60.007. Solid wastes used as fill. (a) A person may place the following solid wastes on the land for a fill project that meets the conditions in this section:

(1) wood waste;

(2) inert waste;

(3) coal ash;

(4) crushed pavement;

(5) other similar solid wastes approved by the department.

(b) A person may not use the following wastes as fill:

(1) animal waste;

(2) asbestos;

(3) biosolids;

(4) commercial solid waste;

(5) drilling waste;

(6) hazardous waste;

(7) household waste;

(8) industrial solid waste;

(9) medical waste;

(10) mining waste;

(11) pathological waste;

(12) PCB waste;

(13) putrescible waste;

(14) selected isolation waste;

(15) sewage solids;

(16) tires;

(17) vehicles and construction equipment.

(c) A person may not place solid waste on the land until the person has submitted a proposal to the department, and that proposal has been approved. A proposal submitted under this section must include the following:

(1) an appraisal or assessment showing the current value of the property where the solid waste is to be placed;

(2) a list of each waste to be placed at the site, including the expected volume and the source of each waste type;

(3) the proposed future use of the site;

(4) an estimate of the value the property will have after the solid waste is in place;

(5) an operations plan explaining where and when the various wastes will be placed on the land;

(6) an estimate of the expected compaction density and load bearing capacity of the finished fill;

(7) a list of each permit and approval issued or expected to be issued by other government agencies;

(8) construction drawings showing

(A) surface contours of the existing site;

(B) surface contours of the finished site;

(C) the location and details for all drainage ditches and culverts to be installed;

(D) the location of any temporary or permanent road or ramp; and

(E) any pavement, sewer, plumbing, or electrical installation.

(d) The department will approve a proposal for solid waste disposal under this section within 30 working days after receipt of the request, if the waste meets the conditions listed in (b) of this section, the person requesting permission has submitted the information required under (c) of this section, and the department finds that the project will

(1) increase the market value of the property;

(2) not shift, erode, or settle in a way that will preclude proposed future use of the site;

(3) not create any harmful leachate;

(4) not undergo combustion; and

(5) not cause a threat to the public health, safety, or welfare, or to the environment. (Eff. 9/7/2002, Register 163)

Authority: AS 44.46.020 AS 46.03.100 AS 46.03.810
AS 46.03.010 AS 46.03.110 AS 46.06.080
AS 46.03.020

18 AAC 60.008. Beneficial use. (a) If a person wants to use a solid waste other than the solid wastes specified in 18 AAC 60.007(a), for beneficial purposes other than the land placement options specified in 18 AAC 60.007(a), that person shall submit a proposal explaining the proposed use and all features of the proposal that are incorporated to protect public health, safety, and welfare, and the environment.

(b) The department will review the proposal and exempt the solid waste from some or all of the requirements of this chapter if the department finds that the proposal adequately protects public health, safety, and welfare, and the environment. (Eff. 9/7/2002, Register 163)

Authority: AS 44.46.020 AS 46.03.100 AS 46.03.810
AS 46.03.010 AS 46.03.110 AS 46.06.080
AS 46.03.020

18 AAC 60.010. Accumulation, storage, and treatment. (a) A person may not store accumulated solid waste in a manner that causes

(1) a litter violation under 18 AAC 64.015;

(2) the attraction or access of domestic animals, wildlife, or disease vectors;

(3) a health hazard; or

(4) polluted run-off water.

(b) A person who sponsors an event that is open to the public and at which solid waste is generated shall

(1) collect, store, transport, and dispose of the solid waste at a solid waste disposal facility that has a permit or is otherwise authorized under this chapter; or

(2) make contractual or other arrangements for the proper collection, storage, transportation, and disposal of that waste at a solid waste disposal facility that has a permit or is otherwise authorized under this chapter.

(c) A person who has made contractual or other arrangements for the collection, storage, transportation, and treatment of solid waste is not relieved of the responsibility for that waste if the contractor fails to manage the waste in compliance with this section.

(d) A person shall dispose of a carcass

(1) of livestock, including poultry, infected with a communicable disease, only if authorized by the state veterinarian and in accordance with 9 C.F.R. 53.4, revised as of January 1, 1998, adopted by reference;

(2) of any animal not described in (1) of this section, other than open range livestock, unless the carcass is used as food for humans or animals,

(A) at a landfill that operates in accordance with a permit issued under this chapter;

(B) by cremation or incineration in an incinerator that complies with 18 AAC 50; or

(C) by burial on land, with the landowner's permission; and

(3) of any animal not disposed under (1) or (2) of this subsection that the department determines is causing a nuisance or threat to the public health, safety, or welfare or to the environment, by one of the methods set out in (2) of this subsection.

(e) Subject to 18 AAC 60.040(b), a person who wishes to dispose of organic waste from a commercial slaughterhouse or fish processing waste may apply that waste to agricultural or silvicultural land for soil enhancement purposes if the waste is

(1) ground up to less than two inches in diameter;

(2) treated by a method described in 40 C.F.R. 503.15, revised as of July 1, 1997, adopted by reference, to reduce the number of *salmonella* spp. or fecal coliform bacteria present to meet the Class A requirements for pathogen reduction at the time of land application;

(3) incorporated into the soil surface when the waste is applied;

(4) applied at or below the agronomic rate for nitrogen for any crop or vegetation that will be grown on that land;

(5) applied in a manner that does not create an odor nuisance or attract animals or other vectors; and

(6) applied in a manner that ensures that run-off of surface water from the disposal site does not violate the water quality standards in 18 AAC 70.

(f) The owner or operator of a transfer station designed to hold 20 cubic yards or more of waste shall

(1) use containers with covers, fencing, or another department-approved method to prevent wind and animals from scattering the waste;

(2) pick up litter as necessary to prevent a violation of AS 46.06.080;

(3) manage the site so that the standards in 18 AAC 60.230 for disease vectors and animal control are met; and

(4) prevent or control run-off that would violate 18 AAC 70.

(g) If the department finds that a transfer station that is not part of a facility holding a permit under this chapter is causing a nuisance or a risk to public health or safety or to the environment, the department will require the operator to submit a facility design and operating plan explaining how the operator will

(1) meet the requirements of (f) of this section;

(2) conduct operations to prevent a fire at the transfer station;

(3) promptly extinguish any fire that occurs;

(4) control odor and dust as necessary to prevent a public nuisance;

(5) provide safe public access to the facility as necessary;

(6) manage hazardous waste abandoned by others at the facility; and

(7) prevent or control run-off that would violate 18 AAC 70.

(h) Except as provided for drilling waste in 18 AAC 60.430, if the department finds that a facility used to store more than 50 tons of materials for reuse, recycling, or resource recovery, or more than 50 tons of solid waste before disposal, is causing or contributing to a nuisance or poses a risk to public health, safety, or welfare, or to the environment, the department will require the operator to meet one or more of the following requirements:

(1) provide proof to the department that the landowner has consented to the waste storage activity, unless the operator owns the property;

(2) remove the materials from the facility or store materials at the facility for no more than one year;

(3) use containers with covers, fencing, or another department-approved method to prevent litter;

(4) pick up litter as necessary to prevent a violation of AS 46.06.080;

(5) manage the facility so that the standards in 18 AAC 60.230 for disease vectors and animal control are met;

(6) prevent fire at the facility;

(7) promptly extinguish any fire that occurs;

(8) prevent or control run-off that would violate 18 AAC 70;

(9) control odors, noise, and dust as necessary to prevent a nuisance;

(10) provide safe public access to the facility as necessary;

(11) manage hazardous waste abandoned by others at the facility;

(12) monitor the temperature of waste piles to detect combustion; and

(13) take other appropriate action.

(14) repealed 9/7/2002.

(i) The owner or operator of a solid waste treatment works that is designed to treat more than five tons of waste daily, and that is not located within the boundaries of a permitted landfill shall

(1) use containers with covers, fencing, or any other short-term, department-approved storage method to prevent wind and animals from scattering the waste;

(2) pick up litter as necessary to prevent a violation of AS 46.06.080;

(3) manage the treatment works so that the standards in 18 AAC 60.230 for disease vectors and animal control are met;

(4) control odors as necessary to prevent a public nuisance;

(5) prevent or control run-off that would violate 18 AAC 70;

(6) prevent fire at the treatment works;

(7) promptly extinguish any fire that occurs;

(8) provide safe public access to the site as necessary;

(9) control dust;

(10) manage hazardous waste abandoned by others at the treatment works; and

(11) take other appropriate action.

Article 2. Waste Disposal Permit.

Section
200. Permit requirement
203. Design approval
205. [Repealed]
207 Operation under a comprehensive solid waste management permit
210. Permit application
211. Class III Community MSWLF permit application
213. Research, Development, and Demonstration Permit
215. Permit issuance
217. Separation from groundwater
220. Access requirements
225. Surface water requirements
227. Landfills located on permafrost
228. Exemptions for freezeback landfills
230. Disease vector, wildlife, and domestic animal control
233. Controlling impacts outside facility boundaries
235. Recordkeeping requirements
240. Procedures to exclude receipt of hazardous waste
243. Intermediate cover
245. Prompt closure
250. Existing permits and permit renewal
255. General permit
260. Permit termination and modification
265. Proof of financial responsibility
270. Termination of post-closure obligations

18 AAC 60.200. Permit requirement. (a) Except as otherwise provided in this section, a person may treat or dispose of solid waste, or construct, modify, or operate a solid waste facility only in accordance with a waste disposal permit issued by the department under 18 AAC 60.215, an authorization under (c) or (d) of this section, or a research, development, and demonstration permit issued under 18 AAC 60.213. However, a permit or authorization under this chapter is not required for

(1) a single-family or duplex residence or a farm where solid waste is generated and disposed of on the premises;

(2) the closure of an inactive reserve pit, solid waste facility, or dump;

(3) disposal that is governed by a permit issued under 18 AAC 72.010, 18 AAC 72.210, or an approved contaminated site cleanup plan under 18 AAC 75 or 18 AAC 78;

(4) disposal that is governed by a permit issued under 18 AAC 62 or under 40 C.F.R. Part 264 or 40 C.F.R. Part 265, revised as of July 1, 1998, adopted by reference;

(5) disposal under an underground injection permit issued under 42 U.S.C. 300h-4 (Safe Drinking Water Act);

(6) a person who transports solid waste to an approved facility;

(7) a facility that is used only for the disposal of material and waste exempted by 18 AAC 60.005(c);

(8) a transfer station, except one that is located at a facility otherwise subject to this section;

(9) a reuse, recycling, or resource recovery facility unless the department determines that the facility is causing or is likely to cause excessive odor or other problems such as combustion, blowing litter, water quality degradation, or vermin attraction;

(10) a solid waste treatment works or a solid waste treatment facility that is designed to treat less than five tons of waste daily;

(11) drilling, trenching, and other activities described in AS 46.03.100(f) that are not subject to the permit requirements of AS 46.03.100;

(12) animal or fish waste disposed under 18 AAC 60.010(d) or (e);

(13) polluted soil that is polluted only because of a naturally occurring metal if the soil is returned to the location where the soil was excavated or taken to another area with an equal or greater concentration of the same metal; or

(14) storage of industrial solid waste under 18 AAC 60.430(a);

(15) waste approved for use as fill under 18 AAC 60.007;

(16) waste approved for beneficial use under 18 AAC 60.008; or

(17) waste managed under a plan approved under 18 AAC 60.207.

(b) If the department certifies an activity under 33 U.S.C. 1344 (Clean Water Act, section 404) and attaches conditions to that certification, and if the department decides that certification may be substituted for a permit required under this chapter, the department will enforce the terms and conditions of the certification in the same way it would require compliance with a permit issued under this chapter for the same activity.

(c) The department will authorize the disposal of municipal solid waste in a Class III MSWLF meeting the requirements of 18 AAC 60.300(c)(3)(B), if

(1) the landfill serves an average daily population of fewer than 50 persons;

(2) the landfill is sited and operated in accordance with the requirements of this chapter;

(3) the owner or operator of the landfill

(A) submits for department review a completed authorization request form provided by the department and any other information that the department considers necessary to ensure that the landfill is sited and operated in accordance with the requirements of this chapter; and

(B) receives written notice from the department that the authorization request has been approved; and

(4) not later than 30 days before the end of each five-year period after the date of a previous authorization under this subsection, the owner or operator of the landfill confirms continued eligibility under (1) and (2) of this subsection by submitting the information that the department requests for that purpose.

(d) The department will authorize the disposal of solid waste in a one-time-use landfill, if

(1) the proposed location meets the requirements of 18 AAC 60.410;

(2) the proposed one-time-use landfill is associated with a project located in an area

(A) that does not have year-round ground access to a system of connected roads with a total length of 100 miles or more; or

(B) where all permitted landfills are more than 100 road miles away or have refused, in writing, to accept the waste;

(3) the owner or operator of the one-time-use landfill

(A) submits for department review a completed authorization request form provided by the department; on the form, the owner or operator must agree to open, operate, and close the landfill in accordance with

(i) the applicable provisions in 18 AAC 60.400 – 18 AAC 60.490 for the specific waste type; and

(ii) any other conditions that the department requires to ensure the protection of the public health, safety, and welfare and the environment;

(B) provides documentation to the department that the landowner consents to the proposed activity; and

(C) receives written notice from the department that the authorization request has been approved;

(4) of the following solid waste types, the proposed landfill will receive only one single type at not more than the listed volume:

(A) 1,000 cubic yards of inert waste;

(B) 250 cubic yards of regulated asbestos-containing materials;

(C) 1,000 cubic yards of domestic sewage solids;

(D) an approved volume of any other solid waste that the department considers to pose a low risk to the environment; and

(5) the one-time-use landfill will be closed not later than one year from the date of initial waste disposal indicated in the authorization request, unless the owner or operator

(A) requests a longer term;

(B) demonstrates that a longer term is necessary to the project; and

(C) receives written approval of the longer term from the department.

(Eff. 1/28/96, Register 137; am 10/29/98, Register 148; am 7/11/99, Register 151; am 9/7/2002, Register 163; am 9/5/2010, Register 195; am 4/12/2013, Register 206)

Authority: AS 44.46.020 AS 46.03.100 AS 46.06.010
AS 46.03.010 AS 46.03.800 AS 46.06.080
AS 46.03.020 AS 46.03.810

18 AAC 60. 203. Design approval. For facilities that require a permit or authorization under 18 AAC 60.200 or 18 AAC 60.211, the owner of the facility must have prior written approval from the department of the facility design in order to construct a new facility or a lateral expansion of an existing facility. Drawings, documents, and plans showing that the facility design will meet the applicable requirements of this chapter may be submitted for department approval either separately or as part of a permit application. (Eff. 4/13/2013, Register 206)

Authority: AS 46.03.010 AS 46.03.100 AS 46.06.080
AS 46.03.020 AS 46.03.710

(2) unless the applicant submits a request for renewal in writing, using a form provided by the department; the request must include

(A) a detailed assessment of the project, showing the status with respect to achieving project goals, and a list of problems and progress towards resolution of those problems; and

(B) other information that the department requests and that the department considers relevant to compliance by the applicant with this chapter. (Eff. 9/5/2010, Register 195)

Authority:	AS 44.46.020	AS 46.03.100	AS 46.03.810
	AS 46.03.010	AS 46.03.110	AS 46.06.010
	AS 46.03.020	AS 46.03.800	AS 46.06.080

18 AAC 60.215. Permit issuance. (a) Except for a research, development, and demonstration permit issued under 18 AAC 60.213, the department will issue or deny a permit after reviewing information contained in the application and the public record, based upon the

(1) applicable provisions of this chapter and 18 AAC 15;

(2) air quality control regulations in 18 AAC 50;

(3) water quality standards in 18 AAC 70;

(4) wastewater disposal regulations in 18 AAC 72;

(5) drinking water standards in 18 AAC 80;

(6) repealed 4/8/2012;

(7) Alaska Historic Preservation Act, AS 41.35.010 - 41.35.240;

(8) long-term stability of the facility and related structures in areas subject to natural events such as aufeis, floods, earthquakes, avalanches, landslides, mudflows, land slippage, or thaw-unstable permafrost; and

(9) applicant's compliance history while conducting other operations regulated by the department under this title, including any notice of violation, mandatory compliance order, consent order, and any other administrative, civil, or criminal enforcement action; an applicant's compliance history will constitute sufficient basis for denial of approval if, in the department's determination, that history shows a pattern or practice of noncompliance that demonstrates the applicant's unwillingness or inability to achieve or maintain compliance with provisions of this chapter.

(b) The department will attach conditions to the permit

(1) to ensure compliance with applicable state law;

(2) that incorporate the standards of this chapter relating to siting, design, construction, operation, and closure of the facility; and

(3) to ensure that dust, odor, and safety hazards are kept to a minimum.

(c) The permittee shall provide timely, adequate notice to the department of any change in the permittee's mailing address or physical residence. (Eff. 1/28/96, Register 137; am 10/29/98, Register 148; am 9/5/2010, Register 195; am 4/8/2012, Register 202)

Authority: AS 44.46.020 AS 46.03.100 AS 46.03.810
AS 46.03.010 AS 46.03.110 AS 46.06.010
AS 46.03.020 AS 46.03.800 AS 46.06.080

18 AAC 60.217. Separation from groundwater. A new unlined landfill or a lateral expansion of a landfill may not be located closer than 10 feet above the highest measured level of an aquifer of resource value unless the landfill is constructed two feet or more above the natural ground surface. (Eff. 10/29/98, Register 148; am 9/7/2002, Register 163)

Authority: AS 44.46.020 AS 46.03.100 AS 46.03.810
AS 46.03.010 AS 46.03.110 AS 46.06.080
AS 46.03.020 AS 46.03.800

18 AAC 60.220. Access requirements. Except for a facility that treats or disposes of biosolids and is subject to 18 AAC 60.500 - 18 AAC 60.510, the owner or operator of a facility subject to the permit requirements of AS 46.03.100 or this chapter shall

(1) control public access;

(2) prevent unauthorized vehicular traffic and illegal dumping of wastes by using artificial barriers, natural barriers, or both; the requirements of this paragraph do not apply to a Class III MSWLF unless it is connected to a major road system;

(3) ensure that public salvaging, if allowed, is performed in an area that does not hinder facility operations, create a safety hazard, or cause pollution; and

(4) ensure that access and onsite roads under the operator's control are kept passable and safe for vehicles during normal hours of operation. (Eff. 1/28/96, Register 137; am 10/29/98, Register 148)

Authority: AS 44.46.020 AS 46.03.100 AS 46.03.810

AS 46.03.010 AS 46.03.110 AS 46.06.080
AS 46.03.020

18 AAC 60.225. Surface water requirements. (a) The owner or operator of a solid waste disposal facility may not allow the placement of solid waste in surface water unless that placement is allowed in a permit issued under AS 46.03.100 and this chapter.

(b) Except for an inert waste landfill, an asbestos landfill, or a Class III MSWLF that meets the standards in 18 AAC 60.300(c)(3)(B), the owner or operator of a landfill shall

(1) remove all ponded water that is in contact with waste within seven days after the formation of the pond unless another dewatering schedule is specified in a permit issued under AS 46.03.100 and this chapter;

(2) if the department determines that a control system for stormwater run-off is necessary to prevent the landfill from contributing to siltation or flooding problems in nearby surface water bodies construct and maintain a control system capable of containing and controlling the run-off from a 24-hour, 25-year storm; and

(3) prevent, contain, or control visible leachate seeps at the boundary of the waste management area.

(c) Except for a Class III MSWLF that meets the conditions of 18 AAC 60.300(c)(3)(B), or a Class I MSWLF with a research, development, and demonstration permit under 18 AAC 60.213 that allows the Class I MSWLF to utilize methods that vary from the requirements of this subsection, the owner or operator of a solid waste disposal facility shall construct and maintain a control system that will prevent run-on from flowing onto the active portion of the facility. The control system must be capable of handling the peak discharge from a 25-year storm.

(d) The owner or operator of an inert waste landfill, an asbestos landfill, or a Class III MSWLF that meets the standards of 18 AAC 60.300(c)(3)(B) shall

(1) minimize contact between stormwater and the waste;

(2) construct and operate the landfill so that seasonal flooding is temporary in duration and ponded water is removed within 30 days; and

(3) prevent, contain, or control visible leachate seeps at the boundary of the waste management area if the department determines that leachate control measures are necessary to prevent a potential threat to public health, safety, or welfare. (Eff. 1/28/96, Register 137; am 10/29/98, Register 148; am 9/5/2010, Register 195)

Authority: AS 44.46.020 AS 46.03.100 AS 46.03.810
AS 46.03.010 AS 46.03.110 AS 46.06.010
AS 46.03.020 AS 46.03.800 AS 46.06.080

18 AAC 60.230. Disease vector, wildlife, and domestic animal control. (a) The owner or operator of a facility subject to the permit requirements of AS 46.03.100 and this chapter shall manage the facility so that

(1) disease vectors do not endanger public health, safety, or welfare or create a nuisance;

(2) wildlife and domestic animals do not endanger public health, safety, or welfare, become harmed by contact with the waste; or become a nuisance; the requirements of this paragraph do not apply to a Class III MSWLF.

(b) The owner or operator of a Class III MSWLF shall minimize, to the extent practical, access by wildlife and domestic animals to putrescible waste deposited at the MSWLF. (Eff. 1/28/96, Register 137; am 10/29/98, Register 148)

Authority: AS 44.46.020 AS 46.03.100 AS 46.03.810
AS 46.03.010 AS 46.03.110 AS 46.06.080
AS 46.03.020

18 AAC 60.233. Controlling impacts outside facility boundaries. The owner or operator of a landfill or solid waste treatment works shall ensure that

(1) a minimum setback of 50 feet is kept between the waste management area and the property line of the facility; and

(2) dust, odor, noise, traffic, and other effects from the operation of the facility do not become a nuisance or a hazard to the public health, safety, or welfare. (Eff. 10/29/98, Register 148)

Authority: AS 44.46.020 AS 46.03.100 AS 46.03.810
AS 46.03.010 AS 46.03.110 AS 46.06.080
AS 46.03.020 AS 46.03.800

18 AAC 60.235. Recordkeeping requirements. (a) The owner or operator of a facility subject to the permit requirements of this chapter shall maintain an "operating record." The record must be retained at a location that is readily accessible for department review and by employees working at the facility. The record must consist of

(1) the permit application and the permit;

(2) inspection records, training procedures, and notification procedures, if required by 18 AAC 60.240;

(3) any demonstration, certification, finding, monitoring, testing, or analytical data required by 18 AAC 60.800 - 18 AAC 60.860;

(4) any permit or record required under the Clean Water Act as that Act applies to leachate and stormwater discharges;

(5) financial assurance documentation if required under 18 AAC 60.265;

(6) the operations plan required in 18 AAC 60.210(b)(3)(C) or 18 AAC 60.211(b)(6);

(7) as-built drawings of the landfill; and

(8) any other documents required by this chapter to be kept in the operating record.

(b) Upon request, the owner or operator shall furnish the operating record to the department, or shall make it available at reasonable times for department inspection. (Eff. 1/28/96, Register 137; am 9/7/2002, Register 163; am 4/12/2013, Register 206)

Authority: AS 44.46.020 AS 46.03.100 AS 46.03.810
AS 46.03.010 AS 46.03.110 AS 46.06.080
AS 46.03.020

18 AAC 60.240. Procedures to exclude receipt of hazardous waste. (a) The owner or operator of a landfill shall

(1) post a clearly legible sign at the entrance to the landfill notifying users that disposal of regulated hazardous waste and polychlorinated biphenyls (PCB) waste is prohibited; and

(2) provide written notification to the department and EPA if a regulated hazardous waste or PCB waste is found at the facility.

(b) Except for a Class III MSWLF, the owner or operator of a landfill shall implement a program at the facility to detect and prevent the disposal of regulated hazardous waste and PCB waste as defined in 40 C.F.R. 761.3, revised as of July 1, 1998, adopted by reference. The program must include the following items at a minimum:

(1) random inspections of incoming loads or other methods to minimize the risk that incoming loads will contain a regulated hazardous waste or PCB waste;

(2) maintenance of records of any inspections performed under (1) of this paragraph; and

(3) training of appropriate facility personnel to recognize regulated hazardous waste and PCB waste; for purposes of this paragraph, training may include that described in the EPA's technical manual entitled *Solid Waste Disposal Facility Criteria*, Subpart C Operating Criteria, EPA530-R-93-017, November 1993, as amended through April 13, 1998.

(c) The requirements of this section do not apply to a facility that treats or disposes of biosolids and is subject to 18 AAC 60.500 - 18 AAC 60.510. (Eff. 1/28/96, Register 137; am 10/29/98, Register 148; am 7/11/99, Register 151)

Authority:	AS 44.46.020	AS 46.03.100	AS 46.03.810
	AS 46.03.010	AS 46.03.110	AS 46.06.080
	AS 46.03.020	AS 46.03.800	

Editor's note: - The United States Environmental Protection Agency manual referred to in 18 AAC 60.240 may be reviewed at the department's offices in Anchorage, Fairbanks, and Juneau. Copies may be obtained from National Technical Information Services, 5285 Port Royal Road, Springfield, Virginia 22161.

18 AAC 60.243. Intermediate cover. (a) Except for a facility that treats or disposes of biosolids and is subject to 18 AAC 60.500 - 18 AAC 60.510 and a facility for disposal of waste that has a permit under AS 46.03.100 and this chapter to contain fluids, the owner or operator of a landfill shall apply an intermediate cover to any inactive portion of a landfill within seven days after the waste is last deposited in that area, using a soil material at least 12 inches thick, graded to prevent water from ponding.

(b) For purposes of this section, "inactive portion" means an area of a landfill that does not receive waste for a period of 90 days or more. (Eff. 10/29/98, Register 148)

Authority:	AS 44.46.020	AS 46.03.100	AS 46.03.810
	AS 46.03.010	AS 46.03.110	AS 46.06.080
	AS 46.03.020	AS 46.03.800	

18 AAC 60.245. Prompt closure. (a) Except where a different time is specified in 18 AAC 60.395(f) or is otherwise approved by the department, the owner or operator of a landfill shall place the final cover on those waste management areas that have reached final elevation within 90 days after the last waste placement.

(b) The requirements of this section do not apply to an inactive drilling waste disposal site. (Eff. 1/28/96, Register 137)

Authority:	AS 44.46.020	AS 46.03.100	AS 46.03.810
	AS 46.03.010	AS 46.03.110	AS 46.06.080
	AS 46.03.020		

18 AAC 60.250. Existing permits and permit renewal. (a) In addition to the

requirements of this section, permit renewal under this chapter is also subject to the permit renewal requirements of 18 AAC 15 and the fee requirements of 18 AAC 60.700.

(b) If an applicant for permit renewal must undertake a construction project or needs additional time to install monitoring or other equipment, the department will negotiate a compliance schedule as part of the renewal.

(c) An application for permit renewal must be submitted at least 30 days before the permit expires. (Eff. 1/28/96, Register 137; am 6/28/96, Register 138; am 9/7/2002, Register 163)

Authority:	AS 44.46.020	AS 46.03.020	AS 46.03.810
	AS 44.46.025	AS 46.03.100	AS 46.06.080
	AS 46.03.010	AS 46.03.110	

18 AAC 60.255. General permit. (a) The department will issue a general permit covering a group of facilities subject to the permit requirements of this chapter, or to a group of activities, if the facilities or activities in the group

(1) involve the same type of waste handling systems;

(2) dispose of the same type of solid waste;

(3) will not threaten public health, safety, or welfare, or the environment; and

(4) are, in the department's determination, best regulated under a general permit.

(b) The department will restrict a general permit to a limited region of the state if the department determines that the safe management and disposal of the waste depends on conditions found in that region and a general permit will protect the public health, safety, and welfare, and the environment.

(c) An applicant for a general permit shall submit to the department a petition in which the applicant demonstrates that the facilities or activities to be covered meet the conditions described in (a) of this section. A general permit may be sought by a single owner or operator, but the department will give priority to applications jointly submitted by two or more owners or operators of facilities that would be subject to the general permit. If the department approves an application for a general permit under this section or, on its own motion, proposes to create a general permit, the department will publish notice of the proposed permit in two issues of a newspaper of general circulation in the area where the waste management is to take place and in other media that the department considers appropriate. The notice will summarize the proposed permit, state where the waste management is to be allowed, state where copies of the proposed permit and supporting documents may be obtained, and state that any person who wants to express an opinion to the department may send written comments to the department within 30 days. The department will send a copy of the public notice and the proposed general permit and

supporting documents to the commissioners of

(1) fish and game;

(2) natural resources;

(3) deleted;

(4) commerce, community, and economic development; and

(5) health and social services.

(d) After the time for public comment expires, the department will grant or deny the application for a general permit or, if the general permit is one proposed by the department, will issue the permit, or decide to take no action on the proposal. A copy of the department's decision will be sent to the applicant and to any person who submitted written comments on the proposed general permit. The decision will include a statement that any person who is aggrieved by the decision may request an adjudicatory hearing under 18 AAC 15.

(e) A general permit will contain criteria by which facilities may qualify for coverage under the general permit. A person who seeks to be covered under a general permit issued under this section may submit an application to the department on a form provided by the department or in accordance with the conditions of the general permit. The application must be accompanied by the annual fee identified in Table I-4 in 18 AAC 60.700(a). In addition, the application must

(1) be submitted within the time period identified in the form for the general permit under which coverage is sought; and

(2) clearly show how the proposed activity meets the criteria and conditions of the general permit.

(f) The department will notify the applicant of its decision to grant or deny an application for coverage under a general permit within 30 days after receiving a complete application under (e) of this section.

(g) Upon 30 days written notice to the permittee, the department will modify, revoke and reissue, or terminate the coverage of a general permit to a specific facility without opportunity for a pre-revocation hearing, and will require that facility to obtain an individual permit if operations under the general permit might threaten public health or the environment. Situations indicative of such a threat include the following:

(1) the facility does not comply with a material provision of the general permit;

(2) there is a material change in the operation or in the type or quantity of waste for which the general permit was issued; or

(3) the permit was procured by misrepresentation of material fact or by failure of the applicant to fully disclose the material facts relating to its issuance.

(h) Notwithstanding 18 AAC 15.195 – 18 AAC 15.340, a person who disagrees with a department action taken under (g) of this section may request review by the director of the department's division responsible for issuing permits under this chapter. A request under this subsection must be submitted within 30 days after the action is taken and must be accompanied by a written discussion that sets out the reasons why the department's action is thought to be erroneous. The director shall issue a written decision on the matter within 30 days after receiving the request. A decision under this subsection is a final agency decision subject to judicial review under the applicable Rules of Appellate Procedure.

(i) Repealed 9/5/2010.

(j) Beginning with the calendar year following the department's approval of an application for coverage under a general permit, the owner or operator shall pay the applicable annual fee within 60 days after the date of billing. (Eff. 1/28/96, Register 137; am 6/28/96, Register 138; am 10/29/98, Register 148; am 6/30/2002, Register 162; am 7/11/2002, Register 163; am 9/5/2010, Register 195; am 4/8/2012, Register 202)

Authority:	AS 44.46.020	AS 46.03.100	AS 46.03.810
	AS 44.46.025	AS 46.03.110	AS 46.06.010
	AS 46.03.010	AS 46.03.800	AS 46.06.080
	AS 46.03.020		

Editor's note: As of Register 171 (October 2004), the regulations attorney made technical revisions under AS 44.62.125(b)(6) to reflect the name change of the Department of Community and Economic Development to the Department of Commerce, Community, and Economic Development made by ch. 47, SLA 2004 and the corresponding title change of the commissioner of community and economic development.

As of Register 171 (October 2004), 18 AAC 60.255(c)(3) was deleted by the regulations attorney because that paragraph was redundant with 18 AAC 60.255(c)(4).

18 AAC 60.260. Permit termination and modification. (a) Repealed 9/5/2010.

(b) No later than 30 days before terminating or modifying under AS 46.03.120 a permit issued under this chapter, other than a general permit subject to termination or modification under AS 46.03.120 and 18 AAC 60.255, the department will issue a written notice of termination or modification. In the notice, the department will

(1) include a clear, detailed statement describing reasons for the department's decision, including acts or omissions of the permittee that led to the department's decision to modify or revoke;

(2) clearly specify the statute, regulation, or permit condition the permittee is alleged to have violated, including the nature of the violation; and

(3) state that the permittee may request an immediate hearing before the commissioner or the commissioner's designee, if the request is submitted to the commissioner within 10 days after receipt of the notice; a request for hearing must include a written statement of reasons why the permittee believes the department's decision to be in error; failure to file a timely request for hearing constitutes a waiver of the permittee's right to a hearing.

(c) A hearing under this section will be held no later than 10 days after a request for hearing is received under (b) of this section, and the commissioner or the commissioner's designee will issue a written decision no later than 10 days after the hearing. A decision under this subsection is a final agency decision subject to judicial review. A hearing under this section will be recorded and will adhere to the evidence rules described in AS 44.62.460.

(d) If the permittee and the department agree to delay the hearing for more than 30 days after the notice is issued under (b) of this section, the department's decision remains in effect unless the permittee requests and is granted a stay by the commissioner or commissioner's designee. A request for a stay must meet the requirements of 18 AAC 15.210. (Eff. 1/28/96, Register 137; am 9/5/2010, Register 195)

Authority:	AS 44.46.020	AS 46.03.100	AS 46.03.850
	AS 46.03.010	AS 46.03.120	
	AS 46.03.020	AS 46.03.820	

18 AAC 60.265. Proof of financial responsibility. Unless the applicant has provided equivalent surety through a government agency or has demonstrated financial assurance under 18 AAC 60.398, the department will require proof of financial responsibility to cover the cost of closing a landfill and, if monitoring is required, the cost of post-closure monitoring if the department determines proof of financial responsibility is necessary to protect the public health, safety, or welfare, or the environment. Proof of financial responsibility under this section may be demonstrated by self-insurance, insurance, surety, or other guarantee approved by the department to assure compliance with applicable closure standards and post-closure monitoring requirements. (Eff. 1/28/96, Register 137; am 10/29/98, Register 148)

Authority:	AS 44.46.020	AS 46.03.100	AS 46.03.830
	AS 46.03.010	AS 46.03.110	AS 46.06.080
	AS 46.03.020	AS 46.03.810	

18 AAC 60.270. Termination of post-closure obligations. (a) Whether or not a permit required by this chapter has been issued, once waste disposal commences at a facility subject to this chapter, the owner and operator are subject to all applicable provisions of this chapter until the owner or operator of the facility requests, and is granted approval by the department to terminate post-closure care required by 18 AAC 60.396, 18 AAC 60.397, or 18 AAC 60.490.

(b) Within 30 days after receipt of a complete request, the department will review a request for approval to terminate post-closure care under the requirements of this chapter. The request must include

(1) a report on the findings of the post-closure monitoring;

(2) drawings, photographs, and other documentation concerning the condition of the landfill at the time of the request; and

(3) an analysis of any potential problems at the landfill, including settlement, erosion, cracking, and slope instability, and what evidence will indicate a problem has developed.

(c) The department will approve a request to terminate the post-closure care requirements if the department finds that the facility does not pose a threat to public health, safety, or welfare, or to the environment.

(d) If the department, after it approves a request under (c) of this section, determines that the circumstances under which the approval was granted have changed to the extent that the facility that was granted approval under (c) of this section poses a threat to public health, safety, or welfare, or to the environment, the owner or operator of the facility must comply with the provisions of 18 AAC 60.800 - 18 AAC 60.860. (Eff. 9/7/2002, Register 163)

Authority: AS 44.46.020 AS 46.03.100 AS 46.03.810
AS 46.03.010 AS 46.03.110 AS 46.06.080
AS 46.03.020

Article 4. Monofills.

Section
400. Applicability
410. Location standards
420. Operations
430. Drilling waste
440. Closure of inactive reserve pits
450. Asbestos
455. Mining waste
460. Inert waste
470. Sewage solids
480. Wood waste
485. Industrial solid waste
490. Closure demonstration and post-closure care
495. (Repealed)

18 AAC 60.400. Applicability. (a) In addition to the requirements of 18 AAC 60.005 - 18 AAC 60.265 and 18 AAC 60.800 - 18 AAC 860, the requirements of 18 AAC 60.400 - 18 AAC 60.495 apply to a person who disposes of waste that is subject to the permit requirement of AS 46.03.100, but that is not

(1) municipal solid waste subject to 18 AAC 60.300 - 18 AAC 60.397;

(2) regulated hazardous waste or waste identified as hazardous waste under 18 AAC 62.020;

(3) being disposed of under a wastewater disposal permit issued under 18 AAC 72; or

(4) subject to a plan approved under 18 AAC 75 or 18 AAC 78 for oil or other hazardous substances.

(b) A solid waste that is not specifically addressed in 18 AAC 400 - 18 AAC 60.495 will be classified by the department and assigned the most applicable waste category during the preapplication meeting conducted under this chapter.

(c) If an applicant is not sure which type of landfill standards apply, the applicant shall contact the department for a determination before applying for a permit.

(d) Repealed 10/29/98. (Eff. 1/28/96, Register 137; am 10/29/98, Register 148; am 7/11/99, Register 151; am 8/8/2003, Register 167; am 9/5/2010, Register 195)

Authority: AS 44.46.020 AS 46.03.020 AS 46.03.110
AS 46.03.010 AS 46.03.100

18 AAC 60.410. Location standards. (a) A monofill built after 1/28/96 may not be constructed on slopes greater than 10 percent grade or unstable soils that might cause the waste to slide or settle excessively.

(b) Except for a mining waste tailings impoundment operating under a permit issued by the department, the owner or operator of a monofill located in a floodplain shall remove the waste or ensure that the monofill

(1) does not restrict the flow of a flood or significantly reduce the temporary water storage capacity of the floodplain; and

(2) is designed to protect against washout of solid waste from the facility.

(c) A new monofill, or a lateral expansion of a monofill, that is subject to 18 AAC 60.400 - 18 AAC 60.495 must be designed to protect its integrity from damage caused by natural events that could be reasonably anticipated to occur at the facility such as aufeis, floods, earthquakes, thawing of unstable permafrost, and the effects of freezing and thawing. (Eff. 1/28/96, Register 137)

Authority: AS 44.46.020 AS 46.03.020 AS 46.03.110
AS 46.03.010 AS 46.03.100

18 AAC 60.420. Operations. (a) A monofill must be operated so that

(1) dust, odor, noise, traffic, and other effects from facility operations do not become a nuisance or hazard to the health, safety, or property of persons outside the boundary of the facility; and

(2) litter is controlled by fencing or another approved means, and is removed from access roadways and other areas in the facility.

(b) Except for drilling wastes, bulk liquid wastes and containerized liquid wastes may not be placed in a monofill unless authorized by a permit issued by the department. (Eff. 1/28/96, Register 137)

Authority: AS 44.46.020 AS 46.03.020 AS 46.03.110
AS 46.03.010 AS 46.03.100

18 AAC 60.430. Drilling waste. (a) Except for an inactive reserve pit subject to 18 AAC 60.440, or drilling waste that is managed as an industrial solid waste under 18 AAC 60.485, the owner or operator of a drilling waste storage facility shall meet the storage requirements of this subsection as follows:

(5) the owner or operator demonstrates that water pollution in the affected water body is diminishing.

(k) If an inactive reserve pit is located on private property and the owner or operator seeking permanent closure approval is not the landowner of record, the owner or operator shall provide proof that the landowner has been notified of the request for permanent closure approval.

(*l*) If additional information about conditions at a closed inactive reserve pit make corrective action necessary to protect public health and the environment, or, if appropriate, supportive documentation becomes available that might help locate an inactive reserve pit closed under (h)(1) of this section, the department will require further investigation, assessment, monitoring, or remediation.

(m) The department will apply a fee described in 18 AAC 60.700(f) for any action taken by the department after initial approval or disapproval of the closure plan, including oversight of corrective action, ongoing monitoring, final inspection of closed sites, and issuance of permanent closure approval. (Eff. 1/28/96, Register 137; am 10/29/98, Register 148; am 6/30/2002, Register 162)

Authority: AS 44.46.020 AS 46.03.090 AS 46.03.800
AS 46.03.025 AS 46.03.100 AS 46.03.810
AS 46.03.020

Editor's note: Information about how to obtain or review SW-846 is in the editor's note for 18 AAC 60.365.

18 AAC 60.450. Asbestos. (a) Waste that includes regulated asbestos-containing material (RACM) waste must be managed in a manner that prevents the release of asbestos fibers to the air or to surface water and must be disposed of in an approved RACM landfill. Non-RACM waste may be disposed of in a municipal solid waste landfill if

(1) the landfill has a permit issued under this chapter;

(2) the waste is covered within 24 hours, using procedures that prevent the release of asbestos fibers to the air or to surface water; and

(3) no fires have occurred in the landfill for more than one year.

(b) A waste management area used for disposal of RACM waste must be located on undisturbed earth or stable fill. An asbestos waste management area may not be located in a manner that would preclude future closeout or remedial action at the facility. The limits of the asbestos disposal area must be marked on property survey records, and recorded on the property deed.

(c) The operator of a facility that is receiving RACM waste shall inspect each load of RACM waste to assure that the friable asbestos material is sealed in leak-proof bags or containers, labeled in accordance with 29 C.F.R. 1910.1001(j)(4), revised as of July 1, 1998, adopted by reference; and accompanied by a complete and accurate shipment record prepared in accordance with (e) of this section or a copy, signed by the owner or operator of the facility, of the asbestos waste shipment record prepared by the transporter in accordance with 40 C.F.R. 61.149.

(d) At the end of each operating day, or at least once every 24 hours while disposal of RACM waste is occurring, the operator shall cover RACM waste that has been deposited at the landfill during the operating day or previous 24 hours with at least six inches of non-RACM material.

(e) For all RACM waste received, the owner or operator of the active landfill shall maintain in the operating record, waste shipment records that include the

(1) name, address, and telephone number of the waste generator;

(2) name, address, and telephone number of the transporter;

(3) amount of asbestos-containing waste material, measured in cubic yards; and

(4) date of receipt.

(f) The owner or operator of a landfill in which RACM waste has been disposed of shall maintain in the operating record, until the landfill closure is complete, a map or diagram showing the boundaries of the asbestos waste management area, its depth, and the amount, in cubic yards, of the RACM waste located there.

(g) Except as provided in (f) of this section, the owner or operator shall retain a copy of all records required under this section for at least two years, and shall furnish them to the department upon request.

(h) The owner or operator shall submit a workplan for approval at least 45 days before excavating or otherwise disturbing any asbestos-containing waste material that has been deposited at the landfill and covered. Department approval of the workplan is required before excavation may begin. If the excavation will begin on a date other than the one contained in the approved workplan, notice of the new date must be provided to the department at least 10 working days before excavation begins. Excavation may not begin earlier than the date specified in the approved workplan. A workplan submitted under this subsection must include the

(1) scheduled starting and completion dates;

(2) reason for disturbing the waste;

(3) procedures to be used to control emissions during the excavation, storage, transport, and ultimate disposal of the excavated asbestos-containing waste material;

(4) location of any temporary storage site; and

(5) final disposal site.

(i) At closure of a waste management area containing RACM waste, a final cover of at least two feet of non-asbestos-containing soil must be placed on the area and revegetated. A permanent survey marker must be constructed at the site. Drawings showing the boundaries of the RACM waste management area must be filed with the department and attached to the property deed, with a written warning about health and safety hazards related to disturbing the site. (Eff. 1/28/96, Register 137; am 7/11/99, Register 151)

Authority:	AS 44.46.020	AS 46.03.100	AS 46.06.080
	AS 46.03.010	AS 46.03.110	AS 46.14.110
	AS 46.03.020	AS 46.03.810	

18 AAC 60.455. Mining waste. Except when the only chemical being used is a flocculent to enhance settling, tailings from hard rock mines, and tailings from placer mines that have been amalgamated or chemically treated, are subject to 18 AAC 60.010 - 18 AAC 60.265, 18 AAC 60.400 - 18 AAC 60.495, 18 AAC 60.700 - 18 AAC 60.730, and 18 AAC 800 - 18 AAC 60.860 as necessary to prevent a violation of the air quality standards in 18 AAC 50 or the water quality standards in 18 AAC 70. The department will, in its discretion, incorporate applicable provisions of this chapter into a wastewater permit issued under 18 AAC 72 or a solid waste disposal permit issued under this chapter. (Eff. 1/28/96, Register 137; am 6/28/96, Register 138)

Authority:	AS 44.46.020	AS 46.03.020	AS 46.03.110
	AS 46.03.010	AS 46.03.100	AS 46.03.810

18 AAC 60.460. Inert waste. (a) The requirements of this section do not apply to a waste management area where inert waste is disposed of within the boundaries of a MSWLF.

(b) Liners are not required at an inert waste monofill.

(c) If a groundwater monitoring system is required at an inert waste monofill, under 18 AAC 60.820, detection monitoring under 18 AAC 60.840 and 18 AAC 60.850 during the active life of the monofill will be required only if the department

(1) determines that non-inert waste is or has been present at the site;

(2) detects evidence of a spill or groundwater contamination; or

(3) finds unexplained contamination in nearby wells.

(d) The owner or operator of an inert waste monofill who accepts combustible inert waste shall maintain fire control equipment and make it available to extinguish any fires that start.

(e) The owner or operator of an inert waste monofill shall construct a final cover of soil material at least 24 inches thick, graded to promote drainage without erosion, and shall revegetate it. The department will approve an alternate final cover design if the applicant demonstrates that the alternate design will protect public health, safety, and welfare, and the environment. After completion of the final cover on a monofill with a groundwater monitoring system, the owner or operator shall conduct detection monitoring at the frequency required by 18 AAC 60.850(b). (Eff. 1/28/96, Register 137; am 10/29/98, Register 148)

Authority: AS 44.46.020 AS 46.03.100 AS 46.03.800
AS 46.03.010 AS 46.03.110 AS 46.03.810
AS 46.03.020

18 AAC 60.470. Sewage solids. (a) The requirements of this section apply to the owner or operator of a sewage solids monofill. If a sewage solids monofill is located within the boundaries of a MSWLF, it is considered co-disposal with municipal solid waste, and the requirements of this section do not apply. If sewage solids are co-disposed of in a MSWLF, the owner or operator shall meet the requirements of 18 AAC 60.365.

(b) Waste placed in a sewage solids monofill must be dewatered and contain at least 10 percent solids by weight. Sewage or septage less than five percent solids by weight will be regulated as wastewater under 18 AAC 72. Sewage or septage that is five percent or more, but less than 10 percent, solids by weight may be handled as wastewater or dewatered to contain at least 10 percent solids by weight.

(c) If a sewage solids monofill does not have a liner and leachate collection system and the boundary of the monofill is

(1) 500 or more feet from the property line of the facility, sewage solids may not be disposed of in the monofill if they contain arsenic, chromium, or nickel in concentrations greater than

(A) the limits established in Table E of this subsection; or

(B) site-specific limits established under (d) of this section; or

manner that minimizes future settlement and instability. The surface of the industrial solid waste landfill may not be sloped more steeply than a 3:1 grade.

(d) The owner or operator of an industrial waste monofill shall install a final cover system designed and constructed to minimize

(1) infiltration through the closed landfill by use of an infiltration layer that contains at least 18 inches of earthen material with a permeability no greater than 1×10^{-5} centimeters per second; and

(2) erosion of the final cover by use of an erosion layer that contains at least six inches of earthen material capable of sustaining native plant growth.

(e) The department will approve an alternative to the final cover design required under (d) of this section if the applicant demonstrates that the proposed design

(1) will protect public health, safety, and welfare, and the environment; and

(2) includes

(A) an infiltration layer that achieves an equivalent reduction in infiltration as the infiltration layer specified in (d)(1) of this section; and

(B) an erosion layer that provides equivalent protection from wind and water erosion as the erosion layer specified in (d)(2) of this section. (Eff. 10/29/98, Register 148)

Authority: AS 44.46.020 AS 46.03.100 AS 46.03.810
AS 46.03.010 AS 46.03.110 AS 46.06.080
AS 46.03.020 AS 46.03.800

18 AAC 60.490. Closure demonstration and post-closure care. (a) After closure of a monofill, the owner or operator shall record a notation on the deed to the property of the facility, or some other instrument that is routinely examined during a title search. The owner or operator shall provide written notification to the department and the landowner that the notation has been recorded and that a copy has been placed in the operating record of the facility. The notation on the deed or other instrument must explain, in perpetuity, to any potential purchaser or leaseholder of the property

(1) that the land has been used as a monofill;

(2) the type of waste that was placed in the monofill;

(3) the geographical boundaries of the waste management areas; and

(4) details of any final cover, cap, or other structures or devices installed as part

of closure.

(b) The property owner may remove the notation required in (a) of this section from the deed or other instrument only if all wastes are removed from the property and the concentrations of any hazardous constituents then remaining do not exceed contemporary State of Alaska cleanup standards for contaminated sites.

(c) Except for a drilling waste disposal facility subject to 18 AAC 60.430(e)(2), the owner or operator of a monofill shall conduct visual monitoring, for settlement and erosion, for at least 60 consecutive months immediately following the closure. The department will require periodic visual monitoring at a monofill for up to 360 consecutive months immediately following the closure, if based on the type of waste and the site's compliance history under this chapter, the department determines that monitoring is necessary to protect the public health, safety, or welfare, or the environment. In addition to visual monitoring, the department will require groundwater, surface water, leachate, gas, and thermal monitoring at a monofill if the department finds that monitoring is necessary to protect the public health, safety, or welfare, or the environment. The department will also require additional monitoring and corrective action necessary to meet the standards in 18 AAC 60.815 and 18 AAC 60.860. The department will extend the post-closure monitoring period if necessary to ensure that the facility will not harm the public health, safety, or welfare, or the environment. At the end of the post-closure period, the owner or operator shall submit a report to the department that describes site conditions and summarizes the information collected during post-closure period. (Eff. 1/28/96, Register 137; am 10/29/98, Register 148; am 7/11/99, Register 151)

Authority: AS 44.46.020 AS 46.03.100 AS 46.03.810
AS 46.03.010 AS 46.03.110 AS 46.06.080
AS 46.03.020 AS 46.03.800

18 AAC 60.495. Permafrost conditions. Repealed. (Eff. 1/28/96, Register 137; repealed 9/7/2002, Register 163)

Article 7. Monitoring and Corrective Action Requirements.

Section
800. Visual and air monitoring
810. Surface water monitoring
815. Corrective action for problems discovered during visual and surface water monitoring or during an inspection
820. Groundwater monitoring and corrective action
825. Groundwater monitoring systems
830. Groundwater sampling and analysis
840. Parameters for surface water monitoring and groundwater detection monitoring
850. Detection monitoring program
860. Assessment monitoring and corrective action

18 AAC 60.800. Visual and air monitoring. (a) For a facility required to have a permit under 18 AAC 60.200, the permittee shall design a visual monitoring program to detect and document

(1) signs of damage or potential damage to any component of the facility from settlement, ponding, leakage, thermal instability, frost action, erosion, thawing of the waste, or operations at the facility;

(2) damage to the above-grade portions of groundwater monitoring devices or thermistors;

(3) violations of permit conditions or requirements of this chapter, specifically including the requirements in 18 AAC 60.225(a) that are readily observable;

(4) escape of waste or leachate or any unauthorized waste disposal;

(5) slippage of a flexible liner or damage to its anchor;

(6) erosion, a tear, a crack, or other damage to the visible portion of a liner;

(7) damage to the structural integrity of a containment structure, retaining wall, erosion control, or diversion structure;

(8) fire or combustion in the waste; and

(9) evidence of death or stress to fish, wildlife, or vegetation that might be caused by the facility.

(b) The department will require air pollution monitoring if there is credible evidence that the facility is causing or contributing to a violation of 18 AAC 50.

(c) The permittee shall ensure that a person who is familiar with permit requirements, with the applicable requirements of this chapter, and with the visual monitoring plan, conducts a visual inspection of the facility once each month, or at a frequency appropriate to facility operations as determined by the department and specified in the permit.

(d) The owner or operator shall keep records of visual monitoring conducted under this section with the operating record of the facility for at least five years after the visual monitoring was conducted. (Eff. 1/28/96, Register 137; am 10/29/98, Register 148)

Authority: AS 44.46.020 AS 46.03.100 AS 46.03.810
AS 46.03.010 AS 46.03.110 AS 46.06.080
AS 46.03.020 AS 46.03.800

18 AAC 60.810. Surface water monitoring. (a) The department will require a surface water monitoring system at a facility if the department finds that surface water pollution is likely to endanger public health or cause a violation of the water quality standards in 18 AAC 70.

(b) If surface water monitoring is required under (a) of this section, surface water must be sampled at points of compliance selected by the permittee and approved by the department. The points of compliance must be chosen so that highest concentrations of hazardous constituents migrating off the facility will be detected and so that interference from sources of pollution unrelated to the facility's solid waste management operations will be minimized. The point of compliance will normally be located no more than 50 feet outside a waste management area boundary and on land owned by the owner of the facility. When establishing a point of compliance under this subsection, the owner or operator may, and the department will, consider the criteria of 18 AAC 60.825(c) that are applicable to surface water.

(c) If surface water monitoring is required under (a) of this section, points of compliance must be sampled during high flow and low flow conditions each year unless another schedule is approved or required by the department to meet the standards in (a) of this section.

(d) If surface water monitoring is required under (a) of this section, monitoring parameters will be selected by the department from those that are set out in 18 AAC 60.840. The department will approve alternative parameters that are indicative of the type of hazardous constituents associated with the type of waste handled at the facility.

(e) If surface water monitoring is required under (a) of this section, the owner or operator shall develop surface water monitoring procedures, including consistent sampling and analysis procedures designed to ensure that monitoring results provide an accurate representation of surface water quality at each location sampled. The owner or operator shall set out the procedures in a handbook or similar document and shall place the document in the operating record of the facility. The surface water monitoring procedures must include procedures and techniques for

(1) sample collection;

(2) sample preservation and shipment;

(3) analytical procedures;

(4) chain of custody control; and

(5) quality assurance and quality control.

(f) If surface water monitoring is required under (a) of this section, the owner or operator shall

(1) submit the results of surface water monitoring to the department after each sampling collection; and

(2) keep records of surface water monitoring conducted under this section with the operating record of the facility for at least five years after the monitoring was conducted.

(g) After a surface water monitoring program is established under this section, the owner or operator shall continue to comply with the surface water monitoring plan while the facility is active and throughout the monitoring period after the facility is closed. (Eff. 1/28/96, Register 137; am 10/29/98, Register 148)

Authority:	AS 44.46.020	AS 46.03.070	AS 46.03.800
	AS 46.03.010	AS 46.03.100	AS 46.03.810
	AS 46.03.020	AS 46.03.110	

18 AAC 60.815. Corrective action for problems discovered during visual and surface water monitoring or during an inspection. (a) If a structural change in or damage to the facility or a monitoring device, or if a violation of a permit condition is observed during visual or surface water monitoring or during a department inspection, the owner or operator shall take action to correct the change, damage, or violation, to prevent the escape of waste or leachate, and to clean up waste that was disposed of in an unauthorized manner.

(b) If a statistically significant change in water quality is detected at the point of compliance as a result of the surface water monitoring program, the owner or operator shall

(1) determine the extent of contamination;

(2) determine if migration from the facility is the cause of the change in water quality;

(3) evaluate whether the water quality standards in 18 AAC 70 are threatened or exceeded at the point of compliance selected under 18 AAC 60.810; and

Article 8. General Provisions.

Section
900. Waivers
990. Definitions

18 AAC 60.900. Waivers. (a) Subject to (b) of this section, the department will grant a waiver of one or more provisions of this chapter, except a provision applicable to a Class I MSWLF and required by 40 C.F.R. 258, revised as of July 1, 1998. To secure a waiver under this section, the applicant must identify, in writing, the provision sought to be waived and must demonstrate that

(1) compliance with the identified provision would cost significantly more than the value of the environmental benefit, public health risk reduction, and nuisance avoidance that could be achieved through compliance with the identified provision; or

(2) the proposed alternative action will provide equal or better environmental protection, reduction in public health risk, and control of nuisance factors than compliance with the identified provision.

(b) In granting a waiver, the department will impose specific conditions as necessary to assure that public health and welfare and the environment are protected. (Eff. 1/28/96, Register 137; am 7/11/99, Register 151)

Authority: AS 44.46.020 AS 46.03.010 AS 46.03.020

18 AAC 60.990. Definitions. Unless the context indicates otherwise, in this chapter

(1) "accepts for disposal" means the act of

(A) accepting solid waste at a solid waste disposal facility and then disposing of the waste without treating the waste; or

(B) disposing of waste or residue that is left after solid waste has been incinerated or otherwise treated;

(2) "accumulation" means the collection of waste or discarded material until the waste or material can be shipped for disposal or another use;

(3) "active life" means the period of operation beginning with the first receipt of solid waste and ending at completion of closure activities;

(4) "active portion" means that part of a facility or unit in which disposal

operations have been or are being conducted, but does not include a facility or unit with a complete final cover;

(5) "active thaw zone" means the surface layers of organic matter and mineral soils that thaw each year in areas of permafrost;

(6) "agronomic rate for nitrogen" means the maximum amount of nitrogen-containing material that can be spread evenly over an area so that all of the nitrogen in the material is used by the crops grown onsite, taking into account any residual nitrogen present in the soil or the addition of another fertilizer;

(7) "airport" means a public-use airport open to the public without prior permission and without restrictions within the physical capacities of available facilities;

(8) "amalgamated" means to mix or alloy a metal with mercury;

(9) "animal waste" means discarded material originating from an animal inoculated with an infectious agent during research, production of biologicals, or pharmaceutical testing; "animal waste" includes the carcass, body parts, blood, and bedding of any animal known to have been in contact with an infectious agent;

(10) "application site" means a facility subject to land application of sewage solids or biosolids;

(11) "approved" means approved by the department;

(12) "aquifer" means a geological formation, group of formations, or portion of a formation capable of yielding significant quantities of groundwater to wells or springs;

(13) "aquifer of resource value" means an area beneath the ground that is used as a drinking water supply source, has a reasonable potential to be used as a drinking water supply source, or has some other potential use for which uncontaminated water might be important;

(14) "area susceptible to mass movement" means an area of influence, including an area characterized as having an active or substantial possibility of mass movement, when the movement of earth material at, beneath, or adjacent to a MSWLF, because of natural or human-induced events, results in the downslope transport of soil and rock material by means of gravitational influence, including landslides, avalanches, debris slides and flows, soil fluction, block sliding, and rock fall;

(15) "asbestos" means the asbestiform varieties of serpentine (chyrsotile), riebeckite (crocidolite), cummingtonite-grunerite, anthophyllite, and actinolite-tremolite;

(16) "aufeis" means ice that is formed as water flows over a frozen surface;

(17) "barrier berm" means an above-grade containment structure used in regions of continuous permafrost;

(18) "barrier layer" means a continuous horizontal layer of natural or synthetic materials through which the movement of liquid is prevented or greatly restricted;

(19) "base flood" means a flood that has a one percent or greater chance of recurring in any year, or a flood of a magnitude equaled or exceeded once in 100 years on the average over a significantly long period;

(20) "biosolids" means solid, semi-solid, or liquid residue generated during treatment of domestic sewage in a treatment works; "biosolids" includes domestic septage; scum or solids removed in primary, secondary, or advanced wastewater treatment processes; and a material derived from biosolids; "biosolids" does not include ash generated during the firing of biosolids in a biosolids incinerator or grit and screenings generated during preliminary treatment of domestic sewage in a treatment works;

(21) "bird hazard" means an increase in the likelihood of a bird-aircraft collision that might cause damage to the aircraft or injury to its occupants;

(22) "blood and blood products" means discarded waste human blood and blood components, including serum and plasma, and materials containing free-flowing blood and blood components;

(23) "cap" means a combination of natural or synthetic materials, including a barrier layer and final cover, placed on a closed waste containment structure;

(24) "Category I nonfriable asbestos-containing material" means asbestos-containing packings, gaskets, resilient floor covering, and asphalt roofing products that contain more than one percent asbestos, determined using the method in 40 C.F.R. 763, Subpart E, Appendix E, Polarized Light Microscopy, revised as of July 1, 1997, adopted by reference;

(25) "Category II nonfriable asbestos-containing material" means asbestos-containing material such as shingles, wallboard, or cementitious pipe that

(A) contain more than one percent asbestos, determined using the method in 40 C.F.R. 763, Subpart E, Appendix E, Polarized Light Microscopy, revised as of July 1, 1997, adopted by reference; and

(B) when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure;

(26) "Clean Water Act" means the "Federal Water Pollution Control Act," 33 U.S.C. 1251 - 33 U.S.C. 1387, as amended through August 21, 1998;

(27) "closed portion" means that part of a facility or unit that has been closed in accordance with this chapter;

(28) "commercial solid waste" means all types of solid waste generated by a store, office, restaurant, warehouse, or other nonmanufacturing activity; "commercial solid waste" does not include residential and industrial wastes;

(29) "containment structure" means a type of waste management area in which an arrangement of dikes, walls, barrier berms, pits, ice storage pits, liners, pads, cover material, and other similar constructs are used to hold solid waste and to prevent the escape, seepage, or discharge of solid waste and leachate from, or infiltration of water or precipitation into, the waste management area;

(30) "cover material" means a natural or synthetic material, or combination of materials, used to cover solid waste disposed of at a solid waste disposal facility or unit;

(31) "crumb rubber" means vehicle tires that have been chopped and ground to a grain size less than or equal to one-quarter inch in diameter;

(32) "crystallization point" means the temperature below 32 F at which ice crystals begin to form;

(33) "cultures and stocks" means discarded cultures and stocks of infectious agents and associated microbiologicals, including human and animal cell cultures from medical and pathological laboratories, cultures and stocks of infectious agents from research and industrial laboratories, waste from the production of biologicals, discarded live and attenuated vaccines, and culture dishes and devices used to transfer, inoculate, or mix cultures of infectious agents;

(34) "demonstrate" means to make a showing of fact to the department; unless a different standard is established on a case-by-case basis, a "demonstration" required by this chapter must show the asserted conclusion by a preponderance of evidence;

(35) "department" means the Alaska Department of Environmental Conservation;

(36) "designated portion" means the active portion of a facility, including the closed portion and that portion set aside to become an active portion in the future;

(37) "disease vector" means a carrier that can transmit a pathogen from one organism to another, and includes flies and other insects, rodents and other small mammals, birds, and vermin;

(38) "displacement" means the relative movement of any two sides of a fault, measured in any direction;

(39) "disposal" means the deposit of a solid or liquid waste into or onto the water or land of the state, whether the waste is contained or uncontained, by discharging, injecting, dumping, spilling, leaking, placing, discarding, or abandoning the waste so that the waste or any part or byproduct of the waste might enter the environment;

(40) "domestic wastewater" has the meaning given in 18 AAC 72.990;

(41) "drilling waste" means exploration and production waste exempted from RCRA Subtitle C that is associated with the exploration, development, or production of crude oil, natural gas, or geothermal energy; "drilling waste" includes drilling muds, cuttings, hydrocarbons, brine, acid, sand, and emulsions or mixtures of fluids produced from and unique to the operation or maintenance of a well, whether naturally occurring or added for the operation or productivity of the well; "drilling waste" is only waste described in this paragraph that is derived intrinsically from primary field operations, produced from a well, and removed at the drill site or removed at a crude oil production facility by crude oil or wastewater treatment process before custody transfer of the crude oil; "drilling waste" does not include spent solvents and oils from equipment maintenance activities, discarded chemical products, or fuels;

(42) repealed 9/7/2002;

(43) "emergency relief volume" means the space necessary to contain material expelled from an oil or gas well during an underground pressure imbalance; the minimum emergency relief volume is routinely one and one-half times the well bore or casing volume;

(44) "EPA" means the United States Environmental Protection Agency;

(45) "existing MSWLF" means a municipal solid waste landfill that was receiving solid waste as of October 9, 1993;

(46) "existing or developing population" means a community of persons residing in close proximity to each other, with a concentration equivalent to at least 120 persons per one-quarter section (160 acres);

(47) "explosive gas" means methane (CH_4);

(48) "facility" means all contiguous land and structures, other appurtenances, and improvements on land used for treatment, storage, or disposal of solid waste; facility includes solid waste disposal facilities, solid waste processing facilities, and treatment works;

(49) "facility structures" means any buildings, sheds, or utility or drainage lines on the facility;

(50) "fault" means a fracture or a zone of fractures in any material along which strata on one side have been displaced with respect to that on the other side;

(51) "floodplain" means the lowland and relatively flat areas adjoining inland and coastal waters; "floodplain" includes flood-prone areas of offshore islands, that are inundated by the 100-year flood; for purposes of this paragraph, "100-year flood" means a flood that has a one percent or greater chance of recurring in any given year or a flood of a magnitude equalled or exceeded once in 100 years on the average over a significantly long period;

(52) "fluid management plan" means the use of snow removal or any dewatering practice to keep to a minimum the hydrostatic head of fluids and drilling wastes in a containment

structure; "fluid management plan" includes approved disposal of liquid wastes in an injection well, or by other approved discharge to the land and water of the state;

(53) "freezeback" means the process of freezing solid waste in place as a means to prevent the migration of solid waste and leachate from the designated portion of a facility or unit;

(54) "friable asbestos material" means material that

(A) contains more than one percent asbestos, determined using the method in 40 C.F.R. 763, Subpart E, Appendix E, Polarized Light Microscopy, revised as of July 1, 1997, adopted by reference; and

(B) when dry, can be crumbled, pulverized, or reduced to powder by hand pressure;

(55) "gas condensate" means the liquid generated as a result of a gas recovery process at a MSWLF;

(56) "groundwater" means water below the land surface in the zone of saturation;

(57) "hard rock mine" means a mining facility, on the surface or underground, in which mineral resources are extracted from consolidated or lithified geologic formations;

(58) "hazardous constituent" means a constituent listed in 40 C.F.R. Part 258, Appendices I or II, revised as of July 1, 1997;

(59) "hazardous waste" has the meaning given in AS 46.03.900;

(60) "Holocene" means the most recent epoch of the Quaternary period, extending from the end of the Pleistocene Epoch to the present; "Holocene" is generally considered to be 10,000 years;

(61) "household waste" means solid waste; "household waste" includes garbage, trash, and sanitary waste in septic tanks, derived from a household; for the purposes of this paragraph, "household" includes single and multiple residences, hotels and motels, bunkhouses, ranger stations, crew quarters, campgrounds, picnic grounds, and day-use recreation areas;

(62) "inactive reserve pit" means a drilling waste disposal area, containment structure, or group of containment structures where drilling waste has not been disposed of after January 28, 1996 and at which the owner or operator does not plan to dispose of drilling waste;

(63) "industrial solid waste" means solid waste generated by a manufacturing or industrial process that is not a hazardous waste regulated under 42 U.S.C. 6921 - 42 U.S.C. 6939b (RCRA, Subtitle C), as amended through August 21, 1998; "industrial solid waste" includes polluted soil, inorganic chemicals, iron and steel manufacturing waste, leather and leather products, waste from nonferrous metals manufacturing and foundries, drilling waste, organic chemicals, plastic resin waste, sludges and boiler ash from the pulp and paper industry,

rubber and miscellaneous plastic products, textile manufacturing waste, and water treatment chemicals; "industrial solid waste" does not include coal ash, slaughterhouse waste, wood waste, inert waste, or mining waste;

(64) "inert waste" means solid waste that has a low potential to pollute air or water, and that does not normally attract wildlife; "inert waste" includes coal power plant ash, scrap metal, auto fluff, construction and demolition waste, and pavement rubble; "inert waste" does not include asphalt material that contains asbestos;

(65) "injection well" means a confined subsurface porous soil or rock formation for the disposal of waste;

(66) "karst terrane" means an area where karst topography, with its characteristic surface and subterranean features, is developed as the result of dissolution of limestone, dolomite, or other soluble rock; in this paragraph "characteristic surface and subterranean features" include sinkholes, sinking streams, caves, large springs, and blind valleys;

(67) "landfill" means an area of land, or an excavation in which solid wastes are placed for permanent disposal, and that is not an application site, injection well, reserve pit, or waste pile;

(68) "lateral expansion" means a horizontal expansion of the waste boundaries of an existing solid waste disposal facility;

(69) "leachate" means liquid that has passed through or emerged from solid waste and contains soluble, suspended, or miscible materials removed from the wastes;

(70) "leachate collection system" means a system or device installed immediately above a liner that is designed, constructed, maintained, and operated to collect and remove leachate from a landfill;

(71) "liner" means a continuous layer of natural or synthetic materials beneath or on the sides of a landfill or solid waste containment structure, or a vertical layer installed in a barrier berm, that extends continuously from the base of the active thaw zone to the top of the barrier berm to prevent solid waste and leachate from escaping from the landfill or the containment structure;

(72) "liquid waste" means waste material that is determined to contain free liquids as defined by Method 9095 (Paint Filter Liquids Test), as described in *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods* (SW-846), adopted by reference in 18 AAC 60.365;

(73) "lithified earth material" means rock, including naturally occurring and naturally formed aggregates or masses of minerals or small particles of older rock that formed by

crystallization of magma or by induration of loose sediments; "lithified earth material" does not include human-made material, such as fill, concrete, and asphalt, or unconsolidated earth material, soil, or regolith lying at or near the earth surface;

(74) "litter" has the meaning given that term in AS 46.06.150;

(75) "lower explosive limit" means the lowest percent by volume of a mixture of explosive gases that will propagate a flame in air at 25°C and atmospheric pressure;

(76) "major road system" means a system of connected pioneer roads and community roads as described in 17 AAC 05.030, with a total length of 100 miles or more;

(77) "maximum horizontal acceleration in lithified earth material" means the maximum expected horizontal acceleration depicted on a seismic hazard map, with a 90 percent or greater probability that the acceleration will not be exceeded in 250 years, or the maximum expected horizontal acceleration based on a site-specific seismic risk assessment;

(78) "medical waste" means laboratory waste consisting of discarded cultures and stocks of infectious agents and associated microbiologicals; pathological wastes; selected isolation waste; used and unused discarded sharps; animal waste; human blood, or blood products; and other wastes defined as "regulated waste" in 29 C.F.R. 1910.1030(b), revised as of July 1, 1997;

(79) "medical waste incinerator" means

(A) a two-chambered incinerator that holds waste for at least one second at temperatures at or above 1700°F in the secondary chamber, and operates at 1200° or more in the primary chamber; or

(B) a thermal oxidation unit approved by the department;

(80) "monofill" means a landfill or drilling waste disposal facility that receives primarily one type of solid waste and that is not an inactive reserve pit;

(81) "MSWLF" means a municipal solid waste landfill;

(82) "municipal solid waste landfill" and "MSWLF" mean an area of land or an excavation that receives household waste, and that is not an application site, surface impoundment, injection well, or waste pile; "municipal solid waste landfill" includes a new MSWLF, an existing MSWLF, and a lateral expansion of an existing MSWLF;

(83) "new MSWLF" means a municipal solid waste landfill unit that did not receive waste before October 10, 1993;

(84) "nondomestic wastewater" has the meaning given in 18 AAC 72.990;

(85) "nonfriable asbestos material" means asbestos-containing material that, when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure;

(86) "open burning" means the combustion of solid waste without

(A) control of combustion air to maintain adequate temperature for efficient combustion;

(B) containment of the combustion reaction in an enclosed device to provide sufficient residence time and mixing for complete combustion; and

(C) control of the emission of the combustion products;

(87) "operator" means the person or persons responsible for the overall operation of a facility;

(88) "owner" means the person or persons who own a facility; unless expressly excluded in a particular section, "owner or operator" includes the holder of a permit issued under this chapter regardless of whether the permittee otherwise fits within the definitions given of those terms;

(89) "pathological waste" means discarded pathological waste, including human tissues, organs, and body parts removed during surgery, autopsy, or other medical procedure;

(90) "PCB waste" means polychlorinated biphenyls waste;

(91) "permafrost" means soil in which the naturally occurring temperature has remained below 32°F for two or more consecutive years;

(92) repealed 9/7/2002;

(93) "permanently frozen state" means the condition at which both of the following occur:

(A) the temperature of the waste is perpetually at or colder than 0.5 degrees F below the crystallization point of the waste; and

(B) migration of leachate and other waste constituents from the buried waste is prevented;

(94) "pH" means the logarithm of the reciprocal of the hydrogen ion concentration;

(95) "placer mining" means obtaining, by washing or dredging, minerals from a glacial or alluvial deposit of sand or gravel that contains eroded particles of valuable minerals;

(96) "polluted run-off water" means water that violates a criterion of 40 C.F.R.

257-3-3, revised as of July 1, 1997, adopted by reference, the water quality standards of 18 AAC 70, or the drinking water standards of 18 AAC 80;

(97) "polluted soil" means

(A) soil that is placed into a landfill, that is not a regulated hazardous waste, and that was excavated during a spill response or leaking underground storage tank action or to comply with an approved contaminated site cleanup plan under 18 AAC 75 or 18 AAC 78; or

(B) a residue or other material that is placed into a landfill and that is not a regulated hazardous waste but contains a hazardous substance in a concentration exceeding the applicable soil cleanup levels set out in 18 AAC 75.341, Table B1 or Table B2;

(98) "pollution" has the meaning given in AS 46.03.900;

(99) "poor foundation conditions" means an area where features exist that indicate a natural or human-induced event might result in inadequate foundation support for the structural components of a solid waste disposal facility;

(100) "Portland cement" means a material used primarily as the ingredient that binds the aggregate together in concrete; concrete made with Portland cement differs from asphalt cement in that Portland cement hardens due to the hydration of lime, while asphalt cement, which uses hydrocarbons as a binder, hardens as it cools;

(101) "public water system" means a source of water, intake works, collection system, treatment works, storage facility, or distribution system from which water is available for human consumption; "public water system" includes systems providing water to more than one residential dwelling unit, or to a factory, office building, restaurant, school, or other similar facility, "public water system" does not include a system serving only a single-family residence;

(102) "pumpable fluids" means fluids that can be readily pumped or made to flow under normal conditions at temperatures above freezing;

(103) "putrescible waste" means solid waste that contains organic matter capable of being decomposed by microorganisms and of such a character and proportion as to cause obnoxious odors and to be capable of attracting or providing food for birds or animals;

(104) "qualified groundwater scientist" means a scientist or engineer who has received a baccalaureate or post-graduate degree in the natural sciences or engineering and has sufficient training and experience in groundwater hydrology and related fields as may be demonstrated by professional certification or completion of accredited university programs that enable that scientist or engineer to make sound professional judgments regarding groundwater monitoring, contaminant fate and transport, and corrective action;

(105) "RCRA" means the Resource Conservation and Recovery Act, 42 U.S.C. 6901 - 42 U.S.C. 6992k, as amended through August 21, 1998;

(106) "recycling" means the process by which a material that would otherwise be destined for disposal is collected, reprocessed, or remanufactured, and then reused;

(107) "registered engineer" means an engineer who is registered in this state under AS 08.48.211;

(108) "regulated asbestos-containing material or RACM" means

(A) friable asbestos material;

(B) Category I nonfriable asbestos-containing material that has become friable;

(C) Category I nonfriable asbestos-containing material that will be, or has been, subject to sanding, grinding, cutting, or abrading; and

(D) Category II nonfriable asbestos-containing material that has a high probability of becoming, or has become, crumbled, pulverized, or reduced to powder by the forces expected to act on the material in the course of a demolition or renovation operation regulated by 40 C.F.R. 61.145, revised as of July 1, 1997, or in the course of a disposal operation regulated under this chapter;

(109) "regulated hazardous waste" means a waste that is a hazardous waste, as defined in 40 C.F.R. 261.3, revised as of July 1, 1998, adopted by reference, that is not excluded from regulation as a hazardous waste under 40 C.F.R. 261.4(b), revised as of July 1, 1998, adopted by reference, and was not generated by a conditionally exempt small quantity generator;

(110) "reinforced barrier berm" means a barrier berm in which a liner is installed;

(111) "representative sample" means a sample the chemical makeup or characteristics of which are indicative of the in situ material from which it came;

(112) "resource recovery" means the recovery of materials or energy from solid waste for industrial use, agriculture, heat production, power production, or another process or purpose, including recycling;

(113) "road base" means the areas under and adjacent to the surface of a road that are not normally in contact with standing water;

(114) "run-off" means rainwater, leachate, or other liquid that drains over land from any part of a facility;

(115) "run-on" means rainwater, leachate, or other liquid that drains over land onto any part of a facility;

(116) "salvaging" means the controlled removal of waste materials for recycling or reuse;

(117) "seismic impact zone" means an area with a 10 percent or greater probability that the maximum horizontal acceleration in lithified earth material, expressed as a decimal fraction of the earth's gravitational pull will exceed 0.10g in 250 years;

(118) "selected isolation waste" means discarded waste material that is contaminated with excretions, exudates, and secretions from patients with highly communicable diseases, and that is treated in isolation; "selected isolation waste" includes blood and blood components, and sharps;

(119) "septage" means liquid or solid material removed from a septic tank, cesspool, portable toilet, Type III marine sanitation device, or similar treatment works that receives only domestic sewage; "domestic sewage" does not include liquid or solid material removed from a septic tank, cesspool, or similar treatment works that receives commercial wastewater or industrial wastewater and does not include grease removed from a grease trap at a restaurant;

(120) "sewage solids" means waste that passes the paint filter test (EPA Test Method 9095, published in Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (SW-846), adopted by reference in 18 AAC 60.365, and has been removed from a wastewater treatment system, sewer, septic tank, or other wastewater handling equipment; "sewage solids" includes lagoon dredge, sewer cleanout waste, barscreen grit, and wastewater treatment sludge;

(121) "sewage solids monofill" means a monofill used for disposal of sewage solids, including a "surface disposal site" as defined in 40 C.F.R. 503.21, revised as of July 1, 1997;

(122) "sharps" means discarded implements or parts of equipment used in animal or human patient care, medical research, or industrial laboratories, including hypodermic needles, syringes, pasteur pipettes, scalpel blades, blood vials, needles with attached tubing, broken or unbroken glassware that has been in contact with an infectious agent, slides, cover slips, and unused, discarded implements or parts of equipment;

(123) "site" means the land, structures, and equipment at a given location associated with a facility subject to this chapter;

(124) "solid waste" has the meaning given in AS 46.03.900;

(125) "solid waste disposal facility" has the meaning given in AS 46.03.900;

(126) "solid waste management system" means a comprehensive waste management regime that might extend beyond the boundary of a single facility, "solid waste management system" includes transport, storage, treatment, and disposal operations;

(127) "solid waste processing facility" has the meaning given in AS 46.03.900;

(128) "spoil and overburden" means soil, rock, and other material that is removed during a mining operation to gain access to ore;

(129) "store" means holding for a temporary period, at the end of which the material being held is treated, disposed of, or otherwise relocated;

(130) "structural component" means a liner, leachate collection system, final cover, run-on/run-off system, and any other component used in the construction and operation of a waste management area that is necessary to protect public health, safety, and welfare and the environment;

(131) "surface impoundment" or "impoundment" means a facility or part of a facility that is a natural topographic depression, human-made excavation, or diked area formed primarily of earthen materials, although it may be lined with human-made materials, that is designed to hold an accumulation of liquid wastes or wastes containing free liquids and that is not an injection well; "surface impoundments" includes holding storage, settling, and aeration pits, ponds, and lagoons;

(132) "surface transportation" means pioneer roads and community roads as described in 17 AAC 05.030, or a railroad system that routinely handles freight; "surface transportation" does not include barges or any other form of water craft;

(133) "surface water" means water

(A) open to the atmosphere and subject to surface run-off; and

(B) from springs, wells, or other collectors directly influenced by surface water;

(134) "tailings" means refuse or dross remaining after ore from a mining operation has been processed;

(135) "thermal instability" means the potential for subsurface degradation of the soils due to thawing in permafrost or ice-rich areas;

(136) "transfer station" means a public use facility for the deposit and temporary storage of solid waste, "transfer station" includes a transfer station located at a landfill; "transfer station" does not include a facility for the storage of a regulated hazardous waste;

(137) "treat" means subjecting waste to physical, mechanical, chemical, biological, or thermal processes that reduce the volume or toxicity, or change the characteristics of the waste;

(138) "treatment works" has the meaning given in AS 46.03.900;

(139) "twenty-five-year storm" or "25-year storm" means a storm that has no

more than a four percent chance of recurring in any given year or a storm of magnitude equaled or exceeded once in 25 years on the average over a significantly long period;

(140) "Type I error" means in a statistical test, incorrectly indicating pollution or an increase in pollution;

(141) "unsaturated zone" means the ground layer beneath the topsoil and overlying the water table in which water in the pore spaces coexists with air or in which geological matter is unsaturated;

(142) "unstable area" means a location that is susceptible to natural or human-induced events or forces capable of impairing the integrity of some or all of a landfill's structural components responsible for preventing releases from the landfill; "unstable area" includes poor foundation conditions, areas susceptible to mass movements, or earthquake-induced failures, areas underlain by permafrost, and Karst terranes;

(143) "uppermost aquifer" means the geologic formation nearest the natural ground surface that is an aquifer, as well as lower aquifers that are hydraulically interconnected with this aquifer within, or immediately downgradient of, the facility's boundary;

(144) "washout" means the carrying away of solid waste by waters of the base flood;

(145) "waste disposal permit" means a permit issued under this chapter;

(146) "waste incompatible with freezeback" means waste that prevents the buried waste in a landfill from attaining a permanently frozen state within the time period allowed in a permit issued under this chapter;

(147) "waste management area" means that part of a facility in which solid wastes are treated, stored, or disposed of;

(148) "waste management boundary" means a plane surface located at the hydraulically downgradient limit of a waste management area, extending down into the uppermost aquifer;

(149) "waste pile" or "pile" means any noncontainerized accumulation of solid, nonflowing waste;

(150) "waste rock" means rock that has been removed during mining or advanced exploration that does not contain sufficient metallic minerals to constitute ore; "waste rock" includes spoil and overburden;

(151) "waste source reduction" means a change in a habit or process that results in less waste being produced, "waste source reduction" does not include physical processing of

waste in balers or incinerators;

(152) "water" or "waters" has the meaning given in AS 46.03.900;

(153) "wetlands" has the meaning given in 40 C.F.R. 232.2, revised as of July 1, 1997;

(154) "wood waste" means a solid waste that is generated during the transfer or processing of timber, "wood waste" includes wood chips, bark, sawdust, and other such woody debris;

(155) "large inert landfill" means a landfill that is designed to accept more than 1000 cubic yards of inert waste;

(156) "institutional control" means a measure taken to limit, prohibit, or protect against an activity that could

(A) interfere with the integrity of activities or improvements designed to encapsulate or control pollution at a facility, or

(B) result in human or environmental exposure to pollution;

(157) "acute hazardous waste" means a waste identified as an acute hazardous waste under 40 C.F.R. 261.30 – 261.33, revised as of July 1, 1998, adopted by reference;

(158) "conditionally exempt small quantity generator" has the meaning given in 40 C.F.R. 261.5, revised as of July 1, 1998, adopted by reference;

(159) "post closure period" means the time period following closure of a facility during which monitoring or care of the facility is required under this chapter; if a closure report or certification is required, the post-closure period begins when the report or certification requirements is satisfied and ends when the conditions of 18 AAC 60.270 are met;

(160) "food waste disposal facility" means a facility used to dispose of

(A) slaughterhouse waste;

(B) waste from a seafood processing facility subject to 18 AAC 34; or

(C) waste from a food processing establishment subject to 18 AAC 31;

(161) Repealed 09/5/2010;

(162) "household hazardous waste" means solid waste that may have hazardous constituents, but that is not regulated under 42 U.S.C. 6921 – 6939e (resource Conservation and Recovery Act, subtitle C) because it is generated by a household; for purposes of this paragraph, "household" includes single and multiple residences, hotels and motels, bunkhouses, ranger

stations, crew quarters, campgrounds, picnic grounds, and day-use recreation areas;

(163) "household hazardous waste storage facility" means a facility used for the collection or storage of

(A) household hazardous waste; or

(B) conditionally exempt small quantity generator waste that is not regulated under 42 U.S.C. 6921 – 6939e (Resource Conservation and Recovery Act, subtitle C) if disposed of in accordance with those provisions;

(164) "untreated medical waste" means medical waste that has not been treated in an autoclave according to the manufacturer's instructions or incinerated;

(165) "wetted surface" means that area of a solid waste disposal cell or trench excavation surface that is in contact with solid or liquid waste;

(166) "working day" means a day other than Saturday, Sunday, or a state holiday. (Eff. 1/28/96, Register 137; am 10/29/98, Register 148; am 7/11/99, Register 151; am 6/30/2002, Register 162; am 9/7/2002, Register 163; am 9/5/2010, Register 195; am 4/12/2013, Register 206)

Authority:	AS 44.46.020	AS 46.03.100	AS 46.03.810
	AS 46.03.010	AS 46.03.110	AS 46.06.010
	AS 46.03.020	AS 46.03.800	AS 46.06.080

Editor's note: The documents referred to in this section may be reviewed at the department's Juneau, Anchorage, and Fairbanks offices.

ATTACHMENT 12

***Permit:** Alaska DEC, Solid Waste Program*
***Applicant:** Central Monofill Services, Inc.*
***Date Submitted:** January 8, 2013*

INERT WASTE MONOFILL
SOLID WASTE PERMIT APPLICATION

PART SEVEN- OPERATIONS PLAN

Central Monofill Services, Inc
Palmer, Alaska

January 2013

Matanuska - Susitna Borough
Development Services

MAY 1 4 2014

Received

Permit: *Alaska DEC, Solid Waste Program*
Applicant: *Central Monofill Services, Inc.*
Date Submitted: *January 8, 2013*

Central Monofill Services Inc.'s Inert Waste Monofill Permit
Part Seven- Operations Plan

Location(s): Milepost 35.3 Glenn Highway, Palmer Alaska 99645
Owner: CMS Inc.
Operator: CRS Inc.
Tax ID(s): 18N02E18C010

The information in this document is an attachment to Central Monofill Services Incorporated's (hereafter known as CMS's) DEC Inert Waste Monofill Permit Application, Part Seven - Operations Plan.

For any questions, comments or clarifications, please do not hesitate to contact myself, Shane Durand.

Should there be any changes or amendments needed for this Inert Waste Monofill Applications, all edits will be made in writing and submitted to the Alaska Department of Environmental Conservation, Division of Environmental Heath, Solid Waste Program in a timely fashion.

Sincerely,

Shane Durand
Secretary/Treasurer

***Permit:** Alaska DEC, Solid Waste Program*
***Applicant:** Central Monofill Services, Inc.*
***Date Submitted:** January 8, 2013*

Contents

Central Monofill Services Inc.'s Inert Waste Monofill Permit 2
Project Description 4
Access Control 4
Seasonal Start and End Dates 5
Hours of Operations / Days of the Week 5
Waste Acceptance and Handling Policy 5
Fire Mitigation Procedures 6
Corrective Action Plan 7
Waste Placement Plan 8
Asbestos Waste Placement Plan (RACM) 9
Non-RACM Waste Placement Plan 10
Litter, Vector and Nuisance Control Plan 10
Monitoring Plan 11
Operating Record 12

***Permit:** Alaska DEC, Solid Waste Program*
***Applicant:** Central Monofill Services, Inc.*
***Date Submitted:** January 8, 2013*

Project Description

CMS's goal for this Inert Waste Monofill, is to have Central Recycling Service, Inc. (CRS) properly place and cover inert debris on a portion of the property, while maintaining and reclaiming a 120 acre site located on Lot C10, Located in Township 17 North, Range 2 East, Section 18 and Lot B6, Located in Township 17 North, Range 2 East, Section 19 in Palmer, Alaska 99645.

Lot C10 is in the South West corner of Section 18 and B6 Adjacent just South of C10. The site has historically been used as a Gravel Pit. The site contours very greatly as different sections of the lot have been mined for gravel. The surrounding slopes are at the natural angle of repose for the material, in some cases as steep as 2:1 (See Attached Plan set, Sheet 1, Existing Conditions). This monofill will occupy 35.4 acres in the southwest corner of the lot C10 and all of Lot B6 north of the Glenn Highway and maintain a 100' buffer from the existing gravel ponds located on the lot C10. The groundwater at the site varies across the site with water elevations close to 85 feet in the northeast corner and down to 70 feet in the south corner. The depth to ground water at specific locations varies significantly due to the widely varying terrain at the site.

The site has been traditionally used as a gravel pit, so the soils onsite vary from some well graded, sandy gravel material to areas of unusable for mining materials such as clay and silt. The industrial ponds onsite are as deep as 80 feet. Permafrost has not been encountered at any time on site during historical use and the area of Palmer is in a sporadic permafrost zone so the likelihood of permafrost at this site is low. Due to the composition of soil containing well graded gravel, the percolation rate at the site is moderate to high. The nearest water bodies are the three industrial ponds onsite. They are manmade industrial ponds caused by past gravel dredging. These bodies do not have inflowing or outflowing water and are fed from onsite surface flow and groundwater. The Matanuska River lies approximately 2 miles to the southeast and this river ultimately discharges into the ocean in the Knik Arm approximately 4.5 Miles southwest.

Access Control

The driveway for Lot C10 is located off of the Glenn Highway and currently has a two driveway configuration that will be used as an entrance/exit configuration. It is the only access point for the inert debris monofill on the site. Signage will be posted informing the public of the monofill operation, private property, not to trespass and/or not to enter the site unless authorized or accompanied by authorized personnel. This access point will prevent unsolicited visitors to trespass onsite (pedestrians/target practice/off-road vehicle usage) and away from any site activities. There will also be a gate and fence that extends up the natural berm surrounding the entrance.

The driveway is currently permitted through DOT&PF since the driveway extends into the Glenn Highway ROW.

***Permit:** Alaska DEC, Solid Waste Program*
***Applicant:** Central Monofill Services, Inc.*
***Date Submitted:** January 8, 2013*

Seasonal Start and End Dates

This site will be operated year round.

Hours of Operations / Days of the Week

The operational hours will generally be from 7am to **7pm, Monday through Saturday.**

Waste Acceptance and Handling Policy

The inert debris brought to this site will be primarily shredded residual, recycling waste, material. Shredded residual material is a variety of non-hazardous, inert material which is shredded to a size of 12 inches or smaller. This material is the by-product of a recycling facility located in Anchorage, Alaska called Central Recycling Services. Central Recycling Services (CRS) specializes in recycling inert construction and demolition waste. The material brought to CRS is both manually and mechanically sorted, screened and processed through to ensure the material is free of hazardous material, putrescible material and/or liquids. The shredded inert material will be placed in a trailer and used as the inert debris for this monofill

Material that will not be accepted at this monofill location will be as follows:

- **PCBs or other Hazardous Wastes**
- **Household Waste**
- **Putrescible Waste**
- **Liquids**
- **Compressed Gas Cylinders**
- **Batteries**
- **Appliances with CFC/HCFC**
- **Chemical Waste**
- **Animal Carcasses**
- **Petroleum Contaminated Materials**

It is Central Recycling Services' policy to require additional documentation from all material haulers transporting any demolition and/or renovation material to the Central Recycling Services' Facility.

The additional information required is: (1) A copy of all Hazardous Building Material Surveys for each project that will be bringing their demolition and/or renovation material to the Central Recycling Facility. Should the Survey indicate the presence of any hazardous materials, then (2) A letter from the Contractor of each project is also to be submitted to Central Recycling Services stating that all hazardous material have been properly removed from the project, and there is no hazardous material being brought to the Central Recycling Facility. For their operations, CRS defines hazardous material as a material containing any percentage of asbestos.

Any demolition and/or renovation material brought to the CRS Facility is not allowed to be dumped onto the Tipping Floor until both of the above mentioned documents have been provided to and reviewed by the authorized CRS employees. When delivered, any material identified in the survey will be searched for within the waste.

Please note that CRS is not open to the public. All customers/haulers are pre-approved and have signed credit applications including indemnity. By signing this document, they acknowledge that hazardous material is not accepted at the CRS Facility.

These policies in place at CRS will help to reduce the risk of prohibited items or contaminates from reaching the monofill.

Although the CRS residual material is the primary material to be deposited at the monofill some inert material will be hauled directly to the monofill without being processed at the CRS recycle facility. These materials will require the same documentation and have the same scrutiny as those delivered directly to CRS.

Fire Mitigation Procedures

Exothermic reactions have been shown to be problems in landfills that accept organic materials. Exothermic reactions occur when organic materials are confined in a moist environment. Therefore the following procedures will be implemented during construction and operation of the landfill to mitigate the potential for exothermic reactions that could cause a fire.

Control of Organic Material:

- No organic soils will be allowed to be in contact with any of the inert debris or tire bales used in the landfill.
- No organic materials other than dry wood construction debris will be allowed in the landfill.
- Only clean tire bales (no organic debris attached) will be used for construction of berms or subgrade structural fill.

Control of Moisture:

- Only dry or damp debris will be allowed to be buried in the landfill. If wet debris are brought to the landfill, they'll be dried prior to being buried in the cell.
- Up gradient run off will be controlled by interception ditches to prevent any storm water runoff from entering the active cells.

Regular Inspections:

- Each day of operation in the landfill the cells will be inspected for evidence of heat or steam rising out of the cells which may be an indication of an exothermic reaction occurring. If an exothermic reaction is suspected the area will be opened and exposed to the air to be dried out.

Limitation to Sub-Cell (lifts) Depths:

- The depth of each sub-cell (or lift) is limited to 15 feet to allow access to the bottom of the lift with commonly available excavation equipment. Due to the long period of time between cell lift completions (anticipate ~1 year each) all areas of the active cell will be accessible for relatively long period of time for regular monitoring.

Corrective Action Plan

As previously mentioned, the shredded residual material will be sorted through at Central Recycling Services before the inert material is brought to the monofill site. Therefore, it will not likely be necessary to clean up any prohibited or unauthorized waste since there will not be the possibility of hazardous or unauthorized waste being inadvertently brought to the monofill.

The Facility at CRS abides by all regulations and permit conditions regarding inert debris handling, placement and sorting of material, therefore no violations of waste disposal or improper processing will take place at the monofill.

However, if somehow some unauthorized hazardous waste is brought to the landfill that waste will be segregated, reported, and handled like an orphan hazardous waste that shows up on any property. ADEC will be notified and HAZWOPER trained crews will be dispatched to properly control and contain the waste.

Should the unlikely event of a fire occur within the inert waste, there will be fire barriers throughout the monofill. These fire barriers will consist of 12 inch thick soil barriers to act as fire retardants and prevent the fire from spreading from Cell to Cell through the entire monofill. There will also be one foot thick soil barriers between the tire bales retaining structures in each Cell to reduce the possibilities of any fire hazards. For small fires the initial attempts will be to quickly extinguish the fire, using on-site fire extinguishers, before the fire spreads into the waste materials.

If the source of the fire is from an exothermic reaction, then the following actions will occur to control the fire:

- The location of the exothermic reaction will be identified.
- A site specific fire fighting plan will be immediately developed to address the situation which may include the following options:
    - The impacted materials may be dug up and exposed to air to dry out.
    - The cell with the exothermic reaction may be flooded with water to reduce the reaction rate. (use on-site industrial well)
    - Depending on where the fire is located, specific measures will be developed to prevent the spread of the fire to or in the tire bales.

In the unlikely event the fire ignites the tire bales, the local fire department will be notified to monitor and control the fire.

There currently are no structures near the monfill that need to be protected. In the future a scale and scale house will be located near the entrance to the site. The scale and scale house will be located approximately 150' to 200' away from the toe of the monofill. A warm storage building may be added in the future as shown on Sheet 2. Types of equipment that may be onsite: Excavator, Loader, Compactor, Dozer, End Dumps, Truck and Trailer. There is to be a designated fueling area for all equipment to be maintained and fueled on an as-needed basis. This will be located within the Storage area shown on Sheet 2. This area shall also serve as parking for employee vehicles, parking and staging areas for equipment, and staging/storage area for materials. All material will be properly protected and stored.

Waste Placement Plan

The inert material will be placed to fill the natural and manmade voids of this property and take advantage of all the onsite features like existing material berms and valleys.

Before material is placed in the monofill, the bottom layer of the cells will be established using groundwater information. The bottom of the cell will located a minimum of 10' above the established groundwater levels.

In order to recycle tires, build embankments and prevent unstable slopes, tire bales will be used for the purpose of containing inert debris within the limits of the Monofill on the south ½ of the site. They may also be used as structural berms on the North, East and West sides of the fill. Much of the Southeast and Southwest sides of the fill will be located next to natural berms and will require no structural support. CRS will maintain a six inch to one foot of soil separation between each Cell's tire bales to create multiple fire barriers throughout the monofill in the unlikely case of a fire.

Please Refer to Sheet 5, Operations plan for a visual guide to the description below: Cell A will be the first cell to be filled. As per detail 2 on sheet 5, the bottom of the monofill will be established 10 feet above the measured groundwater table. The cell will be built vertically and natural material from the north edge of Cell A and all of Cell J will be used as lift separation material. Cells A and F will be constructed first along with establishment of Cell C as the ACM cell. As Cells A and F progress to a median target elevation (approximately 105' local), Cells G and B will begin to be constructed. The same process will occur to Cells D and H, and then E and I. Once the target elevation is established, construction will move back to Cells A and J and the previous described process will begin again until another lift is completed.

During the above process the following general practices shall apply: The roadway/working area will be wide enough to allow at least two vehicles to pass by one another. The trucks will drive to the end of the operating Cell, turn around, and backup into the most accessible area, then dump its material. As the trucks dump each load of material,

the heavy equipment will then organize and compact the placed debris within the operating Cell.

After each Cell lift is filled completely, a bulldozer will spread 6-12" of excess soil, strippings and non-organic overburden on top of the Cell's inert debris creating a fire barrier. This material will also be spread over and in between the tire bale wall of the Cells to help create a visibly pleasing surface as well as promote the revegetation and growth of native plants.

As sections of the monofill become completed, 24 inches of native or imported soil will be spread over the top to serve as a cap and to allow the reestablishment of vegetation on the site within a reasonable period of time. If the soil cannot support plant growth, 4 inches of topsoil will be imported to promote healthy growth and revegetation of slopes. See Sheet 3 of the plans for slope grades and locations. The slopes will be 2:1 at their steepest when reinforced with tire bales, and 3:1 or less everywhere else. The monofill will all be stabilized to a condition that will allow sufficient moisture to be retained for natural revegetation to occur on site within the next five years.

The placement of inert material is proposed to be a continuous process over the period of approximately twenty five years.

Asbestos Waste Placement Plan (RACM)

Regulated Asbestos Containing Material (RACM) waste will be accepted at the monofill site. All waste that includes regulated asbestos-containing material (RACM) waste will be managed in a manner that prevents the release of asbestos fibers to the air or to surface water and must be disposed of in an approved cell (such as Cell E). The base of the asbestos will be undisturbed earth or stable fill. The cell is located in a manner that it will not preclude any future closeout or remedial action at the facility.

The CRS operator shall inspect each load of RACM waste to assure that the friable asbestos material is sealed in leak-proof bags or containers, labeled in accordance with 29 CFR 1910.1001(j)(4), revised as of July 1, 1998. The waste will be accompanied by a complete and accurate shipment record meeting the requirements of 18 AAC 60.

At the end of each operating day, or at least once every 24 hours while disposal of RACM waste is occurring, the operator shall cover RACM waste that has been deposited at the landfill during the operating day or previous 24 hours with at least six inches of non-RACM material.

CRS will retain a copy of all records required under 18 AAC 60.450 for at least two years, and shall furnish them to the department upon request.

CRS will maintain in the operating record of the landfill a map or diagram showing the boundaries of the asbestos waste management area, its depth, and the amount, in cubic yards, of the RACM waste located there. These will documents will be maintained until the landfill closure is complete.

If excavation of the RACM material is needed for any reason, CRS will submit a work plan prepared in accordance with 18 AAC 60 for approval at least 45 days before excavating or otherwise disturbing any asbestos-containing waste material that has been deposited at the landfill and covered. Department approval of the work plan is required before excavation may begin. If the excavation will begin on a date other than the one contained in the approved work plan, notice of the new date must be provided to the department at least 10 working days before excavation begins. Excavation may not begin earlier than the date specified in the approved work plan.

Non-RACM Waste Placement Plan

Non-Regulated Asbestos Containing Material (Non-RACM) waste will also be accepted at the monofill site.

The majority of the Cells within the monofill will be filled with non-hazardous, inert debris; but when the disposal of Non-RACM is needed, a sub-Cell will be created. When a load of Non-RACM is brought to the monofill, the following process will occur.

The monofill Operator will prepare the operating Cell for the Non-RACM load. The Operator will make a separate Cell within the operating Cell, creating a sub-Cell. Each sub-Cell will be surveyed and the location documented for future reference. To ensure the non-RACM will not become friable during the handling or placement, the sub-Cell will be properly covered, as required for Non-RACM disposal, within the first 24 hours of placement in the monofill with one foot of the CRS Daily Cover. If and when necessary, additional cover will be applied to the Non-RACM sub-Cells to provide the minimum of one foot of cover at all times.

Litter, Vector and Nuisance Control Plan

Throughout each Cell, the equipment will spread Daily Cover, when necessary, to ensure the monofill is properly maintained. This Daily Cover is called Alternative Daily Cover, consisting of material (other than earthen material) that is placed on the surface of the operating Cell of the monofill when needed, to control the unlikely event of fires, odors, blowing litter and scavenging. This Daily Cover will be brought from Central Recycling Services.

Due to the debris being inert, there is no concern for wildlife or domestic animals to be attracted to the inert debris landfill and its operations. Neither odors and/or diseases will be issues on or off site as none of the debris will be putrescible.

CRS plans on preventing any problems or issues that may occur on adjacent properties by using berms, grading plans, dust control and Storm Water Pollution Prevention (SWPPP) techniques throughout the disturbed areas on site. Existing Earth Berms on the South and West sides of the property will not only decrease the visual difference of the property, but to act as a buffer and prevent any material from leaving the site and travel onto any neighboring properties. The North and East sides of the monofill have ~1000' between the toe and a neighboring property. If any issues with blowing debris occur, CMS will implement a plan to combat this including earthen berms and chain link fence.

CRS will provide grading plans and implement the SWPPP for all ground disturbing activities. By applying these SWPPP techniques with the grading plans, this will lessen the amount of water movement on site and will ensure the very limited water discharge off of this property meets water quality criteria. The project is designed to have all water infiltrate the permeable gravel soils or drain into the drainage basin composed of industrial water. Should dust become an issue on site, CRS has access to available water trucks when needed.

The existing surrounding land uses within one mile around or adjacent to Lot C10 include: single family residential homes to the West, industrial mining operations to the Northeast, and Southeast and privately owned farming/agricultural due east. This property has been used for gravel mining operations in the past so CMS's future purpose for these properties and these plans will not interfere with the neighboring lands' uses or activities.

The initial projected average daily truck count is about 12, with truck counts of up to 25 per day for short periods of time. Gravel extraction haul trucks use the existing driveway located on Lot C10 and have historically had much larger volumes of trucks on a daily basis. CMS has Grandfather Rights to the driveway and gravel permit. It is not anticipated that a noticeable increase will occur in the noise or the truck traffic on the Glenn Highway.

Monitoring Plan

Due to the inert material being placed in this landfill and the drainage plan, no surface water or ground water is expected to be impacted. Visual inspections will occur on a regular basis following the attached inspection checklist. While limited daily inspections will be conducted whenever the landfill is in operation, at a minimum monthly inspections will be conducted following the entire checklist by a person familiar with all the permit requirements.

***Permit:** Alaska DEC, Solid Waste Program*
***Applicant:** Central Monofill Services, Inc.*
***Date Submitted:** January 8, 2013*

Operating Record

The operating record for this monofill will be kept on-site and a copy of this documentation will be kept at the CRS Facility located at the below address:

2400 Railroad Avenue,
Anchorage, Alaska 99501

ATTACHMENT 13

Construction & Demolition Cell
Clean Up Programs
Disposal Rates
Forms
Haz-Mat Building at Central Landfill
How do I dispose of...
Household Hazardous Waste
Junk Vehicle Removal Program
Waste Acceptance Policy
Solid Waste Contacts
Solid Waste Management Plan
Scrap Metal Recycling
Public Works Divisions
Operations & Maintenance
Solid Waste
Important Roads
Subdivision Construction Manual
Departments
Quick Access
FAQ
Contacts

Acceptable Waste Policy

Acceptable Waste

Acceptable:	Household refuse Commercial refuse Asbestos (with prior notice and approval - call 861-7601 or 861-7604) Refrigerators All items brought in for disposal must be 8 feet in length or less. Any item longer w have to be cut down prior to bringing it to the Landfill or any of the Transfer Sites.
Recycle Material:	Used oil Lead acid batteries Aluminum * Nonferrous metals (copper, brass, etc.) * Electronic Equipment (computers, monitors, TV's) - Are accepted on Wednesday and Saturday (fees apply).

* Separate recycle material and deposit in bins as directed by the Gate House Attendant

Waste that is Not Acceptable

Not Acceptable:	Burning or smoldering material Explosives ** Radioactive material Junk vehicles Narcotics, prescription drugs Sewage, sludge, human excrement, except disposable diapers Tree stumps Tree or brush cuttings exceeding one (1) pick-up load Hazardous waste as defined by the U.S. Environmental Protection Agency (EPA)

** These materials are not accepted at any of the facilities. Contact the Alaska State Troopers for disposal assistance at (907) 745-2131.

Matanuska - Susitna Borough
Development Services

MAY 14 2014

Received

©2013 Matanuska-Susitna Borough
For questions or comments about the Borough, or Borough Services, call (907)861-7801

For website issues contact the IT Helpdesk

Matanuska-Susitna Borough
350 E Dahlia Ave
Palmer, Ak 99645
Hours of Operation: 8:00 AM - 5:00 PM

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ATTACHMENT 14

Construction & Demolition Cell
Clean Up Programs
Disposal Rates
Forms
Haz-Mat Building at Central Landfill
How do I dispose of...
Household Hazardous Waste
Junk Vehicle Removal Program
Waste Acceptance Policy
Solid Waste Contacts
Solid Waste Management Plan
Scrap Metal Recycling
Public Works Divisions
Operations & Maintenance
Solid Waste
Important Roads
Subdivision Construction Manual
Departments
Quick Access
FAQ
Contacts

Construction and Demolition Material

Matanuska - Susitna Borough
Development Services

MAY 14 2014

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The Matanuska-Susitna Borough also has an area for construction and demolition materials at Central Landfill. This consists of materials such as wood, sheetrock, glass, tires, concrete, and other inert materials of this nature. These items may be disposed of at a reduced per ton rate.

Residents may also wish to come into the construction/demolition area to salvage useful materials. A waiver must be signed prior to salvaging in this area. More information is available about salvaging at the Central Landfill Scale House.

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For questions or comments about the Borough, or Borough Services, call (907)861-7801

For website issues contact the IT Helpdesk
Matanuska-Susitna Borough
350 E Dahlia Ave.
Palmer, AK 99645
Hours of Operation 8:00 AM - 5:00 PM

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ATTACHMENT 15

Matanuska - Susitna Borough
Development Services

MAY 1 4 2014

Received

Willis

April 30, 2014

Telephone: (206) 386-7400
Fax: (206) 386-7950
Website: www.willis.com

Direct Line: (206) 386-7414
Direct Fax: (206) 386-7960
E-mail: Macy.Puz-Fazio@willis.com

Matanuska-Susitna Borough
Development Services Division
Attn: Ms. Susan Lee
350 East Dahlia Avenue
Palmer, AK 99645

Re: Central Monofill Services

Ms. Lee –

Central Monofill Services' umbrella policy provides excess limits over their primary polices: General Liability including Pollution Liability / Professional Liability, Business Automobile, and Employers Liability policies. Please see the table below which explains how the limits apply to each policy.

Coverage	Primary Limits	Excess Limits	Total Limits
General Liability, including Pollution	$1,000,000 (per occurrence)	$9,000,000	$10,000,000
Professional Liability	$1,000,000	$9,000,000	$10,000,000
Business Automobile	$1,000,000	$9,000,000	$10,000,000
Employers Liability	$1,000,000	$9,000,000	$10,000,000

If you have any questions, please do not hesitate to contact me.

Thank you

Regards,

Macy Puz-Fazio
Senior Client Services Specialist

Willis of Seattle, Inc.
505 5th Ave South, Suite 200
Seattle, WA 98104

ACORD

CERTIFICATE OF LIABILITY INSURANCE

Page 1 of 1

DATE (MM/DD/YYYY): 04/30/2014

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER

Willis of Seattle, Inc.
c/o 26 Century Blvd.
P. O. Box 305191
Nashville, TN 37230-5191

CONTACT NAME:
PHONE (A/C, No, Ext): 877-945-7378 FAX (A/C, No): 888-467-2378
E-MAIL ADDRESS: certificates@willis.com

INSURED

Central Monofill Services, Inc.
311 N. Sitka Street
Anchorage, AK 99501-1841

INSURER(S) AFFORDING COVERAGE	NAIC #
INSURER A: Lexington Insurance Co.	19437-000
INSURER B: Commerce and Industry Insurance Company	19410-001
INSURER C: Commerce and Industry Insurance Company	19410-003
INSURER D:	
INSURER E:	
INSURER F:	

COVERAGES CERTIFICATE NUMBER: 21559584 REVISION NUMBER:

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN. THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	GENERAL LIABILITY			16933804	3/31/2013	9/30/2014	EACH OCCURRENCE	$ 1,000,000
	X COMMERCIAL GENERAL LIABILITY						DAMAGE TO RENTED PREMISES (Ea occurrence)	$ 300,000
	CLAIMS-MADE X OCCUR						MED EXP (Any one person)	$ 10,000
							PERSONAL & ADV INJURY	$ 1,000,000
	GEN'L AGGREGATE LIMIT APPLIES PER:						GENERAL AGGREGATE	$ 2,000,000
	POLICY X PRO-JECT LOC						PRODUCTS - COMP/OP AGG	$ 2,000,000
								$
	AUTOMOBILE LIABILITY			1924850	3/31/2013	9/30/2014	COMBINED SINGLE LIMIT (Ea accident)	$ 1,000,000
	X ANY AUTO						BODILY INJURY (Per person)	$
	ALL OWNED AUTOS / SCHEDULED AUTOS						BODILY INJURY (Per accident)	$
	HIRED AUTOS / NON-OWNED AUTOS						PROPERTY DAMAGE (Per accident)	$
								$
A	UMBRELLA LIAB X OCCUR			16933824	3/31/2013	9/30/2014	EACH OCCURRENCE	$ 9,000,000
	X EXCESS LIAB CLAIMS-MADE						AGGREGATE	$ 9,000,000
	DED RETENTION $							$
C	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY			WC-000-99-9439	9/30/2013	9/30/2014	X WC STATU-TORY LIMITS / OTH-ER	
	ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below	Y/N	N/A				E.L. EACH ACCIDENT	$ 1,000,000
							E.L. DISEASE - EA EMPLOYEE	$ 1,000,000
							E.L. DISEASE - POLICY LIMIT	$ 1,000,000
A	Professional/Pollution Liability			16933804	3/31/2013	9/30/2014	$1,000,000 Each Claim $1,000,000 Aggregate	

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (Attach Acord 101, Additional Remarks Schedule, if more space is required)

Re: Proof of Insurance

Excess policy is excess over the General Liability, Auto Liability, Employers Liability and Professional/Pollution Liability Policies.

Asbestos coverage is included under the Professional/Pollution Liability policy.

CERTIFICATE HOLDER

Sample Certificate

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

Coll:4403479 Tpl:1806939 Cert:21559584 @1988-2010 ACORD CORPORATION. All rights reserved.

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ATTACHMENT 16

NORTHERN GEOTECHNICAL ENGINEERING, INC. / TERRA FIRMA TESTING
Laboratory Testing Geotechnical Engineering Instrumentation Construction Monitoring Services Thermal Analysis

January 2, 2014

3609-13

Matanuska - Susitna Borough
Development Services
MAY 14 2014
Received

Environmental Management, Inc.
206 E. Fireweed Lane, Suite 201
Anchorage, Alaska 99503

Attn: Larry A. Helgeson, P.E.

RE: STABILITY ANALYSIS FOR THE PROPOSED TIRE BALES REINFORCED LANDFILL SLOPE, CHUGIAK, ALASKA

Larry,

Per your request, Northern Geotechnical Engineering, Inc. *d.b.a.* Terra Firma Testing has prepared this letter as an addendum to our previous geotechnical report, "Stability Analysis for the Proposed Cut Slope, Chugiak, Alaska", dated December 19, 2013. As mentioned in previous letter, proposed developments of the property include cutting the top portion of the existing slope, and constructing a landfill slope near the toe (Figures 1, 2 &3). This letter presents the results of our analysis of the proposed tire bales reinforced landfill slope.

The design calls for a landfill slope inclined at 2H:1V with an approximately vertical height of 70 feet. For the analysis, we included analysis results of slopes inclined 1.2H:1V, 1.5H:1V and 2H:1V. A 20 feet thick tire bales wall was laid out on the proposed landfill slope as reinforcement. The tire bales properties were adopted from "Engineering Properties of Tire Bales for Soil Repairs and Embankment Construction" (Zornberg and LaRocque, 2005), provided by client. Material properties for modeling are shown in Figures 4-9.

Geo-fabric Reinforcement

Preliminary analyses concluded that the tire bales wall would not meet the MOA and code requirements for stability at economically steep configurations. For this project, the MOA requirement of a static factor of 1.7 and a seismic factor of safety of 1.1 was used. To increase the factor of safety, a tieback system was introduced into the model. Especially with the compressible, low-weight backfill, a geo-fabric tie back system appeared to be

most appropriate considering that the geo fabric would serve dual functions by reinforcing the wall and to minimize differential settlements in the backfill near the tire bales wall.

With geo-fabric reinforcement, the bond length is assumed to be equal to the fabric length. The width of the fabric (distance into the section) is always at unit thickness (1 meter or 1 feet), matching the unit thickness of the slope model. It is assumed that the stabilizing resisting force from the fabric acts in the axial direction parallel to the fabric.

Within the model, four layers of geo-fabric were set up at every 15 ft. intervals. The tensile capacity of each layer was varied until the minimum required factors of safety for the overall slope stability were achieved. Also included in the analysis is factor of safety for the tensile strength of the geo-fabric (1.5). The applied loads represent the ultimate capacity of the fabric.

Table 1: Geo-fabric Applied Load for 1.2H:1V Landfill Slope

Layers	Applied Load
Fabric 1	10 kips
Fabric 2	15 kips
Fabric 3	15 kips
Fabric 4	20 kips

Table 2: Geo-fabric Applied Load for 1.5H:1V Landfill Slope

Layers	Applied Load
Fabric 1	10 kips
Fabric 2	10 kips
Fabric 3	15 kips
Fabric 4	15 kips

Table 3: Geo-fabric Applied Load for 2H:1V Landfill Slope

Layers	Applied Load
Fabric 1	5 kips
Fabric 2	10 kips
Fabric 3	10 kips
Fabric 4	15 kips

11301 Olive Lane, Anchorage, Alaska 99515 Phone: 907-344-5934 Fax: 907-344-5993 Email: kmobley@nge-tft.com

Analysis Results

Six runs were conducted to assess the proposed tire bales/geo-fabric reinforced slope stability for the simplified cross section as shown in Figure 3. Each run selected failure surfaces and found a minimum factor of safety. The results of the analyses for the proposed tire bales/geo-fabric reinforced landfill slope are summarized as follows:

- For the representative parameters shown in Table 1, the proposed 1.2H:1V landfill slope reinforced by 20 feet thick tire bales wall at the cross section location appears to be stable under static condition with a minimum factor of safety 1.9 (Figure 4); while it appears stable under a pseudo-static seismic load of 0.3g, having a minimum factor of safety of 1.1 (Figure 5).

- For the representative parameters shown in Table 2, the proposed 1.5H:1V landfill slope reinforced by 20 feet thick tire bales wall at the cross section location appears to be stable under static condition with a minimum factor of safety 1.8 (Figure 6); while it appears stable under a pseudo-static seismic load of 0.3g, having a minimum factor of safety of 1.1 (Figure 7).

- For the representative parameters shown in Table 3, the proposed 2H:1V landfill slope reinforced by 20 feet thick tire bales wall at the cross section location appears to be stable under static condition with a minimum factor of safety 2.4 (Figure 8); while it appears stable under a pseudo-static seismic load of 0.3g, having a minimum factor of safety of 1.1 (Figure 9).

Conclusion and Closure

This preliminary analysis shows that is possible to construct a fill of recycled, shredded construction debris using tire bales to develop the slope face. Further analyses can be conducted to optimize the fabric spacing, fabric type, slope face angle, and construction methodology with the cost of materials and construction. Because the construction of the fill is expected to take many years, the cost optimization may not remain a constant. It is entirely possible to alter the slope face angle, fabric type and strength, and fabric spacing during the life of the project to meet current cost optimization.

Northern Geotechnical Engineering Inc. prepared this letter exclusively for the use of the *Environmental Management, Inc.* and their contractors for use in design and construction

of the proposed development. *Northern Geotechnical Engineering, Inc. d.b.a Terra Firma Testing* should be notified if significant changes are to occur in the nature, design, or location of the proposed facilities in order that the conclusions and recommendations presented in this report may be reviewed and, if necessary, modified to satisfy the proposed changes.

Northern Geotechnical Engineering, Inc. d.b.a Terra Firma Testing conducted this evaluation following the standard of care expected of professionals undertaking similar work in the State of Alaska under similar conditions. No warranty expressed or implied is made.

We appreciate the opportunity to provide you with our services. If you have any questions, please do not hesitate to contact us at your convenience.

Sincerely,
Northern Geotechnical Engineering, Inc. *d.b.a.* Terra Firma Testing,

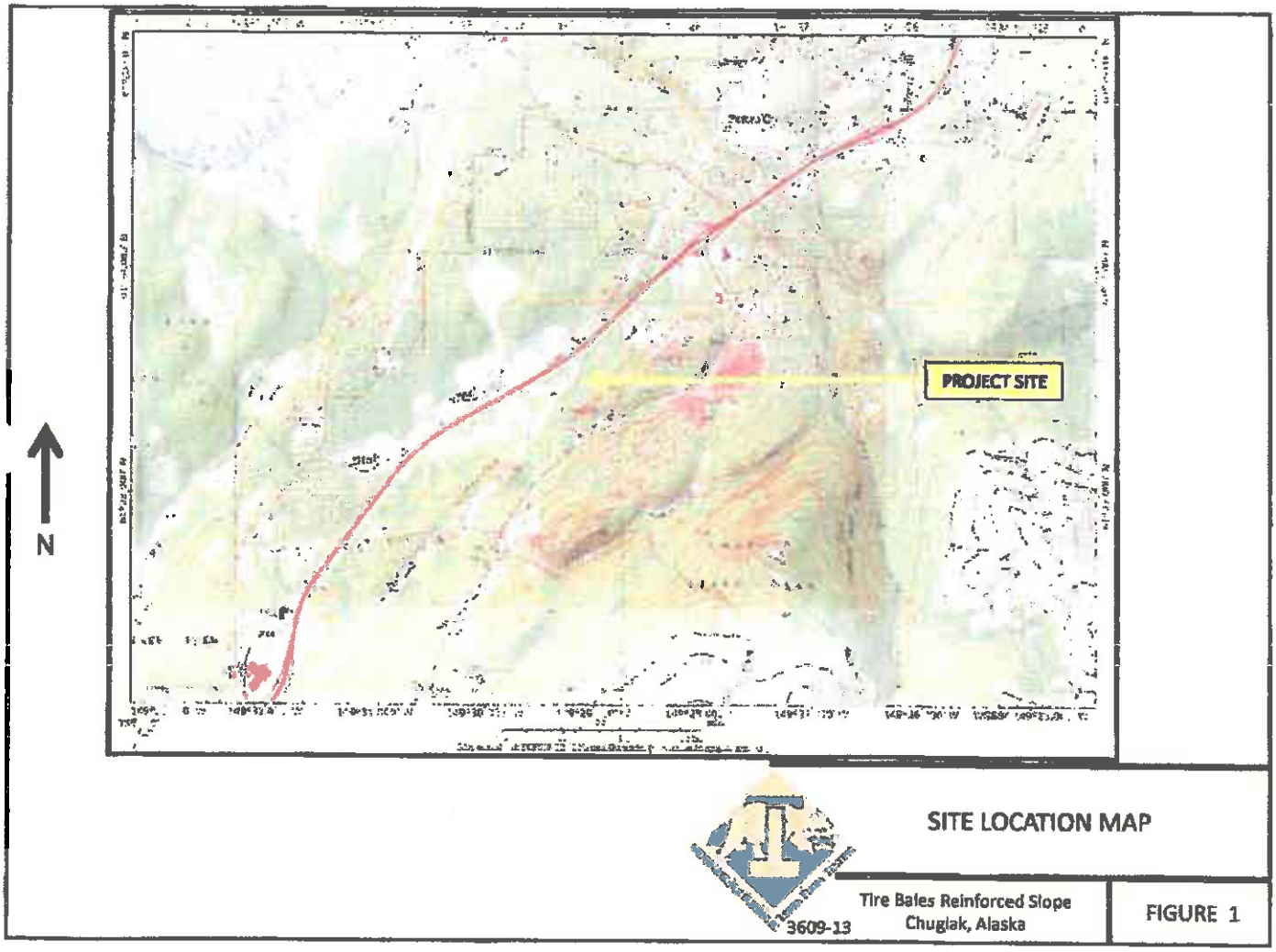
Xiaoxuan (Eva) Ge, E.I.T.
Project Engineer

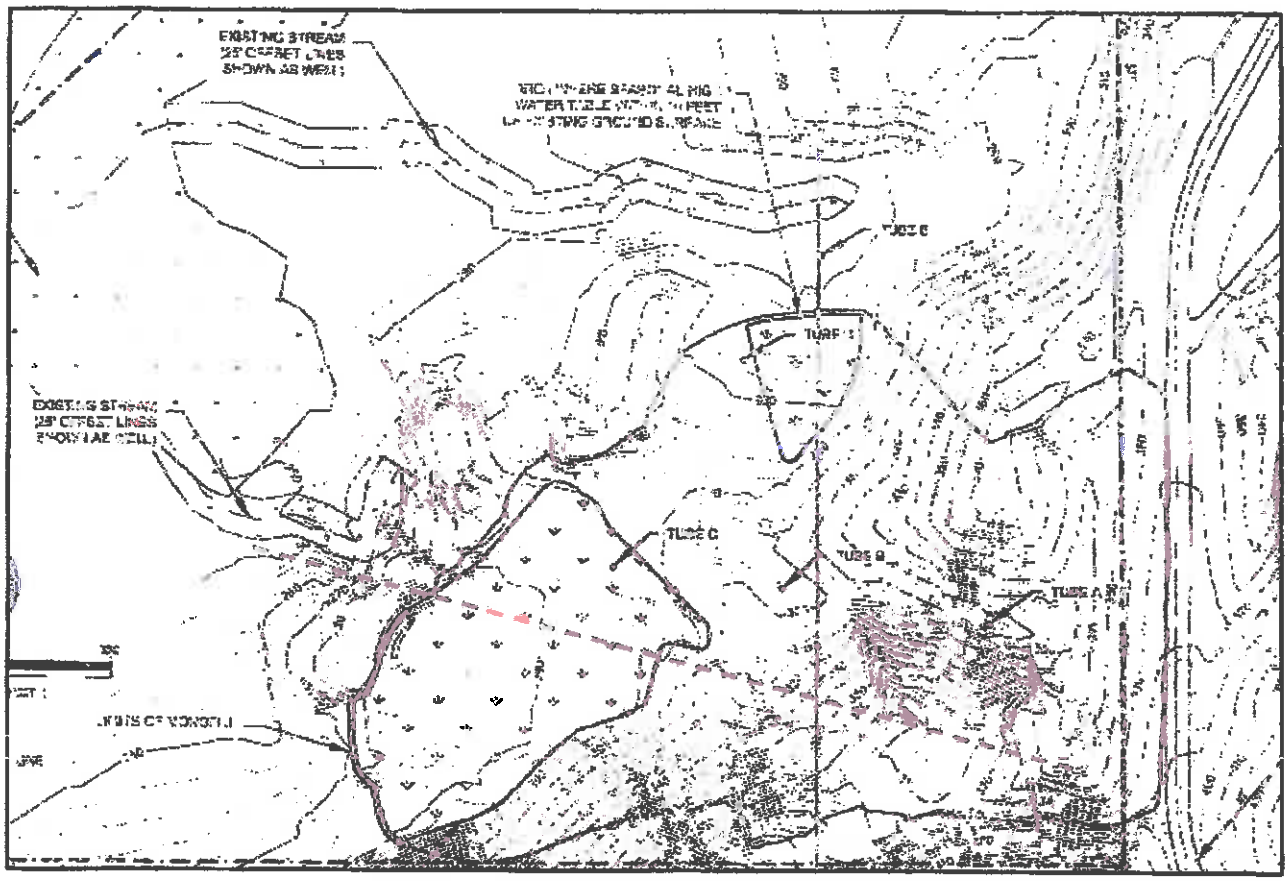
STATE OF ALASKA
49TH
KEITH F. MOBLEY
CE-9066
REGISTERED PROFESSIONAL ENGINEER

Keith F. Mobley, P.E.
President

11301 Olive Lane, Anchorage, Alaska 99515 Phone: 907-344-5934 Fax: 907-344-5993 Email: kmobley@nge-tft.com

FIGURES


PROJECT SITE
N
SITE LOCATION MAP
3609-13
Tire Bales Reinforced Slope
Chugiak, Alaska
FIGURE 1



Note:

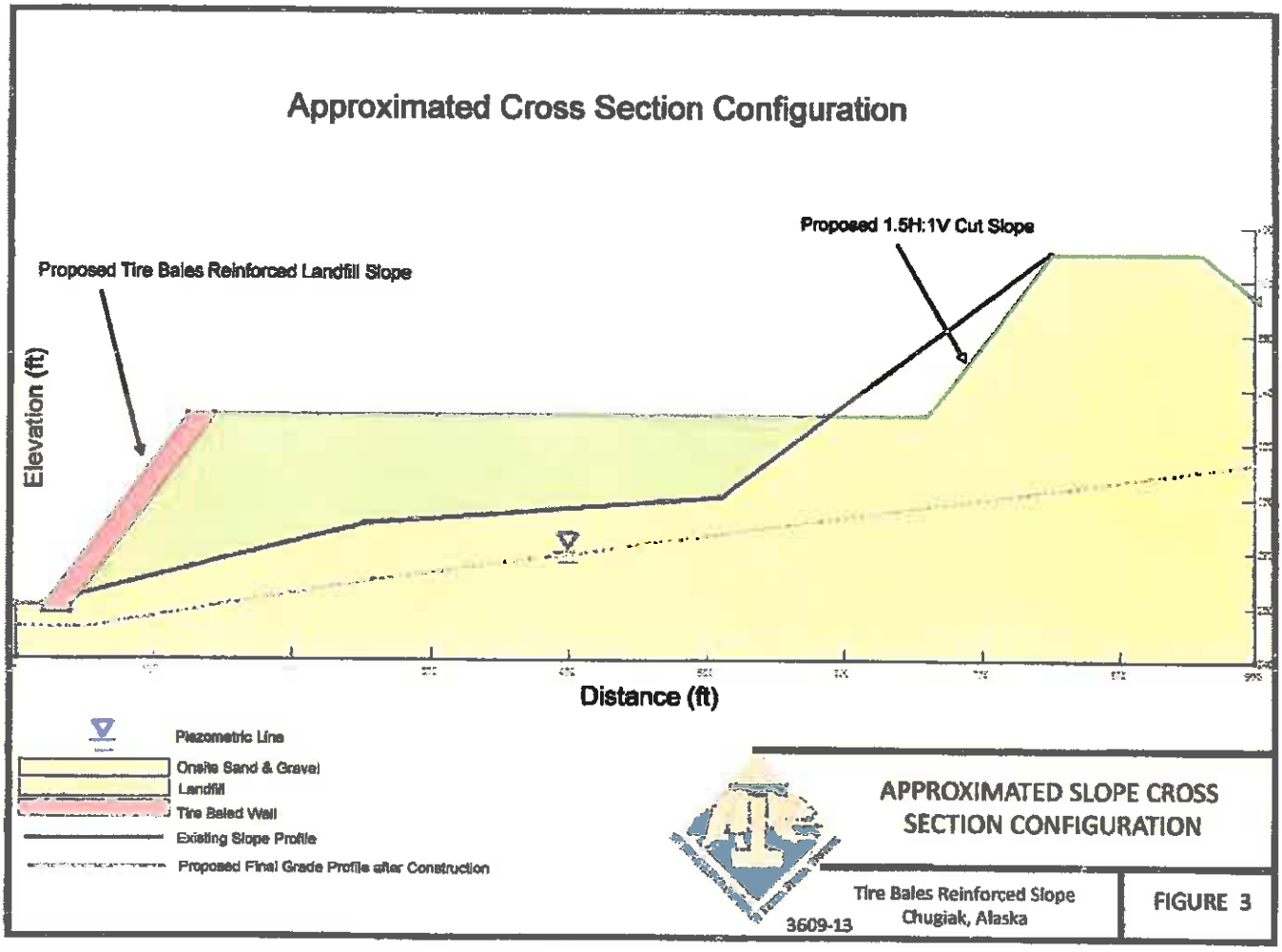
Approximate Cross Section Location

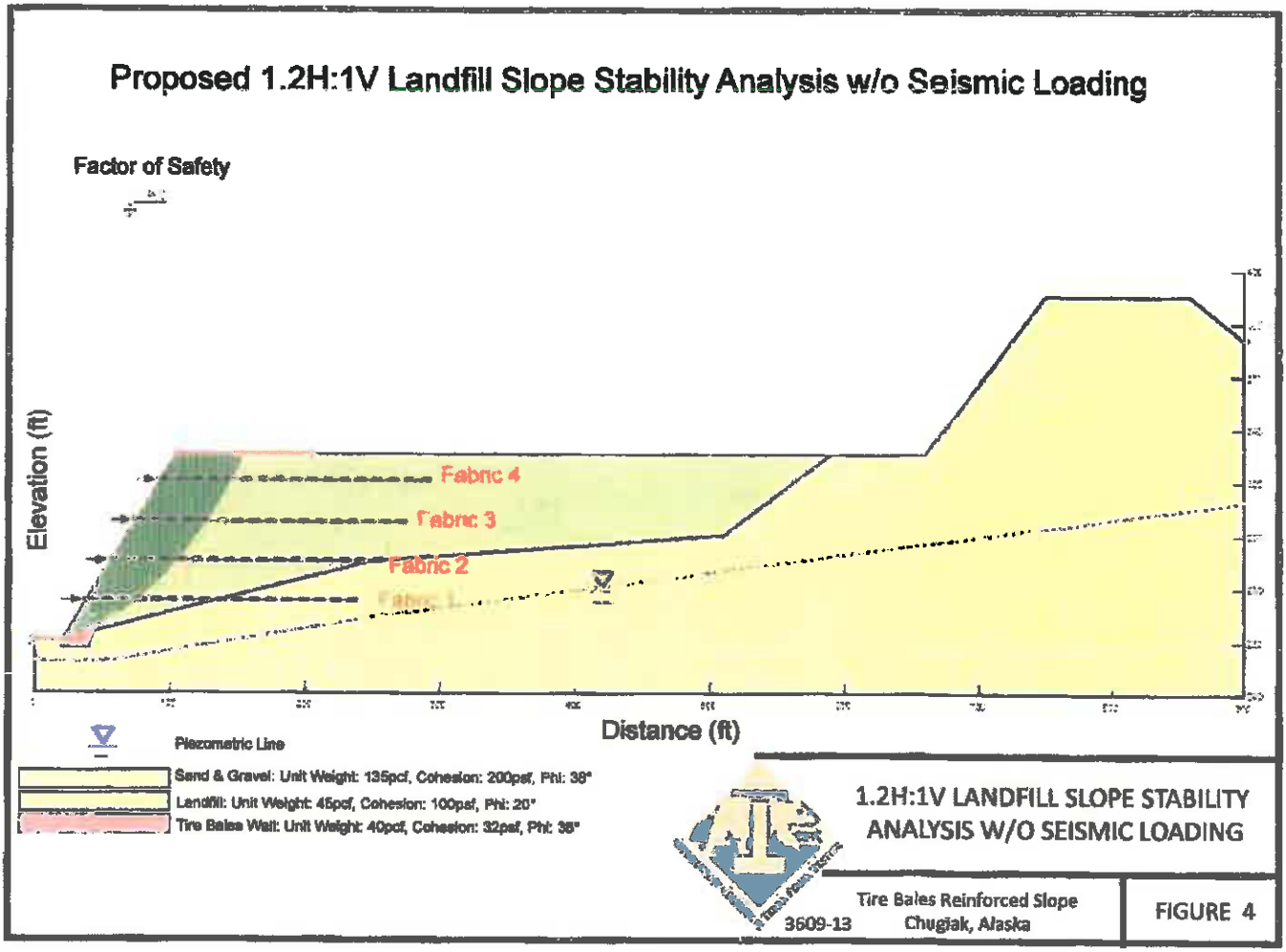
APPROX. CROSS SECTION LOCATION

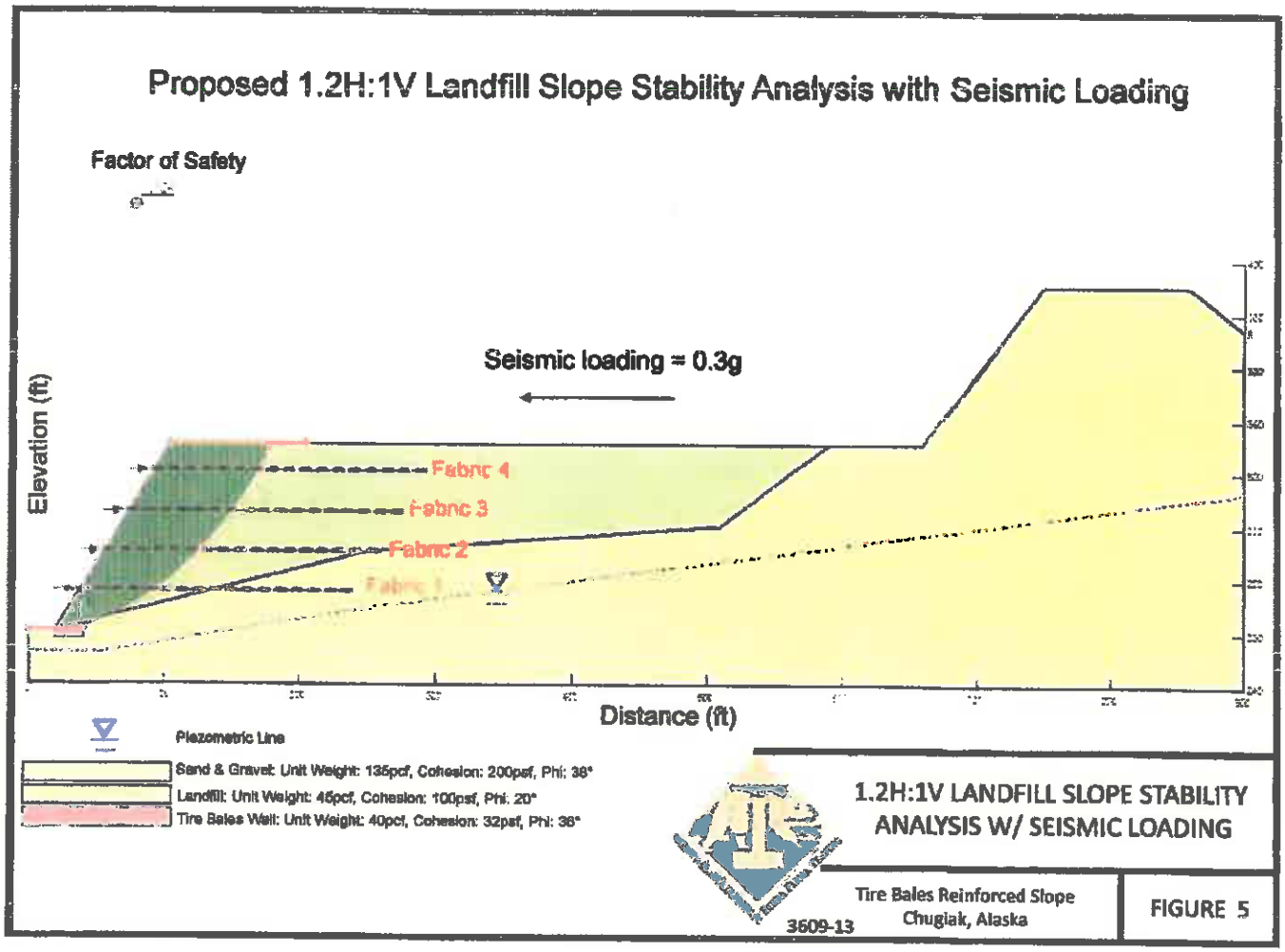
3609-13

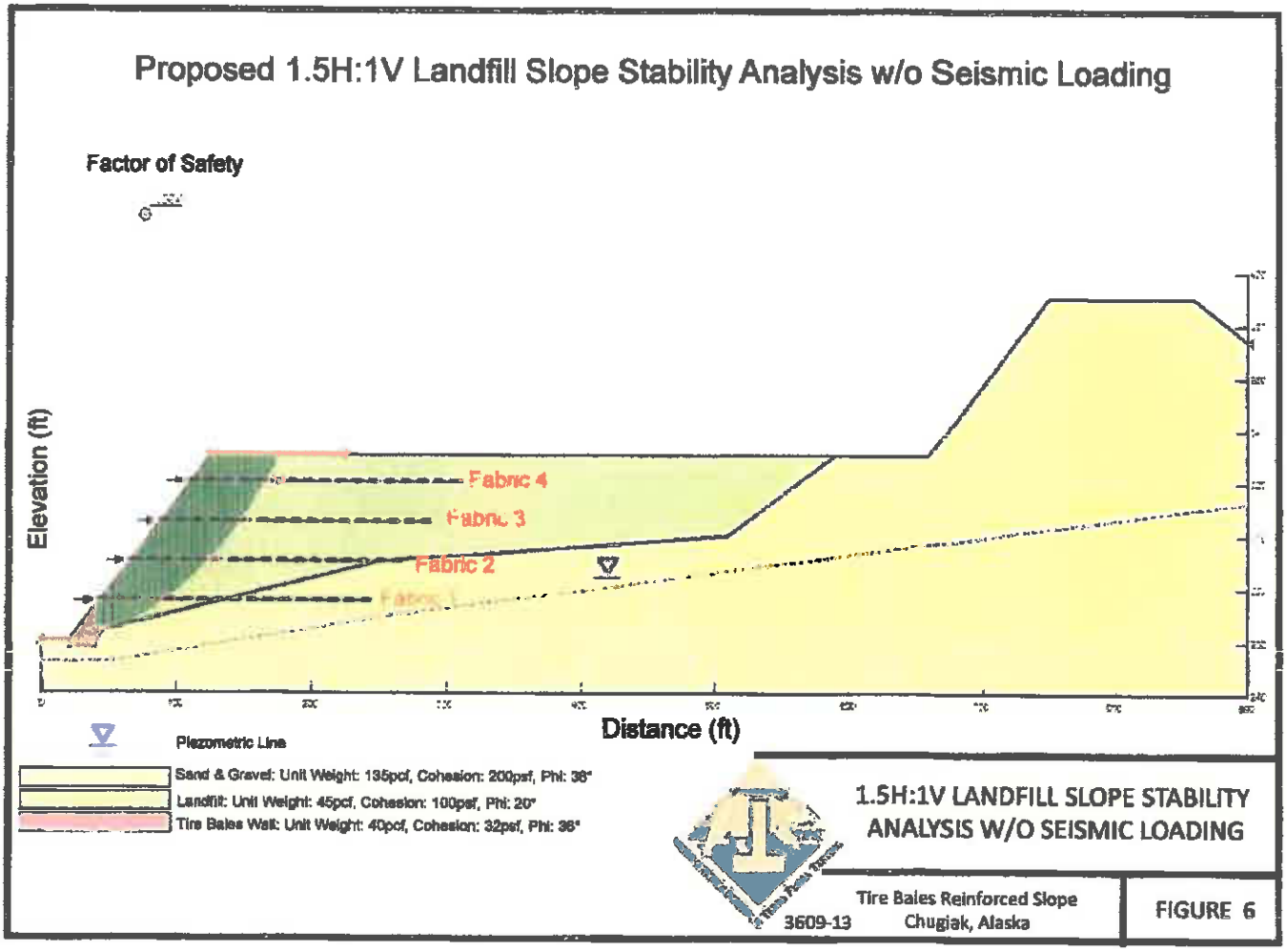
Tire Bales Reinforced Slope
Chugiak, Alaska

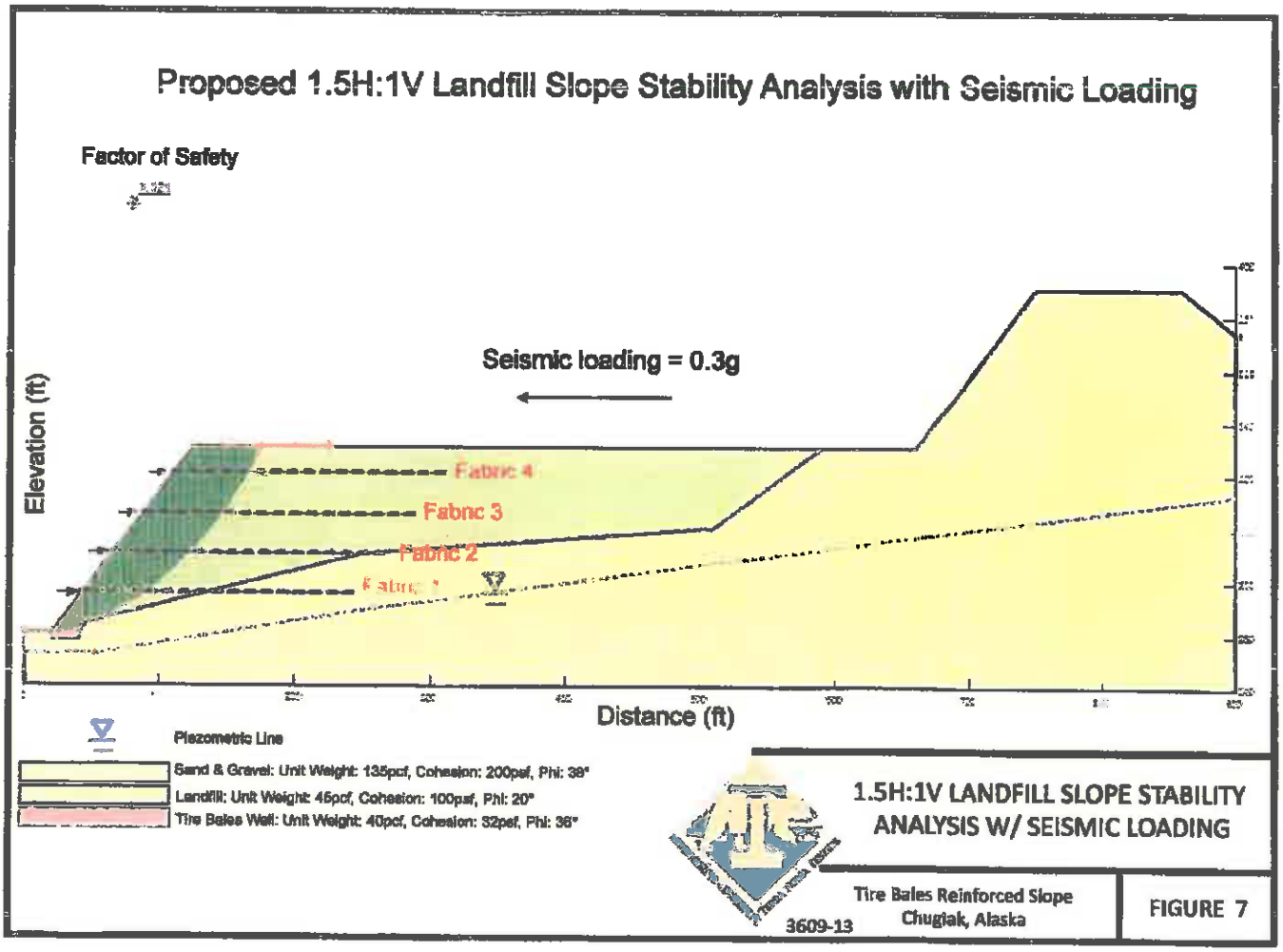
FIGURE 2

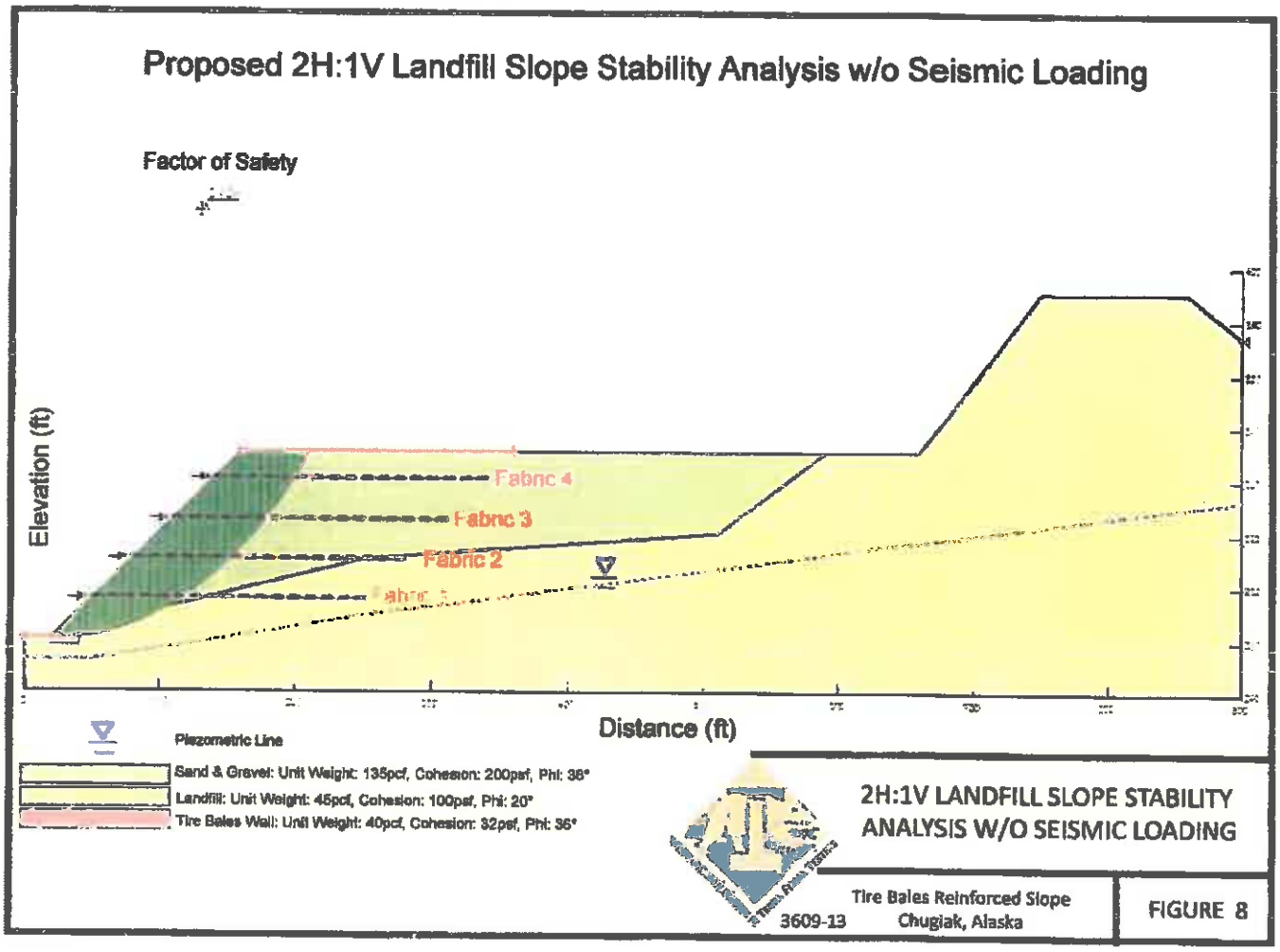

Approximated Cross Section Configuration
Proposed 1.5H:1V Cut Slope
Proposed Tire Bales Reinforced Landfill Slope
Elevation (ft)
Distance (ft)
Piezometric Line
Onsite Sand & Gravel
Landfill
Tire Baled Wall
Existing Slope Profile
Proposed Final Grade Profile after Construction
APPROXIMATED SLOPE CROSS SECTION CONFIGURATION
Tire Bales Reinforced Slope
Chugiak, Alaska
3609-13
FIGURE 3

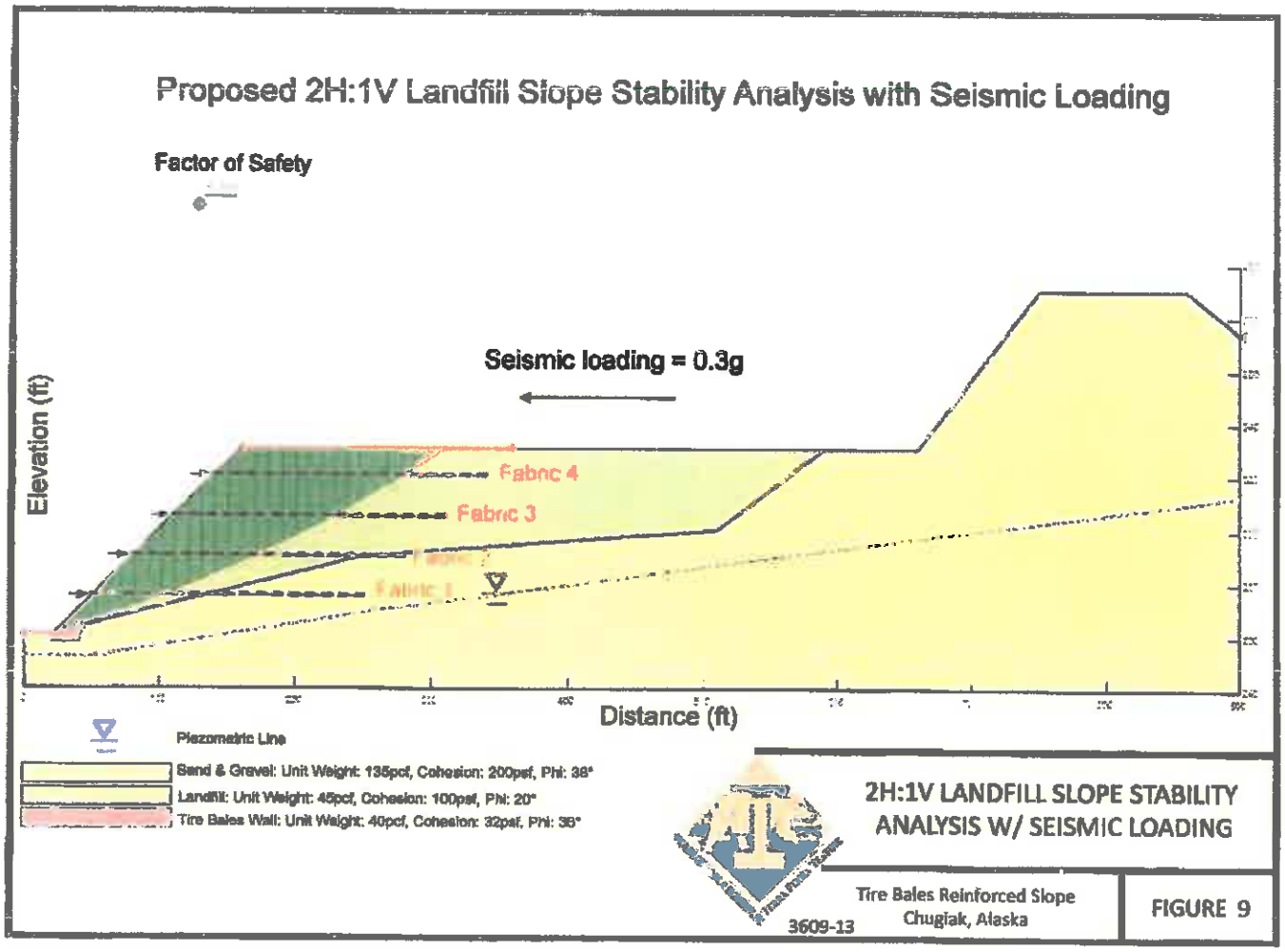

Proposed 1.2H:1V Landfill Slope Stability Analysis w/o Seismic Loading
Factor of Safety
Elevation (ft)
Fabric 4
Fabric 3
Fabric 2
Distance (ft)
Piezometric Line
Sand & Gravel: Unit Weight: 135pcf, Cohesion: 200psf, Phi: 38°
Landfill: Unit Weight: 45pcf, Cohesion: 100psf, Phi: 20°
Tire Bales Wall: Unit Weight: 40pcf, Cohesion: 32psf, Phi: 38°
1.2H:1V LANDFILL SLOPE STABILITY ANALYSIS W/O SEISMIC LOADING
Tire Bales Reinforced Slope
3609-13 Chugiak, Alaska
FIGURE 4


Proposed 1.2H:1V Landfill Slope Stability Analysis with Seismic Loading
Factor of Safety
Seismic loading = 0.3g
Elevation (ft)
Fabric 4
Fabric 3
Fabric 2
Fabric 1
Distance (ft)
Piezometric Line
Sand & Gravel: Unit Weight: 135pcf, Cohesion: 200psf, Phi: 38°
Landfill: Unit Weight: 45pcf, Cohesion: 100psf, Phi: 20°
Tire Bales Wall: Unit Weight: 40pcf, Cohesion: 32psf, Phi: 36°
1.2H:1V LANDFILL SLOPE STABILITY ANALYSIS W/ SEISMIC LOADING
Tire Bales Reinforced Slope
Chugiak, Alaska
3609-13
FIGURE 5


Proposed 1.5H:1V Landfill Slope Stability Analysis w/o Seismic Loading
Factor of Safety
Elevation (ft)
Fabric 4
Fabric 3
Fabric 2
Distance (ft)
Piezometric Line
Sand & Gravel: Unit Weight: 135pcf, Cohesion: 200psf, Phi: 38°
Landfill: Unit Weight: 45pcf, Cohesion: 100psf, Phi: 20°
Tire Bales Wall: Unit Weight: 40pcf, Cohesion: 32psf, Phi: 38°
1.5H:1V LANDFILL SLOPE STABILITY ANALYSIS W/O SEISMIC LOADING
Tire Bales Reinforced Slope
3609-13 Chugiak, Alaska
FIGURE 6


Proposed 1.5H:1V Landfill Slope Stability Analysis with Seismic Loading
Factor of Safety
Seismic loading = 0.3g
Elevation (ft)
Fabric 4
Fabric 3
Fabric 2
Distance (ft)
Piezometric Line
Sand & Gravel: Unit Weight: 135pcf, Cohesion: 200psf, Phi: 38°
Landfill: Unit Weight: 45pcf, Cohesion: 100psf, Phi: 20°
Tire Bales Wall: Unit Weight: 40pcf, Cohesion: 32psf, Phi: 38°
1.5H:1V LANDFILL SLOPE STABILITY ANALYSIS W/ SEISMIC LOADING
Tire Bales Reinforced Slope
Chugiak, Alaska
3609-13
FIGURE 7


Proposed 2H:1V Landfill Slope Stability Analysis w/o Seismic Loading
Factor of Safety
Elevation (ft)
Fabric 4
Fabric 3
Fabric 2
Distance (ft)
Piezometric Line
Sand & Gravel: Unit Weight: 135pcf, Cohesion: 200psf, Phi: 38°
Landfill: Unit Weight: 45pcf, Cohesion: 100psf, Phi: 20°
Tire Bales Wall: Unit Weight: 40pcf, Cohesion: 32psf, Phi: 36°
2H:1V LANDFILL SLOPE STABILITY ANALYSIS W/O SEISMIC LOADING
Tire Bales Reinforced Slope
3609-13 Chugiak, Alaska
FIGURE 8


Proposed 2H:1V Landfill Slope Stability Analysis with Seismic Loading
Factor of Safety
Seismic loading = 0.3g
Elevation (ft)
Fabric 4
Fabric 3
Distance (ft)
Piezometric Line
Sand & Gravel: Unit Weight: 135pcf, Cohesion: 200psf, Phi: 38°
Landfill: Unit Weight: 45pcf, Cohesion: 100psf, Phi: 20°
Tire Bales Wall: Unit Weight: 40pcf, Cohesion: 32psf, Phi: 35°
2H:1V LANDFILL SLOPE STABILITY ANALYSIS W/ SEISMIC LOADING
Tire Bales Reinforced Slope
Chugiak, Alaska
3609-13
FIGURE 9

ATTACHMENT 17

Permit: *Application for a Conditional Use Permit- MSB 17.60*
Applicant: *Central Monofill Services*
Date Submitted: *January 15, 2014*

for these complaints has not been corroborated and may be the result of other variables including normal variations in seasonal weather events. CMS is working cooperatively with the State of Alaska Department of Natural Resources to monitor the water levels in these ponds to accurately determine what if any impact occurs to neighboring lakes. CMS CUP application maintains a setback from the ponds for both the storage of materials and monofill materials. Proposed activities related to the recycle facility and monofill will not require any alterations to the ponds or aquifer. The ponds are not included in the area requested for CUP.

Maddox & Associates was hired to perform an independent review of the site hydrology and leachate concerns raised with the proposed CMS Monofill. Maddox & Associates is a nationally recognized professional hydrogeologist with experience evaluating contaminate potential in over 50 sanitary landfills in the US and Canada. Mr. Maddox looked at everything from rainwater infiltration through the monofill, potential leachate, ground water movement and potential worst case scenarios. The Maddox report and associated findings are attached. In summary Mr. Maddox found that *"the construction and operation of the proposed monofill will not present a threat to groundwater beneath the site, nor down-gradient of the site."*

A previous report by the National Demolition Association, entitled "Demolition Contractors Manage and Dispose of Waste Responsibly" confirms Mr. Maddox's findings. This report is attached and in summary finds, "For years, these facilities have accepted construction/demolition wastes and, when managed properly, pose no significant threat to the environment." "These findings support National Demolition Association's conclusion that properly designed, well maintained and operated demolition waste landfills are the most economical and environmentally sound method to manage that portion of the demolition industry's waste which cannot economically be recycled." The proposed CMS Monofill will be the first in Alaska to meet the National Demolition Association guideline for prudent, environmentally responsible operations.

To further insure the protection of the Groundwater CMS has installed monitoring wells around the site. Water level data is being shared with Alaska Department of Natural Resources for regional study of ground water table elevations.

The site has been previously completely stripped of trees reducing any potential animal habitat issues. C&D material is considered inert and non-putrescent, so it does not attract animals or birds. The CRS facility in Anchorage has processed C&D materials since 2009 with no animal attraction issues to any of the materials handled or processed.

Matanuska - Susitna Borough
Development Services
MAY 14 2014
Received

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ATTACHMENT 18

STATE OF ALASKA

SEAN PARNELL, GOVERNOR

DEPT. OF ENVIRONMENTAL CONSERVATION
DIVISION OF ENVIRONMENTAL HEALTH
SOLID WASTE PROGRAM

555 Cordova Street
Anchorage, Alaska 99501
PHONE: (907) 269-7642
FAX: (907) 269-7600
http://www.dec.state.ak.us/

Certified Mail #7008 1830 0002 6350 9907
Return Receipt Requested

November 19, 2010

Ms. Shaune O'Neil
Public Works Director
Matanuska-Susitna Borough
350 East Dahlia Ave.
Palmer, AK 99645

Matanuska - Susitna Borough
Development Services
MAY 14 2014
Received

Subject: Matanuska-Susitna Borough Central Landfill
Solid Waste Permit No. SW1A007-15

Dear Ms. O'Neil:

The Alaska Department of Environmental Conservation (ADEC) has completed its evaluation of your permit application for the Matanuska-Susitna Borough (MSB) Central Landfill, dated November 3, 2010. Please review the conditions and stipulations in the permit and ensure that they are understood. This permit is being issued in accordance with Alaska Statute (AS) 46.03; Title 18, Chapter 15 of the Alaska Administrative Code (18 AAC 15); and the Solid Waste Regulations (18 AAC 60).

Any person who disagrees with this decision may request an adjudicatory hearing in accordance with 18 AAC 15.195 - 18 AAC 15.340 or an informal review by the Division Director in accordance with 18 AAC 15.185. **Informal review requests** must be delivered to the Division Director, Alaska Department of Environmental Conservation, 555 Cordova Street, Anchorage, AK 99501 within 15 days of the permit decision. **Adjudicatory hearing requests** must be delivered to the Commissioner of the Department of Environmental Conservation, 410 Willoughby Avenue, Suite 303, Juneau, Alaska 99801, within 30 days of the permit decision. If a hearing is not requested within 30 days, the right to appeal is waived. More information regarding submitting a request for an informal review or adjudicatory hearing may be found at www.dec.state.ak.us/commish/ReviewGuidance.htm. Even if an adjudicatory hearing has been requested and granted, all permit conditions remain in effect unless a stay has been granted.

If you have any questions, or require any additional information, please contact Doug Huntman at (907) 269-7642 or by email at doug.huntman@alaska.gov

Sincerely,

Lori Aldrich
Solid Waste Program Coordinator

Attachment: Permit # SW1A007-15, expiring on **November 19, 2015**
cc: Greg Goodale, MSB

STATE OF ALASKA
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
555 Cordova Street
Anchorage, AK 99501

SOLID WASTE DISPOSAL PERMIT

Permit No. **SW1A007-15**

Date Issued: November 19, 2010
Date Expires: November 19, 2015

The Alaska Department of Environmental Conservation (ADEC), under authority of AS 46.03 and 18 AAC 60, issues a solid waste disposal permit to:

Matanuska-Susitna Borough
Palmer Central Landfill
350 E. Dahlia Avenue
Palmer, AK 99645-6488

and designated representatives for the management and operation of a Class I municipal solid waste landfill. It authorizes operation of municipal waste cells 2A, 2B, cell 3, and separate cells for construction and demolition (C&D) waste and asbestos containing material.

The landfill is located at Milepost 3 of the Palmer-Wasilla Highway at the southern end of North 49th State Street. The active landfill is currently limited to an approximately 160-acre section of the 620-acre site, legally described as S ½ Section 1, E ½ SE ¼ Section 2, NE ¼ NE ¼, E ½ NW ¼ NE ¼ Section 11, N ½ NW ¼, N ½ SW ¼ NW ¼, N ½ SE ¼ NW ¼, NW ¼ NE ¼ of Section 12, Township 17 North, Range 1 East, Seward Meridian.

The permit holder shall manage and operate the facility in accordance with:

- 18 AAC 60
- permit application materials submitted November 3, 2010, and additional application materials submitted November 19, 2010

In addition, the following permit conditions are required:

Specific Conditions

Explosive Gas Monitoring Plan

1. MSB must submit a facility wide gas monitoring plan, including installation of a gas monitoring well system that meets the requirements of 18 AAC 60.350. The plan must be submitted to ADEC for approval, no later than June 1, 2010 and the gas monitoring wells must be installed and operational no later than June 1, 2012.

Landfill Closure

1. MSB must submit a facility wide conceptual closure plan that meets the requirements of 18 AAC 60.395, no later than June 1, 2011. The closure plan should include intended closure sequence for all landfill cells you expect to operate over the life of the landfill. The plan must also include updated calculations of the cost estimate for closure and post-closure care of the landfill.

Facility Design

1. Limit vertical expansion of the landfill cells to 340 feet elevation.

Facility Operations

1. For noise control:

   a. Not operate any heavy equipment or commercial size trucks at the landfill working face from 9 p.m. to 7 a.m., excluding emergency situations;
   b. Only operate vehicles at the landfill with properly sized and functional mufflers installed;
   c. Not operate construction equipment or commercial size trucks at the landfill from 10 p.m. to 6 a.m. for the construction of new landfill cells.

2. Maintain a minimum separation distance of 50 feet between the active placement of solid waste and the facility boundary, except next to residential areas. All new cells next to residential areas must have a separation distance of 300 feet between the cell boundary and the facility boundary.

3. Ensure that landfill personnel conduct random waste inspections of incoming loads on a weekly basis to check for prohibited wastes. Ensure that landfill personnel receive adequate training in the identification of hazardous waste and prohibited waste. Maintain a record of the random inspections noting the date, inspector name, and any prohibited wastes identified. The inspection records shall be maintained in the facility record.

Municipal Waste Cell Operations

1. Ensure that only one working face/dumping location for municipal waste is exposed at any one time, and that it is located within the footprint of cells 2A, 2B or cell 3. The maximum size of the working face shall not exceed 200 feet wide and 10 feet tall.

2. Maintain a slope no greater than 3 to 1 (horizontal to vertical) on interior slopes of the cells. Interior slopes are those that will have waste placed against them at some time in the future based on the approved facility plans.

3. Maintain a slope no greater than 4 to 1 (horizontal to vertical) on all exterior slopes of the cells. Exterior slopes are those that will not have waste placed against them in the future based on the approved facility plans.

Construction & Demolition (C&D) Cell Operations

1. Ensure that only one working face/dumping location for C&D waste is exposed at any one time.

2. Compact, consolidate, and cover the C&D waste monthly or more frequently if needed to control litter and vectors.

3. Ensure that no asbestos containing material (ACM) is disposed in the C&D cell.

Asbestos Cell Operations

1. Ensure that all ACM is disposed in the asbestos cell. Friable ACM must be sealed in leak-proof bags or containers with proper labeling prior to acceptance at the facility. Non-friable ACM, if not containerized, must be deposited in the designated asbestos disposal area in a manner that does not result in breakage and the subsequent release of asbestos dust.

2. Ensure that all asbestos-containing waste material is covered with at least six (6) inches of soil material by the end of the day of disposal.

3. Ensure that a designated representative is present at the site to supervise each disposal.

Visual Monitoring

1. Visually monitor the site each month for signs of damage or potential damage from settlement, ponding, erosion, leachate seeps, animal attraction and compliance with other permit conditions. Record the inspection results on the form submitted in the monitoring plan. Maintain the inspection results in the facility's operating record.

Groundwater Monitoring

1. Conduct groundwater monitoring at the facility as described in the monitoring plan, dated October 2010

    a. Groundwater elevations for all wells must be recorded at each sampling event.

    b. For wells designated for detection monitoring, test all water quality samples for the constituents listed in Appendix I of Title 40, part 258 of the Code of Federal Regulations (40 CFR 258) and the following compounds from Table J of 18 AAC 60: specific conductivity, temperature, pH, Chloride, DRO, GRO, Mercury, and Total Dissolved Solids.

    c. For wells subject to assessment monitoring, test all water samples for all constituents listed in Appendix II of 40 CFR 258 in the June sampling. In the December sampling, these wells must be tested for Appendix I constituents, plus any Appendix II constituents detected above the method detection limit (MDL) at the facility in any sampling event.

d. No later than 60 days after receiving the laboratory results for a monitoring event, submit a report to ADEC in an approved format including the appropriate analyses.

General Conditions

1. Access and inspection - The Permittee shall allow the Commissioner or his representative access to the permitted facilities at reasonable times to conduct scheduled or unscheduled inspections or tests to determine compliance with this permit, State laws, and regulations.

2. Information access - Except for information relating to confidential processes or methods of manufacture, all records and reports submitted in accordance with the terms of this permit shall be available for public inspection at the State of Alaska, Department of Environmental Conservation, 555 Cordova Street, Anchorage, AK 99501.

3. Civil and criminal liability - Nothing in this permit shall relieve the Permittee from civil or criminal penalties for noncompliance, whether or not such noncompliance is due to factors beyond his control, including, but not limited to, accidents, equipment breakdowns, or labor disputes.

4. Availability - The Permittee shall post or maintain a copy of this permit available to the public at the disposal facility.

5. Adverse impact - The Permittee shall take all necessary means to minimize any adverse impacts to the receiving waters or lands resulting from noncompliance with any limitation specified in this permit, including any additional monitoring needed to determine the nature and impact of the non-complying activity. The Permittee shall clean up and restore all areas adversely impacted by the noncompliance.

6. Cultural or paleontological resources - Should cultural or paleontological resources be discovered as a result of this activity, work which would disturb such resources is to be stopped, and the State Historic Preservation Office, Division of Parks and Outdoor Recreation, Department of Natural Resources, is to be notified immediately (907-269-8721).

7. Applications for renewal - In accordance with 18 AAC 15.100(d), applications for renewal or amendment of this permit must be made no later than 30 days before the expiration date of the permit or the planned effective date of the amendment.

8. Other legal obligations - The requirements, duties, and obligations set forth in this permit are in addition to any requirements, duties, or obligations contained in any permit that the Alaska Department of Environmental Conservation or the U.S. Environmental Protection Agency has issued or may issue to the Permittee. This permit does not relieve the Permittee from the duty to obtain any and all necessary permits and to comply with the requirements contained in any such permit or with applicable state and federal laws and regulations. All activities conducted by the Permittee pursuant to the terms of this permit

and all plans implemented by the Permittee pursuant to the terms of this permit shall comply with all applicable state and federal laws and regulations.

9. Pollution prevention - In order to prevent and minimize present and future pollution, when making management decisions that affect waste generation, the Permittee shall consider the following order of priority options: waste source reduction; recycling of waste; waste treatment; and waste disposal.

This permit expires on November 19, 2015 and may be revoked or amended in accordance with 18 AAC 60.260. The permit can be renewed if the facility will operate beyond this date. **To avoid expiration of this permit, a renewal application must be submitted to ADEC at least 30 days before the expiration date, as set forth in 18 AAC 15.110.**

Lori Aldrich
Solid Waste Program Coordinator

ATTACHMENT 19

MATANUSKA-SUSITNA BOROUGH
Planning and Land Use Department
Planning Division
350 East Dahlia Avenue • Palmer, AK 99645
Phone (907) 745-9833 • Fax (907) 745-9876
Email: planning@matsugov.us or
astrawn@matsugov.us

Matanuska - Susitna Borough
Development Services
MAY 14 2014
Received

MEMORANDUM

DATE: October 7, 2011

FROM: Susan Lee, Planner II

SUBJECT: REQUEST FOR REVIEW AND COMMENTS

PROJECT: **Conditional Use Permit for a Salvage Yard**

PARCEL ID: 16N03W24D009 & 4617000L002B **TAX MAP:** GB 08

LOCATION: Township 16 North, Range 3 West, Section 24, Seward Meridian

APPLICANT: Tri-Metal International LLC

A conditional use permit application has been submitted for the operation of a salvage yard for the collection, cutting, and staging of material for export from Port MacKenzie. The Planning Commission will conduct a public hearing on this request on November 21, 2011. If we do not receive comments from you we will assume you have no objections to the proposed project.

Distribution:

Borough Manager (info only)	Transportation Planning
Collections	Community Development
Assessment	Public Works Director
Planning Division	Right-of-Way Coordinator
Environmental Planning	Emergency Services Director
Platting Division	Code Compliance
	Cultural Resources

Comments: Return written comments by **October 31, 2011.** Thank you for your review.

DISTRIBUTION LIST - CONDITIONAL USE PERMITS & VARIANCES

✓ Corps of Engineers
P. O. Box 6898
~~Elmendorf AFB, AK 99506-6898~~
JBER

US EPA
222 W. 7th Avenue, Box 19
Anchorage, AK 99513-7588

ADEC, Division of Water
555 Cordova St.
Anchorage, AK 99501

ADOT/PF Aviation
P.O. Box 196900
Anchorage, AK 99519-6900

Alaska State Parks
Division of Parks & Outdoor Recreation
550 W. 7th Avenue, Suite 1380

✓ Matanuska Electric Association
Attn: ROW Department
P.O. Box 2929
Palmer, AK 99645-2929

Enstar Natural Gas Company
Attn: Engineering Department
P.O. Box 190288
Anchorage, AK 99519-0288

FAA
Attn: Real Estate/Air Traffic
222 West 7th Avenue, Box 14
Anchorage, AK 99513-7587

Division of Land & Water
Water Resource Section
550 W. 7th Avenue, Suite 1020
Anchorage, AK 99501

Alaska Railroad Corporation
Real Estate Division
P.O. Box 107500
Anchorage, AK 99510-7500

✓ Friends of Mat-Su
P.O. Box 116
Palmer, AK 99645

Fire Service Area _____
City of _____
Chamber of Commerce _____

✓ ADEC
1700 E. Bogard Road, Bldg B, Suite 202
Wasilla, AK 99654

ADOT/PF
289 Inner Springer Loop
Palmer, AK 99645

Alaska State Parks
HC 32 Box 6706
Wasilla, AK 99654

Department of Fish & Game
333 Raspberry Road
Anchorage, AK 99502

Division of Mining Land & Water
Material Sales
550 W. 7th Avenue, Suite 900C
Anchorage, AK 99501

✓ Matanuska Telephone Association
Attn: Engineering Department
P. O. Box 3550
Palmer, AK 99645-3550

✓ ADOT&PF
Planning
P.O. Box 196900
Anchorage, AK 99519-6900

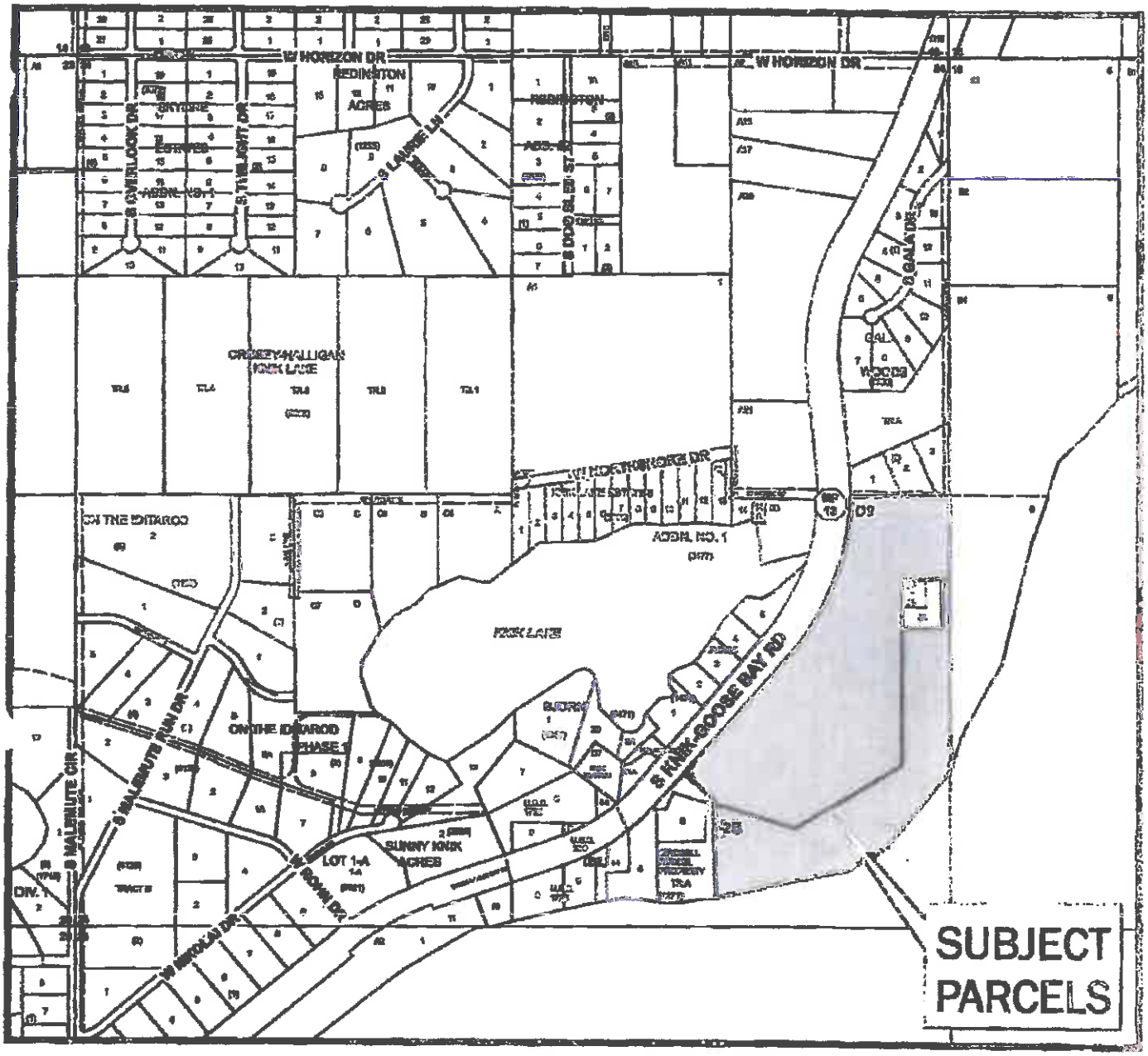
✓ Department of Fish & Game
Division of Habitat
1800 Glenn Highway, Suite 12
Palmer, AK 99645

✓ Department of Public Safety
Division of Fire Prevention
5700 East Tudor Road
Anchorage, AK 99507-1225

Su-Knik Mitigation Bank
P.O. Box 2281
Sebastopol, CA 95473

New Horizons Telecom
901 Cope Industrial Way
Palmer, AK 99645

Assemblymember Daily Salmon
Community Council Knik Fairview
Other _____



16N03W24D009
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This map is solely for informational purposes only. The Borough makes no express or implied warranties with respect to the character, function, or capabilities of the map or the suitability of the map for any particular purpose beyond those originally intended by the Borough. For information regarding the full disclaimer and policies related to acceptable uses of this map, please contact the Matanuska-Susitna Borough GIS Division at 907-745-4801.

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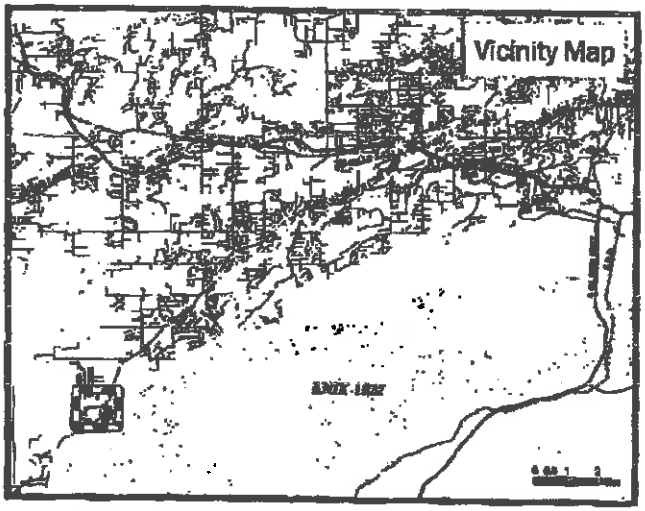

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MATANUSKA-SUSITNA BOROUGH

Planning and Land Use Department
Code Compliance Division
350 East Dahlia, Palmer, Alaska 99645
(907)745-9853 * fax (907)745-9876
ccb@matsugov.us

RECEIVED
OCT 0 8 2011
MATANUSKA-SUSITNA BOROUGH
PLANNING DIVISION

BASIC APPLICATION FOR CONDITIONAL LAND USE PERMIT

Application Fee is $500 for proposed development and $1500 for "After the Fact" development. The application fee, must accompany this application. Prior to the application's presentation to the Planning Commission, applicants must also pay cost of required mailings and advertising. Applicants will be provided notice of charges due. Discuss the application process with MSB Planning Department staff before completing the application. Submit the application to the MSB Code Compliance Division at the address listed above.

Most of the application will be additional information provided by the applicant. Incomplete applications will not be processed. Carefully read the appropriate MSB codes, questionnaires and instructions. Fill out forms completely. Check the appropriate □. Use N/A if a question is not applicable. Attach additional pages as needed. For more information go to www.matsugov.us , and click on code compliance.

Is this application for a; □ proposed (new) □ use □ structure,
a "After the Fact" (existing) □ use □ structure,
□ Change or expansion of an existing conditional use permit (CUP) □ use □ structure,
□ Preexisting Legal Nonconforming (Grandfather Rights) □ use □ structure,
The proposed development is; SCRAP METAL STAGING BUILDING
The proposed development requires a conditional use permit under MSB 17.60.030
At a minimum, this application must provide sufficient information to meet area wide borough codes and,
Specific application requirements of MSB Code 17.60.100 and, General
CUP standards of MSB Codes _____ and,
Special CUP standards of MSB Code _____
Special CUP questionnaire(s) are attached _____ □ Yes □No □ N/A
PROJECT LOCATION: Township: 16N, Range: 03W, Section: 24, Meridian SEWARD
SUBDIVISION: _____ BLOCK: _____, LOT: D-2-9
(US Survey, aliquot Part, Lat. /Long. etc) _____
STREET ADDRESS: 10405 S. KNIK-GOOSEBAY ROAD
VICINITY: _____
LOT SIZE: Acres 34.04 *or* _____ Square Feet
Is site in a Special Use District (SPUD) or city? Yes, Name KNIK SUBDIST 1 RECREATION No,
Development and use must also comply with the rules for the SPUD and city.

Ownership: *If the applicant is not the owner of record, a letter of authorization signed by the owner must be attached to this application.* Is authorization attached? □ Yes □No □ N/A

For MSB Staff use: MSB TAX PARCEL ID _____ ***MSB FILE CUP #*** _____

Name of Property Owner
KNIK INDUSTRIES LLC
Address: 1730 W JAIME MARIE CIR
WASILLA, AK 99654
Phone: Hm
Wk Cell 907-229-8946
E mail CFESLER@GCI.NET

Name of Applicant/Contact *(if not owner)*
TRI METAL INTERNATIONAL, LLC
Address: 401 S. WASILLA ST #2A
WASILLA, AK 99654
Phone: Hm
Wk Cell 907-982-9443
E mail DSMITH@TRIMETALLLC.COM

This Application is for; ☐ **New Use,** ☐ **New Structure,** ☐ **Modification of Existing Use,** ☐ **Modification of Existing Structure**

Type of Use(s): ☐ Commercial, ☐ Industrial, ☐ Home Occupation, ☐ Home Based Business, ☐ Retail, ☐ Wholesale, ☐ Office, ☐ Auditorium/Restaurant, ☐ Manufacturing, ☐ Processing/ Repairing, ☐ Warehousing/ Storage ☒ Salvage yard, ☐ Adult Oriented Business, ☐ Alcohol Beverage (Bar and Lounge), ☐ Alcohol Beverage (Package liquor sales) ☐ Mobile Home Park, ☐ Mobile Home Placement, ☐ Racetrack, ☐ Community Correctional Residential Center,
☐ Natural Resource Extraction, Total cubic yards _____, Cubic yards per year _____
☐ Residential; Number of dwelling units _____, ☐ Other _____
Describe Project: TRELAND IS BEING USED TO RE-SIZE SCRAP STEEL FOR EXPORT FROM PORT MACKENZIE.

Is this an Expansion of Preexisting Legal Nonconforming Use or Structure? ☐ Yes ☒ No
If yes, this use has lawfully existed in this location since what date? ☐ Yes ☐ No ☒ N/A
If yes, has the nonconforming use, been discontinued for more than twelve consecutive months since it began? ☐ Yes ☐ No ☒ N/A
If yes, list the date the use was discontinued _____ **and date use resumed** _____
To establish Grand Father Rights for a use, complete this form (including attachments) also include a copy of the earliest Business Licenses and other evidence of the continued existence of the use at this site since the date the use became nonconforming. **Is evidence attached?** ☐ Yes ☐ No ☒ N/A
Grand Father Rights for structures are processed under MSB 17.80.
Describe the proposed expansion/increase of the Preexisting Legal Nonconforming Use:

Plans and Drawings: (Note some codes require surveys and drawings prepared by certified professionals)
Plans and drawings must provide all information required by the code regulating the subject development. Attach a detailed Site Plan and dimensional drawings of the horizontal views of structures (drawn to scale) showing, at a minimum, the location of setbacks, easements, all existing and proposed buildings and structures, (including tanks and chemical processing equipment), access points, buffering, vehicular and pedestrian circulation patterns, parking, loading, storage and processing areas, lighting, topography, drainage management plan, sources of noise, water bodies, visual and sound buffers, fences, berms, landscaping, adjacent: streets, public easements and rights of way.

Structural drawings should depict height, width volume, appearance, modifications, identify use areas with locations and dimensions, delineate areas of expansion or change in use, and other details sufficient to adjudicate the application.
Are Site Plans and structural drawings attached? ☒ Yes ☐ No

Structure(s): *If more than one structure is proposed, attach requested information about each.*
☐ None, ☐ Existing, ☒ Proposed New Structure(s) how many new structures 1, ☐ Relocation,
☐ Addition, ☐ Alteration/Remodel, ☐ Repair/Replacement, ☐ Basement/Daylight Basement,
☐ Tower(s); Type: _____
Number of Stories above avg. grade: _____, Maximum Height of Structure above avg. grade: _____
Total Exterior Gross sq. ft. of Building: _____ ☐ Ditches,
☐ Parking Lot Area _____, ☐ Storage Yard Area _____, ☐ Ponds Area _____
☐ Fill Cubic Yards: _____, ☐ Excavation Cubic Yards: _____

Structural Setbacks: *Measure from closest point of structure(s) to:*
Right of Way and Public Use/Access easements _____ ft *(Minimum 25 ft.)*,
Side Lot Line _____ ft *(Minimum 10 ft.)*, Rear Lot Line _____ ft *(Minimum 10 ft.)*, Waterbody _____ ft
(Minimum 75 ft. for habitable structures and garages)

Water Frontage: Does the property have water frontage? ☒ Yes ☐ No ☐ N/A
Name of Water Body: KNIK ARM

Access /Driveway: This project will access what street (s)? KNIK-GOOSE BAY ROAD
Is the street: ☐ Borough Maintained, ☒ State (ADOT/PF) Maintained, or ☐ Private?
Will this project require a new, or modified, driveway to a street or road? ☐ Yes ☒ No ☐ N/A
Does this project have an existing Driveway permit? ☒ Yes ☐ No ☐ N/A
Driveway permit may be required, call 745-4801 (MSB Public Works Dept); or 745-2159 (AK DOT-PF)

Water Supply: ☐ None ☐ Existing ☐ Proposed ☒ Private well/cistern ☐ Public/Community
ADEC Certification may be required, contact Alaska DEC at 376-1850 (www.state.ak.us/dec) ADNR Water Rights may be required, contact Alaska DNR at 907-269-8503(www.dnr.state.ak.us).

Sewage Disposal: ☐ None ☐ Existing ☐ Proposed ☐ Pit Privy ☐ Holding Tank ☐ Septic Tank ☐ Public/Community ☒ Other (specify) PORT-A-POTTY FOR EMPLOYEE USE
No part of a subsurface sewage disposal system shall be closer than 100 ft from any body of water or water course (MSB Title 17.55.020). Other rules apply. ADEC Certification may be required, call Alaska DEC at 376-5038 for more information. Connection to available public systems (such as Talkeetna) may be required. Contact MSB Public Works Dept. at (907) 745-9801.

EXISTING Land Use on Adjacent Lots:
North: 4 HOMES ACROSS HWY FROM PROPERTY APPROXIMATELY 571' FROM SITE
South: KNIK ARM - NO VISIBLE USES
East: KNIK ARM West: 4 HOMES APPROXIMATELY 378' FROM SITE
Other:

OTHER PERMITS, COVENANTS, PLAT NOTES, DEED RESTRICTIONS, ETC
It is the responsibility of the owner and applicant to identify and comply with all applicable private restrictions such as covenants, and plat notes, as well as all local, state and federal regulations applicable to this development and to obtain all necessary authorizations and permits. Any commercial use requires State and Borough Business licenses. City business licenses may also be required. State Fire Marshall's review may be required; call (907)269-5604 for state fire and building codes.

The applicant has determined the following authorizations or permits are required for this project:
Permit name/#_____ _____ Applied for, issued
Permit name/#_____ _____ Applied for, issued
Permit name/#_____ _____ Applied for, issued
Permit name/#_____ _____ Applied for, issued
An Alaska Coastal project questionnaire is helpful in determining if state or federal resource management permits are required. These forms are available from the borough or at the ADNR website, www.alaskacoast.state.ak.us. Coastal Project Questionnaire attached Yes No

Statement
I am the owner, or owner's representative, of the above described property and I hereby apply for a conditional use permit in accordance with the requirements of all applicable MSB ordinances.

I understand that by making application for a conditional use permit, the owner grants permission for borough staff member(s) to enter onto the property for the purpose of processing the application and monitoring compliance with code and permit requirements.

I understand that other rules such as local, state and federal regulations, covenants, plat notes, and deed restrictions may also be applicable and other permits may be required. I understand that it is the responsibility of the owner and operator to identify and comply with all applicable rules.

I further understand that the Borough Planning Commission may impose additional conditions and safeguards designed to protect the public's health, safety, and welfare and to ensure the compatibility of the conditional use with other lawful uses.

The information submitted in this application is accurate and complete to the best of my knowledge.

Curt Fesler 9-21-2011

Signature of, ☐ owner, ☐ owner's representative Date

CURT FESLER 907-229-8948

Printed name of signer Day Time Telephone Number

Tri Metal International LLC Conditional Use Permit

We are applying to acquire a conditional use permit to allow us to collect, cut, and stage material on a private lease site located at 10405 S. Knik-Goosebay Road (hereafter referred to as the site). We are finishing preparations for our first load to ship out between October 10th – 15th. We have already stockpiled approximately 5200 tons of steel at our permit site at Mile 19 Point MacKenzie Road. At our current production we expect to have 6000 tons or more available to load onto the ship. This would be the first actual shipload of steel to be exported from Alaska, and it will be exported from the borough's port. This is an important milestone in the Mat-Su Borough's history.

Our company was organized as a Limited Liability Company in the state of Alaska on October 25, 2009. We have worked in Alaska since then acquiring material to export from Port MacKenzie. We were performing most of the prep work at the site of the acquired material, but found it to be more efficient to bring larger pieces to one central location for re-sizing and removal of non-steel components.

Since June of 2011, we have processed approximately 3000 tons of steel through the site in question. It has been done safely for the public, our personnel, and the environment.

The site is accessed from a driveway off of Knik-Goosebay road at approximately mile 13.9. As the site has been operated as a gravel pit for at least the last 5 years, the driveway is constructed to allow multiple trucks a day both in and out(see photo #1 of the attached photos). The site possesses a natural treed barrier and is not visible from the roadway. With the prior use as a gravel pit, it also sits below the surrounding area. From the driveway, the trucks follow the road down into the pit and around to the scale house (Photo #2) for weigh in. After weigh in, the trucks proceed to where we offload the material (Photo #3).

To unload the trucks, unless they are towing trailers designed for dumping, we have been using either our crane (Photo #4), or one of our excavators (Photo #5) to remove the material from the truck. If the truck is equipped with a dump bed or a trailer capable of dumping the procedure is similar, except they dump their contents. After emptying the load they return to the scale to weigh out. The trucks then follow the road back to exit onto Knik-Goosebay Road.

At this time, we are not accepting material that has contaminants as we are not currently setup to handle large quantities of oil, hydraulic fluid, etc. We do check materials for any potential contaminants and if any are found, they are removed into sealable containers for disposal. Disposal will be by taking the materials to Mat-Su Central Landfill. Next, they are then checked for non-ferrous(anything other than steel) materials that are removed for separate recycling from the steel. Last, they are given to our crews that resize the material into pieces no bigger than 37 inches at the widest point.

Once the material is ready for the cutting crew, they use propane and oxygen torches to size the material. This setup was chosen because of the clean burning aspect of propane, as well as affordability and accessibility. With each person setup on a per ton basis, they each keep a separate completed pile (Photo #6) that is loaded into side dump semi-truck trailers. The trucks facilitating this move follow the same procedure as described previously for trucks coming into the site, just reversed as they scale first empty, are loaded, and then scaled full. The material is then taken to our permit site located at mile 19 Point MacKenzie Road. Once there it is neatly stacked and awaits the ships arrival. That concludes what we are doing currently.

Future plans:

Our lease space as it stands currently is set to expand to the proposed area shown on the site plan. We are planning the construction of up to a 300-foot x 150-foot building to allow us to accept materials which may still contain oil, antifreeze, gasoline, etc. The goal is to drain all liquids for re-use, if possible such as waste oil for heating the building, or proper disposal. The building will serve as storage for all of our tools and equipment when not in use. It is also planned to house our offices and employee break room in the same structure. The exact location, shape, and type of building have yet to be determined, but the rough area of placement has been shown on the site plan.

We are currently in negotiations to place a liquid oxygen generation plant on the site. The plant will be for our company use only with no intention of being a retail sale location. The costs for the installation of the plant are estimated to be $100,000, plus the expense of training select employees on the use of the equipment to fill the oxygen bottles. The location is shown on the site plan for intended plant placement. The reason behind the liquid oxygen generation plant is to minimize transporting liquid oxygen on the road system. Potential injury to the public due to unforeseen circumstances while transporting increases with increased hauling. The only facility to get the quantity of oxygen we are using is the Air Liquide bulk plant in Anchorage.

Depending on space available at the site, one potential expansion would be a large scale shredding facility. We are considering if there might be a site inside the port district, near rail, road, and dock that would offer long-term leasing for this investment. This final site decision will be made at a later date. This facility would have the capacity to shred whole cars and large pieces of steel. It would also be able to sort and separate out different types of materials. This shredder would produce ready to ship materials, with no further processing needed.

We are currently in negotiations with Prudhoe Bay contractors for removal of steel from the area for processing and shipping out from Port Mackenzie. We also are in negotiations for the tear down and removal of a derelict tank farm in Fairbanks, Alaska. This would also pass through this site for processing. We have material in Canada we will be preparing to ship to the site. We are constantly looking for more material, and have contacted BLM to be contacted for removal of abandoned mining equipment and machinery.

Another potential source of steel we are exploring is to work in conjunction with Port MacKenzie in the construction of a dry dock for us to bring large ships for tear down (referred to as ship breaking). The construction of said dry dock would allow us to do this, as well as the potential to allow other ships to dry dock for repairs and maintenance. This is a long-term goal and will not see a decision on this until 2015 or later.

Addendum to Tri Metal International LLC Conditional Use Permit

Per the Borough's request, here is additional information regarding our permit application.

The conditional use permit application we supplied is for a lease that overlaps parcels 16N03W24D009(10405 S. Knik Goose Bay Road) & 4617000L002B (10425 S. Knik Goose Bay Road). Only the first address was listed on the application. We need it to cover both parcels in the lease.

The scale house that was talked about at our meeting and shown on our site plan belong to Stepper's Construction, we have no interests in it other than the use we are allowed. There are no set vehicular or pedestrian patterns to show on the site plan as the roadway is not consistent due to gravel extraction and pedestrian traffic is non-existent on the site. Parking areas are also not shown either due to the changing topography of the site and no defined area will be set aside for this purpose.

The site plan has been updated to label the separate lease lots, the future oxygen plant, acreage of each lease lot, width of the access road, specific uses and drainage of the site.

Photo # 1 - Entrance

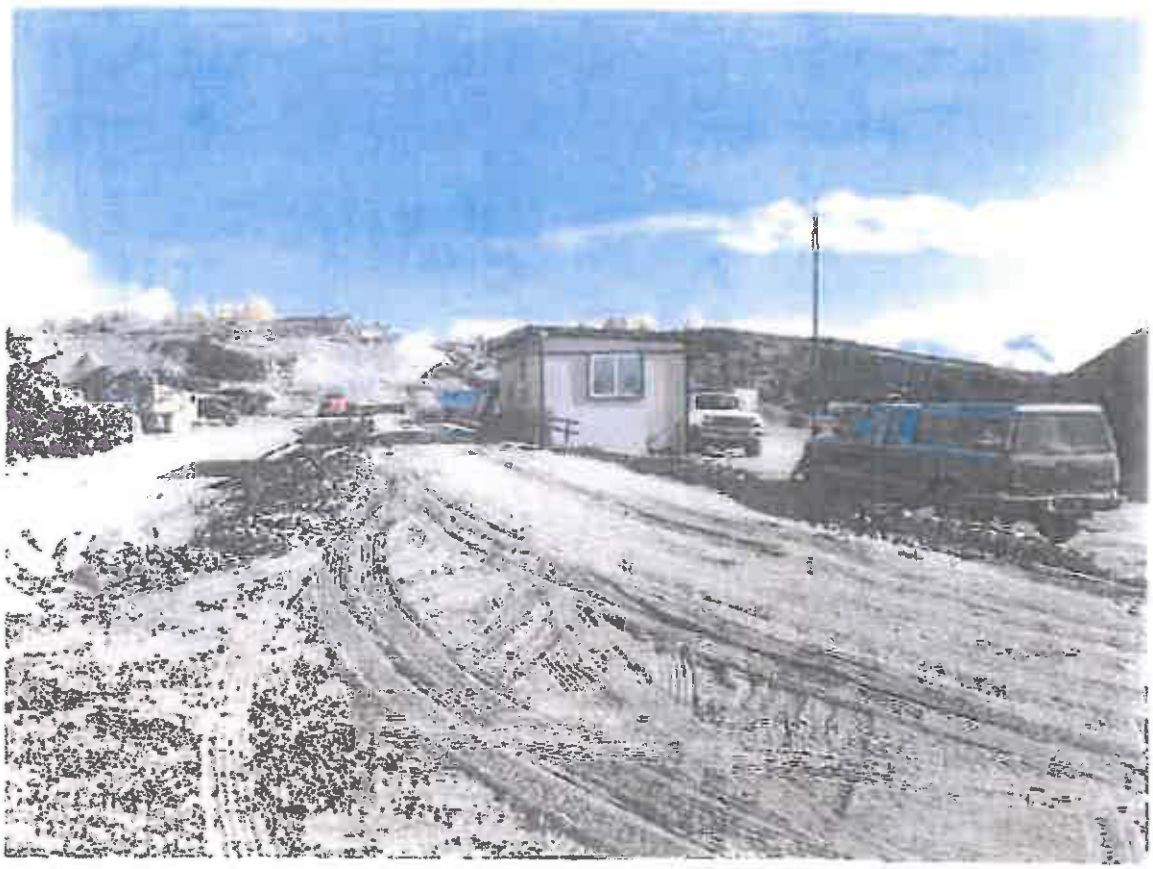


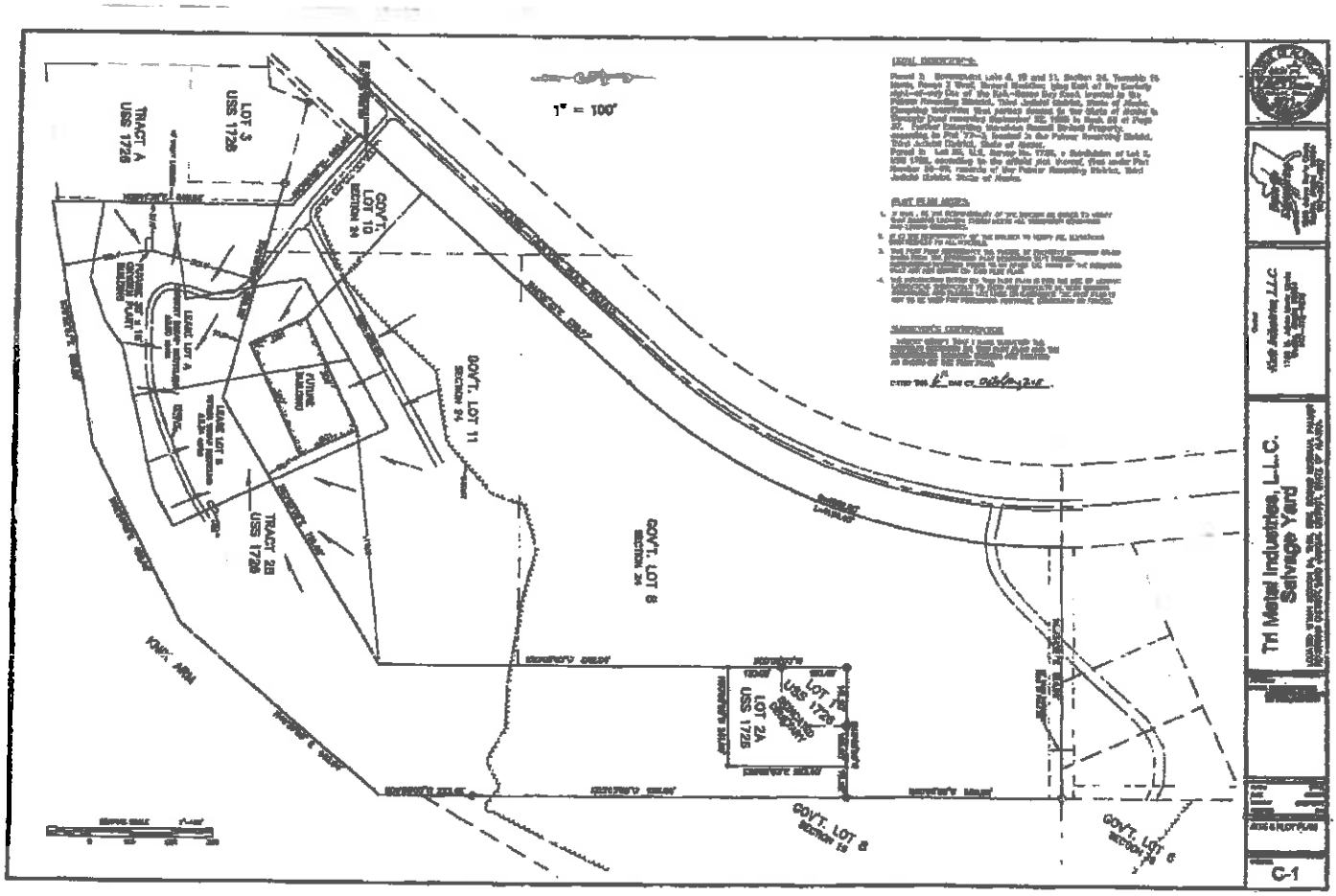
Photo # 2 - Scale House

Photo # 3 - Offloading of Truck

Photo # 4 - Crane

Photo # 5 - Excavator

Photo # 6 - Completed Pile waiting for Transport


1" = 100'
TRACT A USS 1726
LOT 3 USS 1726
GOVT. LOT 10 SECTION 24
GOVT. LOT 11 SECTION 24
GOVT. LOT 8 SECTION 24
TRACT 2B USS 1726
LOT 2B USS 1726
LOT 2A USS 1726
GOVT. LOT 6 Section 19
GOVT. LOT 6
TH Metal Industries, L.L.C. Salvage Yard
C-1

ATTACHMENT 20

Bradley Hydrologic Consultants

3527 North Point Drive
Anchorage, AK 99502
phone: 907-248-0058
fax: 907-243-3754

Matanuska - Susitna Borough
Development Services
MAY 14 2014
Received

Groundwater Modeling Report, AS&G Palmer Pit

Anchorage Sand & Gravel, Inc.
Anchorage, Alaska

August 2010

TABLE OF CONTENTS

Executive Summary ii

1.0 Introduction 1

2.0 Regional Geology and Hydrology 3

3.0 Model Grid and Boundary Conditions 10

4.0 Model Calibration 14

5.0 Predictive Modeling Results 18

6.0 References Cited 24

APPENDIX A -- GROUNDWATER PUMPING TESTS

LIST OF FIGURES

Figure 1-1. Proposed Lake at AS&G's Palmer Pit 1

Figure 2-1. Regional Geologic and Hydrologic Setting 3

Figure 2-2. Palmer Terrace and Crevasse-Fill-Ridge Deposits 4

Figure 2-3. Typical Crevasse-Fill-Ridge Deposit, Palmer, Alaska 4

Figure 2-4. Wilder Pond in 2003 vs. 2006 5

Figure 2-5. Water Table in the Vicinity of the Palmer Pit 6

Figure 2-6. Long-term Hydrographs, AS&G Monitoring Wells 7

Figure 2-7. Palmer Pit Water Table on July 8, 2010 8

Figure 3-1. Model Grid Showing Bedrock Elevation Contours 10

Figure 3-2. Model Cross Section: Row 13 11

Figure 3-3. Effect of the Pioneer Meadows Wells Pumping at 100 gpm Each 13

Figure 4-1. Measured vs. Predicted Water Table on June 12, 2004 15

Figure 4-2. Measured vs. Predicted Water Table on June 27, 2004 16

Figure 4-3. Measured vs. Predicted Water Table on July 8, 2010 17

Figure 5-1. Predicted Water Table for a Single Lake 19

Figure 5-2. Predicted Water Table for Two Lakes 21

Figure 5-3. Modeled Rate of Water Level Increase During Dredging of the North Lake 23

LIST OF TABLES

Table 5-1. Zone Budget Results 20

EXECUTIVE SUMMARY

A groundwater modeling study was performed to assess the impact of dredging at Anchorage Sand and Gravel, Inc.'s (AS&G's) Palmer gravel pit. The proposed dredging operation would create a 130-acre lake approximately 100 feet deep. The purpose of the modeling effort was to provide an objective determination of the approximate lake elevation, and to assess potential impacts on nearby lakes and wells. For transparency to reviewers, the model is intended to be as simple as possible. This was accomplished by using the minimum number of layers needed to represent the groundwater flow system: one layer for aquifer materials that will be removed by dredging, one layer for aquifer materials that will remain after dredging, and one layer for bedrock. Around the perimeter of the model, a constant head boundary is used to mimic the regional water table slope. Local changes in water table slope are reproduced using the bedrock surface mapped using AS&G drill holes and a single zone of reduced hydraulic conductivity exposed as a silt lens on the adjacent property. The model uses a regional hydraulic conductivity value based on two high-capacity pumping tests that agree both internally and with nearby well yields. A reduced hydraulic conductivity for the silt lens is supported by adjacent pond elevations and by a domestic well test where the silt lens extends onto AS&G's property. Based on these data, the model reproduces the July 8, 2010 water table configuration with an average error within 0.5 feet, and within 0.2 feet through most of the model domain.

Although the model reproduces the July 8, 2010 water table configuration remarkably well, the model's parameter values and boundary conditions do not constitute a "unique" solution to the groundwater flow problem. That is, a slightly different set of parameter values and boundary conditions might produce an equally good fit. However, the selected parameter values and boundary conditions are "transparent", based on solely on pumping test data and measured groundwater elevations. If different water table conditions or hydraulic conductivity values are identified, these conditions can be evaluated either qualitatively or quantitatively by re-running the model.

The model calibration assumed that the July 8, 2010 water table configuration represents a steady-state condition, so that the rate of precipitation and groundwater inflow are exactly balanced by the rate of groundwater outflow. In reality, natural aquifers are always responding to seasonal changes in precipitation and recharge. As a result, the

water table is expected to fluctuate upward and downward from the July 8, 2010 configuration. By limiting the analysis to a steady-state condition, we are assuming that seasonal changes in precipitation and recharge are not important relative to the long-term water table configuration.

Model results indicate dredging would produce a slight (1 to 2-foot) depression in the water table around the north end of the lake, and a corresponding water table rise around the south end of the lake. The lake would depress the water table at the Pioneer Meadows wells by about 0.5 feet, and water level changes at other wells would be less. Except for the Church well, none of the capture zones of surrounding water supply wells would intercept the lake. Due to the distance between the Church well and the lake (over 450 feet), no water quality impacts are anticipated at the Church well.

The model was used to calculate groundwater flow through the lake cells and through a cross section downgradient of the lake. Results indicate that flow through the lake cells would increase by about 7.7 million gallons per day (mgd) after dredging, and flow through the downgradient cross section would increase by about 4.4 mgd. Based on previous pump test results, this could cause a significant increase in the elevation of Wilder Pond. If a 200-foot dike was constructed between the north and south halves of the lake, the inflow to Wilder Pond would be reduced to about 1.5 mgd. At this rate of inflow, the rise in the pond surface elevation would be less than 1.5 feet.

Fine sediment accumulation would tend to reduce flow through the lake(s). By monitoring the rate of water level rise during dreding of the north lake, the effect of sediment accumulation can be evaluated.

A 1992 study concluded that irrigation withdrawals over 6 mgd are not stressing area aquifers, and that the potential water supply significantly exceeds actual use. With a dike between the north and south lakes, the increased flow due to dredging represents less than one-fourth of irrigation use. Considering that the water is recharged into the aquifer, the dredging activity should have little effect on the overall groundwater flow system. For comparison, the increased flow resulting from two lakes (1.5 mgd) represents about one-fifth of the mean annual flow of Wasilla Creek at Fishook Road, located approximately 10 miles upstream from the Palmer Hay Flats.

1.0 INTRODUCTION

This document provides the results of groundwater modeling at Anchorage Sand & Gravel, Inc's. (AS&G's) Palmer Pit. The purpose of the modeling effort is to resolve questions regarding the effects of gravel dredging on the underlying aquifer. As shown on Figure 1-1, the dredging operation would create a 130-acre lake up approximately 100 feet deep. A previous assessment concluded that the lake would cause a slight (1 to 2-foot) depression in the water table around the north end of the lake, and a corresponding water table rise around the south end of the lake (Brailey 2007). However, questions remain concerning the resulting lake levels and effects on nearby wells (Munter 2009). Specifically, these questions include:

- What is the expected lake level, and what effect will this have on the surrounding aquifer?
- How much flow will pass through the lake as compared with the undisturbed aquifer?
- How will the lake affect the capture zones of the Crimson View and Pioneer Meadows public water systems?
- What options are available to minimize changes to the surrounding groundwater flow system?

Figure 1-1. Proposed Lake at AS&G's Palmer Pit

A 3-dimensional groundwater model was prepared to specifically address these issues. The model is intended to be as simple as possible while still adequately representing the groundwater flow system. The model includes the effects of an uneven bedrock surface and the large pond(s) south of AS&G's property (Figure 1-1). The model does not consider transient water table fluctuations, focusing instead on steady-state flow conditions with and without the lake. Aquifer properties are based on measured values throughout most of the model domain, and assumed values for a silt formation that separates two ponds. The resulting calibration provides general agreement with the measured water table configuration, but does not reproduce local water level variations. Because the goals of the model are to address large-scale impacts surrounding the 130-acre lake, small-scale deviations from measured water table configurations were considered acceptable.

Groundwater modeling was performed using Visual MODFLOW v. 4.1, which includes MODFLOW-2000, a modular 3-dimensional finite-difference groundwater flow model developed by the U.S. Geological Survey (USGS; Harbaugh et al. 2000). Visual MODFLOW also includes MODPATH and Zone Budget, two USGS programs to calculate particle pathlines and subregional water budgets, respectively.

The following sections describe the regional geology and hydrology, model grid and boundary conditions, steady state calibrations, and predictive modeling results.

2.0 REGIONAL GEOLOGY AND HYDROLOGY

The Matanuska valley near Palmer is bounded by the Talkeetna Mountains on the north and the Chugach Mountains to the south and east (Figure 2-1). The Matanuska valley was formed by repeated glacial advances along a zone of faulting and deformation between metasedimentary and metaigneous rocks the Chugach Terrane on the south and granitic and sedimentary rocks the Peninsular Terrane on the north. Bedrock is exposed at the surface along the fronts of the Talkeetna and Chugach mountains, and is mantled by alluvium on the valley floor. The thickness of alluvium varies considerably, ranging up to over 200 feet near the center of the "Palmer terrace" (Pewe and Reger 1983; Figure 2-2). Local bedrock highs occur at Bodenburg Butte, a constriction of the Matanuska River near Palmer, and in the western part of the AS&G property (Figures 2-1 and 2-2).

Figure 2-1. Regional Geologic and Hydrologic Setting

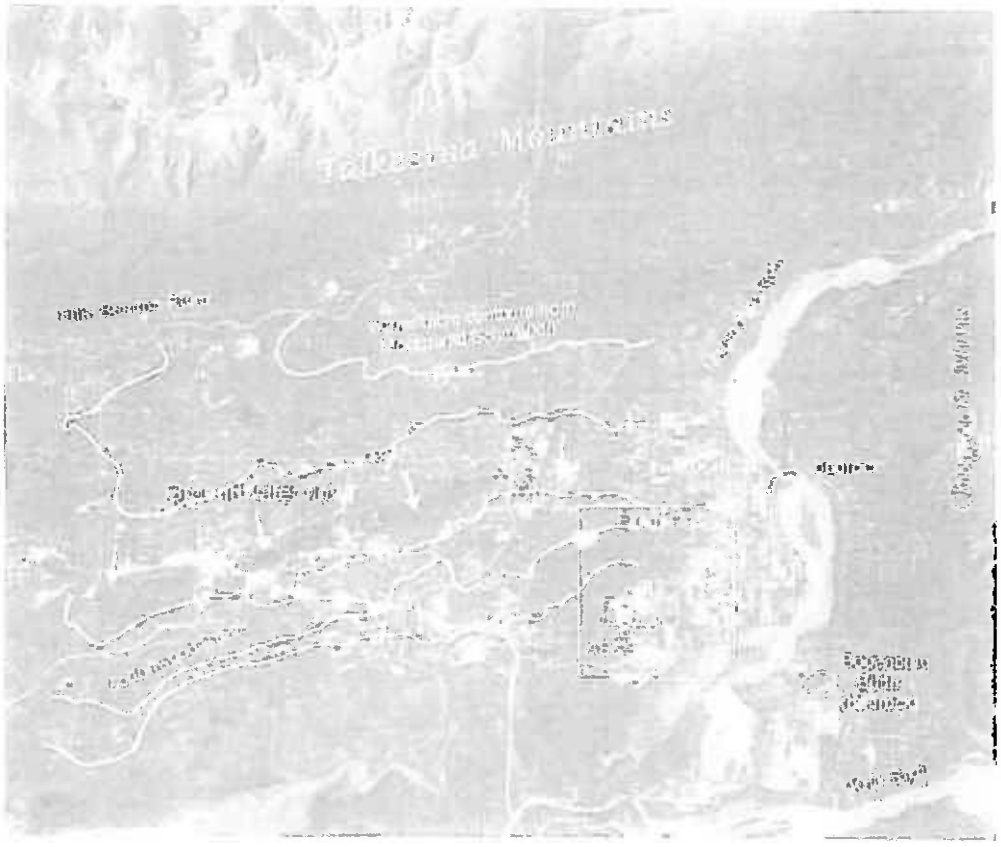
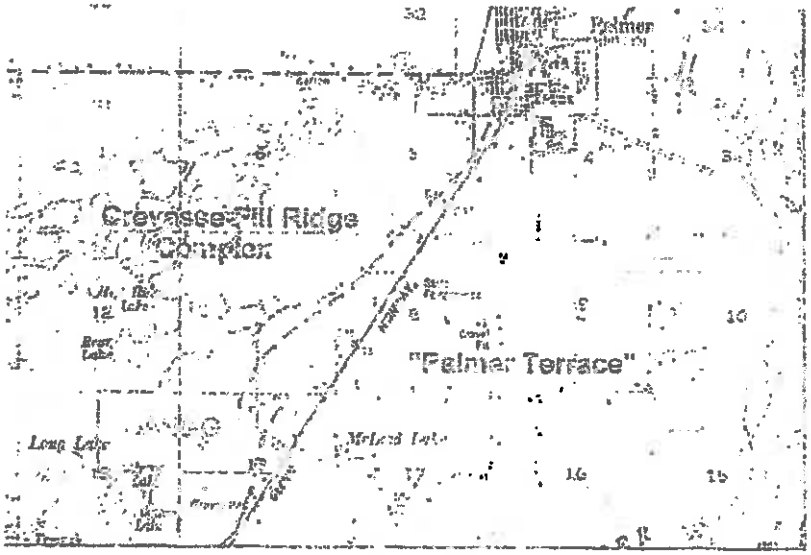


Figure 2-2. "Palmer terrace" and Crevasse-Fill-Ridge Deposits



AS&G's Palmer Pit is located in crevasse-fill-ridge deposits located immediately west of the "Palmer terrace" (Pewe and Reger 1983). These deposits formed in subparallel crevasses that developed in stagnant ice during the later stages of the Naptowne Glaciation. Although most of the ridges are comprised of marketable sand and gravel (Figure 2-3), one ridge on the west side of Wilder Pond contained a silt lens that

Figure 2-3. Typical Crevasse-Fill-Ridge Deposit, Palmer, Alaska

separated the dredge pond from a topographically depressed area to the west. The silt lens was breached in July 2004, causing flooding of the depressed area and lowering of the dredge pond by as much as 7.6 feet (Figure 2-4).

Figure 2-4. Wilder Pond in 2003 vs. 2006

The "Palmer terrace" was deposited slightly after the crevasse-fill-ridge deposits, as the Naptowne ice front retreated to the north. These outwash deposits locally overlie the crevasse-fill-ridge sediments in the vicinity of the Palmer Pit (Pewe and Reger 1994).

Based on a regional water table map prepared by the U.S. Geological Survey (Moran and Solin 2006), groundwater flow is generally southward from the Talkeetna Mountain front (Figure 2-1). In the vicinity of the Palmer Pit, groundwater occurs in an unconfined aquifer tapped by numerous domestic and community water supply wells (Figure 2-5). The aquifer is relatively thick (locally over 200 feet) and commonly exhibits high well yields. Comparison of the water table elevation with adjacent floodplain elevations (Figure 2-2) suggests that the unconfined aquifer is recharged by both the Matanuska River and by groundwater inflow from the north. Oxygen isotope studies performed by the U.S. Geological Survey indicate that the water table aquifer

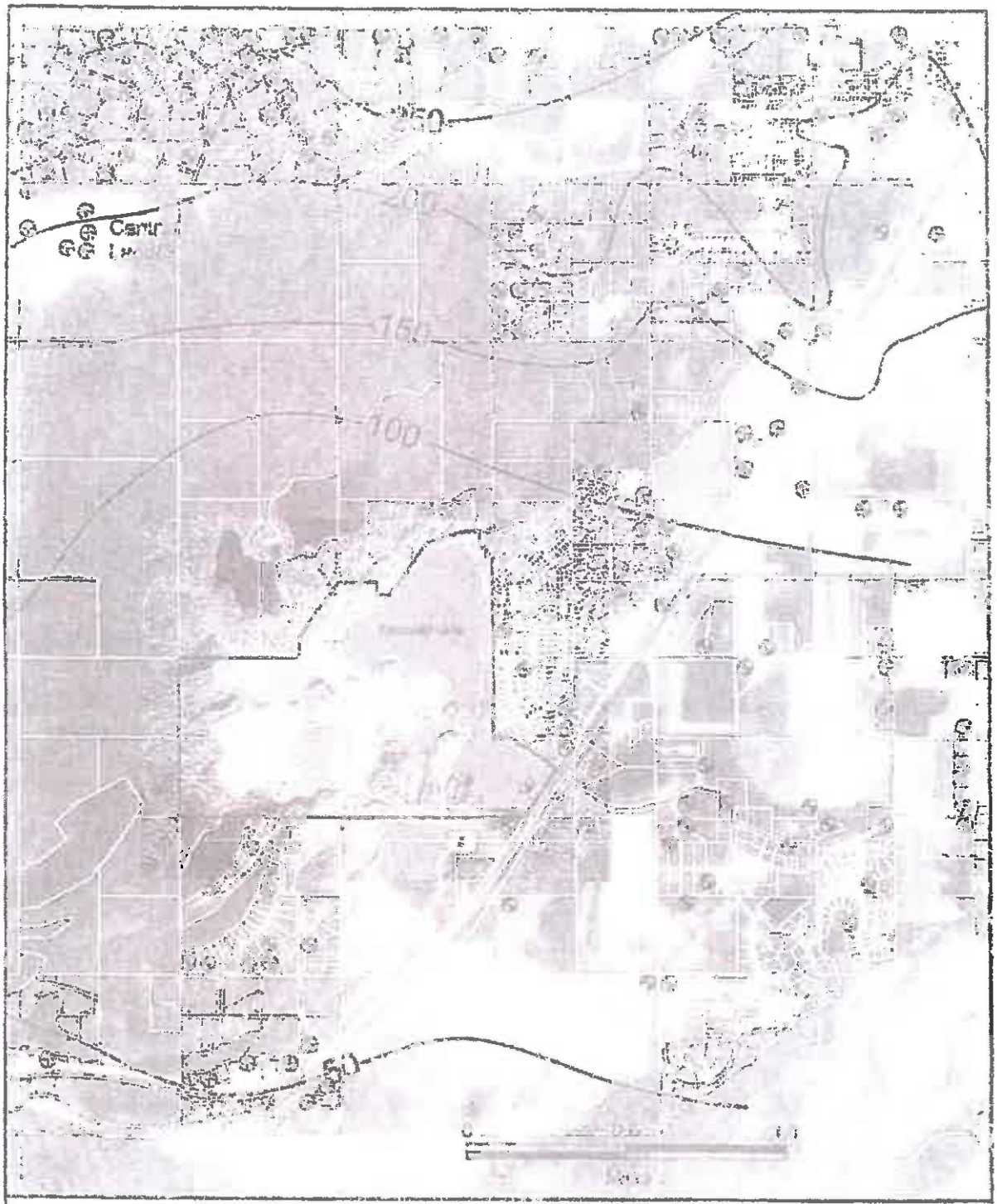


Figure 2-5. Water Table in the Vicinity of AS&G's Palmer Pit

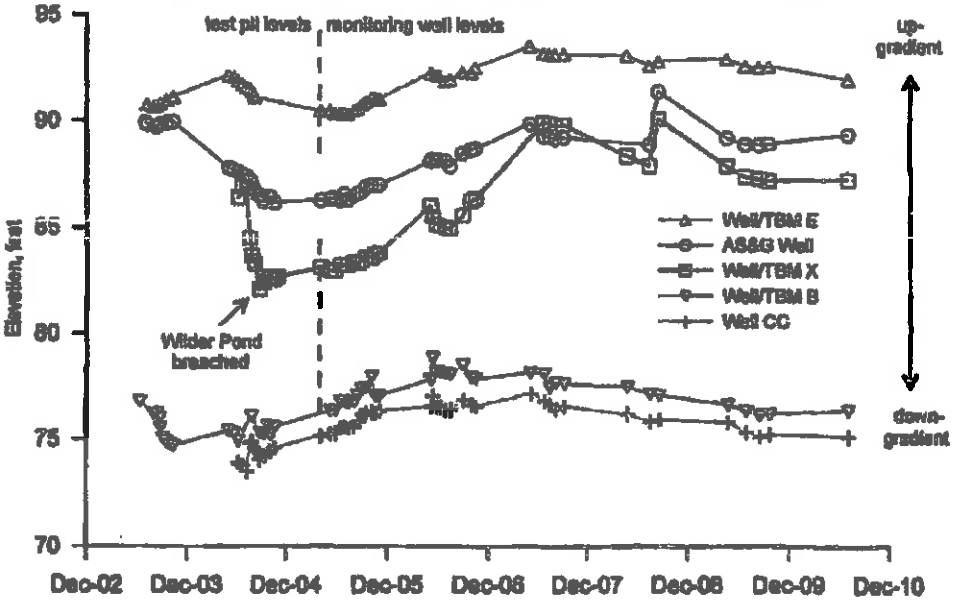
Brailey Hydrologic Consultants
August 2010

has a direct hydraulic connection to many lakes in the Palmer-Wasilla area (Moran and Solin 2006).

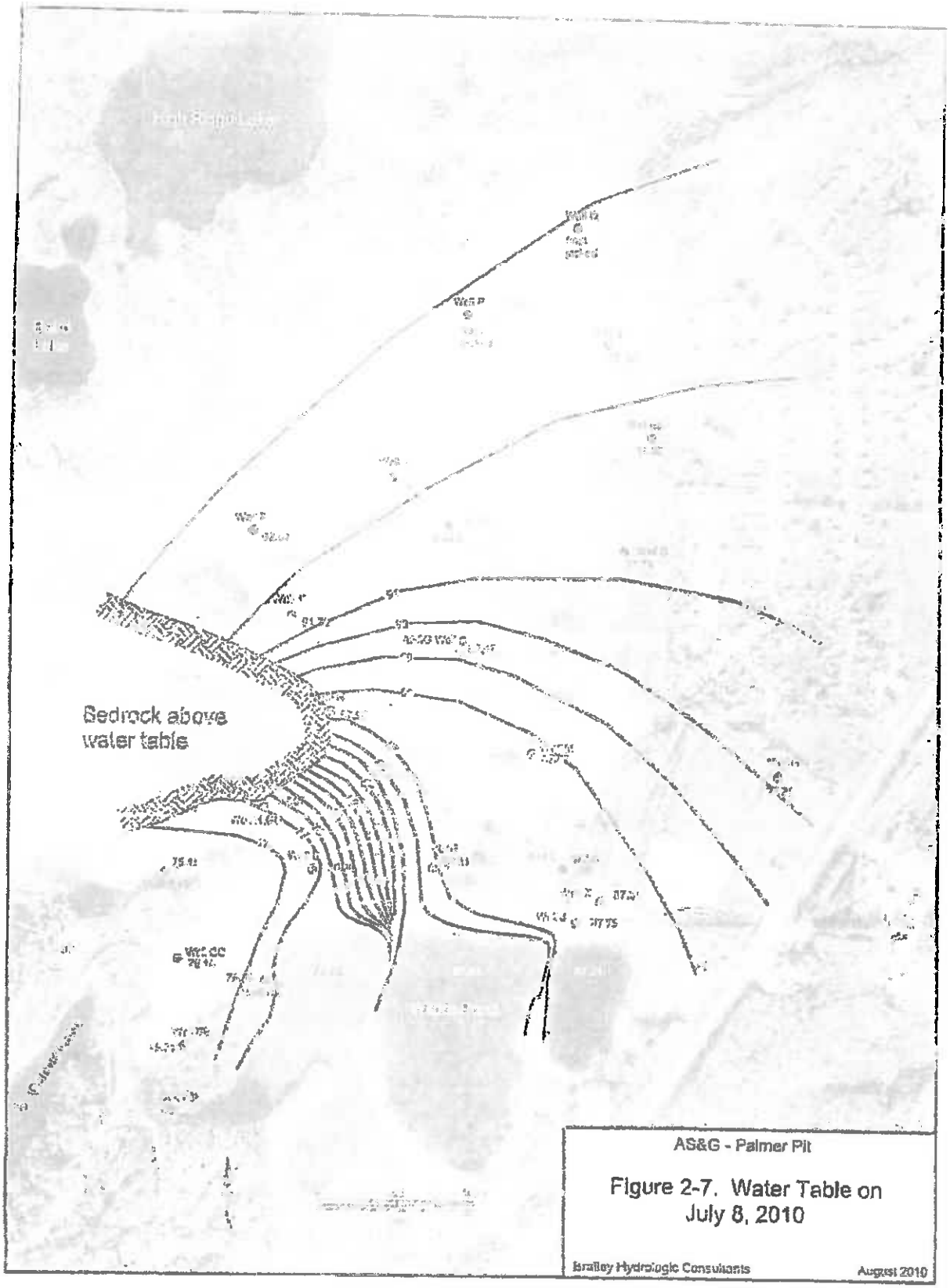
AS&G has performed periodic water level measurements at the Palmer Pit since 2003 (Figure 2-6). The initial monitoring network included a number of test pits that were replaced with monitoring wells in 2005. The current monitoring network includes 19 PVC monitoring wells, three inactive steel-cased wells, and an active domestic well. Water levels in the central Wilder Pond were monitored from 2003 to 2005, but were not available for the east and west ponds until July 2010. Similarly, concurrent water level elevations for Canoe and Irene Lakes were not available until July 2010.

Including water surface elevations for Irene Lake and the three adjacent dredge ponds, the July 8, 2010 water table configuration reflects the most complete set of water level measurements in the monitoring database. Long-term hydrographs show that the July 8, 2010 water table configuration elevation is relatively stable, having adjusted to the adjacent dredge ponds excavated in 2002 through 2007 (Figure 2-6).

Figure 2-6. Long-term Hydrographs, AS&G Monitoring Wells



The July 8, 2010 water table configuration shows a generally southward groundwater flow direction that curves around a bedrock high separating Baird and High Ridge Lakes to the north from Canoe and Irene Lakes to the south (Figure 2-7). Based on


Bedrock above
water table
AS&G - Palmer Pit
Figure 2-7. Water Table on
July 8, 2010
Bradley Hydrologic Consultants
August 2010

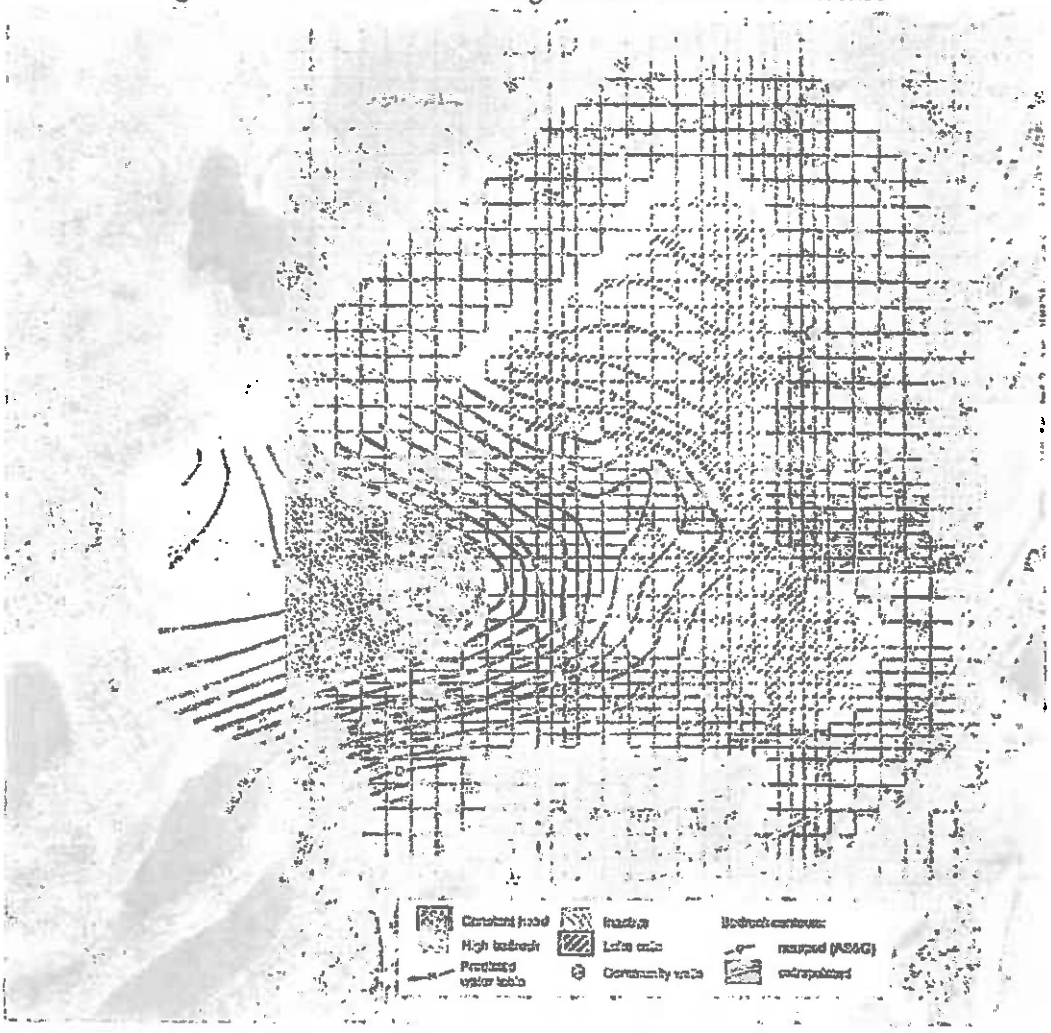
aerial photogrammetric measurements (AeroMetric 2008), the elevation difference between Baird and Irene Lakes is about 25 feet. Although the surface of Canoe and Irene Lakes is about 5 feet above the water table, the slope of the water table is consistent with the elevation difference between the lakes north and south of AS&G's property. The difference between the water table elevation and the surface of Canoe and Irene Lakes suggests that the lakes are perched by fine grained sediments lining the bottoms of the lakes. Perching of lakes and streams has long been recognized in the groundwater literature, and is commonly modeled using a reduced lake or streambed conductance relative to the underlying deposits (e.g. Merritt and Konikow 2000).

- Although the unconfined aquifer generally flows southward toward discharge areas along the Matanuska River (Munter 2010), the lowest groundwater elevations occur in the southwest corner of AS&G's property (Figure 2-7). This suggests a zone of increased transmissivity south of Canoe Lake. By analogy with Echo and Kepler Lakes, Canoe and Irene Lakes were once occupied by stagnant ice masses separated by meltwater streams (Reger and Updike 1983). Flow constrictions between the stagnant ice masses could have resulted in high-permeability zones between the lakes. Fine-grained sediments and a former pond at the location of Wilder's central pond (Figure 2-2) suggest that an ice mass was present in this area. If so, meltwater flows could have been constricted between this area and the ice mass in Canoe Lake, resulting in a buried channel of high-permeability deposits.

3.0 MODEL GRID AND BOUNDARY CONDITIONS

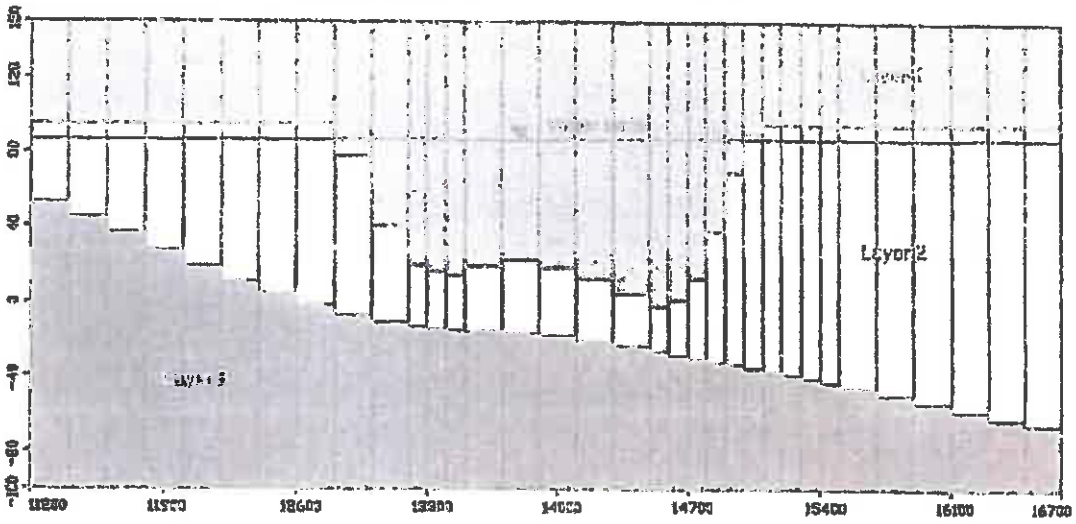
As proposed in AS&G's *Groundwater Modeling Plan* (Brailey 2009), the model grid is oriented north-south, approximately parallel to the regional groundwater flow direction (Figures 2-1 and 2-4). The grid includes three layers, each consisting of 43 rows and 34 columns. The bottom layer (Layer 3) represents bedrock, simulated using inactive cells. Geologic mapping performed by AS&G indicates a bedrock ridge beneath the western part of AS&G's property, where bedrock elevations extend up to 30 feet above the water table. The bedrock elevation is well-defined in the center and west of the model area, but required extrapolation to the north, east, and south (Figure 3-1).

Figure 3-1. Model Grid Showing Bedrock Elevation Contours



The middle layer (Layer 2) represents aquifer materials that will not be disturbed by mining, and the top layer (Layer 1) represents materials that will be removed (Figure 3-2). The model was calibrated using the same hydraulic conductivity for Layers 1 and 2, representing hydrologic conditions before mining. The effect of gravel dredging was simulated by increasing the hydraulic conductivity of Layer 1 until all of the "lake" cells exhibited the same head. This provides an unbiased estimate of the lake elevation, dependent only calculated water flows into and out of the lake.

Figure 3-2. Model Cross Section: Row 13



The model's lateral boundary conditions are illustrated on Figure 2-1. Except where bedrock elevations are above the water table, the perimeter of the model is a constant head boundary with head values estimated from water table maps of the monitoring network.

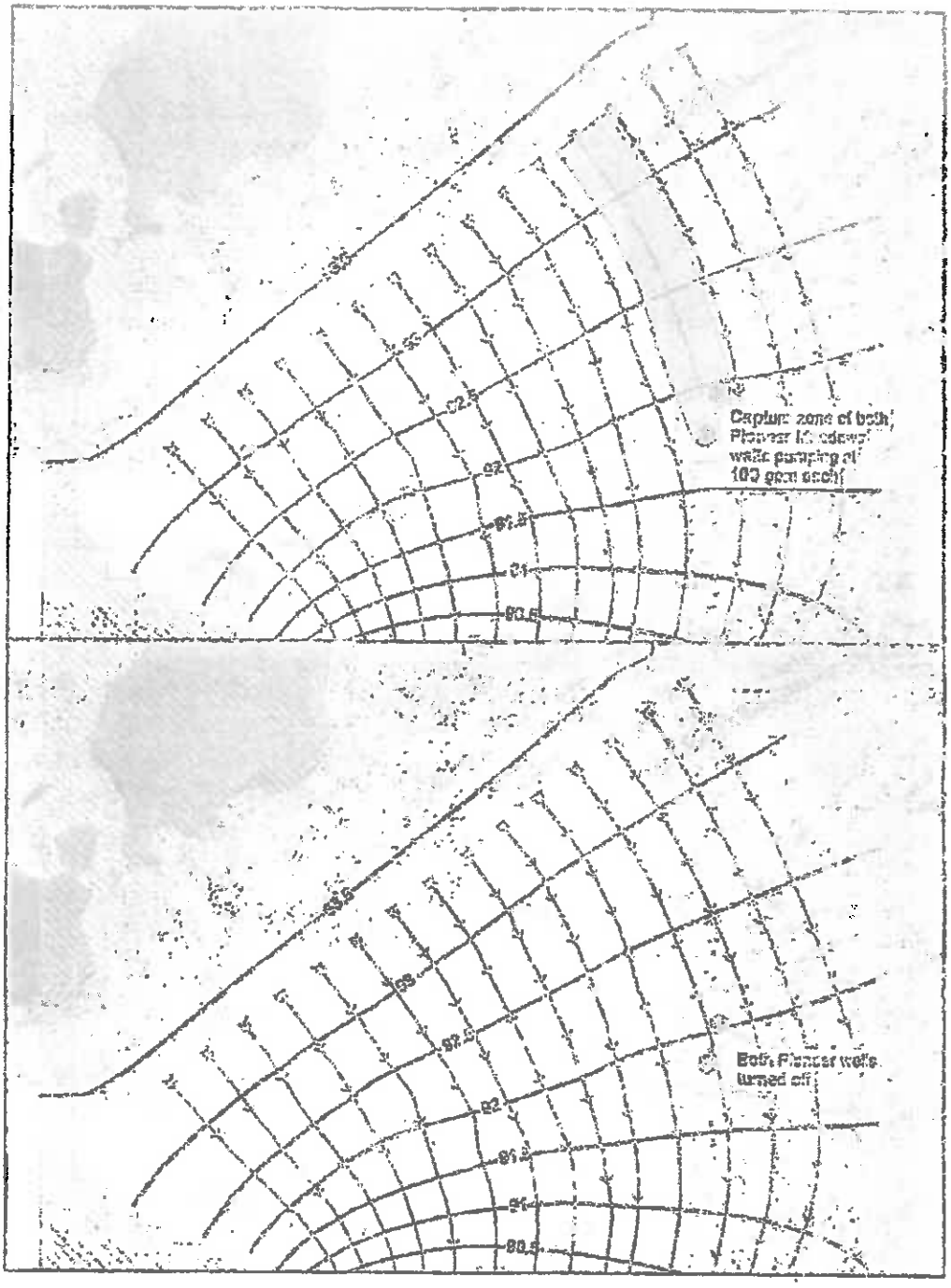
Groundwater recharge from precipitation was included by specifying a recharge rate of four inches per year throughout the model domain. This represents about one-fourth of annual precipitation, and is consistent with recharge values estimated by Patrick and others (1989) for lower elevations in the Anchorage Bowl. Modeling results indicate that recharge from precipitation is a relatively small component of the overall water balance.

A final boundary condition was included to assess the impact of water supply wells on the local groundwater flow system. There are five domestic wells and two community water supply systems within the model domain. The Pioneer Meadows community

water supply system served 86 residents in 2001, and the Crimson View community supply system served 120 residents in 1998. The five domestic wells serve individual homes.

To evaluate the effect of water supply wells, two pumping wells were added at locations corresponding to the Pioneer Meadows wells (Figure 3-3). These wells are located such that the constant head boundary has little effect on modeled drawdown and flowlines. In contrast, the Crimson View well is located immediately adjacent to a constant head boundary. The Pioneer Meadows wells were both assigned continuous pumping rates of 100 gallons per minute (gpm), for a combined flow rate nearly ten times the Crimson View system's peak daily production for 2001. Even at these pumping rates, the model results demonstrate that the Pioneer Meadows wells have little effect on the groundwater flow system (Figure 3-3). By analogy, the Crimson View well and the five domestic wells should have little effect on the goals of the modeling effort.

Figure 3-3. Effect of the Pioneer Meadows Wells Pumping at 100 gpm Each



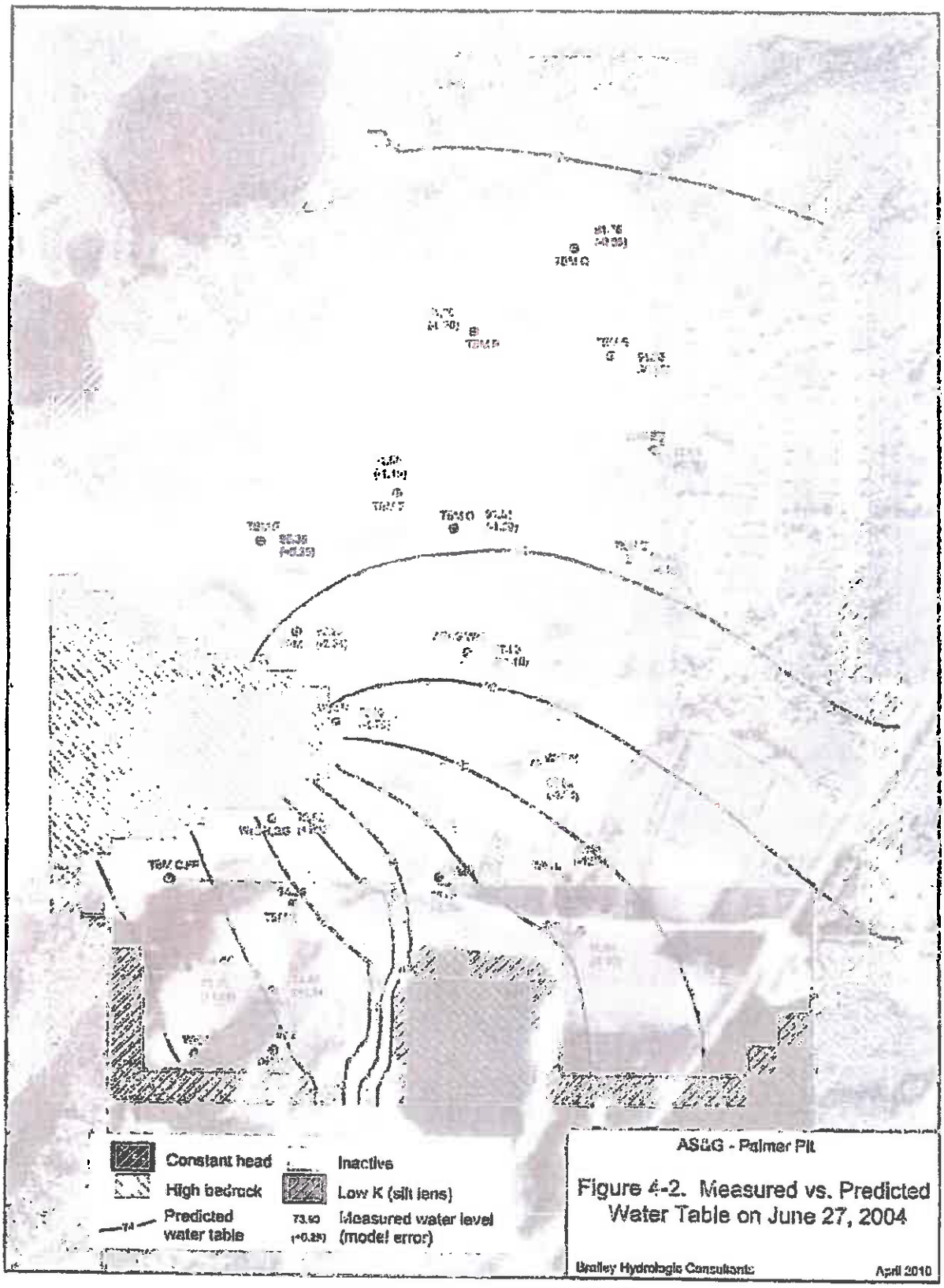
4.0 MODEL CALIBRATION

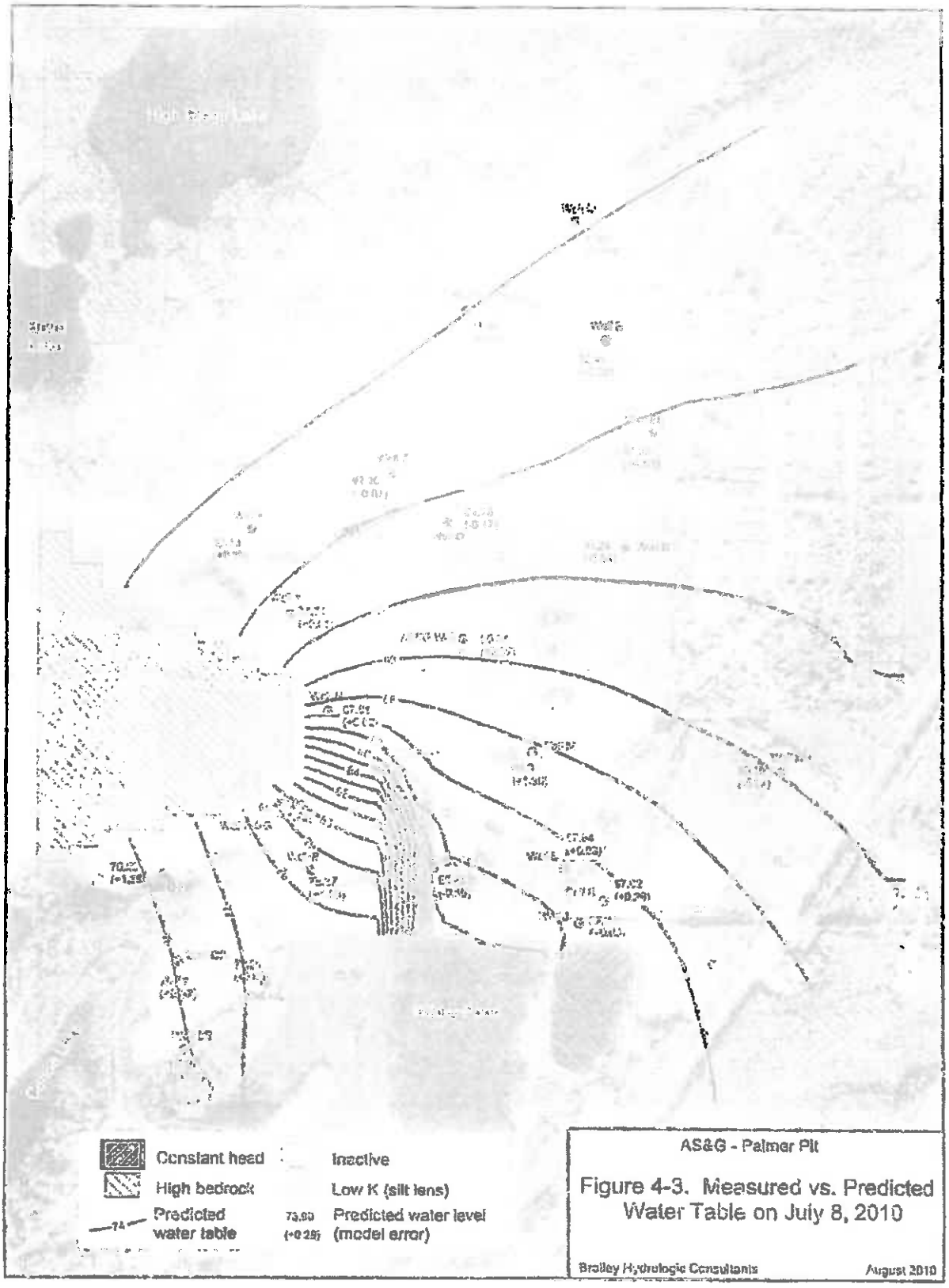
AS&G's *Groundwater Modeling Plan* proposed fitting the model to measured water table configurations during and after a June 2004 pumping test of Wilder Pond, using the measured pumping rate (3,300 gpm) as an additional boundary condition. Two sets of water level measurements were recorded during this period, on June 12 and June 27, 2004. As shown on Figures 4-1 and 4-2, other water level changes (unrelated to pumping) also occurred between June 12 and 23, 2004. Because the non-pumping water level changes had a significant effect on the flow rate entering Wilder Pond, the measured pumping rate could not be reproduced within reasonable parameter limits.

However, an acceptable steady-state calibration was obtained using water level measurements on July 8, 2010 (Figure 4-3). In addition to the wells measured in June 2004, the July 8, 2010 measurements included several data points near AS&G's south property boundary, including Wells H and I, the three dredge ponds south of AS&G's property, and Irene Lake. Long-term hydrographs show that the July 8, 2010 water table configuration elevation is relatively stable, having adjusted to the adjacent dredge ponds excavated in 2002 through 2007 (Figure 2-6).

Based on consistent pump test results for Wilder Pond and the AS&G Well (Appendix A), the July 8, 2010 calibration assumed a regional hydraulic conductivity of 1,400 ft/day, with a lens of reduced hydraulic conductivity paralleling Canoe and Irene Lakes (Figure 4-3). A pump test performed on Well I (Appendix A) indicates a local hydraulic conductivity of 50 ft/day on the east side of the lens, and the 8-foot difference in water levels suggests an even lower hydraulic conductivity between Wilder's central and western dredge ponds. Accordingly, the lens was assigned an hydraulic conductivity of 50 ft/day near Well I and 10 ft/day between Wilder's central and western dredge ponds. This hydraulic conductivity distribution results in an average error of +1.22 feet in predicted water table elevations west of the low permeability lens, and an average error of +0.14 feet elsewhere throughout the model. The model error west of the low permeability lens could be reduced by further increasing the local hydraulic conductivity, but this result has little effect on model outcomes.

Constant head
High bedrock
Predicted water table
Inactive
Low K (silt lens)
Measured water level (model error)
AS&G - Palmer Pit
Figure 4-1. Measured vs. Predicted Water Table on June 12, 2004
Bradley Hydrologic Consultants
April 2010


Constant head
High bedrock
Predicted water table
Inactive
Low K (silt lens)
Measured water level (model error)
ASG - Palmer Pit
Figure 4-2. Measured vs. Predicted Water Table on June 27, 2004
Bradley Hydrologic Consultants
April 2010


Constant head
High bedrock
Predicted water table
Inactive
Low K (silt lens)
Predicted water level (model error)
AS&G - Palmer Pit
Figure 4-3. Measured vs. Predicted Water Table on July 8, 2010
Bradley Hydrologic Consultants
August 2010

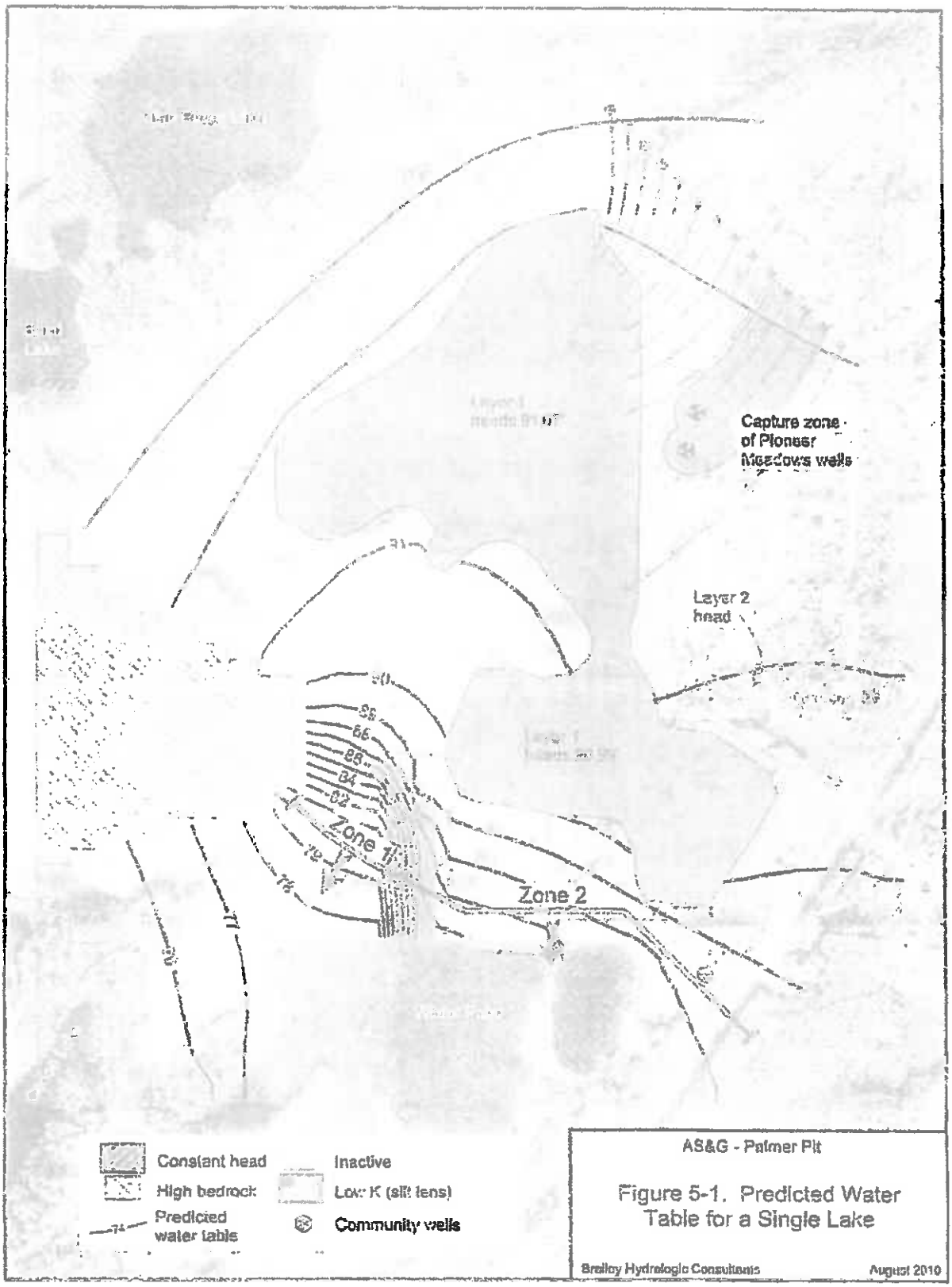
5.0 PREDICTIVE MODELING RESULTS

Predictive modeling runs were performed using the July 8, 2010 water table configuration, reflecting the current dredge pond geometry south of AS&G's property. The model runs were performed assuming steady-state conditions, which does not account for seasonal water table fluctuations or variations in pumping and recharge rates. Nevertheless, the steady-state runs illustrate the general groundwater flow changes that can be expected after dredging of the lake.

The effect of the lake was simulated by increasing the hydraulic conductivity of Layer 1 until all of the lake cells showed the same head value. In the lake's original configuration, convergent solutions were obtained using Layer 1 hydraulic conductivities up to 10,000,000 ft/day, resulting in lake head values that agreed to within 0.01 feet. However, subsequent dredging plans involved a 20 percent expansion of the south half of the lake. In this configuration, convergent solutions could only be obtained for Layer 1 hydraulic conductivities up to 5,000,000 ft/day. This configuration results in a 0.08-foot head difference between the north and south halves of the lake (Figure 5-1). In reality, there would be no difference in water surface elevations between the two ends of the lake. The 0.08-foot head difference reflects the Layer 1 hydraulic conductivity needed to achieve a convergent solution (5,000,000 ft/day), which provides more resistance to flow than an open channel. Although slightly inaccurate from a surface water standpoint, this difference does not affect the accuracy of modeled groundwater elevations and flow quantities. Rather, the modeling approach provides an unbiased estimate of the resulting lake elevation.

The modeled water table contours indicate that groundwater would enter the north half of the lake and exit via the south half (Figure 5-1). Comparison of modeled groundwater levels indicates that the lake would reduce the water table elevation at the Pioneer Meadows wells by about 0.5 feet. Because these wells are both 100 feet deep and have static water levels ranging from 27 to 30 feet (ADNR 2010), the lake would not affect their well yields. Likewise, because flow is toward the north half of the lake (Figure 5-1), the lake would not affect their water quality. Although the Crimson View well is too close to the model boundary for accurate simulation, its location suggests that there would be no change in well yield or water quality.

The closest domestic well downgradient of the proposed lake is the Church well, located approximately 450 feet from the lake's southeast corner (Figure 5-1). The presence of domestic wells between Canoe and Irene Lakes suggests that the aquifer provides


Capture zone of Pioneer Meadows wells
Layer 2 head
Zone 1
Zone 2
Constant head
High bedrock
Predicted water table
Inactive
Low K (silt lens)
Community wells
AS&G - Palmer Pit
Figure 5-1. Predicted Water Table for a Single Lake
Bailey Hydrologic Consultants
August 2010

adequate filtration over horizontal distances much smaller than 450 feet. As a result, no water quality impacts are expected at the Church well.

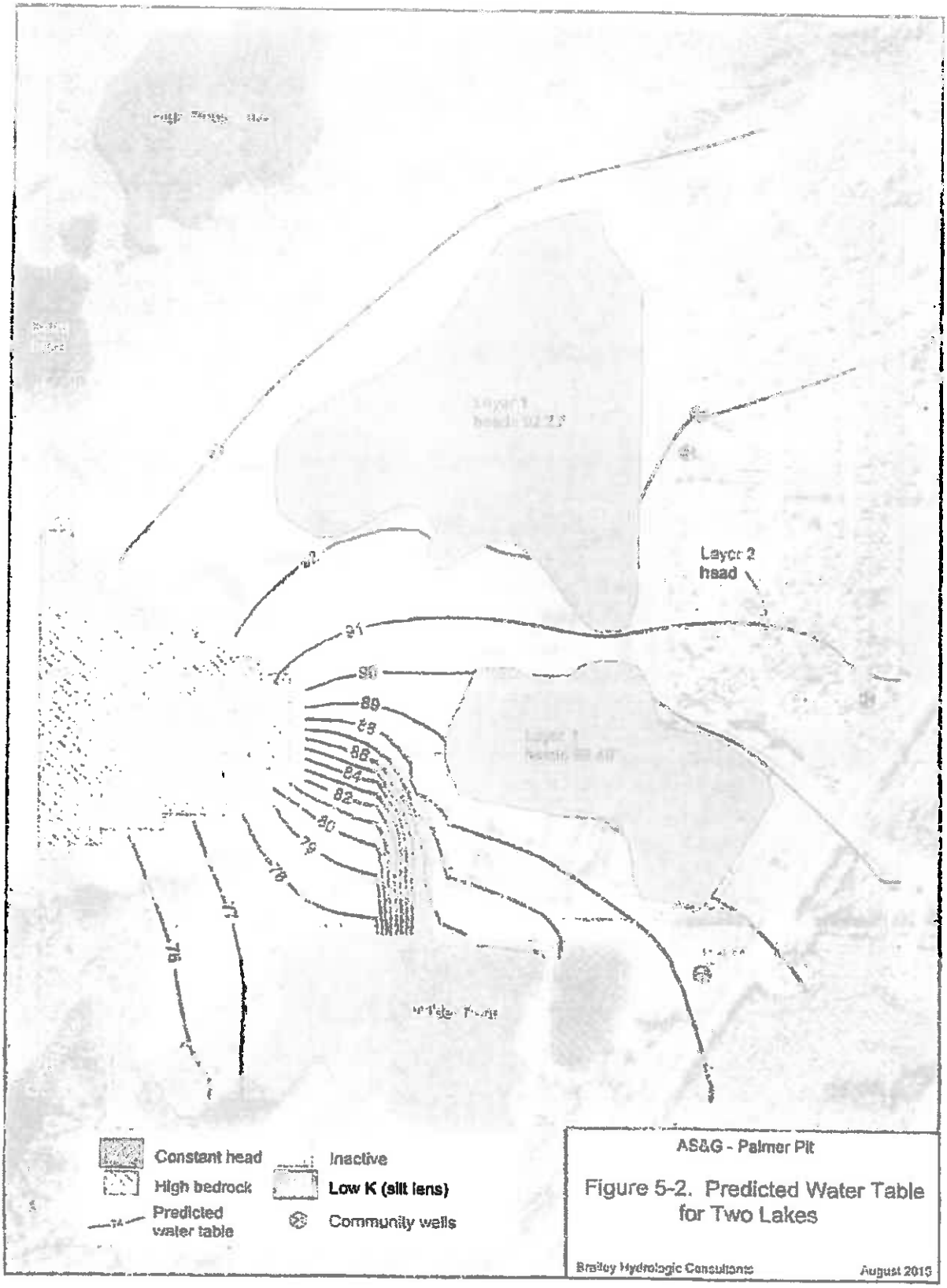
The rate of groundwater flow through the lake was calculated using MODFLOW's Zone Budget module (Harbaugh 1990). Groundwater flow was calculated through the lake cells and through a cross section downgradient of the lake (Figure 5-1). The downgradient cross section was divided into two segments, one discharging into Wilder Pond and another discharging towards Canoe and Irene Lakes. The results shown on Table 5-1 indicate that the lake cells would transmit about 11 million gallons per day (mgd) after dredging, as compared with about 3 mgd under current conditions. Flow through the downgradient cross section would increase from 6.8 to 11 mgd, with most of the discharge entering Wilder Pond.

Table 5-1. Zone Budget Results

Dredging Option	Flow through Lake Cells (mgd[1])	Flow through Downgradient Cross Section, mgd[1]				
		West Segment	East Segment	Total	Increase Over Baseline	Percent Increase
Baseline conditions	3.0	1.6	5.2	6.8		
One Lake	10.7	1.7	9.5	11.2	4.4	65
Two Lakes	9.7	1.6	6.6	8.3	1.5	22
North Lake Only	6.2	1.6	5.6	7.2	0.5	7.0

1 mgd = million gallons per day

Although the model boundary requires a constant water level in Wilder Pond, pump test results (Appendix A) indicate that the increased flow would raise the pond level. By maintaining a lower pond elevation, the model boundary overestimates pond inflow. Nevertheless, it appears that a single lake on AS&G's property could cause a significant increase in the elevation of Wilder Pond. To reduce the inflow into Wilder Pond, a dike could be constructed between the north and south halves of the lake (Figure 5-2). Using an hydraulic conductivity of 10 feet/day, a 200-foot dike would reduce the inflow into Wilder Pond to about 1.5 mgd. Comparison with the June 2004 pump test results indicates that the additional inflow would raise the Wilder Pond level by about 1.5 feet. If dredging was limited to the north lake only, the additional inflow into Wilder Pond would be about 0.5 mgd, resulting in a pond level increase of about 0.5 feet.


Layer 2
head
91
90
89
88
86
84
82
80
78
76
Constant head
High bedrock
Predicted water table
Inactive
Low K (silt lens)
Community wells
AS&G - Palmer Pit
Figure 5-2. Predicted Water Table for Two Lakes
Bradley Hydrologic Consultants
August 2015

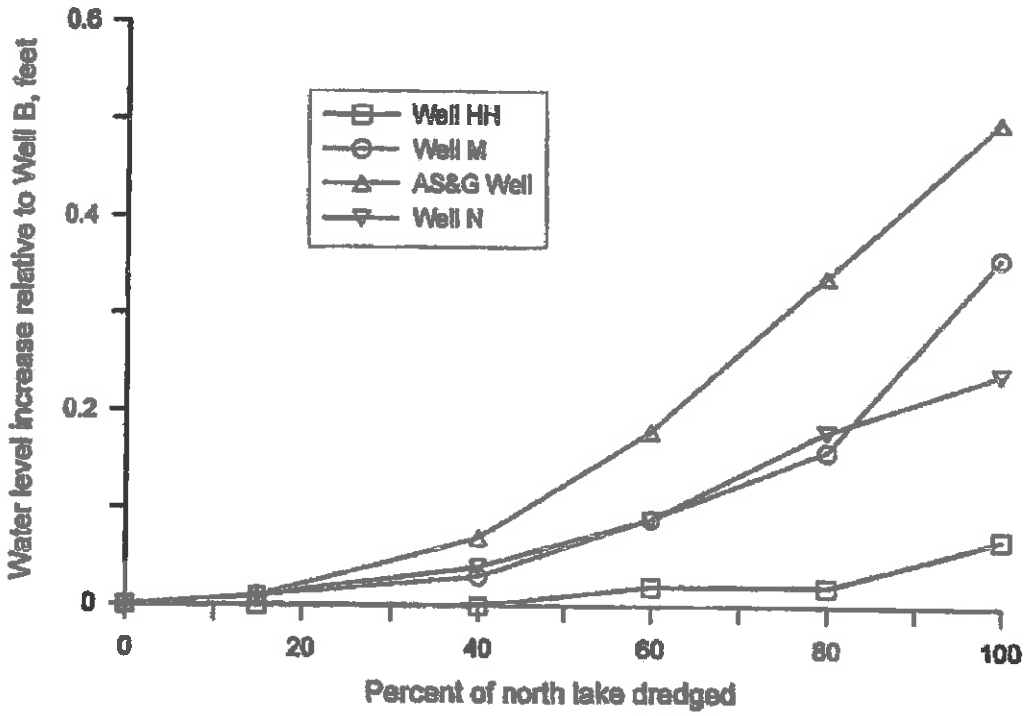
La Sage (1992) noted that the Palmer city wells are permitted for withdrawal of 2 mgd, and that irrigation use probably exceeds 6 mgd. Based on analysis of water level records, La Sage concluded that these withdrawals are not stressing area aquifers, and that the potential water supply significantly exceeds actual use. With a dike between the north and south lakes, the increased flow due to dredging (1.5 mgd) represents less than one-fourth of 1992 irrigation use. Considering that the water is recharged into the aquifer, the dredging activity should have little effect on the overall groundwater flow system.

For comparison, the increased flow resulting from two lakes (1.5 mgd) represents about one-fifth of the mean annual flow of Wasilla Creek at Fishook Road, located approximately 10 miles upstream from the Palmer Hay Flats.

The foregoing analyses assume that flow into and out of the lake will not be affected by fine-grained sediments accumulating on the lake bottom. In reality, most natural and man-made lakes develop a sediment lining that reduces groundwater exchange. For example, the water surface of Canoe Lake is perched approximately 5 feet above the water table, indicating that fine-grained sediments limit outflow into the aquifer. The dredging process will suspend fine-grained sediment in the water column, which will settle onto the lake bottom as dredging proceeds. The rate and thickness of sediment accumulation is unknown, but it will likely reduce both inflow and outflow.

AS&G plans to dredge the lakes in a north-to-south direction over a 15- to 20-year period. During this time, water levels will be monitored regularly and compared against the rate of increase predicted by the model (Figure 5-3). The resulting data will be used to assess the effect of sediment accumulation and to monitor for unforeseen adverse effects. Mitigating steps will be implemented if the data indicate any potential future problems.

Figure 5-3. Modeled Rate of Water Level Increase during Dreding of the North Lake



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APPENDIX A – GROUNDWATER PUMPING TESTS

Although the modeled water table geometry is primarily controlled by the configuration of the surrounding constant head boundary, the rate of groundwater flow through the model is dependent on the aquifer's hydraulic conductivity. To determine representative hydraulic conductivity values, groundwater pumping tests were performed on Wilder Pond and two wells located on AS&G's property. These tests are described in the following sections.

A.1 June 2004 Pumping Test on Wilder Pond

In preparation for subsequent dredging activities, Wilder Construction performed a pumping test on Wilder's central pond in June 2004. The pond was reportedly up to 200 feet deep, and was separated from a previously mined area to the west by a silt dike (Figure A-1). The silt dike was sufficiently impermeable to prevent seepage into the mined area, which was depressed up to 8 feet below the pond surface elevation. To evaluate the effect of breaching the dike (Figure 2-4), water was pumped from the central pond to another location on Wilder's property. According to flow measurements performed by Wilder, the pond was pumped at a constant rate of 3,300 gpm for 7 days. The decline in water levels due to pumping was measured using pressure transducers installed in Wilder Pond and Well AA (Figure A-2).

Figure A-1. Wilder Pond Extents, October 2003

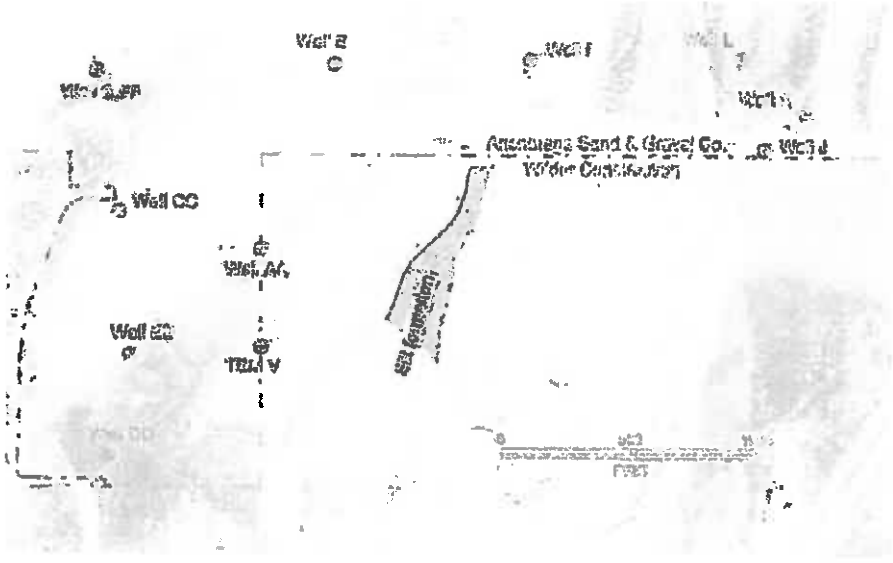
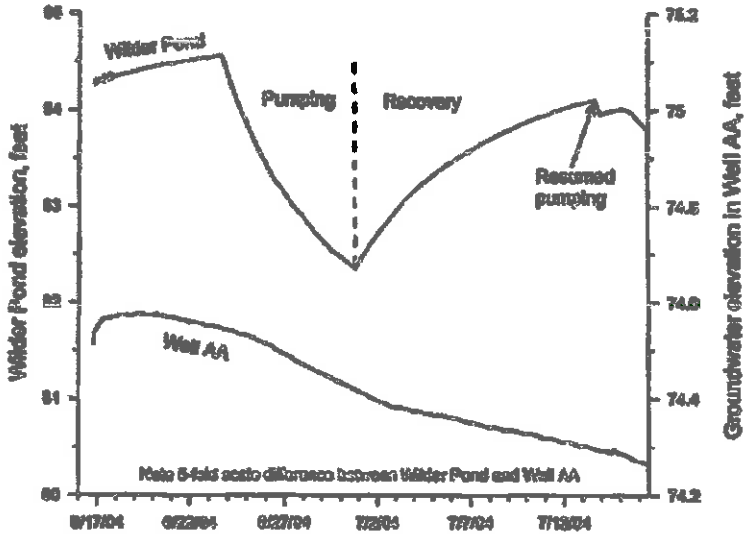
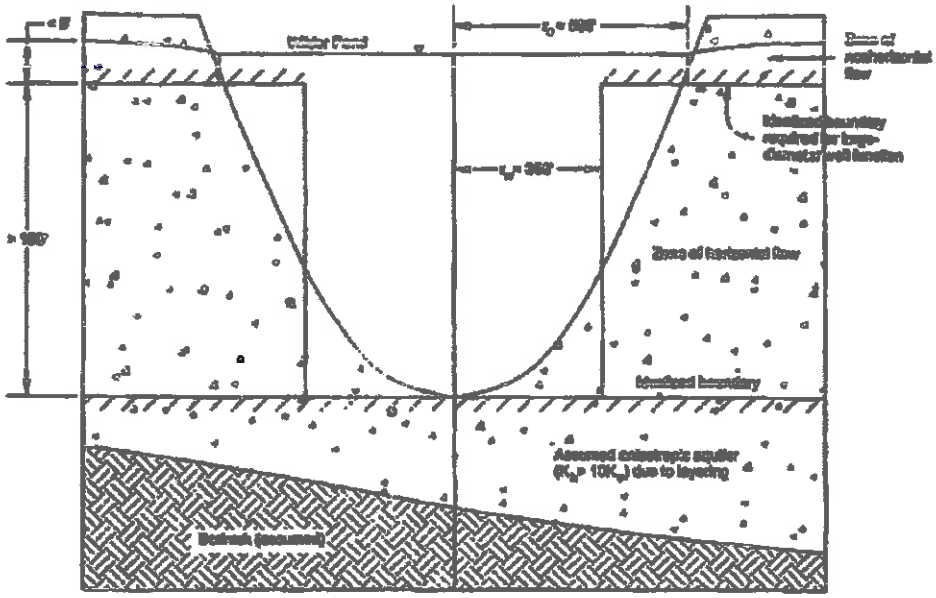


Figure A-2. Water Levels in Wilder Pond and Well AA



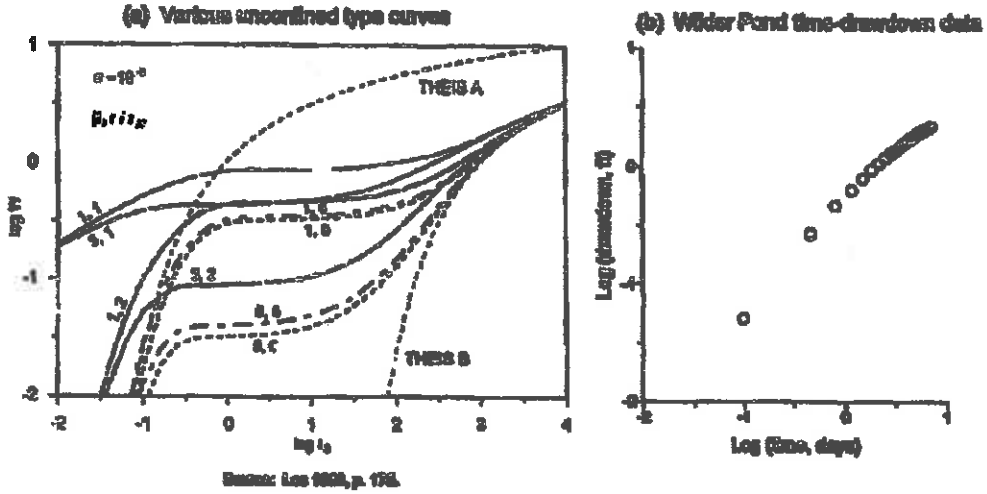
The pumping test data were analyzed using type curves for flow to a large diameter well developed by Mishra and Chachadi (1985). This approach requires the assumed geometry shown on Figure A-3, where the pond is considered to be cylindrical. The sloping sidewalls of the pond are simulated using the parameter α, defined as $\phi (r_w/r_c)^2$ where ϕ is porosity and r_w and r_c are the radial dimensions shown on Figure A-3. The

Figure A-3. Idealized Geometry for $\alpha = 0.1$



aquifer is assumed to be confined, with no vertical component of flow. Although the aquifer is actually unconfined, the time-drawdown curve does not show the delayed gravity response characteristic of unconfined aquifers (Figure A-4). This suggests that the effect of gravity drainage is negligible relative to horizontal flow, and water is released from the aquifer predominantly via confined aquifer mechanics. Evidence for this type of response in unconfined aquifers is discussed further by Neuman (1974).

Figure A-4. Time-Drawdown Data vs. Unconfined Type Curves



The pumping test data were evaluated by superimposing a log-log plot of drawdown vs. the reciprocal of time on type curves provided by Mishra and Chachadi (Figures A-5 through A-7). Type curves are provided for different values of α, defined as:

$$\alpha = \phi \left(\frac{r_w}{r_c} \right)^2 \qquad (1)$$

where ϕ is porosity and r_w and r_c are the radial dimensions shown on Figure 3. Selecting ψ as the x-axis value corresponding to the duration of pumping (t_p), transmissivity was calculated as:

$$T = \frac{\phi r_w^2}{4 t_p \psi} \qquad (2)$$

For each value of α, a different value of r_w was calculated by rearranging Equation (1). Results are summarized on Table A-1.

Figure A-5. Curve Fit of Pumping Test Data for $\alpha = 0.01$

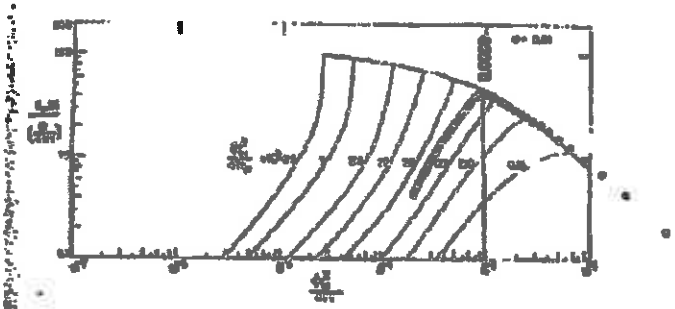


Fig. 2(b). Family of type curves: $S_{yy}(t)/(Q/4\pi T)$ versus $r_w^2/4Tt$ for $\alpha = 10^{-2}$.

Figure A-6. Curve Fit of Pumping Test Data for $\alpha = 0.001$

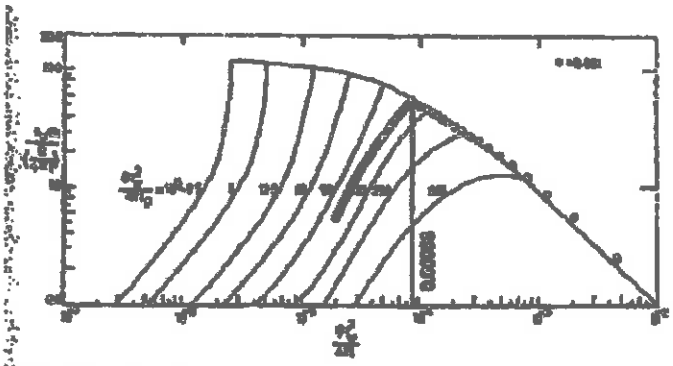


Fig. 2(c). Family of type curves: $S_{yy}(t)/(Q/4\pi T)$ versus $r_w^2/4Tt$ for $\alpha = 10^{-3}$.

Figure A-7. Curve Fit of Pumping Test Data for $\alpha = 0.0001$

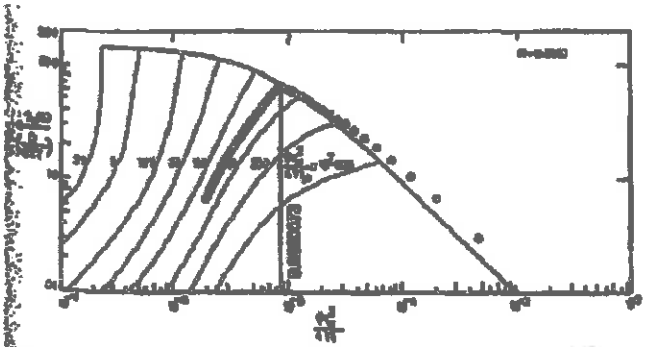


Fig. 2(d). Family of type curves: $S_{yy}(t)/(Q/4\pi T)$ versus $r_w^2/4Tt$ for $\alpha = 10^{-4}$.

Table A-1. Wilder Pond Transmissivity Calculations

Parameter	Source	Curve Fit #1 (Figure A-5)	Curve Fit #2 (Figure A-6)	Curve Fit #3 (Figure A-7)
Porosity, ϕ	Estimated	0.25	0.25	0.25
Pond radius, r_c	[Area/π] $^{1/2}$	566 feet	566 feet	566 feet
Deep radius, r_w	from (1)	113 feet	35.8 feet	11.3 feet
Duration of pumping, t_p	Transducer data	7.1 days	7.1 days	7.1 days
x-axis value at t_p, u	curve fit	0.0009	0.00008	0.0000073
Transmissivity, ft²/day	from (2)	125,335	141,002	154,522

Comparison of Figures A-5 though A-7 suggests that the best fit of pumping and recovery test data was obtained for α = 0.001 (Figure A-6), indicating an aquifer transmissivity of about 141,000 ft²/day. Assuming an aquifer thickness of 200 feet, this result corresponds to an hydraulic conductivity of 700 ft/day. However, this result assumes that flow is fully radial throughout the surrounding aquifer. In contrast, the silt lens west of Wilder Pond constitutes an hydraulic barrier that was sufficiently impermeable to prevent seepage into the adjacent depression (Figure A-2). This configuration is similar to a well located near an impermeable boundary, which is evaluated in detail by Bear (1979). For the case of a well located immediately adjacent to an impermeable boundary, the measured drawdown should be twice the drawdown in an equivalent unbounded aquifer. Because drawdown is inversely related to hydraulic conductivity, reducing drawdown by half (while maintaining a constant flow rate) is mathematically equivalent to doubling hydraulic conductivity. Thus, the actual hydraulic conductivity should be twice the value obtained using the foregoing radial flow model, or about 1,400 feet per day. If the silt lens is somewhat leaky, then the actual hydraulic conductivity may be somewhat less.

A.2 May 2010 Pumping Test on the AS&G Well

To confirm that the hydraulic conductivity on AS&G's property is comparable to that measured at Wilder Pond, a pumping test was conducted on the "AS&G Well" on May 14, 2010. Along with Wells M and N, the AS&G Well is one of three steel-cased wells in the center of the AS&G property (Figure 2-5). A well log is not available for this well,

but it is 80 feet deep, with a static water level about 30 feet below ground surface. Local knowledge indicates that well has not been used since the mid-1980's, and that it may have been a high-yield well used for gravel washing operations.

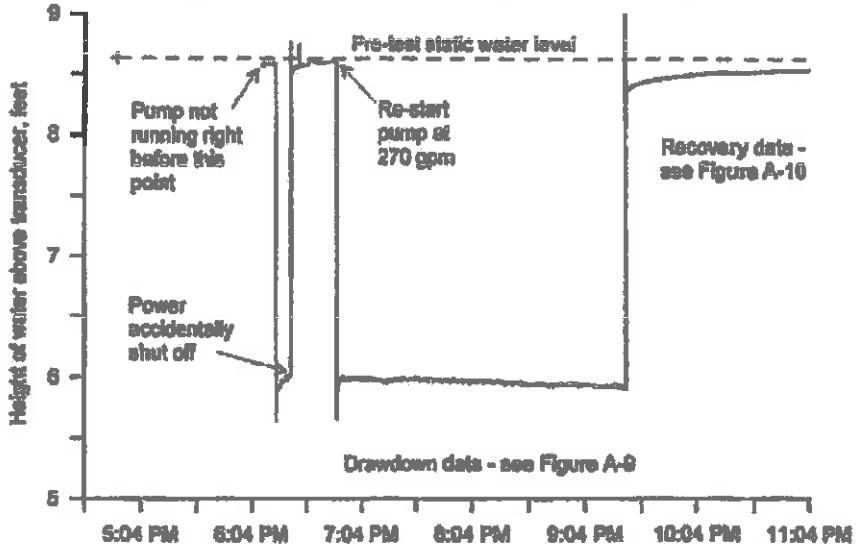
The AS&G Well is 8 inches in diameter, but has no pump or power supply. It is not known if the well is screened, perforated, or open-ended. This information is important for analysis of measured drawdowns in the pumping well, which can be exaggerated if flow is restricted as it enters the well. For this reason, additional observation wells were considered for measurement of drawdown outside the pumping well. However, the small drawdowns reported for the adjacent Pioneer Meadows wells (AWPS 2010) raised concern that drawdown might not be measurable outside the pumping well. As a result, a single-well pumping test was planned prior to installation of any observation wells.

During single-well pump tests, drawdowns in the pumping well can be affected by friction losses and by pump turbulence. However, the rise in water level after the cessation of pumping (termed recovery) can also be used to determine hydraulic conductivity. Although early-time recovery data can be affected by friction losses, the pumped well rapidly equilibrates with water levels outside the well casing, so that intermediate- and late-time recovery data reflect water levels in the surrounding aquifer. The longer the well is pumped (and the higher the pumping rate), the larger the cone of depression becomes outside the pumping well. The use of intermediate- and late-time recovery data minimizes the effect of friction losses, and provides a measure of hydraulic conductivity at a larger radial distance from the well.

Based on high nearby well yields, Anchorage Well and Pump Service installed a 30-horsepower turbine pump on May 14, 2010. The pump was powered by a 160 kilowatt (kW) generator providing 3-phase, 460-volt power. The pump was connected with four inch-diameter pipe to a totalizing flowmeter and a hose discharging downslope from the pumped well. During the test, the discharge flowed over the ground surface to the pit floor approximately 400 feet northwest.

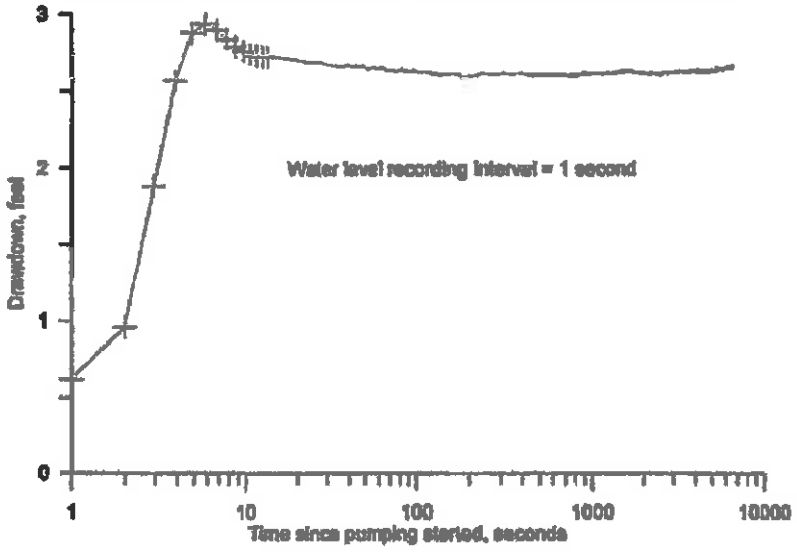
The water level in the pumped well was measured with a 5-psi pressure transducer suspended about 8 feet below the static water level. Figure A-8 shows a summary of water levels measured during pumping and the first 2 hours of recovery. The pump was first energized at 5:10 pm, but it produced only about one-tenth of its rated discharge (~300 gpm). The pump was turned off and on several times between 5:10 and 6:10 pm, during which it was determined that the pump impellers may have been plugged. Upon re-starting the pump at 6:18 pm, the pump produced a steady flow rate of 270 gpm, but the power was accidentally disconnected at 6:26 pm. The well was allowed to recover, and the pump was re-started for a final time at 6:51 pm.

Figure A-8. AS&G Well Pump Test Summary



Water level data during the drawdown cycle of the AS&G Well pumping test are shown on Figure A-9. A semilogarithmic plot is often used for drawdown analysis, during which water levels at later times should approach a straight line with a positive slope (i.e., drawdown should increase with time). In contrast, water levels during pumping

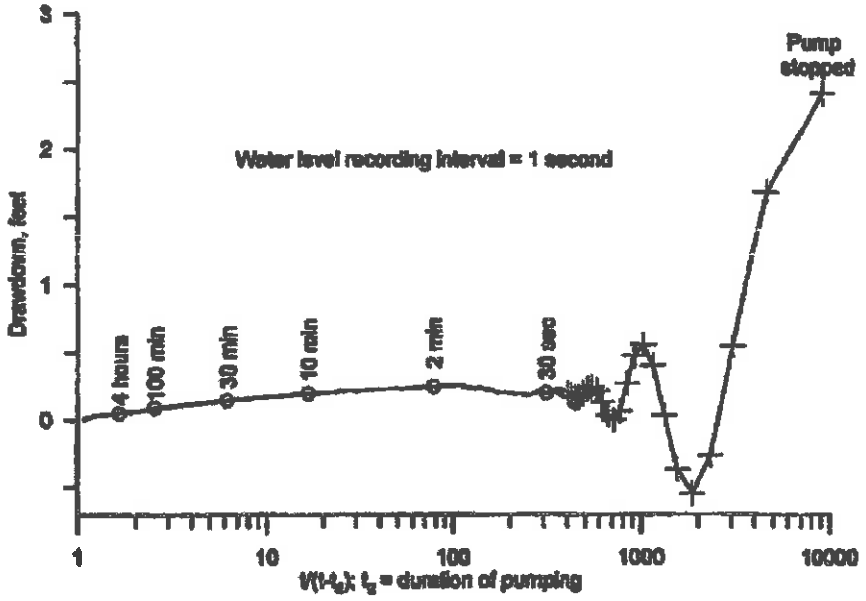
Figure A-9. Drawdown Data – AS&G Well Pumping Test



showed decreasing drawdowns after the first 6 seconds of pumping. One explanation for this behavior is that the pump used during the test may be more powerful than previous pump(s) installed in this well. This would tend to remove fine sediment from the well screen and surrounding formation, thereby increasing the hydraulic conductivity in the vicinity of the well. Because of the decrease in drawdown over time, the drawdown data were not used for to determine hydraulic conductivity.

Water level data during the recovery period following the pump test are shown on Figure A-10. Recovery data are analyzed using a semilogarithmic plot of drawdown versus the quantity $t/(t-t_2)$, where t is the time since pumping started and t_2 is the duration of pumping. The recovery data show a series of oscillations after the pump was shut off, followed by a gradual water level recovery. Oscillating recoveries are commonly observed during slug tests in high-permeability aquifers (van der Kamp 1976), and are attributed to inertial forces within the well casing. In contrast, the aquifer response away from the well casing is best respresented by intermediate- and late-time recovery data, after the oscillations have ceased.

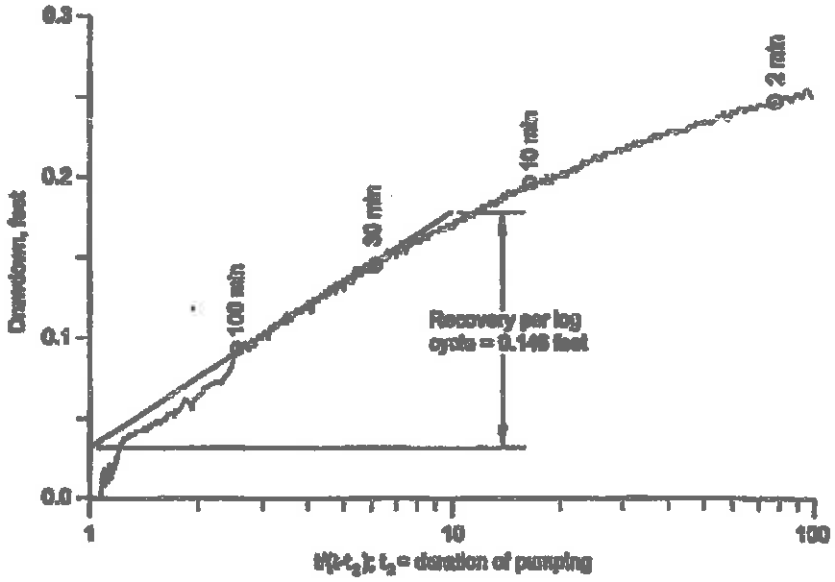
Figure A-10. Summary of AS&G Well Recovery Data



When plotted against $t/(t-t_2)$ on semilogarithmic axes, the recovery data should approximate a straight line at intermediate and late times. As shown on Figure A-11, the largest rate of recovery occurred between 90 and 100 minutes after pumping stopped, indicating an hydraulic conductivity of about 1,400 feet per day. The

somewhat erratic data collected after 100 minutes appears to have been affected by retrieval and replacement of the transducer (at 11:05 pm), and by rising water levels over the course of the next day (up to 0.03 feet). These effects can be minimized by limiting the analysis to the period between 30 and 100 minutes after the cessation of pumping.

Figure A-11. Curve Fit of AS&G Well Recovery Data



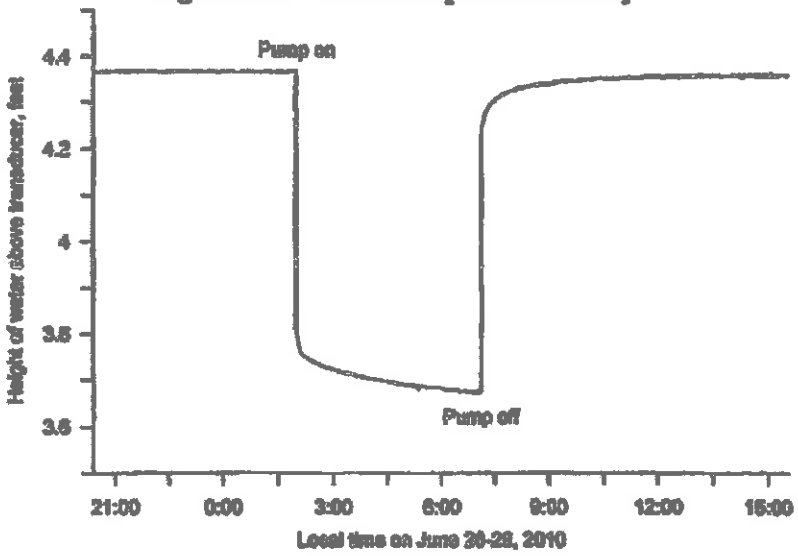
A3 June 2010 Pumping Test on Well I

Although the water table is relatively flat on the north half of AS&G's property (Figure 2-5), the slope of the water table increases to the southwest. To investigate the hydraulic conductivity in this area, a pumping test was performed on Well I. This well is equipped with a pump, and provides domestic water for the break shack adjacent to AS&G's equipment maintenance shop. A well log is not available for Well I, but it is 57 feet deep, with a static water level about 34 feet below ground surface. The well is 6 inches in diameter, and probably consists of open-ended steel casing. Based on Figure 3-1, the depth to bedrock at Well I is about 105 feet.

The pump discharge from Well I passes through about 40 feet of buried ¾-inch copper pipe before entering a pressure tank in the break shack. To maximize the flow rate, temporary piping was installed to bypass the pressure tank, discharging to the ground surface about 70 feet northeast of the well. From there the discharge flowed northeast into a vegetated area.

To check for natural water level fluctuations, water levels in Well I were recorded for about 8 hours before the test. The well was pumped at 7.2 gpm for 5 hours, and the recovery of water levels was recorded for 9 hours after the test. Unlike the AS&G Well test, drawdown increased throughout the pumping period (Figure A-12), but the resulting hydraulic conductivity values were lower than those obtained during the recovery period. Because hydraulic conductivity values obtained during pumping can be biased by friction losses, the following analysis focuses on data obtained during the recovery period.

Figure A-12. Well I Pump Test Summary



Water level recovery data following the Well I pumping test are shown on Figure A-13. This plot has the same semilogarithmic axes as those discussed for Figure A-10. Due to the lower permeability at this location, initial recovery data does not exhibit the oscillations typical of high-permeability formations (van der Kamp 1976). Rather, the drawdown data shows a rapid decline after the pump was turned off, followed by a linear water level recovery. The slope of the recovery plot between 30 minutes and 8 hours after the cessation of pumping yields an hydraulic conductivity of 53 feet per day, which is significantly lower than the values measured at Wilder Pond and the AS&G Well. This is consistent with the low yield of Well I (7.2 gpm) as compared with the AS&G Well (270 gpm) and Wilder Pond (3,300 gpm).

Figure A-15. Summary of Well I Recovery Data

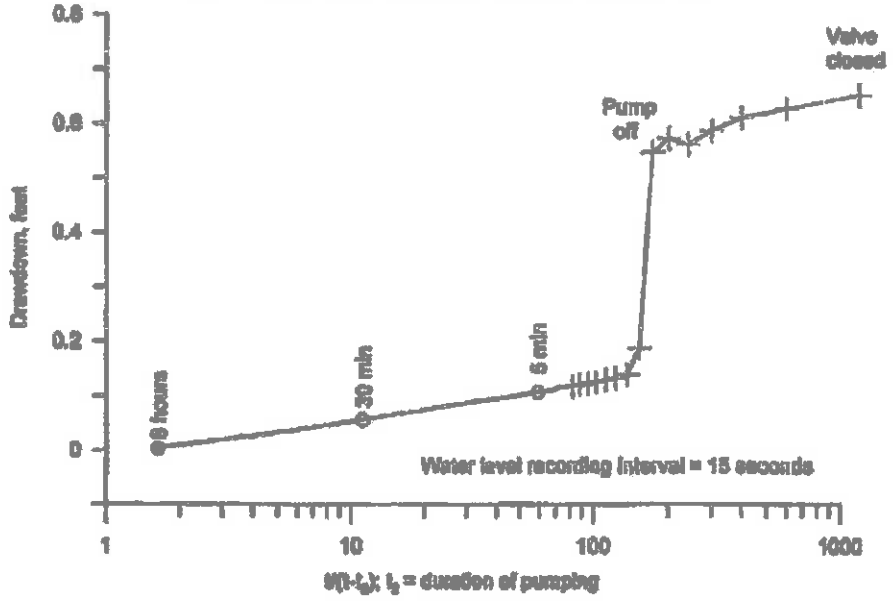
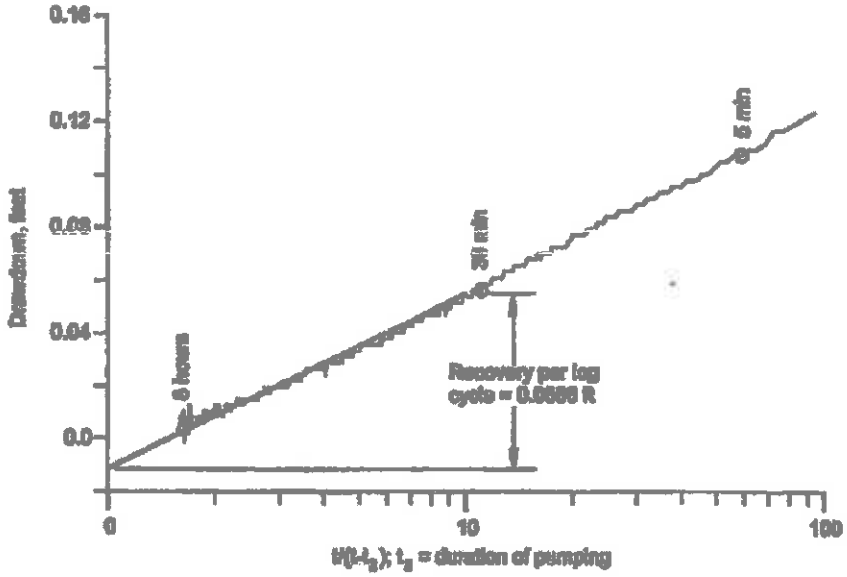


Figure A-16. Curve Fit of Well I Recovery Data



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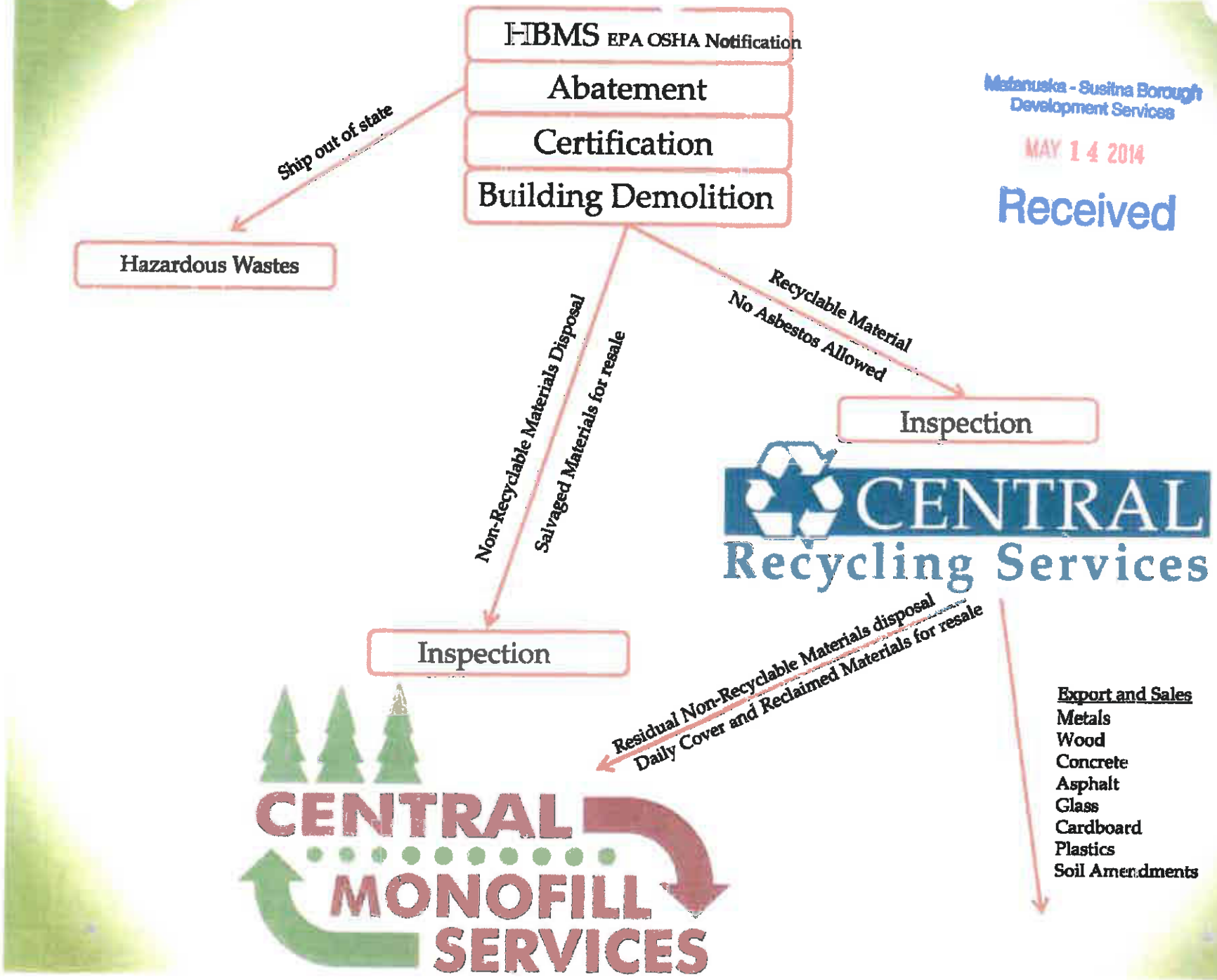

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ATTACHMENT 22

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CHARACTERIZATION OF BUILDING-RELATED CONSTRUCTION AND DEMOLITION DEBRIS IN THE UNITED STATES

Prepared for

The U.S. Environmental Protection Agency
Municipal and Industrial Solid Waste Division
Office of Solid Waste
Report No. EPA530-R-98-010

by
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Prairie Village, KS

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A large number of people, ranging from local governmental agencies to large demolition contractors, provided waste assessment data for this project. These people are identified in the reference sections at the end of the chapters of this report.

We appreciate the efforts of the peer reviewers, who reviewed the report and provided valuable comments and suggestions. The peer reviewers for the report are

William Turley
C&D Debris Recycling

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USEPA Region V

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TABLE OF CONTENTS

Chapter — Page

EXECUTIVE SUMMARY ES-1

1 INTRODUCTION AND METHODOLOGY 1-1
Background 1-1
Methodology 1-2
Peer Review and Data Sources 1-3
Defining C&D Debris 1-3
State definitions for construction and demolition debris 1-5
Construction and demolition debris in perspective 1-9
Definitions 1-10
Overview of this report 1-11
References 1-12

2 GENERATION OF CONSTRUCTION AND DEMOLITION DEBRIS 2-1
Introduction 2-1
Building-related construction and demolition debris generation 2-1
Construction debris 2-1
Residential 2-1
Nonresidential 2-2
Demolition debris 2-4
Residential 2-4
Nonresidential 2-7
Renovation debris 2-7
Residential 2-8
Nonresidential 2-10
Summary of building-related C&D debris generation 2-10
Construction and demolition debris generated from road, bridge, and other non-building activities 2-12
State Construction and demolition debris generation rates 2-12
Composition of construction and demolition debris 2-13
References 2-19

3 MANAGEMENT OF C&D DEBRIS IN THE UNITED STATES 3-1
Introduction 3-1
Landfilling 3-1
Recovery of C&D debris for recycling 3-3
Deconstruction 3-5
Asphalt and concrete recycling 3-6
Waste wood recycling 3-7
Metals recycling 3-8
Asphalt shingles 3-8
Drywall (Sheetrock, Gypsum) 3-8
Estimated recovery rate 3-8
Summary of C&D debris management practices 3-10
References 3-11

4 ADDITIONAL PERSPECTIVES ON CONSTRUCTION AND DEMOLITION DEBRIS 4-1
Introduction 4-1
MSW collected with C&D debris 4-1

TABLE OF CONTENTS (continued)

Chapter Page

4 C&D debris collected with MSW 4-2
References 4-3

Appendix

A Calculations
B State Definitions for Construction and Demolition Debris
C Typical Construction and Demolition Debris Constituents

Bibliography

LIST OF TABLES

Table Page

1 Representative generation sources of C&D sector materials 1-4
2 Typical components of construction and demolition debris 1-8
3 Estimated generation of residential construction debris 2-3
4 Estimated generation of nonresidential construction debris 2-4
5 Estimated generation of residential demolition debris 2-6
6 Estimated generation of nonresidential demolition debris 2-8
7 Empirical waste assessments for residential renovation debris 2-9
8 Summary of estimated building-related C&D debris generation 2-11
9 State regulatory schemes for C&D landfills 3-4
10 Estimated management of building-related C&D debris in the United States, 1996 3-10

A-1 Residential Construction Debris Worksheet
A-2 Nonresidential Construction Debris Worksheet
A-3 Residential Demolition Worksheet
A-4 Nonresidential Demolition Worksheet
A-5 Residential Renovation Worksheet
A-6 Nonresidential Renovation Worksheet
A-7 Estimated Weight of Concrete Driveways Replaced each Year
A-8 Estimated Weight of Asphalt Roofs Replaced per Year
A-9 Estimated Weight of Wood Roofs Replaced per Year
A-10 Estimated Weight of Heating, Ventilating, and Air Conditioning Equipment Replaced each Year
A-11 Construction Waste from Single Family Residential Construction
A-12 Riverdale Case Study
A-13 Residential C&D Debris Composition
A-14 Nonresidential C&D Debris Composition
A-15 Construction & Demolition Debris Composition
A-16 Composition of Building Construction & Demolition Debris
A-17 Composition of C&D Debris in Des Moines, Iowa
A-18 Average Composition of Waste from 19 Industrial/Commercial Demolition Projects in the Northwest Area
A-19 Number of Active Construction & Demolition (C&D) Landfills in the United States
A-20 Number of Active Wood Processing Facilities that also Accept C&D Waste, by State

C-1 Typical Construction and Demolition Debris Constituents

LIST OF FIGURES

Figure		Page
1	C&D debris in perspective	1-9
2	Average size of new house construction	2-5
3	Generation of construction and demolition debris from buildings	2-11
4	Sample composition of residential new construction debris	2-15
5	Sample composition of residential new construction debris	2-16
6	Sample composition of residential renovation debris	2-16
7	Sample composition of residential demolition debris	2-17
8	Sample composition of multi-family demolition debris	2-17
9	Sample composition of demolition debris	2-18
10	Number of C&D debris landfills in the United States	3-2

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CHARACTERIZATION OF BUILDING-RELATED CONSTRUCTION AND DEMOLITION DEBRIS IN THE UNITED STATES

Executive Summary

INTRODUCTION

The purpose of this report is to characterize the quantity and composition of building-related construction and demolition (C&D) debris generated in the United States, and to summarize the waste management practices for this waste stream. C&D debris is produced when new structures are built and when existing structures are renovated or demolished. Structures include all residential and nonresidential buildings as well as public works projects, such as streets and highways, bridges, piers, and dams. Many state definitions of C&D debris also include trees, stumps, earth, and rock from the clearing of construction sites.

The focus of this report is on building-related wastes, including construction, demolition, and renovation of residential and nonresidential buildings. Road and bridge debris, land clearing debris, etc. are not covered in detail in this report. They are, however, discussed briefly.

METHODOLOGY

The methodology used for this study combines national Census Bureau data on construction industry activities with point source waste assessment data (i.e., waste sampling and weighing at a variety of construction and demolition sites) to estimate the amount of building-related C&D debris produced nationally.

It is important to recognize that this is a first attempt to use this methodology. It is expected that as the trend towards better characterization of C&D sites continues and more communities record their C&D debris quantities and compositions, the national estimates as developed in this report can be tested and modified accordingly. Currently, the limited point source waste assessment data may be a source of considerable uncertainty in the analysis.

Since the method developed here makes use of readily available Census Bureau data on national C&D activity, (e.g., construction and demolition permits and construction value) the methodology should be well suited for periodic updating. Waste assessment results should change very slowly over time because construction materials used and building construction practices remain relatively constant from year to year. Composition of waste from demolished buildings, which have been built over a range of years, should change even more slowly.

DEFINITIONS
(For purposes of this report, following is a working set of definitions)

Construction and Demolition (C&D) Debris is waste material that is produced in the process of construction, renovation, or demolition of structures. Structures include buildings of all types (both residential and nonresidential) as well as roads and bridges. Components of C&D debris typically include concrete, asphalt, wood, metals, gypsum wallboard, and roofing. Land clearing debris, such as stumps, rocks, and dirt, are also included in some state definitions of C&D debris.

Generation of C&D debris, as used in this report, refers to the weight of materials and products as they enter the waste management system from the construction, renovation, or demolition of structures, and before materials recovery or combustion takes place. Source reduction activities (e.g., on-site usage of waste wood mulch or the on-site use of drywall as a soil amendment) take place *ahead* of generation, i.e., they reduce the amount of waste generated.

Recovery of materials, as estimated in this report, includes the removal of products or materials from the waste stream for the purpose of **recycling** the materials in the manufacture of new products.

Source reduction activities reduce the amount or toxicity of wastes before they enter the waste management system. **Reuse** is a source reduction activity involving the recovery or reapplication of a product or material in a manner that retains its original form and identity. Reuse of products such as light fixtures, doors, or used brick is considered source reduction, not recycling.

Discards include the C&D debris remaining after recovery for recycling (including composting). These discards would presumably be combusted or landfilled, although some debris is littered, stored or disposed on-site, or burned on-site.

REPORT HIGHLIGHTS

Building-Related C&D Debris Generation Estimates

- An estimated 136 million tons of building-related C&D debris were generated in 1996 (Table ES-1).
- The estimated per capita generation rate in 1996 was 2.8 pounds per person per day.
- Forty-three percent of the waste (58 million tons per year) is generated from residential sources and 57 percent (78 million tons per year) is from nonresidential sources.
- Building demolitions account for 48 percent of the waste stream, or 65 million tons per year; renovations account for 44 percent, or 60 million tons per year; and 8 percent, or 11 million tons per year, is generated at construction sites.

Table ES-1

SUMMARY OF ESTIMATED BUILDING-RELATED C&D DEBRIS GENERATION, 1996*
(Roadway, Bridge, and Land Clearing Debris not included)
(Thousand Tons)

Source	Residential		Nonresidential		Totals	
	Thou tons	Percent	Thou tons	Percent	Thou tons	Percent
Construction	6,560	11	4,270	6	10,830	8
Renovation	31,900	55	28,000	36	59,900	44
Demolition	19,700	34	45,100	58	64,800	48
Totals	58,160	100	77,370	100	135,530	100
Percent	43		57		100	

* C&D debris managed on-site should, in theory, be deducted from generation. Quantities managed on-site are unknown.

Source: Franklin Associates

Composition of C&D Debris from Buildings

The composition of C&D debris is highly variable and depends critically on the type of activity where sampling is done. Whereas wood is typically the largest component of waste material generated at construction and renovation sites, concrete is commonly the largest component of building demolition debris.

Road, Bridge, and Land Clearing Debris

Road, bridge, and land clearing wastes represent a major portion of total C&D debris, and some of the materials produced are managed by the same processors and landfills that manage building-related wastes. A methodology was not developed in the scope of this project to estimate these wastes. Point source waste assessment data were not available for these projects.

Management Practices for C&D Debris

- The most common management practice for C&D debris is landfilling, including C&D landfills, MSW landfills, and unpermitted sites. An estimated 35 to 45 percent was discarded in C&D landfills in 1996. An estimated 30 to 40 percent of C&D debris is managed on-site, at MSW landfills, or at unpermitted landfills.

- A 1994 survey done for the EPA identified about 1,900 active C&D landfills in the United States.

- An estimated 20 - 30 percent of building-related C&D debris was recovered for processing and recycling in 1996. The materials most frequently recovered and recycled are concrete, asphalt, metals, and wood.

- There is an trend toward increasing recovery of C&D debris in the United States. ***C&D Recycling*** estimates there are about 3,500 operating facilities that process C&D debris materials in the United States.

- Recent deconstruction demonstration projects show that high diversion rates may be achieved. Deconstruction minimizes contamination of demolition debris; however, it is labor intensive, and generally requires more time than traditional demolition.

- Metals have the highest recycling rates among the materials recovered from C&D sites. The Steel Recycling Institute estimates that the recycling rate for C&D steel is about 85 percent (18.2 million tons out of 21.4 million tons generated). These numbers include not only scrap steel from buildings but also from roads and bridges.

- We estimate there are about 500 wood processing facilities in the United States that derive wood from C&D debris. The leading states for these wood processing plants are North Carolina, Oregon, and California.

Peer Review and Data Sources

This first edition report underwent extensive internal and external peer review of methodology and data sources. Major contributors of data sources and peer review include the National Association of Home Builders Research Center; Gershman, Brickner & Bratton, Inc.; EPA Region 5, and the U.S. Department of Commerce, Bureau of the Census.

As part of an ongoing effort to better characterize non-hazardous wastes subject to regulation under Subtitle D of RCRA, USEPA encourages public comment on this report, including additional methodological considerations and data sources.

Chapter 1

INTRODUCTION AND METHODOLOGY

BACKGROUND

The purpose of this report is to characterize building-related construction and demolition (C&D) debris generated in the United States. Construction and demolition debris is produced when new structures are built and when existing structures are renovated or demolished. Structures include all residential and nonresidential buildings as well as public works projects, such as streets and highways, bridges, piers, and dams. Many state definitions of C&D debris also include trees, stumps, earth, and rock from the clearing of construction sites.

National estimates of construction and demolition debris generation have been limited in the past to extrapolation of local data, using population or construction employment to make the extrapolations. Values for generation rates reported in various locations across the country have ranged from 0.12 to 3.52 pounds per capita per day (Wilson 1977), a range too large for meaningful extrapolations.

At least three studies in the past 30 years have made national generation rate estimates. The first was a 1969 Public Health Service study, which reported a national average of 0.66 pounds per person per day (ppd) (PHS 1969). The same study reported an urban average generation rate of 0.72 ppd, a number which was also reported in the 1986 EPA municipal solid waste characterization report as an estimate for the national average (EPA 1986). Based on the U.S. population in 1986 (240 million), the EPA report estimated 31.5 million tons per year of C&D debris generation.

In a draft report prepared for the National Renewable Energy Laboratory in 1994 (Franklin 1994), Franklin Associates identified 22 cities, counties, or states for which C&D debris data were reported. There was a weak but positive correlation between C&D debris generation and per capita construction employment in each area. The national extrapolated estimate for C&D debris generation using that methodology was 64.4 million tons per year.

The previous C&D debris estimates for the United States now appear to be low, based on the results of this study. As discussed in the sections that follow, we estimate that C&D debris generation for building-related wastes only (i.e., excluding wastes from roadways, bridges, land clearing, and excavation), was about 136 million tons in 1996.

METHODOLOGY

The initial objective of this study was to develop a methodology somewhat parallel to EPA's material flows methodology used for MSW characterization that would use readily available national data, which would be suitable for periodic updates. The material flows methodology starts with national production data by material and product, adjusts for imports, exports, average lifetimes, and consumption, and then calculates national generation by summing up all the materials and products that make up MSW. Because of the long and extremely variable lifetimes of buildings, roads, and other structures, the material flows method was determined to be infeasible for C&D debris.

Another approach—sampling and weighing at landfills—is often used for determining local waste management system needs and would be the preferred method for this study if sufficient time and funds were available. However, even on the local level there may be significant barriers to this method. Sampling from a mixed waste stream with statistical confidence is very difficult, time consuming, and costly. Locating all the places where C&D debris is placed is not a trivial matter in some localities, and obtaining permission to sample at private landfills can be a major challenge. For a national study of this type, this method would be both cost and time prohibitive.

The methodology used for this study combines national Census Bureau data on construction industry project activity with point source waste assessment data (i.e., waste sampling and weighing at a variety of construction and demolition sites) to estimate the amount of C&D debris produced nationally. Because of the lack of point source waste assessment data from roadway, bridge, and landclearing projects, this study was limited to building-related wastes.

It is important to recognize that this is a first attempt to use this methodology. We expect that as the trend towards better characterization of C&D sites continues where more communities record their C&D debris quantities and compositions, the national estimates as developed in this report can be tested and modified accordingly. Currently, the limited point source waste assessment data may be a source of considerable uncertainty in the analysis.

Since the methodology developed here makes use of readily available Census Bureau data on national C&D activity, (e.g., construction and demolition permits and construction value) the methodology should be well suited for periodic updating. Waste assessment results should change very slowly over time because construction materials used and building construction practices remain relatively constant from year to year. Composition of waste from demolished buildings, which were built over a range of years, should change even more slowly.

PEER REVIEW AND DATA SOURCES

This first edition report underwent extensive internal and external peer review of methodology and data sources. Major contributors of data sources and peer review include the National Association of Home Builders Research Center, Gershman, Brickner & Bratton, Inc., EPA Region 5, and the U.S. Department of Commerce, Bureau of the Census.

During the peer review process, a consensus was reached that this report represents a credible attempt at estimating national generation of building-related construction and demolition debris. However, the report could benefit from additional waste sampling studies to strengthen the source category (construction, demolition, and renovation) estimates. Further, future editions will need to address roadway, bridge, and land clearing debris in order to present a more complete picture of the national construction and demolition waste stream. As part of an ongoing effort to better characterize non-hazardous wastes subject to regulation under Subtitle D of RCRA, USEPA encourages public comment on this report, including additional methodological considerations and data sources.

DEFINING C&D DEBRIS

A broad definition of the representative projects and sources of C&D debris is shown below (Table 1). This table shows that the generation sources of C&D debris cover a broad segment of the U.S. economy. The sources range from homebuilders and homeowners to general commercial developers, general building contractors, highway and street contractors, bridge erectors/constructors, bituminous pavement contractors, small home remodelers, site grading contractors, demolition contractors, roofing contractors and drywallers, and excavation specialists.

The amount of C&D debris generated and reported to regulatory agencies around the country varies considerably from one community to another. This variation is created, in part, by the difference in state regulations on the subject material, and also by the historical demographics and current growth and development activity of the community.

Excerpts from a number of state definitions of C&D debris are presented in this chapter, with more complete citations in Appendix B. This is a representative sample of how states are defining C&D debris. It illustrates the diversity of C&D debris terminology. Several states include land-clearing debris as C&D; however, Massachusetts, New York, and North Carolina specifically exclude these materials. Oregon excludes clean fill materials when separated from other C&D wastes and used as fill materials or otherwise land disposed. New York, Kansas, and Rhode Island's definitions specifically exclude some materials, even

Table 1

REPRESENTATIVE GENERATION SOURCES OF C&D SECTOR MATERIALS*

Site clearance materials
(Brush, tree, and stumpage materials)

Excavated materials
(Earth, fill, and other excavated rock and granular materials)

Roadwork materials
Concrete slabs and chunks from concrete road construction
Asphalt chunks and millings from asphalt pavement
Bridge/overpass construction/renovation materials

New construction materials
(Residential, commercial, and industrial project sources)

Renovation, remodeling or repair materials
(Residential, commercial, and industrial project sources)

Demolition materials . . . including wrecking, implosion, dismantling, and deconstruction
(Residential, commercial, and industrial project sources)

Disaster debris

* Note that estimates for site clearance, excavated materials, and roadwork materials are not included in this report.

Source: Gershman, Brickner & Bratton, Inc. Fairfax, Virginia

if resulting from C&D activities. Examples of exclusions include garbage, carpeting, furniture, corrugated containerboard, and other containers.

The variance in state definitions affects the interpretation of the results of this report. Corrections or adjustments may be required when comparing the results of this report with state data, depending on the definition the state used. Corrections may also be required when comparing data from any two states.

The amount of C&D debris available for discard in any region also depends on the general economic conditions of the region, the weather, major disasters, special projects, and local regulations. In fast growing areas, the C&D waste stream from buildings consists primarily of construction debris, with much smaller quantities of demolition debris. Demolition debris is produced when older buildings are demolished to make way for the new developments. By contrast, in many urban areas demolition debris dominates the C&D waste stream.

STATE DEFINITIONS FOR CONSTRUCTION AND DEMOLITION DEBRIS
(A representative sample of definitions that points out the variability of definitions used)

California. Construction and demolition (C&D) debris includes concrete, asphalt, wood, drywall, metals, and many miscellaneous and composite materials. C&D debris is generated by demolition and new construction of structures such as residential and commercial buildings and roadways.

Florida. "Construction and demolition debris" means discarded materials generally considered to be not water soluble and non-hazardous in nature, including but not limited to steel, glass, brick, concrete, asphalt material, pipe, gypsum wallboard, and lumber, from the construction or destruction of a structure as part of a construction or demolition project or from the renovation of a structure, including such debris from construction of structures at a site remote from the construction or demolition project site. The term includes rocks, soils, tree remains, trees, and other vegetative matter which normally results from land clearing or land development operations for a construction project; clean cardboard, paper, plastic, wood and metal scraps from a construction project . . . unpainted, non-treated wood scraps from facilities manufacturing materials used for construction of structures or their components and unpainted, non-treated wood pallets provided the wood scraps and pallets are separated from other solid waste; and the commingling of wood scraps or pallets with other solid waste; and *de minimis* amounts of other non-hazardous wastes that are generated at construction or demolition projects . . . .

Hawaii. "Construction and demolition waste" means solid waste, largely inert waste, resulting from the demolition or razing of buildings, of roads, or other structures, such as concrete, rock, brick, bituminous concrete, wood, and masonry, composition roofing and roofing paper, steel, plaster, and minor amounts of other metals, such as copper. Construction and demolition waste does not include cleanup materials contaminated with hazardous substances, friable asbestos, waste paints, solvents, sealers, adhesives, or similar materials.

Kansas. "Construction and demolition waste" means solid waste resulting from the construction, remodeling, repair and demolition of structures, roads, sidewalks and utilities; and solid waste consisting of vegetation from land clearing and grubbing, utility maintenance, and seasonal or storm-related cleanup. Such wastes include, but are not limited to, bricks, concrete and other masonry materials, roofing materials, soil, rock, wood, wood products, wall covering, plaster, drywall, plumbing fixtures, electrical wiring, electrical components containing no hazardous materials and non asbestos insulation. It shall not include asbestos waste, garbage, cardboard, furniture, appliances, electrical equipment containing hazardous materials, tires, drums and containers even though such wastes resulted from construction and demolition activities. Clean rubble that is mixed with other construction and demolition waste during demolition or transportation shall be considered to be construction and demolition waste.

Kentucky. . . . Construction/demolition debris . . . results from the construction, remodeling, repair, and demolition of structures and roads and . . . uncontaminated solid waste consisting of vegetation resulting from land clearing and grubbing, utility line maintenance, and seasonal and storm-related cleanup. Such waste includes, but is not limited to bricks, shredded or segmented tires, concrete and other masonry materials, soil, rock, wood, wall coverings, plaster, drywall, plumbing fixtures, tree stumps, limbs, saw dust, leaves, yard waste, paper, paper products, metals, furniture, insulation, roofing shingles, asphalt pavement, glass, plastics that are not sealed in a manner that conceals other wastes, electrical wiring and components containing no liquids or hazardous metals that are incidental to any of the above . . . . Asbestos . . . only if approved by the division . . . .

STATE DEFINITIONS FOR CONSTRUCTION AND DEMOLITION DEBRIS (Continued)

Maricopa County, Arizona. Construction debris is a general term used to describe a large class of solid wastes usually generated as a byproduct of the construction, demolition, or maintenance of residences, commercial or industrial facilities and infrastructure. Construction debris includes such materials as: broken concrete, asphalt, steel, aluminum, glass, brick, tile, paper, plastics, wood products, sheet rock, street sweepings and canal dredgings.

Massachusetts. C&D waste is comprised of debris generated from construction, renovation, repair, and demolition of roads, bridges, and buildings and includes wood, steel, concrete, masonry, plaster, metal, and asphalt, but not wood from land-clearing, i.e. stumps, logs, brush, and soil, nor rock from excavations.

Minnesota. Construction Wastes—Building materials, packaging, and rubble resulting from construction, remodeling, repair, and demolition of buildings and roads.
Demolition Debris—Solid waste resulting from the demolition of buildings, roads, and other man-made structures, including concrete, brick, bituminous concrete, untreated wood, masonry, glass, trees, rock, and plastic building parts. Demolition debris does not include asbestos.

North Carolina. "Construction" or "demolition" when used in connection with "waste" or "debris" means solid waste resulting solely from construction, remodeling, repair, or demolition operations on pavement, buildings, or other structures, but does not include inert debris, land-clearing debris or yard debris.

Nebraska. "Construction and demolition waste" shall mean waste which typically results from construction or demolition projects and includes all materials which are the by-products of construction work or which result from demolition of buildings and other structures, including, but not limited to brick, concrete rubble, masonry materials, paper, gypsum board, wood, rubber and plastics. Construction and demolition waste does not include friable asbestos-containing materials, liquid waste, hazardous waste, putrescible waste or furnishings from demolished structures.

New York. Construction and demolition (C&D) debris means uncontaminated solid waste resulting from the construction, remodeling, repair and demolition of utilities, structures and roads; and uncontaminated solid waste resulting from land clearing. Such waste includes, but is not limited to bricks, concrete and other masonry materials, soil, rock, wood (including painted, treated and coated wood and wood products), land clearing debris, wall coverings, plaster, drywall, plumbing fixtures, non asbestos insulation, roofing shingles and other roof coverings, asphalt pavement, glass, plastics that are not sealed in a manner that conceals other wastes, empty buckets ten gallons or less in size and having no more than one inch of residue remaining on the bottom, electrical wiring and components containing no hazardous liquids, and pipe and metals that are incidental to any of the above. Solid waste that is not C&D debris (even if resulting from the construction, remodeling, repair and demolition of utilities, structures and roads and land clearing) includes, but is not limited to asbestos waste, garbage, corrugated container board, electrical fixtures containing hazardous liquids such as fluorescent light ballasts or transformers, fluorescent lights, carpeting, furniture, appliances, tires, drums, containers greater than ten gallons in size, any containers having more than one inch of residue remaining on the bottom and fuel tanks. . . .

STATE DEFINITIONS FOR CONSTRUCTION AND DEMOLITION DEBRIS (Continued)

Oregon. "Construction and Demolition Waste" means solid waste resulting from the construction, repair or demolition of buildings, roads and other structures, and debris from the clearing of land, but does not include clean fill when separated from other construction and demolition wastes and used as fill materials or otherwise land disposed. Such waste typically consists of materials including concrete, bricks, bituminous concrete, asphalt paving, untreated or chemically treated wood, glass, masonry, roofing, siding, plaster; and soils, rock, stumps, boulders, brush and other similar material. This term does not include industrial solid waste and municipal solid waste generated in residential or commercial activities associated with construction and demolition activities.

Portland, Oregon Metropolitan Service District. Construction Waste - Waste materials resulting from the construction, remodeling and repair of buildings and other structures.
Demolition Waste - Solid waste, largely inert, resulting from the demolition or razing of buildings, roads, and other man-made structures. Demolition waste consists of, but is not limited to, concrete, brick, bituminous concrete, wood, masonry, composition, roofing and roofing paper, steel, and amounts of other metals like copper. Plaster (i.e., sheet rock or plasterboard), any other non-wood material that is likely to produce gases or leachate during the decomposition proces" and asbestos wastes are not considered to be demolition wastes.

Rhode Island. "Construction and Demolition (C&D) Debris" shall mean non-hazardous solid waste resulting from the construction, remodeling, repair, and demolition of utilities and structures; and uncontaminated solid waste resulting from land clearing. Such waste includes, but is not limited to wood (including painted, treated and coated wood and wood products), land clearing debris, wall coverings, plaster, drywall, plumbing fixtures, non-asbestos insulation, roofing shingles and other roofing coverings, glass, plastics that are not sealed in a manner that conceals other wastes, empty buckets ten gallons or less in size and having no more than one inch of residue remaining on the bottom, electrical wiring and components containing no hazardous liquids, and pipe and metals that are incidental to any of the above. Solid waste that is not C&D debris (even if resulting from the construction, remodeling, repair, and demolition of utilities, structures, and roads and land clearing) includes, but is not limited to, asbestos waste, garbage, corrugated container board, electrical fixtures containing hazardous liquids such as fluorescent light ballasts or transformers, fluorescent lights, carpeting, furniture, appliances, tires, drums, containers greater than ten gallons in size, any containers having more than one inch of residue remaining on the bottom, and fuel tanks. . . .

South Carolina. "Construction and demolition debris" means discarded solid wastes resulting from construction, remodeling, repair and demolition of structures, road building, and land-clearing. The wastes include, but are not limited to, bricks, concrete, and other masonry materials, soil, rock, lumber, road spoils, paving material, and tree and brush stumps, but does not include solid waste from agricultural or silvicultural operations.

Washington. "Demolition waste" means solid waste, largely inert waste, resulting from the demolition or razing of buildings, roads and other man-made structures. Demolition waste consists of, but is not limited to, concrete, brick, bituminous concrete, wood and masonry, composition roofing and roofing paper, steel, and minor amounts of other metals like copper. Plaster (i.e., sheet rock or plaster board) or any other material, other than wood, that is likely to produce gases or a leachate during the decomposition process and asbestos wastes are not considered to be demolition waste . . . .

See Appendix B for complete texts and citations.

The components that make up C&D debris also vary a great deal depending on the type of construction and the methods used by the construction industry. Table 2 shows typical contents of C&D debris by broad material types. Table C-1 in Appendix C shows a more detailed list of C&D debris components.

Construction debris from building sites typically consists of trim scraps of construction materials, such as wood, sheetrock, masonry, and roofing materials. There is typically much less concrete in construction debris than demolition debris, although some construction projects produce considerable quantities of concrete, depending on the technology used to build the concrete walls. Scrap from residential construction sites typically represents between 6 and 8 percent of the total weight of the building materials delivered to the site, excluding the foundation, concrete floors, driveways, patios, etc. There is typically very little waste concrete to dispose of from residential construction projects.

Table 2

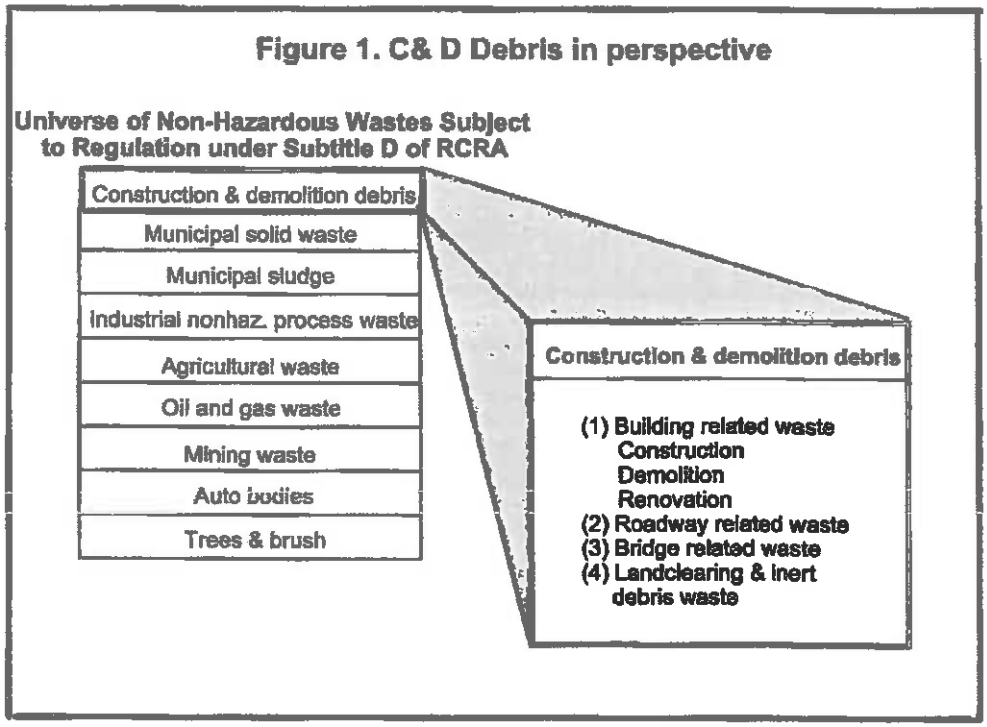
TYPICAL COMPONENTS OF CONSTRUCTION AND DEMOLITION DEBRIS

Material Components	Content Examples
Wood	Forming and framing lumber, stumps, plywood, laminates, scraps
Drywall	Sheetrock, gypsum, plaster
Metals	Pipes, rebar, flashing, steel, aluminum, copper, brass, stainless steel
Plastics	Vinyl siding, doors, windows, floor tile, pipes
Roofing	Asphalt & wood shingles, slate, tile, roofing felt
Rubble	Asphalt, concrete, cinder blocks, rock, earth
Brick	Bricks and decorative blocks
Glass	Windows, mirrors, lights
Miscellaneous	Carpeting, fixtures, insulation, ceramic tile

When buildings are demolished, large quantities of waste may be produced in a relatively short period of time, depending on the demolition technique used. The demolition project duration can vary depending on the technique used—implode a structure with explosives, use a crane and wrecking ball technique, or deconstruct the structure. In actual practice, the vast majority of demolition projects use a combination of the last two basic techniques depending on the materials used in the original project, the physical size of the structure, the surrounding buildings that cannot be disturbed or impacted, and the time allocated for the project. One hundred percent of the weight of a building, including the concrete foundations, driveways, patios, etc., may be generated as C&D debris when a building is demolished. On a per building basis, demolition waste quantities may be 20 to 30 times as much as construction debris.

CONSTRUCTION AND DEMOLITION DEBRIS IN PERSPECTIVE

C&D debris is generally a non-hazardous waste subject to regulation under Subtitle D, as shown in Figure 1. Other non-hazardous wastes include municipal solid waste (MSW), sludges from water and wastewater treatment plants, nonhazardous wastes from industrial processes, agricultural wastes, oil and gas wastes, mining wastes, spent automobiles, and trees and brush. MSW, which is primarily the waste from residential and commercial sources, has been characterized in more detail and for a longer period of time by the EPA than the other non-hazardous wastes. A material flows methodology was developed for MSW characterization in the late 1960s and early 1970s, and has been modified and updated periodically since then. The latest of the EPA reports was published in May of 1998 (EPA 1998).



Although the C&D debris stream is usually described based on its origin as outlined in Table 1 above, there are some potential overlaps with other waste streams, in particular, MSW. For example, the MSW characterization includes all postconsumer corrugated boxes, even though significant quantities of these boxes enter the waste stream from building construction sites. (See Appendix A, Table A-11.) To simply sum up the national quantities of MSW and C&D debris could result in double counting. Other examples of MSW sometimes collected at C&D sites include wood pallets, food and beverage containers, caulking tubes, and paint containers. On the other hand, building material wastes are frequently collected by MSW waste management systems. However, EPA's material flows

methodology does not include them. Examples include pipes, plumbing fixtures, and building materials that are replaced by residents and discarded with their household trash. The overlap issues are discussed further in Chapter 4 of this report.

The six activities that generate C&D debris from buildings include the construction, demolition, and renovation (improvements and repair) of both residential and nonresidential buildings. Residential buildings include single-family houses and duplexes, up to and including high rise multi-family housing. Nonresidential buildings include commercial, institutional, and industrial buildings.

Construction activities generally produce cleaner materials than demolition. Demolitions may produce several types of materials bonded together or contaminated with hazardous materials, such as asbestos or lead paint. Renovation projects can produce both construction and demolition type wastes.

DEFINITIONS
(For purposes of this report, following is a working set of definitions)

Construction and Demolition (C&D) Debris is waste material that is produced in the process of construction, renovation, or demolition of structures. Structures include buildings of all types (both residential and nonresidential) as well as roads and bridges. Components of C&D debris typically include concrete, asphalt, wood, metals, gypsum wallboard, floor tile, and roofing. Land clearing debris, such as stumps, rocks, and dirt, are also included in some state definitions of C&D debris.

Generation of C&D debris, as used in this report, refers to the weight of materials and products as they enter the waste management system from the construction, renovation, or demolition of structures, and before materials recovery or combustion takes place. Source reduction activities (e.g., on-site usage of waste wood mulch or the on-site use of drywall as a soil amendment) take place *ahead* of generation, i.e., they reduce the amount of waste generated.

Recovery of materials, as estimated in this report, includes the removal of products or materials from the waste stream for the purpose of recycling the materials in the manufacture of new products.

Source reduction activities reduce the amount or toxicity of wastes before they enter the waste management system. **Reuse** is a source reduction activity involving the recovery or reapplication of a product or material in a manner that retains its original form and identity. Reuse of products such as light fixtures, doors, or used brick is considered source reduction, not recycling.

Discards include the C&D debris remaining after recovery for recycling (including composting). These discards would presumably be combusted or landfilled, although some debris is littered, stored or disposed on-site, or burned on-site.

OVERVIEW OF THIS REPORT

Chapter 1 contains background information on the methodology used for this report, examples of state definitions for C&D debris, and perspectives on the components of C&D and its relationship to other non-hazardous wastes. Chapter 2 contains estimates of the national generation of the building fraction of C&D debris from each of six major building C&D activities, i.e., residential construction, demolition, and renovation, and nonresidential construction, demolition, and renovation. Examples of locally generated data for the other C&D related generating sectors, e.g., roadway, bridge, and land clearing debris are presented for illustrative purposes. Also included in Chapter 2 are some data showing the composition of C&D debris from the various C&D activities.

Chapter 3 of the report discusses the options for management of C&D debris in the United States, including landfilling and recovery for recycling.

Chapter 4, Perspectives, discusses the overlap of the C&D debris waste stream and the MSW waste stream.

Chapter 1

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Chapter 2

GENERATION OF CONSTRUCTION AND DEMOLITION DEBRIS

INTRODUCTION

For the purposes of this initial national report, emphasis has been placed on the generation of construction and demolition (C&D) debris from building construction, demolition, and renovation activities. Examples of locally generated data for the other C&D-related generating sectors, e.g., roadway, bridge, and land clearing debris, are presented.

BUILDING-RELATED CONSTRUCTION AND DEMOLITION DEBRIS GENERATION

For analysis purposes, building C&D debris is divided into six categories: residential construction, demolition, and renovation and nonresidential construction, demolition, and renovation. These categories were selected based on the relationship between available Census data and empirical composition factors.

The following sections describe the data used and the methods for estimating the amount of building-related C&D debris generated, on a weight basis. Tables A-1 through A-6 in Appendix A are worksheets that provide details of the calculations used to arrive at generation for each component of the C&D debris stream.

Construction Debris

Residential. Empirical data for new residential construction have been identified from five sources: The NAHB Research Center; METRO in Portland, Oregon; Woodbin 2 in Cary, North Carolina; McHenry County, Illinois; and Cornell University. Each of these groups has conducted waste assessments at new construction sites.

The National Association of Homebuilders (NAHB) Research Center has developed a detailed methodology for conducting waste assessments at construction sites. Assessment data have been analyzed for single-family residential construction debris at four sites, including Largo, Maryland; Anne Arundel County, Maryland; Portland, Oregon; and Grand Rapids, Michigan. The NAHB Research Center also conducted a waste assessment at a 36-unit condominium construction project in Odenton, Maryland.

The Metropolitan Service District in Portland, Oregon (METRO) conducted a series of sampling projects at a large number of residential construction sites in Oregon over the last 5 or more years.

Wake County, North Carolina and the North Carolina Division of Pollution Prevention and Environmental Assistance conducted five residential construction waste assessments in the Raleigh, North Carolina area. Woodbin 2, a non-profit organization of the County, organized the assessments.

McHenry County, Illinois conducted waste audits at a single-family construction site and a 6-unit apartment building, and Cornell University conducted a waste audit at a single-family residence in New York.

The data from the five sources are summarized in Table 3. A total of 93 dwelling units are represented on this table. Generation rates ranged from 2.41 to 11.3 pounds per square foot of floor space. Geography does not appear to be the reason for the spread in data; it is more likely the types of houses, the specific practices of the builders, and the lack of uniform standards for the collection and storage of the sampled materials. The weighted average value from the five sources is 4.38 pounds per square foot.

Extrapolation factors are Census Bureau data that record the number of construction permits and the total square feet of new construction. According to the Department of Commerce Current Construction Reports (C-30), in 1996 the value of new private and public residential construction put in place totaled $181.795 billion. Data from areas where permits are required were used to calculate an average dollars per square foot. Total value in areas where permits are required was $127.9 billion for a total of 2,172 million square feet of floor space (1995). This amounts to $58.89 per square foot. Applying this factor to the total C-30 value and correcting 3 percent for inflation results in a total of 2,997 million square feet of new residential construction in 1996. At 4.38 pounds per square foot (Table 3), total generation is **6.56** million tons per year.

Nonresidential. The methodology for nonresidential construction debris is similar to that for residential construction debris. However, nonresidential buildings are much more varied than residential buildings and fewer waste assessments have been done, making the quantity estimates more uncertain.

Nonresidential buildings include private industrial, office, hotels/motels, other commercial, religious, educational, hospital and institutional, and miscellaneous buildings plus public industrial, educational, hospital, and other categories.

Table 3
ESTIMATED GENERATION OF RESIDENTIAL CONSTRUCTION DEBRIS

EMPIRICAL WASTE ASSESSMENTS

Date	Research Group	Type of data	Location	No. of Units	Building Size (Sq ft)	Total Waste (Pounds)	Generation rate (Lb/sq ft)	Average generation (Lb/sq ft)
1992	NAHB	Single-family	Portland, OR	1	3,000	13,684	4.56	
1994	NAHB	Single-family	Grand Rapids, MI	1	2,600	12,182	4.69	
1994	NAHB	Single-family	Largo, MD	1	2,200	10,210	4.64	
1995	NAHB	Single-family	Ann Arundel Cty, MD	1	2,450	9,436	3.85	
		Totals			10,250	45,512		4.44
1993	METRO	Single-family	Portland, OR	1	2,800	13,800	4.93	
1994	METRO	Single-family	Portland, OR	1	1,290	8,600	6.67	
1994	METRO	Single-family	Portland, OR	1	1,290	10,600	8.22	
		Totals			5,380	33,000		6.13
<1994	METRO (1)	Single family	Portland, OR	37	2,080	7,720	3.71	3.71
1996-97	Woodbin 2 (2)	Single-family	North Carolina	1	3,250	19,382	5.96	
1996-97	Woodbin 2	Single-family	North Carolina	1	3,250	36,722	11.30	
1996-97	Woodbin 2	Single-family	North Carolina	1	3,250	25,296	7.78	
1996-97	Woodbin 2	Single-family	North Carolina	1	3,250	28,805	8.86	
1996-97	Woodbin 2	Single-family	North Carolina	1	3,250	23,122	7.11	
					16,250	133,326		8.20
1993	County (3)	Single-family	McHenry Co. IL	1	2,000	14,880	7.44	
	Cornell U.	Single-family	Highland Mills, NY	1	1,890	4,556	2.41	
1996	NAHB	Multi-family (4)	Odenton, MD	36	50,400	204,000	4.05	
1993	County (3)	Multi-family (5)	McHenry Co. IL	6	9,000	33,580	3.73	
					59,400	237,580		4.00
Totals for 93 dwelling units				93	172,130	754,494		4.38

EXTRAPOLATION

Value of new private and public construction put in place (6)	181,795	million
Average cost of construction (7)	$60.66	per square foot
Total square feet of new construction	2,997	million square feet
Average C&D debris generation rate	4.38	pounds per square foot
Total Generation of Residential Construction Debris	**6.56**	**million tons**

(1) Average of 37 residential construction sites. Metro Report, 1994.
(2) Wake County SWM & NC Div of Pollution Prevention. Coordinated by Woodbin 2, a non-profit organization. Five sites were between 3000 and 3500 square feet each.
(3) Audit by McHenry County, assisted by Cornerstone Material Recovery.
(4) 36-unit condominium, average 1400 square feet.
(5) 6-unit apartment building.
(6) Department of Commerce, Current Construction Reports.
(7) Based on 1995 construction permits, 3% adjustment to 1996 for inflation.

Source: Franklin Associates

Table 4 shows the results of six nonresidential waste assessments. Ranging from 1.61 to 4.21 pounds per square foot, the average generation rate of the individual sampling studies is 3.89 pounds per square foot. These buildings include a retail store, restaurant, institutional building, and two office buildings.

Table 4
ESTIMATED GENERATION OF NONRESIDENTIAL CONSTRUCTION DEBRIS

EMPIRICAL WASTE ASSESSMENTS

Date	Research Group	Type of data	Location	Building Size (Sq ft)	Total Waste (Pounds)	Generation Rate (Lb/sq ft)
1995	Turner Construction	Retail Store Construction	Seattle, WA	37,000	148,000	4.00
1995	METRO	County Justice Center	Portland, OR	41,850	176,000	4.21
1992	METRO	Restaurant	Portland, OR	5,000	10,940	2.19
1994	METRO	Office construction (1)	Portland, OR	7,452	12,000	1.61
1997	Sellen Construction	Office construction	Seattle, WA	297,115	1,163,560	3.92
			Totals	388,417	1,510,500	
			Average			3.89

EXTRAPOLATION

Value of new private and public construction put in place (2)	198,700	million dollars
Average cost of construction (3)	$90.40	per square foot
Total square feet of new construction	2,198	million square feet
Average C&D debris generation rate	3.89	pounds per square foot
Total Generation of Nonresidential Construction Debris	4.27	million tons

(1) Two office buildings.
(2) Department of Commerce Current Construction Reports.
(3) Based on 1995 construction permits, with 3% adjustment to 1996 for inflation.

Source: Franklin Associates

The 1996 value of nonresidential buildings, as reported in Current Construction Reports, is $198.7 billion. Average construction costs in 1995 were $87.77 per square foot, resulting in an estimated 2,197.7 million square feet of new construction, after making a 3 percent correction for inflation. Multiplying by 3.89 pounds per square foot results in a total estimated generation of 4.27 million tons per year.

Demolition Debris

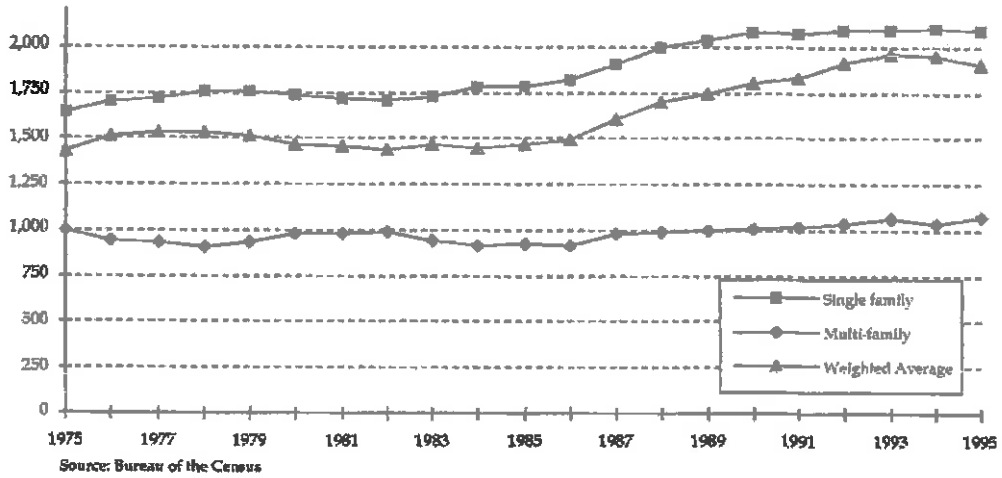
Residential. Demolition debris is estimated, starting with the number of residential demolitions per year, estimating the average house size when demolished, and then multiplying by the waste material per square foot, from empirical demolition waste assessments.

The NAHB economists have estimated the number of demolitions per year, based on Component of Inventory Change (CINCH) data (Carliner 1996). They estimate that the units actually destroyed through intentional demolitions or disasters such as fires or weather-related incidents between 1980 and 1993 averaged 245,000 per year. This is about three times the number reported by the Census Bureau based on permit data. Reasons for the higher number include unpermitted demolitions, municipalities that do not require permits, and

demolition permits that are handled by municipal offices other than building departments. Although CINCH data have been discontinued in 1995 due to federal budget cuts, these data are expected to be available through the American Housing Survey (AHS).

Houses of all ages and sizes may be demolished, but on average it is recognized that older houses are demolished more frequently, and older houses are on average smaller than new ones. New single-family housing units and multi-family housing units (including apartments and condominiums) built in 1995 averaged 2,100 square feet and 1,050 square feet, respectively. Figure 2 shows how average new house sizes have increased over the last 20 years. Multi-family houses have remained nearly the same, while new single-family houses grew from 1,600 square feet to 2,100 square feet. For this analysis, we assumed the average single-family and multi-family house sizes are 1,600 and 1,000 square feet, respectively, when demolished.

Figure 2. Average size of new house construction



Source: Bureau of the Census

Table 5 shows three single-family house demolition assessments and one multi-family deconstruction assessment. The weight of houses when demolished depends critically on whether the houses have concrete foundations and basement walls or not. The use of masonry in exterior cladding also affects the house weight significantly. None of the three single-family houses in Table 5 had full basements. Therefore, we made adjustments to the sampling data to develop an estimate of residential demolition debris which reflects the likely impact of some of the demolished houses having basements.

Table 5

ESTIMATED GENERATION OF RESIDENTIAL DEMOLITION DEBRIS

EMPIRICAL WASTE ASSESSMENTS

Date	Research Group	Type of data	Location	Building Size (Square feet)	C&D Debris (Pounds)	Generation rate (Lb/sq ft)
1992	METRO	SF Demolition (1)	Portland, OR	1,280	66,000	52
1994	METRO	SF Demolition (2)	Portland, OR	1,200	63,000	53
1994	METRO	SF Demolition (3)	Portland, OR	750	31,000	41
	Total Single-family, without foundations			3,230	160,000	50
	Adjustment for concrete (4)				197,000	61
	Total Single-family, including concrete			3,230	357,000	111
1997	NAHB	4 unit MF Deconstruction	Maryland	2,000	254,400	127
	Weighted average for single-family and multi-family (Appendix A-3)					**115**

EXTRAPOLATION

Estimated number of residential demolitions per year	245,000
Estimated average size of residences demolished (sq ft)	1,396
Average C&D debris generation rate (pounds per square foot)	115
Total Generation of Residential Demolition Debris (tons/yr)	**19,700,000**

(1) 1920s house. Concrete rubble not included.
(2) Concrete rubble not included.
(3) Small house without basement.
(4) Franklin Associates estimate. See Table A-3 for calculation of amount of concrete, in lb/sq ft. (Assumes a composite house, i.e., partial basement, garage, etc.)

Source: Franklin Associates

The Census Bureau provides data on the types of foundations in existing houses in *Current Housing Reports*. Forty-five percent of single-family houses have basements, 26 percent are on concrete slabs, and the remainder have crawl spaces. Table A-3 in the appendix describes an analysis using these percentages to estimate that on average the amount of concrete in a 1,600 square foot single family house is 61 pounds per square foot. The amount can range from zero for houses without basements, garages, or driveways to more than 150 pounds per square foot.

We estimate the total C&D debris generated when single-family houses are demolished is 111 pounds per square foot. For multi-family housing, NAHB Research Center's value of 127 pounds per square foot (Table 5) was used, resulting in an average for all residences of 115 pounds per square foot. Applying this rate to the 245,000 housing units demolished per year results in a waste generation estimate of 19.7 million tons per year, as shown in Table 5.

Nonresidential. The method used to estimate the generation of nonresidential demolition debris is to first determine the number of demolitions per year, then estimate the average size (in square feet) of buildings being demolished. The number of square feet is then multiplied by the generation per square foot, as determined by empirical waste assessments.

The Census Bureau has, until 1995, monitored the number of demolitions, based on permits issued by permit issuing entities. This data series is now discontinued because of federal budget cuts. In 1995, a total of 43,795 nonresidential demolition permits were issued. That number is used in this study as an estimate for 1996. In 1994 there were 45,061 permits issued, which suggests that using the 1995 number for 1996 is a reasonable estimate. Data were not found indicating that the number of demolitions is actually larger than the permits would indicate. Therefore, no correction was made, as was done for residential demolitions. It is less likely that nonresidential demolitions escape the permitting requirements than residential demolitions, because nonresidential demolition is more closely regulated.

We estimated the average nonresidential building size at 13,300 square feet by the following method. The 1996 ***Statistical Abstract*** characterizes existing commercial buildings by type, including the number of buildings, and total square feet based on the time period (decade) when the buildings were built (EIA 1992). Based on those data, we determined that buildings now standing that were built between 1920 and 1969 average 13,300 square feet per building.

Table 6 shows the results of waste assessments at 23 nonresidential buildings over the last several years. The average generation rate is 155 pounds per square foot. Multiplying by the square feet per building and the total number of demolition permits results in a nonresidential demolition debris generation of **45.1** million tons per year.

Renovation Debris

Renovation (or remodeling) includes improvements and repairs to existing buildings. Renovation debris consists of both construction and demolition materials. Remodeling waste quantities are even more variable than construction or demolition waste. Renovation debris ranges from single materials being generated, such as when driveways or roofs are replaced, to multiple material generation, such as when buildings are modified or enlarged. For this analysis, we made estimates for wastes generated when major improvements are made.

Table 6
ESTIMATED GENERATION OF NONRESIDENTIAL DEMOLITION DEBRIS

EMPIRICAL WASTE ASSESSMENTS

Date	Research Group	Type of Building	Location	Building Size Square feet	Total Waste Tons	Generation rate Lb/sq ft
1991	NAHB	Prison shop	Oakalla, BC	12,000	1,301	217
1994-1995	METRO	Warehouse	Portland, OR	86,400	1,566	36
1992	METRO	Department store	Portland, OR	44,000	3,639	165
1994	METRO	Institutional building	Portland, OR	60,000	5,454	182
1997	Argonne	Office building	Chicago, IL	5700	289	101
1997	W. County	Cold storage building	Washington Co., OR	73,600	13,163	358
1995-1996	R.W. Rhine	17 Industrial buildings	Northwestern U.S.	2,204,000	167,200	152
		Totals		2,485,700	192,612	
		Average				155

EXTRAPOLATION

Total demolitions (1)	43,795	
Average building size (2)	13,300	sq ft
Average C&D debris generation rate	155	pounds per square foot
Total nonresidential demolition debris	45,100,000	tons/year

(1) U.S. Census Bureau, Manufacturing and Construction Division, 1995.
(2) U.S. Energy Information Administration, 1992. From 1996 Statistical Abstract.

Source: Franklin Associates

Residential. In 1996, the value of residential improvements and repairs amounted to $114.3 billion (Census 1997). Of this, 68 percent (or $77.7 billion) was for improvements and 32 percent (or $36.6 billion) was for repairs. Improvements are defined by the Census Bureau to include additions, alterations, and major replacements which add to the value or useful life of a property, or adapt a property to a new or different use. Repairs include incidental maintenance and repairs to keep a property in ordinary operating condition (C-Series Reports).

Because of the wide variation in remodeling projects, waste assessments to determine generation per square foot are not very useful for estimating total generation. More important is the amount of material produced per job, e.g., per kitchen addition or bath remodeling or roof replacement. Table 7 shows the results of five waste assessments that have been made at residential sites, showing a wide variation in generation rates on a square foot basis. Remodeling typically generates more waste per square foot than new construction, largely because of the demolition that accompanies remodeling. However, some remodeling jobs, like roof replacement, produce relatively low amounts of material on a square foot basis.

Table 7
EMPIRICAL WASTE ASSESSMENTS FOR RESIDENTIAL RENOVATION DEBRIS

Date	Research Group	Type of data	Location	Size of Project (Sq ft)	Total Waste (Pounds)	Generation rate (Lb/sq ft)	Average generation (Lb/sq ft)
1997	NAHB	SF Remodel (Kit & rm add.)	Maryland	560	11,020	19.68	
1997	NAHB	SF Remodel (bathroom)	Chapel Hill, NC	40	2,883	72.10	
		Totals		600	13,903		23.17
1993	METRO	Kitchen remodel	Portland, OR	150	9,600	64.00	
1993-1994	METRO	House remodel	Portland, OR	1,330	26,000	19.55	
		Totals		1,480	35,600		24.05
1997	NAHB	SF Remodel (New roof)	Maryland	1,400	4,640	3.31	3.31

Source: Franklin Associates

We estimated renovation debris generation for this analysis by reviewing the number of major home improvements, then estimating the amount of material produced by each type of improvement. Although all home improvement projects cannot be included in a study of this type, selection of the major projects can be useful for making first estimates.

Appendix A Tables A-7, A-8, A-9, and A-10 show some of the assumptions made and the results of estimating the amount of material produced when driveways are replaced, when asphalt and wood roofs from residences having one to four units per structure are replaced, and when residential heating and cooling equipment is replaced. Based on the assumptions made, replacement of these categories produces 13 million tons of concrete from driveways, 6.4 million tons of asphalt roofs, 1.4 million tons of wood roofing, and 1.6 million tons of heating, ventilating, and air conditioning (HVAC) equipment.

The analysis above assumes that 60 percent of residential driveways are made of concrete and are on average 45 feet long (NAHB 1995). Asphalt driveways are also very common, but replacement generates much less waste than concrete, since asphalt driveways are usually overlaid with new asphalt rather than being replaced.

Approximately 67 percent of residences have asphalt roofs (NAHB 1997a). For this analysis, 25 percent were assumed to have wood roofs. Other residential roofing materials include slate, tile, metal, and concrete. These materials are used much less than asphalt and wood, and generally are used over long periods before being replaced.

The NAHB Research Center has compiled estimates of waste generation rates by type of remodeling projects (Yost 1998). The major waste generation remodeling activities involve kitchens, bathrooms, and room additions. Generation from these job types are shown in Table A-5 in Appendix A.

Annually there are approximately 1.25 million major kitchen remodeling jobs (complete tear-out), with an average generation of 4.5 tons per job, and 1.25 million minor kitchen remodeling jobs (facelift, e.g., cabinet replacement) at 0.75 tons per job. Major bath remodelings (1.2 million per year) produce on average one ton of waste material each, and 1.8 million minor bath remodeling jobs produce on average 0.25 tons of waste each. Room additions, estimated at 1.25 million per year, produce on average 0.75 tons apiece. On this basis, we estimated total residential renovation generation, from the improvement or replacement projects itemized above, to be **31.9** million tons per year.

Nonresidential. Based on Census Bureau data, total dollars spent for nonresidential renovation projects in 1996 was $100.4 billion. We calculated this number by assuming the ratio of residential to nonresidential dollars is the same in 1996 as in 1992. We could not find any information on total renovation dollars for 1996.

Very few waste assessments are available for nonresidential renovation. Therefore, the previous methodology cannot be used to estimate this amount. Lacking specific assessment data, we compared total dollars spent on nonresidential and residential renovation and assumed that the amount of waste generated is proportional to dollars spent in these two sectors. (See Table A-6 for more details of this analysis.)

Based on the assumption that waste generation per dollar is equal to the residential rate, total nonresidential renovation is equal to **28.04** million tons per year, less than residential generation by the ratio of dollars spent.

Summary of Building-Related C&D Generation

Table 8 summarizes the estimates for C&D debris generation from the construction, demolition, and renovation of residential and nonresidential buildings in the United States. The estimated total for 1996 is almost 136 million tons, with 43 percent coming from residential and 57 percent from nonresidential sources. Forty-eight percent of the C&D debris generated is from building demolitions, 44 percent is from renovation, and 8 percent is from building construction.

Figure 3 provides a breakdown, in percent of total, of the six building sectors that generate C&D debris. The largest sector is nonresidential demolition at 33 percent. Residential and nonresidential renovation debris make up 23 and 21 percent, respectively, followed by residential demolition at 15 percent. New construction represents 8 percent of total C&D debris, with residential at 3.4 percent and nonresidential at 4.8 percent.

Table 8

SUMMARY OF ESTIMATED BUILDING-RELATED C&D DEBRIS GENERATION, 1996*
(Roadway, Bridge, and Land Clearing Debris not included)
(Thousand Tons)

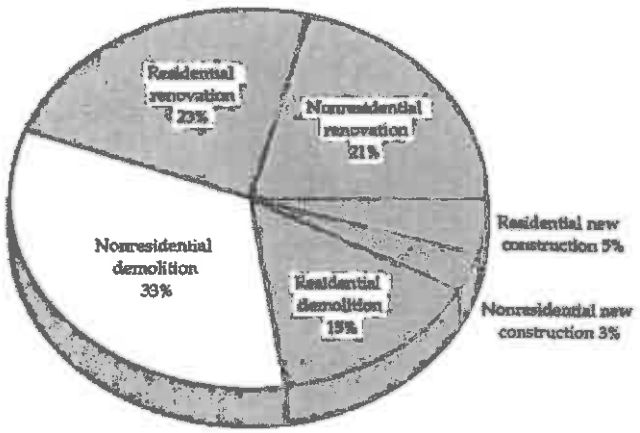
Source	Residential		Nonresidential		Totals	
	Thou tons	Percent	Thou tons	Percent	Thou tons	Percent
Construction	6,560	11	4,270	6	10,830	8
Renovation	31,900	55	28,000	36	59,900	44
Demolition	19,700	34	45,100	58	64,800	48
Totals	58,160	100	77,370	100	135,530	100
Percent	43		57		100	

* C&D debris managed on-site should, in theory, be deducted from generation. Quantities managed on-site are unknown.

Source: Franklin Associates

The estimate of 136 million tons per year is equal to 2.8 pounds per capita per day (pcd). This compares to 4.3 pcd of MSW generation. Note that the 2.8 pcd does not include C&D debris from roadway and bridge construction and demolition or from land clearing projects. These wastes are discussed briefly in the following section.

Figure 3. Generation of construction and demolition debris from buildings



CONSTRUCTION AND DEMOLITION DEBRIS GENERATION FROM ROAD, BRIDGE, AND OTHER NON-BUILDING ACTIVITIES

In this initial characterization study, we developed a methodology to estimate C&D debris generation from building construction, demolition, and renovation. However, because point source data were not available, we did not estimate the generation of site clearance materials, excavated materials, and roadwork materials. These are waste streams that will require further investigation in future editions of EPA's C&D work. These other wastes are typically managed by many of the same processors and landfills that manage building-related wastes.

We have made attempts, however, to provide certain cameo examples of locally generated data on most of these other generating sectors within the context of this report. Most communities and states that report C&D debris include the total C&D debris stream, which of course varies according to applicable regulations and definitions.

In 1995, a report was completed for Anne Arundel County, Maryland (part of the Metro Washington, DC area) that attempted to quantify total C&D debris generated and/or disposed in that County (GBB 1995). The report concluded that 138,000 tons per year of in-County generated C&D waste was being disposed at area C&D landfills (called "rubblefills" in the State of Maryland), while 435,000 tons per year of C&D debris materials were processed/recycled. This latter figure was reported to be about 12 percent wood waste and 88 percent concrete, asphalt, brick, block and porcelain waste generated in the County. This particular report is significant in the sense that it represents an example of total C&D generation in a large developing community.

STATE CONSTRUCTION AND DEMOLITION DEBRIS GENERATION RATES

We identified six states that have C&D debris generation records available. They are California, Florida, Massachusetts, Oregon (Portland metropolitan area), South Carolina, and Vermont. Generation of C&D debris from these states ranged from 1.43 pcd in South Carolina to 3.41 pcd for Massachusetts.

All of these states except Massachusetts report rates lower than 2.8 pcd, which is our estimate for building-related debris alone. The state data may include road debris as well. There are several reasons some of the states' estimates may be low. The six states' data reflect reports from facilities receiving C&D debris. Some of the many locations typically accepting C&D debris—ranging from established landfills to processors to sites with temporary permits (or no permits)—may be missed when C&D debris quantities are reported. Also, C&D debris mixed with MSW may be missed. In some states, road debris (asphalt and concrete) is mostly reused or recycled; it either remains on site or is incorporated into other roads. Thus, very little road debris would be expected in the states' quantities.

It is important to note that the methodology used in this report includes all building-related C&D debris, whether managed in C&D or MSW landfills, processing centers, land clearing landfills, or unpermitted landfills. It also includes on-site managed waste, if any, e.g., concrete or asphalt that is used as fill material, since no method was determined for making a correction. An important feature of the methodology used for residential demolition debris estimation, i.e., changes in housing inventory, is that residential buildings destroyed by natural disasters are included in this estimate.

We contacted two of the states by phone to discuss their C&D debris generation estimates. Florida reported a generation rate in 1995 of 2.01 pounds per capita per day. This rate was determined from reports to the state by each of the counties. The waste reported consists primarily of building waste, and is thought by the official contacted to be under-reported by many of the counties (Moreau 1997).

South Carolina has a reported generation rate of 1.43 pcd. The person contacted thinks that number is also grossly under-reported (Pitt 1997). C&D debris landfills for utilities and manufacturing and short term landfills are not required to report their quantities in South Carolina, and are not monitored by the State.

COMPOSITION OF CONSTRUCTION AND DEMOLITION DEBRIS

Six sets of C&D sorting data that provide some empirical measurements of the composition of C&D debris were identified. Each of the sampling studies was conducted with the specific goal of developing composition data for C&D debris. Probably the most rigorous assessments have been conducted at residential construction sites. These waste assessment projects are:

1. The National Association of Homebuilders (NAHB) Research Center conducted waste assessments at four residential construction sites: Largo, Maryland; Anne Arundel County, Maryland; Portland, Oregon; and Grand Rapids, Michigan. The Research Center also conducted a waste assessment at a four-unit multi-family demolition (or deconstruction) site (NAHB 1997b).

2. The Metropolitan Service District in Portland, Oregon (METRO) conducted a series of sampling projects at a number of residential and nonresidential construction, demolition, and renovation sites in Oregon.

3. Cunningham Environmental Consulting and the Cascadia Consulting Group sampled loads of C&D debris at disposal sites and transfer stations. Loads of residential and commercial construction, demolition, and remodeling debris from the Seattle area were selected (Cunningham 1996). Detailed sorting of these loads was done.

4. Gershman, Brickner & Bratton, Inc. (GBB) conducted a C&D sorting study for the Town of Babylon, New York that was funded by the New York State Energy Research and Development Authority (NYSERDA). The three-week study included C&D samples from waste loads from all or parts of 16 residential and nonresidential construction, demolition, and renovation projects (Brickner 1993). A total of 161.5 tons were sorted.

5. GBB, in association with the Metro Waste Authority, also sampled C&D debris from residential and commercial construction, demolition, and remodeling projects in Des Moines, Iowa for a one-week period (Brickner 1995).

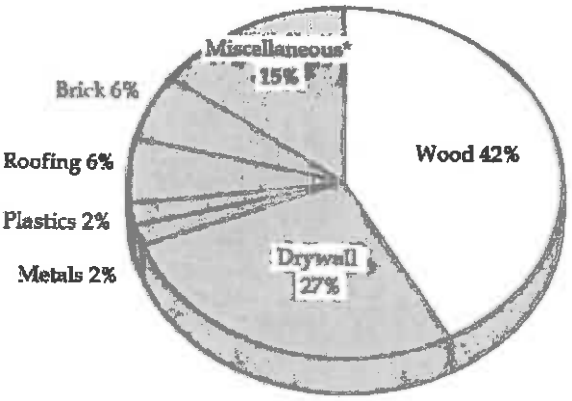
6. R.W. Rhine, Inc. of Tacoma, Washington, a demolition contractor, provided waste assessment data from the demolition of 19 nonresidential (industrial/commercial) buildings in the greater Northwest area.

In addition to the analyses listed above, the University of Florida is conducting waste audits at Florida residential construction sites. Data from these studies are expected to be available soon.

The detailed composition data from the sampling studies are shown in Tables A-11 through A-18 in Appendix A of this report. A review of these tables demonstrates that the composition of C&D debris is highly variable, as may be expected because of the many different types of buildings and construction practices in existence. The data collections were done under many different conditions and levels of detail. Therefore, we made no attempt to average all the compositions. Although different, there are some observations that can be made.

The first two (Tables A-11 and A-12) and sixth (Table A-16) sets of data characterize waste at the source, i.e., at specific construction or demolition sites. The other three data sets (Cunningham in the Seattle area and GBB in Babylon, New York and Des Moines, Iowa) characterize debris as disposed at the landfills. The sectors (or sources) for each load of C&D debris that was sorted are identified, but the specific phase of construction or demolition is not identified.

Figure 4. Sample composition of residential new construction debris (Average of assessments in four locations)



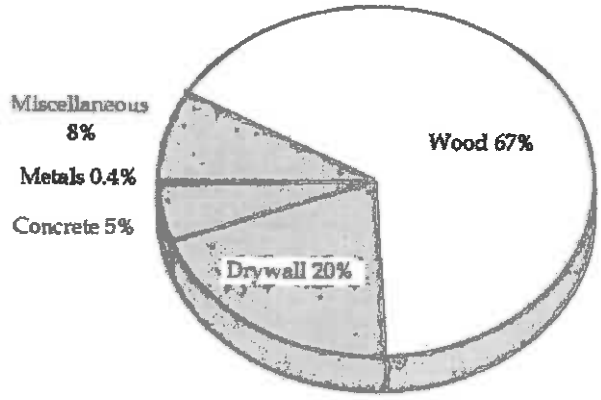
Source: NAHB Research Center * Refuse, dirt, sweepings, and aggregat

NAHB and Metro examined both composition and quantity per square foot of floor space for single-family housing. Both of these groups developed data from well-defined construction projects, i.e., the materials consist of trim scraps from beginning to end of the residential construction process, without serious contamination from other sources. Figures 4 and 5 show these data in percent by weight. Figure 4 shows the average composition for four single-family houses, two in the East, one in the Midwest, and one in the Northwest. Wood is the largest component, followed by drywall.

Figure 5 shows the composition from three new residential construction sites in the Portland, Oregon area. The percentage of wood in the Northwest samples is considerably higher, as may be expected, because a large fraction of homes in the Northwest have wood roofs. Residential construction debris in the Southwest and southern United States is expected to contain a lower percentage of wood than in the East and Midwest, and more brick and cinder blocks. As waste assessment data become available in other regions of the country, it will be possible to develop an overall composition for residential construction debris and to relate composition to total generation, i.e., estimate total C&D debris generation by material type.

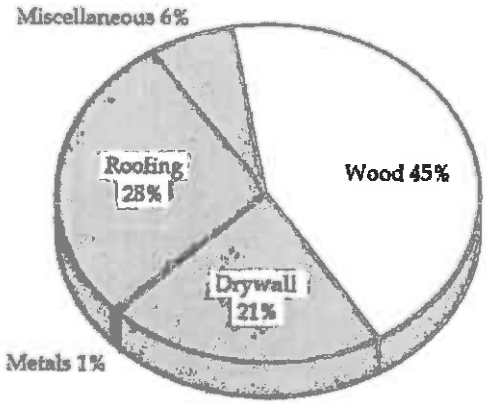
Figure 6 shows the composition of residential renovation debris in the Northwest. This stream is similar to the construction debris stream, but with an obvious difference, an increase in the amount of roofing materials. Only trim pieces of roofing are included in new construction debris.

Figure 5. Sample composition of residential new construction debris (Average of three sites, Portland, Oregon)



Source: METRO Portland, Oregon

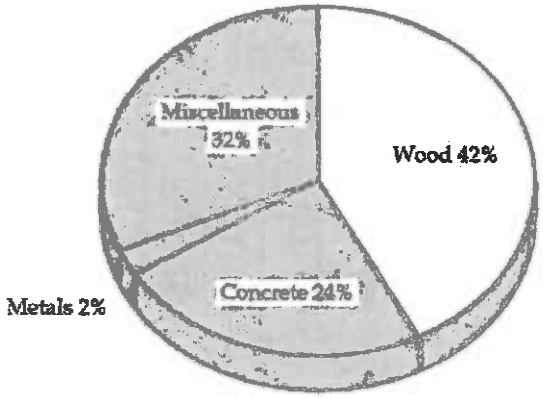
Figure 6. Sample composition of residential renovation debris (Average of two sites, Portland, Oregon)



Source: METRO Portland, Oregon

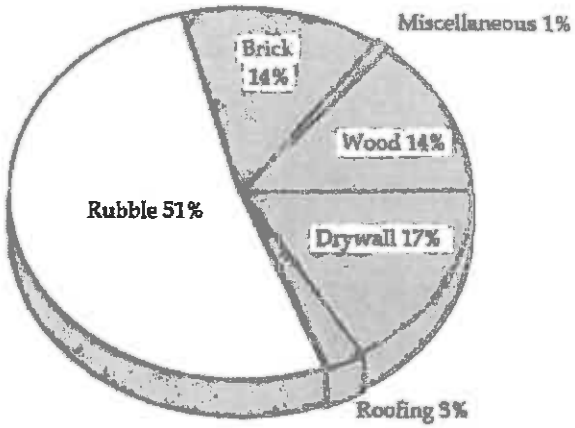
Concrete is missing from the renovation stream of Figure 6. Obviously these two projects did not include projects like driveway replacement. This demonstrates that many samples are required before we can report an overall composition that represents the U.S. average with confidence.

Figure 7. Sample composition of residential demolition debris (Average of three sites, Portland, Oregon)



Source: METRO Portland, Oregon.

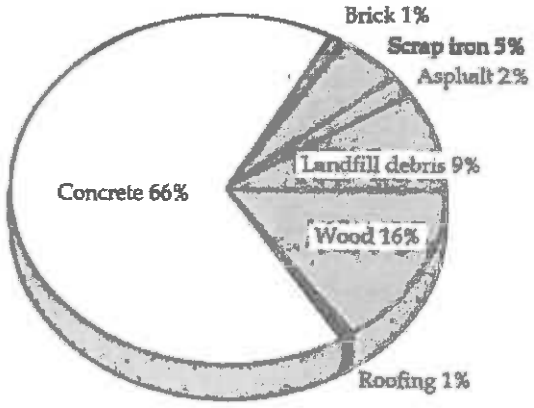
Figure 8. Sample composition of multi-family demolition debri



Source: NAHB Research Center, Inc.

Figure 7 displays the composition of residential demolition debris. Concrete is an obvious component of this stream, as it is in Figure 8, which shows the composition of a 2,000 square foot two story four-plex that was disassembled by NAHB in a demonstration project for the USEPA.

Figure 9. Sample composition of demolition debris (19 nonresidential projects in the Pacific Northwest)



Source: R.W. Rhine, Inc., Tacoma, WA

Figure 9 shows the average composition of 19 nonresidential buildings that were demolished in the Northwest area. These were large industrial/ commercial type buildings that ranged in weight from 891 tons to 37,500 tons. While this figure represents the average composition, the percentage of wood ranged from 0.03 percent to 88 percent in the 19 buildings. This demonstrates the huge variability of building types.

Some general observations can be made from these figures. Residential construction and renovation projects tend to yield significant quantities of wood and drywall, whereas demolition sites are heavily weighted toward concrete and rubble. The debris from 19 nonresidential demolition projects of Figure 9 averaged 66 percent concrete.

Chapter 2

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Chapter 3

MANAGEMENT OF CONSTRUCTION AND DEMOLITION DEBRIS IN THE UNITED STATES

INTRODUCTION

Construction and demolition (C&D) debris is managed in a variety of ways, ranging from reuse to recycling to disposal in landfills or combustion facilities. The most common management method is landfilling, including specially permitted C&D landfills and municipal solid waste (MSW) landfills, as well as unpermitted inert debris sites.

In most states there is no formal reporting mechanism that documents C&D debris disposal, recovery, or recycling activities. The information collected by many state agencies is largely anecdotal. In addition, information from private companies is generally considered to be proprietary and not available for public dissemination.

LANDFILLING

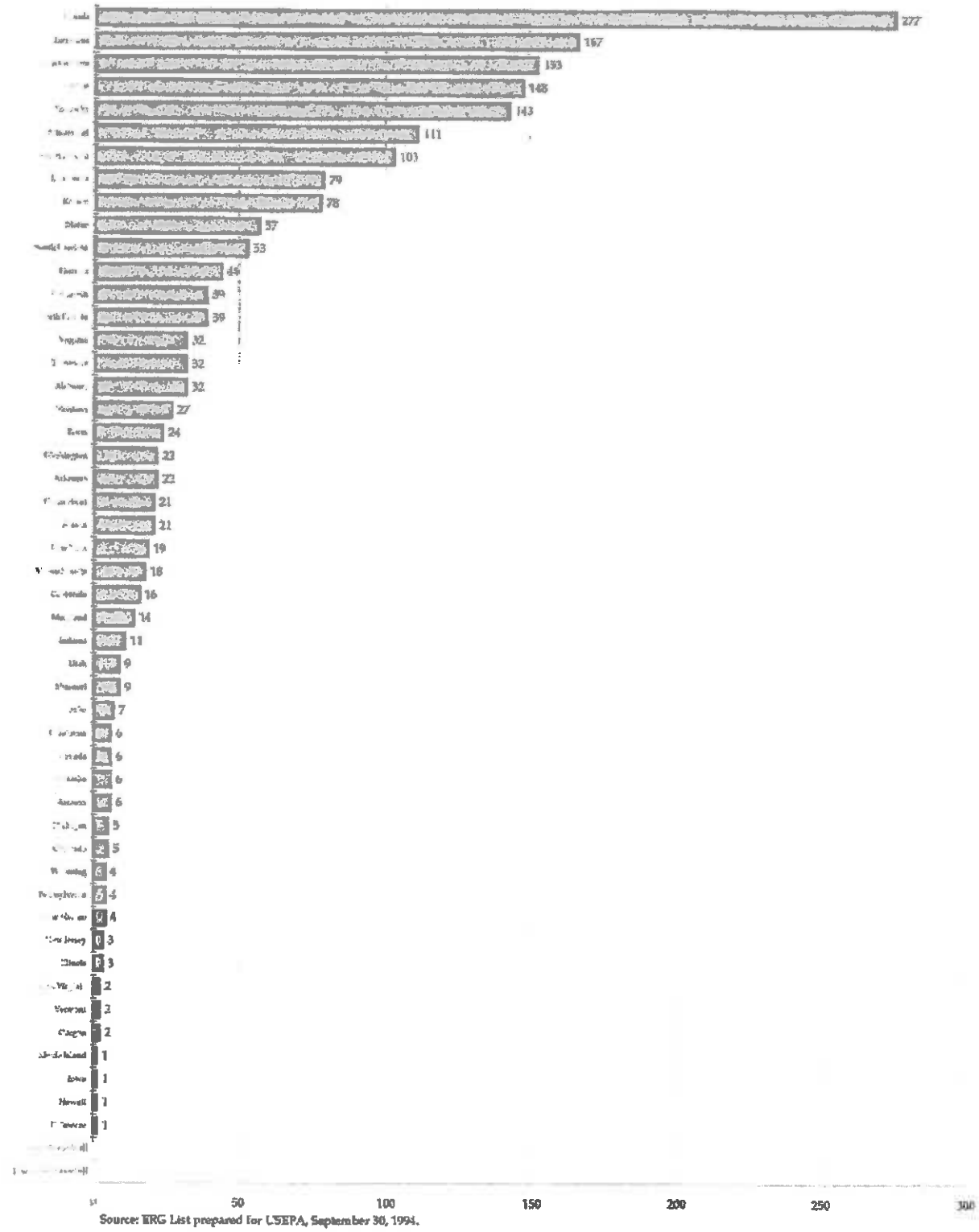
A large fraction of C&D debris generated in the United States ends up in C&D landfills. Since much of this waste stream is inert, solid waste rules in most states do not require the landfills to provide the same level of environmental protection (liners, leachate collection, etc.) as landfills licensed to receive MSW. Therefore, C&D landfills generally have lower tipping fees, and handle a large fraction of the C&D debris.

A 1994 survey done for the EPA identified about 1,900 active C&D landfills in the United States (ERG 1994). Florida had the largest number (280), followed by six other states (Louisiana, North Carolina, Ohio, Kentucky, Mississippi, and South Dakota) with over 100 C&D landfills apiece. (See Appendix A, Table A-19 and Figure 10.)

A recent survey of 850 randomly selected C&D landfills in the United States (40 percent response rate) found that on average, C&D landfills received 29,300 tons of material in 1995 (Bush 1997). Assuming that average holds true for the 1,900 active landfills, 55.6 million tons per year are disposed of in permitted C&D landfills. This amount is equal to about 41 percent of the estimated 136 million tons of building related C&D debris, as estimated in the previous chapter. However, this 55.6 million tons is likely to contain significant amounts of non-building C&D debris.

The amount of C&D debris disposed of in MSW landfills is not known. It is significant, however, because in many areas, particularly where landfill tipping fees are low, disposal in MSW landfills is the most common management method for C&D debris.

Figure 10. Number of C&D debris landfills in the United States



Source: ERG List prepared for USEPA, September 30, 1994.

A significant fraction of residential renovation debris is discarded by homeowners into the household trash and disposed of in MSW landfills. Discarded items include replacement plumbing and electrical fixtures, lumber, and other building materials used in home repair or improvement projects.

Unpermitted landfills for C&D debris are also very common in many states. These are fill areas for inert materials, with little or no control or record keeping by the state or local governments. Some of these are on-site facilities that are used only for the disposal of C&D debris generated at a specific site and may be closed following completion of the activity. Little data exists on the number of unpermitted C&D landfills nationwide. Georgia, the only state known to count them, has about 900 such sites (ICF 1995).

Open burning of C&D debris at construction sites is practiced in many rural areas as well as in many small to medium size cities. The amount of material burned is unknown.

Regulatory schemes used by states for C&D landfills have been divided into four categories as summarized in Table 9. Eleven states require C&D landfills to meet state MSW landfill requirements or requirements similar to these. Twenty-four states regulate C&D landfills separately from MSW landfills. In addition to the 24 states that regulate all C&D landfills as a landfill unit separate from sanitary landfills, eight states have defined further separate requirements for on-site and off-site C&D landfills. Of those eight states, Maine requires both off-site and on-site landfills to meet MSW landfill rules if they are greater than six acres. Seven states exempt all on-site landfills from regulatory requirements. Of these seven, sanitary landfill regulations apply to all off-site landfills in Colorado and New Mexico.

In summary, disposal in landfills is the major waste management option for C&D debris from buildings. We estimate that C&D, MSW, and other landfills account for roughly 65 to 85 percent of that waste stream.

RECOVERY OF C&D DEBRIS FOR RECYCLING

The six major constituents of C&D debris, if not too severely contaminated, have all been recovered and processed into recycled-content products that have been marketed somewhere in the United States. The materials most frequently recovered and recycled are concrete, asphalt, metals, and wood. To a much lesser degree, gypsum wallboard and asphalt shingles have been processed and recycled. The technologies to recover and process these materials for reuse are available. The major barriers to increased recovery rates at this time are:

Table 9

STATE REGULATORY SCHEMES FOR C&D LANDFILLS

State	Must meet MSW Landfill Requirements	Separate C&D Debris Regulations	Separate Requirements for On-Site and Off-Site Landfills	Exempt On-Site C&D Debris Landfills from Regulation
Alabama		Yes		
Alaska				
Arizona	Yes			
Arkansas		Yes		
California		Yes		
Colorado				Yes
Connecticut	Yes			
Delaware		Yes		
Florida		Yes		
Georgia		Yes		
Hawaii				Yes
Idaho	Yes			
Illinois			Yes	
Indiana		Yes		
Iowa	Yes			
Kansas		Yes		
Kentucky			Yes	
Louisana				Yes
Maine			Yes	
Marvland		Yes		
Massachusetts	Yes			
Michigan			Yes	
Minnesota		Yes		
Mississippi				Yes
Missouri		Yes		
Montana		Yes		
Nebraska	Yes			
Nevada	Yes			
New Hampshire		Yes		
New Jersey			Yes	
New York		Yes		
New Mexico				Yes
North Carolina		Yes		
North Dakota	Yes			
Ohio		Yes		
Oklahoma	Yes			
Oregon				Yes
Pennsylvania			Yes	
Rhode Island	Yes			
South Carolina		Yes		
South Dakota		Yes		
Tennessee			Yes	
Texas		Yes		
Utah				Yes
Vermont		Yes		
Virginia		Yes		
Washington		Yes		
West Virginia			Yes	
Wisconsin		Yes		
Wyoming		Yes		
Total Number	11	24	8	7

Source: ICF Incorporated. "Construction and Demolition Waste Landfills." February 1995.

- the cost of collecting, sorting, and processing;
- the low value of the recycled-content material in relation to the cost of virgin-based materials, and
- the low cost of C&D debris landfill disposal.

Responses to a survey of North American aggregate producers indicated that plant permitting issues, as well as product specifications that favor the use of virgin materials, were also problems facing recyclers (Deal 1997).

The number of recycling facilities for C&D debris has been growing rapidly in the last few years. In 1996, it was estimated there were at least 1,800 operating C&D recycling facilities (Brickner 1997). That number includes more than 1,000 asphalt and concrete crushing facilities, 500 wood waste processing plants, and 300 mixed-waste C&D facilities. No information is available on the average throughput of these facilities.

The estimate of 1,800 C&D facilities does not include quarry rock crushing plants, brush/tree tub grinding plants, or pallet grinding operations. The asphalt and concrete crushing plants handle large quantities of road debris, but also concrete recovered from building construction, renovation, and demolition.

The largest number of C&D recycling facilities were reported to be in the Western States (28 percent) and the Mid-Atlantic states (27 percent). The Southwestern and Rocky Mountain States each have only three percent of the total, and the Southeastern, Upper Midwestern, and New England states have 12, 13, and 14 percent of the facilities, respectively.

Because of the effort being exerted to develop markets for recovered materials, the number of C&D recycling facilities is continuing to grow. A July 1997 status update lists 37 new recycling plants or equipment additions in the United States, including planned projects for the rest of 1997 (Leiter 1997). The editor of **C&D Debris Recycling** estimates there are now more than 3,500 C&D debris recycling facilities in operation (Turley 1998).

Deconstruction

Deconstruction is a new expression to describing the process of selective dismantling or removal of materials from buildings before or instead of demolition (NAHB 1996a). A common practice in the United States is to remove materials of value from buildings prior to and during demolition for recycling or reuse. Reuse and recycling examples include electrical and plumbing fixtures that are reused, steel, copper, and lumber that are reused or recycled, wood flooring that is remilled, and doors and windows that are refinished for use in new construction.

Demolition contractors have been practicing deconstruction in varying degrees for a number of years to remove some of the more valuable materials prior to demolition by conventional methods. This activity, along with recovery of demolition materials after the building has been knocked down, has increased significantly since the 1970s and 1980 (Taylor 1997). Deconstruction minimizes contamination of demolition debris, thus increasing the potential for marketing the recovered materials. It is, however, labor intensive, and may require more time than traditional demolition.

Several deconstruction demonstration projects have been completed recently, showing that high diversion rates may be achieved. The NAHB Research Center completed the deconstruction of a two-story, four-unit apartment building in Maryland (NAHB 1997). The Research Center measured the volume and the weight of all materials on site, whether salvaged, recycled, or landfilled. The diversion rate was 76 percent by weight and 70 percent by volume.

In another recent demonstration project, three buildings were deconstructed at the recently closed Fort Ord Army Base, located in Monterey County, California (Schneider 1997). The buildings included a one-story clinic, a single-story administration building, and a two-story barracks. Goals of this project include the evaluation of costs and potential recovery.

Asphalt and Concrete Recycling

Concrete is made up of cement, water, and aggregate, such as crushed stone, sand, or grit. Concrete can be recycled by first crushing it to remove any metals. The primary use of crushed concrete is as a replacement for road-base gravel. Other applications include use as an aggregate in asphalt or concrete. Concrete recycling is practiced in most areas of the country. The practice is most prevalent in areas where landfill tipping fees are high or aggregate is in short supply.

Asphalt pavements are made of asphalt concrete (AC), which consists of asphalt (the bituminous binder) and aggregate. The aggregate makes up the bulk of the asphalt concrete, while the asphalt binder comprises about 5 to 7 percent CIWMB 1997).

While no reports have been identified showing the amount of asphalt and concrete recycled, some datapoints that provide indications of the amounts recycled are discussed below (Brickner 1997).

As stated above, it is estimated there are more than 1,000 asphalt and concrete crushing facilities in the United States. GBB estimates that potentially 50 million tons per year of milled pavement in the United States is reused. Twenty to 50 percent goes back into pavement as Reclaimed Asphalt Pavement (RAP), with the remainder finding its way into aggregate base or subbase. GBB research in the Pacific Northwest, for example, has estimated that for the State of Washington alone, the use of RAP is between 650,000 and 1,000,000 tons per year.

Based on data collected for the State of Washington from waste concrete processors/recyclers, GBB has estimated that 1.4 to 1.5 million tons of waste concrete in that state are recovered, crushed, and recycled on an annual basis.

In Anne Arundel County, Maryland, an area between Washington, DC and Baltimore, Maryland, GBB field work in 1995 indicated that the concrete and asphalt processors in that County alone were receiving, crushing and recycling over 850,000 tons per year of these two types of materials (includes out-of-county generation).

In California, asphalt pavement and concrete are not reported separately. The state estimated generation of "inert solid waste," which consists of concrete, asphalt, dirt, brick and other rubble, at 8.2 million tons per year. The estimated recycling rate for inert solid wastes is 57 percent; the remainder is disposed of (CIWMB 1997).

Waste Wood Recycling

Wood waste produced at construction sites generally has a better potential for reuse than wood from demolition sites due to the ease of separating the materials. Demolition wood is often less desirable because of contamination and because of the difficulty in separating the wood from other building materials.

Wood processing facilities have sprung up in many areas of the United States in recent years, particularly in areas with high landfill costs. Many of these facilities accept wood from C&D debris as well as other wood. Processed (chipped) wood is used as mulch, composting bulking agent, animal bedding, and fuel. Wood waste from construction or demolition is attractive as a fuel because of its low moisture content. Depending on the wood waste boiler system design and the state/regional air pollution permit requirements for the facility, a level of quality control may be necessary at the wood processing plant to reduce and/or avoid the processing of treated and/or painted wood if used as a fuel source in a combustion process.

The American Forest & Paper Association (AF&PA) has located 315 wood processing facilities in the United States that process C&D debris, as shown in Table A-20 of the Appendix. These facilities were included in the estimate of 500 wood processing plants as discussed above. The leading states for these wood processing plants are North Carolina (44), Oregon (35), and California (34). Quantities of wood processed are not given in the AF&PA report.

Metals Recycling

Metals have the highest recycling rates among the materials recovered from C&D sites. Good markets for ferrous metals, as well as copper and brass, have existed for many years. The Steel Recycling Institute estimates the recycling rate for C&D steel is about 85 percent (18.2 million tons out of 21.4 million tons generated). These numbers include not only scrap steel from buildings but also from streets, bridges, and highways (Heenan 1996). The percentage of metals coming from roads and bridges is unknown.

A 1997 survey of North American aggregate producers by Vanderbilt University and C&D Recycling Magazine found that the markets for waste rebar removed from the concrete rubble appear to have increased from 1994 to 1997 (Deal 1997). Twenty-one percent of the 1994 recyclers depended on disposal for their rebar compared to 4 percent in 1997.

Asphalt Shingles

Asphalt shingles are most commonly used on slanted residential roofs. Built-up roofing, which consists of roofing felt between layers of tar and gravel, is traditionally used on flat commercial roofs. These two materials represent the majority of the waste coming from roof replacement or repair. About two-thirds of the residential roofing market is made up of asphalt shingles (NAHB 1996b). Other roofing materials include wood, tile, and concrete.

The common uses for recycled roofing asphalt include hot mix asphalt for paving, cold mix asphalt paving product, and new roofing materials. Meeting the specifications for paving and roofing materials is still limiting the growth of these applications. Preconsumer manufacturing scrap (approximately one million tons per year) is currently being used in hot mix asphalt; however, postconsumer scrap (estimated at 8 to 10 million tons per year), which is less uniform in composition, is not nearly as widely used or recommended for use in hot mix asphalt (Button 1997).

Drywall (Sheetrock, Gypsum)

Drywall is being recycled in several locations by first separating the paper backing, which is recycled into new paper backing, and then remixing the gypsum and using it in the manufacture of new drywall. Recovered drywall has also been used as animal bedding, cat litter, and as a soil amendment.

Estimated Recovery Rate

Because of the relatively benign nature of C&D debris (i.e., much of it is inert), there has been no concerted effort in the past to track and quantify the generation or recovery rate from a national perspective. Therefore, only general estimates can be made based on data from those local communities and states that monitor the waste stream.

A total survey of states was not feasible for this project, but several states were contacted in an attempt to estimate of the national recovery rate for C&D debris. States representing more than 50 percent of the U.S. population were contacted. Most states contacted have no statewide records available on the quantity of C&D debris generated or recovered for recycling. We identified five states that report recycling rate data for C&D debris. The recovery rates in the five states range from 37 percent to 77 percent. The five states and their reported recovery rates are:

Massachusetts	77 percent
Florida	46 percent
Vermont	37 percent
Oregon (Metro)	42 percent
South Carolina	40 percent
Average	48 percent

These data confirm that there is significant recovery of C&D debris for recycling in these locations. However, it is not likely that these five states are representative of the United States as a whole. We expect that the states that keep records have higher recovery rates than the national average.

The definitions of what constitutes C&D debris and what constitutes recycling among the states are not standardized, as was discussed earlier, although most C&D debris definitions include both building-related wastes and as road and bridge debris. Massachusetts includes asphalt and concrete from roads in both the numerator and denominator of the recovery rate calculation, but does not include land clearing debris, (i.e., stumps, soil, rock, etc.). Florida's recovery numbers include primarily building debris and land clearing debris. Road debris is generally not counted (Moreau 1997).

Several methods were explored for estimating a national recovery rate for C&D debris. The first is to look at the relationship of recovery rate and landfill tipping fees. It might be expected that states with low C&D landfill tipping fees have lower recovery rates.

Lowest C&D landfill tipping fees are generally in the lower population density states, such as the Midwest, where the average has been reported at $19.70 per ton, compared to $46 and $42.60 per ton in the Northeast and West, respectively (Bush 1997). A large number of states in the Midwest do not have recovery rate records. In the South, the average is $27.10 per ton. Using tipping fees as a guide, a conservative estimate would be that the average recovery rate might be about half of the average of the five states reporting recovery rates, or 20 to 30 percent of generation.

To test how reasonable the 20 to 30 percent estimate is, consider the 1,800 C&D debris recovery facilities referred to above. Assuming the 1,000 concrete and asphalt plants handle primarily road debris, there are 800 or more wood and mixed waste processors that are thought to handle primarily building debris. Recycling rates of 20 to 30 percent (27 to 41 million tons per year) would result in an average throughput of 90 to 140 tons per day, which appears to be a reasonable average size.

SUMMARY OF C&D DEBRIS MANAGEMENT PRACTICES

Over the past 10 years a significant amount of data has been collected on the amount of C&D debris disposed of at C&D and MSW landfills and the amount processed at recycling facilities. The studies were conducted at the municipal, county, or state levels. Research has also been conducted on the number of C&D landfills and processing facilities in operation on the national level. This foundation of new research was used to estimate how C&D debris is managed on a national level.

Table 10 summarizes our estimated C&D debris management practices in the United States in 1996. These quantity estimates apply to building-related wastes, as estimated in Chapter 2. An estimated 35 to 45 percent of the waste generated is managed in C&D landfills, 20 to 30 percent is recovered for recycling, and 30 to 40 percent is disposed of in MSW landfills and other disposal sites, such as unpermitted landfills or combustion facilities.

Table 10
ESTIMATED MANAGEMENT OF BUILDING-RELATED C&D DEBRIS IN THE UNITED STATES, 1996

Management Option	Million tons/year	Percent of Total
Recovered for recycling	25-40	20-30
C&D landfills	45-60	35-45
MSW landfills and other*	40-55	30-40
Totals	136	100

* Includes combustion and disposal in unpermitted sites.
Source: Franklin Associates

Chapter 3

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Chapter 4

ADDITIONAL PERSPECTIVES ON CONSTRUCTION AND DEMOLITION DEBRIS

INTRODUCTION

The solid waste industry usually identifies wastes according to the source and predominant method of solid waste management. Waste materials defined as municipal solid waste (MSW) are normally discarded from residences or commercial establishments and managed in municipally controlled landfills or processing facilities. Construction and demolition (C&D) debris is generated at construction and demolition sites, and managed in C&D landfills or processing facilities.

However, the lines separating the various sectors of solid waste are sometimes blurred. Data sources for the production of some components of MSW (e.g., paper products) are developed from trade association data. These sources tabulate the entire production, without regard to the final discard point; i.e., some paper products are not discarded from residences or commercial establishments, but are collected from construction sites. Conversely, some wastes that are classified as C&D debris by the methods developed in this report, because they are building materials, are placed into the household trash and end up in MSW landfills.

While this blurring of lines may not be an issue of great importance because of the relatively small amounts of crossover, it could potentially result in double counting of some fractions when estimating the national generation.

MSW COLLECTED WITH C&D DEBRIS

Definitions for some components that make up MSW are affected by the data that are available. For example, postconsumer old corrugated containers (OCC) are included in EPA's MSW characterization, even though some of them are discarded from construction sites. Light fixtures, major appliances, vinyl siding, and other items are often delivered to construction sites in corrugated boxes. As a result, nearly all construction site waste assessments include OCC as a waste category. On a volume basis, up to 20 percent of wastes collected at residential construction sites may be OCC. By weight, OCC ranged from 2 percent to 10 percent in the waste audits performed by NAHB.

An extensive year-long demonstration project conducted by CornerStone of Wisconsin, Inc. was monitored on a quarterly basis by GBB (Brickner 1997). GBB reported that through the use of specialized collection vehicles serving new residential construction in Southeast Wisconsin, the amount of collected and marketed OCC averaged about 25 percent of the total collected volume of material. Since the loose corrugated containers were estimated to occupy about 30 cubic yards per ton, the actual weight recovered was estimated to be 7 percent of the total average weight of material generated from each of the residential units serviced by the unique CornerStone system.

Additional data on several other C&D debris sorts that also quantified OCC are presented in Appendix A of this report.

Although the amount of OCC collected at C&D sites can be a significant fraction of residential construction wastes, it is a small fraction of the total OCC discarded, and on a weight basis it represents a very small fraction of the total C&D debris stream.

Other common MSW items typically collected at C&D sites include food and beverage containers, appliances, and carpeting. Containers discarded by workers at construction and demolition sites typically show up in C&D debris. Major appliances and carpeting also frequently remain in houses that are demolished, and are included with mixed C&D debris.

C&D DEBRIS COLLECTED WITH MSW

Significant quantities of building materials, particularly renovation scraps, are also discarded in the municipal waste stream. Examples include pipes, plumbing fixtures, and building materials that are replaced by the residents and discarded with their household trash. The amount of these types of wastes in MSW is not known. However, this "overlap" of MSW and C&D may account for some of the discrepancies that have been experienced between expected MSW quantities and actual weights.

At the current level of refinement of C&D generation and recovery data, the overlap of MSW and C&D debris is not expected to be a cause for concern at the national level in the near future.

Chapter 4

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Appendix A

CALCULATIONS

Table A-1
Residential Construction Debris Worksheet

Method to Use

(1) Start with total dollars of new construction, from Census Bureau. Current Constr Reports, C-30.
(2) Calculate sq ft of new construction from total dollars and $/sq ft construction cost.
(3) From empirical waste assessment, estimate lb/sq ft of new construction.
(4) Calculate total generation.

Calculation

(1) C-30, Residential Construction (1996) = $181,795,000,000
(Includes private new housing units and public housing & redevelopment)

(2) 1995 Census data, Table 1175 of 1996 Stat Abs. (Note: whole industry not included)

Residential Construction	$127,900,000,000	
Residential sq ft of new constr	2,172,000,000	sq ft
Cost of new construction	$58.89	per sq ft

Total sq ft of new constr = 181,795,000,000/58.89/1.03 2,997,326,036 sq ft
(Includes 3 percent inflation factor)

(3) See sampling waste assessment results:

Average Generation = 4.38 lb/sq ft

(4) Total new residential construction debris = 6,564,000 tons/year

Table A-2
Nonresidential Construction Debris Worksheet

Method to Use

(1) Start with total dollars of new construction, from Census Bureau. Current Constr Reports, C-30.
(2) Calculate sq ft of new construction from total dollars and $/sq ft construction cost.
(3) From empirical waste assessment, estimate lb/sq ft of new construction.
(4) Calculate total generation.

Calculation

(1) C-30, Nonresidential Construction (1996) $198,694,000,000
(Includes all private nonres and public industrial, educ, hosp & other)

(2) 1995 Census data, Table 1175 of 1996 Stat Abs. (Note: whole industry not included)

Nonresidential Construction	$112,000,000,000	
Nonresidential sq ft of new construction	1,276,000,000	Sq ft
Cost of new construction	$87.77	per sq ft

Total sq ft of new construction = 198,694,000,000/87.77/1.03
(Includes 3 percent inflation factor) 2,197,759,570 sq ft

(3) See sampling waste assessment results:

Generation = 4.02 lb/sq ft

(4) Total new residential construction debris = 4,417,000 tons/year

Table A-3
Residential Demolition Worksheet

Method to Use

(1) Start with the number of residences demolished per year.
(2) Estimate the average size of residences that are demolished (single-family (SF) and multi-family (MF)).
(3) Estimate pounds of waste generated per sq ft, from sampling studies.
(4) Calculate total generation.

Calculation

(1) Estimate: 245,000 residential demolitions per year, per NAHB Economics Dept.

(2) Smaller than the average size of new residences, because it is older.
See graph of sizes of houses built, in Figure 2:
New houses built in 1995 are 2,100 sq ft (SF), and 1,050 sq ft (MF)
New MF house sizes are unchanged since 1975, while new SF houses grew from 1,600 sq ft to 2,100 sq ft
Ave size is 1,396 sq ft from 1975 to 1986, then climbs to 1,900 sq ft/house
Demolitions: use 1600 sq ft for SF houses and 1000 sq feet for MF houses

(3) METRO sampling of three SF houses = 49.5 lb/sq ft without concrete	39.6	tons	31%
Estimated wt of foundation, 30' X 30' house w/8" thick basement walls			
30'X8'X0.67'X4X150 lb/cu ft/2000 = est. tons of foundation	48.2	tons	38%
(assumes 8 in. wall thickness and concrete density of 150 lb/cu ft)			
Basement floor			
30'X30'/3X150 lb/cu ft/2000 = tons of floor	22.5	tons	18%
Garage floor & driveway 10X(20+45)/3X150/2000	16.3	tons	13%
Total for 1600 sq ft single family with full basement & garage	126.6	tons	100%
Total in lb/sq ft	158.2	lb/sq ft	
Concrete only	108.7	lb/sq ft	
For house on slab (basic house)	39.6	tons	51%
Concrete slab (same as basement floor)	22.5		29%
Garage floor & driveway (same as above)	16.3		21%
Total for SF on slab	78.35	tons	100%
Total in lb/sq ft	97.9	lb/sq ft	
Concrete only	48.4	lb/sq ft	
For house with crawl space (no bsmt, garage, or driveway)	39.6	tons	
Total for SF with crawl sp	49.5	lb/sq ft	
Concrete only	0.0	lb/sq ft	
For MF housing (per NAHB MF (Table 5))	127	lb/sq ft	

(4) Fraction of total units in U.S. from 1996 Statistical Abstract, Table 1194, Existing housing (1993)
Single family residences:

Foundation type	Fraction of total units	C&D debris (lb/sq ft)	Sq ft/unit	Est. units demol-ished	Total Sq ft	Generation (tons)	Percent of waste
Basement	0.30	158.2	1,600	72,426	115,882,000	9,200,000	47%
Concrete slab	0.17	97.9	1,600	42,406	67,850,000	3,300,000	17%
Crawl sp & other	0.19	49.5	1,600	46,865	74,983,000	1,900,000	10%
	0.66			161,697	258,715,000	14,400,000	73%
Weighted ave. SF residence		111.3	1,600				
Multi-family (>1)	0.34	127.0	1,000	83,303	83,303,000	5,300,000	27%
Totals	1.00			245,000	342,018,000		100%
Total residential demolition generation =						19,700,000	tons
Average pounds per sq ft of house demolished =						115	lb/sq ft
Average tons per dwelling unit demolished =						80.4	tons/unit

Source: Franklin Associates

Table A-4
Nonresidential Demolition Worksheet

Method to Use

(1) Start with the number of demolitions per year.
(2) Estimate the average size of nonresidential buildings demolished, assuming buildings demolished were built between 1920 and 1969.
(3) Estimate pounds of waste generated per sq ft, from sampling studies.
(4) Calculate total generation.

Calculation

(1) Use demolition permits data from the U.S. Bureau of the Census.
Note: Census permits data are discontinued as of 1995.

Census no. for 1994 = 45,061 buildings
Census no. for 1995 = 43,795 buildings

(2) Calculation of the average size of nonresidential buildings built between 1920 and 1969

Construction period		No. of yrs in period	Bldgs built in period (thou)	Million sq ft	Average bldg size Sq ft/bldg
1990	1992	3	128	2,502	19,547
1980	1989	10	884	14,287	16,162
1970	1979	10	982	14,014	14,271
1960	1969	10	783	12,612	16,107
1946	1959	14	880	10,421	11,842
1920	1945	26	724	8,712	12,033
1900	1919	20	255	3,608	14,149
Before	1989		169	1,721	10,183
1920	1969	50	2,387	31,745	13,299

The average size of buildings built between 1920 and 1969 = 13,299

Source: U.S. Energy Information Administration, "Commercial Buildings Characteristics,1992". From 1996 Statistical Abstract, Table 1206. (Excludes buildings 1,000 square feet or smaller).

(3) Average generation from sampling (Table 6) 173 lb/sq ft

(4) Total nonresidential generation 50,400,000 Tons

Source: Franklin Associates

Table A-5
Residential Renovation Worksheet

Method to Use

(1) Start with total dollars of improvements and repairs, from Census Bureau. Current Constr Reports, C-30.
(2) Estimate the number of replacements of roofs, driveways, HVAC, kitchens, etc. and the amount of waste materials generated from each.
(3) Calculate total generation.

Calculation

(1) 1996 Expenditures for improvements and repairs of residential properties — 114,300 million dollars
Census data, released 8/4/97

Improvements	68	percent	77,724
Repairs	32	percent	36,576
			114,300 million dollars

(2) Estimates for remodeling *	Million jobs	Tons/job	Tons
Kitchens (minor)	1.25	0.75	937,500
Kitchens (major)	1.25	4.5	5,625,000
Baths (minor)	1.8	0.25	450,000
Baths (major)	1.2	1.00	1,200,000
Additions	1.25	0.75	937,500

(3) Replacements (see FAL estimates, on following Tables A-7 through A-10)

Concrete from driveway replacements	13,000,000	tons/year
Asphalt roofs	6,800,000	
Wood roofs	1,400,000	
Heating & A/C replacements	1,574,000	
Kitchen remodeling	6,562,500	
Bathroom remodeling	1,650,000	
Additions	937,500	
Total residential renovation debris	31,924,000	tons/year

* NAHB Research Center

Source: Franklin Associates

Table A-6
Nonresidential Renovation Worksheet

Method to Use

(1) Start with total dollars of improvements and repairs, from U.S. Census.
(2) Calculate average $/sq ft of renovation from nonresidential renovation waste assessments.
(3) Generation (tons)=[Total Dollars / (Dollars/sq ft)] X (lb/sq ft) / (lb/ton).

Alternative method: Simply multiply quantity of residential renovation debris (Table A-5) by the ratio of dollars spent nonresidential to residential.

Calculation

(1) Total nonres improvements in 1996 * 100,400 million dollars
This compares to 1996 residential improvements of 114,300 million dollars
Total res + nonres 214,700 million dollars
*Assume same ratio of res/nonres as in 1992.
Bureau of the Census, Expenditures for Nonresidential Improvements and Repairs: 1992
From Table E: Comparison of Resid & Nonres Improvements & Repairs: 1992

	Tot. Dollars	Sq ft	$/sq ft		
(2) Renovation assessments	$8,578,000	72,000	$119	/sq ft	28.49 lb/sq ft
	$12,305,422	180,000	$68	/sq ft	6.85
	$2,100,000	24,000	$88		20.63
	$22,983,422	276,000	$83	/sq ft	17.67 lb/sq ft

(3) Total estimated square feet of renovation = 100,400 million / ($83/sq ft) 1,206 million sq ft

Estimated generation (method one) = 1,206 million X 17.67lb/sq ft/2,000 lb/ton = 10,652,000 tons/yr
Note: Total floorspace of nonresidential buildings in 1992 is 67.876 billion sq ft
Therefore 1,206 million represents 1.7 percent of total.
This seems to be unreasonably low. It implies an average of more than 50 years between renovations.
Therefore, use the alternative methodology.

Alternative methodology: Estimated generation = 31,924,000 / 114,300X100,400 = 28,042,000 tons/yr

Source: Franklin Associates

Table A-7
Estimated Weight of Concrete Driveways Replaced
Each Year from Residences With Less than Five Units/Structure

Total Housing units with < 5 units/structure, 1993*				**81,094,000**
Median age of housing = 28 years				
Estimated dimensions of ave driveway, LxWxT (ft)	8 X	45 X	0.333	
Calculated average driveway volume (cu ft)				119.9
Estimated percent of driveways replaced each year	3%			
Est. percent of homes with concrete driveways	60%			
Replacements/yr (total units times % replaced)				1,445,900
Total concrete removed (cu ft)				173,334,500
Density of concrete (lb/cu ft)	150			
Total tons of concrete				**13,000,000**

* 1996 Statistical Abstract, Table 1189.

Source: Franklin Associates

Table A-8
Estimated Weight of Asphalt Roofs Replaced
Each Year from Residences with Less than Five Units/Structure

Total Housing units with < 5 units/structure, 1993*		81,094,000
Median age of housing = 28 years		
Assume average roof area (sq ft)	1,400	
Assume weight of asphalt roof (lb/100 sq ft)	240	
Average wt of asphalt roof (lb/roof)		3,360
Estimated percent of homes with asphalt roofs**	67%	
Estimated percent of roofs replaced each year**	7%	
Replacements/yr (total no. times percent replaced)		3,803,300
Total tons of asphalt roofing removed		**6,400,000**

* 1996 Statistical Abstract, Table 1189.

** NAHB Research Center Waste Management Update 2, October 1996.

Source: Franklin Associates

Table A-9
Estimated Weight of Wood Roofs Replaced
Each Year from Residences with Less than Five Units/Structure

Total Housing units with < 5 units/structure, 1993*		81,094,000
Median age of housing = 28 years		
Assume average roof area (sq ft)	1,400	
Assume weight of wood roof (lb/100 sq ft)	200	
Calculated weight of wood roof (lb/roof)		2,800
Estimated percent of homes with wood roofs	25%	
Estimated percent of roofs replaced each year	5%	
Replacements/yr (total times percent replaced)		1,000,000
Total tons of wood roofing removed		**1,400,000**

* 1996 Statistical Abstract, Table 1189.

Source: Franklin Associates

Table A-10
Estimated Weight of Heating, Ventilating, and Air Conditioning Equipment Replaced Each Year

Total Housing units, 1993 (1) 106,610,000

Median age of housing = 28 years

	Estimated lb/unit*	Number in use (1)	Est. % replaced per year	Total TPY
Warm air furnaces	300	55,763,000	5	418,200
Electric heat pump	600	9,697,000	5	145,500
Steam or hot water systems	1,000	14,898,000	3	186,200
Floor, wall, or pipeless furnace	200	5,625,000	5	28,100
Built-in electric units	200	8,084,000	7	56,600
Room heaters	200	4,056,000	7	28,400
Stoves	200	3,477,000	3	10,400
Fireplaces	300	1,076,000	4	6,500
Central air	600	46,277,000	5	694,200
Total Replacement Products in the U.S. (1993)				**1,574,100**

(1) 1996 Statistical Abstract, Table 1189.
(2) Estimated by Franklin Associates.

Note: Equipment that remains in building unused will eventually become demolition debris.
Source: Franklin Associates

Table A-11
Construction Waste From Single Family Residential Construction (1)

	Largo, MD (2)			Anne Arundel County, MD (3)			Portland, OR (4)			Grand Rapids, MI (5)			Average
	Pounds	Tons	% of C/D	Pounds	Tons	% of C/D	Pounds	Tons	% of C/D	Pounds	Tons	% of C/D	% of C/D
Wood	4,305	2.15	42.2	3,319	1.66	35.2	6,676	3.34	48.8	5,310	2.66	43.6	42.4
Concrete													
Brick			0	1,240	0.62	13.1			0			0	3.3
Shingles													
Other Roofing													
Asphalt			0	544	0.27	5.8			0			0	1.4
Fiberglass													
Glass													
Metals	200	0.10	2.0	316	0.16	3.3	73	0.04	0.5	183	0.09	1.5	1.8
Plastics & foam	135	0.07	1.3	67	0.03	0.7	51	0.03	0.4	409	0.20	3.4	1.4
Mixed													
Textiles				51	0.03	0.5	10	0.01	0.1	85	0.04	0.7	0.4
OCC	420	0.21	4.1	478	0.24	5.1	280	0.14	2.0	1,240	0.62	10.2	5.4
Other Packaging	50	0.03	0.5	58	0.03	0.6	20	0.01	0.1	147	0.07	1.2	0.6
Other mixed C&D	2,420	1.21	23.7	423	0.21	4.5	2,768	1.38	20.2	1,908	0.95	15.7	16.0
Drywall	2,680	1.34	26.2	2,940	1.47	31.2	3,806	1.90	27.8	2,900	1.45	23.8	27.3
Masonry & Tile													
Inerts													
Totals	10,210	5.11	100	9,436	4.72	100	13,684	6.84	100	12,182	6.09	100	100
Square feet	2,200			2,450			3,000			2,600			
Pounds/sq ft	4.6			3.9			4.6			4.7	Average lb/sq ft =		4.4

(1) Source: NAHB Research Center, 1995.
(2) 2 story -2200 sq ft, W/O bsmt, vinyl sided w/brick front, 4 bdrm, 2 1/2 ba, 2 car gar, no deck, 11/94.
(3) 2 story -2450 sq ft, full bsmt, 2 car gar. brick facade, 4 bdrm, 2 1/2 ba, 3/95.
(4) Custom 2 story -3000 sq ft, full bsmt, tile roof, 4 bdrm, 3 ba, 2 car gar, tile roof, 7/92
(5) 2 story -2600 sq ft. W/O bsmt, vinyl siding, 4 bdrm, 2 1/2 ba, 3 car gar w/deck, 10/94
(5) OCC, approx. 380 containers - largest contributors to volume: cabinets, appliances, vinyl siding, windows, doors, and electrical fixtures.

Table A-12
Riverdale Case Study
Multi-Family (4-Plex) Building Deconstruction

Material	Tons	Percent
Wood	17.6	14
Drywall	21.6	17
Roofing	3.5	3
Rubble	66.5	52
Brick	17.9	14
Miscellaneous	1.4	1
	128.5	101

Total building floor area = 2,000 square ft

Generation rate = 129 pounds/square foot

Source: NAHB Research Center, Inc. June 1997

Table A-13
Residential C&D Debris Composition
METRO, Portland Oregon (As generated) (1)

	New Construction		New Construction		New Construction		Kitchen Renovation		House Renovation	
	Pounds	Percent	Pounds	Percent	Pounds	Percent	Pounds	Percent	Pounds	Percent
Wood	6,945	50.4	6,000	71.5	8,400	79.3	1,526	15.2	14,500	55.1
Drywall	3,806	27.6	1,450	17.3	1,210	11.4	7,620 (2)	76.1		
Concrete	1,698	12.3								
Metal	138	1.0					186	1.9		
Cardboard	280	2.0			135	1.3				
Roofing									10,200	38.8
Miscellaneous	909	6.6	936	11.2	850	8.0	675	6.7	1,600	6.1
	13,776	100.0	8,386	100.0	10,595	100.0	10,007	100.0	26,300	100.0
Total square feet	2,800		1,290		1,290		150.0		1,330.0	
Pounds/sq ft	4.9		6.5		8.2		66.7		19.8	

	Demolition		Demolition		Demolition	
	Pounds	Percent	Pounds	Percent	Pounds	Percent
Wood	19,000	25.7	34,000	54.0	18,000	58.0
Drywall						
Concrete	30,000	40.5			10,000	32.2
Metal	4,000	5.4				
Cardboard						
Roofing						
Miscellaneous	21,000	28.4	29,000	46.0	3,020	9.7
	74,000	100.0	63,000	100.0	31,020	100.0
Total square feet	1,280.0		1,200.0		750.0	
Pounds/sq ft	57.8		52.5		41.4	

(1) Includes recycled and disposed materials.
(2) Plaster and brick
Source: METRO Data Sheets, Portland, OR 1992-1995.

Table A-14
Nonresidential C&D Debris Composition
METRO, Portland Oregon (As generated) (1)

	Institutional New Construction		2 Office Buildings New Construction		Hospital Lab & Office Renovation		Office Building Renovation		Department Store Renovation	
	Pounds	Percent	Pounds	Percent	Pounds	Percent	Pounds	Percent	Pounds	Percent
Wood	36,000	20.5	4,400	37.0			7,200	40.2	406,000	20.4
Drywall			4,800	40.3			10,000 (2)	55.9	222,000	11.2
Concrete										
Metal					11,600	22.1	300	1.7	812,000	40.8
Cardboard	34,000	19.3							10,000	0.5
Roofing									10,300	0.5
Miscellaneous	106,000	60.2	2,700	22.7	40,800	77.9	400	2.2	530,000	26.6
	176,000	100.0	11,900	100.0	52,400	100.0	17,900	100.0	1,990,200	100.0
Total square feet	41,850		7,452		10,560		6,000.0		198,500.0	
Pounds/sq ft	4.2		1.6		5.0		3.0		10.0	

	Warehouse Demolition		Department Store Demolition		Institutional Demolition	
	Pounds	Percent	Pounds	Percent	Pounds	Percent
Wood	2,496,000	79.7	84,000	1.2	142,000	1.3
Drywall						
Concrete	176,000	5.6	6,534,000	89.5	7,210,000	66.1
Metal	402,000	12.8	646,000	8.9	256,000	2.3
Cardboard						
Roofing						
Miscellaneous	58,800	1.9	34,000	0.5	3,300,000	30.3
	3,132,800	100.0	7,298,000	100.0	10,908,000	100.0
Total square feet	86,400.0		44,000.0		60,000.0	
Pounds/sq ft	36.3		165.9		181.8	

(1) Includes recycled and disposed materials.
Source: METRO Data Sheets, Portland, OR 1992-1995.

Table A-15

Construction & Demolition Debris Composition

City of Seattle (As Disposed)

	Residential New Construction		Commercial New Construction		Residential Remodeling (1)		Commercial Remodeling(1)		Residential Demolition		Commercial Demolition	
	Tons	Percent	Tons	Percent	Tons	Percent	Tons	Percent	Tons	Percent	Tons	Percent
Wood waste	1,569	52.6	2,583	34.6	7,257	55.5	3,834	51.1	6,509	49.5	12,791	31.0
Mineral Aggregates (2)	870	29.2	2,740	36.8	4,076	31.2	1,641	21.9	3,989	30.4	11,734	28.4
Glass	1	0.0	3	0.0	136	1.0	2	0.0	204	1.6	349	0.8
Metals	82	2.7	759	10.2	674	5.2	957	12.8	694	5.3	7,391	17.9
Paper	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Yard wastes	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Plastics	160	5.3	241	3.2	397	3.0	598	8.0	317	2.4	1,891	4.6
Other materials	242	8.1	965	12.9	424	3.2	278	3.7	416	3.2	5,663	13.7
Other Organics	45	1.5	31	0.4	107	0.8	127	1.7	972	7.4	1,110	2.7
Hazardous Waste	15	0.5	133	1.8	15	0.1	65	0.9	41	0.3	362	0.9
	2,984	100.0	7,455	100.0	13,086	100.0	7,502	100.0	13,143	100.0	41,292	100.0

(1) Roofing materials hauled separately not included.

(2) Mineral aggregates include roofing materials (composition, built-up, tarpaper, clay roofing tile, slate), concrete, bricks, masonry, tile, mortar, fiberglass insulation, and gypsum scrap.

Source: Construction and Demolition Debris Study for the City of Seattle, by Cunningham Environmental Consulting and Cascadia Consulting Group. Draft Report, March 1995

Table A-16
Composition of Building Construction & Demolition Debris

Component	Residential Renovation		Residential New Construction		Residential Demolition		Commercial Renovation		Commercial Demolition		Total Composition	
	Pounds	Percent	Pounds	Percent	Pounds	Percent	Pounds	Percent	Pounds	Percent	Pounds	Percent
Asphalt	0.0	0.00	0.0	0.00	0.0	0.00	12.9	0.01	0.0	0.00	12.9	0.00
Brick	1,474.3	3.66	320.6	1.87	1,648.6	2.13	545.3	0.40	0.0	0.00	4,188.8	1.30
Corrugated	339.9	0.84	891.5	5.21	141.3	0.18	316.1	0.23	125.3	0.31	1,814.1	0.56
Carpeting	154.3	0.38	326.6	1.18	9.9	0.01	31.5	0.04	109.0	0.27	651.5	0.20
Cinder Block	10.7	0.03	169.1	0.61	13,641.0	17.61	26,206.6	19.03	0.0	0.00	40,027.4	12.39
Concrete with Rebar	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00
Concrete without Rebar	77.3	0.19	2,177.9	7.84	11,820.3	15.26	30,201.1	21.93	816.5	2.05	45,093.1	13.96
Dirt/Earth	0.0	0.00	119.0	0.43	0.0	0.00	144.2	0.10	0.0	0.00	263.2	0.08
Drywall	4,739.6	11.80	3,930.8	14.18	1,045.2	1.35	5,220.2	3.79	25.4	0.06	14,990.2	4.64
Electric Fixtures	79.9	0.20	10.5	0.04	3.3	0.00	639.8	0.46	40.0	0.10	773.5	0.24
Electrical Wiring	36.0	0.09	4.2	0.02	66.2	0.09	929.8	0.67	81.5	0.20	1,118.9	0.35
Furniture	13.0	0.03	0.0	0.00	0.0	0.00	63.8	0.05	421.5	1.06	497.3	0.15
Glass	65.8	0.21	58.7	0.21	57.2	0.07	63.9	0.05	38.8	0.05	284.4	0.09
Insulation-Foam	190.8	0.47	31.6	0.11	61.9	0.08	333.8	0.24	2.2	0.01	620.3	0.19
Insulation-Sheathing	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00
Masonite/Slate	468.3	1.16	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	468.3	0.14
Metal Drums	0.0	0.00	0.0	0.00	8.4	0.01	29.8	0.02	440.0	1.10	478.2	0.15
Metal-Ferrous	875.6	2.18	214.7	0.77	1,454.4	1.88	6,729.8	4.89	2,577.3	6.47	11,851.8	3.67
Metal-Nonferrous	75.9	0.19	91.0	0.34	28.1	0.04	165.6	0.12	4.0	0.01	364.6	0.11
Misc. Fines	10,921.7	27.14	9,904.6	35.65	26,308.9	33.97	24,901.4	18.08	21,783.6	54.67	93,822.2	29.04
Other Paper	239.1	0.59	40.1	0.14	48.2	0.06	173.9	0.13	167.1	0.42	668.4	0.20
Pallets	17.8	0.04	123.6	0.44	0.0	0.00	160.6	0.12	195.0	0.49	497.0	0.15
Plastic film	123.5	0.31	32.5	0.19	39.4	0.04	143.7	0.10	51.8	0.13	404.9	0.13
Plastic-PVC Pipe, Rigid, etc.	20.5	0.05	194.5	0.70	32.1	0.04	293.0	0.21	830.2	2.08	1,372.3	0.42
Porcelain/Bathroom Fixtures	72.1	0.18	19.1	0.07	144.5	0.19	138.7	0.10	75.3	0.19	449.7	0.14
Pressboard/Chipboard	941.6	2.34	1,511.7	5.44	593.1	0.77	1,835.7	1.35	4,937.1	12.39	9,839.2	3.05
Roofing Material-Felt	10.8	0.03	36.2	0.13	148.3	0.19	0.0	0.00	0.0	0.00	195.3	0.06
Roofing Material-Shingles	4,328.6	10.76	272.0	0.98	933.6	1.21	16,209.5	13.22	0.0	0.00	23,743.9	7.35
Rubber	11.2	0.03	82.4	0.30	9.0	0.00	21.6	0.02	0.0	0.00	115.2	0.04
Siding-Aluminum	0.0	0.00	0.0	0.00	87.3	0.11	0.0	0.00	0.0	0.00	87.3	0.03
Siding-Vinyl	439.7	1.09	129.2	0.47	80.9	0.10	0.0	0.00	45.1	0.11	684.9	0.21
Textiles	5.8	0.01	4.8	0.02	3.2	0.00	36.9	0.03	0.0	0.00	50.7	0.02
Tile-Ceiling	206.5	0.51	153.3	0.55	198.8	0.26	573.6	0.42	31.5	0.08	1,163.7	0.36
Tile/Ceramics	921.6	2.29	344.8	1.24	48.5	0.06	1,156.4	0.84	14.2	0.04	2,485.5	0.77
Tires	26.7	0.07	0.0	0.00	0.0	0.00	15.9	0.01	0.0	0.00	42.0	0.01
Treated Wood	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	168.9	0.42	168.9	0.05
Tree Limbs/Stumps	782.1	1.94	1,952.2	7.03	298.7	0.39	810.7	0.59	104.6	0.26	3,948.3	1.22
Untreated Wd.-Plywood	729.1	1.80	1,082.0	3.89	652.5	0.84	5,724.8	4.16	1,811.4	4.55	9,998.8	3.09
Untreat. Wd.-Dimen. Wd.(not paint.)	10,214.7	25.36	3,319.6	11.95	17,232.5	22.28	7,243.3	5.26	4,727.1	11.86	42,759.4	13.24
Untreat. Wd.-Dimen. Wd.(Paint.)	1,348.6	3.35	18.8	0.07	617.0	0.78	4,512.8	3.28	101.1	0.25	6,588.3	2.04
White Goods/ Appliances	249.0	0.62	0.0	0.00	0.0	0.00	91.1	0.07	144.6	0.36	484.7	0.15
TOTAL	40,246.5	100.0	27,786.6	100.0	77,419.3	100.00	137,719.8	100.0	39,852.1	100.00	323,054.3	100.00

Source: Gershman, Brickner & Bratton, Inc., for Town of Babylon, NY; Demolition Age, September 1993.

Table A-17
Composition of C&D Debris in Des Moines, Iowa (1)

Component	Residential New Construction		Residential Renovation		Residential Demolition	
	Tons	Percent	Tons	Percent	Tons	Percent
Asphalt	0.0	0.0	0.0	0.0	0.0	0.0
Brick	11.3	5.2	5.3	3.8	0.9	3.9
Cardboard	9.7	4.5	2.7	2.0	0.1	0.4
Concrete	26.4	12.1	12.5	9.1	5.0	21.8
Drywall	35.4	16.3	7.4	5.4	2.4	10.5
Metal	3.4	1.6	13.1	9.5	1.1	4.8
Plastic	1.9	0.9	0.9	0.7	0.1	0.4
Roofing	12.2	5.6	39.3	28.5	3.8	16.6
Wood	96.5	44.3	41.1	29.8	7.4	32.3
Other	20.8	9.6	15.4	11.2	2.1	9.2
	217.6	100.0	137.7	100.0	22.9	100.0

Component	Commercial Construction		Commercial Renovation		Commercial Demolition		Total Composition	
	Tons	Percent	Tons	Percent	Tons	Percent	Tons	Percent
Asphalt	0.4	0.6	0.0	0.0	0.0	0.0	0.4	0.0
Brick	4.4	6.7	17.1	4.6	2.0	7.4	41.0	4.8
Cardboard	4.9	7.5	5.4	1.4	0.4	1.5	23.2	2.7
Concrete	21.6	32.9	81.7	21.8	8.5	31.6	155.7	18.4
Drywall	4.3	6.6	58.6	15.6	5.3	19.7	113.4	13.4
Metal	5.8	8.8	48.1	12.8	3.2	11.9	74.7	8.8
Plastic	0.3	0.5	0.8	0.2	0.0	0.0	4.0	0.5
Roofing	6.3	9.6	39.3	10.5	0.8	3.0	101.7	12.0
Wood	12.3	18.8	67.9	18.1	6.7	24.9	231.9	27.4
Other	5.3	8.1	56.5	15.1	0.0	0.0	100.1	11.8
	65.6	100.0	375.4	100.0	26.9	100.0	846.1	100.0

(1) C&D debris generated in one week of July 1994 in Des Moines, Iowa
Source: Brickner, Robert, Gershman, Brickner & Bratton, Inc. "Identifying C&D Debris Markets." Scrap Processing, March/April 1995.

Table A-18
Average Composition of Waste from 19 Industrial/Commercial Demolition Projects in the Northwest Area

Material	Totals Tons	Average Percent
Wood	28,000	15.5
Roofing	1,400	0.8
Concrete	120,300	66.8
Brick	2,200	1.2
Scrap Iron	8,700	4.8
Asphalt	3,200	1.8
Landfill debris	16,400	9.1
Total tons	180,200	100.0
Total tons (17 buildings)	167,200	
Building size (square fee	2,204,000	
Average generation rate*	151.7 lb/sq ft	

* Building sizes available for 17 of the 19 projects.
Source: R.W. Rhine Inc., Tacoma, Washington

Table A-19
Number of Active Construction & Demolition (C&D) Landfills in the United States

State	Number of C&D Landfills	Rank from high	Rank from low
Alabama	32	17	35
Alaska	21	23	29
Arizona	6	35	17
Arkansas	22	21	31
California	16	26	26
Colorado	5	37	15
Connecticut	21	22	30
Delaware	1	49	3
District of Columbia	0	51	1
Florida	277	1	51
Georgia	44	12	40
Hawaii	1	48	4
Idaho	7	31	21
Illinois	3	42	10
Indiana	11	28	24
Iowa	1	47	5
Kansas	78	9	43
Kentucky	143	5	47
Louisiana	167	2	50
Maine	57	10	42
Maryland	14	27	25
Massachusetts	18	25	27
Michigan	5	36	16
Minnesota	79	8	44
Mississippi	111	6	46
Missouri	9	30	22
Montana	27	18	34
Nebraska	6	34	18
Nevada	6	33	19
New Hampshire	0	50	2
New Jersey	3	41	11
New Mexico	4	40	12
New York	19	24	28
North Carolina	153	3	49
North Dakota	39	14	38
Ohio	148	4	48
Oklahoma	6	32	20
Oregon	2	45	7
Pennsylvania	4	39	13
Rhode Island	1	46	6
South Carolina	53	11	41
South Dakota	103	7	45
Tennessee	32	16	36
Texas	24	19	33
Utah .	9	29	23
Vermont	2	44	8
Virginia	32	15	37
Washington	22	20	32
West Virginia	2	43	9
Wisconsin	39	13	39
Wyoming	4	38	14
Total	1889		

Source: "List of Industrial Waste Landfills and Construction and Demolition Waste Landfills, prepared for U. S. Environmental Protection Agency by Eastern Research Group, Inc., September 30, 1994.

Table A-20
Number of Active Wood Processing Facilities that also Accept C&D Waste by State

State	Construction	Demolition	Construction & Demolition	Total Number of Facilities
North Carolina	12	0	32	44
Oregon	5	2	28	35
California	11	1	22	34
Maryland	15	0	9	24
New Jersey	5	1	14	20
Washington	9	0	8	17
Ohio	5	0	8	13
New York	7	0	5	12
Florida	1	2	7	10
Georgia	7	0	3	10
Massachusetts	5	3	0	8
Virginia	2	1	5	8
Alabama	0	0	6	6
Michigan	6	0	0	6
Minnesota	5	1	0	6
Illinois	2	1	2	5
Oklahoma	2	0	3	5
Texas	3	1	1	5
Wisconsin	3	2	0	5
Connecticut	1	0	3	4
New Hampshire	1	0	3	4
Pennsylvania	2	0	2	4
Rhode Island	1	0	3	4
Colorado	1	0	2	3
Idaho	0	0	3	3
Maine	0	0	3	3
Delaware	1	0	1	2
Indiana	2	0	0	2
Vermont	1	0	1	2
Alaska	0	0	1	1
Arizona	1	0	0	1
Hawaii	1	0	0	1
Iowa	1	0	0	1
Kansas	1	0	0	1
Louisiana	0	1	0	1
Mississippi	0	0	1	1
New Mexico	0	0	1	1
South Carolina	0	0	1	1
South Dakota	1	0	0	1
Tennessee	1	0	0	1
Arkansas	0	0	0	0
District of Columbia	0	0	0	0
Kentucky	0	0	0	0
Missouri	0	0	0	0
Montana	0	0	0	0
Nebraska	0	0	0	0
Nevada	0	0	0	0
North Dakota	0	0	0	0
Utah	0	0	0	0
West Virginia	0	0	0	0
Wyoming	0	0	0	0
Total	**121**	**16**	**178**	**315**

Source: "National Wood Recycling Directory", (First Edition). American Forest & Paper Association, January 1996.

Appendix B

STATE DEFINITIONS FOR CONSTRUCTION AND DEMOLITION DEBRIS

Appendix B

STATE DEFINITIONS FOR CONSTRUCTION AND DEMOLITION DEBRIS

This appendix includes a representative sample of definitions of construction and demolition (C&D) debris used by states and other jurisdictions. The definitions are the most recent available from the states.

STATE OF CALIFORNIA

Construction and demolition (C&D) debris includes concrete, asphalt, wood, drywall, metals, and many miscellaneous and composite materials. C&D debris is generated by demolition and new construction of structures such as residential and commercial buildings and roadways.

STATE OF FLORIDA

"Construction and demolition debris" means discarded materials generally considered to be not water soluble and non-hazardous in nature, including but not limited to steel, glass, brick, concrete, asphalt material, pipe, gypsum wallboard, and lumber, from the construction or destruction of a structure as part of a construction or demolition project or from the renovation of a structure, including such debris from construction of structures at a site remote from the construction or demolition project site. The term includes rocks, soils, tree remains, trees, and other vegetative matter which normally results from land clearing or land development operations for a construction project; clean cardboard, paper, plastic, wood and metal scraps from a construction project; effective January 1, 1997, except as provided in Section 403.707(13(j), F.S., unpainted, non-treated wood scraps from facilities manufacturing materials used for construction of structures or their components and unpainted, non-treated wood pallets provided the wood scraps and pallets are separated from other solid waste; and the commingling of wood scraps or pallets with other solid waste; and *de minimis* amounts of other non-hazardous wastes that are generated at construction or demolition projects, provided such amounts are consistent with best management practices of the construction and demolition industries. Mixing of construction and demolition debris with other types of solid waste will cause it to be classified as other than construction and demolition debris.
(Florida Department of Environmental Protection, Bureau of Solid and Hazardous Waste, Division of Waste Management. Solid Waste Management in Florida. Classification of Landfills. Rule 62-701.200 (19). June 1997)

STATE OF HAWAII

"Construction and demolition waste" means solid waste, largely inert waste, resulting from the demolition or razing of buildings, of roads, or other structures, such as concrete, rock, brick, bituminous concrete, wood, and masonry, composition roofing and roofing paper, steel, plaster, and minor amounts of other metals, such as copper.

Construction and demolition waste does not include cleanup materials contaminated with hazardous substances, friable asbestos, waste paints, solvents, sealers, adhesives, or similar materials.
(Hawaii Department of Health. Hawaii Administrative Rules, Title 11, Chapter 58.1, Solid Waste Management Control)

STATE OF KANSAS

"Construction and demolition waste" means solid waste resulting from the construction, remodeling, repair and demolition of structures, roads, sidewalks and utilities; and solid waste consisting of vegetation from land clearing and grubbing, utility maintenance, and seasonal or storm-related cleanup. Such wastes include, but are not limited to, bricks, concrete and other masonry materials, roofing materials, soil, rock, wood, wood products, wall covering, plaster, drywall, plumbing fixtures, electrical wiring, electrical components containing no hazardous materials and non asbestos insulation. It shall not include asbestos waste, garbage, cardboard, furniture, appliances, electrical equipment containing hazardous materials, tires, drums and containers even though such wastes resulted from construction and demolition activities. Clean rubble that is mixed with other construction and demolition waste during demolition or transportation shall be considered to be construction and demolition waste.
(Kansas Department of Health and Environment. Kansas Statutes Annotated Chapter 65—Public Health, Article 34—Solid Waste and Administrative Regulations Article 29—Solid Waste Management, Part 1. Administrative Procedures; Part 2. Standards. May 1994)

STATE OF KENTUCKY

Construction/Demolition Debris Landfill - Construction/demolition debris landfill is the category of solid waste site or facility for the disposal of solid waste that results from the construction, remodeling, repair, and demolition of structures and roads and for the disposal of uncontaminated solid waste consisting of vegetation resulting from land clearing and grubbing, utility line maintenance, and seasonal and storm-related cleanup. Such waste includes, but is not limited to bricks, shredded or segmented tires, concrete and other masonry materials, soil, rock, wood, wall coverings, plaster, drywall, plumbing fixtures, tree stumps, limbs, saw dust, leaves, yard waste, paper, paper products, metals, furniture, insulation, roofing shingles, asphalt pavement, glass, plastics that are not sealed in a manner that conceals other wastes, electrical wiring and components containing no liquids or hazardous metals that are incidental to any of the above and other inert waste as approved by the division. Asbestos-containing materials may be accepted only if the permit application includes procedures approved by the division to handle these materials.
(Kentucky Natural Resources and Environmental Pollution Control, Division of Waste Management. Permits Issued by the Division of Waste Management, I. Solid Waste Landfill Permits (Construction and Operation), Landfill Classifications: Construction/Demolition Debris Landfill)

MARICOPA COUNTY, ARIZONA

Construction debris is a general term used to describe a large class of solid wastes usually generated as a byproduct of the construction, demolition, or maintenance of residences, commercial or industrial facilities and infrastructure. Construction debris includes such materials as: broken concrete, asphalt, steel, aluminum, glass, brick, tile, paper, plastics, wood products, sheet rock, street sweepings and canal dredgings.
(Maricopa County, Arizona. Construction Wastes: Classification)

THE COMMONWEALTH OF MASSACHUSETTS

C&D waste is comprised of debris generated from construction, renovation, repair, and demolition of roads, bridges, and buildings and includes wood, steel, concrete, masonry, plaster, metal, and asphalt, but not wood from land-clearing, i.e. stumps, logs, brush, and soil, nor rock from excavations.
(The Commonwealth of Massachusetts Department of Environmental Protection. 310 CMR 16.00, Site Assignment Regulations for Solid Waste Facilities. 16.02: Definitions; Also 1997 Master Plan Update Draft, Non Municipal Solid Waste)

STATE OF MINNESOTA

Construction Wastes

"Building materials, packaging, and rubble resulting from construction, remodeling, repair, and demolition of buildings and roads."

Demolition Debris

"Solid waste resulting from the demolition of buildings, roads, and other man-made structures, including concrete, brick, bituminous concrete, untreated wood, masonry, glass, trees, rock, and plastic building parts. Demolition debris does not include asbestos."
(Minnesota Office of Environmental Assessment. Metropolitan Solid Waste Planning Policy. Draft 11/25/96)

STATE OF NORTH CAROLINA

"Construction" or "demolition" when used in connection with "waste" or "debris" means solid waste resulting solely from construction, remodeling, repair, or demolition operations on pavement, buildings, or other structures, but does not include inert debris, land-clearing debris or yard debris.
(North Carolina Division of Waste Management. GS 130A-290. DEFINITIONS (1) (4))

STATE OF NEBRASKA

"Construction and demolition waste" shall mean waste which typically results from construction or demolition projects and includes all materials which are the by-products of construction work or which result from demolition of buildings and other structures, including, but not limited to brick, concrete rubble, masonry materials, paper,

gypsum board, wood, rubber and plastics. Construction and demolition waste does not include friable asbestos-containing materials, liquid waste, hazardous waste, putrescible waste or furnishings from demolished structures.
(Nebraska Department of Environmental Quality. Title 132 - Integrated Solid Waste Management Regulations, Chapter 1 011. Effective date: May 14, 1994)

STATE OF NEW YORK

Construction and demolition (C&D) debris means uncontaminated solid waste resulting from the construction, remodeling, repair and demolition of utilities, structures and roads; and uncontaminated solid waste resulting from land clearing. Such waste includes, but is not limited to bricks, concrete and other masonry materials, soil, rock, wood (including painted, treated and coated wood and wood products), land clearing debris, wall coverings, plaster, drywall, plumbing fixtures, non asbestos insulation, roofing shingles and other roof coverings, asphalt pavement, glass, plastics that are not sealed in a manner that conceals other wastes, empty buckets ten gallons or less in size and having no more than one inch of residue remaining on the bottom, electrical wiring and components containing no hazardous liquids, and pipe and metals that are incidental to any of the above. Solid waste that is not C&D debris (even if resulting from the construction, remodeling, repair and demolition of utilities, structures and roads and land clearing) includes, but is not limited to asbestos waste, garbage, corrugated container board, electrical fixtures containing hazardous liquids such as fluorescent light ballasts or transformers, fluorescent lights, carpeting, furniture, appliances, tires, drums, containers greater than ten gallons in size, any containers having more than one inch of residue remaining on the bottom and fuel tanks. Specifically excluded from the definition of construction and demolition debris is solid waste (including what otherwise would be construction and demolition debris) resulting from any processing technique, other than that employed at a department-approved C&D debris processing facility, that renders individual waste components unrecognizable, such as pulverizing or shredding. Also, waste contained in an illegal disposal site may be considered C&D debris if the department determines that such waste is similar in nature and content to C&D debris.
(New York State Department of Environmental Conservation, Division of Solid & Hazardous Materials. 6 NYCRR Park 360 Solid Waste Management Facilities. Title 6 of the Official Compilation of Codes, Rules and Regulations. 360-1.2(b)(38). Effective November 26, 1996. Reprinted January 1997)

STATE OF OREGON

"Construction and Demolition Waste" means solid waste resulting from the construction, repair or demolition of buildings, roads and other structures, and debris from the clearing of land, but does not include clean fill when separated from other construction and demolition wastes and used as fill materials or otherwise land disposed. Such waste typically consists of materials including concrete, bricks, bituminous concrete, asphalt paving, untreated or chemically treated wood, glass, masonry, roofing, siding, plaster; and

soils, rock, stumps, boulders, brush and other similar material. This term does not include industrial solid waste and municipal solid waste generated in residential or commercial activities associated with construction and demolition activities.
(Oregon Department of Environmental Quality. Disposal Site Definitions)

PORTLAND, OREGON METROPOLITAN SERVICE DISTRICT
Construction Waste - Waste materials resulting from the construction, remodeling and repair of buildings and other structures.
Demolition Waste - Solid waste, largely inert, resulting from the demolition or razing of buildings, roads, and other man-made structures. Demolition waste consists of, but is not limited to, concrete, brick, bituminous concrete, wood, masonry, composition, roofing and roofing paper, steel, and amounts of other metals like copper. Plaster (i.e., sheet rock or plasterboard), any other non-wood material that is likely to produce gases or leachate during the decomposition process, and asbestos wastes are not considered to be demolition wastes.
(Portland, Oregon Metropolitan Service District, Solid Waste Department. Investigation of Alternative Markets for Recycled Wood. Prepared by International Resources Unlimited, Inc.)

STATE OF RHODE ISLAND
"Construction and Demolition (C&D) Debris" shall mean non-hazardous solid waste resulting from the construction, remodeling, repair, and demolition of utilities and structures; and uncontaminated solid waste resulting from land clearing. Such waste includes, but is not limited to wood (including painted, treated and coated wood and wood products), land clearing debris, wall coverings, plaster, drywall, plumbing fixtures, non-asbestos insulation, roofing shingles and other roofing coverings, glass, plastics that are not sealed in a manner that conceals other wastes, empty buckets ten gallons or less in size and having no more than one inch of residue remaining on the bottom, electrical wiring and components containing no hazardous liquids, and pipe and metals that are incidental to any of the above. Solid waste that is not C&D debris (even if resulting from the construction, remodeling, repair, and demolition of utilities, structures, and roads and land clearing) includes, but is not limited to, asbestos waste, garbage, corrugated container board, electrical fixtures containing hazardous liquids such as fluorescent light ballasts or transformers, fluorescent lights, carpeting, furniture, appliances, tires, drums, containers greater than ten gallons in size, any containers having more than one inch of residue remaining on the bottom, and fuel tanks. Also excluded from the definition of C&D debris is solid waste resulting from any processing technique that renders individual waste components unrecognizable, such as pulverizing or shredding, at a facility that processes C&D debris.
(State of Rhode Island Department of Environmental Management, Office of Waste Management. Rules and Regulations for Composting Facilities and Solid Waste Management Facilities Rule 1.3.47)

STATE OF SOUTH CAROLINA

"Construction and demolition debris" means discarded solid wastes resulting from construction, remodeling, repair and demolition of structures, road building, and land-clearing. The wastes include, but are not limited to, bricks, concrete, and other masonry materials, soil, rock, lumber, road spoils, paving material, and tree and brush stumps, but does not include solid waste from agricultural or silvicultural operations.
(South Carolina Department of Health and Environmental Control. Chapter 61. R. 61-107.11 Solid Waste Management: Construction, Demolition and Land-Clearing Debris Landfills. B. Definitions)

WASHINGTON STATE DEPARTMENT OF ECOLOGY

"Demolition waste" means solid waste, largely inert waste, resulting from the demolition or razing of buildings, roads and other man-made structures. Demolition waste consists of, but is not limited to, concrete, brick, bituminous concrete, wood and masonry, composition roofing and roofing paper, steel, and minor amounts of other metals like copper. Plaster (i.e., sheet rock or plaster board) or any other material, other than wood, that is likely to produce gases or a leachate during the decomposition process and asbestos wastes are not considered to be demolition waste for the purposes of this regulation.
(Washington State Department of Ecology Solid Waste and Financial Assistance Program, Chapter 173-304 WAC, Minimum Functional Standards for Solid Waste Handling)

Appendix C

TYPICAL CONSTRUCTION AND DEMOLITION DEBRIS CONSTITUENTS

Table C-1

TYPICAL CONSTRUCTION AND DEMOLITION DEBRIS CONSTITUENTS

Primary Inert Fractions
Asphalt
Brick
Cinder block
Concrete with rebar/wire mesh
Concrete without steel reinforcing
Masonite/slate
Tile-ceramic
Glass
Dirt/earth
Plastic sheet film
Plastic pipe
Porcelain, including bathroom fixtures
Metal-ferrous
Metal-nonferrous
Electrical wiring
Insulation-fiberglass
Plastic buckets/containers

High Organic Based Fractions
Ceiling tiles
Corrugated shipping containers
Insulation-treated cellulose
Insulation-sheathing
Pallets/spools/reels
Pressboard/chipboard
Roofing materials (e.g., roofing felt, asphalt shingles)
Dimensional lumber & shapes (clean)
Plywood, particleboard, oriented strandboard, etc.

Range of Composite Materials (may require special handling)
Carpeting
Carpet padding
Gypsum wallboard (mainly gypsum with paper backing)
Electrical fixtures (metal, light tubes/bulbs, ballasts)
Electrical switches
Rubber hosing/conduits
Tires (some with wheels)
Painted wood
Pressure treated wood
Wood composites

Source: Gershman, Brickner & Bratton, Inc. Fairfax, Virginia

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PHOTOGRAPHS

Central Monofill Services Site

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Birchwood Landfill

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AGENCY COMMENTS

Susan Lee

From: Aldrich, Lori (DEC) [lori.aldrich@alaska.gov]
Sent: Friday, October 31, 2014 11:57 AM
To: Susan Lee
Cc: Stephanie & Stephen Nowers; Shane Durand; Rich Harbuck; William Quantick; Blankenburg, Robert J (DEC)
Subject: Comment: Central Monofill Services Conditional Use Permit

The Alaska Department of Environmental Conservation (ADEC) Solid Waste Program has been asked to submit official comment on the Central Monofill Services (CMS) Matanuska Susitna Borough (MSB) Conditional Use Permit (CUP) Application.

On page 17of 38 of the CMS MSB CUP application it states:
Alaska Department of Environmental Conservation (ADEC) reviewed the CMS Monofill Permit application for this site and has approved the permit conditioned upon receipt of the MSB CUP.

This issue was addressed in the application by CMS in response letter to you , dated May 12, 2014.

The ADEC Solid Waste Program has reviewed the CMS Inert Waste Monofill Permit application submitted January 12, 2013, including additional information submitted January 23, 2013. ADEC Solid Waste determined that the application was complete, and posted a public notice in the Frontiersman on March 12 & 15, 2013. No comment was received on the public notice.

Due to an error in the original public notice, which excluded the permitting of an Asbestos waste cell at the monofill, ADEC will be publishing an additional 30-day public notice in the near future.

At this time, NO DECISION has been issued by ADEC on the CMS Inert Waste Monofill Permit application other than it is complete based on our January 2013 regulations.

Thank you,
Lori

Lori Aldrich
REGIONAL PROGRAM MANAGER
Solid Waste Program
Department of Environmental Conservation
555 Cordova Street
Anchorage, AK 99501
(907) 269-7622

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Susan Lee

From: Theresa Taranto
Sent: Tuesday, October 14, 2014 9:27 AM
To: Susan Lee
Subject: RE: Central Monofill Services Conditional Use Permit Application

FIRM 8145, X Zone and located within the Core Area.
Code Compliance has had a complaint open on this property since 4/24/13. Case #G20130022, Officer Kevin Sumner.
Thanks,

Theresa Taranto
Development Services
Administrative Assistant

Mat-Su Borough
350 E Dahlia Ave.
Palmer, Alaska 99645
907-861-8574

From: Susan Lee
Sent: Monday, October 06, 2014 3:43 PM
To: allen.kemplen@alaska.gov; Schade, David W (DNR); mearow@matanuska.com; rglenn@mta-telco.com; jennifer.diederich@enstarnaturalgas.com; robin.leighty@enstarnaturalgas.com; ospdesign@gci.com; Richard Boothby; jmcnutt@palmerak.org; Elizabeth Weiant; Jill Irsik; CEPOA-RD-S@usace.army.mil; Shane.M.McCoy@usace.army.mil; Lloyd Smith; Brad Pickett; Eileen Probasco; Frankie Barker; Debbie Passmore; Debby McKimmey; John Moosey; George Hays; Matthew Beck; Aldrich, Lori (DEC); Sandra Garley; mayor@palmerak.org; jhannan@palmerak.org; GatewayCommunityCouncil@gmail.com; dlinnell@hdlalaska.com; dlundin@hdlalaska.com; Andy Dean; Linda Vinson; Theresa Taranto
Subject: Central Monofill Services Conditional Use Permit Application

Central Monofill Services has submitted a conditional use permit application under MSB 17.60 for the operation of a monofill for the disposal of inert material. The inert debris will primarily be non-hazardous shredded residual recyclable waste material from construction and demolition waste. The proposed site is located on MSB Tax Parcels 17N02E18C010 (2840 S. Glenn Highway) and 17N02E19B006 (2560 S. Glenn Highway); within Township 17 North, Range 2 East, Sections 18 and 19, Seward Meridian.

The Planning Commission will conduct a public hearing concerning this application on Monday, December 1, 2014 at 6:15 p.m. in the Borough Assembly Chambers, 350 E. Dahlia Avenue, Palmer, Alaska.

Application material may be viewed on-line at www.matsugov.us and clicking on "Public Notices'. Application material may also be reviewed in the Borough Permit Center.

If you have questions or would like to submit comments please contact Susan Lee, Planner II, at 861-7862 or mail to MSB Development Services Division, 350 E. Dahlia Avenue, Palmer, AK 99645; fax 861-7876 or e-mail: slee@matsugov.us.

Comments Due 5 p.m., October 31, 2014.

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)

907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

Susan Lee

From: Frankie Barker
Sent: Wednesday, October 15, 2014 3:02 PM
To: Susan Lee
Subject: Central Monofill CUP

Susan,

Comments on Central Monofill Services CUP:

1) Water Quality
Soils in the area to be used are very porous, loose gravels and glacial loess, and therefore offer little or no filtering capacity for fluids being emitted or drained from the fill. Without any liners, even a 10 foot separation from the water table may not be sufficient to prevent leakage and potential contamination of the water resources in the area. Consistent monitoring of wells in the area prior to and during operations should be required to determine if any water contamination is occurring. CMS included a water quality monitoring plan in their previous application but did not include a plan in this application. This is a serious oversight.

A condition should be applied to this permit to submit a thorough water quality monitoring plan and conduct inspections according to an approved plan. Any problems with water quality found during the monitoring program should be reported immediately to ADEC and MSB as well as to neighboring households who rely on wells.

2) Air Quality
This location is one of the windiest sites in the region since it is at the confluence of the Matanuska and Knik River valleys. Loose debris and dust from the fill will scatter beyond the boundaries of the site if deposited on windy days and not covered up immediately. The applicant proposes the use of catch fences and compactors to reduce windborne debris. They state "when sustained wind conditions on site exceed 20 mph, waste will not be unloaded without secondary containment". Even with secondary containment, strong winds in this area will cause blowing debris. **Operations should cease entirely when MSB issues air quality alerts for high winds in the Palmer area and not resume until winds subside.**

3) Wildlife
On page 31 of the application, it states that "there is no concern of wildlife or domestic animals being attracted to the inert debris and the monofill operations. Since there will be no putrescible waste allowed (or disposed of) in the monofill, there will be no animals attracted to this site".
Migratory birds, especially water fowl, are already attracted to the ponds on the site particularly during spring migration. Plastics, styrofoam and other small debris have already been found in the water bodies and waterfowl have been observed swimming in these ponds. If the fill is placed on or near the existing ponds, it may be ingested by waterfowl with damaging results. This site is less than 1 mile from Palmer Hays Flats Refuge, the major migratory bird refuge in Southcentral Alaska, and thus will have consistently large flocks of birds (swans, cranes, geese, etc.) passing over every year. There is no plan in the application to mitigate wildlife presence, primarily waterfowl, that are attracted to this site. **A wildlife mitigation plan, particularly addressing spring migration periods, should be included in the operation plan for this permit.**

Overall, the applicant does not demonstrate an understanding of the unique water quality, wildlife migration and wind conditions that make this site challenging for their type of operation.

Frankie Barker
Environmental Planner

Matanuska-Susitna Borough
350 E. Dahlia Avenue
Palmer, AK 99645
907-746-7439 or 907- 861-8439
frankie.barker@matsugov.us

PUBLIC COMMENTS

Susan Lee

From: Patti Kepler-Goossen [pat_eye74@hotmail.com]
Sent: Thursday, November 20, 2014 1:21 PM
To: Susan Lee
Subject: RE: 3-mail

Dear Susan,

I have another thought. I believe that before making a final decision and taking a vote on an issue that will ultimately effect the lives and well-being of individuals and wildlife habitat in our community, now and for years to come, each member of the Matanuska-Susitna Borough Planning Commission should be asked some questions and be required to give totally honest answers. First of all, they need to imagine themselves living in the area near the gravel pit where Central Monofill Services proposes to set up their monofill operations.

The questions would be:

1. "Knowing the information and warnings that have been submitted to you regarding the risk of air pollution, ground water pollution, and wind-blown litter...as a resident and/or property owner in the area near this site, and if the monofill operations were happening, would you be willing to drink the water from your well, enjoy standing out in your yard and breathing the air, and accept the accumulation of litter on your property?"

2. "Once operations at CMS were happening would you be able to sell your home or property, once potential buyers learned of the known conditions and risks attached to purchase of your property?"

3. "If you were not a resident in this area, and were looking for property to puchase, would you consider buying property near the monofill site?"

3. "Considering all the information and warnings given; for the sake of those of us who are residents in this area and for the sake of our children and grandchildren who live here, can members of the Planning Commission, in all honesty and with a clear conscience, cast a "Yes" vote to approve Central Monofill Services being issued a permit to operate at this site?"

Thank you, Susan. I hope this email with these questions can be relayed to members of your Planning Commission before the time comes for making a final decision on this matter.

Sincerely,

Patti Goossen

From: pat_eye74@hotmail.com
To: susan.lee@matsugov.us
Subject: RE: 3-mail
Date: Mon, 27 Oct 2014 12:02:39 -0800

Susan,
Thank you for letting me know. I will resend the pictures one at a time from my Kepler Park email address.

Patti Goossen

From: Susan.Lee@matsugov.us
To: pat_eye74@hotmail.com
Subject: 3-mail
Date: Fri, 24 Oct 2014 16:37:27 +0000

Ms. Goossen:

I did receive your fax, however, I did not receive your e-mail. The e-mail attachments may have been too big, as the MSB only allows for 10 mg for an attachment size. If you want to send them again, you will probably need to do it in separate e-mails.

Susan

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

Susan Lee

From: Durand, Shane [shane@cei-alaska.com]
Sent: Thursday, October 30, 2014 2:46 PM
To: Susan Lee
Subject: Community Council Resolution
Attachments: Gateway Com Coun CMS.pdf

Please find attached relevant correspondence.

Shane Durand

Central Recycling Services
2400 Railroad Ave.
Anchorage, AK 99501
(907)748-7400
(907)770-5084 fax
www.centralrecyclingservices.com
www.crssurplusmaterials.com
www.cicequipment.com

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CENTRAL MONOFILL SERVICES

Anchorage
311 N. Sitka Street
Anchorage, AK 99501

Fairbanks
1301 Wells Street
Fairbanks, AK 99701

Scotti MacDonald
Registered Agent
Gateway Community Council
PO Box 578
Palmer, AK 99645

Reference: Gateway Community Council Resolution 01-14

Central Monofill Services (CMS) as a property owner in the Gateway Community Council would like to respond to Resolution 01-14.

CMS is disappointed that the Gateway Community Council elected to pass this resolution without providing us the opportunity to present the project at a council meeting. We understand that the proposed use of a portion of our property as a Recycle Facility and Monofill has raised concerns with members of the council and that to many people any type of Landfill has a negative stereotype. CMS recommends the Council review the CMS 2014 Conditional Use Permit application in its entirety or contact us for more details and information on the proposed project. Concerns and issues raised by the community have been addressed in detail in our 2014 Conditional Use Permit (CUP), application. We have had informational meetings for the community and have an open door policy to see our operations in efforts to help educate the community on our proposed operations. Concerns raised by neighbors over contamination and water issues led CMS to commission engineering studies by both local engineers and nationally recognized experts in the field. These subject matter experts determined our design at this location to be safe and protective of public health.

CMS has operated a similar Monofill in Salcha, Alaska since 2012. Prior to receipt of our permits for the Salcha facility we heard many of the same concerns and misconceptions from our Salcha neighbors. Today those same neighbors have firsthand knowledge of our successful operations and have written letters of support. If after a review of the application materials questions still exist we will gladly have another informational meeting for the community council.

Thank you for the consideration.

Shane Durand

PH (907) 770-7470 FAX (907) 770-5084
www.centralmonofillalaska.com • cms@centralmonofillalaska.com

Gateway Community Council
Resolution 01-14

To: the Matanuska-Susitna Borough Planning Commission, Borough Assembly, Alaska Department of Environmental Conservation and Palmer City Council

Re: Request by Central Monofill Services, Inc. to operate a landfill for construction debris & asbestos near Mile 38.3 of the Glenn Highway near Palmer, Alaska.

A Resolution of the Gateway Community Council opposing the approval of a conditional use permit for Central Monofill Services, Inc. to operate a landfill at this location due to the threat it poses to surface, drinking and ground water and other environmental impacts,

Matanuska-Susitna Borough
Development Services
OCT 28 2014
Received

WHEREAS, the property in question is a former gravel pit previously owned by Granite Construction and is legally described as:

> 17N02E18C010 and 17N02E19B006, within Township 17 North, Range 2 East, Sections 18 and 19, and Seward Meridian; and

WHEREAS, past gravel extraction activity mined into an aquifer feeding the surrounding area, and on multiple occasions affected the water levels of surrounding lakes causing concern to property owners as well as potentially adversely affecting private wells in the area; and

WHEREAS, hydrological reports and testing by the Alaska Department of Natural Resources has indicated a connection between the aquifer on the gravel pit property and surrounding water bodies and need for more testing; and

WHEREAS, Central Monofill Services, Inc. recently bought this property for the purposes of depositing construction debris and asbestos taken from buildings in the Municipality of Anchorage and other areas; and

WHEREAS, this material poses a significant threat to air and water quality of the surrounding area; and

WHEREAS, contaminants have been found in leachate from construction and debris landfills at levels exceeding health and water quality standards that include arsenic, cadmium, lead, manganese, carcinogens such as benzene and vinyl chloride, sulfate, and also chromium and arsenate if chrominated copper arsenate-treated wood is disposed of; and

WHEREAS Central Monofill Services, Inc. has already created pollution by illegally dumping trash and ground up construction debris on said property without proper permits and with blatant disregard for the surrounding environment, groundwater, surface water and air quality; and

WHEREAS Central Monofill Services, Inc., and its manager Shane Durand were cited by the Mat-Su Borough and convicted in Palmer District Court on six counts of: violating

the borough's junk and trash ordinance, failure to comply with a borough order to clean up and operating a junk yard without a permit; and

Case Numbers:

3PA-13-03603MO
3PA-13-03604MO
3PA-13-03623MO
3PA-13-03601MO
3PA-13-03602MO
3PA-13-03624MO

WHEREAS, Central Monofill Services, Inc., has demonstrated disregard for regulations and the impacts of their activities by refusing to clean up the illegally dumped trash even after the court convictions and only removing the trash after being threatened with an enforcement order from the Alaska Department of Environmental Conservation; and

WHEREAS the residents of the Gateway Community Council and surrounding areas are concerned with the impact of the proposed monofill, and by Central Monofill Services' disregard to date for local ordinances, state regulations and the impact that their activities will have on the surface and groundwater quality, air quality and other environmental impacts; and

WHEREAS, water is one of the most valuable natural resources the MSB has, and its quality should not be compromised through short term and short-sighted economic activity that could reasonably be located elsewhere in the borough where it would not pose a threat to water quality; and,

WHEREAS, the MSB contracted an independent hydrological study and review of Central Monofill Services hydrological study with J. A. Munter Incorporated, Professional Hydrologist; and,

WHEREAS, the Munter report found that Central Monofill Services report prepared by Terrasat to be flawed in its findings and further found that the proposed Monofill poses severe threats to groundwater and downgradient wells; and,

WHEREAS, Central Monofill Services' proposed operation would generate minimal economic benefits to the borough in terms of jobs or tax revenue; and

WHEREAS, the Gateway Community Council recognizes the importance of this area and its surrounding public and private recreation areas and is proud that the Glenn Highway is a National Scenic Byway and serves as the Gateway to Palmer; and,

WHEREAS the proposed monofill is inconsistent with some of the goals and policies of the Borough-Wide Comprehensive Plan (2005 Update) and the Core Area Comprehensive Plan (2007); and

Now therefore let it be resolved that the Gateway Community Council is formally opposed to the location of Central Monofill Services, Inc. landfill at this location due to the threat it poses to surface and ground water and other environmental impacts,

Now therefore let it be further resolved that the Gateway Community Council strongly believes that the near and long-term risks are too high for this or any Monofill development to take place at this location compare to any short-termed economic benefits; and,

Signed this date

President, Gateway Community Council — Date 10-27-14

Vice President, Gateway Community Council — Date 10·27·2014

RECEIVED
OCT 31 2014
PERMIT CENTER

To - Planning Commission

In regards to CMS application,
I don't believe these people should be able to "dump" their trash here in the Valley, they already call us. "Valley Trash".
What about the polution of the homes around it What about the the health and safety of the families in the area. That's just a liille besides the eye sore.
We need "Just Say No"
thank you!

Janice C. Barrett
14254 E. Outer Springer Lp.
Palmer, AK 99645

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Matanuska - Susitna Borough
Development Services

OCT 31 2014

Received

October 31, 2014

From: Gerry Keeling
Matanuska-Susitna Borough Resident
Palmer

To: Planning and Zoning Commission Members
MSB

Attn: Susan Lee, MSB

Re: Proposed Land Fill
MSB Gateway Area

It is never too late to correct a poor decision.

The negative impact of the proposed land fill will adversely affect the homes and property belonging to the residents, raising concern for the lakes and water tables of the surrounding area as well.

What impact to the Mat-Su Campus of the University of Alaska Anchorage Land Trust as bequeathed by Valley residents Fred and Sara Machetanz will threaten that large portion of the Gateway area?

Matanuska - Susitna Borough
Development Services

OCT 31 2014

Received

I am troubled by the apparent lack of concern and limited respect for the natural and unparalled beauty of our Valley, (and its residents and appreciative visitors), by the developer/s of this Land fill.

There are other sites that would be available to the developer, to utilize nearby or to develop elsewhere.

Remember, it is not too late put a more responsible direction to the growth and development of Mat-Su.

Very truly yours,

Gerry Keeling
P.O. Box 135
Palmer, Alaska 99645
(907) 745-3703

10/31/14

To Whom it may concern:

I most strongly object to the CMS Dump project as proposed and advise the planning commission to deny the permitt application on the basis of health and safety concerns. It is completly unreasonable to propose dumping toxic waste into an open aquafir and equally unreasonable to make any statement that contaminants will not travel down gradient polluting wells and surrounding lakes. This project is totally absurd and cannot be allowed. The consequences of this will be far reaching and irreversible. We may well be looking at the greatest disaster in the history of the Mat-Su Borough. Seriously, what are these people thinking? The only logical answer to this is NO!!! Not now, not ever.

Thank you for your Attention

James P. Fenster

2201 Nissen Drive, Palmer

RECEIVED
NOV 3 2014
Matanuska-Susitna Borough
Planning Dept Administration

North Star Animal Hospital
840 S. Cobb St.
Palmer, AK 99645
(907) 746-7387/ FAX (907) 746-7329
E-mail: starpets@mtaonline.net

Teresa Beck, DVM
Shauna Henry, DVM
Harrison Wellman, DVM

Matanuska - Susitna Borough
Development Services
NOV 03 2014
Received

Fax

To: Palmer Toxic Dumping Comments Attn:

Fax: 861-7876 Date: 11-3-14 Pages:

Re: From:

Planning Commission Meeting

Copy of my letter to the Editor RE: living by the other land fill.

I had forwarded it from the Frontiersman website already. Wanted to make sure you had a copy.

Thanks!

Teresa Beck

Matanuska - Susitna Borough
Development Services

NOV 0 3 2014

Received

Who monitors what is dumped here?

Posted: Monday, February 24, 2014 11:59 pm

To the editor:

Most days, it smells like hydrogen sulfide outside in my yard. At least that is what the lady from the DEC said.

She came out two days after I called the Palmer Fire Department in December to investigate the extremely strong-smelling smoky odor emanating from the reclamation site that is conveniently hidden from the public view off Rebarchek Road just south of the Alaska State Fairgrounds. Today, the odor is a little stronger than normal because it is cold and there is no wind. Other days, it may be a less distinct smell, but it is constant. I know it is coming from this site because when I walk, run or ski and turn the corner by the fairgrounds, a wall of stench will sometimes hit me in the face.

I have been reassured (or have I?) that they are only dumping inert construction waste materials there. The lady at the DEC said the dump is a full 20 feet above our water table, which feeds my water well. She said that according to code, only 10 feet is required. Really? Wow, that makes me feel safe that the water table that many of us use in south Palmer is protected. But this is supposed to be inert material. Yet, it is decomposing, thus producing the constant hydrogen sulfide gas smell. My question to the city of Palmer is who monitors what is dumped there? Who monitors our drinking water? Does anyone really know how close the bottom of this old gravel pit really is to the water table? If it pollutes the air, what is all this waste doing to the ground?

I sure would be disappointed to see another dumpsite be located in south Palmer. Sure, Central Monofill Services may have all the answers regarding groundwater contamination and blowing debris, but what if they are wrong or under estimated? They are dumping waste and it will decompose to some degree over time. It will be there a long time, causing odors, possibly contaminating the soil, water and making permanent changes. Please let your voices be heard to the Mat-Su Borough Assembly members, planning commission and city of Palmer before we have another stinky unpredictable site on our hands.

Teresa Beck

Palmer

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FAX COVER

To: Susan Lee
Company : Mat-Su Borough Planning Department
Fax Number : (907) 861-7876

From : Patricia Kepler Goossen
Company :
Fax Number : (907) 486-3777

Subject :

Pages including cover page: 2 Date : 10/31/14 Time : 4:30 p.m.

MESSAGE

Dear Susan –

The attached is an add-on to my previous comments, dated October 30, 2014.

Thank you,

Patricia Kepler Goossen

Matanuska - Susitna Borough
Development Services

NOV 03 2014

Re[illegible]

October 31, 2014

Dear Susan Lee,

This is an add-on to my previous comments, dated October 30, 2014 FAXed to you.

Central Monofill Services claims their monofill set-up and processing system would be environmentally "safe". Since it is a man-made set-up it is impossible to make even the everyday operations 100% safe. No system involving so many variables in management, ground exposure, weather, and unforeseen "acts of nature" can claim to have no risk of damages to the environment. I feel that the bottom line in this whole matter with the proposed monofill site is that there are no guarantees that the environment would not be harmed. Is it truly worth putting the health and future well-being of humans at risk?

Sincerely,

Patricia Kepler Goossen

Patricia Kepler Goossen

Matanuska - Susitna Borough
Development Services

NOV 0 3 2014

Received

Dear MatSu Governing Officials:

I am sending this by fax, as my email was not going through. I hope you will still accept my comments in light of the difficulty with the internet connection or server.

I am writing because I am very concerned about the CMS plan to install a mono-fill dump on land that is very close to my home. It is very unfortunate that better protections are not already in place to prevent this from happening. We, as a community, need to decide what is best for our area. As our representatives, I hope you will listen to all the people who have spoken on this issue. Really, a corporation is a single entity under the law, and should not carry more weight than the opinions of thousands in the community.

The proposed mono-fill would be placed in an area where a previous gravel pit disturbed the aquifer. The company even admits that a portion of this property does not have adequate separation from the aquifer. They plan to push some gravel into the area to a get a minimum separation. However, there are many surrounding homes directly tied in with the aquifer, and use this water directly for drinking purposes. Several people reported well changes when the gravel company originally penetrated the aquifer. Please understand that the land fill contents will not be 'inert' or non-toxic. You have seen the products proposed, including asbestos. Other products are also very dangerous. They would place ground up pressure treated wood, which leaches toxins such as arsenic into the water for many years. This is just to name a couple. I have studied the science behind it. A few feet of gravel will not prevent the groundwater from becoming contaminated.

The CMS company wants to put asbestos on this property. We all know of the high winds that bring continual erosion to the landscape. At some point, we will likely have high winds blowing the asbestos particles into our air. Who will take on the liability for the resulting asbestosis lung disease?

Please also consider the big picture. This is a shell corporation that will have limited liability. They plan to bring Anchorage waste to the Valley, bypassing a dump, so they can save on disposal fees, and thus make more profits. They would make these profits at a great risk to residents of the Palmer area. We feel Anchorage should deal with its own trash, and not put it into our community -especially not into a residential area.

Consider this companies track record. They have already been cited for breaking our laws. Consider that they want to monitor for contamination themselves. Talk about a conflict of interest! There would be no third part government monitor. They have not even addressed our concerns with a change in plans, but are just banging on the door, trying to ram it through again.

I know many write off our opinions, because no one wants a dump near their house. However, there are many other places where this dump could be installed. Perhaps, some place where the aquifer has not already been penetrated, some place not so exposed to high wind, some place not directly next to our homes.

Matanuska - Susitna Borough
Development Services
NOV 03 2014
Received

Matanuska - Susitna Borough
Development Services

I fear that in the future, the Mat-Su will be exposed to multi-million dollar lawsuits, for groundwater contamination, loss of groundwater rights, lung diseases, and more. This has happened all over the country when local governments failed to protect the citizens.

You are in charge of planning. You are in your positions to serve our community. Please do not put the desires of a single entity above the safety, community will, and future direction of our fine borough.

Sincerely,

Christopher Sahlstrom, MD

Palmer, Alaska

Matanuska - Susitna Borough
Development Services

NOV 03 2014

Received

Susan Lee

From: John Rozzi [johnrozzi@gmail.com]
Sent: Friday, October 31, 2014 8:33 AM
To: Susan Lee
Subject: Concern about permit for Central Monofill Services

Dear Ms Lee,

I am writing you as a concerned citizen living in the Mountain View Estates subdivision. I am not in favor of a company coming into the area that will be disposing of toxic material that could contaminate our water supply. Therefore, I am against the approval of their permit to do business in our area.

Respectfully,

--
John Rozzi

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Susan Lee

From: Wes Walling [w.walling@yahoo.com]
Sent: Friday, October 31, 2014 6:47 AM
To: Susan Lee
Subject: monofill CUP

10/31/14

To Matsu Borough Planning,

I am writing this letter in support of Central Monofill Services' application to permit a C&D monofill. As a resident of the Matsu, I understand and appreciate the Borough's apprehension in approving the CUP in 2013. After reviewing the current application though, it is abundantly clear that CMS has taken the feedback and concerns raised by the Planning Commission and neighbors, and through clarification and added studies, has proven that their operation is environmentally responsible, safe, and an asset to the Matsu Borough as a whole. The numerous benefits this facility will provide to the communities of the Matsu are well documented within the application material. A recent flier circulated by the opposition to this project asks "could there be a worse location". Now that CMS has proven that leachate and ground water contamination concerns are unfounded, Could there be a better location?, seems to be the more appropriate question. The central location, heavy industrial use of surrounding properties, highway access, lack of direct line of sight to the fill operations, and the fact that this type of industrial usage is exactly what the MSB Comprehensive Plan seeks to encourage at mined out gravel extraction sites, makes this location ideal. The MSB already has enforceable codes in place to address windblown debris leaving the property. Denying the CUP based on this concern is illogical. Allow CMS the opportunity "to be innocent until proven guilty", their application demonstrates that they recognize the risk, and have an adaptive plan in place to deal with the wind.

I urge the MSB Planning Commission to look past the vocal opposition, who seem to be willing to make any argument to stop this project, and the negative stereotypes associated with traditional landfills, and vote to approve the CUP. Please do not allow NIMBY to stop this project and the progress of recycling, especially unsubsidized recycling, in the Matsu and Alaska.

Sincerely,

Wes Walling
17155 E Idle Dr
Palmer, Ak

Susan Lee

From: Durand, Shane [shane@cei-alaska.com]
Sent: Thursday, October 30, 2014 3:01 PM
To: Susan Lee
Subject: letter of support
Attachments: CRS and CMS Letter of Support.pdf

FYI

Shane Durand

Central Recycling Services
2400 Railroad Ave.
Anchorage, AK 99501
(907)748-7400
(907)770-5084 fax
www.centralrecyclingservices.com
www.crssurplusmaterials.com
www.cicequipment.com

CALBAG METALS CO.

1602 Marine View Drive • Tacoma, WA 98422

Phone: (253) 572-6800
Fax: (253) 572-5420
E-Mail: metals@calbag.com

Letter of Support for Central Recycling Services and Central Monofill Services Project

Calbag Metals has been in the recycling industries for over one hundred years. We are an ISO 140001 certified facility and as environmental stewards, we work very diligently with our suppliers to insure that they also handle materials and material processing in a manner that is responsible. Central Recycling has sent employees to observe and train at our certified facility and other long standing reputable yards. Recycling materials that would otherwise end in land filling is the responsible and environmentally conducive to insuring quality of life issues for the future. The materials being recycled also require less energy, water, and other natural resources. Central Monofill Services will expand the recycling services that will not only be environmentally responsible but will stimulate local economy and tax revenue that will enhance many other programs. We support CRS and CMS in their expansion endeavor.

Lois Young

Calbag Metals Tacoma

Susan Lee

From: conard miller [ravens@gci.net]
Sent: Thursday, October 30, 2014 7:23 PM
To: Susan Lee
Subject: Palmer toxic dump

We write this letter as community members for over 30 years, we have raised our family in this valley and watched as our son grew to become a man in this community. We also write this as an apology to those future sons and daughters who will not have what our own son had, a chance at being free and enjoying our great land. Somewhere along the line in our community we forgot about the ties that bind us together and make us a community and we started to look out for making a quick buck and now the devil wants his due. Everyone always said the valley was big, but after a while after seeing test wells being forced into people's backyards and gravel pits slowly growing to devour the wild places where a person could hike or hunt, we feel a chill in our bones. The valley is a place of wonders with green hills and breathtaking sights, but over the years special interests and representatives have tried to sell the soul of our community, its natural abundance and splendor, which greeted us each day. Could the Founding Fathers of Manhattan ever have imagined that their splendor would be spent so quickly and be lost for a dozen generations even quicker when they greeted each new day? We took for granted and never could believe that the waste and filth of others would be greeted so greedily and lovingly brought into our community. A few pieces of papers and some shiny metal coins for the loss of our land for generations seems like a sad trade, but it seems the devil gets what the devil pays for. Long after the outsiders who dumped their poison onto our lands have gone and the quick buck made has turned to dust another more sinister dust will remain to blow across someone else's brow who will be sitting and looking at the remnants of the filth and trying to explain to a child the cost we paid to take poisons into our bodies every time we take a sip of water or eat a fish caught in some local stream or the hint of some unnatural things in the wind and why we sacrificed the place where we lived for some paper script. They say we did not speak up, they say we did not stand up against the loss of our land, even if that is true for some it is not true for all. For their will always be those who will say no even when it's not fashionable to say no. We say no, there are some prices to high to pay and for those future generations being robbed before they are born, we mourn for what you have lost before you ever knew it.

AnneMarie and Conard Miller

Susan Lee

From: Roy Kallander [starscout3185@gmail.com]
Sent: Thursday, October 30, 2014 8:54 PM
To: Susan Lee
Subject: Re-application by Central Monofill Services, Inc. For CUP

Susan Lee of the Matanuska-Susitna Borough Planning Commission,

In regards to the proposed Monofill by Central Monofill Services, Inc., it is, simply put, one the absolute worst type of businesses to be built on that particular property. These monofills have a history of leaking toxins into the air and water systems in several locations in the Lower 48. Ohio is currently dealing with this very issue in the majority of their monofills, and are currently working on creating regulations- after the contamination started. After the fact is too late. The health and safety of the people there and here is being threatened through water contamination and through the air in the way of toxic fumes, (such as Hydrogen Sulfide & others), and through wind blown debris as nearby residents experienced last year when high winds scattered CMS's illegally dumped garbage all over their yards. There have been 2 major hydrologic studies done: one in the past & another done recently by the same expert- Mr. Munter, that discuss the water issues in depth. The aquifer breach by the gravel company that owned the land previously directly affected the levels of nearby lakes and a multitude of private wells. That demonstrates a precedent of water issues long before CMS came along. Combine the major water issues with dumping construction debris to include asbestos, treated lumber etc, into holes in the ground with no impermeable liners, and no regulation or oversight, and you have a recipe for certain disaster.
I am not opposed to economic growth, unless it comes at the expense of the people and the resources they rely on to live. You have our health and resources in your hands, we are counting on you- please protect us.

Sincerely, Roy Kallander, Jr.

Sent from my iPad

Susan Lee

From: Charles Homan [homan@mtaonline.net]
Sent: Thursday, October 30, 2014 3:02 PM
To: Susan Lee
Subject: Central Recycling Services Monofill Permit

Dear Ms. Lee

I would like add my comments for the support of the proposed land fill development of Central Recycling Services. This is a much needed monofill that currently does not exist in the Valley. Failure to develop this type of facility is a huge mistake. We need to recycle building materials and conserve our resources which cuts costs and certainly reduces the amount of waste going into the Borough land fill. As the population grows the demand on our Borough infrastructure is growing and the need to use every means of keeping down the filling of our land fill is critical. The proposal will allow for the recycling of construction wastes and reduces waste. It appears just down Pittman Road from me the old saloon on the corner of Pittman & the Parks Highway is about to be taken down. i imagine this facility would make it possible to recycle much of that wood but without the proposed it will be dumped never to be used again in the Borough land fill.

Please support this application for permit.

Charles E. Homan
7362 W. Parks Hwy #230
Wasilla, AK 99623
Phone: 907-357-4436

Susan Lee

From: Tina Holland [sandtholland@gmail.com]
Sent: Thursday, October 30, 2014 3:49 PM
To: Susan Lee
Subject: Please support the Central Monofill Services Conditional use permit

To whom it may concern:

I am a Fairbanks resident and I grew up in Salcha Alaska where Central Monofill recently opened a new site that has been operating for several years now.

Not only is the facility run very clean and in a business like manner but they have actually upgraded the land that was previously a junk yard and hazardous to the neighbors. The property has actual curb appeal now and Central Monofill along with being a reputable business is a very good neighbor to the residents in the area. Central Monofill has spent an incredible amount of time and effort to not only minimize any impact to the area but also to improve roads and to some extent the quality of life for their neighbors.

We of course had some reservations due to our lack of knowledge on the subject, but after reviewing the plans and talking to the owners and operators of the facility we came to understand the importance of the service to the community and that it did not have to come at a price to the locals.

As this is the same company that is looking to open in the Matsu area I not only support them but think that we would be negligent in stopping one of our local Alaskan companies from keeping "our" Alaska clean and tidy.

Please do not let fear and propaganda dictate the growth and development of our great state!

Sean Holland

Susan Lee

From: Alaska Thermal Imaging [akthermalimaging@yahoo.com]
Sent: Thursday, October 30, 2014 5:00 PM
To: Susan Lee; permitcenter@matsugove.us
Cc: matthewb@mtaonline.net
Subject: Central Monofill Services Conditional use Permit Comments
Attachments: Central Monofill services HOA comments001.pdf

Hi Susan

Please find Mt. View Estates HOA comments concerning the Conditional use permit for the operation of a monofill for CMS attached to this email.
Thank you for considering our comments

On a side note I have never understood how the initial conditional use permitting for this property with the previous owner was not binding by law regardless of transfer of deed.

Thank you
Emmett Leffel
MT View HOA President
(907) 746-4332

cc; Matthew Beck

Matanuska-Susitna Borough
Planning and Land Use Department
Development services Division
350 East Dahlia Avenue Palmer Ak 99645
Phone (907) 861-7822 Fax (907) 861-7876
Email: permitcenter@matsugov.us

Memorandum

Date:	October 2, 2014
From:	Susan Lee, Planner 11
Subject:	REQUEST FOR REVIEW AND COMMENTS
Project:	Application for a conditional use permit for the operation of a monofill
Parcel ID:	Township 17 North, Range 2 East, Sections 18 & 19, Seward Meridian
Applicant:	Central Monofill Services

Thank you for receiving and considering our comments concerning these important issues. It is with great concern that we as a Home Owners Association respond to this memorandum. Our earlier testimony on these issues pertaining to this applicant and conditional use permit has been recorded and heard by the Borough concerning this Applicant's failure to meet reasonable expectations of the Borough and its residence. This applicant has proven from day one that they are not concerned with protecting our water quality, land, air or even following basic permit guidelines and requirements. The gross violations of their previous conditional use permit and blatant degradation to surrounding environments and water quality has proven their complete disregard for community and our environment. Mt. View Estates HOA's primary concern is protecting our quality of life, property value and our water supply. With a community well serving our entire subdivision connected to the same aquifer that has been punctured on this property, we strongly urge the Panning Division, the Borough Manager and Assembly to reject this permit application for the operation of a monofill.

Respectfully

10-30-14

Emmett Leffel
Mt. View HOA President
1901 S. Kaye Marie Drive
Palmer AK 99645
(907) 746-4233

Susan Lee

From: weircei@gmail.com
Sent: Thursday, October 30, 2014 7:32 PM
To: Susan Lee
Subject: CMS Conditional use permit

As a lifelong Alaska resident and a Palmer resident in the Matsu Valley for 14 years I am in support of Central Mono fill services conditional use permit . I believe it will bring jobs to the valley and bring a much needed service in construction debris recycling and disposal industry to the valley.
CMS has proven they can do this responsibly with their operations in Fairbanks at the Salcha mono fill .
And I believe they can do it in the same responsible manner here in Palmer Alaska.
Please support the responsible disposal of construction debris and recycling in Alaska Paul Weir
407 E. Caribou Palmer Alaska

Susan Lee

From: jesse saxton [alaskamutt@hotmail.com]
Sent: Thursday, October 30, 2014 7:33 PM
To: Susan Lee
Subject: Comment on proposed mono fill

Please don't allow this environmental nightmare to occur! I am not just saying this because my living room windows look right down into the center of it, but because Alaska should put the hard lessons of the lower 48 to use. We have already been subject to big companies that move in, create an ecological mess, change the company name, and hide behind a paper trail of company sell off's. We have already seen it in action with the so-called gravel "pit". The original mine operator filed a reclamation plan that kept the local population and governing body happy and as soon as they took the easy money, sold the property and made the dredge ponds somebody else's problem leaving the local population with an eyesore and having to deal with it. This also leaves the local government with endless and costly lawsuits as well as having to clean up a business's mess. Apparently no one is holding these companies responsible for their actions . All of this expense heaped on to the tax payers of the Borough just for some short-term profit. Have we not seen enough damage from toxic runoff from tires. Tires are not an inert material and please show me a building in alaska built from tires which are a petroleum product. So much for a mono-fill. The toxic runoff from alone will be enough to render the entire area useless for future development since it will be too unstable to build on in earthquake country. All you have to do is look at the h hills bordering my property to see the erosion that will take place from wind and water. With no plan in place to monitor and inspect each load this monofill will become just another land fill and set a precedence for future such projects.

If the borough is looking at income from sales tax and a few jobs they are not seeing even a small piece of the big picture. Property values in the area have already been projected to fall at least 15%, so begin the lawsuits if the borough doesn't lower property taxes in the area willingly and up front. Once CMS is done with this project the entire area is lost square footage to future tax revenue and the borough is stuck maintaining and monitoring forever, the loses just keep piling up just so one man can reap profits. The loss of property value cannot even be calculated. No one wants to move into an area that is essentially a giant open pit mine that will eventually become an enormous land fill. The original reclamation plan for high-end housing around a recreational lake with easy commute to Anchorage and the base's would bring long term growth and revenue to the Palmer area as well as high paying construction jobs in the short term.

I also believe the State and CMS are missing an opportunity on railroad property across the highway. There is a gravel pit with easy access to a rail spur which could cut transportation costs and have access to gravel resources.

Susan Lee

From: Michael Lane [lane@mtaonline.net]
Sent: Thursday, October 30, 2014 7:50 PM
To: Susan Lee
Subject: landfill - Central Monofill Services

I am writing to voice my family's opposition to the landfill proposed by Central Monofill Services. The proximity of this landfill to lakes and residences is worrying. Most homes in this area rely on individual wells for their water supply. Many people use the lakes for recreational pursuits, with a positive economic impact. Risking the aforementioned for short term economic gain does not seem to be in the best interest of area residents. The Palmer area is a wonderful, unique place. Surely there are less destructive avenues to pursue for economic growth.

Thank You and Best Regards.

Michael Lane
2950 S. Lakeshore Loop
Palmer, AK 99645

Susan Lee

From: Elaine and David Palmer [titus@mtaonline.net]
Sent: Thursday, October 30, 2014 8:16 PM
To: Susan Lee
Cc: Ramona Puddicombe; Nat Palmer
Subject: Comment on the Proposed Monofil Site Conditional Use Permit

Importance: High

To: Ms. Susan Lee, Mat-Su Borough.

There is an open comment period that closes at 0500p on October 31, 2014 for a proposed monofil site on the Glenn Highway in the unincorporated limits of Palmer, Alaska. At first glance this proposal appears somewhat inert, however, on the basis of the anticipated site material, specifically:

Regulated Asbestos Containing Material (RACM) and Non-RACM will be accepted at the site.

Location:

The proposed site is located on MSB Tax Parcels: 17N02E18C010 (2840 S. Glenn Highway) and 17N02E19B006 (2560 S. Glenn Highway); within Township 17 North, Range 2 East, Sections 18 and 19, Seward Meridian

This issue deserves a closer look. Living at 7000 E Lower Mesa Drive, Palmer, approximately three miles due west of the proposed monofil site, I have the following comments:

1. A ten foot designated separation to an unlined dump site for known hazardous materials (asbestos) from an aquifer water table used by thousands of people is potentially criminal – individuals should review such cases as the Lynn Canal – and I have water rights for my well as do many others – with no public water supply.
2. This area, in which I have resided for over thirty years, experiences from three to six wind events per year where winds in excess of sixty mph from the east/southeast create an extended dust plume from the gravel pit in question and others in its immediate vicinity that extends far beyond my residence does not need to be supplemented by known hazardous and carcinogous materials intentionally dumped at the proposed location merely for convenience or individual economic gain. It should be noted that this dust plume encompasses a regional hospital, a State College, an elementary school, and hundreds of homes and dozens of businesses.
3. If a permit is granted then the permittee should be required to bond against any and all health issues generated by this site for the potential time frame within which the site represents a potential hazard to both the aquifer and the downwind atmospheric volume where hazardous material dust may be propagated. A reasonable wind event should be determined (maximum observed by me to date is approximately 110 knots) and a legitimate wind impact zone determined to evaluate the true impact of such a material release on those community elements stated in item #2. above.

I am available to discuss any aspect of this comment should you chose to do so. Thank you for this opportunity.

David Palmer

7000 E Lower Mesa Drive

Palmer, AK 99645

907-745-5227

Susan Lee

From: Geri Zehrt McCann [gerimccann@hotmail.com]
Sent: Thursday, October 30, 2014 8:17 PM
To: Susan Lee
Subject: Public Comment for Planning Commission

Mat-Su Borough Planning
Attn: Susan Lee
slee@matsugov.us
Public Comment to Planning Commission

Dear Planning Commission

We live on Canoe Lake and are opposed to Central Monofil's permit for a private dump at mile 38.3 of the Glenn Hwy.
This dump presents threats and hazards to the local surrounding area: Health, drinking water, lakes, fish, environment, natural habitat, wild life, air quality, and devastating results in the event of an earth quake or fire. It will be an eye sore, reduce property values in the region, and will be a detriment to our otherwise pristine national scenic byway.

Water quality is vital: It is the worst location for a monofil in the whole Matanuska/Susitna Valley because the site sits on top of the massive aquifer that feeds our lakes and provides drinking water. People with wells that are connected to the aquifer will not have confidence in drinking the water that once had no threat of pollution. The aquifer is connected to the water that feeds the surrounding lakes. The Kepler/Bradley Lake Systems and and Matanuska Lake Recreation area will be under threat of irreversible contamination. Local residents and tourists alike enjoy fishing in the pristine unpolluted waters in the rivers and lakes in the close surrounding area. With the threat of the dump that could contaminate the lakes it will detour recreational fishing in the area. When the lakes are contaminated it will pollute and possibly wipe out our fragile eco system and kill fish, waterfowl, birds of prey and wild life that live around and in the lakes. We have nesting eagles and osprey who hunt in this region. Central Monofill has not regulated the water levels in the ponds in order to protect the water levels in the surrounding lakes. How can we trust that they will protect the water quality?

. A dump permit would allow tanks and potentially leaky equipment to be parked next to the ponds open to the aquifer. Accidents happen. The aquifer is only 2 feet below the surface and even if they state there is 10 feet, how can microscopic pollutants be filtered out in just 10 feet, Even if they line the dumping cells, they will have to pump them out – who will regulate this procedure to protect any spillage into the ponds or grounds. Where will they dump this toxic fluid?

ASBESTOS, HEALTH CONCERNS:, Cancer from asbestos is life threatening! Who will monitor the owners to make sure they dump the asbestos safely. Those who live close by are asked to take a drastic health risk and trust our lives and in the professional credibility of the monofill owners and staff. They to date have already been sited for not complying with contracts and codes. How can they be trusted? It will be cost prohibitive to pay borough staff to their monitor dumping practices, so they will be dumping without accountability and monitoring. Accidents happen and the local residents will suffer irreversible health issues as a result.

The dump is in a wind tunnel that can get winds up to 80 mph that snaps trees and tears roofs off of houses and causes substantial damage to structures. These winds will blow any trash that has not been covered adequately, and blow not only trash but air pollutants causing health hazards. It will harm those with lung issues such as asthma, emphysema etc.

CMS also wants to store and sell salvaged items and materials and vehicles & who knows what else? There will be stacks of vehicles, and junk that may also leak and pollute. Do we want a "Sanford & Son's" junkyard at our gateway and along our scenic byway, and down the highway from our new visitor center! This will be a detriment to our image and make us live up to the name of Valley Trash. We will be a joke and Anchorage will be laughing as we store and dump there trash in our front door!!

The borough would make so much revenue if they had to pay to dump in borough dumps. What is the reasoning that would cause the borough to let them create an eye sore and health hazard when they could be making money from these folks. If they want to bring Anchorage trash here they should pay like everyone else!!!

What happens WHEN there is an earthquake? The 64 earthquakes damaged our wetlands and rocked this area too!!! We have had some significant earthquakes in the last few months in the valley. I live just blocks away from the dump and our house was rocking and shaking.

The monofill site was supposed to have been developed into a beautiful subdivision for lakefront homes. There was only one problem… The soil in this earthquake zone is too unstable for building. The sand will liquefy in an earthquake. It may also subside as the hay flats did during the 1964 earthquake.

The CMS site is too unstable to support a house, but it is being planned to support a chemical containing waste pile 8 stories high. With the groundwater at ground level currently and many earthquakes to come, we could easily end up with a site that has acres of waste continuously leaching directly into groundwater.

What if there is a wild fire?? The toxic garbage and tires will heavily pollute the air and environment.

This is a "NO BRAINER" anyone who votes r to approve the CMS dump application is either mentally unstable or "bought off" by CMS – in either case they should be removed from the Planning Commission. The community is watching and trusting the Planning Commission to make a decision on what is best for the communities health and well being and image. Will the Planning Commission vote for what is best for Valley residents or for questionable a Anchorage business.

We support the plan that was created and approved by the community which preserves this area for a a beautiful park or something that will benefit our community and compliment our National Scenic Byway, and be a beautiful welcome to our Valley that is just up from our new visitors center.

Sincerely
Geri McCann
2280 S. Killarney Dr.
Palmer, Ak 99645

907-715-7891
gerimccann@hotmail.com

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Susan Lee

From: Rebecca Jeffers [rebeccajeffers@hotmail.com]
Sent: Thursday, October 30, 2014 9:15 PM
To: Susan Lee
Subject: Comment for submission about Monofill in Palmer
Attachments: Honorable submit.doc

Dear Susan Lee,
First of all I would like to offer you my sympathy on being the contact person on such a sensitive topic. I have attached my letter that I would like to submit on the Central Monofill Services Dumpsite permit in Palmer. I have also pasted the letter below incase you cannot open the attachment for any reason, you may use either letter since they are the same. Please email me a verification that my letter will be submitted with the public comments on this permit. Please email me if you need me to send it again or have any questions.
Thank you and I hope you have a Happy Halloween and a great weekend,
Rebecca Jeffers

Honorable Matanuska-Susitna Borough Planning Commission members,

My parents and I own a home and live on Canoe Lake in the Bradley – Kepler subdivision. I am writing to express my concern over the purposed conditional use permit for the operation of a monofill for the disposal of non-asbestos material and asbestos material located on parcel #17N02E18C010 (2840 Sl. Glenn Highway) and 174N02E19B006 (2560 S. Glenn Highway). It is my concern (and all of our neighbors) that this landfill will taint our underground water reservoir that supplies all the wells and lakes in and around that area. The lakes (Irene, Canoe, Bradley, Long, Kepler, Matanuska lakes) are stocked with fish by Fish and Game. Also, many people come to these lakes to swim and others come to fish and then eat the fish which they catch. My neighbors and I around these lakes are on well water, thus alarmed at the situation we are put in, to make sure nothing is started or completed around us that will contaminate our only water supply.

The parcels that Central Monofill wants to have a dump on have been problematic for years. Furthermore, the aquifer in those parcels has also been problematic for many years since the gravel pit punctured it. The gravel pit reassured the residents around the incident with promises that the area would be reclaimed once it was no longer an active gravel pit. Many of us residents even submitted different reclaiming ideas and there were many people willing to volunteer time and trades to assist the project. One idea was to turn it into a park, with 2 ponds, some barbeque grills and picnic tables. Maybe even have a nice soccer field for the local teams to play on. We could even dedicate and name it after a prominent Palmer or Alaska leader.

It is my concern that putting in this monfil site will decrease the property values around it. These decreases in values have been verified by multiple real estate agents for the Matanuska Susitna Valley. If the values of the properties decrease, so does the security of those families. In addition, a monofill site will bring more noise, odor, and traffic which will be incredibly upsetting to an area that is use to clean, beautiful and serene surroundings.

Central Monofill Services has no long term plans on protecting our water, nor do they have any monitoring plans for the water pollution or air pollution that is probable to occur. Also, they have plans for putting in a fence or tire bails, but not for covering it to keep the fly away debris to a minimum; thus creating a messy subdivision behind it and roadway in front of it, given that the winds will blow debris into both the subdivision

and the roadway (consequently creating a driving hazard). The wind here swirls creating a tornado like scenario and the proposed tire bails and fences will not catch any of the debris whirled up by the vortex. What is the plan for picking up the debris that gets out of the monofill site and how are they going to deal with the high winds that we get here which can last more than five days? Debris may well end up in the stocked fishing lakes too. How will this affect the farms around us, our pets and our children? Will we end up with contaminated food? This is not an appropriate location for a Monofill dumpsite.

Our State Representatives, Borough Assembly Members, Borough Mayor and Planning Boards are the public's first line of defense. Thus, they need to be ethical and good stewards for our communities and environment. One fix would be for the Borough Assembly and Mayor to adopt the Anchorage Codes for zoning and permitting. These codes would prevent Central Monofill Services from putting this type of a dump in a residential area. The Matanuska Susitna Borough could tweak the codes in the future if they need to, but this would give the residents and community protection immediately.

You have continually been sensitive to the protection of the Palmer culture and atmosphere. You have also been marvelous in understanding the family character and strength of our neighborhoods and community. I am hoping and urging you to heed the concern, and fear, the people of Palmer now face. Help us safeguard our community (and farms) for the countless generations we know will live in this subdivision and community. Not to mention the innumerable number of people that will come to these lakes for recreational delight. A residential and sport fishing area is assuredly not the location for a waste dump which will contain hazardous materials. This dump "will" contain regulated and non regulated asbestos materials per the letter received from the Matanuska-Susitna Borough Planning and Land Use Commission. Non-regulated asbestos requires full hazardous material suits and respirators when working around it, yet the ground (which is only 10 feet above an aquifer that is the only supply of well water for multiple subdivisions) will not even have a liner! The company Central Monofill Services has many alternative locations more appropriate than this from which to choose. In the short time this company has been around they have already amassed violations, fines and even had to have the DEC provide them with a cease and desist order so they would stop dumping in the Palmer location that they did not have a permit for! That site is the same site in Palmer that is being applied for again! Furthermore, they are currently in Court in Anchorage for Violations! This, in itself, is not reassuring. (Please see the Facebook page 'Palmer Toxic Dumping' for more information about how the community feels on this issue). This is not a suitable location for a Monofill dumpsite.

Please say NO to this Monofill site for your future, and the future of the generations yet to come. Many people have talked against it and then when the time comes they voted to approve it! This makes the tax payers wonder how much they were paid for their vote. Will you be a voice against the asbestos containing Monofill for the residents of the city you in charge of? If these parcels need to be turned into something then ask the community for ideas (like a park) and volunteers; the community will come together to make it happen. The community supports a park and intensely opposes a Monofill dump.

Central Monofill Services are technically not a Monofill since they will have non asbestos material, regulated asbestos material and non-regulated asbestos material – a Monofill is called that because they only dump a single type of material – normally inert non asbestos containing material. This means Central Monofill Services is not even staying true to their name.

Central Monofill Services tried last year to get a dump permit for the same location that they are applying for now and they got told NO! All of the Palmer residents, Real Estate agents, lawyers and community councils who attended the meeting were against the dump! The only people for the dump were on their payroll! Please help us protect our futures and the futures of our children.

Let's all stand together and STAND AGAINST Central Monofill Services' asbestos dump site in Palmer.

Sincerely,
Rebecca A. Jeffers, 2360 S. Killarney Drive

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Susan Lee

From: Kevin McCann [kmccann@mtaonline.net]
Sent: Thursday, October 30, 2014 9:35 PM
To: Susan Lee
Subject: Public Comment

Mat-Su Borough Planning

Attn: Susan Lee

slee@matsugov.us

Public Comment to Planning Commission

Dear Planning Commission

We live on Canoe Lake and are opposed to Central Monofil (CMS) permit for a private dump at mile 38.3 of the Glenn Hwy.

This dump presents threats and hazards to the local surrounding area: Health, drinking water, lakes, fish, environment, natural habitat, wild life, air quality, and devastating results in the event of an earth quake or fire. It will be an eye sore, reduce property values in the region, and will be a detriment to our otherwise pristine national scenic byway.

Water quality is vital: It is the worst location for a monofil in the whole Matanuska/Susitna Valley because the site sits on top of the massive aquifer that feeds our lakes and provides drinking water. People with wells that are connected to the aquifer will not have confidence in drinking the water that once had no threat of pollution. The aquifer is connected to the water that feeds the surrounding lakes. The Kepler/Bradley Lake Systems and and Matanuska Lake Recreation area will be under threat of irreversible contamination. Local residents and tourists alike enjoy fishing in the pristine unpolluted waters in the rivers and lakes in the close surrounding area. With the threat of the dump that could contaminate the lakes it will detour recreational fishing in the area. When the lakes are contaminated it will pollute and possibly wipe out our fragile eco system and kill fish, waterfowl, birds of prey and wild life that live around and in the lakes. We have nesting eagles and osprey who hunt in this region. Central Monofill has not regulated the water levels in the ponds in order to protect the water levels in the surrounding lakes. How can we trust that they will protect the water quality?

A dump permit would allow tanks and potentially leaky equipment to be parked next to the ponds open to the aquifer. Accidents happen. The aquifer is only 2 feet below the surface and even if they state there is 10 feet, how can microscopic pollutants be filtered out in just 10 feet, Even if they line the dumping cells, they will have to pump them out – who will regulate this procedure to protect any spillage into the ponds or grounds. Where will they dump this toxic fluid?

ASBESTOS, HEALTH CONCERNS:, Cancer from asbestos is life threatening! Who will monitor the owners to make sure they dump the asbestos safely. Those who live close by are asked to take a drastic health risk and trust our lives and in the professional credibility of the monofill owners and staff. They to date have already been sited for not complying with contracts and codes. How can they be trusted? It will be cost prohibitive to pay borough staff to their monitor dumping practices, so they will be dumping without accountability and monitoring. Accidents happen and the local residents will suffer irreversible health issues as a result.

The dump is in a wind tunnel that can get winds up to 80 mph that snaps trees and tears roofs off of houses and causes substantial damage to structures. These winds will blow any trash that has not been covered adequately, and blow not only trash but air pollutants causing health hazards. It will harm those with lung issues such as asthma, emphysema etc.

CMS also wants to store and sell salvaged items and materials and vehicles & who knows what else? There will be stacks of vehicles, and junk that may also leak and pollute. Do we want a "Sanford & Son's" junkyard at our gateway and along our scenic byway, and down the highway from our new visitor center! This will be a detriment to our image and make us live up to the name of Valley Trash. We will be a joke and Anchorage will be laughing as we store and dump there trash in our front door!!

The borough would make so much revenue if they had to pay to dump in borough dumps. What is the reasoning that would cause the borough to let them create an eye sore and health hazard when they could be making money from these folks. If they want to bring Anchorage trash here they should pay like everyone else!!!

What happens WHEN there is an earthquake? The 64 earthquakes damaged our wetlands and rocked this area too!!! We have had some significant earthquakes in the last few months in the valley. I live just blocks away from the dump and our house was rocking and shaking.

The monofill site was supposed to have been developed into a beautiful subdivision for lakefront homes. There was only one problem… The soil in this earthquake zone is too

unstable for building. The sand will liquefy in an earthquake. It may also subside as the hay flats did during the 1964 earthquake.

The CMS site is too unstable to support a house, but it is being planned to support a chemical containing waste pile 8 stories high. With the groundwater at ground level currently and many earthquakes to come, we could easily end up with a site that has acres of waste continuously leaching directly into groundwater.

What if there is a wild fire?? The toxic garbage and tires will heavily pollute the air and environment.

This is a "NO BRAINER" anyone who votes r to approve the CMS dump application is either mentally unstable or "bought off" by CMS – in either case they should be removed from the Planning Commission. The community is watching and trusting the Planning Commission to make a decision on what is best for the communities health and well being and image. Will the Planning Commission vote for what is best for Valley residents or for questionable a Anchorage business.

We support the plan that was created and approved by the community which preserves this area for a a beautiful park or something that will benefit our community and compliment our National Scenic Byway, and be a beautiful welcome to our Valley that is just up from our new visitors center.

Sincerely

Kevin McCann

2280 S. Killarney Dr.

Palmer, Ak 99645

907-715-7892

kmccann@mtaonline.net

This Page

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Susan Lee

From: Craner, Jeremy POA [Jeremy.D.Craner@usace.army.mil]
Sent: Thursday, October 30, 2014 1:54 PM
To: Susan Lee
Subject: RE: comment (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

I withdraw my comment listed below.

Jeremy

-----Original Message-----
From: Craner, Jeremy POA
Sent: Wednesday, October 29, 2014 11:37 AM
To: 'slee@matsugov.us'
Subject: comment (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

I am a nearby resident (1294 South Thalo Drive) and I strongly oppose the location of this proposed monofill.

Jeremy

Jeremy Craner, P.G.

USACE Alaska District (EN-EE)

Joint Base Elmendorf-Richardson, Alaska

907.753.2628 (voice)

907.753.2829 (fax)

Classification: UNCLASSIFIED
Caveats: NONE

Classification: UNCLASSIFIED
Caveats: NONE

Susan Lee

From: Craner, Jeremy POA [Jeremy.D.Craner@usace.army.mil]
Sent: Wednesday, October 29, 2014 11:37 AM
To: Susan Lee
Subject: comment (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

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Jeremy

Jeremy Craner, P.G.
USACE Alaska District (EN-EE)
Joint Base Elmendorf-Richardson, Alaska
907.753.2628 (voice)
907.753.2829 (fax)

Classification: UNCLASSIFIED
Caveats: NONE

Susan Lee

From: Lisa Kallander [zombiebeader@gmail.com]
Sent: Friday, October 31, 2014 1:06 AM
To: Susan Lee
Subject: Objection to Central Monofill Services, Inc. Conditional Use Permit

Susan Lee, and Matanuska-Susitna Borough Planning Commission,

The application for a Conditional Use Permit by CMS, Central Monfill Services, Inc. for building and operating a Monofill at Milepost 38.3 of the Glenn Highway poses a direct threat to the population's health and safety. With a system of lakes, over 50 private wells and an aquifer that has millions of gallons of water flowing through it makes this property one of the worst areas anyone could place a unlined, unregulated asbestos and construction debris dump! The environmental threat is not limited to the water supply, but to the air as well. High winds common to the Region scatter debris, as the surrounding neighbors found out after CMS illegally dumped garbage last year. Those same winds would scatter any airborn toxins as well. The damage caused would be uncontainable and far too expensive for CMS's woefully inadequate insurance policy to cover. Currently the state of Ohio is drafting regulations now that 29 of 30 Monofills there are leaking 7+ toxins into the ground at levels exceeding health standards. Many other states have Hydrogen Sulfide gases leaking into the air from their Monofills. After reading CMS's proposal and the hydrologic reports from both sides, there are no adequate plans to contain and protect

A main reason for granting Conditional Use Permits is for economic development. What are the economic benefits to the Valley with this privately owned and operated business that pays little more in property taxes than a single-use residential home in the area and that will employ only 3 full-time employees? They will escape Anchorage's higher Municipal dumping fees and will likely divert money away from the Central Landfill. CMS will reap all of the financial benefits while Palmer and everyone downstream and downwind will reap all of the consequences, not a fair trade any way that you look at it. The City of Palmer doesn't like the idea either and just drafted a resolution against it. This type of business also conflicts with aspects of the Borough's Comprehensive Plans.

I haven't even addressed the impact to traffic on the Glenn Highway with year round operations estimating up to 100 trucks a day during the peak months of Spring and Summer. The large number of drivers that commute to Anchorage, which includes my husband, as well as tourists and all other motorists will all be directly impacted by this. There are so many other locations in the Valley that could be appropriate for a Monofill, the property at Milepost 38.3 of the Glenn Highway is absolutely the most inappropriate site imagineable for a Monofill. After reviewing all of the facts, I pray that the Planning Commission acts to protect the public from this very real threat.

Thank you, Lisa Kallander, 3185 S Lakeshore Loop, Palmer.

Susan Lee

From: Lisa Kallander [zombiebeader@gmail.com]
Sent: Friday, October 31, 2014 3:16 AM
To: Susan Lee
Subject: Central Monofill Services, Inc.'s Conditional Use Permit Application

To Susan Lee and Matanuska-Susitna Borough Planning Commission,

Milepost 38.3 of the Glenn Highway, the site CMS, Central Monofill Services, Inc., wants to build and operate a Monofill, a business which in this location, would pose a direct threat to the population's health and safety. With the nearby system of several lakes, over 50 private wells, and an aquifer that has several millions of gallons of water flowing through it is one of the absolute worst locations anyone could place an unlined and unregulated asbestos and construction debris dump. Hydrologic studies have shown that the water table is very close to the surface, and it's levels unpredictable. This was discovered when the gravel company that owned it prior to CMS breached the aquifer and caused nearby lake levels and private wells to be altered. This set a precedent for water issues on this site. The environmental threat is not limited to the water supply but to the air as well, as homeowners nearby discovered after CMS illegally dumped trash and high winds common to the Region scattered the garbage all over their properties. Those same winds would distribute any toxic gases such as Hydrogen Sulfide which has been found leaking into the air from Monofills in other states. Ohio is currently drafting regulations after 29 of 30 of their Monofills have been leaking at least 7 toxins at levels exceeding safety standards. Once these toxins have leaked, total containment and cleanup are difficult if not impossible, and the associated costs are astronomical. CMS's woefully inadequate insurance policies wouldn't be able to cover even part of it.

A main reasons for a Conditional Use Permits is to promote economic development, but where is the benefit to the Valley when a privately owned business that pays slightly more property taxes than a single family residence in the same area plans to hire only 3 full time employees? The company will also gain relief from Anchorage's higher Municipal dumping fees and will divert money from the Valley's Central Landfill. They reap all of the benefits while the Valley reaps all of the consequences, not a fair trade any way you look at it.

The Glenn Highway will also be affected greatly by the year-round operation, especially in the peak Spring and Summer months with up to 100 trucks a day. The numerous Anchorage commuters, which includes my husband, the tourists, and all other drivers will definitely be impacted.

There are several locations in the Valley that could be appropriate for a business like this. MilePost 38.3 of the Glenn Highway is the least appropriate site imaginable. The facts show without a doubt that a different location is the only solution, I hope that the Planning Commission once again has the wisdom to see this and to continue to protect us because you have our health and safety in your hands.

Thank you, Lisa Kallander, 3185 S Lakeshore Loop, Palmer

Matanuska-Susitna Borough
Planning & Land Use Department
Development Services Division
350 East Dahlia Avenue
Palmer, Alaska 99645

Matanuska - Susitna Borough
Development Services

OCT 30 2014

Received

53033B03L001 103
JOHNSON KENTON S & K J D
2075 S HIGH RD
PALMER, AK 99645

FIRST CLASS MAIL

The Matanuska-Susitna Borough Planning Commission will consider the following:
Application or Item: *Application for a conditional use permit for the operation of a monofill for the disposal of inert material*
Matanuska-Susitna Borough Code Section: MSB 17.60 – Conditional Uses
Applicant: Central Monofill Services
Request: *An application has been submitted for the operation of a monofill for the disposal of inert material. The inert debris wil primarily be non-hazardous shredded residual, non-recyclable waste material from construction and demolition waste Regulation Asbestos Containing Material (RACM) and Non-RACM will also be accepted at the monofill site.*
Location: MSB Tax Parcel# 17N02E18C010 (2840 S. Glenn Hwy.) and 17N02E19B006 (2560 S. Glenn Hwy.); within Township 1' North, Range 2 East, Sections 18 & 19, Seward Meridian.

The Planning Commission will conduct a public hearing in the Borough Assembly Chambers, Palmer, Alaska, on this item on ***December 1, 2014*** The meeting begins at 6:00 p.m. ***Public hearings begin at 6:15 p.m.*** This may be the only presentation of this item before the Planning Commission and you are invited to attend.

This conditional use permit application will be introduced for public hearing at the **November 3, 2014** Planning Commission meeting. The Planning Commission members may submit questions to the Planning Commission Clerk concerning the matter or request for more information from the applicant at the time of the introduction. All questions and requests submitted by the Commission shall be in writing and copies will be provided to the applicant and made available to all interested parties and the public upon request. Answers to questions and additional materia requests will be addressed in the staff report for the public hearing.

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Name: Kent Johnson ***Address:*** 2060 High Rd

Location/Legal Description of your property: Block 1 Lot 2 Tara Dells

Comments: Clearly, The only reason CMS wants to haul Anchorage trash to The Valley is to save themselves money. Anchorage has a dump of its own. The valley has two existing monofills. If we are going t accept out of town trash lets get the same rate as the Anchor dump gets for out of town trash - Twice the local rate. Let CMS bring it to the MSB C+D Pit. The proposed area is a damaged and fragile watershed.

Note: Vicinity Map Located on Reverse Side

Planning & Land Use Department
Development Services Division
350 East Dahlia Avenue
Palmer, Alaska 99645

Matanuska - Susitna Borough
Development Services

OCT 30 2014

Received

53033B03L001 103
JOHNSON KENTON S & K J D
2075 S HIGH RD
PALMER, AK 99645

FIRST CLASS MAIL

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Matanuska-Susitna Borough Code Section: MSB 17.60 – Conditional Uses
Applicant: Central Monofill Services
Request: *An application has been submitted for the operation of a monofill for the disposal of inert material. The inert debris wi primarily be non-hazardous shredded residual, non-recyclable waste material from construction and demolition waste Regulation Asbestos Containing Material (RACM) and Non-RACM will also be accepted at the monofill site.*
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Name: Kent Johnson ***Address:*** 2040 High Rd

Location/Legal Description of your property: Block 1 Lot 3 Tara Dells

Comments: Why would anyone consider letting waste material and runoff flow into a body of water being fed year round from a punctured aquafard. Previous mistakes in industrial development have given responsible development a bad name. Will The MSB learn from past mistakes? Lakes, Wells & Rivers in this area already are dealing with the waterflow, why add contaminents to the exsting problem? Lets develop this area into something better than a polluting, eyesore, traffic jam

Note: Vicinity Map Located on Reverse Side

Matanuska-Susitna Borough
Planning & Land Use Department
Development Services Division
350 East Dahlia Avenue
Palmer, Alaska 99645

Matanuska - Susitna Borough
Development Services

OCT 30 2014

Received

FIRST CLASS MAIL

The Matanuska-Susitna Borough Planning Commission will consider the following:

Application or Item: *Application for a conditional use permit for the operation of a monofill for the disposal of inert material*

Matanuska-Susitna Borough Code Section: MSB 17.60 – Conditional Uses

Applicant: Central Monofill Services

Request: *An application has been submitted for the operation of a monofill for the disposal of inert material The inert debris will primarily be non-hazardous shredded residual, non-recyclable waste material from construction and demolition waste. Regulation Asbestos Containing Material (RACM) and Non-RACM will also be accepted at the monofill site.*

Location: MSB Tax Parcel# 17N02E18C010 (2840 S. Glenn Hwy.) and 17N02E19B006 (2560 S. Glenn Hwy.); within Township 17 North, Range 2 East, Sections 18 & 19, Seward Meridian.

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Name: Kent Johnson ***Address:*** 2075 S Hight Rd

Location/Legal Description of your property: Block 3 Lot 1 Tandells

Comments: CMS has proven two things. 1. They are willing to spend money to buy off opposition, and 2. They are willing to shorte and Circumvent existing regulations. CMS is about to extend the gateway welcome sign reading like Burma Shave. Enjoy Majestic View Blowing Debris ... Polluted Water ... good scrounge ... home For Sale ... Cheap!! MatSu Valley ... ~~Bread Basket~~ ... Waste Basket of A

Note: Vicinity Map Located on Reverse Side

FAX COVER

To: Susan Lee
Company: Mat-Su Borough Planning Department
Fax Number: (907) 861-7876

From: Patricia Kepler Goossen
Company:
Fax Number: (907) 486-3777

Subject: Comments on CMS CUP Application

Pages including cover page: 3 Date: October 30, 2014 Time:

MESSAGE

Dear Susan,

I recently submitted my comments as a business owner and am now submitting comments as owner of a personal residence also. I feel both letters of comment should be submitted to the Planning Commission since they each refer to different properties for consideration.

Thank you very much,

Patricia (Patti) Kepler Goossen

Matanuska - Susitna Borough
Development Services
OCT 31 2014
Received

Matanuska-Susitna Borough
Planning & Land Use Department
Development Services Division
350 East Dahlia Avenue
Palmer, Alaska 99645

U.S. POSTAGE PITNEY BOWES
Matanuska - Susitna Borough
Development Services
ZIP 99645
02 1W
OCT 31 2014
Received

117N01E24B013 73
GOOSSEN PATTI K SWANSON
PO BOX 2908
KODIAK, AK 99615-2908

FIRST CLASS MAIL

The Matanuska-Susitna Borough Planning Commission will consider the following:

Application or Item: *Application for a conditional use permit for the operation of a monofill for the disposal of inert material*

Matanuska-Susitna Borough Code Section: MSB 17.60 – Conditional Uses

Applicant: Central Monofill S[illegible]99615*2908 B027

Request: *An application has been submitted for the operation of a monofill for the disposal of inert material. The inert debris will primarily be non-hazardous shredded residual, non-recyclable waste material from construction and demolition waste. Regulation Asbestos Containing Material (RACM) and Non-RACM will also be accepted at the monofill site.*

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Name: Patricia Kepler Goossen ***Address:*** 10190 E. Bradley Lake Ave. Palmer, Alaska

Location/Legal Description of your property: 117N01E24B013 / Mile 38 Glenn Highway

Comments:

Due to more space required, comments are on an attached page.

Note: Vicinity Map Located on Reverse Side

October 30, 2014

Matanuska - Susitna Borough
Development Services

OCT 31 2014

Received

Ms. Susan Lee
Matanuska-Susitna Borough
Planning & Land Use Department
Development Services Division
350 East Dahlia Avenue
Palmer, Alaska 99645

Dear Susan Lee,

I own property and a residence at 10190 E. Bradley Lake Avenue, Palmer, Alaska. Legal description and location of my property is 117N01E24B013 / Mile 38 Glenn Highway. I am deeply concerned about the proposed monofill dump site near my property. I believe there is great potential for contamination of the surrounding groundwater by toxic materials processed at such a site. Obviously this would have a disastrous effect on our well water, putting our health and well-being at risk. It would also release toxins into the nearby lakes and streams, which would obviously endanger the fish and wildlife in these areas.

My husband has been a builder/subcontractor for over 40 years and is quite knowledgeable about the contents of building materials such as those Central Monofill Services is proposing to recycle/dispose of at this site. He sees it is inevitable that such materials would release highly toxic contaminants through leaching into the groundwater or be dispersed into the air.

I have read the report of findings written by J.A. Munter Consulting, Inc., dated February 7, 2014 which was submitted to your department. With such research and knowledgeable conclusions presented as to the damaging effects of such a monofill site, I do not understand how the Mat-Su Borough Planning Commission can even consider issuing a Conditional Use Permit to Central Recycling Services / Central Monofill Services, allowing them to operate such a facility at this location. Please use wise caution and integrity in making a decision concerning this matter.

Thank you for your time.

Sincerely,

Patricia Kepler Goossen

Patricia Kepler Goossen
Mailing address: PO Box 2908, Kodiak, AK 99615 or
10190 E. Bradley Lake Avenue, Palmer, AK 99645
Email: pat-eye74@hotmail.com
Phone & FAX: (907) 486-3777

Matanuska-Susitna Borough
Planning & Land Use Departm
Development Services Division
350 East Dahlia Avenue
Palmer, Alaska 99645

RECEIVED
OCT 30 2014
PERMIT CENTER

53009B02L011 164
REINHART GERALD J & D A
PO BOX 1322
PALMER, AK 99645-1322

FIRST CLASS MAIL

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Applicant: Central Monofill S[illegible]1322 B018
Request: *An application has been submitted for the operation of a monofill for the disposal of inert material. The inert debris will primarily be non-hazardous shredded residual, non-recyclable waste material from construction and demolition waste. Regulation Asbestos Containing Material (RACM) and Non-RACM will also be accepted at the monofill site.*
Location: MSB Tax Parcel# N02E18C010 (2840 S. Glenn Hwy.) and 17N02E19B006 (2560 S. Glenn Hwy.); within Township 17 North, Range 2 East, Sections 18 & 19, Seward Meridian.
The Planning Commission will conduct a public hearing in the Borough Assembly Chambers, Palmer, Alaska, on this item on ***December 1, 2014***. The meeting begins at 6:00 p.m. ***Public hearings begin at 6:15 p.m.*** This may be the only presentation of this item before the Planning Commission and you are invited to attend.

This conditional use permit application will be introduced for public hearing at the **November 3, 2014** Planning Commission meeting. The Planning Commission members may submit questions to the Planning Commission Clerk concerning the matter or request for more information from the applicant at the time of the introduction. All questions and requests submitted by the Commission shall be in writing and copies will be provided to the applicant and made available to all interested parties and the public upon request. Answers to questions and additional material requests will be addressed in the staff report for the public hearing.

Commission members may not receive or engage in ex-parte contact with the applicant, other parties interested in the application, or members of the public concerning the application or issues presented in the application.

Application material may be viewed on-line at www.matsugov.us and clicking on 'Public Notices'. Application material may also be reviewed in the Borough Permit Center. If you have any questions or, would like to send us comments, concerning the proposed action, this form may be used for your convenience by filling in the information below and mailing it to the Matanuska-Susitna Borough, Development Services Division, Planning Department, 350 East Dahlia, Palmer, Alaska 99645. You may fax comments to 861-7876 or e-mail to *slee@matsugov.us*. For additional information please contact Susan Lee, Planner II, at 861-7862. Comments received by ***5 p.m., October 31, 2014*** will be included in the Planning Commission packet for the Commissioner's review and information. Please be advised that comments received from the public after that date will not be included in the staff report to the Planning Commission but will be provided as hand-outs to the Commission. If there is not enough room below, please attach this sheet to another piece of paper. **In order to be eligible to file an appeal from a decision of the Planning Commission, a ~~person must be designated an *interested party*. See MSB 15.39.010 for definition of "*Interested Party*".~~ The procedures governing appeals to the Board of Adjustment and Appeals are contained in MSB 15.39.010-250, which is available on the Borough internet home page, (http://www.matsugov.us), in the Borough Clerk's office, or at various libraries within the borough.**

Name: GERALD REINHART *Address:* P.O. BOX 1322, PALMER 99645

Location/Legal Description of your property: 10551 TYLER DR.

Comments: FACT – ① YES OPEN AQUIFER IS AT SURFACE, AND MOST PLACES ONLY TWO-THREE FEET BELOW SERFACE, I KNOW – I WORKED THERE FOR CPP AND GRANITE CONST. 9 YEARS IN THAT GRAVEL PIT.
② CONTAMINATION WILL ENTER AQUIFER
③ NO ONE IN THE BOROUGH WANTS THE CONTAMINATED PIT
– SEE PAGE 2 –

Note: Vicinity Map Located on Reverse Side

- GERALD REINHART - PAGE 2
- PLANING & LAND USE DEPARTMENT

QUESTION ?

- IF IT IS NON-HAZARDOUS - Why NOT DUMP IT in ANCHORAGE AREA FILL SITE ? - Why TRUCK IT TO PALMER AT huge EXPENCE ?
- WHAT DOES ANCHORAGE CITY COUNCIL SAY ABOUT DUMPING HAZARDOUS TRASH in ANCHORAGE FILL SITES ?
- Who WILL OVER-SEE DUMP SITE - STATE - BOROUGH OR NO BODY ?
- PALMER ALREADY HAS A-QUESTIONABLE DUMP SITE - How MANY DOES PALMER NEED ?
- Why is The CITY OF PALMER, ALSO KNOWN AS - PALMER AIDS — ALASKA INTERIOR DUMP SITE ?
- To The PEOPLE OF THE BOROUGH PERMITING COMMITTEE — IF YOU WANT A CONTAMINATED DUMP — PUT IT in YOUR BACK YARD !
  - NOT OURS -

Susan Lee

From: Sandra [sobrien.zoo@gmail.com]
Sent: Thursday, October 30, 2014 4:57 AM
To: Susan Lee
Subject: Central Monofill Services Conditional Use Permit Application

Hello,

I would like to submit a comment on this permit application. I live in Palmer and it would be a travesty to allow dumping on this site. This should never be used as a dump site! I am commenting on a conditional use permit application under MSB 17.60 which has been submitted for the operation of a monofill for the disposal of inert material. The inert debris will primarily be non-hazardous shredded residual nonrecyclable waste material from construction and demolition waste. Regulated Asbestos Containing Material (RACM) and Non-RACM will be accepted at the site. The proposed site is located on MSB Tax Parcels: 17N02E18C010 (2840 S. Glenn Highway) and 17N02E19B006 (2560 S. Glenn Highway); within Township 17 North, Range 2 East, Sections 18 and 19, Seward Meridian.

Please let it be recorded that I do not want this permit to be allowed.

Sincerely,

Sandra O'Brien

7450 N Esther Dr. Palmer, AK 99645

This email is free from viruses and malware because avast! Antivirus protection is active.

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Susan Lee

From: Stephanie Figon [sfigon@mtaonline.net]
Sent: Thursday, October 30, 2014 1:48 AM
To: Susan Lee
Subject: Comment regarding CMS CUP application

Dear Planning Commission Members,

I own a home with a private well less than 1000 feet from the proposed monofill site. Central Monofill Services has included in their design a plan to run drainage ditches to the gravel pond lakes which are open to the aquifer about 500 feet from my well. Of greater concern is the massive volume of leachate that will be percolating through the 2 million cubic yards of rotting mixture of toxic material directly into my groundwater. Last year CMS officials clearly lied to commission members in its statements that the elevation of the site was greater than 10 feet above groundwater and this summer, they were busy moving dirt around to get close to 10 feet above groundwater. Now, again, they are asserting that they have the *minimum* of 10 feet when the porous nature of the gravel would not provide adequate protection even if the minimum they used was several times as much. The borough's independent hydrological evaluation of the 2014 CMS application by Munter concluded that this project can contaminate wells UP TO A MILE IN A DOWNGRADIENT DIRECTION.

Hydrogen Sulfide gas is poisonous. Most people will not live in, much less BUY a home that is polluted. Central Monofill's assertion that my property value will not be affected is clearly self-serving. The steel in the tire bales will begin breaking down within 5 years, so the dump will be completely unstable before it is even filled. The erosion from 4 wheelers on the 30-50 degree slopes will be devastating. The gravel surface of the site is too unstable to support a single house, but CMS proposes to lay 7 stories of waste on property that will subside in an earthquake, leaving their dump in continuous contact with groundwater. If a grass fire should ignite the 32 acres of tires, it could literally burn for years and this has happened in a similar dump in California. The company's assertion that the completed and closed monofill could ever end up being used as agricultural land is economically unsound and they know it.

The corporate owners continue to market their activities as "recycling". This is nonsense. The project serves no purpose other than profit the corporate owners. Central Monofill Services is a "shell" corporation with almost no assets of its own and was clearly designed by lawyers for the purpose of shielding its owners assets from any of the liability for damages the dump creates. They talk about insurance, but what insurance company in the world would insure a project that is PREDICTED to contaminate wells a mile down-gradient? Then they propose a woefully inadequate 1 million dollars (5 million dollars aggregate) to fix the damage from this environmental crime.

The proposed dump provides almost no jobs while significantly reducing badly needed revenue to the borough landfill which already has a well regulated C&D section and an asbestos cell to divert these waste streams safely.

The Glenn Highway project plans to reroute Colleen Street through the proposed monofill. Will our new safe intersection now be routed through the CMS dump, or will we continue to risk high speed collisions at mile 38 of the Glenn. Wind will take the garbage everywhere, making the scenic byway a sight after any minor wind event. I don't believe that these corporate officers who were convicted of illegally dumping garbage without a permit or even so much as a business license can ever be trusted to keep the asbestos out of the wind.

Given these conditions, any vote in favor of permitting this monofill should be unthinkable. Please protect the property rights of the residents near this site. PLEASE DO NOT PERMIT THIS OR ANY PRIVATE UNMONITORED DUMP.

Sincerely,
Stephanie Figon
2030 South Killarney Drive,
Palmer, AK 99645

Susan Lee

From: rachel cheyette [matieandmesa@yahoo.com]
Sent: Thursday, October 30, 2014 12:17 AM
To: Susan Lee
Subject: Comment re: Central Monofill Services

I am writing to oppose the permit request of Central Monofill Services to operate a dump in Palmer on the Glenn Highway. My husband and two children live in Sky Ranch off of the Outer Springer. There are a multitude of reasons why this permit should, again, be denied.

1) Central Monofill Services has a proven history of dumping waste without a permit. It is deplorable that our local government would approve of this behavior by granting a permit after the fact. This sets a precedent that companies can act in violation of laws and rules and then just ask for forgiveness later. This act by Central Monofill Services is exacerbated by the fact that they took no preventive action to protect groundwater or air pollution.

2) The dump area requested by Central Monofill Services is directly accessible to our ground water (aka drinking water). If granted a permit, the message sent by the MB is that it is putting the healthy and safety of its' residents behind an economic interest. If the Borough approves this permit, with the knowledge of the risk to personal health, then the Borough is also setting itself up for lawsuits, which, in the end, will result in a greater financial loss than any revenue earned by granting the permit.

3) Regarding the revenue. It is my understanding, that the taxes paid by Central Monofill Services are not that much in excess of those paid by the property owners in Sky Ranch; and that Central Monofill Services intends to employee around three (3) people. Therefore, not only is there no great economic benefit, but there is not even a "job opportunity" benefit to the residents of the Valley.

4) The Springer system is already subject to an increase of truck and train traffic due to existing gravel pits. Has the MSB considered the increase in truck traffic in this area - an area where people still jog and ride bikes on the side of the road. In addition, what steps will the company take to reduce noise, pollution and wear and tear on our roads?

5) The area of Palmer, where the dump is proposed is subject to extremely high winds. Given the hazardous waste materials allowed to be dumped at this proposed site, this puts local residents (including farms where most of the Valley vegetable are grown) at a greater risk for air pollution. I understand that asbestos products may be dumped at this site. Asbestos is so dangerous it is no longer allowed in our schools or homes. Now imagine these chemicals blowing across the highway into residential neighborhoods and farm land.

6) I cannot comprehend why the MSB would consider taking Anchorage residents garbage. Neither Central Monofill Services, nor the Anchorage residents care about the long term affects on the residents of the Valley. Why is the Valley responsible for Anchorage trash? By agreeing to accept Anchorage waste then the MSB Assembly is giving credence to the phrase "Valley Trash."

Please consider the hazards this permit request by Central Monofill Services creates for the nearby residents of Palmer and please speak on our behalf, and not on the behalf of an Anchorage company.

Sincerely,

Rachel Gernat and Daniel Cheyette

Susan Lee

From: Ann Corbett [ann@corbett6.com]
Sent: Wednesday, October 29, 2014 7:46 PM
To: Susan Lee
Subject: Please support the Central Monofill Services Conditional Use Permit

Dear Susan,
I am sending this email as a concerned citizen of the community. I try to keep up with the news in our community but until recently haven't become overly involved with what I would term "local matters." This recently changed due to ongoing newspaper and television coverage on the proposed Central Recycling Services Monofill. This coverage has been so skewed against Central Recycling Services that I feel like it is time to get involved. I have read the Central Recycling Services Conditional Use Permit to the Matanuska Borough for a Central Monofill Services facility in the Valley. As a concerned member of the community, I felt it was my duty to dig just a little deeper into what seemed an unjust manhunt against a local business. I have attended community meetings concerning the proposed Monofill and have even taken the time to tour the proposed site. At no time did I, or my four children, feel unsafe on the property. We were all impressed with Central Recycling Services' concern for the environment and the community. Tonight I went online and read the Department of Environmental Conservation's report (18 AAC 60) signed by Governor Sean Parnell and Commissioner Larry Hartig. As merely a layman, so to speak, everything I have read in Article 4 of this document seems to be accurately and fairly addressed in the materials that Central Recycling Services has submitted and made accessible to the public.

It eases my mind and conscious to know that this proposal I am supporting will not only bring construction and demolition material recycling to the Mat-Su Borrough, but that it will also help bring down the cost of recycling waste across the state of Alaska. I am not sure how saving money in an conscientious and responsible way can ever be considered bad. In fact, it seems irresponsible to just take the previously processed and sorted materials and dump them back into a traditional landfill. Mixing clean waste into unknown household waste seems ridiculous. My understanding is that the proposed Monofill will only take residual material and known, non-recyclable, construction and demolition material--not household or rotten trash.

I understand why local residents may be concerned with the proposed Monofill. They are scared of the unknown. The term 'landfill' is intimidating and noxious, yet media continues to use it in regard to this proposal. I have taken advantage of the informational meetings, fact sheets and tours that Central Recycling Services has offered the community. I feel confident that Central Recycling Services and their partners will keep the promise of a safe and clean operation.

Thanks for considering my viewpoint.

Sincerely,
Ann Corbett

Susan Lee

From: Dan Lucas [dlucas@mtaonline.net]
Sent: Wednesday, October 29, 2014 7:06 PM
To: Susan Lee
Subject: CMS Special Use Permit

Hello--
I am writing to express my full support for the special use permit being sought by CMS for a construction debris recycling and disposal site at mile 38.3 of the Glenn Highway. CMS will provide a needed service and at the same time will be able to reclaim what is currently an unattractive mined out gravel pit. I have discussed the potential impacts with residents of the area and have concluded their objections are based entirely on typical NIMBY attitudes. Their attempts at fearmongering went so far as for one person to tell me that the Anchorage water supply could also be in jeopardy if this business is allowed to proceed, as contaminants would travel under the Matanuska and Knik River, and leach up into Eklutna Lake, and thence into the water line to Anchorage. Hmmm.
I hope the borough will see the practicality of this proposed use of the land in question, grant the permit, and not be cowed by emotional arguments against it.

Sincerely,

Dan Lucas
1180 S. Margaret Ct.
Palmer, Alaska 99645

Susan Lee

From: DAN BILLMEYER [dbillmeyer@hotmail.com]
Sent: Wednesday, October 29, 2014 6:52 PM
To: Susan Lee
Cc: Shane Durand
Subject: [POSSIBLE SPAM] CENTRAL MONOFILL

Importance: Low

FOR THE PAST 8 YEARS I'VE BEEN WORKING DEMO FOR CRS AND CEI , I'VE SEEN AND HELPED THIS COMPANY START AND GROW INTO A RECYCLING LEADER IN ALASKA AND CANADA WHICH HAS SET THE HIGH STANDARDS FOR MANY TO FALLOW IN RECYCLING ! MY DEMO DEBRIS HAS BEEN PICK AND SORTED ON THE SITES TO RECOVER AS MUCH RECYCLED MATERIALS AS I CAN WITH MEN AND MACHINES THEN THE REMAINDER IS SENT TO OUR RECYCLE PLANT AND RECYCLING IS FINE TUNED AS THE MATERIALS ARE PROCESSED AGAIN AND SORTED OUT EVEN MORE COMPLETELY ! THE END PRODUCT GOING TO A FILL SITE IS A CLEAN C & D PRODUCT WITH ALL HAZARDOUS MATERIAL AND RECYCLABLE MATERIALS REMOVED ! I AM A DEMANDING PERSON ON MY JOBS TO ALWAYS GO THAT EXTRA LITTLE BIT, ANYONE CAN TEAR DOWN A BUILDING BUT TO MAKE IT LOOK LIKE A PARK WHEN YOUR DONE HAS ALWAYS BEEN MY WORD AND IS MY GOAL. THAT'S THE WAY THIS COMPANY OPERATES, THEY DON'T COVER IT UP BUT THEY CLEAN IT UP SO IT'S SAFE FOR GENERATIONS TO COME. THE DUMPS AND LANDFILLS OF THE PAST ARE WHAT I'M CONCERNED ABOUT AND YOU SHOULD BE TOO, WITH EVERYTHING PLUS THE KITCHEN SINK THROWN IN THEM ! I HAVE GOTTEN NOTHING BUT POSITIVE REVIEW LETTERS ON OUR WORK IN ALASKA AND CANADA WITH NOT ONE NEGATIVE NOTE EXCEPT FROM A FEW OTHER CONTRACTORS BECAUSE OF OUR HIGH STANDARDS THAT THEY ARE CALLED TO LIVE UP TO ! CENTRAL COMPANIES ARE ALWAYS SHARPENING THEIR TOOLS OF THE TRADE TO BE "THE LEADER" IN ALASKA RECYCLING AND CLEAN FILL SITES !
THE PEOPLE OUT THERE WITH THEIR NEGATIVE/TOXIC REMARKS AND BANDWAGONS ARE RUNNING IN FEAR OF THE UNKNOWN BECAUSE THEY HAVE NOT SPENT ONE MINUTE RESEARCHING THIS COMPANY'S TRACK RECORD OR THEIR GOALS BUT DWELL ON THE LANDFILLS OF THE PAST WHICH WERE A FREE FOR ALL DUMP SITE FOR EVERYTHING INCLUDING THE KITCHEN SINK !

THANK YOU VERY MUCH FOR TAKING THE TIME TO READ MY FEELINGS ON THIS MATTER WHICH I AM PROUD TO HAVE BEEN PART OF THIS COMPANY AND HELP BUILD IT TO WHERE IT IS TODAY !
DAN BILLMEYER- RETIRED

Susan Lee

From: Mary Fisher [alpar@gci.net]
Sent: Wednesday, October 29, 2014 4:22 PM
To: Susan Lee
Subject: Public Comment for Monofill Application
Attachments: PH Notice CMS 2014-ALPAR Comments.doc

TO: Susan Lee, Planner II, MatSu Borough Planning Department:

Dear Susan,
Please find attached our comments on the Application by Central Monofill Services for a conditional use permit. As per the instructions on the attached comment form, I am emailing this to meet your deadline of Oct. 31, 2014.

Would you please confirm receipt of our comments?

Thanks very much.
Mary Fisher, Executive Director

ALPAR
Alaskans for Litter Prevention and Recycling
Keeping Alaska beautiful

PO Box 200393, Anchorage, AK 99520
Office: 907.644.7968
Cell: 907.317.8089
Fax: 907.274.8023
http://www.alparalaska.com
Email: alpar@gci.net

Please Like Us!
https://www.facebook.com/ALPARAlaska

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Matanuska-Susitna Borough
Planning & Land Use Department
Development Services Division
350 East Dahlia Avenue
Palmer, Alaska 99645

FIRST CLASS MAIL

The Matanuska-Susitna Borough Planning Commission will consider the following:
Application or Item: *Application for a conditional use permit for the operation of a monofill for the disposal of inert material*
Matanuska-Susitna Borough Code Section: MSB.17.60 – Conditional Uses
Applicant: Central Monofill Services
Request: *An application has been submitted for the operation of a monofill for the disposal of inert material The inert debris will primarily be non-hazardous shredded residual, non-recyclable waste material from construction and demolition waste. Regulation Asbestos Containing Material (RACM) and Non-RACM will also be accepted at the monofill site.*
Location: MSB Tax Parcel# 17N02E18C010 (2840 S. Glenn Hwy.) and 17N02E19B006 (2560 S. Glenn Hwy.); within Township 17 North, Range 2 East, Sections 18 & 19, Seward Meridian.

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Name: Mary Fisher for Alaskans for Litter Prevention and Recycling ***Address:*** PO Box 200393, Anchorage, AK 99520

Location/Legal Description of your property: NA

Comments: Thank you for taking comments on behalf of Alaskans for Litter Prevention and Recycling (ALPAR.) ALPAR is a 501c3 non-profit that supports economically viable recycling and litter clean up programs throughout the state for over 30 years. We serve the MATSU Borough through support for the Valley Community for Recycling Solutions (VCRS) Recycling Center at over $100,000 in services annually as well as through support for the Wasilla, Palmer, and Houston Youth Litter Patrols, MAT SU borough distribution of free ALPAR litter bags, DOT Adopt a Highway and other litter cleanup efforts.

We support Central Monofill Services' application for this much-needed monofill for specific materials that are best suited for this type of disposal. We have had an excellent relationship with CMS and their family of companies, Central Recycling Services and Central Environmental Inc. for many years. The monofill supports a recycling operation for the Railbelt and North Slope that is insuring that tens of thousands of tons of inert debris are being diverted from our state's landfills to becoming new products. The small portion of unusable materials from this manufacturing process must be disposed of economically and safely.

Since 2011, ALPAR and the residents of our communities have benefited by partnering with CRS to provide glass recycling in the Anchorage bowl, which is also utilized by many in the MATSU Borough. CRS to provide exceptional services to ALPAR and our residents to turn old glass into useful construction material with only a fraction of that material needing to be disposed after processing. Without their commitment, resources and expertise, this recycling service would not exist. They have been a positive, upstanding company to partner with, ensuring quality of product, safety of the processing operation and timely marketing of recycled glass product to users to the benefit of our communities. Based on our experience, their operation has been professional, detailed, focused on safety and environmental stewardship and responsive to community needs. We have never experienced any smells, contamination or other problems at their sites. We have seen a well run, organized and safe operation. This year, CRS donated over $9,000 in product and services towards an ALPAR-supported park improvement project again demonstrating their commitment to community. CRS received the ALPAR Outstanding Supporter Award in 2012 and the Outstanding Business Recycler in 2009. We believe that CRS/CEI and CMS will be an excellent service provider in the MATSU Borough based on our experience with them and will provide a much-needed service that the remanufacture of recycled construction, demolition and glass materials must have in order to remain viable.

Note: Vicinity Map Located on Reverse Side

Susan Lee

From: Debby Novak [dljnovak@gmail.com]
Sent: Wednesday, October 29, 2014 3:53 PM
To: Susan Lee
Subject: Central dump

To quote Durand, "a lot of people are skewing what happened to the negative, making it seem a lot worse than it really is," regarding their short stay in the Valley last year. How can what they did be skewed negatively when it actually was negative; illegal dumping and blowing debris. And, thirty percent of the property isn't even 10 feet above the groundwater.

The issue of well water quality has to be everyone's main concern. If once contaminated, there is no going back. As pointed out there is so much unused land around, why can't they find a more appropriate dumping site? They are worried about the high dumping fees in Anchorage, we are worried about our well water and lakes, health, the look of the Valley. It would be a blight for all to see.

Please end this once and for all.

Debby Novak
Skyranch

Sent from Debby's iPad

Susan Lee

From: Nick Kuhlmann [nkuhlmann@hotmail.com]
Sent: Wednesday, October 29, 2014 3:34 PM
To: Susan Lee
Subject: Central Recycling CUP

Mrs. Lee,

I support the CUP that Central Recycling has applied for. I've followed the opposition of this application and had to speak up. The proposed landfill application is for inert C&D waste only! The associated risks that people seem to think exist are completely ridiculous and unsubstantiated by scientific fact. I think the general public is highly confused and misinformed. Please use your best judgment and scientific factual evidence when making your decision.

Regards,

Nick

Susan Lee

From: Rebecca Lyon [ak1lyon@gci.net]
Sent: Wednesday, October 29, 2014 11:52 AM
To: Susan Lee
Subject: Central Monofill Services Conditional Use Permit

I support Central Monofill Services application for a conditional use permit along the Glenn Highway.

I came to know of Central Environmental Inc. while working on a piece of public art for Alaskans for Litter Prevention. I have been to several of their sites in the Anchorage area, sourced recycled materials and have been impressed with how orderly, professional and safe their facility are.

This is an Alaskan Company that takes care of it's Alaskan employees while increasing the amounts of recycled materials that can be pulled from our local landfills without increasing costs to its residence.
CRC has also been a very generous supporters of the community donating to many local causes for many years.

Thanks you,
Rebecca Lyon

Susan Lee

From: Wayne [wynholbrook@yahoo.com]
Sent: Wednesday, October 29, 2014 10:51 PM
To: Susan Lee
Subject: Central monofill conditional use permit

Ms lee,
I would like to comment in the central monofill services conditional use permit. I own a home in crimson view subdivision, my back yard borders the gravel pit. I grew up in Pinconning Michigan, on Bay Arenac line. All my neighbors were my family. The road I grew up on is about a mile long and there's 14 houses on it, which are all owned buy Holbrooks (my family). Growing up I could walk or ride my bike to all my cousins houses and my grandparents. The property behind all my families houses was beautiful woods with creeks and tons of wildlife. Growing up I would see deer and turkeys in the yard daily. I'd wake up to the sounds of birds, and the smell of fresh air. Getting to the point, the square mile woods behind my families houses was owned by one man. He sold the property to a company that wanted to develop the land into a landfill. My family fought and fought. In the end we lost the battle and the work began. Where we once sat and enjoyed peaceful dinners by the grill was now loud bulldozers, horns and backup alarms. Before the work began, we would see a handful of cars a day go by the house, normally it was friends or family that would wave. now it was semi after semi. Road construction started to make the road bigger so all these big vehicles would fit down the road. What was once a beautiful wooded view behind our homes was now a wide open field of dirt with a fence around it. We were horrified but had no idea what was to come. Once they started hauling garbage in the noise never stopped. However, my family did win one small battle and the equipment wasn't able to work after 10 pm so we could get a little peace and quiet. Once they started bringing garbage to the landfill, the horrible stench came with it. Some days the wind would blow towards our houses and would smell so bad you couldn't even enjoy any aspect of life. What once were beautiful homes that my family worked hard there entire lives for were now worth pennies. I could go on all day about the negative effects that dump had on our community. Please don't make me go through all this again in my lifetime. I am so scared that this might happen to me again. I moved from anchorage to Palmer a few years ago so I could live in a small, peaceful and beautiful Place. I absolutely love it there.

Sent from my iPhone

FAX TRANSMITTAL SHEET

10/29/14

Matanuska - Susitna Borough
Development Services

OCT 29 2014

Received

To MSB Development Services Division
Attn: Susan Lee

Fax# 861-7876

Comment:

Central Monofill Services Conditional Use Permit

There are 2 pages, including this coversheet. Please call if all pages are not received.

Central Monofill Services Conditional Use Permit

The proposed site is located on MSB Tax Parcels: 17N02E18C010 (2840 S. Glenn Highway) and 17N02E19B006 (2560 S. Glenn Highway); within Township 17 North, Range 2 East, Sections 18 and 19, Seward Meridian.

A conditional use permit application under MSB 17.60 has been submitted for the operation of a monofill for the disposal of inert material. The inert debris will primarily be non-hazardous shredded residual non-recyclable waste material from construction and demolition waste. Regulated Asbestos Containing Material (RACM) and Non-RACM will be accepted at the site.

To Whom It May Concern:

This is a letter in regards to the disposal site that is proposed for inert material, which will contain asbestos. (there is no such thing as regulated asbestos). Being that asbestos is a dangerous material why would it be allowed off of a main road where the wind would carry the fragments of airborne material. I submit that with that kind of material it will and cannot be contained. I find that this material they want to dispose of is the cause of cancer, lung disease and death, it is one of the deadliest products ever made that has been used in homes and businesses throughout this country, they have had to remove it at a high cost financially and environmentally because of the health hazards related to it. Why would a proposal of that magnitude be even a consideration for the Mat-Su?

There have been many other solutions to the disposing of such materials throughout the lower 48's maybe this site would be a short cut for the companies wanting to dispose of it. It would cost far more for a seif-contained disposal site to be built, than to just dump it in an area that will always be contaminated. You are not going to tell the public that precautions by the employees of this project will not be protected from the debris while working with this material. So why would you place the inherent dangers for the public with this site?

Maybe if you had lost someone to asbestos your position on this matter would find you fighting to keep that which is clean and healthy for future generations recognizing that it would not stay that way once this project would be untaken.

I find it appalling that it is even being considered.

Diane Phillips

Matanuska - Susitna Borough
Development Services

OCT 29 2014

Received

Susan Lee

From: Ina Ayers [Krazyquilter@alaska.com]
Sent: Wednesday, October 29, 2014 2:40 PM
To: Susan Lee
Subject: Central Recycling Services

I understand from the paper the Mat Su Bourough is against Central Recycling Services location in the valley. Let me tell you something.
We had a large driveway put in by them from recycled glass and things recycled. It saved the environment and helped us a lot. There was no mess and it helped to empty the landfill. They have had a long history of cleaning up the environment.

This company is very aware of clean living, including wells and the neighbors.
The neighbors do not want the company there for it will take away from their trespass playground. We need more companies that are concerned for our future than those just dumping trash everywhere that will not be recycled.

Please consider letting them have a permit. If you are so concerned why not have the borough clean up all the rusty old cars and trash along the roads cleaned up.

You will not find a more concerned company and reliable employees than Central Recycling Service. They may have a brief history in the valley but a very good one world wide.

Thanks for your consideration. Ina and Richard Ayers

Susan Lee

From: Charles Young [cayjr1@gmail.com]
Sent: Wednesday, October 29, 2014 1:05 PM
To: Susan Lee
Subject: Proposed Monofill Site Permit
Attachments: Palmer Monofil Site Permit.docx

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"Dream big and dare to fail"
Norman D. Vaughn

"We all live in the protection of certain cowardice's which we call our principles."
Mark Twain

Charles A Young

5789 S Hanson Loop

Wasilla, AK 99623

October 29, 2014

Dear Planning Commission members:

I am submitting comments on the proposed landfill near the Glenn Highway in the Palmer – State fairground and residential areas.

This landfill has been stopped by the borough before. It should now be completely shut down and the area should be restored to pre gravel extraction conditions.

There are many reasons for this restoration however; the health of families in many neighboring subdivisions is paramount. My primary concern is that of water table contamination. I know from first-hand experience the conditions of drinking water are drastically affected from disturbance at the gravel pit-dump site. My daughter and her children live in one of the nearby subdivisions. Unpermitted dumping at the site in the past has caused sediment and a foul taste in the water of my daughter's family well.

The Borough Planning Commission Finding of Facts and Conclusions of Law in the denial of a permit show many reasons why the dump site should not be allowed. The applicants complete disregard to windblown trash as well as their dumping of trash without an MSB or ADEC permit into a gravel pit which most likely exposes the nearby water table to contaminates is a primary reason this project should be permanently enjoined from going forward.

Item 35 of the Planning Commission Findings: "According to documentations and studies the proposed monofill site is located where the topography, geology, hydrology and soil are inadequate for protection of ground and surface water quality." This alone should be enough to warrant a finding against the permit. There is no way to seal the ground from the spreading of toxics materials into the surrounding aquifer if they are placed into the proposed monofill site. This aquifer supplies the surrounding thousands of families with drinking, bathing, cooking and laundry water.

Thank you for your time and consideration.

Charles A Young

907 854 0398

5789 South Hanson Loop

Wasilla, AK 99623

Susan Lee

From: Doug VanWingerden [doug@mtaonline.net]
Sent: Wednesday, October 29, 2014 1:04 PM
To: Susan Lee
Subject: Central Monofill Services Conditional Use Permit

I am voicing my support for the Central Monofill Services Conditional Use Permit. There are a host of reasons that make environmental and economic sense to support this effort. There is a lot of misinformation, distortions, flat out lies, and general fear mongering by a few folks that are against the program. They are either very confused or have some self serving agenda for opposing this effort. I sincerely hope all the facts will be objectively considered and the permit issued.

Thanks,
Doug VanWingerden

Susan Lee

From: garyagearhart@gmail.com on behalf of Gary Gearhart [gary@gearharts.org]
Sent: Wednesday, October 29, 2014 11:35 AM
To: Susan Lee
Subject: Monofil Dump

October 29, 2014

TO: Mat-Su Borough Assembly

I am a resident of the Sky Ranch neighborhood which is adjacent to an existing gravel pit and with close proximity to a proposed monofil dump.

This large gravel pit/asphalt plant already exposes us to noise pollution and inconvenient railway disruption. In addition, prevailing winds carry airborne pollution, odors, and smoke from a dump site at the intersection of Inner Springer and Rebarchek Road. Assurances that this is not harmful are found hard to believe. The potential for additional pollution to the air and private wells from the proposed project site abound and should not be ignored.

Assurances aside, this company has already demonstrated mistrustful behavior by dumping material without the required permit. Both the Borough and DEC cannot guarantee that proper enforcement of the permit restrictions will be conducted.

Please do not allow this company to turn Borough land into a dumping station for the building refuse of Anchorage.

My family is asking you, the Assembly member, not to award CMS a permit that endangers our community.

Respectfully,

Gary and Eileen Gearhart
2750 S. Sky Ranch Lp.
Palmer, AK 99645

--
Gary A. Gearhart.
907-355-4605

Susan Lee

From: Kellie Ballard [kellieballard@yahoo.com]
Sent: Wednesday, October 29, 2014 11:14 AM
To: Susan Lee
Subject: Central Monofill Services Conditional Use Permit Comment

My name is Kellie Ballard'Chambers and I reside on Bradley Lake ave, which is approximately one block from the southern border of the proposed mono fill site. I have several concerns, both short and long term, regarding the dump site and the possible effects it could have on surrounding property values as well as physical health hazards to those that may be affected. This site has a history of extremely high winds (I realize CMS's legal council has wind reports from the airport which is 5 miles away and not an accurate gauge to wind speeds at the site) and an open aquifer that feeds into the surrounding wells and other bodies of water.

State Law requires that disclosure to the buyer of real property be made if a dump site or gravel pit is within a one mile radius of said property. It stands to reason, because of mandatory state law, that theses types of projects negatively affect property resale values, more so if those projects contain hazardous materials such as asbestos vrs the existing abandoned gravel pit.

According to Central Monofill Service's own Borough application, the inert debris will "primarily" be non hazardous, shredded, residual, non recyclable waste material from construction and demolition waste. According to Websters dictionary, it defines "primarily" as meaning "for the most part". CMS defines hazardous material "as a material containing any percentage of asbestos". According to OSHA, there are over 400 materials that are deemed toxic or hazardous and require regulation. According to EPA's Toxic Substance Control Act, there are more than 62,000 chemicals or substances in their inventory list, some of which can be found in CMS's own defined inert material. This is insanity to even consider disposal any where near the open aquifer which feeds the surrounding homeowner wells and state lakes.

According to the Matanuska Susitna Borough code officer, Mark Whisenhunt, in his report dated 4-29-2013, in his contact with Stuart Jacques,CMS President, noted that they hauled "daily cover" aka "screened fines or topper" material to the proposed site prior to obtaining a permit. This material consisted of Styrofoam, carpet and various types of plastics along with material that according to the Mat Su Borough application is not permitted at the mono fill, under "household waste". CMS and Shane Durand were issued six citations and were ordered to remove the screened fines, some of which was buried in ground water. This trash water was then being pimped into the dredge pond that feeds directly into the aquifer that supplies all the surrounding lakes as well as private wells.

I do not have much confidence in a company who makes up their own definitions for what is and isn't hazardous, and who has already violated their very own guidelines and procedures for responsible disposal of inert materials by their own definition.

According to CMS's own application, "the facility at CRS abides by all regulations and permit conditions regarding inert debris handling, placement and sorting of material, therefore no violations of waste disposal or improper processing will take place at the monofill". Violations have already occurred prior to CMS having an approved permit in hand. This leaves no confidence in this company to properly monitor themselves with the potential giant risks involved with contamination.

Kellie Ballard'Chambers

Susan Lee

From: Grant Goulet [goulet907@icloud.com]
Sent: Wednesday, October 29, 2014 10:46 AM
To: Susan Lee
Subject: CMS Response
Attachments: CMS Response.PDF

Susan,

Attached is my response regarding the Central Monofill permit.

To whom it may concern,

My name is Grant Goulet and I have been working for Central Recycling Service (CRS) for over four years. I have had the opportunity to contribute to many projects around CRS in those four years whether it be expanding the final product bin for aggregate material, installing and designing a water misting system for the facility to keep dust down during the summer months, or running the tip floor and inspecting loads as they come in to prevent hazardous waste from entering the final shredded residual. I have done it all, and have expanded my knowledge of Construction and Demolition (C&D) recycling that I would not have had the opportunity to learn without this job. I am a prime example of CRS providing jobs and training to its employees. Approval of the CUP will bring more jobs to the valley

Now I work in the office and assist the Operations Manager with the daily operation of the facility. In this position I realize that it would be unrealistic for CRS to operate without having a monofill to dispose of inert shredded residual. It is also not responsible to take the residual material we create that is free of hazardous and putrescent materials and mix back into household landfills that are full of contaminants. A day may come where landfill waste is mined to recover resources and a monofill could be a preferred resource since it will be a consistent product from a known place without household waste mixed in it. Monofill Services to operate and dispose of inert material in a safe and effective way.

Sincerely,

Grant Goulet

Susan Lee

From: mayfield@mtaonline.net
Sent: Wednesday, October 29, 2014 10:35 AM
To: Susan Lee
Subject: Comment Against the CEI permit

Ms. Lee, please confirm receipt of this email via return email. Thank you in advance.

CEI has proven to be a bad neighbor on several occasions, not the least of which was the bad faith shown in dumping waste before it was authorized. What is there to prevent them from getting the permit and then allowing trash and debris to fly all around Palmer once they have their permit? Is there a measure in place that would require them to take care of the trash?

What's to prevent them from contaminating the groundwater - sure they "say" they won't but why can they be believed? The Koch brothers surely stated that they wouldn't contaminate the groundwater in Fairbanks... There are 50 wells that have the potential to be contaminated. Will the Borough require CEI to take out insurance against future contamination in perpetuity? Is the Borough willing to pay for additional testing on a yearly basis to ensure that the groundwater isn't being contaminated? Is the Borough willing to take responsibility for developing new water sources for people potentially being affected by a potential bad actor once CEI has contaminated the water, declares bankruptcy and leaves? What happens if, like the Koch Brothers, they leave and leave us with contaminated water? Who will foot the bill for that? Who will pay for lost property values because we don't have potable water?

Sarah Mayfield
Crimsonview Subdivision
1421 S Vermillion
Palmer, Alaska 99645

Susan Lee

From: Bobby Fischer [rjfcaf13@gmail.com]
Sent: Wednesday, October 29, 2014 10:35 AM
To: Susan Lee
Subject: Dump site permit

We recently moved to Sky Ranchsudivision in the Matsu Valley. The prime reasons we chose this community were the consistent property values due to a strong homeowners association and the pride of ownership shown by the property owners. A building material dumpsite so close to our homes will not only devalue the area, but potentially put the residents in danger from toxic runoff into our water systems, wells and lakes. Air quality could be compromised from asbestos or other airborne contaminants. Our children deserve better.

We strongly request that the dump permit be denied.

Robert and Cathy Fischer
2985 S. Lakeshore Loop
Palmer, AK

Susan Lee

From: Patrick Family [patrickfamilyak@yahoo.com]
Sent: Wednesday, October 29, 2014 10:05 AM
To: Susan Lee
Cc: me
Subject: permit application under MSB 17.60

My name is Deborah Patrick. I live in Palmer at 4775 S Crabapple Ct. I am unable to attend the public hearing regarding permit application under MSB 17.60 on December 1st. I would like to make my displeasure known regarding this application. I do not think this is a project that should be near any place that is populated considering the nature of waste to be deposited at this site. Specifically, any type of asbestos, inert or other. Regulated or not, there will be the possibility of these containers failing in the future. Such materials should not be disposed of anywhere near public use areas, or residential areas. I am urging the Mat-Su Borough to deny this application in favor of a better thought out location.
Thank you for your time and consideration, Deborah A. Patrick
4775 S Crabapple Ct
Palmer, AK 99645
(907) 745-4262

Susan Lee

From: Jackie Bartz [jackie@solsticeadvertising.com]
Sent: Wednesday, October 29, 2014 9:04 AM
To: Susan Lee
Subject: Central Monofill Services Conditional Use Permit Application Public Comment

Ms. Lee,

I would like to comment on the Central Monofill Services Conditional Use Permit Application. Last year my boyfriend purchased a home on Vermillon street. It backs up to the gravel pit. Prior to moving to Palmer, he lived in Anchorage for 7 years and I lived there for 5. We hated the hustle and bustle of Anchorage, the lack of privacy and the traffic. We immediately fell in love with Palmer and our home. Every night we spend time in his beautiful back yard shooting our bows, playing with our dog and enjoying Pioneer Peak.

I'm afraid that our beautiful life will be ruined if the Central Monofill Services is allowed to build a landfill. I'm terrified our water will be polluted and we will find trash in our yard. Our neighborhood is one of the windiest in the Valley and I'm scared litter will end up in our backyard and harm my dog. Also, I routinely fish nearby at Echo Lake and enjoy being able to drive less than a mile down the road and spend a peaceful evening catching trout. It's really a hidden gem. If there is any risk of our drinking water or the fish being polluted, it's not worth it.

We chose to purchase where we did because we love the neighborhood and it's the perfect place for commuters. We're afraid that if a landfill is built our housing price will plummet and we will never be able to resell our home, which will ruin our future. In addition, the MatSu Convention and Visitors Borough is about to begin construction on the new Scenic Byway & Gateway to Palmer. This will bring increased tourism numbers to the Valley, which is good for our community. I fear if there is a landfill nearby the value and the appeal will drop drastically.

Please help us save the community we love for generations to come.

Jackie Bartz
(406)422-3289
1224 S. Vermillon Street
Palmer, Alaska

Susan Lee

From: Matt O'Connell [MattO@WasteConnections.com]
Sent: Wednesday, October 29, 2014 9:02 AM
To: Susan Lee
Subject: Please support the Central Monofill Services Conditional Use Permit
Attachments: CRS Monofill Support Letter Mat-Su 10292014.pdf

Matt O'Connell
Division Vice President
Denali Division
Alaska Waste
Waste Connections
907.273.2763 office
907.230.9023 cell
matto@wasteconnections.com

"Gentlemen, we are going to relentlessly chase perfection, knowing full well we will not catch it, because nothing is perfect. But we are going to relentlessly chase it, because in the process we will catch excellence. I am not remotely interested in just being good." - Vince Lombardi

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Alaska Waste

October 29, 2014

Matanuska – Susitna Borough
350 E. Dahlia Ave.
Palmer, AK 99645

Re: Central Monofill Services Facility

Dear Commissioners,

On behalf of Alaska Waste, I support the planning and development of an inert waste monofill site. As a waste management company in the Alaskan waste industry, I can see a construction and demolition monofill site as solely a benefit to the local community.

Central Recycling Services (CRS) is the only full-scale Construction & Demolition Recycling Facility in Alaska. They are known for their ability to divert construction and demolition materials from the Alaskan landfills, to meet recycling quality standards per the construction requirements of Leadership of Environmental and Energy Design (LEED), and to meet all regulations required when managing and disposing of hazardous materials.

Prior to CRS' existence, there was not an option to recycle reusable materials from the construction and demolition industry. Over the past four years, CRS helped the local construction and demolition contractors and box store companies, to extend the life of the landfill by diverting over 77% of all of the construction materials brought to their recycling facility in Anchorage.

With an increasing demand for recycling within Alaska, a need for inert debris monofills are more essential. A responsible environmental company, such as Central Recycling Services, has the ability to benefit the entire Borough by recycling as much of the construction and demolition materials and therefore building an inert debris monofill.

Sincerely,

Matt O'Connell
Division Vice President

WASTE CONNECTIONS

Waste Connections of Alaska, Inc. dba Alaska Waste • 6301 Rosewood St. Anchorage, AK 99518
www.alaskawaste.com • Phone 907.563.3717 • Fax 907.273.2797

Susan Lee

From: Michael Kreger [michaelekreger1234@gmail.com]
Sent: Wednesday, October 29, 2014 8:52 AM
To: Susan Lee
Subject: Central Monofil Conditional Use permit application

To the planning and zoning commission --
Ladies and Gentlemen

I write in support of the application of Central Monofil for a Conditional Use permit to establish a monofil site for recycling inert construction debris.

I have lived in Anchorage since 1982). There is a significant need for greater recycling capacity for construction debris in the region. South-central Ak is in re-development and a substantial amount of re-useable material is being generated.

The applicant is one of the Central Environmental, Inc. companies. I have known the company and its owners professionally for many years. They are, in my opinion, the "gold standard" in Alaska for integrity and environmental responsibility in a highly regulated industry.

Thank you. Mike Kreger 5363 Sillary Circle Anchorage, Ak 99508 (907) 230-1451

Susan Lee

From: endell [endell@gci.net]
Sent: Wednesday, October 29, 2014 8:41 AM
To: Susan Lee
Subject: Central Monofil
Attachments: Scan.pdf

Please include our response in the information provided Planning Commissioners. Thank you.

Roger and Judy Endell

Matanuska-Susitna Borough
Planning & Land Use Department
Development Services Division
350 East Dahlia Avenue
Palmer, Alaska 99645

53107B02L007 59
ENDELL ROGER V & JUDITH L
11511 E CRIMSONVIEW DR
PALMER AK 99645-9307

FIRST CLASS MAIL

The Matanuska-Susitna Borough Planning Commission will consider the following:

Application or Item: *Application for a conditional use permit for the operation of a monofill for the disposal of inert material*

Matanuska-Susitna Borough Code Section: MSB 17.60 – Conditional Uses

Applicant: Central Monofill Services 99645*9307 H007

Request: *An application has been submitted for the operation of a monofill for the disposal of inert material. The inert debris will primarily be non-hazardous shredded residual, non-recyclable waste material from construction and demolition waste. Regulation Asbestos Containing Material (RACM) and Non-RACM will also be accepted at the monofill site.*

Location: MSB Tax Parcel# 17N02E18C010 (2840 S. Glenn Hwy.) and 17N02E19B006 (2560 S. Glenn Hwy.); within Township 17 North, Range 2 East, Sections 18 & 19, Seward Meridian.

The Planning Commission will conduct a public hearing in the Borough Assembly Chambers, Palmer, Alaska, on this item on ***December 1, 2014***. The meeting begins at 6:00 p.m. ***Public hearings begin at 6:15 p.m.*** This may be the only presentation of this item before the Planning Commission and you are invited to attend.

This conditional use permit application will be introduced for public hearing at the **November 3, 2014** Planning Commission meeting. The Planning Commission members may submit questions to the Planning Commission Clerk concerning the matter or request for more information from the applicant at the time of the introduction. All questions and requests submitted by the Commission shall be in writing and copies will be provided to the applicant and made available to all interested parties and the public upon request. Answers to questions and additional material requests will be addressed in the staff report for the public hearing.

Commission members may not receive or engage in ex-parte contact with the applicant, other parties interested in the application, or members of the public concerning the application or issues presented in the application.

Application material may be viewed on-line at www.matsugov.us and clicking on 'Public Notices'. Application material may also be reviewed in the Borough Permit Center. If you have any questions or, would like to send us comments, concerning the proposed action, this form may be used for your convenience by filling in the information below and mailing it to the Matanuska-Susitna Borough, Development Services Division, Planning Department, 350 East Dahlia, Palmer, Alaska 99645. You may fax comments to 861-7876 or e-mail to *slee@matsugov.us*. For additional information please contact Susan Lee, Planner II, at 861-7862. Comments received by ***5 p.m., October 31, 2014*** will be included in the Planning Commission packet for the Commissioner's review and information. Please be advised that comments received from the public after that date will not be included in the staff report to the Planning Commission but will be provided as hand-outs to the Commission. If there is not enough room below, please attach this sheet to another piece of paper. **In order to be eligible to file an appeal from a decision of the Planning Commission, a person must be designated an *interested party*. See MSB 15.39.010 for definition of "*Interested Party*". The procedures governing appeals to the Board of Adjustment and Appeals are contained in MSB 15.39.010-250, which is available on the Borough internet home page, (http://www.matsugov.us), in the Borough Clerk's office, or at various libraries within the borough.**

Name: Roger and Judy Endell ***Address:*** 11511 E. Crimsonview Dr, Palmer, AK 99645

Location/Legal Description of your property: Crimsonview Sub 1, [redacted], Block 2, Lot 7

Comments:

See attached comments

Note: Vicinity Map Located on Reverse Side

A large private dump (aka monofill) is being proposed to be located along the Glenn Highway just north of the Matanuska Lakes State Recreation Area, which is composed of eight lakes in the Bradley/Kepler lake complex and is the Gateway to Palmer.

A private Anchorage-based company, Central Monofill Services has yet again submitted an "Application for a conditional use permit for the operation of a monofill for the disposal of inert material", defined loosely as construction/demolition waste, from Anchorage. Similar to the company's unsuccessful attempts to locate in the Chugiak area the company is repeating its' efforts to gain approval here.

Perhaps before a decision is rendered, a few points for discussion might be considered by our MatSu Borough government with its variety of elected and appointed representatives. Please, let us all consider the following five discussion points:

1. Perhaps all waste should be processed and deposited within the Borough in which it originated.
2. Public use disposal sites with fair and clear regulations and daily oversight and management already exist for this proposed purpose. These sites are currently utilized by hundreds of contractors and private citizens in both the MatSu and Anchorage Boroughs, year round under well-established public health and safety guidelines. There should be no need for a private monofill exception.
3. The significant number of families who live in the Crimsonview, Heavenly Meadows and Pioneer Meadows subdivisions and those living adjacent to Irene Lake, Canoe Lake and Bradley Lake surround the proposed monofill site. All of these families, mothers, dads and children, are entitled to clean air, clean water and clean lands, all of which may be seriously threatened by a monofill operation amongst these family homes. Why should our governmental representatives subject the MatSu Borough to future lawsuits for violation of these rights to public health and safety?
4. The proposed land use area surely has higher value to the Borough and its' people, and including possibly the City of Palmer, as the potential site for housing, a public park or recreational fields, schools or multiple small businesses, most of which would add positively to the tax base of our communities.
5. In both the private sector and in government it is a serious burden to explain why someone who has been recently untrustworthy should continue to receive continued public support. We need to hire trustworthy individuals, companies and governmental representatives who place the public good and the health and safety of our moms, dads and children above corporate convenience. It is our impression that the good people of this Borough appreciate good government and will support common efforts for the greater enhancement of the overall community.

Roger + Judy
Endell
10/29/14

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Susan Lee

From: Anette Lewis [teresarose@mtaonline.net]
Sent: Wednesday, October 29, 2014 5:36 AM
To: Susan Lee
Subject: Re: CRS Conditional Use Permit for the Monofill in Mat Su Borough

My Name is Anette Lewis.

I have held a residence in the Mat Su Borough for over 10 years now. I grew up in the Matanuska Valley. It is my home and I would never support something that I thought would diminish it.

I have worked in the construction field since 2002 and have seen just about every aspect of a construction project. I don't know anyone who doesn't appreciate a new home or office which require construction. Every construction project produces debris, and the end result of this mass quantity of debris should NOT be the landfill. Supporting a company that will remove as much of that debris for recycling and reduce the amount that goes into any type of fill just makes sense. I know that the fill going into the Proposed Monofill would be non-toxic, meaning it would not pollute the ground nor the water; after all, it is all the same materials as the buildings and homes we all dwell in.

I would like to see a responsible company come in and safely handle these materials at a site that is secluded from the view of most and at which hauling materials would be from a main highway keeping the trucking out of residential areas.

I only see this Monofill as a positive venture for our growing community.

Anette Lewis
13407 E Mikes Lane
Palmer, AK 99645

Susan Lee

From: Nancy S [nsteffen50@gmail.com]
Sent: Tuesday, October 28, 2014 8:57 PM
To: Susan Lee
Subject: Monofil

I support the monofil in Palmer. This is private property that the owner should be allowed to develop. After checking on the company, visiting their monofil in Fairbanks, touring their facilities in Anchorage I feel this is a responsible company. They will be providing jobs which the valley needs. Also 50-70 % of the product they recycle from demo is sold in the valley. We shouldn't stop responsible development.

When people complain about trash blowing around that can be seen just about anywhere in the Valley. Also people complaining need to remember this is private property not their personal recreational area.

I have lived in Alaska since 1964 and husbands family came to the valley in the late 1930's

Nancy Steffen

Sent from my iPad

Susan Lee

From: Glynn, Jerry [Jerome.Glynn@providence.org]
Sent: Tuesday, October 28, 2014 7:57 PM
To: Susan Lee
Subject: Central Monofill Services Conditional Use Permit

I oppose the Central Monofill Services Conditional Use Permit because of this sentence: "Regulated Asbestos Containing Material (RACM) and Non-RACM will be accepted at the site." I do not want this material any where near my kids and my wife.

Jerry Glynn
273 N Prairie Cir
Palmer Ak 99645

This message is intended for the sole use of the addressee, and may contain information that is privileged, confidential and exempt from disclosure under applicable law. If you are not the addressee you are hereby notified that you may not use, copy, disclose, or distribute to anyone the message or any information contained in the message. If you have received this message in error, please immediately advise the sender by reply email and delete this message.

Susan Lee

From: Roseann Leiner [roseannleiner@gmail.com]
Sent: Tuesday, October 28, 2014 7:46 PM
To: Susan Lee
Subject: Comment on an application for a monofill disposal at 2840 and 2560 S Glenn Highway

Comment on an application for a conditional use permit for the operation of a monofill for the disposal of inert material at 2840 and 2560 S Glenn Highway

I am Roseann Leiner, and I own a residential property at 2340 S Killarney Drive, which has access to Canoe Lake.

My comments are as follows: As as a user of Canoe Lake and an owner of a well for residential use at 2340 S Killarney Dr., I strongly urge that the application for the monofill disposal be rejected.

If monofill disposal is on a porous gravel surface overlying a high water table, the risk of contaminating the local aquifer is great. The monofill may have some compounds that react with water and leach into the ground water. Standing water has been visible on the subject parcels in recent years, and may be tied to water levels at Canoe Lake, Irene Lake, and Bradley Lake. The surface water indicates a high water table on the subject parcels for which the permit is requested. Residential wells and lake ecosystems are valuable and can be ruined by contamination.

Please do not risk contamination of the local water aquifer by monofill disposal.

Thank you,
-Roseann Leiner

Susan Lee

From: Annette Toro [annette.toro@yahoo.com]
Sent: Tuesday, October 28, 2014 5:39 PM
To: Susan Lee
Subject: Proposed CMS DUMP Palmer AK

To: Planning Commission;

We Miguel and Annette Toro are residents in the Majestic Hills Subdivision off of Inner Springer. We would like to plead with you not to approve and give the permit for a Dump that had been "tentatively approved" by Alaska DEC.
This can have enormous risks to our environment and inevitably to our Health. Having such a dump that could contaminate our water (wells, lakes and streams)(ex:may contain creosote, lead,acrylic, chromium, pentachlorophenol, phenol-formaldehyde resins and other contaminants to our ground water), air quality from wind caught debris and contaminated material (ex: Asbestos, Black Mold) Please remember our wonderful "Palmer Winds" that could easily spread any debri to our beautiful and clean Matsu Borough here in Palmer.
As we have learned with other dump sites in many Cities and States it has proved that although it starts out to be "controlled" dumping. It has been found to house poisonous debris and toxic waste causing cancer in people living near and using the well and ground water, not to ignore the two headed cows.
Thank you for taking into consideration our protest for it is to benefit all of the People of Palmer. We don't want to be know as "Palmer the Toxic Waste Dump".

Sincerely,
Miguel and Annette Toro

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Susan Lee

From: Brian Groseclose [tgclose@gci.net]
Sent: Tuesday, October 28, 2014 4:27 PM
To: Susan Lee
Subject: CMS Dump Permit
Attachments: October 28 CMS DUMP.docx

Please read attached letter. Thank you,

Brian Groseclose

October 28, 2014

To: Mat-Su Borough Assembly

I am requesting that the Matsu Borough Assembly members DO NOT award a permit to CMS for the monofill dump site. I live in the Sky Ranch subdivision and we already have enough noise and air pollution issues here. The sewer smell is disgusting from the settling ponds less than one mile from here. There is a gun range near Mt View Estates that law enforcement uses for target practice for hours on end. We have the dump near the fair grounds that occasionally brings foul odors our way. We DO NOT need more pollution with a dump across the highway that will almost certainly contaminate our drinking water! There are already toxic wastes that have been dumped in this area and if a permit is issued the problem will escalate into serious health issues for all of the local residences as well as wildlife. Our property values will decline and we will not be able to sell our homes if any groundwater becomes contaminated. There are millions of acres of land all over Alaska and this company wants to take the easy and convenient way to make money while not giving any concern to the citizens in Palmer or the local area. Please DO NOT issue this permit. If you choose to issue it, I hope you fully accept the responsibility for the outcome when things go bad in the community. I chose to live in Palmer for the wonderful community it has always been. Please don't destroy it just for money or the convenience of a close dumping ground. Think of the long-term effects on our future generations of family members that depend on a clean and healthy environment to live in. Thank you,

Brian Groseclose
2228 S Austin Cir
Palmer, AK 99645

tgclose@gci.net
907-982-5538

Susan Lee

From: Barbara Landi [deerbarb@gmail.com]
Sent: Tuesday, October 28, 2014 4:05 PM
To: Susan Lee
Subject: Comment on the CMS dump

October 28, 2014

To: Mat-Su Borough Assembly

I am making this comment on behalf of the 50 lot- owners in Sky Ranch subdivision, a nice quiet community on the east side of the Glenn Highway, adjacent to the gravel pit and barely a "stone's throw" from the site of the private monofil dump.

All of us in Sky Ranch are outraged that the DEC has approved the project and we strenuously implore our borough assembly now to deny this private company a permit to proceed.

We already suffer airborne pollution, odors and smoke from a dump site at the intersection of the Inner Springer & Rebarchek road near the fairgrounds. We value the sweet and clean water from our private wells that are now endangered by this project. Why must we suffer our residential community to become the dumping site for Anchorage via this private company? They have already demonstrated they cannot be trusted as they began dumping material in advance of a permit. Neither do we trust the DEC to conduct oversight of their dumping activity. While area residents choked with eyes burning recently due to thick smoke from mysterious fires that burned and smoldered near Rebarchek Rd, we were told it was all good and safe, nothing to worry about.

Such assurances ring very hollow and we feel powerless in this fight against a private company seeking to turn our clean and healthy community into a private dump for all the building projects in southcentral Alaska.

Please assembly members, we respectfully entreat you NOT to award CMS a permit to destroy our community.

Barbara Landi

President, Sky Ranch at Pioneer Peak HOA

745-1068

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Susan Lee

From: Theresa Daily [tundralady@gmail.com]
Sent: Wednesday, October 29, 2014 12:15 AM
To: Susan Lee
Subject: Proposed Monofill Landfill near Kepler & Echo Lake

Re: Proposed CRS Mono fill Dump / Palmer, Alaska

Dear Mat-Su Assembly Members,

I am writing this letter as a private citizen and resident of Alaska for over 38 years. I have concerns about a proposed mono fill near Kepler and Echo Lake. I believe heavy industrial uses like mono fill dumps DO NOT belong next to established family neighborhoods, parks and lakes and drinking water. Science has proven these landfills are toxic to our water and our air. Unfortunately the laws have not caught up with the findings. You can visit this web page link below for more information about toxic mono fills

http://www.neha.org/pdf/JEH/columns/JEH_0908_ATSDR.pdf

Background:

Central Recycling Services is proposing to use a parcel of land in Palmer to allow heavy industrial uses, including the immediate operation of a private, unlined construction and demolition debris dump (a 'mono fill'). Central Recycling Services Inc. would create and operate the dump for the exclusive disposal of their refuse obtained primarily from demolition projects on JBER. The parcel is proposed directly north of a popular tourist attraction, Kepler and Echo Lakes and hundreds of nearby homes. Access into the dump will be via Glenn highway, with truck traffic increasing to dozens a day in and out of the location. Central Recycling has chosen to ignore the voices of its neighbors and go forward with the application to the Palmer Assembly in hope of their approval.

What the C & D Landfill will potentially do:

·allow Central Recycling, Inc. to profit at the borough tax payer's expense by forfeiting dump fees at the Palmer Landfill which already operates a facility that can specifically handle this kind of waste;

· heavily increase truck traffic and result in potential conflicts along the Glenn Highway

· potentially cause major environmental catastrophes, including surface and subsurface water contamination from an unlined landfill into thousands of wells and lakes in the area.

· spew high concentrations of hydrogen sulfide gas into the surrounding air; hydrogen sulfide is a poisonous, flammable, and colorless gas with a characteristic odor of rotten eggs, produced when gypsum board (Sheetrock, Drywall) becomes wet - common complaints from these types of mono fills across the country, including an existing, and active mono fill adjacent to the Birchwood Airport, in Chugiak, Alaska, include permanent or long-term effects such as

nausea, headache, eye irritation, difficulty in breathing, poor motor function, and loss of attention and memory; there have been documented complaints at Birchwood Airports mono fill of hydrogen sulfide gas.

Pleas view CBS Ch11 report - Birchwood mono fill complaints

https://www.facebook.com/video.php?v=371943332942484&set=vb.273836102753208&type=3&theater

· threaten the HEALTH of established adjacent neighborhoods, Tourist using nearby campgrounds and parks and LOCAL Recreational USERS as well as bring about the decrease of surrounding property values.

I urge you to oppose this mono fill. It is NOT safe. Central recycling has other options. They can and should use the local borough landfill.

Sincerely,

Theresa Daily

tundralady@gmail.com

Direct from ATSDR

Michelle Colledge, M.P.H., Ph.D.
Lynn Wilder, M.S.Hyg., C.I.H.

Construction and Demolition (C&D) Landfills: Emerging Public and Occupational Health Issues

Editor's note As part of our continuing effort to highlight innovative approaches to improving the health and environment of communities, the Journal is featuring a bimonthly column from the U S Agency for Toxic Substances and Disease Registry (ATSDR) The ATSDR, based in Atlanta, Georgia, is a federal public health agency of the U S Department of Health and Human Services ATSDR serves the public by using the best science, taking responsive public health actions, and providing trusted health information to prevent harmful exposures and diseases related to toxic substances

The purpose of this column is to inform readers of ATSDR's activities and initiatives to better understand the relationship between exposure to hazardous substances in the environment and its impact on human health and how to protect public health We believe that the column will provide a valuable resource to our readership by helping to make known the considerable resources and expertise that ATSDR has available to assist communities, states, and others to assure good environmental health practice for all served

The authors of this month's installment, Michelle Colledge and Lynn Wilder are with ATSDR's Division of Regional Operations and Division of Health Studies, respectively Dr Colledge is a senior research officer, and earned her MPH from Florida A&M University and her Ph D from the University of Illinois at Chicago School of Public Health She is a lieutenant commander in the United States Public Health Service, and has worked for ATSDR since 1999 Since working in the region 5 office, Michelle has lead multi-agency and multi-disciplinary teams in public health investigations, risk and exposure assessment, and provides technical assistance to partner agencies for emergency response activities Lynn Wilder is a senior environmental scientist and received her M S in industrial hygiene from the University of Pittsburgh She is a certified Industrial Hygienist and is a Ph D candidate at the University of Washington's Department of Environmental and Occupational Health Since joining ATSDR in 1989, she has worked in areas of emergency response, health and exposure investigations, and health studies

Historically, construction and demolition (C&D) debris landfills have been considered nonhazardous operations, containing relatively inert wastes such as concrete, asphalt, wood, metals, gypsum drywall, and roofing materials. In recent years, however, it has become increasingly clear that emissions resulting from the decomposition of gypsum drywall and organic debris are a public health issue. Drywall, comprised of gypsum ($CaSO_4 \cdot 2H_2O$), breaks down into hydrogen sulfide and other sulfur compounds under anaerobic conditions and in the presence of water. When exposed to water, the sulfate in the gypsum is dissolved in landfill leachate (Townsend, 1998). Under the same environmental conditions, organic debris degradation produces other flammable gases such as methane. As a result, surface and subsurface fires may occur at C&D landfills (Federal Emergency Management Agency [FEMA], 2002).

Drywall can be a significant constituent of C&D wastes. Depending on the type of construction, it comprises between 5% and 25% of total C&D volume generated (Townsend et al., 2000; United States Environmental Protection Agency [U.S. EPA], 1998). In the United States, C&D waste comprises a considerable portion of the overall solid waste stream. The U.S. Environmental Protection Agency (U.S. EPA) estimated that over 136 million metric tons of building-related wastes were generated in 1996 (U.S. EPA, 1998). Approximately 35%–40% of these wastes were landfilled in C&D facilities. As a comparison, this amount of C&D waste was only slightly less than the 190 million metric tons of total municipal solid waste (MSW) generated that same year (Clark, Jambeck, & Townsend, 2006). In 1996, approximately 1,900 C&D landfills were operating in the United States (U.S. EPA, 1998). At these sites, gas emissions to ambient air are influenced by a number of factors, including, but not limited to, the volume and composition of the waste (particularly gypsum drywall content); engineering design and controls; the condition, composition, and thickness

of the landfill cap; and leachate collection, removal, and handling practices.

Because U.S. EPA does not specifically regulate the operations of C&D landfills, C&D regulation is the responsibility of individual states. Clark and co-authors (2006) recently reviewed and summarized state C&D landfill regulations across the country. The authors found little consistency from state to state in the siting and engineering design requirements of these facilities, in regulatory oversight and rules, or even in a state's definition of what constitutes C&D waste. The authors did find, however, that state standards are generally far less stringent for C&D facilities than for MSW facilities (Clark, Jambeck, & Townsend, 2006).

The Agency for Toxic Substances and Disease Registry (ATSDR) and its federal, state, and local health and environmental agency partners have recently investigated a number of C&D landfills with gas emissions that caused significant community health concerns. Community exposures vary, but are generally greatest during stable meteorological conditions and are generally diurnal with the highest concentrations in ambient air in late evening and early morning hours. At some of these sites, concentrations of hydrogen sulfide gas in residential ambient air were at or above levels known to cause adverse human health effects. At an Ohio C&D landfill, hydrogen sulfide concentrations in residential ambient air approached the National Institute of Occupational Safety and Health (NIOSH) recommended exposure limit (REL) for the occupational ceiling value of 10 parts per million (ppm) (ATSDR, 2003). Improper leachate management at the same site also resulted in community hydrogen sulfide concentrations of up to 95 ppm on at least one occasion (ATSDR, 2006). This concentration is just below the NIOSH immediately dangerous to life and health (IDLH) level of 100 ppm over 15 minutes.

Under normal conditions, hydrogen sulfide is a colorless, flammable gas. It has an odor threshold as low as 0.5 parts per billion (ppb) (ATSDR, 2006), and is typically characterized as smelling like rotten eggs or sewage. When inhaled, hydrogen sulfide readily enters the blood stream via diffusion through pulmonary alveoli. The majority of hydrogen sulfide is metabolized through oxidation into thiosulfate, then further oxidized to sulfate, which is rapidly excreted in the urine. People with preexisting respiratory conditions or immature respiratory systems are more likely to experience adverse health effects from hydrogen sulfide exposure. Those with cardiac or nervous system disorders may also be more likely to experience adverse outcomes from hydrogen sulfide exposure. Although the exacerbation of preexisting respiratory conditions (e.g., asthma) and neurological effects (e.g., headache, nausea, and fatigue) have been noted at low levels (between 10 and 100 ppb), to date, quantifiable irritant effects levels have only been reported with exposures in the low ppm range (Bhambini, Burnham, Snydmillar, MacLean, & Lovlin, 1996a, 1996b; Campagna et al., 2004; Jappinen, Vilkka, Marttila, & Haahtela, 1990; Kilburn & Warshaw, 1995; Kilburn, 1997; Kilburn, 1999). With acute exposures at concentrations at or above 100 ppm, serious injury and death are possible (Hirsch & Zavala, 1999; Milby & Baselt, 1999; Parra, Monso, Gallego, & Morera, 1991; Reiffenstein, Hulbert, & Roth, 1992; Snyder, Safir, Summerville, & Middleburg, 1995; Tvedt, Edland, Skyberg, & Forberg, 1991; U.S. EPA, 2003).

Although ATSDR is not an occupational health agency, staff members have noted worker health and safety issues at numerous C&D landfills. Generally, these facilities have no employee training programs on the use of personal protective equipment and no on-site monitoring programs for common C&D gases. In one case, several employees either lost consciousness or became nauseated and evacuated the work area (Florida Department of Health [FDOH], 2007). In November 2007, four employees died as a result of exposure to high concentrations of hydrogen sulfide while attempting to repair a leachate pump at a C&D landfill in Superior, Wisconsin (Einhorn, 2007). Surface and subsurface fires at C&D landfills also pose a physical hazard to site employees.

The removal of drywall from the waste stream would reduce the potential of hydrogen sulfide generation from C&D facilities. Drywall recycling is an emerging market, and has the potential to significantly diminish the quantity of drywall going into C&D landfill facilities and reduce the potential of human health effects from exposure. Most drywall waste is generated from new construction (64%), followed by demolition (14%) (California Integrated Waste Management Board [CIWMB], 2008). Scrap from new construction is the primary focus of today's drywall recycling market, but future recycling strategies may also include recycling demolition drywall wastes (Townsend, 2003).

Weak regulations that govern C&D facilities at the state and local levels make addressing exposures at these sites an onerous and complicated process. Also, in the absence of a federal ambient air quality standard for hydrogen sulfide, many states have promulgated their own hydrogen sulfide standards—but others have not. Without these kinds of standards, requiring changes in facility operations that lead to reductions in community exposures is difficult at best.

The issues of national consistency and the potential for adverse effects on human health necessitate a dialogue about how best to manage C&D debris while minimizing its effects on neighboring communities. When health issues arise, it is challenging for some states to protect human health from the consequences of inadequate C&D management. Negative public health impacts would be avoided if more careful consideration was given to C&D landfill siting, design, management, and closure. Such an approach would protect health and quality of life for neighboring residents and employees.

Corresponding Author: Michelle Colledge, M.P.H., Ph.D., ASTDR Division of Regional Operations, 77 W. Jackson Blvd., Room 413, Chicago, IL 60604. E-mail: colledge.michelle@epa.gov.

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Susan Lee

From: Caleb Moffitt [calebmoffitt34@gmail.com]
Sent: Tuesday, October 28, 2014 1:09 PM
To: Susan Lee
Subject: Proposed Monofill

To the Mat-Su borough planning commission and Mat-Su Borough Staff:

I am a proud supporter of the CMS Proposed Monofill on the Glenn Highway. I was born and raised in the Matanuska Valley and am a lifelong Valley resident, my family has been in the Matanuska Valley since the late 1930's. I work for Central Recycling Services and I support the proposed monofill because of facts not feelings. It makes me sick to see the lies that have been said about CMS and Shane Durand. The main people in opposition of the proposed monofill have spread propaganda, mislead, and blatantly lied to the general public regarding this proposed monofill. The very premise of their opposition is a lie, "Palmer Toxic Dumping". If I was a member of the general public with no knowledge of the proposed monofill and I read this, I would be in immediate opposition. They use powerful words to incite an emotional response in people who would otherwise take no interest in the proposed monofill, which would be fine if it wasn't based on a lie. However, the truth is, this material comes from buildings and homes that are occupied by humans. The material that would be placed in the proposed monofill has undergone more screening, testing, and sorting than the material that goes into any other monofill in the State of Alaska. Any hazardous materials, including asbestos, have been removed from the waste stream and dealt with properly (this is not speculation but a fact because I have personally seen it done). This is not to say that any other monofill is doing anything wrong but to say that we are a recycling company first and foremost, we process all of the material that comes through our facility. CMS is not inventing new materials to put into a monofill, these are the same materials that go into the Mat-Su Borough's monofill and Alaska Demolition's monofill, with one differentiating fact, the material that would go into the proposed CMS monofill has been processed and sorted to ensure that all hazardous materials are properly dealt with!!!!!

Every load of material that is delivered to our recycling facility is delivered under the knowledge that we do not accept hazardous materials, this is clearly outlined in our credit application and on our website. When the load is dumped at our facility, it undergoes visual inspection by trained personnel with the following tier of importance: 1.) Does the load contain anything hazardous? 2.) What is recyclable? If the answer to the first question is not a definitive no, we put the load aside for further testing to ensure that it does not contain hazardous materials. If the load does contain hazardous material, it is cleaned up in accordance with all applicable rules and regulations. If we are sure the load contains nothing hazardous, then and only then will we pull the recyclable materials from the load. By the time any material leaves our facility it has been processed and sorted by multiple people and machines.

If you were to ask everyone in opposition to this proposed monofill the following question: Do you support recycling? I would be shocked if you were to hear a single "No" answer. Recycling and Reuse of materials is becoming more popular and necessary every day. The proposed monofill would allow for recycling in the Mat-Su valley on a level that is currently not attainable. We don't recycle materials by the pound, we recycle them by the ton and we do so without being subsidized by the government. It would allow for reusable materials to be sold in the valley at a competitive rate and it would also open the valley up for the recycling of Construction and Demolition debris at competitive prices. In my experience if it costs someone more to recycle than it does to dispose of a material, generally they are not going to recycle it. It is irresponsible not to support a company that is willing to recycle materials that are not currently being recycled, especially when it doesn't cost an extra cent in taxes!!!!

The truth is, we are a good company that is run by good men, one of those being Shane Durand. We do a job that most are unwilling to do and we do it extremely well. I have heard some people say that the employees working for this company are untrained, that is completely false and unverified, the employees here are highly trained and knowledgeable regarding recycling and identifying hazardous materials. The opposition to this proposed monofill is based entirely on fear, not facts. The facts clearly show that we are capable of running a recycling facility and a monofill.

One of the largest gatherings in the state of Alaska is located across the street from an active monofill. Alaska Demolition's monofill is right next to the Alaska State Fair. How many Alaska State Fairs have been ruined by the monofill next to it?

This is a case of a few neighbors, who can't even see the proposed monofill from their homes, doing and saying whatever it takes to garner an emotional response from people who would otherwise take no interest in the proposed monofill. The majority are misinformed, some of my friends and family have been placed on a list of people who opposed the proposed monofill, without their consent or knowledge. "Where emotions run high, logic runs low" (Unknown). Please look past the emotions and the lies, and do the logical thing, support this proposed monofill based on the facts. Thank you for your time.

Caleb Moffitt

Susan Lee

From: Peter House [peter@deep-tree.com]
Sent: Tuesday, October 28, 2014 9:59 AM
To: Susan Lee
Subject: Central Monofill Services Conditional Use Permit

Hey, Susan,
I hope you're well. I just wanted to poke in and express support for the monofill CUP that CMS has requested. I got a mailer from some concerned neighbors about CMS' monofill app. It was pretty crazy so I thought I'd ask around a bit to see if this is something to take action about. I've learned over time that things are usually a little bit more complicated than the talking points on ANY flier. So this is what I've learned:

- Two other C&D monofills are within two miles of the proposed site. Neither of those facilities have the controls and processes in place that CMS proposes to reduce waste and monitor the waste for hazards. Neither of the other existing facilities has been shown to be a detriment to the community.
- There has been a similar monofill next to the State Fair for years. I've driven by it a number of times coming and going and it doesn't seem to be an issue. From what I know it has not contaminated the fair or the neighbors.

I get it, there's a lot of NIMBY that goes around and waste is an unpleasant topic. But I'd really like to see a stronger recycling presence here in the Valley. I feel like this monofill is a step in the right direction. I hope cooler heads prevail. Thanks for your time.

Best regards,
Peter House
Deeptree
907-982-1736

Susan Lee

From: Rachel House [rachel.house@gmail.com]
Sent: Monday, October 27, 2014 9:19 PM
To: Susan Lee
Subject: Please support the Central Monofill Services Conditional Use Permit

Susan Lee,

I am a Palmer resident with young children living near the downtown area. We moved to this city because we appreciated it's unique history and it's potential for healthy growth. When I first learned about the proposed Conditional Use Permit for CRS, I was very skeptical and feared the negative affects it would have on our community. When I contacted the owner of CRS, he was very willing to discuss my concerns, encouraged me to visit the site and asks more questions, and provided information for me to continue researching on my own.

After doing so, I feel very strongly that this is a permit that would benefit our community far more than it would cause harm. Waste disposal is a part of living and CRS has been able to build a private business that successfully and responsibly recycles and disposes of our community waste.

Thank you for your time,

Rachel House

Susan Lee

From: Mary Weir [mweir1@icloud.com]
Sent: Monday, October 27, 2014 8:51 PM
To: Susan Lee
Subject: Central monofil

Please support the Central Monofill Services Conditional Use Permit.

We need this clean waste site, it would be a great leap forward towards long term protection of our environment.

Mary Weir

Susan Lee

From: Fred Thompson [fwt1@mtaonline.net]
Sent: Monday, October 27, 2014 7:19 PM
To: Susan Lee
Subject: FW: Central Monofill Services Conditional Use Permit

My computer has been acting up and I'm Not sure if you received my email or not? So I decided to resend

To Susan Lee with MSB Development Services Division

Please support the Central Monofill Services Conditional Use Permit!

My name is Fred Thompson and have recently moved to 6301 E Birch Acre dr. Wasilla Alaska and previously lived on Lazy mountain for years.

I have lived in the Matsu area for the last 8 years and in Alaska since 1966 and support the Central Monofill Services Conditional Use Permit.

1) Central Monofill Services (CMS) along with Central Recycling Services (CRS) will be a great asset to the Matsu Borough (MSB) area to bring non subsidized Recycling to our Area.
2) CRS & CMS both private owned companies will bring additional employment to our MSB area along with additional Matsu Valley recycling not currently being offered.
3) Waste disposal facilities are a necessary part of living as we Americans produce substantial waste daily. Construction demolition of buildings and other structures generate massive amounts of debris that is deposited quite often in our public landfills along with other household and commercial garbage. CRS & CMS have ability to recycle then monofill the non-recyclable portion of waste material.
4) This service will extend the life of our public taxpayer backed landfills through private enterprise.
5) There have been other C&D Monofills in the same general area that are currently not recycling any of the materials and have not been a detriment to the local community. CMS through recycling processes will reduce waste and better monitor waste for hazards than other sites.
6) The CMS site is in a good location for the service they will bring to our area. It is well suited for truck and public traffic as it is in similar commercial area of other heavy truck traffic use from neighboring gravel pits.
7) CMS has been titled with trying to start a toxic waste dump and this could not be further from the truth. In fact they do not accept regular garbage type waste and additionally screen all product delivered to them by mechanical and hand process to further ensure the quality of their recycling products and finally the disposal of unused materials into the Monofill.
8) There seem to be a few people willing to say anything to stop this service being offered to the MSB but I hope with your investigation of this project you will see the truth and approval for the Central Monofill Conditional Use Permit.

Once again Please support the Central Monofill Services Conditional Use Permit!

Susan Lee

From: akhotrod90 [akhotrod90@gmail.com]
Sent: Monday, October 27, 2014 6:44 PM
To: Susan Lee
Subject: RE: Palmer Recycling facility

Sent via the Samsung Galaxy S® 5 ACTIVE™, an AT&T 4G LTE smartphone

-------- Original message --------
From: akhotrod90 <akhotrod90@gmail.com>
Date:10/27/2014 12:19 AM (GMT-09:00)
To: akhotrod90@gmail.com, Charles Siler <csiler57@gmail.com>
Cc:
Subject: Palmer Recycling facility

My name is Rod Bowers and I am a lifelong Alaskan of 47 years. I am a heavy equipment mechanic at a local dealership.I fully support the recycling facility project and monofil program in the valley ind. pit area. I think that Central Environmental Inc. is the right company for the job. The need for short and long term job opportunities is essential for the growth of the Palmer community. C.E.I has a proven history of responsible recycling. I appreciate a locally owned company investing in our people.

Thanks
Rod Bowers

Sent via the Samsung Galaxy S® 5 ACTIVE™, an AT&T 4G LTE smartphone

Susan Lee

From: akhotrod90 [akhotrod90@gmail.com]
Sent: Monday, October 27, 2014 6:38 PM
To: Susan Lee
Subject: Fwd: Palmer Recycling facility

Sent via the Samsung Galaxy S® 5 ACTIVE™, an AT&T 4G LTE smartphone

-------- Original message --------
From: akhotrod90 <akhotrod90@gmail.com>
Date:10/27/2014 12:19 AM (GMT-09:00)
To: akhotrod90@gmail.com, Charles Siler <csiler57@gmail.com>
Cc:
Subject: Palmer Recycling facility

My name is Rod Bowers and I am a lifelong Alaskan of 47 years. I am a heavy equipment mechanic at a local dealership.I fully support the recycling facility project and monofil program in the valley ind. pit area. I think that Central Environmental Inc. is the right company for the job. The need for short and long term job opportunities is essential for the growth of the Palmer community. C.E.I has a proven history of responsible recycling. I appreciate a locally owned company investing in our people.

Thanks
Rod Bowers

Sent via the Samsung Galaxy S® 5 ACTIVE™, an AT&T 4G LTE smartphone

Susan Lee

From: Eric Gmail [klcm54a@gmail.com]
Sent: Monday, October 27, 2014 6:08 PM
To: Susan Lee
Cc: eric b
Subject: Palmer dump proposal

Hello,

Please let me know an anchorage dump across the road from my property is not being seriously considered for at least one of many reasons.

-With all the open land available in AK, no reason whatsoever to pollute our backyard with so many variables and detrimental facts.

-The highway is already terrible with access and safety issues related to the gravel site and railroad.

-The proposed sight will almost certainly leach into the surrounding gravel bed depressions and also pollute the recreation areas and lakes surrounding the proposed site.

-Anchorage should be encouraged to handle their own waste... Barge to isolated area seems like a good option to me.

respectfully,

2650 S Skyranch Loop
Palmer, AK 99645

Eric Bleakney

Sent from my iPad

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Susan Lee

From: Richard Harbuck [superglide@mtaonline.net]
Sent: Monday, October 27, 2014 5:04 PM
To: Susan Lee
Subject: Public Comments on CMS 2014 CUP Application
Attachments: IMAG0513.jpg; IMAG0521.jpg; IMAG0503.jpg

Dear Susan Lee, The following are my comments and concerns regarding the 2014 C.U.P. Application by Central Monofill Services also known as CMS.

CMS a know and convicted polluter in the Mat-Su Borough (see below citations numbers) is once again requesting to establish a monofill dump within the boundaries of the Borough, on property that is an exhausted gravel extraction operation. The property in question was mined to water table, and the areas with commercial quantities of gravel remaining were dredged to bedrock creating open ponds in the water table. During the dredging operation a breach occurred in the local aquifer between two different levels of ground water requiring the State of Alaska DNR Dam Commission to become involved. At that time the operator of the gravel pit was required to establish a dam separating the two separate water levels. At the time of purchase of said property, a request to modify the existing dam with a spillway to relieve water levels only higher than historical normals was made to DNR. This modification was approved by DNR and the dam deregulated. Since that time the spillway modification has never stopped spilling. Water has continued to flow nonstop through the modification contrary to its intend design, and is suspected of causing water table irregularities in the area, as was the case during two previous breach events. DNR continues to insist that CMS repair the spillway to the original modification specifications and CMS refuses to act. Action pending by DNR.

3PA-13-03603MO
3PA-13-03604MO
3PA-13-03623MO
3PA-13-03601MO
3PA-13-03602MO
3PA-13-03624MO

During the year 2013 CMS applied for and was denied a C.U.P. for a monofill at this same location. Even before any permitting had been granted, CMS began Dumping garbage and construction debris, no State of Alaska permit, no Borough permit and no Borough business license. CMS's first argument was that it was there property and could do whatever they wanted to because the material they were dumping was not garbage but a product. A de-watering operation was also started, pumping garbage tainted water into the nearby open dredge ponds, again with no permit. The Borough's Code Compliance office issued orders to stop the activity and to remove the dumped garbage. CMS responded to this by covering it with a layer of dirt and told the Borough that it had removed the dumped material. CMS was found guilty in court on all charges brought against them by the Borough. CMS feels they are above the rules.

During the 2013 Planning commission hearing CMS swore up and down that they had the required 10' of separation from the water table as required by DEC at the lowest point in the gravel pit. This leads one to question, why if this was true, did the previous pit operator leave thousands of yards of easily recoverable gravel un-extracted? The fact is, the gravel was extracted, to just above water table and standing water existed on the property in several areas. Pictures taken during the ordered removal of the garbage dumped and covered with dirt by CMS show a process of painstaking and careful removal, that dis-spite their best efforts, reveal ground water seeping up and puddling at the removal site (see attached photos). CMS lied during their testimony to the Planning Commission and is in the process of amending their DEC application on this matter.

Just after CMS began their illegal dumping in the spring of 2013 several days of moderate to high winds occurred. This had the impact of depositing large amounts of wind blown garbage on, and littering adjacent private properties, not once but twice. To cover their activities and collective butts, a clean-up took place twice. CMS later argued in court that this blown trash had just blown through the site and collected over the winter much like garbage on and near the highway. May I note that in my 12 plus years living in this area, it was, and has been the only time this has occurred. CMS perjured themselves in court.

The Borough contracted a study by J.A. Munter Inc. Professional Hydrologist in February of 2014 regarding the possible effects of a monofill operation at this site. Unlike the cherry picked information submitted by CMS in their

application, this study should be required reading by the members of the planning commission, as it is likely to be much less biased.

The Municapaity of Anchorage and the borough both have facilities in place that can receive this type of waste, with tax revenue and oversight . Within the City of Palmer there already exsists a monofill dump not even half full. This facility has proven to have problems with the release of hydrogen sulfide gasses and underground fires. The need for this new facility only exsits for CMS to dump its trash so it can increase their bottom line. The potential problems that will occur at this site if permitted far outweigh any claims made by the applicant regarding minimal economic benefits. The Borough will not be receiving any significant tax revenue from this proposed activity, only future headaches.

Over the past decades we have, and continue to export gravel products out of the Borough to Anchorage with no tax revenue. The fact that we as a Borough, are even considering receiving in return their potentially polluting waste materials leads one to seriously question the mindset of Borough Government. CMS likes to push their message that this is all about recycling, but make no mistakes the end product of their operation is garbage, and this is a location poorly suited for this activity.

Thank You,
Richard Harbuck

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Susan Lee

From: Patrick Durand [sewtrain557@gmail.com]
Sent: Monday, October 27, 2014 4:13 PM
To: Susan Lee
Subject: Central Monofill Services land Use Permit comment

Central Monofill Services land Use Permit comment

I have attended two of the informational meetings by CMS and read the entire application for the conditional use permit. I urge you to please support the Central Monofill Services Conditional Use Permit.

Engine 557 Restoration Company has been a direct beneficiary of the recycling policy in place at Central Recycling Services. Construction materials such as shop doors, insulation, structural steel, industrial shelving and abatement services have all been provided through their program. Many of these items were salvaged materials saved from the trash stream.

This is a private company with no local, state or federal subsidy, prepared to relieve the local MSB land fills of thousands of tons of inert materials in a safe controlled manner. It is in every residents self interest to support this request, as without it cost to support the expansion of the MSB land fill will continue to increase. If you have not noticed, a small pickup load of household garbage less than 200 lbs, at the land fill just went from $8.00 to $11.00 this month.

It is long past time for the MSB to join the real world of materials management to include proper reclamation of recyclable products and internment of the remaining 25% of the stream that is inert. CMS is prepared to perform that service.

The resulting landscaped and developed property will certainly be an asset to the community compared to the gravel pit and the dust raising trespass activities that take place their now.

Long time resident,

Patrick J. Durand
4923 N. Kipling Dr.
Wasilla, Alaska 99654

p.s. Yes, Shane Durand is my son.

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Susan Lee

From: Sarah Wolcoff [swolcoff@hotmail.com]
Sent: Monday, October 27, 2014 2:43 PM
To: Susan Lee
Subject: Proposed monofill from CMS

To the Mat-Su Borough Planning Commission,
I'd like to express my deep concern and opposition to the proposed monofill at mile 38.3 Glenn Highway by CMS (Shane Durand). The proposed monofill would be disastrous for the Palmer and Gateway area.

Our well water has already been negatively impacted by the activities of Granite Construction when they pierced the aquifer in the proposed dump site. An independent well monitoring service tech told me "In thirty years' experience, I have never seen this much sediment in anything other than a freshly dug well, and even that usually settles within a day or two." Our neighborhood well has had this type of ongoing sediment for years, in spite of several layers of filters. The potential contaminants from ground-up construction debris, as well as potentially leaky discarded tanks and equipment, would leach directly into our well water and local lakes through this pierced aquifer and run-off, causing grave health concerns to residents near the area. I have raised 3 children here and know that they would be especially vulnerable to toxic contaminants such as lead, formaldehyde, arsenic, asbestos, fuel contaminants such as benzene, and more. I am rightfully fearful of the serious health consequences of exposure to toxins in household water.

Mr. Durand seems confident of his untrained and inexperienced abilities to secure asbestos-filled plastic bags with 100% accuracy while overseeing untold numbers of equally untrained and inexperienced subordinates. I, however, am highly doubtful. As you know, this is a high wind area where small debris and plastic bags are constantly blowing away and ripping to shreds in the wind. I have seen yard sized trampolines hanging from the treetops after windstorms. Residents here routinely lose roof shingles, lawn furniture, large trash cans, etc. in the wind and have to chase them down or retrieve them. This is NOT a good location for *any* dump, let alone one harboring contaminants like asbestos bagged in plastic. I come from a family who has extensive civilian contractor career experience in removing asbestos from defunct military sites all around Alaska. I know the level of safety precautions necessary as well as the ease in which untrained or unethical people can cause serious life affecting harm. Going off of recent actions, direct quotes, and facts, I personally believe that Shane Durand is not trained, trustworthy, accountable enough, nor credible enough to be handling this contaminant under his proposed circumstances.

Our family moved to this area with the understanding that the gravel pits would not be here forever, and that residential or park areas would be developed in the long run. It is family friendly, a good commuting location, and a clean and beautiful place. For the most part, the area is developing nicely and it is a desirable location for buying a home and living long term. Property values here have done well considering the widespread housing problems over the last several years. Adding a dangerous and unsightly dump right alongside the highway and adjoining our neighborhoods (and on top of our water), along with all the trucking, debris, and noise associated with it, is not good for Palmer. It's not good for our health, our environment, for the economic development of our town, nor for our property values. My husband and I have discussed our options and have decided that we will likely have to take a loss on our home and move if this dump is approved because of our health concerns for our children. One family moving may be of minimal concern to you as a board, however I urge you to consider that many others around us feel the same way- and we are hard working, productive, law abiding, healthy families that contribute to this area as consumers, business

owners, property tax payers, voters, and vested residents of Palmer, and we take good care of our properties. Please hear us and understand our concerns. I cannot imagine that Palmer would benefit from so many families leaving, and a dump and low-income, crime-ridden area developing as a result.

Thank you very much for your time and for hearing my concerns.

Sincerely,
Sarah Wolcoff
Resident of Pioneer Meadows subdivision, South of Palmer

Susan Lee

From: Patti Kepler [keplerpark@email.com]
Sent: Monday, October 27, 2014 12:14 PM
To: Susan Lee
Subject: Kepler Park pictures
Attachments: DSCN4976.JPG

Ms Lee,
Since you did not receive the five pictures I previously sent with my letter of comment, I am sending them one at a time. Please let me know if you are still unable to view them.

Thank you,
Patricia (Patti) Goossen

October 21, 2014

Matanuska-Susitna Borough
Development Services Division
Planning Department
350 East Dahlia Ave.
Palmer, Alaska 99645

Dear Susan Lee,

My name is Patricia Kepler Goossen. I am submitting this in protest of Central Monofill Services recent application for a conditional use permit. I would also like to file a complaint against recent activities by Central Monofill Services. I believe operations being conducted at the gravel pit located at MSB Tax Parcel #17N02E18C010 and #17N02E19B006 have had, and will have, a gross negative impact on my property and business. It is my understanding that the placement of a dam(s) in man-made industrial ponds at the gravel pit are causing increased pressure to the surrounding aquifer, resulting in a significant rise in water levels of nearby lakes and streams.

I own and operate Kepler Park, a campground located at Mile 37.4 Glenn Highway. Legal Description of property: #17N01E24B014. The property is situated on the shores of Kepler and Bradley Lakes. The nature of our business is to provide scenic camp/picnic sites and boat rentals to the public. I have serious concerns about the condition of our property and future of my business.

Areas of concern are:

1. Trees along shoreline: I have observed a drastic rise in water level of these lakes over the past two years and at an especially alarming rate during this past 2014 summer season! The water level has risen approximately one foot just since opening for business in May of this year! This was more than just the annual spring melt-off. The water level increased and continued to rise throughout the summer. The rise in water level has caused flooding of our campsites along the shoreline. Survival of trees along these shorelines are now threatened because of water surrounding them at their base and root systems. Some of these trees are over one hundred years old. Two trees have died and had to be removed as a result of this flooding. Grass and other vegetation which was on dry ground is under water and has been killed.
2. Camp/Picnic Sites: Also, as a result of this flooding, the shoreline is diminishing which reduces the amount of space required for our camp sites. One of our prime sites (#10 as pictured) has been reduced to one quarter of its original useable space. Two other sites have been reduced to half their original size. Four other sites along the shoreline are also being threatened by rising water levels.
3. Boat rentals: We provide boat rentals to the public for recreation and sport fishing in Kepler and Bradley Lakes. Customers have always had access to both lakes by way of a channel of water between them. A bridge spans this channel so it is necessary for boaters to float under it to access both lakes. The high water levels effect this part of our operations because there is no longer enough clearance under the bridge for boaters to pass through. Also, the launch area along the shore where our rental boats are parked has been reduced from a width of approximately 18 feet to now only 6 feet of useable space.
4. Bridge access: The bridge referred to is situated on a Matanuska-Susitna Borough designated roadway (Kepler Drive). The increasing water level is threatening the stability of the bridge abutments.
5. Fish/Wildlife: As mentioned, one aspect of our business is to provide access for sport fishing. Kepler and Bradley Lakes are stocked each year by the Alaska Department of Fish & Game. These lakes are fed by underground springs. It is already known that the materials disposed of in operations of a monofill dump site would result in the inevitable release of toxins into the ground water feeding these lakes. Such contaminants would threaten the lives of fish and water fowl. Also keep in mind that the fish in these lakes are used for human consumption.

We have been in business as a campground for 62 years. Many pictures have been taken over the years, including this year, so we have a visual comparison of the change in water levels. I am attaching copies of the most recent pictures taken this year.

It has been suggested that I seek legal counsel in this situation, for the killing of trees on our property and for property damages potentially resulting in loss of business. Hopefully, my protest and those of my neighboring property owners will be heeded, putting a stop to operations by Central Monofill Services at the proposed location. I would also hope that steps will be taken to reverse and correct the damaging effects the dams have had on the surrounding aquifer.

Thank you very much for your time and attention to this matter.

Sincerely,

Patricia Kepler Goossen

Kepler Park
P.O Box 2908
Kodiak, AK 99615
Ph. (907) 486-3777
Email: keplerpark@email.com or pat_eye74@hotmail.com

Susan Lee

From: Patti Kepler [keplerpark@email.com]
Sent: Monday, October 27, 2014 12:24 PM
To: Susan Lee
Subject: Kepler Park pictures
Attachments: DSCN4994.JPG

Picture #2 of 5 - RE: Damages due to flooding at Kepler Park campground.

~Patti

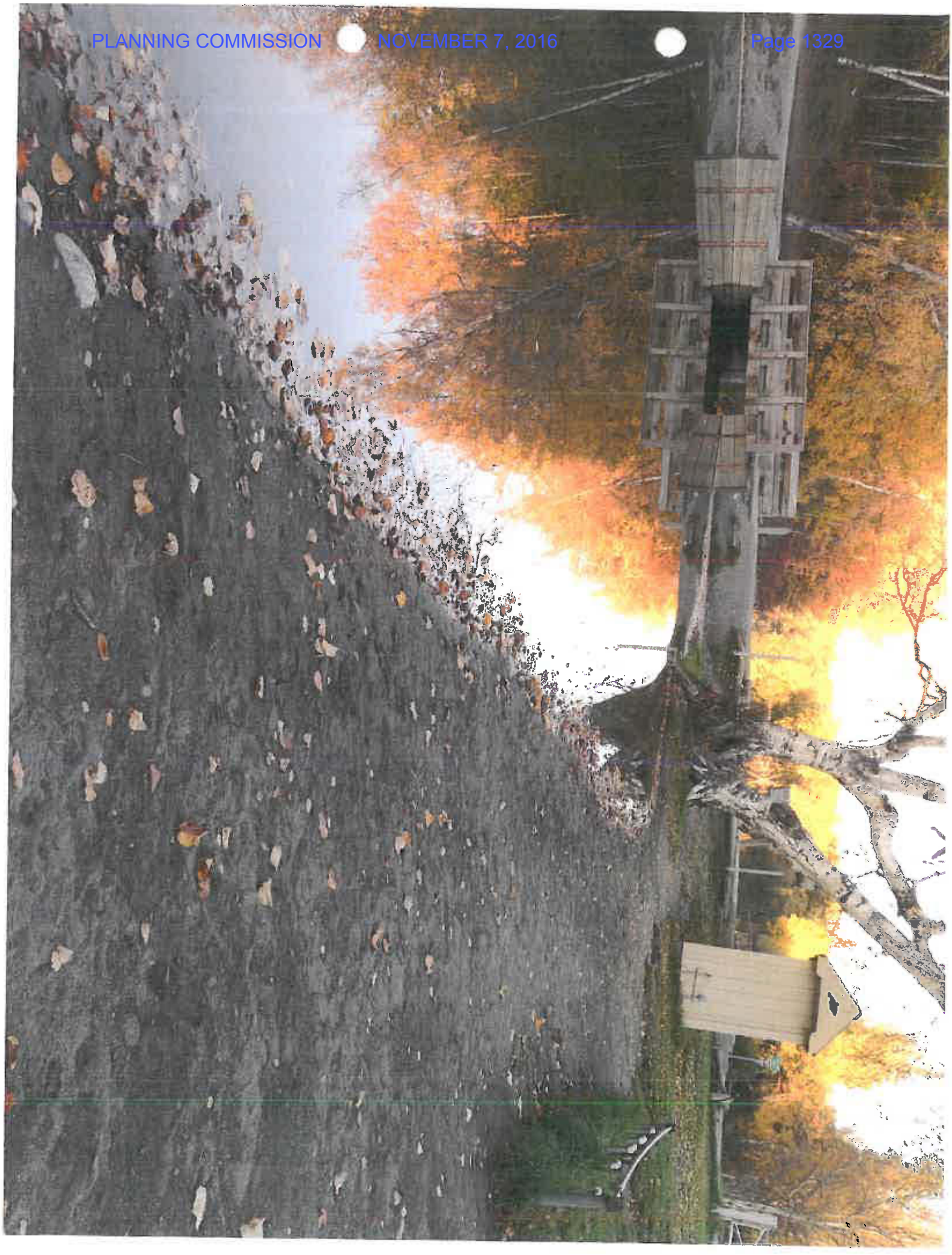
10

Susan Lee

From: Patti Kepler [keplerpark@email.com]
Sent: Monday, October 27, 2014 12:28 PM
To: Susan Lee
Subject: Kepler Park pictures
Attachments: DSCN4984.JPG

Picture #3 of 5 - RE: Damages due to flooding at Kepler Park campground.

~Patti



Susan Lee

From: Patti Kepler [keplerpark@email.com]
Sent: Monday, October 27, 2014 12:34 PM
To: Susan Lee
Subject: Kepler Park pictures
Attachments: DSCN4985.JPG

Picture #4 of 5 - RE: Damages due to flooding at Kepler Park campground.

~Patti

Susan Lee

From: Patti Kepler [keplerpark@email.com]
Sent: Monday, October 27, 2014 12:37 PM
To: Susan Lee
Subject: Kepler Park pictures
Attachments: DSCN4987.JPG

Picture #5 of 5 - RE: Damages due to flooding at Kepler Park campground.

~Patti

Susan Lee

From: Jason Bontrager [jbontrager@rulien.com]
Sent: Monday, October 27, 2014 8:44 AM
To: Susan Lee
Subject: Central Recycling Services Conditional Use Permit

Dear Mat-Su Borough:

I would like to share my support for granting a Conditional Use Permit to Central Recycling Services which would allow them to permit their Central Monofill Services facility in the Valley. Besides the obvious aesthetic, economical, and health benefits of a cleaner Valley, it shows the Boroughs support for recycling. The exemplary history of the Company clearly shows it is both responsible and professional. We should be doing everything we can to ensure it will be in existence for years to come.

Regards,

Jason Bontrager, CPA
Rulien + Associates, LLC
3301 Denali Street, Suite 300
Anchorage, AK 99503
Phone: 907-272-1421
Fax: 907-272-8556
Email: jbontrager@rulien.com
Website: www.rulien.com

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Susan Lee

From: Melodie Wright [rewrighter@gmail.com]
Sent: Saturday, October 25, 2014 11:41 AM
To: Susan Lee
Subject: Palmer dump comment

I am writing to protest the recent permit application by CMS for a dump along the Glenn Highway in the middle of a complex watershed system. This watershed was already compromised by the previous owner of the site, which ran a gravel mining operation that cracked through the shale protecting the aquifer, which supplies water to several thousand homes. Nothing was ever done to fix this problem and the aquifer remains open to this day.

Now, CMS proposes an asbestos dump right there. The possibility for toxic leaching is very real, and there is NO WAY to fix contamination should it occur. Is the borough prepared to deal with a lawsuit from hundreds of homeowners? Is CMS prepared to deal with a lawsuit? Because I assure you, this is what would happen should thousands of families suddenly find their homes being supplied with poisonous water. Home values would drop like a stone, gutting the finances of those families. All because a for-profit, privately owned dump wants to put its trash in a place where it isn't regulated by the Mat-Su Borough, which has a very poor track record of protecting its own environmental concerns. I am writing to warn those on the planning commission to be aware of their own legacy. Do you really want to be remembered by future generations as one of the people who created the opportunity for environmental disaster?

Second to the issue of water quality is wind. Anyone who lives south of Palmer knows of the high winds that regularly occur. We have windstorms that last up to five days. Trash from the dump would blow everywhere. And what about the expansion of the Glenn Highway which will occur in 2016? The berms shielding the trash mountain from the road would be graded away, leaving a gigantic garbage heap visible to everyone who drives by.

Allowing this dump would give a whole new meaning to the term "Valley Trash" - indicative of a government that allows a toxic trash dump in plain sight of a main highway through Alaska, AND a moronic disregard of a water resource upon which thousands depend.

Let's not turn the Valley Trash nickname into truth.

Roger & Melodie Wright
Palmer, Alaska

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Susan Lee

From: Fred Thompson [fwt1@mtaonline.net]
Sent: Saturday, October 25, 2014 6:19 PM
To: Susan Lee
Subject: Central Monofill Services Conditional Use Permit

To Susan Lee with MSB Development Services Division

Please support the Central Monofill Services Conditional Use Permit!

My name is Fred Thompson and have recently moved to 6301 E Birch Acre dr. Wasilla Alaska and previously lived on Lazy mountain for years.

I have lived in the Matsu area for the last 8 years and in Alaska since 1966 and support the Central Monofill Services Conditional Use Permit.

1) Central Monofill Services (CMS) along with Central Recycling Services (CRS) will be a great asset to the Matsu Borough (MSB) area to bring non subsidized Recycling to our Area.

2) CRS & CMS both private owned companies will bring additional employment to our MSB area along with additional Matsu Valley recycling not currently being offered.

3) Waste disposal facilities are a necessary part of living as we Americans produce substantial waste daily. Construction demolition of buildings and other structures generate massive amounts of debris that is deposited quite often in our public landfills along with other household and commercial garbage. CRS & CMS have ability to recycle then monofill the non-recyclable portion of waste material.

4) This service will extend the life of our public taxpayer backed landfills through private enterprise.

5) There have been other C&D Monofills in the same general area that are currently not recycling any of the materials and have not been a detriment to the local community. CMS through recycling processes will reduce waste and better monitor waste for hazards than other sites.

6) The CMS site is in a good location for the service they will bring to our area. It is well suited for truck and public traffic as it is in similar commercial area of other heavy truck traffic use from neighboring gravel pits.

7) CMS has been titled with trying to start a toxic waste dump and this could not be further from the truth. In fact they do not accept regular garbage type waste and additionally screen all product delivered to them by mechanical and hand process to further ensure the quality of their recycling products and finally the disposal of unused materials into the Monofill.

8) There seem to be a few people willing to say anything to stop this service being offered to the MSB but I hope with your investigation of this project you will see the truth and approval for the Central Monofill Conditional Use Permit.

Once again Please support the Central Monofill Services Conditional Use Permit!

Susan Lee

From: valleycat1935@gmail.com
Sent: Sunday, October 26, 2014 5:10 PM
To: Susan Lee
Subject: Attn: Susan Lee re: CMS monofill dump

I am writing concerning the proposed CMS monofill site just off the Glenn Highway at mile 38.3. After reviewing materials on the Borough website, including the Munter Report and the Planning Commission's June 2013 Resolution 13-30 which denied the permit, I continue to be adamantly opposed to this dump. In addition to that overwhelming evidence to deny this permit yet again (including the Planning Commission's own 37 "findings of fact and conclusions of law"), consider how this dump would be in direct violation of several goals of the Mat-Su Borough Core Area Comprehensive Plan--specifically Goals 1, 3, 7, and 8 ("Hazards: protect life and property from harm from natural and man-made hazards such as floods, erosion, wildfire, earthquakes, air and water pollution, and hazardous materials."). Furthermore, keep in mind that there already exists a dump site for construction waste (the Rebarchek Pit) just a couple of miles from the proposed CMS dump site. Not only is the proposed dump a hazard to the local residents and to the natural environment, it simply isn't necessary.

Please vote to deny their permit.

Heather Lampard

Sent from my iPad

Susan Lee

From: Heather McGee Lackey [cultof.notdoing@gmail.com]
Sent: Sunday, October 26, 2014 3:27 PM
To: Susan Lee
Cc: Jan Helfrich; Christine Richey; Roxanne Laughlin; John Lackey
Subject: Stop private dumps

Dear Matanuska-Susitna Borough:

As a Palmer homeowner and business owner on a community well system, I am writing to oppose the permitting of private toxic dumps in the Borough. The CMS dump on Glenn Highway is five miles from our well, and a hydrology report after review of the conditional use permit has already shown that the dump has the potential to contaminate wells within one mile with hazardous waste from geologically unstable construction materials. What's to keep known carcinogens from traveling more widely in ground water, unbeknownst to the owners and the Borough?

Our homeowners' association has our communal water supply tested on an annual basis. If we start seeing the presence of or increases in creosote, lead, acrylic, chromium, pentachlorophenol, phenol-formaldehyde resins, cadmium, CVOCs, sulfate, hydrogen sulfide, arsenic, and other pollutants, will we have recourse against CMS? Your own Planning Commission Resolution 13-30 has already declared the site incompatible with the residential character of the area and the Borough's own land-use goals -- among other highly concerning violations of what a reasonable resident can expect in terms of protections by the Borough government. The site is less than a mile away from a major migratory bird refuge.

In addition, the decision to permit such an UNLINED dump site atop a drinking water aquifer (with no system in place to monitor leachate) is a flagrant violation of the public trust and our right to the protection of our health and safety. Why are public dumps, subject to oversight, insufficient to meet disposal needs?

Thank you for the opportunity to comment on this topic.

Heather McGee
7635 East Woodview Way
Palmer, Alaska 99645

Susan Lee

From: Adam Hall [adam_hall09@yahoo.com]
Sent: Sunday, October 26, 2014 10:36 AM
To: Susan Lee
Subject: Comments on CMS for Planning Commission Information Packet

My address is 2351 S Colleen St in Palmer, and my property is adjacent to the property on which CMS wants to run a monofill (Location MSB Tax Parcel# 17N02E18C010 and 17N02E19B006).

There are so many issues with them operating a monofill on this property. They include:

1. ASBESTOS - There is no independent inspection process to assure proper asbestos containment at this PRIVATELY OWNED, FOR PROFIT dump. The Palmer dump already has an asbestos cell and C&D (construction and demolition) section with proper oversight. AK Demo already runs a private C&D dump 2 miles away.

2. Poison Wells Up To a Mile From the Site - A borough sponsored hydrological evaluation concludes: "Contaminants could travel approximately a mile down-gradient and still exceed drinking water standards". A quote from CT.gov states, "wood waste from construction, renovation and demolition, pressure treated timber... may contain creosote, lead, acrylic, chromium, pentachlorophenol, phenol-formaldehyde resins, and other known carcinogens and ground water contaminants... These pollutants can leach into the ground water" (http://www.ct.gov/deep/cwp/view.asp?a=2718&q=325342)

3. Environmental Crime History - While being cited for ILLEGALLY DUMPING waste without a permit or even a business license, CMS Corporate Officer Shane Durand stated, "the solution to pollution is dilution." The company was later fined and were repeatedly ordered to clean up although they claimed the dump material was not trash. I personally took pictures of the trash that was blown onto other properties adjacent to this site and communicated directly with Mark Wisenhunt to have him come and see for himself the illegal activity of CMS. My wife also spoke directly with Shane Durand as he made false statements to the newspapers about "No Trespassing" signs I have on my property. To sum up his response to me, he explained that now she know how it feels to have false information spread to the papers. Therefore, he was okay with lying to the newspapers about us, because he felt that others were lying about him. Who would ever want a neighbor like that?!?!?!?!

4. Contamination of Fishing in the Kepler-Bradley Lake System - The site sits on top of the open aquifer that flows through fishing and recreation areas at Canoe Lake, Kepler-Bradley Lake, and beyond. Approval of a combination dump & junkyard permit for this property will allow fuel tanks and potentially leaky equipment to be parked on the edge of man-made gravel pit lakes OPEN TO THE AQUIFER.

5. Windblown Trash - "Valley Trash" WILL be what people see on their way to Palmer. That negatively affects tourism, business, property values, and tax revenues. I personally have witnessed this windblown trash already and they have not even been granted the legal permit to dispose of anything!

It is so disheartening that a company wants to destroy the beautiful area that I call my home. Please do not let them do this!!!!

Adam Hall
907-717-4396

Susan Lee

From: Sarah Hall [sarahhall612@yahoo.com]
Sent: Sunday, October 26, 2014 10:32 AM
To: Susan Lee
Subject: Comments on CMS for Planning Commission Information Packet

My address is 2351 S Colleen St in Palmer, and my property is adjacent to the property on which CMS wants to run a monofill (Location MSB Tax Parcel# 17N02E18C010 and 17N02E19B006).

There are so many issues with them operating a monofill on this property. They include:

1. ASBESTOS - There is no independent inspection process to assure proper asbestos containment at this PRIVATELY OWNED, FOR PROFIT dump. The Palmer dump already has an asbestos cell and C&D (construction and demolition) section with proper oversight. AK Demo already runs a private C&D dump 2 miles away.

2. Poison Wells Up To a Mile From the Site - A borough sponsored hydrological evaluation concludes: "Contaminants could travel approximately a mile down-gradient and still exceed drinking water standards". A quote from CT.gov states, "wood waste from construction, renovation and demolition, pressure treated timber... may contain creosote, lead, acrylic, chromium, pentachlorophenol, phenol-formaldehyde resins, and other known carcinogens and ground water contaminants... These pollutants can leach into the ground water" (http://www.ct.gov/deep/cwp/view.asp?a=2718&q=325342)

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5. Windblown Trash - "Valley Trash" WILL be what people see on their way to Palmer. That negatively affects tourism, business, property values, and tax revenues. I personally have witnessed this windblown trash already and they have not even been granted the legal permit to dispose of anything!

It is so disheartening that a company wants to destroy the beautiful area that I have called home for my entire life of over 35 years. Please do not let them do this!!!!

Sarah Hall
907-717-4319

Susan Lee

From: Rose Williams [kaymaid@hotmail.com]
Sent: Saturday, October 25, 2014 9:54 AM
To: Susan Lee
Subject: Proposed Monofill 2840 Glenn Hwy

Dear Ms. Lee,

I am writing as an Interested Party in the Central Monofill on 2840 Glenn Hwy. My home is down wind and down stream from the proposed dump and I am appalled that here we are again having to defend our homes. I thought we had settled this last year in June, but apparently Central Monofill has enough money to keep driving there plan through. I am offended that our public officials do not listen to the public voices on this issue. No still means no. I don't want a permanent dump polluting the water table where I get my well water from, nor do I want do live down wind of the stink and asbestos laden pollution the monofill will generate. I have not changed my mind since a year ago. I am categorically against the monofill because I want to live in a clean environment with clean water and air. Once you place a dump next too a neighborhood you have doomed that neighborhood to live with the effects of that dump forever! I urge the council to please consider the concerns of the home owners of the neighborhoods adjacent to the proposed dump.

Sincerely,

Rose Williams

Susan Lee

From: Peggy Bryan [pbryan@mtaonline.net]
Sent: Thursday, October 23, 2014 1:26 PM
To: Susan Lee
Subject: Palmer Toxic Dumping Community Group

I am a landowner in Mountain View Estates off E. Outer Springer Loop. I am against the granting of a permit to CMS to open a private dump across the Glenn Highway from where I live. I worry about poisoning our water supply, trash blowing around from the site and pumping of contaminated water on wetlands. There is already a dump site on the Springer road system. We don't another one which won't have the proper oversight as the current dump. Thank you.

Peggy Bryan

Susan Lee

From: Joe Jolley [JJolley@cornerstoneak.com]
Sent: Thursday, October 23, 2014 4:52 PM
To: Susan Lee
Subject: Please support the Central Monofill Services Conditional Use Permit

Joe Jolley

Cornerstone General Contractors
5050 Cordova Street Anchorage AK 99503
Phone (907) 646-7213 Fax (907) 561-7899 Cell (907) 227-6018

Susan Lee

From: Pete W Praetorius [pwpraetorius@matsu.alaska.edu]
Sent: Thursday, October 23, 2014 6:24 PM
To: Susan Lee
Subject: Kepler-Bradley Landfill

I'm writing to express my concern about a proposal by the CMC Corporation to open a private landfill in the Kepler-Bradley Lakes area. This area is both a bedroom community and an area that is popular with many types of recreation, and locating a landfill in this area is incompatible with current uses.

It is argued by CMC that because the landfill would consist of an unlined cell that only nontoxic material would be dumped there. However, as someone who has often visited the unlined C&D cell at the Mat-Su Borough landfill, I can attest that many toxic items end up in unlined cells. These toxic items, such as treated wood, painted wood, used carpet, and even lead/acid batteries, will eventually contaminate the ground water and surrounding lakes. It should be noted that when a dump contaminates ground water it basically does so forever. For example, ancient Roman dumps still produce leachate—fortunately, the leachate coming from these Roman dumps does not contain the toxic soup that will emanate from a dump that contains treated wood and other products of this modern age.

In addition to the inevitable contamination of the Kepler-Bradley Lakes area water, a landfill at this location will also contaminate the air and landscape. This is a very windy area, and even the best effort to contain and cover dumped material before it blows away is an impossible task. Again, an examination of the area surrounding the Mat-Su Borough landfill provides ample evidence: blown garbage of all kinds covers the surrounding area despite the fact that the landfill staff works to cover the garbage as quickly as it is dumped.

Finally, allowing a private corporation to install a potentially toxic dump is inviting a future liability for Borough tax payers. A dump such as the one that CMC is proposing is similar to a mine that produces toxic material. Mining companies typically abandon old mines and declare bankruptcy once the resource has paid out. Once this proposed dump is filled, CMC will have no incentive to maintain the dump in perpetuity because doing so would cost much more than any bond that the company may have put up upon permitting. The tax payers of the Mat-Su Borough (and perhaps the state government) will be left to clean up any pollution. Moreover, CMC's track record as a polluter does not instill confidence that it will do the right thing and continue to monitor and clean up any pollution coming from their proposed dump site. Thus, I urge you to deny this permit. Let CMC find another location that will not threaten area ground water and that is not in such a windy area.

Pete Praetorius
13329 E. Oceanview RD
Palmer, AK 99645

Dr. Pete Praetorius
pwpraetorius@matsu.alaska.edu
Associate Professor of Communication
Matanuska-Susitna College
PO Box 2889
Palmer Alaska, 99645
907-745-9728 office
907-745-4747 home

Matanuska - Susitna Borough
Development Services
OCT 23 2014
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117N01E24A003 71
GIYER JAS H & MARIETTA D
PO BOX 97
PALMER, AK 99645-0097

FIRST CLASS MAIL

The Matanuska-Susitna Borough Planning Commission will consider the following:
Application or Item: *Application for a conditional use permit for the operation of a monofill for the disposal of inert material*
Matanuska-Susitna Borough Code Section: MSB 17.60 – Conditional Uses
Applicant: Central Monofill Services 99645*0097 B001
Request: *An application has been submitted for the operation of a monofill for the disposal of inert material. The inert debris will primarily be non-hazardous shredded residual, non-recyclable waste material from construction and demolition waste. Regulation Asbestos Containing Material (RACM) and Non-RACM will also be accepted at the monofill site.*
Location: MSB Tax Parcel# 17N02E18C010 (2840 S. Glenn Hwy.) and 17N02E19B006 (2560 S. Glenn Hwy.); within Township 17 North, Range 2 East, Sections 18 & 19, Seward Meridian.

The Planning Commission will conduct a public hearing in the Borough Assembly Chambers, Palmer, Alaska, on this item on ***December 1, 2014***. The meeting begins at 6:00 p.m. ***Public hearings begin at 6:15 p.m.*** This may be the only presentation of this item before the Planning Commission and you are invited to attend.

This conditional use permit application will be introduced for public hearing at the **November 3, 2014** Planning Commission meeting. The Planning Commission members may submit questions to the Planning Commission Clerk concerning the matter or request for more information from the applicant at the time of the introduction. All questions and requests submitted by the Commission shall be in writing and copies will be provided to the applicant and made available to all interested parties and the public upon request. Answers to questions and additional material requests will be addressed in the staff report for the public hearing.

Commission members may not receive or engage in ex-parte contact with the applicant, other parties interested in the application, or members of the public concerning the application or issues presented in the application.

Application material may be viewed on-line at www.matsugov.us and clicking on 'Public Notices'. Application material may also be reviewed in the Borough Permit Center. If you have any questions or, would like to send us comments, concerning the proposed action, this form may be used for your convenience by filling in the information below and mailing it to the Matanuska-Susitna Borough, Development Services Division, Planning Department, 350 East Dahlia, Palmer, Alaska 99645. You may fax comments to 861-7876 or e-mail to *slee@matsugov.us*. For additional information please contact Susan Lee, Planner II, at 861-7862. Comments received by ***5 p.m., October 31, 2014*** will be included in the Planning Commission packet for the Commissioner's review and information. Please be advised that comments received from the public after that date will not be included in the staff report to the Planning Commission but will be provided as hand-outs to the Commission. If there is not enough room below, please attach this sheet to another piece of paper. **In order to be eligible to file an appeal from a decision of the Planning Commission, a person must be designated an *interested party*. See MSB 15.39.010 for definition of *"Interested Party"*. The procedures governing appeals to the Board of Adjustment and Appeals are contained in MSB 15.39.010-250, which is available on the Borough internet home page, (http://www.matsugov.us), in the Borough Clerk's office, or at various libraries within the borough.**

Name: James H. + Marietta D. Giyer *Address:* PO Box 97, Palmer, AK. 99645

Location/Legal Description of your property: 10200 E. Bradley Lake Rd Palmer AK 17N01E24A003 Township 17N Range 1E

Comments:

We are 100% against allowing any type of waste debris being dumped in the proposed site, no matter how safe it is suppose to be. There would be no monitoring of the water from our well to assure that we are not drinking toxic waste that is leaking from the waste debris. The lakes are also at risk of toxic leaks, who safe guards the fish that live in the lakes? Again, we are 100% against any type of waste debris being dumped.

Once the water table is contaminated there is no turning back!

Susan Lee

From: Susan Lee
Sent: Friday, October 24, 2014 8:37 AM
To: 'pat_eye74@hotmail.com'
Subject: 3-mail

Ms. Goossen:

I did receive your fax, however, I did not receive your e-mail. The e-mail attachments may have been too big, as the MSB only allows for 10 mg for an attachment size. If you want to send them again, you will probably need to do it in separate e-mails.

Susan

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

FAX COVER

Matanuska - Susitna Borough
Development Services
OCT 23 2014
RECEIVED

To: Susan Lee
Company: Mat-Su Borough Planning Department
Fax Number: (907) 861-7876

From: Patricia K. Goossen
Company: Kepler Park
Fax Number: (907) 486-3777

Subject: Comments Regarding CMS CUP Application

Pages including cover page: 3 Date: 10/23/14 Time: 2:00 p.m.

MESSAGE

Dear Susan –

The attached pages are copies of an email sent to you on 10/22/14. They are being FAX'ed as an extra measure for you to receive my comments on this subject. (I sent 5 pictures to you in the email. I am not including them in this FAX but additional photos are available upon request.)

Patricia K. Goossen
Kepler Park / Owner

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October 21, 2014

Matanuska-Susitna Borough
Development Services Division
Planning Department
350 East Dahlia Ave.
Palmer, Alaska 99645

Matanuska - Susitna Borough
Development Services
OCT 23 2014
RECEIVED

Dear Susan Lee,

My name is Patricia Kepler Goossen. I am submitting this in protest of Central Monofill Services recent application for a conditional use permit. I would also like to file a complaint against recent activities by Central Monofill Services. I believe operations being conducted at the gravel pit located at MSB Tax Parcel #17N02E18C010 and #17N02E19B006 have had, and will have, a gross negative impact on my property and business. It is my understanding that the placement of a dam(s) in man-made industrial ponds at the gravel pit are causing increased pressure to the surrounding aquifer, resulting in a significant rise in water levels of nearby lakes and streams.

I own and operate Kepler Park, a campground located at Mile 37.4 Glenn Highway. Legal Description of property: #17N01E24B014. The property is situated on the shores of Kepler and Bradley Lakes. The nature of our business is to provide scenic camp/picnic sites and boat rentals to the public. I have serious concerns about the condition of our property and future of my business.

Areas of concern are:

1) Trees along shoreline: I have observed a drastic rise in water level of these lakes over the past two years and at an especially alarming rate during this past 2014 summer season! The water level has risen approximately one foot just since opening for business in May of this year! This was more than just the annual spring melt-off. The water level increased and continued to rise throughout the summer. The rise in water level has caused flooding of our campsites along the shoreline. Survival of trees along these shorelines are now threatened because of water surrounding them at their base and root systems. Some of these trees are over one hundred years old. Two trees have died and had to be removed as a result of this flooding. Grass and other vegetation which was on dry ground is under water and has been killed.
2) Camp/Picnic Sites: Also, as a result of this flooding, the shoreline is diminishing which reduces the amount of space required for our camp sites. One of our prime sites (#10 as pictured) has been reduced to one quarter of its original useable space. Two other sites have been reduced to half their original size. Four other sites along the shoreline are also being threatened by rising water levels.
3) Boat rentals: We provide boat rentals to the public for recreation and sport fishing in Kepler and Bradley Lakes. Customers have always had access to both lakes by way of a channel of water between them. A bridge spans this channel so it is necessary for boaters to float under it to access both lakes. The high water levels effect this part of our operations because there is no longer enough clearance under the bridge for boaters to pass through. Also, the launch area along the shore where our rental boats are parked has been reduced from a width of approximately 18 feet to now only 6 feet of useable space.

4) Bridge access: The bridge referred to is situated on a Matanuska-Susitna Borough designated roadway (Kepler Drive). The increasing water level is threatening the stability of the bridge abutments.
5) Fish/Wildlife: As mentioned, one aspect of our business is to provide access for sport fishing. Kepler and Bradley Lakes are stocked each year by the Alaska Department of Fish & Game. These lakes are fed by underground springs. It is already known that the materials disposed of in operations of a monofill dump site would result in the inevitable release of toxins into the ground water feeding these lakes. Such contaminants would threaten the lives of fish and water fowl. Also keep in mind that the fish in these lakes are used for human consumption.

We have been in business as a campground for 62 years. Many pictures have been taken over the years, including this year, so we have a visual comparison of the change in water levels. I am attaching copies of the most recent pictures taken this year.

It has been suggested that I seek legal counsel in this situation, for the killing of trees on our property and for property damages potentially resulting in loss of business. Hopefully, my protest and those of my neighboring property owners will be heeded, putting a stop to operations by Central Monofill Services at the proposed location. I would also hope that steps will be taken to reverse and correct the damaging effects the dams have had on the surrounding aquifer.

Thank you very much for your time and attention to this matter.

Sincerely,
Patricia K Goossen

Patricia Kepler Goossen
Kepler Park
P.O Box 2908
Kodiak, AK 99615
Ph. (907) 486-3777
Email: keplerpark@email.com or pat_eye74@hotmail.com

Susan Lee

From: Kenton B Bear [coldfootbear@gmail.com]
Sent: Thursday, October 23, 2014 11:35 AM
To: Susan Lee
Subject: CRS valley project coments

I am in favor of the Monofill and the efforts CRS has made to get this project going. I have seen the site in Salcha and it is a clean area of work. There are no birds, animals or stench that goes along with many other waste sites Ive seen over the years. Costruction Debris that has been processed is What I refer to as clean trash. Its gotta go somewhere and they do a fine job with it.

Susan Lee

From: Sandy Duncan [sduncan_213@yahoo.com]
Sent: Thursday, October 23, 2014 7:05 AM
To: Susan Lee
Subject: Monofil permit

I am writing to express my concerns about the re-application for the Monofil Dump Site. Having lived in the State 56 years, I have seen a lot of changes take place. Some good, some not so good. I have lived in the Valley for 31 years. I have enjoyed the beauty and pristine environment of both the Butte and now the Springer System area. This Dump Site does not comply with anything worthwhile in the continuation of preserving or protecting this area. My main concern is the existing watershed. Due to the lack of monitoring of the contents which will be "dumped and buried" at this proposed site, this leaves our precious water open to extreme pollution. During the last permitting application process the Borough's Staff found several reasons why this is NOT a good venture. Please, please do not allow this application to be permitted! Thank you.

Sincerely,
Sandra Duncan
2160 S. Kaye Marie Dr.
Palmer, AK 99645
907-746-3848

Sent from my iPhone

Susan Lee

From: Amber Reed [athabascan.amber@gmail.com]
Sent: Wednesday, October 22, 2014 3:12 PM
To: Susan Lee
Subject: Please deny the permit request for the monofil dump in Palmer, AK
Attachments: W-Mat-Su-Borough-Denies-Permit_June2013.pdf

Hello,

I would first like to start out with a thank you to the borough for denying the first permit application and protecting my family for the extremely negative affects of having a toxic dump in our back yard. I have four children who have grown up in Palmer in our house in Mountain View Estates, this is our home and it is beautiful. Our community well is at risk of being contaminated, our beautiful landscape is at risk of being turned into a trash strewn mess and our wildlife will be pushed even further from their natural habitat. We have fish beds that will be fed with toxins from the dump, children will be drinking contaminated water! Please consider the facts below when this permit comes up on your docket-

The site sits on top of the massive aquifer that feeds our lakes and provides drinking water. A dump permit would allow tanks and potentially leaky equipment to be parked next to the ponds open to the aquifer. **Large fuel tanks are already reportedly on site.** Accidents happen.

ASBESTOS, HEALTH CONCERNS, AND PROPERTY VALUES

The dump owners say that Asbestos will only be delivered in plastic bags, so it will never be a problem. The community with neighbors as close as 500 feet from the dumpsite are being asked to believe that accidents never happen. No contractor or busy demolition worker will ever make a mistake, mix up the paperwork or misunderstand instructions. Accidental asbestos contamination to some degree seems highly probable, yet the company assures us that this very legitimate worry will not affect anyone's property values.

WELL CONTAMINATION IS PREDICTED

The 2014 Munter Report on hydrology studied the specifics of the dump's site operation plan and concluded that the **site may contaminate wells up to 1 mile away.**

WATER CONTAMINATION & HISTORY OF ILLEGAL DUMPING

Dump management have shown no concern about pumping contaminated surface runoff into the ponds. In fact, while being cited for illegally dumping waste without a permit, **Shane Durand stated to the borough official, "the solution to pollution is dilution."** (MSB Code compliance case summary G20130022 page 5—see the official Borough Citations.

Neighbors whose groundwater is being polluted would disagree with Mr. Durand; the Solution to Pollution is PREVENTION.

WINDBLOWN TRASH

The dump's owners say the 60 MPH wind won't be a problem. They have said that they believe that stacks of tires and the trees on neighboring property will keep debris from leaving the site. Neighbors are pretty sure this dump will end up being spread for miles up and down the Glenn Highway into Palmer. **"Valley Trash" *will* be what people see on their way to Palmer.**

Thanks for your consideration,

Amber Reed

12730 E Kaye Marie Ct

Palmer, AK 99645

MATANUSKA-SUSITNA BOROUGH
PLANNING COMMISSION RESOLUTION NO. 13-30 (Am)

A RESOLUTION OF THE MATANUSKA-SUSITNA BOROUGH PLANNING COMMISSION ADOPTING FINDINGS OF FACT AND CONCLUSIONS TO SUPPORT THEIR FAILURE TO APPROVE RESOLUTION 13-22.

WHEREAS, Resolution 13-22 recommended approval of a conditional use permit for the operation by Central Monofill Services (CMS) of an inert material monofill on parcels 17N02E18C010 and 17N02E19B006, within Township 17 North, Range 2 East, Sections 18 and 19, Seward Meridian; and

WHEREAS, Resolution 13-30 contains findings of fact and conclusions of law which support denial of the conditional use permit; and

WHEREAS, on June 3, 2013, the Planning Commission held a public hearing on Resolution 13-22; and

WHEREAS, the Planning Commission's vote on the motion failed to garner a majority vote on June 3, 2013; and

NOW, THEREFORE, BE IT RESOLVED, that the Matanuska-Susitna Borough Planning Commission denied the conditional use permit based on the following findings of fact and conclusions of law:

1. Borough staff has documented trash and the Daily Cover (screened fines) that have blown from the monofill onto adjacent properties.

2. Borough staff has documented trash and/or the Daily Cover blown over the 40 foot hill on the west side of the property.

3. ADEC regulations (18 AAC 60.420(2)) states a monofill must be operated so that litter is controlled by fencing or another approved means, and is removed from access roadways and other areas in the facility.

4. This region experiences frequent multiple-day high-wind events each year since it is at the confluence of the Matanuska and Knik River valleys. Loose debris and dust from the fill has and is expected to continue to scatter beyond the boundaries of the site.

5. Fencing is not expected to contain the trash and/or the Daily Cover/screened fines on the site. The trash and/or Daily Cover/screened fines will get blown into the trees and surrounding properties.

6. CMS has not provided adequate mitigation plans for preventing trash and debris from leaving the site.

7. The Daily Cover/screened fines consist of shredded materials that are less than two inches in size. Material this size is easily distributed by the wind.

8. The inert debris that will be deposited on the site will be shredded into pieces 12 inches or smaller. Material this size can also become windblown.

9. The previous use of this site was for earth materials extraction. There are pre-existing legal nonconforming use rights for earth materials extraction for this property, which means that the industrial use was not approved under the current regulatory structure or evaluated for compatibility with surrounding land uses.

10. The proposed monofill is an industrial use and is an incompatible use with the surrounding residential areas as it cannot be completely screened from the surrounding residences to the west, debris from the monofill will blow onto the surrounding residences and roadways, and there is the possibility of contamination of drinking water wells in the area.

11. The final height of the monofill is proposed to be at 150 feet above sea level (ASL). The proposed monofill will have 2700 feet of frontage along the Glenn Highway. The proposed completed height of the monofill will be 35 to 40 feet above the adjacent berms on the southwest perimeter of the site.

12. The monofill will be unsightly from the Glenn Highway, and from the surrounding properties, including the residential subdivision directly to the west. It is not possible to completely screen the monofill because of topography and because the project is proposed to be 150 feet (ASL) high at completion.

13. The proposed monofill is inconsistent with some of the land use goals and policies of the Borough-Wide Comprehensive Plan (2005 Update) and the monofill is an industrial use and incompatible with the neighboring residential areas.

14. The proposed monofill is inconsistent with some of the goals and policies of the Borough-Wide Comprehensive Plan (2005 Update) and the Core Area Comprehensive Plan (2007) as there is the potential for groundwater contamination that could have negative effects on drinking water and surface water quality.

15. The proposed monofill is inconsistent with the goals and policies of the Borough-Wide Comprehensive Plan (2005 Update) and the Core Area Comprehensive Plan (2007 Update)

16. The proposed monofill will not preserve and will detract from the value, character, and integrity of the surrounding area as the monofill will be unsightly from the Glenn Highway and from the surrounding properties including the residential subdivision directly to the west. It is not possible to completely screen the monofill because of topography and because the project is proposed to be 150 feet (ASL) high at completion. Conditions may be set to address trash and debris containment on the site (17.60.100(B)(1)).

17. Comments received regarding the proposed monofill raised the following concerns:
    - Dumping of material without MSB or ADEC permits.

- Dumping of hazardous waste
- Trash in the water
- Water pollution
- Health problems
- Pollution of surrounding lakes
- Protection of watershed and aquifer
- Compromising the aquifer
- Windblown unhealthy dust and particulates from the monofill
- Pollution of drinking water
- Windblown materials/debris onto surrounding properties
- Impact on downstream waterways
- Long term safety of water quality
- Contamination of water table
- Use the existing landfill for disposal of material
- Previous problems with gravel extraction on this property and rising water table
- Trash in the trees is an eyesore
- Breaching of berm between two of the manmade lakes and impact on surrounding water levels
- Long term impact of contamination of drinking water
- Disregard for lakes, streams, and drinking water
- Lack of oversight and planning
- Lack of CMS's ability to manage and provide oversight of the facility
- Concerns about reclamation of the property
- Dumping of garbage/monofill near standing water
- High wind area will cover surrounding area with dust and debris from monofill
- Contamination of soil
- Residents are entitled to clean air, land and water
- Lowering of property values
- The Glenn Highway is a Scenic Byway
- Threat to migratory and breeding birds
- How the redesign of the Glenn Highway will affect this site

- Rising water level of Canoe Lake due to dam breach
- Concerns about asbestos being dumped at this site
- Concerns about lead based paint, mercury and heavy metals deposited in the monofill
- Too close to residential area

18. The monofill will be unlined.

19. Materials brought to the site will not be deposited on an impermeable surface that will contain any prohibited and/or contaminated materials.

20. No system is proposed to capture, treat, or monitor leachate leaving the site.

21. Alaska Department of Environmental Conservation (ADEC) regulations state that an unlined landfill may not be located closer than 10 feet above the highest measured level of an aquifer of resource value unless the landfill is constructed two feet or more above the natural ground surface (18 AAC 60.217).

22. The applicant has not addressed how they will monitor or manage the seasonal high water table fluctuations to ensure that the bottom of the monofill is not annually saturated by groundwater.

23. Soils in the area of the monofill site are very porous, loose gravels and glacial loess, and offer little or no filtering capacity for fluids being emitted or drained from the fill. Without a liner, a ten foot separation is not sufficient to prevent leachate from reaching the water table increasing the risk of potential contamination of the water resources in the area.

24. Contaminants typically found in groundwater surrounding construction and demolition landfills include cadmium, lead, iron, manganese, several chlorinated volatile organic compounds, sulfate, hydrogen sulfide, and TDS (Total Dissolved Solids). Chromium and arsenic are found if chrominated copper arsenate-treated wood is disposed in the landfill.

25. The site appears to be up gradient of the groundwater flow direction from private drinking water wells. Without a Fate and Transport Model for compounds of concern to evaluate the risk posed by the proposed monofill to down gradient wells, there is no way to evaluate if these compounds will reach the drinking water wells at concentrations posing risk to health.

26. Baseline data for water quality has not been provided.

27. Seasonal water table elevation fluctuations have not been established.

28. The top of the completed monofill drops 40 feet from one end to the other. The run-off from this slope could pose problems with the dredge ponds at the base of the monofill causing problems with the aquifer.

29. Migratory birds, especially waterfowl, are attracted to the ponds already on the site. Material used as daily cover includes material potentially hazardous to birds if ingested.

30. This site is less than one mile from the Palmer Hay Flats Refuge, which is the major migratory bird refuge in Southcentral Alaska.

31. It is not possible to set conditions to adequately protect the groundwater and aquifer from anticipated negative effects of the monofill. The stormwater management proposed by the applicant will maximize the volume of water infiltrating the monofill. This infiltrating meltwater and rainfall will percolate through the placed materials, enter the groundwater and a large unconfined aquifer. The leachate from the construction and debris monofill may contain compounds at concentrations above drinking water standards. That water will impact private and public water wells used by homes, neighborhoods and farms, and could also enter nearby lakes that are heavily used. Adequate baseline water quality data monitoring to establish the quality of the existing water, the level of the groundwater throughout the monofill site, and the porosity of the materials under the monofill, has not been provided.

32. The proposed monofill will be harmful to the public health, safety, convenience, and welfare (17.60.100(B)(2)).

33. The site plan depicts the proposed structures in compliance with setback requirements.

34. The application minimally addresses the impacts of the climate, geology, hydrology and geography of the site and the impacts to surrounding land uses.

35. According to documentation and studies the proposed monofill site is located where the topography, geology, hydrology and soil are inadequate for protection of ground and surface water quality.

36. The conditional use does not fulfill all other requirements of this chapter (17.60.100(B)(4)).

37. The berm adjacent to the Glenn Highway will have to extend in height in order to obscure the view of the monofill from the highway.

BE IT FUTHER RESOLVED that this is a final determination which may be appealed in accordance with MSB 15.39.140 by filing a written notice of appeal with the Borough Clerk within 21 days from the date this determination was issued. If an appeal is not filed as described in the preceding sentence, the right to appeal is forfeited.

ADOPTED by the Matanuska-Susitna Borough Planning Commission this 17th day of June, 2013.

JOHN KLAPPERICH, Chair

ATTEST:

MARY BRODIGAN, Planning Clerk

(SEAL)

YES: Endle, Healy, Klapperich, Walden, and Rauchenstein

NO: Haller

Susan Lee

From: Silvertip Design [silvertip.design@gmail.com]
Sent: Wednesday, October 22, 2014 2:02 PM
To: Susan Lee
Subject: Please STOP the Monofill Project

To Whom it may concern,
I am against the proposed Monofill. The highway does not need the additional large truck traffic on a stretch of road that is already congested. This is a state thoroughfare depended on by heavy commuter traffic as well as tourists in the summer months. Why would anyone consider adding additional heavy truck traffic, pulling on and off the highway, to such an import transportation route. POOR LOCATION.
Thank you,
Ron Richards

--
Silvertip Design
421 S. Alaska St.
Palmer, Alaska 99645
(907) 745-2902

Susan Lee

From: JoAnn Franks [galeryak@ak.net]
Sent: Wednesday, October 22, 2014 1:55 PM
To: Susan Lee
Subject: MONOFILL

I am writing about the monfil project just off the Glenn Highway – behind the gun club. I live in Mt View Subdivision and we share a community well. Our water depth is very shallow and contamination of the water basin is a huge concern to all of us. Can this company guarantee clean water? Also, what will happen if the water is contaminated ? Another concern is appearances – this is a dump that people will see from the highway – is this the way we want to present the most beautiful spot in Alaska? When is there going to be an meeting about this ? I want to put it on my calendar – Thanks for reading this.....

Jo Ann Franks, Owner
The Gallery
1150 S. Colony Way
in the Key Bank Plaza
Palmer, AK 99645

Phone: (907) 745-1420
Fax: (907) 745-3311
Website: www.galleryak.com

If you no longer wish to receive email from us, please reply and put REMOVE ME in the subject line.

Susan Lee

From: newliver04@yahoo.com
Sent: Wednesday, October 22, 2014 11:57 AM
To: Susan Lee
Subject: Toxic Waste dump/ monofil

I live in the Mountain View Estates subdivision not far from the proposed proposed toxic waste dump/ monofil. I oppose the borough granting a permit for this facility as toxins will get into the water table sooner or later,our strong winds will carry debris onto private property and also degrade our air quality. Additionally, the dump will be an eye sore to all who drive to Palmer on the Glenn Highway. As a member of the tax paying public, I strongly request and advise the MSB to hold well advertised public meetings prior to action on this proposed dump. Any other action is irresponsible and not in the public interest. Thank you.
David A. Jenkins

Sent from my iPad

Susan Lee

From: Tim Harris [timh012964@gmail.com]
Sent: Wednesday, October 22, 2014 11:06 AM
To: Susan Lee
Subject: Public Comment - CMS Monofill in Palmer

I strongly urge the Borough Planning Commission to deny any type of permit to Central Monofill Services that creates a dump on parcels 17N02E18C010 and 17N02E19B006 within Township 17 North,, Range 2 East, Sections 18 and 19, Seward Meridian.

The findings of fact and conclusions of law stated in Matanuska-Susitna Borough Planning Commission Resolution 13-30 should be more than enough reason to again deny this permit. Add to that the three citations issued to CMS for failing to comply with a cleanup order, dumping trash that created a public nuisance, and operating a junkyard without a permit.

There is compelling reason to deny this permit. Being a resident of Palmer, I do not want this unsightly development, that could very possibly contaminate lakes and aquifers, and most assuredly have blown trash littering neighborhoods and streets, permitted to move forward.

Thank you.

Timothy P. Harris
1105 E. Hidden Ranch Circle
Palmer, AK 99645
907-351-1140

Matanuska-Susitna Borough
Planning & Land Use Department
Development Services Division
350 East Dahlia Avenue
Palmer, Alaska 99645

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JOHNSON BRADLEY T
PO BOX 2901
PALMER, AK 99645-2901

FIRST CLASS MAIL

Matanuska - Susitna Borough
Development Services
OCT 22 2014
RECEIVED

The Matanuska-Susitna Borough Planning Commission will consider the following:

Application or Item: *Application for a conditional use permit for the operation of a monofill for the disposal of inert material*

Matanuska-Susitna Borough Code Section: MSB 17.60 – Conditional Uses

Applicant: Central Monofill Services 99645#2901 B039

Request: *An application has been submitted for the operation of a monofill for the disposal of inert material. The inert debris will primarily be non-hazardous shredded residual, non-recyclable waste material from construction and demolition waste. Regulation Asbestos Containing Material (RACM) and Non-RACM will also be accepted at the monofill site.*

Location: MSB Tax Parcel# 17N02E18C010 (2840 S. Glenn Hwy.) and 17N02E19B006 (2560 S. Glenn Hwy.); within Township 17 North, Range 2 East, Sections 18 & 19, Seward Meridian.

The Planning Commission will conduct a public hearing in the Borough Assembly Chambers, Palmer, Alaska, on this item on ***December 1, 2014***. The meeting begins at 6:00 p.m. ***Public hearings begin at 6:15 p.m.*** This may be the only presentation of this item before the Planning Commission and you are invited to attend.

This conditional use permit application will be introduced for public hearing at the **November 3, 2014** Planning Commission meeting. The Planning Commission members may submit questions to the Planning Commission Clerk concerning the matter or request for more information from the applicant at the time of the introduction. All questions and requests submitted by the Commission shall be in writing and copies will be provided to the applicant and made available to all interested parties and the public upon request. Answers to questions and additional material requests will be addressed in the staff report for the public hearing.

Commission members may not receive or engage in ex-parte contact with the applicant, other parties interested in the application, or members of the public concerning the application or issues presented in the application.

Application material may be viewed on-line at www.matsugov.us and clicking on 'Public Notices'. Application material may also be reviewed in the Borough Permit Center. If you have any questions or, would like to send us comments, concerning the proposed action, this form may be used for your convenience by filling in the information below and mailing it to the Matanuska-Susitna Borough, Development Services Division, Planning Department, 350 East Dahlia, Palmer, Alaska 99645. You may fax comments to 861-7876 or e-mail to *slee@matsugov.us*. For additional information please contact Susan Lee, Planner II, at 861-7862. Comments received by ***5 p.m., October 31, 2014*** will be included in the Planning Commission packet for the Commissioner's review and information. Please be advised that comments received from the public after that date will not be included in the staff report to the Planning Commission but will be provided as hand-outs to the Commission. If there is not enough room below, please attach this sheet to another piece of paper. **In order to be eligible to file an appeal from a decision of the Planning Commission, a person must be designated an *interested party*. See MSB 15.39.010 for definition of *"Interested Party"*. The procedures governing appeals to the Board of Adjustment and Appeals are contained in MSB 15.39.010-250, which is available on the Borough internet home page, (http://www.matsugov.us), in the Borough Clerk's office, or at various libraries within the borough.**

Name: BRADLEY T. JOHNSON ***Address:*** PO BOX 2901 PALMER AK. 99645

Location/Legal Description of your property: 1900 S. LOWE RD. TARA DELLS SUB.

Comments: THE LAKES/PONDS IN PARCELS B6&C10 ARE DIRECTLY CONNECTED TO THE SURROUNDING LAKES AND AQUIFER. THE REQUEST FROM CMS DOES NOT SAY ABSOLUTELY NO HAZARDOUS MATERIALS. RISKY. I AM ALSO CONCERNED ABOUT NOISE POLLUTION AND THE VISUAL ASTHETICS OF A DUMP. ICK. THIS WILL CERTAINLY NOT RAISE SURROUNDING PROPERTY VALUES, LEADING TO FINANCIAL LOSS. WHAT HAPPENS YEARS FROM NOW? *Note: Vicinity Map Located on Reverse Side* LAWSUITS GALORE! PERHAPS CMS SHOULD CONSIDER USING THE BOROUGH LANDFILL.

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Matanuska-Susitna Borough
Planning & Land Use Department
Development Services Division
350 East Dahlia Avenue
Palmer, Alaska 99645

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KEPLER INC
1251 S JEWEL ST
PALMER, AK 99645

112

Matanuska - Susitna Borough
Development Services

OCT 22 2014

Received

FIRST CLASS MAIL

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Applicant: Central Monofill S~~[illegible]~~ 9033 H007

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Name: Chris Kepler ***Address:*** 1251 S Jewel St Palmer, AK 99645

Location/Legal Description of your property: 17N1E Sec 24 B7, 8, 14

Comments: The Kepler family owns part of Kepler Lake, Bradley Lake, and Echo Lake. We own all of Harriet Lake. The water level has gone up a foot plus in the last couple of years. This last winter was one of the driest on record and the water level continued to go up. Kepler Park is flooding. You can not take a boat under the bridge and the pizza sites and boat launch areas are diminishing in size. Our water level is a function of what goes on in the gravel pits. The trees along the edge of the water provide wildlife. (I have pictures Enclosed.)

Note: *Vicinity Map Located on Reverse Side*

Kepler Park Flooding
10/17/2014

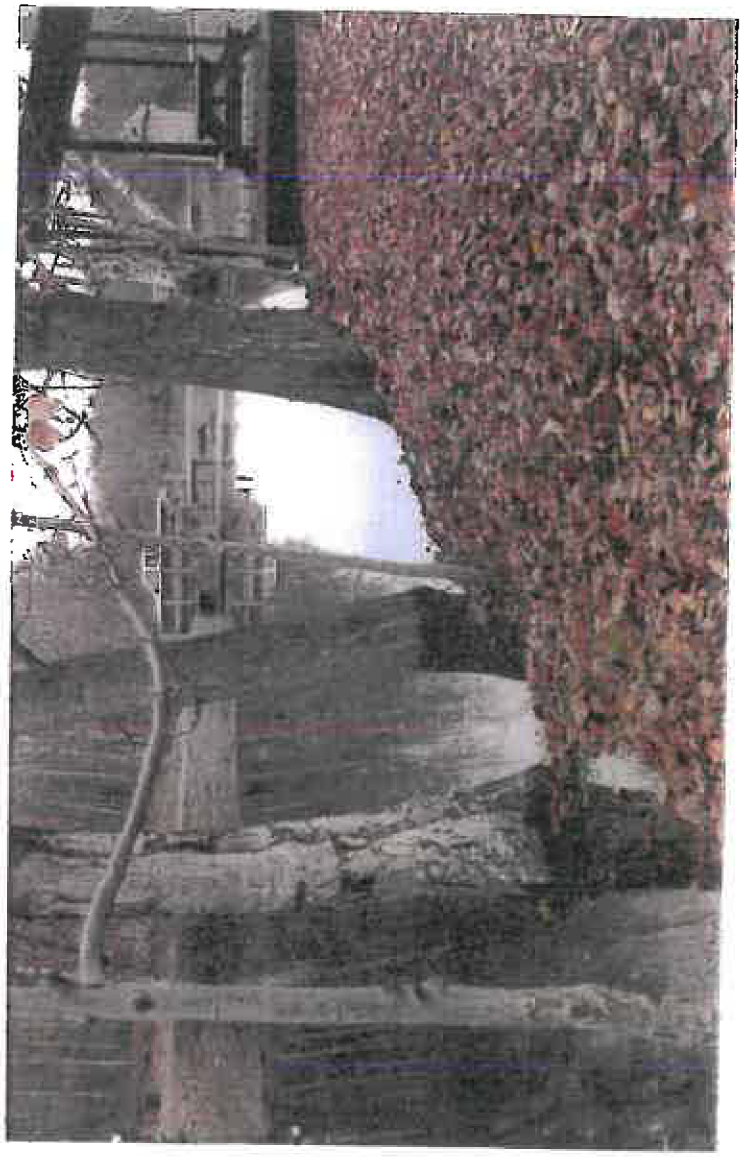
Kepler Park office

Large cottonwood trees are in water

10/17/201

Cottonwood; Birch in water.

10/17/14



10/17/16 #1

New trees in water

Boat launching beach is
1/2 of what it was. - width.
10/17/14

Campsite 8 is 1/2 gone
& big trees in water

10/17/14

Big trees in water

10/17/14

Big trees in water

10/17/14

Boat launch area is half as wide as it was

10/17/14

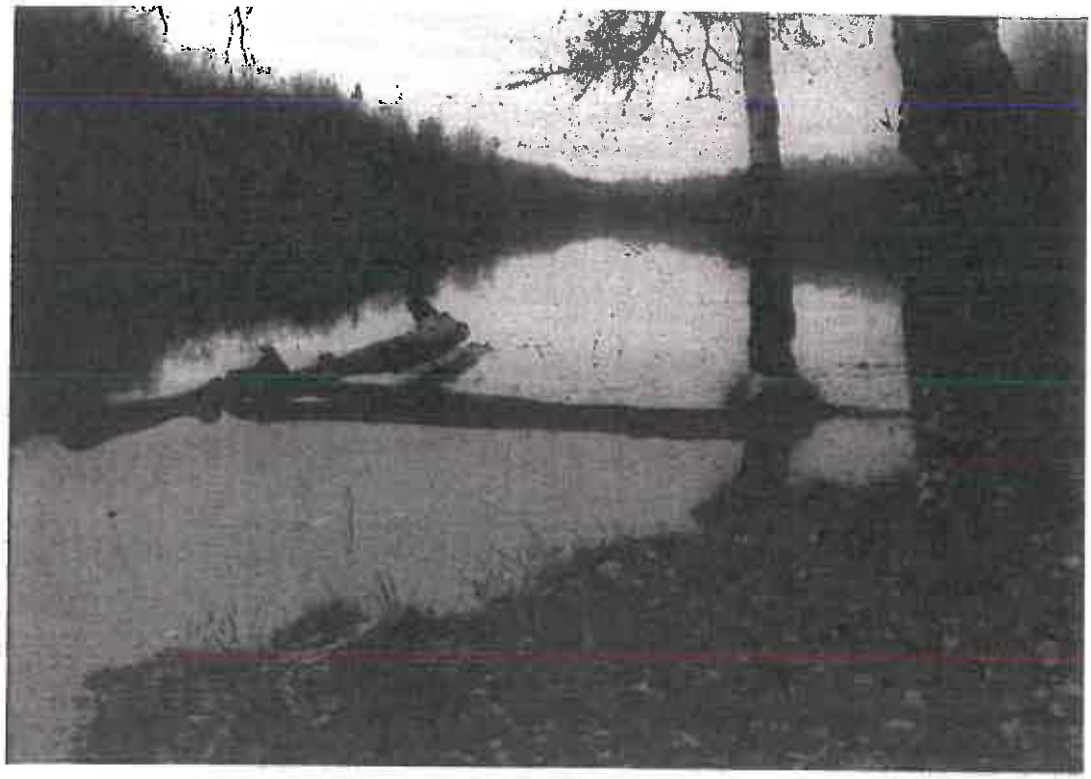
Large birch is undermined by water. I used to be dry.

10/17/14

Dead log used to be @ the edge of the bank. Small log is used as a ramp.

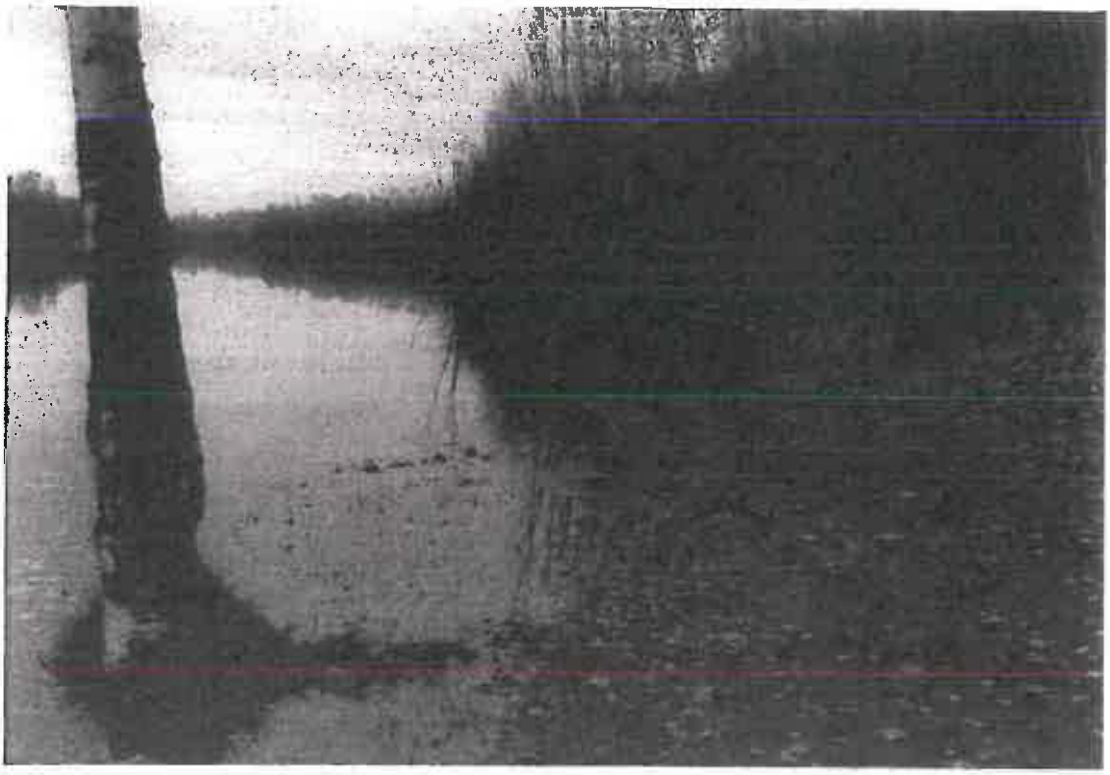
Camp site 9 is 1/2 gone & grass area is flooded.

10/17/14



Dead log used to be at the banks edge.

10/17/14



Site 10 - the favorite site —
is 3/4 gone and trail in
the middle is under water

10/17/14

K7288E43150 29 K7R

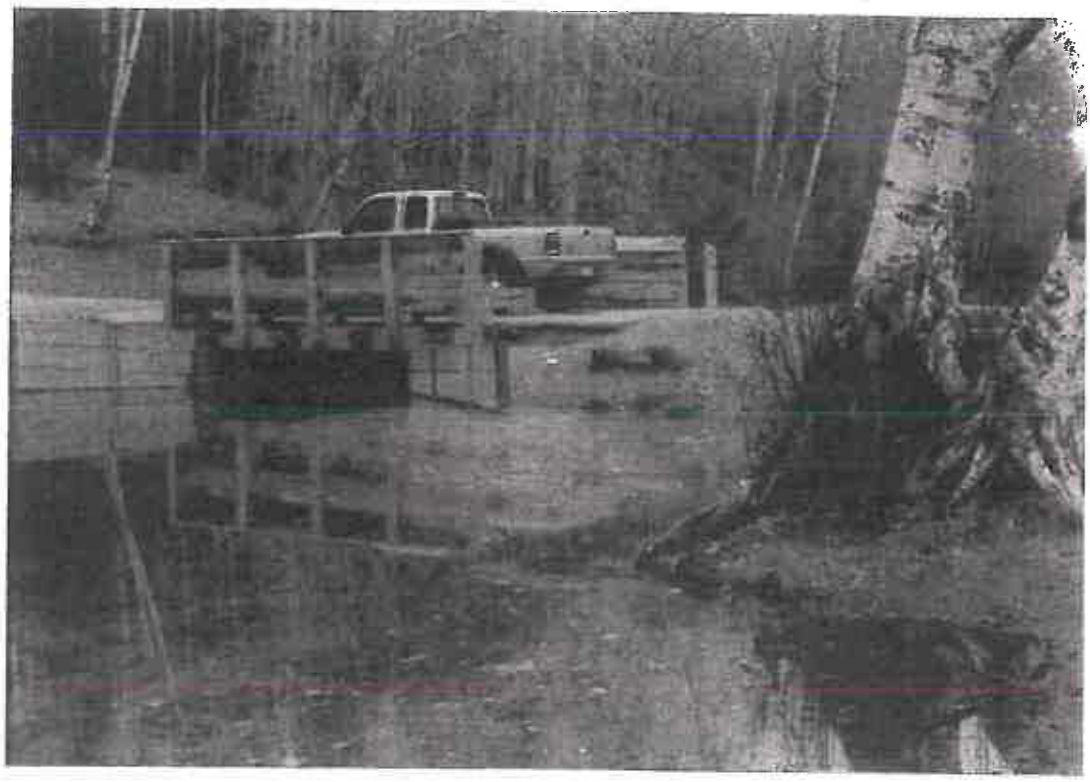
This tree has always been dry.

10/17/14

2289543185D 22

Bridge clearance - we used to sit up in a boat and were able to row under the bridge -

10/17/14

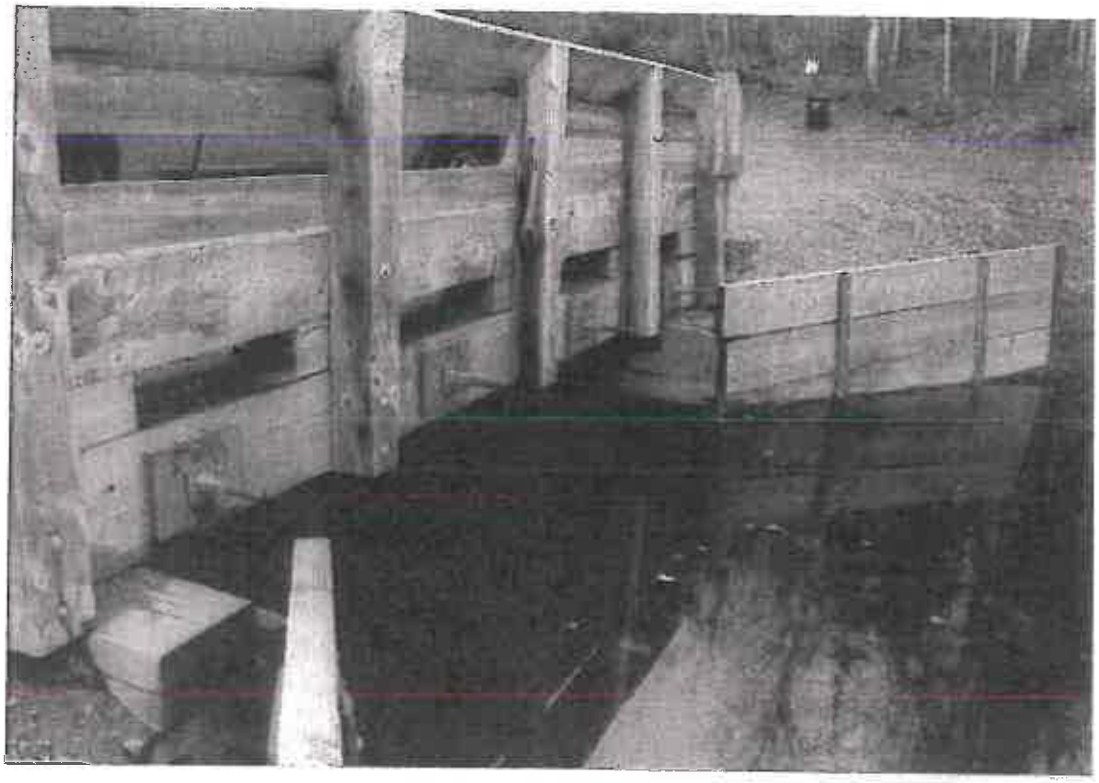


Matsu Borough owns this bridge. It is on Kepler Drive ROW.

10/17/14

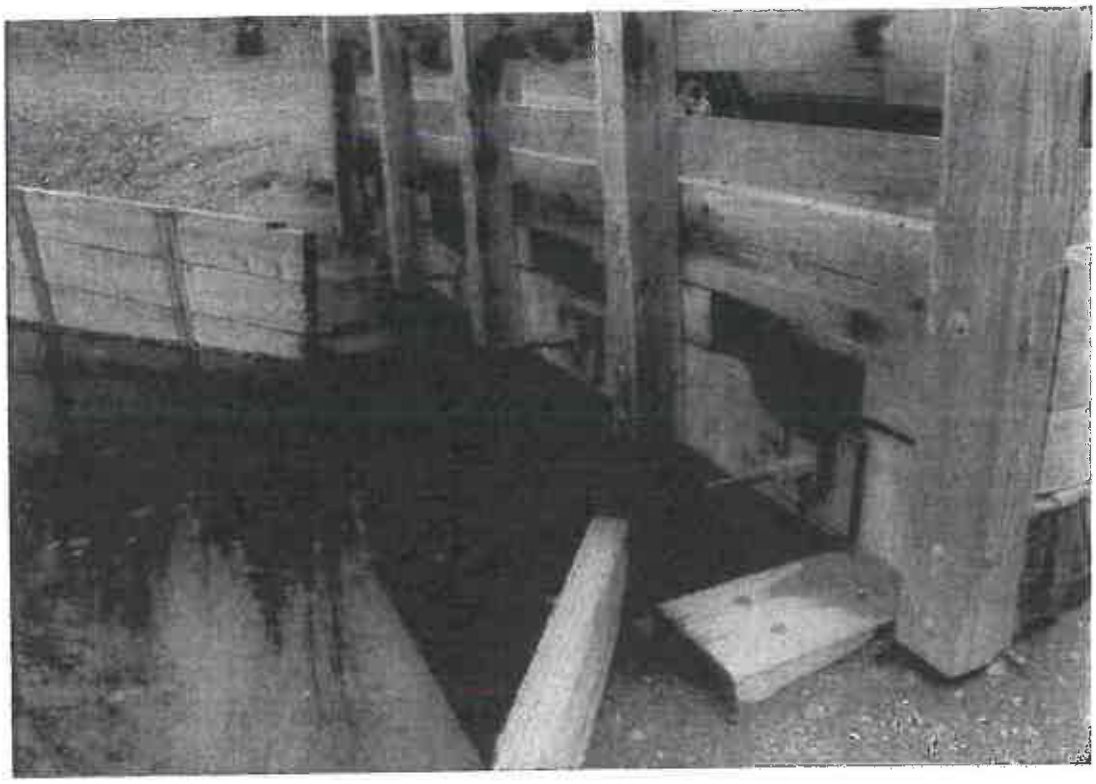
Bradley Lake side

10/17/14

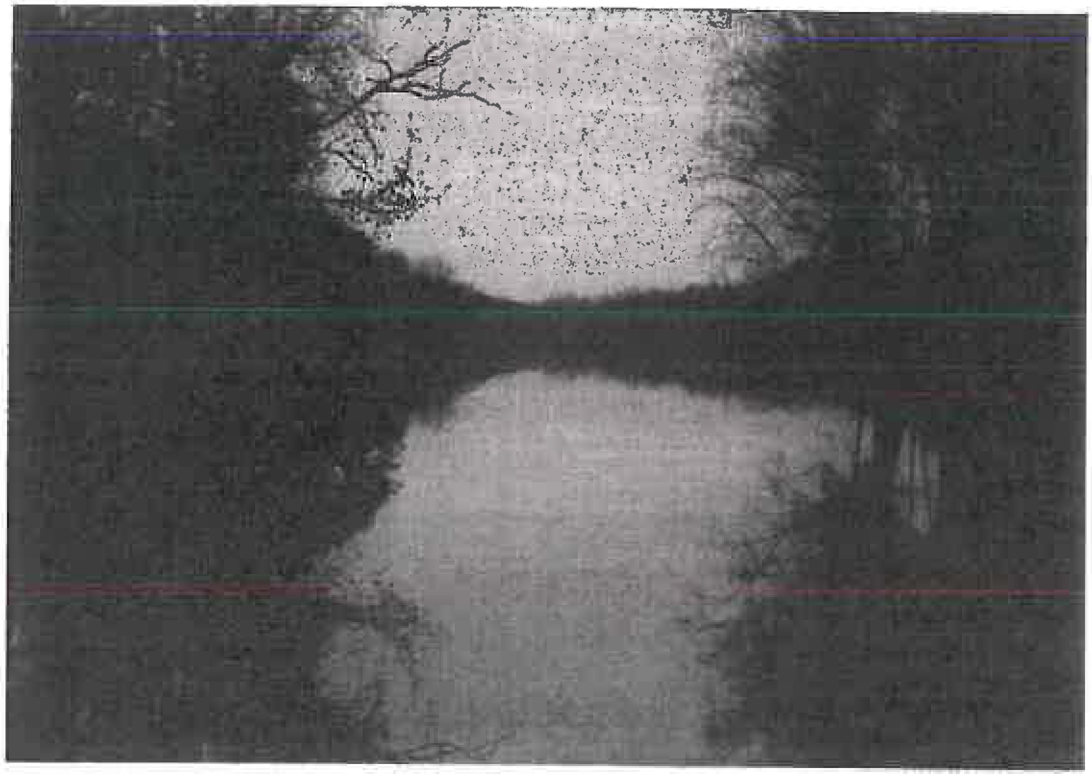


Can not get a boat under the bridge

10/17/14



10/17/14



Channel between Kepler Lake and Bradley Lake is 50% wider ~~that~~ than it has been. 10/17/14

Gravelpit lakes

K7A28954431

10/17/14

Gravel Pit lakes 10/17/14
and proposed dump site.

Gravel Pit lakes

K7A028954

10/17/14

Gravel Pit Lakes

Proposed Recycle Dump Area to the right.

10/17/14

K702895431850 3.7.X

Proposed dump site 10/17/14

8162895443181

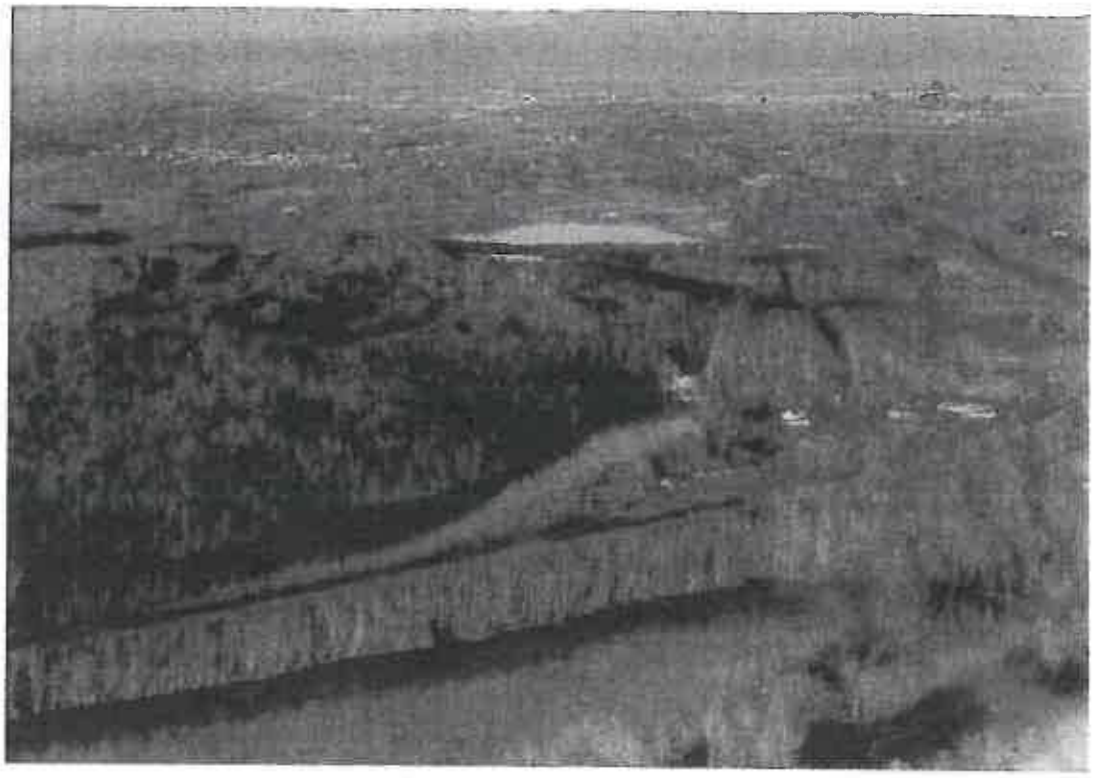
Proposed dump site 10/17/14

2128954431

Gravel pit lakes
and dump site

10/17/14

74288954431F



Gravel Pit Lakes in the back.
Proposed dump site in middle.
Bradley Lake & Echo Lake
in the foreground. 10/17/14

Kyle Park & Lakes

10/17/14

K7A2895443185A 15

Echo Lake

K7A2895

10/17/14

Kepler Park
Kepler Lake
Echo Lake

10/17/14

Kepler Park

10/17/14

Victor Lake
Kepler Lake
Echo Lake

10/17/14

Kepler Lake
Bradley Lake
Echo Lake

Kepler Park
10/17/14

New gravel pit activity
& Long Lake

10/17/14

New gravel pit activity on back side near Long Lake.

10/17/14

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Susan Lee

From: Hensen, Jeremy [Jeremy@accl.asrc.com]
Sent: Wednesday, October 22, 2014 8:10 AM
To: Susan Lee
Subject: Please support the Central Monofill Services Conditional Use Permit

Susan Lee

From: Lainie [lainies@mtaonline.net]
Sent: Tuesday, October 21, 2014 3:26 PM
To: Susan Lee
Cc: LAINIE
Subject: Response to Central Monofill Application

I am writing in response to the Central Monofill Application.

I live in the Kepler Bradley Lakes area, a pristine Matanuska Valley location surrounded by recreational and private lakes abundant with wildlife. It is also home to many of my dear neighbors.

I DO NOT want Central Monofill in my "back yard."

I do not want non-recyclable construction materials, asbestos, demolition waste, shredded residual waste, nor any other hazardous and non-hazardous waste dumped in my "back yard."

I do not want hazardous and non-hazardous residuals leaching into my water well, and recreational waters. The health risks are too great.

I do not want noise pollution caused by machinery and the many vehicles traveling in and out of Central Monofill, nor debris strewn across the landscape.

What I DO want is that my family live without fear of serious health problems caused by Central Monofill.

The Mat-Su Convention and Visitors Bureau recently celebrated the land purchase for a new Gateway Visitor Center, located at Mile 36, Glenn Highway, on June 6, 2014. The Center will provide shopping, sightseeing, and recreational use information to Alaska residents and tourists. It will boost our economy. This major project is to protect the scenic qualities along the ENTIRE length of the Glenn Highway, and that includes subject parcels 17N02E18C010 and 17N02E19B006.

To approve the Central Monofill application will bring a whole new meaning to "Valley Trash."

Please, for the health and peace of mind of Valley residents, and in preserving our scenic natural beauty, DO NOT approve the Central Monofill application.

I will be attending the public hearings on November 3, and December 1, 2014.

Respectfully submitted,

Elaine (Lainie) Karisko
2200 S Killarney Dr.
Palmer, Alaska 99645

Susan Lee

From: Marvella Webster [mwebster@ccsalaska.org]
Sent: Wednesday, October 22, 2014 5:18 AM
To: Susan Lee
Subject: Toxic Dumping

Since we live in the area, we feel that there should be no private toxic wast dumps in this area. Our children fish all year on the lakes in this area. The Kepler-Bradley Lake system is one that families need to continue to enjoy for years to come. As protectors of the land we need to make sure that what we give vote to now is a good thing, not a passing fancy that will satisfy us for a few years, but turn around and be harmful for our children and grandchildren.
There is space in Alaska for a toxic dump to operate safely. It may appear to be more costly to companies and taxpayers at the moment, but in the future it will be money well spent.

Illegal dumping of toxic and non-toxic dumping is a problem in the valley and it must be brought to the attention of all. The brough must stop this permit that has been "tentatively approved" by the DEC. We as the residents need to know that our borough government is doing all in thier power to keep our lands, water and people protected from this unhealthy dump site.

--

Marvella Webster
Center Coordinator
mwebster@ccsalaska.org

2100 E Foundry Way Wasilla Alaska 99654
Phone: (907) 373-7795 Fax: (907) 373-0752

Making a difference in the lives and families
of young children within our communities

Susan Lee

From: James Farr [jamesfarr99520@gmail.com]
Sent: Wednesday, October 22, 2014 7:56 AM
To: Susan Lee
Subject: CRS Monofill

I support the CRS monofill.

Thanks

James Farr
PO Box 201839
Anchorage AK 99520

Susan Lee

From: ESTHER REEM [Esther.REEM@matsuk12.us]
Sent: Tuesday, October 21, 2014 10:25 AM
To: Susan Lee
Subject: dump site

To whom it may concern,

I am writing this letter against having a dump site in my neighborhood and in the town of Palmer. I live in Crimsonview subdivision and I am concerned about the dangers this dumping site could cause the homeowners that live within this dumping site. Please reconsider this area for a dumping site!

Thank you,
Esther Reem

Disclaimer Notice: This email and any attachments to it may be confidential and are intended solely for the use of the individual to whom it is addressed. Any views or opinions expressed are solely those of the author and do not necessarily represent those of the **Matanuska-Susitna Borough School District.** If you are not an intended recipient for this email, you are hereby notified that this is not a waiver of confidentiality and that you must not take any action based upon its contents, and any dissemination, distribution, or copying of this information is strictly prohibited.

If you believe you have received this information in error, please notify the sender immediately by reply email and immediately delete this message from your system.

Susan Lee

From: Dorothy Durfee [aksnoball@gci.net]
Sent: Tuesday, October 21, 2014 11:15 AM
To: Susan Lee
Subject: Stop Private Dumps!

Hi,
DO NOT issue a permit to CMS for a private dump. This case is a good example of why the Borough needs to tighten their dumping code!

Please publicize the names of the assemblymen who vote to issue a permit, so we know who **NOT** to vote for in future elections!

Thank you for giving me the opportunity to voice my opinion,
Dorothy Durfee

This email is free from viruses and malware because avast! Antivirus protection is active.

Susan Lee

From: Dorothy Durfee [aksnoball@gci.net]
Sent: Tuesday, October 21, 2014 11:28 AM
To: Susan Lee
Subject: Stop Private Dumps

Hi,
Do not issue a permit or allow CMS to make the Borough a private dumping ground.

John Durfee

This email is free from viruses and malware because avast! Antivirus protection is active.

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Susan Lee

From: Gilley [dgilley@gci.net]
Sent: Tuesday, October 21, 2014 1:02 AM
To: Susan Lee
Subject: Dump

It never ceases to amaze me that it is the year 2014 and yet we have people who are suppose to be representing and enforcing the laws of the land that think we are in the old west and it's the 1800's. That want to relive the era when immigrants in this country were brought over and forced to work for meager wages or none and were shot if they stepped out of line. We hear how the land was stolen from the native people in the old west so the rich rancher could expand his holdings and make life better for those of us that toed the line, kept their mouth shut and allowed a hand full of degenerates to take over the country and do what ever they dam well pleased. Wait that's a movie or is it.

Today 2014 we are facing that mentally. Not any more sophisticated than the 1800, just a little more so called political correct, at least that is what you would have us believe and you know how stupid and dump the American people are.

You are suppose to be our friends, our neighbors, but you act more like the cattle barons of the old west, except this time it is still land that you want. Land that you want to ruin and pollute for whatever you think your cattle baron wants to take.

The idea of a dump of this nature that the bough and our so called representatives want allow at the convenient site for the master who will reward you with what you think is good money and will leave us with our own private toxic environment in years to come. Iam a little familiar with these harmless dumps scattered throughout the old military bases in Alaska and believe me they turned out to not be clean and non-toxic as they were thought to be. MONEY was the reason that the land out there is/was an environmental nightmare. We are talking just harmless building products, asbestos, paints, old furniture and brand new furniture, you know the harmless types of products that are perfectly safe until bury them into the ground or burn them, well I hope you people are bright enough to understand what I am saying.

I am not against progress or the development of new resource. I think that people who think the idea of the coal production is a killer, but the glacial silt we breath and shovel out of the house after a good wind is not harmful, but I know that we can not fight mother nature. Introducing products that will have a deadly effect on the community over an extended period of time, we can fight. I am sure that some one in Borough must realize that we have 25,260 sq. miles here, so why take an residential area and allow it to be ruined, this is not an "not in my back yard" protest, because I do not want it in anyone's else's back yard.

I am not against a dump away from living area or potential new living areas so some cattle baron can collect his money at the least expense or the easiest convenience for his company. You are willing to take what ever meager money these people going to offer you to ruin the lives of the young people who will be raised under these circumstances and in the name of it's the interest to the borough. We have enough stupid people now.

You folks can try to call it a low impact dump, I know better because I have been on enough clean up jobs in the bush and Aleutians to know better. I just can not believe the EPA would allow this site unless they were/are given incorrect facts. I ask you to send this outfit down to a site that exist and charge their customers more to transport it, just like I have to do every time I go into any store and prices have increased almost daily because of transportation cost and you will still get your tariff . Thank you for taking my comments and hope to meet the group who will be making the decision

David Gilley

1440 Vermillon Dr.

Palmer

Matanuska-Susitna Borough
Planning & Land Use Department
Development Services Division
350 East Dahlia Avenue
Palmer, Alaska 99645

Matanuska-Susitna Borough

OCT 17 2014

RECEIVED

FIRST CLASS MAIL PITNEY BOWES

53009B01L002 159
QUANTICK WM F & TONI D
PO BOX 3001
PALMER, AK 99645

Matanuska - Susitna Borough
Development Services

OCT 20 2014

RECEIVED

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Matanuska-Susitna Borough Code Section: MSB 17.60 – Conditional Uses

Applicant: Central Monofill Services PO BOX 3001 PALMER AK 99645 B040

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Name: William Quantick ***Address:*** P.O. Box 3001 Palmer, AK 99645

Location/Legal Description of your property: CANOE LK Block 1 Lot 2

Comments: See Attached.

Note: Vicinity Map Located on Reverse Side

TO: Matanuska-Susitna Borough
Planning & land Use Dept.
RE: Concerns regarding proposed Monofill

Matanuska - Susitna Borough
Development Services
OCT 20 2014
RECEIVED

SUMMARY: The proposed monofill activity poses a significant threat to public heath from materials blowing off site and to water quality, including drinking water, from toxic chemicals leaching out of the proposed monofill material. These threats have not been adequately considered by the state, and there is a lack of coordination among agencies in responding to concerns.

There is a long history of trouble controlling water on this property. There is an exposed open aquifer, and considerable evidence, including hydrological studies, showing that activities on the gravel pit property affect the lake levels in at least Canoe, Irene, and Bradley lakes and concern that this may also affect area wells. In addition, water flows off this property to the southwest into wetlands in the Palmer Hayflats Refuge. Water from the gravel pit has caused documented flood damage to at least one homeowner across the Glenn Highway. Central Recycling Services has already had trouble controlling water on the property with dumped material contaminating a small pond, leading to citations from the Mat-Su Borough. Photographs continue to document water on the surface of the property where they want to dump. This despite company officials testimony to the contrary about the water.

Central Recycling Services has shown little ability to regulate themselves and little regard to date for the public concerns or government enforcement actions.

REQUESTED ACTIONS:

-- Ask the state Department of Environmental Conservation to reopen the monofill permit process because of inadequate public process.

DEC approved the permit for the monofill without any public input because the public notice was so inadequate that no one knew about it. As a result, potential Impacts to water quality, including drinking water, and other concerns were not adequately considered.

-- Ask the state Department of Environmental Conservation for a coordinated response to this property to protect the aquifer.

There are multiple agencies and even different divisions within DEC and DNR involved. But none seem to think they have jurisdiction for the impacts this property has on lake levels and potentially our drinking wells. This includes DEC's Solid Waste Division, and Surface Groundwater Section. It also includes DNR's Division of Mining, Land & Water's Dam Safety Office, Division of Water Resources, and Alaska Hydrological Survey. Other state agencies could be involved including Fish and Game and State Parks, but it's unclear whether they have been consulted.

-- Ask DNR to do a more thorough hydrological study of this area as was proposed in this year's state budget, and in the meantime consider adding stipulations to the property to protect the exposed open aquifer that feeds the area lakes and possible drinking water wells.

In a Jan. 13, 2010 letter to Mat-Su Borough code compliance division, Granite Construction Manager Trevor Edmondson acknowledged the company had dredged in the aquifer that feeds at least Canoe, Irene and Bradley lakes and possibly our drinking water wells.

-- Ask DNR to review whether existing reclamation regulations for gravel pits under Alaska Statute 27.19 have been enforced.

Granite in 2009 told the Mat-Su Borough they were done mining the property. No reclamation appears to have taken place. The new property owners have said they will not need to do reclamation unless they gravel the property.

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– Ask state officials to require Central Recycling Services to release the hydrological information they have on the property, including from 20 water monitoring wells then owner Granite Construction monitored dating back to at least 2009.
In a Jan. 13, 2010 letter to the Mat-Su Borough code compliance division, Granite general manager Trevor Edmondson refused to release the data, claiming it could be "misconstrued."

Ask DNR to review their decision to deregulate the dam between the two gravel pit ponds that includes the aquifer the feeds area lakes.
The application was approved in 2012 without considering the impact on the area lakes, and potentially drinking water. Granite Construction in their application did not cite the impact on the surrounding lakes even though they knew about it.

Create a committee to study a long-term solution to protecting the exposed aquifer on this property.
This could include a possible private-public partnership to purchase the property to make it part of the Crevasse Moraine – Kepler Bradley State Park greenbelt area. The City of Palmer could consider using the aquifer as a drinking water supply source, as it is reportedly much less mineralized than their current source.

Matanuska-Susitna Borough
Planning & Land Use Departm
Development Services Division
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FIRST CLASS MAIL

The Matanuska-Susitna Borough Planning Commission will consider the following:

Application or Item: *Application for a conditional use permit for the operation of a monofill for the disposal of inert material*

Matanuska-Susitna Borough Code Section: MSB 17.60 – Conditional Uses

Applicant: Central Monofill Services 53009B01L002 B040

Request: *An application has been submitted for the operation of a monofill for the disposal of inert material. The inert debris will primarily be non-hazardous shredded residual, non-recyclable waste material from construction and demolition waste. Regulation Asbestos Containing Material (RACM) and Non-RACM will also be accepted at the monofill site.*

Location: MSB Tax Parcel# 17N02E18C010 (2840 S. Glenn Hwy.) and 17N02E19B006 (2560 S. Glenn Hwy.); within Township 17 North, Range 2 East, Sections 18 & 19, Seward Meridian.

The Planning Commission will conduct a public hearing in the Borough Assembly Chambers, Palmer, Alaska, on this item on ***December 1, 2014***. The meeting begins at 6:00 p.m. ***Public hearings begin at 6:15 p.m.*** This may be the only presentation of this item before the Planning Commission and you are invited to attend.

This conditional use permit application will be introduced for public hearing at the **November 3, 2014** Planning Commission meeting. The Planning Commission members may submit questions to the Planning Commission Clerk concerning the matter or request for more information from the applicant at the time of the introduction. All questions and requests submitted by the Commission shall be in writing and copies will be provided to the applicant and made available to all interested parties and the public upon request. Answers to questions and additional material requests will be addressed in the staff report for the public hearing.

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Application material may be viewed on-line at www.matsugov.us and clicking on 'Public Notices'. Application material may also be reviewed in the Borough Permit Center. If you have any questions or, would like to send us comments, concerning the proposed action, this form may be used for your convenience by filling in the information below and mailing it to the Matanuska-Susitna Borough, Development Services Division, Planning Department, 350 East Dahlia, Palmer, Alaska 99645. You may fax comments to 861-7876 or e-mail to *slee@matsugov.us*. For additional information please contact Susan Lee, Planner II, at 861-7862. Comments received by ***5 p.m., October 31, 2014*** will be included in the Planning Commission packet for the Commissioner's review and information. Please be advised that comments received from the public after that date will not be included in the staff report to the Planning Commission but will be provided as hand-outs to the Commission. If there is not enough room below, please attach this sheet to another piece of paper. **In order to be eligible to file an appeal from a decision of the Planning Commission, a person must be designated an *interested party*. See MSB 15.39.010 for definition of *"Interested Party"*. The procedures governing appeals to the Board of Adjustment and Appeals are contained in MSB 15.39.010-250, which is available on the Borough internet home page, (http://www.matsugov.us), in the Borough Clerk's office, or at various libraries within the borough.**

Name: William Quantick *Address:* P.O. BOX 3001 Palmer, AK 99645

Location/Legal Description of your property: CANOE Lake Block1 Lot 2.

Comments: See Attached.

Note: Vicinity Map Located on Reverse Side

May 17, 2013

To - Matanuska Susitna Borough
Planning & Land Use Dept

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From – William Quantick
P.O.Box 3001
Palmer, Alaska 99645
907 360 0682

Re: Public Comment Information on Central Monofill Services

As it states in the Matanuska Susitna Borough Codes

Chapter 17.60: Conditional Uses

17.60.030 – "Permit required:
The following land uses are declared to be potentially damaging to property values and usefulness of adjacent properties, or potentially harmful to the public health, safety and welfare: Junkyards and Refuse Areas"

Property Values – *At the first meeting that was held May 14, 2013 @ Palmer Community Center a question that was asked about the property values. Central Monofill Services (It will be Referred to CMS) responded by saying that the site at the Fair Ground shows no decline in value. But CMS did not take in effect that this site was there prior to the construction of the houses. The areas that will be affected are homeowners who've been living in their homes for 20 to 30 years. – It's a business and I'm aware that its all about the bottom line and so is the investment in my real estate. My suggestion to the board is that CMS do an extensive research to find out how damaging it will be to the surrounding neighborhoods. Why should 2 people have the benefit of improving their lives when it is devaluating others?*

Harmful to the Public Health – *Asbestos, there are 2 ways it can enter the body (this information came from another states Department of Health, no matter where you live, Asbestos is the same). First Inhalation and the second is Ingestion.*

Inhalation - *The concern of it getting air born is always a possibility if they don't follow the proper procedure in transportation. As you know with the winds here in the Valley reaching up to Hurricane Strength. How do we know that they will follow through on their commitment to do the right thing? As I stated at the meeting they already received 3 citations from the Borough and that makes CMS unreliable.*

Ingestion – "The digestive system can be exposed to asbestos from drinking water and mucous cleared from the lungs. A small number of fibers may penetrate the cells that line the digestive system, but only a few will reach the bloodstream. These fibers will be released in the urine."

"The health effects from oral asbestos exposures are unclear. In some areas where residents are exposed to asbestos fibers in **DRINKING WATER**, cancers of the esophagus, stomach, and intestine may be greater concern."

QUESTION - *If CMS is going to be the first to accept Asbestos in the State of Alaska what regulations are in place to protect the residences and do they have the proper training to handle this dangerous item?*

17.60.040 – "Application Procedures:
General. An application to the planning commission for a conditional use or modification of an existing conditional use may be initiated by a property owner or the owner's authorized agent. An application for a conditional use shall be filed with the planning director on a form provided by the planning department."

1) "The application for a conditional use permit shall be accompanied by an a appropriate filing fee as established by the assembly, payable to the borough.

(B) ***Site plan***. A detailed site plan showing the proposed location of all buildings and structures on the site, access points, buffering, drainage, vehicular and pedestrian circulation patterns, parking areas and the specific location of the use or uses to be made of the development shall be submitted with the application."

QUESTION - *How can they submit their plan when the expansion of the Glenn Highway is still being worked out?*

"(C) Action by planning commission.

(1) The planning commission shall hear any interested parties and shall render a decision on the application for a conditional use permit within 30 calendar days from the date of public hearing. In recommending the granting of a conditional use, the planning commission shall state in writing the conditions of approval of the permit, which it finds necessary to carry out the intent of this chapter. These conditions may increase the required lot size, control the location and number of vehicular access points to the property, ***require screening and land filling where necessary to reduce noise and glare, and may require the reclamation of property to a character in keeping with surrounding lands.*** The commission may impose other conditions and safeguards designed to ensure the compatibility of the conditional use with other lawful uses."

QUESTION - *What about the company who sold the property shouldn't they comply with their permit obligations or dose that go away when the property is sold?*

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"17.60.100 - General Standards:
(A) A conditional use may be approved only if it meets with the requirements of this section in addition to any other standards required by this chapter.

(B) In granting a conditional use permit, the planning commission must make the following findings:

****(1) The conditional use will preserve or not detract from the value, character, and integrity of the surrounding area;***

****(2) That granting the conditional use permit will not be harmful to the public health, safety, convenience, and welfare;***

(3) That sufficient setback, lot area, buffers, or other safeguards are being provided to meet the conditions listed in subsections (B)(1) through (3) of this section; and

(4) The conditional use fulfills all other requirements of this chapter pertaining to the conditional use in this section."

QUESTION – *I want to know who will Guarantee our property and Health Values and Expenses?*

17.60.110 – "Junkyards And Refuse Area Standards:
(A) No junkyard or auto wrecking yard shall be established or operated unless the wrecking yard is completely obscured from the view of any traveled or public right-of-way. The permit may require the junkyard or auto wrecking yard not within a building to be contained within a continuous solid fence no less than eight feet in height, if such requirement is necessary to prevent the unsightly display of the yard or for public safety purposes. Fencing may be of one or a combination of the following:

(1) Conventional solid wood or metal fencing;

(2) Evergreen or other natural planting sufficient to provide year-round screening; and

(3) Earthen berm or topography.

(B) In all cases, fencing provided shall be continuous and of sufficient density to provide visual screening required by this chapter on a year-round basis."

QUESTION – *What about the views from the homeowner's windows?*

They were caught *dumping prior to getting their application, they were told to stop all dumping and to remove all debris from the site and they also received 3 citations for these infractions.*

QUESTION – *Was the buried waste removed or are they just planning on paying the fines? How can we trust them to do what they are supposed to do when they already showed their true intentions?*

Other issues

1) The Pond's that were dug by Granite are still not fixed, they are still causing problems on the adjacent lands, just for example the lake level on Canoe Lake is up to 2 – 3 feet and it was found that one of the ponds in the gravel pit breeched the aquifer. Who will be responsible for fixing this?

2) We need to find a happy middle ground, so far to date these gravel pits have created 3 issues. The prison, coal power plant, and now a dumpsite that will accept Asbestos. Is there any way that we can be proactive and to have a land swap to make this land part of the Matanuska Park system?

3) Create New Codes and Standards to regulations for Refuse / Dump areas to include Recycling, Hazmat and general waste.

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Name: William Quantick *Address:* P.O. Box 3001 Palmer, AK 99645

Location/Legal Description of your property: Canoe Ck Blk 1 Lot 2

Comments: See Attached

Note: Vicinity Map Located on Reverse Side

William Quantick
P.O.Box 3001
Palmer, Alaska 99645

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Matanuska-Susitna Borough
Planning & Land Use Dept

" The Mat-Su Borough needs a strong and sustainable economy; which is obtainable through common-sense leadership." With that statement it bring up some of the mistakes the Borough has done in the past that has caused excess of amount spending such as the Ferry. Planning is a very import part of the economic growth, by building the Ferry before a deal to secure dockage was putting tax pay's money at risk and now we are paying the consequence.

"Open for Business" is the mayors statement and we all understand the only way to grow is to develop. But in developing we need to attract the "Right Kind of Business" that will employee more than a hand full of people, Public safety and health and business that require Industrial locations to be placed in Industrial zoned areas.

I would like to bring to your attention to the CMS Monofill that is becoming a major issue for a lot of people. It's not to say we don't want businesses to be developing in the Mat-Su or "Palmer" but the Right Kind of Businesses. I sure your well aware of the all the problems that are occurring and the hard ship on the people who choose to live in Palmer.

CMS is not a partner who I would say is on the "WIN WIN" side of things. Just look at the problems they have started, Anchorage Daily News Reports, "Recycler Sues City Over Disposal Discount for $100,000.00" (ADN 03/ 01/14), In Palmer Court they were found guilty in 6 citations for Illegal Dumping. I've been in business and my rule of thumb, is Strong Business Ethics, Trust, and a "Win Win Partnership." No matter what CMS promises and how they think they will take care of problems that arise, their records show it all.

I took the liberty to do some research to show you that this is a bad deal all based on how much the Borough will lose in taxable income. Taxable income is a vital need to keep the Mat-Su Growing but if you start losing it, where will you find it to make it up, by Raising Taxes? I went to the "Mat-Su Borough Parcel Viewer" to first see how many properties are located with in a one-mile area of CMS property boundaries. From my calculation there are 415 +/- private property owners, some with million dollar homes on them.

My process, I took 5 random properties assessments from each subdivision (Canoe Lake, Crimson View and Sky Ranch). I worked out the loss of income that will generate if this Dump goes through. Based on the assessment tax for these 15 properties the loss will be from $270,126.00 to $675,315.00, not good. And not to mention the other loss of income to the Boroughs own land fill; CMS will be dumping tonnage on their on property to avoid paying it fair share.

You have the power to make the right choice to protect the Gateway of Palmer from the smell of Leaking Decomposing Gas (Same Smell at Highland Facility), Unsightly Trash, Contaminating Drinking Water and to the 415 property owners of Palmer who's hard earned investments that are at stake. None of this would have come to a head if the Borough enforced the "Reclamation clause in the gravel pit agreements."

Sincerely,

William Quantick

Mat Su Borough Loss of Income

5 Random Home's in each of the 3 subdivision located with in 1 mile * of the purposed CMS Dump disposable area.

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Sky Ranch Subdivision Total Assessment				
	Assessment	6% loss **	10% loss **	15% loss***
House 1	$430,600.00	$25,836.00	$43,060.00	$64,590.00
House 2	$390,900.00	$23,454.00	$39,090.00	$58,635.00
House 3	$515,400.00	$30,924.00	$51,540.00	$77,310.00
House 4	$334,700.00	$20,082.00	$33,470.00	$50,205.00
House 5	$369,100.00	$22,146.00	$36,910.00	$55,365.00
Total	$2,040,700.00	$122,442.00	$204,070.00	$306,105.00

Crimson View Total Assessment				
	Assessment	6% loss **	10% loss **	15% loss***
House 1	$215,200.00	$12,912.00	$21,520.00	$32,280.00
House 2	$224,700.00	$13,482.00	$22,470.00	$33,705.00
House 3	$216,900.00	$13,014.00	$21,690.00	$32,535.00
House 4	$221,000.00	$13,260.00	$22,100.00	$33,150.00
House 5	$210,000.00	$12,600.00	$21,000.00	$31,500.00
Total	$1,087,800.00	$65,268.00	$108,780.00	$163,170.00

Canoe Lake Total Assessment				
	Assessment	6% loss **	10% loss **	15% loss***
House 1	$181,000.00	$10,860.00	$18,100.00	$27,150.00
House 2	$242,400.00	$14,544.00	$24,240.00	$36,360.00
House 3	$232,100.00	$13,926.00	$23,210.00	$34,815.00
House 4	$385,500.00	$23,130.00	$38,550.00	$57,825.00
House 5	$332,600.00	$19,956.00	$33,260.00	$49,890.00
Total	$1,373,600.00	$82,416.00	$137,360.00	$206,040.00

All Total	$4,502,100.00			
Loss of taxable Assessment		$270,126.00	$450,210.00	$675,315.00

Note: All figures are from the 2013 Mat-Su Borough Tax Records

There are 415 plus property owners in the 1 mile area. if you take all of these figures and add them together there will be a greater loss of income to the Mat-Su Borough. in addition they are also planning on disposing Asbestos a Hazardous material, which increases the area to two miles out. It will effect more property with additional loss of revenue and at a higher rate.

The Boroughs loss of revenue is one thing but it is far more devastating to the property Owner who will lose 6% to 15% right off the real estate value of their properties.

Additional loss of revenue to the Mat-Su Borough is from its own Land Fill

* State of Alaska Residential Real Property Transfer Disclosure Statement, Pg 5 line 23
** MSN Real Estate Study by AZ Assessor's Office
*** University of CA states if Hazardous waste (Asbestos) is dumped.

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Name: William Quantick *Address:* P.O.Box 3001 Palmer AK 99645

Location/Legal Description of your property: CANOE LK BLK 1 Lot 2

Comments:

Note: Vicinity Map Located on Reverse Side

Hi my name is Bill Quantick and I'm here to voice my concerns about this permit application and will like to state that the idea of recycling is a good plan and also would like to bring to your attention to the Mat Su Borough Codes Under the heading of Conditional Use Chapter 17.60.030

Potentially Damaging to Property Values and Potentially Harmful to public Health, Safety and Welfare: "Junkyards and Refuse Areas."

First I would like to address **Damaging Property Values –**

Central Monofill Services (CMS) - States that **Property Values** will not devalue?

How do they know this?

What kind of research was assigned to this?

Is this part of the application process?

And who will be responsible for my Investment loss if this permit gets approved?

Second

Does asbestos exposure cause health problems?

Breathing it we already know it causes LUNG CANCER and

ME-SO-PTHELIOMA

But there is "The health effects from oral asbestos exposures which are **presently unclear**. But in some areas where residents are exposed to asbestos fibers in DRINKING WATER, cancers of the esophagus, stomach, and intestine may be of greater concern." Something to keep in mind.

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Other issues that I'm unclear of are the **Transportation** - As for the regulated Asbestos are they going to transport according to U.S. EPA Standards?

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The Next Code

17.60.100 - General Standards:

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***(2) That granting the conditional use permit will not be harmful to the public health, safety, convenience, and welfare;

(3) That a sufficient setback, lot area, buffers, or other safeguards are being provided to meet the conditions listed in subsections (B)(1) through (3) of this section; and

(4) The conditional use fulfills all other requirements of this chapter pertaining to the conditional use in this section.

In the mean time they are in the process of applying for their application but were caught dumping, and were told to stop all dumping and to remove all debris from the site.

They also received 3 citations for these infractions.

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My QUESTION to the Borough

Was the waste removed? If not...
What are you going to do about it?
Or are you just going let them pay the fines and reward them with a permit?

The Meaning of
Integrity – Adherence to code of values
Trust – The truth of someone

How can we trust them and believe in their integrity when they already showed their true intentions?

There are other questions
120 acres track they say they will only use 48 acres, what will become of the remain 72 Acers?

They said only 3 to 4 trucks per day but the permit states up to 100 trucks per day?

And who will responsible to repair the rising water in the surrounding lakes?

What to do? Suggestion

Stick to the 2007 Matanuska-Susitna Borough Core Area Comprehensive Plan, which makes this area Educational/Medical/Glenn Parks District

Or

Market it as a residential area Easy 40 min commute to Anchorage, Lake front property, mountain, and Glacier Views.

Thank you,

Matanuska-Susitna Borough
Planning & Land Use Department
Development Services Division
350 East Dahlia Avenue
Palmer, Alaska 99645

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0001364310 OCT. 08. 2014

53009B01L002 159
QUANTICK WM F & TONI D
PO BOX 3001
PALMER, AK 99645

Matanuska - Susitna Borough
Development Services
OCT 20 2014
RECEIVED

FIRST CLASS MAIL

The Matanuska-Susitna Borough Planning Commission will consider the following:

Application or Item: *Application for a conditional use permit for the operation of a monofill for the disposal of inert material*

Matanuska-Susitna Borough Code Section: MSB 17.60 – Conditional Uses

Applicant: Central Monofill Services 53009B01L002 3001 B040

Request: *An application has been submitted for the operation of a monofill for the disposal of inert material. The inert debris will primarily be non-hazardous shredded residual, non-recyclable waste material from construction and demolition waste. Regulation Asbestos Containing Material (RACM) and Non-RACM will also be accepted at the monofill site.*

Location: MSB Tax Parcel# 17N02E18C010 (2840 S. Glenn Hwy.) and 17N02E19B006 (2560 S. Glenn Hwy.); within Township 17 North, Range 2 East, Sections 18 & 19, Seward Meridian.

The Planning Commission will conduct a public hearing in the Borough Assembly Chambers, Palmer, Alaska, on this item on ***December 1, 2014***. The meeting begins at 6:00 p.m. ***Public hearings begin at 6:15 p.m.*** This may be the only presentation of this item before the Planning Commission and you are invited to attend.

This conditional use permit application will be introduced for public hearing at the **November 3, 2014** Planning Commission meeting. The Planning Commission members may submit questions to the Planning Commission Clerk concerning the matter or request for more information from the applicant at the time of the introduction. All questions and requests submitted by the Commission shall be in writing and copies will be provided to the applicant and made available to all interested parties and the public upon request. Answers to questions and additional material requests will be addressed in the staff report for the public hearing.

Commission members may not receive or engage in ex-parte contact with the applicant, other parties interested in the application, or members of the public concerning the application or issues presented in the application.

Application material may be viewed on-line at www.matsugov.us and clicking on 'Public Notices'. Application material may also be reviewed in the Borough Permit Center. If you have any questions or, would like to send us comments, concerning the proposed action, this form may be used for your convenience by filling in the information below and mailing it to the Matanuska-Susitna Borough, Development Services Division, Planning Department, 350 East Dahlia, Palmer, Alaska 99645. You may fax comments to 861-7876 or e-mail to *slee@matsugov.us*. For additional information please contact Susan Lee, Planner II, at 861-7862. Comments received by ***5 p.m., October 31, 2014*** will be included in the Planning Commission packet for the Commissioner's review and information. Please be advised that comments received from the public after that date will not be included in the staff report to the Planning Commission but will be provided as hand-outs to the Commission. If there is not enough room below, please attach this sheet to another piece of paper. **In order to be eligible to file an appeal from a decision of the Planning Commission, a person must be designated an *interested party*. See MSB 15.39.010 for definition of *"Interested Party"*. The procedures governing appeals to the Board of Adjustment and Appeals are contained in MSB 15.39.010-250, which is available on the Borough internet home page, (http://www.matsugov.us), in the Borough Clerk's office, or at various libraries within the borough.**

Name: William Quantick ***Address:*** P.O. Box 3001 Palmer, AK 99645

Location/Legal Description of your property: CANOE LK BLK 1 Lot 2

Comments: See Attached.

Note: Vicinity Map Located on Reverse Side

My name is Bill Quantick
Residence of Canoe Lake Subdivision

Matanuska - Susitna Borough
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Topic – Central Monofill Services

Not sure if you are aware that Central Monofill Services has purchases land from Granite and it is just south of Palmers city limits

Central Monofill Services is in the process of trying to develop a landfill for non-recyclable building material.

This location will be accepting ground up material from construction demolition, which will consist of Sheet Rock, Roof Shingles, Paint, Metal, Pressure Treated Lumber, and Asbestos, just to name a few items. This material is coming from Anchorage and other areas because this location is prime for their needs.

There are issues that need to be address such as

- A Breached Open Aquifer less than 300 yards from the fill site
- Local Community and private Wells
- Rising Lake Levels
- And The Appearance to the Gate Way To Palmer

And the 2 most important issues Health and Property Values

Lets say if the City Of Palmer ever Annex this area they will be having to deal with this Problem, I do hope that you have some influence to see that this greedy project is short lived.

Matanuska-Susitna Borough
Planning & Land Use Department
Development Services Division
350 East Dahlia Avenue
Palmer, Alaska 99645

Matanuska-Susitna Borough
OCT 17 2014
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Applicant: Central Monofill Services PO BOX 3001 PALMER AK 99645-3001 B040

Request: *An application has been submitted for the operation of a monofill for the disposal of inert material. The inert debris will primarily be non-hazardous shredded residual, non-recyclable waste material from construction and demolition waste. Regulation Asbestos Containing Material (RACM) and Non-RACM will also be accepted at the monofill site.*

Location: MSB Tax Parcel# 17N02E18C010 (2840 S. Glenn Hwy.) and 17N02E19B006 (2560 S. Glenn Hwy.); within Township 17 North, Range 2 East, Sections 18 & 19, Seward Meridian.

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Name: Wm Quantick *Address:* P.O. Box 3001 Palmer, AK 99645

Location/Legal Description of your property: Quantick Lk Blk 1 Lot 2

Comments: See Attached

Note: Vicinity Map Located on Reverse Side

Bill Quantick
P.O. Box 3001
Palmer, Alaska 99645
Cell – 907 360 0682 / abxwilliam@aol.com

Matanuska - Susitna Borough
Development Services
OCT 20 2014
RECEIVED

Matanuska Susitna Borough
Planning & Land Use Dept.

I am a resident of the Mat- Su and reside just south of Palmer's city limits by the Grante Gravel Pits. The reason for this letter the gravel pit on the left side as you head north has been sold to Central Monofill Services and they are seeking permission to be come the first State Wide Asbestos dump site. Their plan is to recycle as much of the products they can but in the process there is always the worst of the worst left over.

This group finds this location to be ideal or I should say logistically centrally located. In return they would cut cost on getting this dangerous waste to this location to be profitable.

The concept is good for Alaska but not good for the surrounding area. What I mean is that when I first moved to area I found my house and I accepted that there was a gravel pit next door not a dumping ground for this "New Business" other wise I would have found another location, listed below are a few bullet points.

- Property values
- Hazardous material
- Health

I do have a few suggestions

Borough Land Swap - That will place this in a location that makes cense
To be proactive - Make this gravel pit part of the park system so we don't have to go through this again (Prison, Power Plant) or zone it residential

I'm not sure if you have any control to help but I'm asking.

Sincerely

Bill Quantick

Susan Lee

From: Linnzi Doerr [LDoerr@rmconsult.com]
Sent: Monday, October 20, 2014 11:18 AM
To: Susan Lee
Subject: Please OPPOSE the CENTRAL MONOFILL SERVICES Permit

Ms. Lee,

I urge you to consider our environment, our livelihoods, and the families in our community and keep potentially hazardous disposal sites AWAY from our housing, farming, water wells and recreational areas. I chose to move back to Palmer to raise my family in a rich, unspoiled rural community. I purchased my home off Cienna Drive 4 years ago and am strongly opposed to the idea of allowing any kind of land fill to occupy the gravel area located at the proposed site. Please consider that this proposed site is in the heart of our community, surrounded by lakes, recreational areas, farms, family homes and very near the State Fair Grounds. I can't imagine a worse location for a waste disposal site. Please protect and safe guard our community from what will absolutely cause damage to the environment, air quality, ground water and overall quality of life to nearby residents and borough residents alike. The CMS Permit threatens the very quality of life that brought us back to the borough.

http://ewssite.com/how-it-works

Sincerely,
Linnzi Doerr
907-360-8394

How our landfill works

Our landfill is among the most technologically advanced in the United States. Here's why:

Choosing the site

Environmental Waste Solutions specializes in reclaiming former mine pits, and turning them into carefully designed landfills that are classified for "beneficial use" according to approved Civil Engineering applications. We study the proposed site to determine:

- The area of land necessary for the landfill
- The composition of the underlying soil and bedrock
- The flow of surface water over the site
- The impact of the proposed landfill on the local environment and wildlife
- The historical or archaeological value of the proposed site

EWS works to take otherwise unusable land and make it productive during the short term. Our long-term goals include turning the land into wooded preserves.

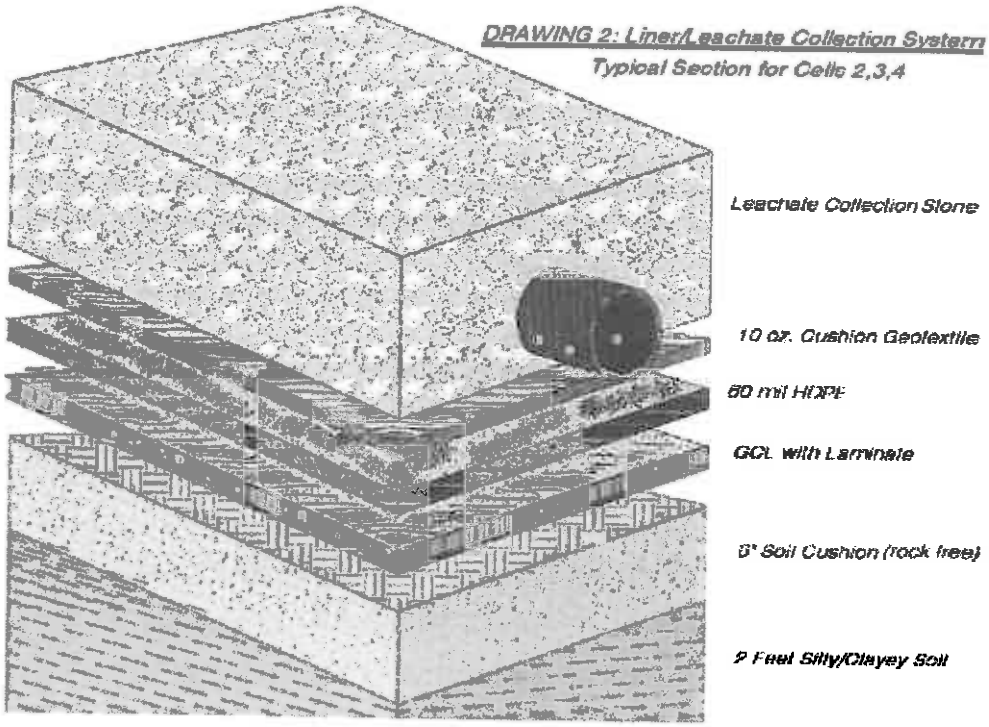
Building the landfill

Our sites are thoughtfully designed and highly engineered to exceed state requirements and are professionally run to keep the community safe.

The basic parts of a landfill are:

- **Bottom liner system** – separates landfill content and subsequent leachate from groundwater. Leachate is liquid that drains downward through the landfill.
- **Individual cells** – where the material is stored within the landfill
- **Storm water drainage system** – collects rainwater that falls on undeveloped portions of the landfill and runs off without contacting waste material.
- **Leachate collection system** – collects rainwater that comes in contact with waste material and collects the water for treatment and proper disposal.
- **Covering or cap** – seals off the top of the landfill

Each of these parts is designed to address specific challenges that are encountered in a landfill. So, with each part of the landfill, there is a problem to be solved.



Bottom liner system

A landfill's major purpose and one of its biggest challenges is to contain the waste so that potential problems are contained. The bottom liner prevents the waste from coming in contact with the outside soil, particularly the groundwater. EWS uses a 6-foot liner between the ground clay and man-made materials being deposited. The liner is triple lined on the sides and quadruple-lined at the base, far exceeding requirements.

Mono-cell construction

Landfill content is compacted into areas, called cells. The material within the cell is compressed by heavy equipment (tractors, bulldozers, rollers and graders) that go over the day's accumulation several times. It is covered with six inches of soil and compacted further. Lifts are arranged in rows and layers of adjoining cells.
EWS stores a specific type of waste throughout the landfill, hence it is a "monofill" composed of "monocells. This means that 10 or 20 years in the future, if and when it becomes economically feasible, the landfill can be mined and its contents harvested for use.

Storm water drainage

Our sites are built to minimize water discharge. This is done in two ways:

- **Prevent rainwater from entering site.**
  We cover the cells daily to keep out rainwater.
- **Drain water away.**
  To exclude rainwater, the landfill has a storm drainage system. Plastic drainage pipes and storm liners collect water from the landfill and channel it to drainage ditches surrounding the landfill's base. The ditches carry water from collection areas to the side of the landfill.

Leachate collection system

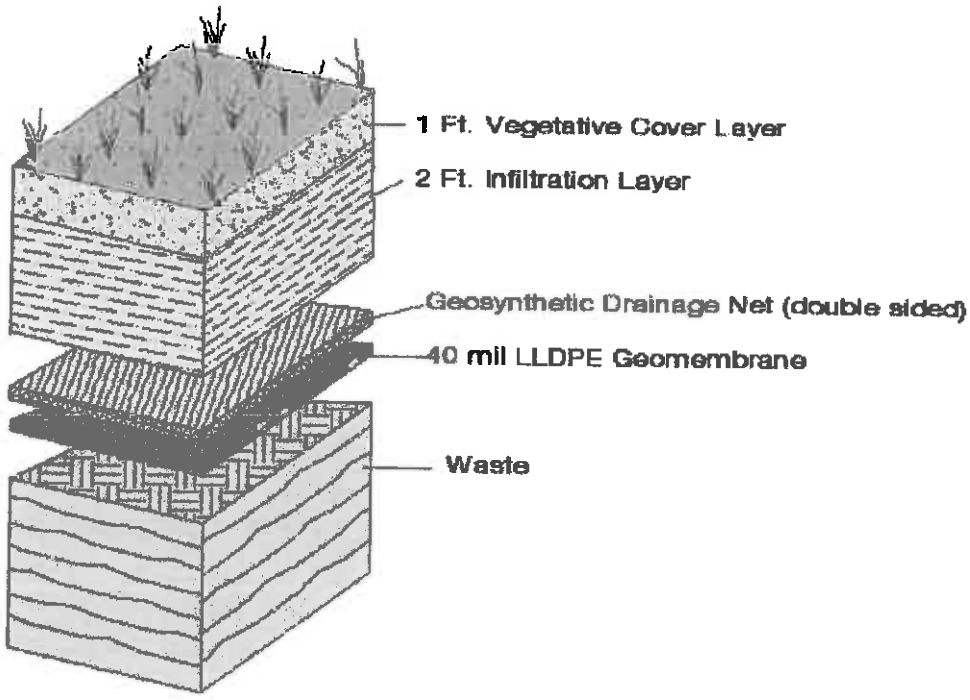
There is no perfect system to exclude water from a landfill. This water runoff called, leachate is typically acidic. To collect leachate, perforated pipes run throughout the landfill. These pipes then drain into a leachate pipe, which carries leachate to a leachate collection tank. The leachate is tested and allowed to settle. After settling, all water is professionally treated.

Groundwater monitoring

At many points around the landfill are groundwater-monitoring stations. These are pipes that are sunk into the groundwater so water can be sampled and tested for the presence of leachate chemicals. EWS uses three times the number of test wells required, just feet away from the waste stream. More test wells allow us to detect potential situations before they can become a problem.

Covering or cap

DRAWING 2: PROPOSED FINAL COVER SYSTEM



Waste deposited in the landfill is covered each day with six inches of a clay and gravel mixture called chert. This covering seals the compacted waste from the air and prevents water from getting through. When a section of the landfill is finished, it is covered permanently with a polyethylene cap (40 mil). The cap is then covered with a 2-foot layer of compacted soil. The soil is then planted with vegetation to prevent erosion of the soil by rainfall and wind.

Responsible landfill operation

EWS accepts shipments only by contractual agreement from industrial partners who need to dispose of byproduct in an environmentally responsible way. During landfill operations, incoming trucks are weighed on arrival and their load is inspected. Next, the vehicles unload at the tipping point. A warehouse is located on-site, so that if it's raining, covered trucks can come into a closed building and safely offload. This means we can receive shipments 365 days a year, rain or shine. After loads are deposited, bulldozers are used to spread and compact the new material on the working area of the landfill. At the end of the day, the working cell is covered with chert and compressed until it becomes impermeable.

Recycling Ventures

Recycling Ventures is a new endeavor created in alliance with EWS to develop economically feasible methods to reduce, and eventually eliminate, salt cake waste. Recycling Ventures takes the waste stream being landfilled by EWS and recycles the waste in alignment with current best practices. We are hopeful to be able to reduce the amount of waste by 1-15% through our recycling process.

Recycling Ventures is an environmentally sensitive company that uses no chemicals to separate the aluminum from the salt cake. Additionally, Recycling Ventures has considered the environment first through the design and construction of our facility and stands ready to implement additional technology that shows further waste reduction in the future.

With this said, Recycling Ventures is pursuing future design and implementation of technology that will eventually provide the ability to fully recycle the contents of salt cake. By joining forces with EWS, Recycling Ventures hopes to be a valuable asset to the Camden community as it pursues and implements this technology.

What happens long term?

When a landfill closes, EWS will continue to monitor the site and groundwater. Upon complete maturity, it will be capped and a forest will be planted over it, resulting in a densely wooded mound where once there was a landfill.

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Susan Lee

From: Lorna Gleason [msbowie@frontier.com]
Sent: Saturday, October 18, 2014 2:34 PM
To: Susan Lee
Subject: Stop Private Dumps comment

Re: The private dump slated for the location of the Glenn Hwy. at mile 38.3.

It is my opinion that there should never be a dump site placed anywhere the vicinity of any bodies of water nor anywhere near residential neighborhoods. Also, there should always be strict regulations and oversight to be sure these regulations are adhered to when it comes to disposing waste that materials that are dangerous contaminants. I don't think people really understand the dangers of contaminants entering into our aquifers and what it can do. There were two national cities with water crises just this year where the water became contaminated. We can't live without clean water.
Why would the Alaska DEC even think of tentatively approving something like this when they are so strict on everything else. We hope the borough takes this issue with great review and thought.

A concerned Mat Su Valley homeowner

Susan Lee

From: timpenny [timpenny@gci.net]
Sent: Friday, October 17, 2014 3:48 PM
To: Susan Lee
Cc: shane@cei-alaska.com; Charlie Siler
Subject: Central Environmental INC

As a resident of the State Of Alaska since 1973 and a property owner in the MSB since 1993 I'm submitting my positive comment concerning the Conditional use Permit applied for by Central Environmental INC.
It is my opinion that the MSB needs sites for disposal such as this to insure that materials left over from demolition be disposed of in the best possible way to protect the environment. There are many examples of improperly disposed of materials throughout the MSB. The central location of this site near the greatest population density is ideal. I'm confident that since CEI is all ready in the business of disposal they will abide by the MSB rules for safe disposal.
In addition Mr. Shane Durand has demonstrated his interest in supporting community events by allowing the Alaska Model Boat Club to use his lake on said property for the running of radio control boats. The Club is a member of NAMBA which is a national organization which oversees the safe operation of these models.

Thanks you for this opportunity to make my comments heard.
Sincerely
Timothy R Johnson

Susan Lee

From: Susan Lee
Sent: Tuesday, October 14, 2014 8:42 AM
To: 'superglide@mtaonline.net'
Subject: RE: size info CMS apps.

It looks like the 2013 application material was around 143 pages and the 2014 application material is 774 pages.

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

From: Richard Harbuck [mailto:superglide@mtaonline.net]
Sent: Monday, October 13, 2014 2:37 PM
To: Susan Lee
Subject: size info CMS apps.

Hello Susan could you please tell me the number of pages in the 2013 application and the number of pages in the 2014 application as finalized by the borough from CMS. Thank you. Rich H.

Susan Lee

From: Dustin Boller [dustin_boller@yahoo.com]
Sent: Sunday, October 12, 2014 5:02 PM
To: Susan Lee
Subject: Monofill

Hi Susan and Planning Department,

I wanted to comment on the proposed mono fill at 2849 S. Glenn Hwy near Palmer. My family and I live near the proposed site and are extremely opposed to this measure. I hear a lot of anger around the neighborhood as well. My concerns stem from both the potential for air and groundwater contamination. I have two young sons, one of which has breathing problems. The wind blows extremely hard out in this area and I want assurances that debris (especially asbestos containing particles) will not blow off the site and straight into my neighborhood. This goes without mentioning potential groundwater contamination in our nearby wells and the smell that may even reach the fairgrounds that can put a damper on the events held there. We don't want a site like this that can risk the health of our family, decline our property value, and just become a general eyesore to the palmer area.

A VERY strong NO from us!

Sincerely,

Dustin and Angela Boller

Susan Lee

From: Nicholas Czechowicz [nczechowicz@gmail.com]
Sent: Thursday, October 09, 2014 9:11 AM
To: Susan Lee
Cc: Jessica Stinson
Subject: Proposed Palmer Monofill dump site

I can only think of two reasons this proposed material dump is being considered again by MY local government: mismanagement of bureaucratic processes before, during, or after the original denial was issued, or making the decision based on greed over the protection of our city's health and resources. Neither option reflects well on the members who allowed this to happen.

The location of the site should be of principal concern. It is nestled in among lakes and streams in a beautiful area where many of us grew up exploring and fishing as children. More importantly, these lakes and streams are direct lines of contamination into a giant aquifer which the areas residents draw drinking water from. ANY potential for contamination is an unacceptable risk, and given the materials which are to be dumped there, already poses an unacceptable level of risk and shows a complete disregard to the health and well being of the citizens of Palmer. It would be a negligent act for a governmental entity to permit such actions occurring, and exposing their constituents to such a risk.

The Munter Report has already concluded that well contamination is probable. With a slogan coined by Shane Durand stating, "The solution to pollution is dilution" shows the mentality of this company. Under NO circumstances should we permit a company like this to operate a facility that has direct impact on our health. This company has a recorded history of scoffing at regulatory practices. Do not give them another chance.

We have, as a city, achieved steady growth and healthy home market rates in the face of much economic turmoil. To consider permitting a company to do this will pour all of this down the drain. Why would we allow it in a prime location which could either be allocated for either housing development, trail systems, or wilderness area (only 3 of many options) which would BOOST the value of land and homes in the city instead of deterring investment in housing and local economy, while decreasing land and home values (and the associated tax income the city makes)?

If this dump is allowed, I will be sadly be leaving my hometown with my family in tow for fear of their health. It's a shame to think that our representation may allow the destruction of my beautiful corner of the earth through "legalized" and permitted ecological pollution.

I can guarantee that at the first sign of pollution or contamination, something similar to the Clean Water Initiative will be brought forth on to the City of Palmer, along side the Clean Waters Act of 1972 (33 USC 1251) where to EPA will investigate the permitting process. How can I make this guarantee? Contamination and misrepresentation reports to the Federal Government are free, easy, and require that they follow up. And there will be a lot of angry Alaskans who like to get involved.

All of this begs the question: why even allow it in the first place? It only does a disservice to the city and it's residents, as well as place an even heavier burden on the local government to authorize such permitting in the future when a responsible company applies. Stop the process before it begins.

Nicholas Czechowicz
11757 E. Loretta Cir
Palmer, AK 99645

Susan Lee

From: katie [katesweb@mtaonline.net]
Sent: Friday, November 07, 2014 3:04 PM
To: Susan Lee
Subject: Toxic Dump

We can live without gravel but we can't live without good water.
We can find other places to dump waste but we can't find other water sources once it is contaminated we can't get it back.
Please do not permit this dumping in the area of all those lakes or streams along the Glenn Hiway from Palmer to the river bridges or anywhere from the Landfill now in operation by the borough to the Matanuska River by CMS or any other organization/company and etc. that would create a dump of any kind .
Thank you
Katie Rousey

Susan Lee

From: Dan Delaney [accesselectric.delaney@gmail.com]
Sent: Friday, November 07, 2014 10:51 AM
To: Susan Lee
Subject: [POSSIBLE SPAM] Palmer toxic waste land
Attachments: Palmer toxic dump.docx

Importance: Low

Please read attachment statement above. STOP THIS PRIVATE DUMP at mile 38.3 .

11/6/14

I, Daniel Delaney, am an Electrical Administrator, Master Electrician and contractor, business owner and home owner in this area. I am strongly against a dump in this area, because this is all wet land with birds, fish, bears, and all forms of Alaska wild life.

The wet land is critically important to all the families with wells in the area. This would poison the water and pollute the lands for families, pets, fish, large birds and other wild life. We all have been here longer than these most self-serving lands rapists. They have already been witnessed dumping in this location after hours of operation by several local land-owners. Who knows what kind of damage this has already done?

A home development or subdivisions in this area would be a much more productive use of the land and lakes on this proposed property. This would give families homes; some of which could be gorgeous lake front and lake-ridge homes with beautiful surroundings. This could create a wonderful community, work for hundreds of workers and businesses, and income for the community and surrounding towns well into the future. However, a dump in this area would destroy the land forever.

The dump would poison the water for the community and all surrounding wildlife. What this area needs is not a dump, polluting the land and water for all, but to sustain its clean, non-toxic, glacier water. This land needs to remain garbage free.

This is one of the most scenic areas in our Mat Sue Valley. Its will be seen from everyone traveling in and out of our beautiful state of Alaska, U.S. Highway #1, a port hole in and out of our states largest cities as well as all the fair goers and tourists visiting from all over the world. Even to propose such a sight in such a beautiful area shows the lack of concern for our lovely surrounding's and pristine water ways.

What this will do to this area is worse than the pebble mine and that Alaska voted not to allow.

I ask please for the benefits of all do not allow this toxic waste land in this location.

Sincerely concerned local resident and business owner Daniel R. Delaney.

Susan Lee

From: Zennon McNeill [zennmcn@gmail.com]
Sent: Friday, October 31, 2014 9:16 AM
To: Susan Lee
Subject: Monofill MISTAKE comments

To whom it may concern, the CMS Monofill has been and is still a terrible mistake, if built at the presently proposed site. After countless hours of research and efforts in understanding the irreversible damage that will take place if this monofill is built in this hydrologically sensitive area that hydrates the local area and that is also positioned in the dead center of two valleys that produce consistently high winds that will continue to spread trash and particulates across adjacent land and into the air, it is CLEAR, IT IS STILL THE WRONG SITE.
Property values will be negatively affected also.
These issues that are but a few of many that lay the foundation for the NO, when asked, should this monofill go forward at the present location?
The public and community are relying on good judgement that is expected of the appointed commission to refuse this CUP APPLICATION. This monofill will benefit a handful financially, while affecting a large amount of hard working, tax paying, property owning FAMILIES in the direct vicinity, adjacent and opposite the proposed site, along with all residents of Palmer.
The water ways and lakes located from within a 1000 feet and a few miles will be adversely affected, these lakes and creeks are stocked by the state and also have naturally running trout and salmon.
The scenic byway that runs past this atrocity, past the STATE FAIR GROUNDS then into Palmer is supposed to be protected by local and state government.
If this application is approved it will show that the local appointed commission has demonstrated gross misconduct and neglect and direct disrespect for the community.
With all of the pushback and viable evidence and argument from the community, if this CUP is granted it will fortify the foundation for legal action by the community.
PLEASE PLEASE PLEASE do not allow this monofill at THIS SITE. FORCE CMS to FIND ANOTHER LOCATION.
CMS PLEASE DONATE THIS LAND TO GREAT LAND TRUST, so as it may be PROTECTED,and put to GOOD USE FOR OUR COMMUNITY.
Ultimately the COMMUNITY will PAY for a CMS MISTAKE.
CMS, show that you are a good entity and do the right thing, everybody knows what that is.

With Respect, Sincerity, and Good Judgement, Zennon McNeill

Sent from my iPhone

Susan Lee

From: Vickie Lee Fenster on behalf of Permit Center
Sent: Monday, November 03, 2014 11:46 AM
To: Susan Lee
Subject: FW: Comments for Permit for Central Monofill Services
Attachments: October 31.docx

Vickielee Fenster, CFM
Permit Center
Mat-Su Borough
907-861-8507
vfenster@matsugov.us

"Change the way you look at things and the things you look at change."

From: Alaska Thermal Imaging [mailto:akthermalimaging@yahoo.com]
Sent: Friday, October 31, 2014 4:43 PM
To: Susan Lee
Cc: Permit Center
Subject: Comments for Permit for Central Monofill Services

Susan Lee

Please find my attached email to voice my concern for wishing to have the permit for Central Monofill Services *Denied.*

Thank you
DayLa Leffel

October 31, 2014

To: Matanuska-Susitna Borough, Planning and Land Use Department
Development Services Division

Attn: Susan Lee, Planner II Email:slee@matsugov.us

Response for Comments

Project: Application for a conditional use permit for the operation of a monofil

Parcel ID: Township 17 North, Range 2 East, Sections 18 & 19, Seward Meridian

Applicant: Central Monofill Services

As a resident of Palmer, a lifelong Alaskan, a homeowner, and a mother I wish to voice my concern and oppose the permit of a monofill at location: Township 17 North, Range 2 East, Sections 18 & 19, Seward Meridian. My water source is fed by the aquifer under this proposed site, which has already been documented to have been punctured by the previous owners. In NO way is this a justified or acceptable calculated risk of potential contamination of the water that my family drinks everyday and feeds my gardens in the summer to only then be consumed by us. We must protect our water source today and for the future of our children. I believe that there is no need to have a monofill dump anywhere within a residential location. There is beautiful water recreation area that sits right next door that must be protected also for future generations. Once the damage is done it is nearly impossible to correct so the only thing we can do is not allow the potential contamination to occur to begin with. Please consider a denial in this permit process and demand that Central Monofill Services finds an acceptable location to conduct this monofill elsewhere.

DayLa Leffel
PO Box 2674
Palmer, Alaska 99645

Cc: PermitCenter@matsugov.net

Susan Lee

From: Kim Meals [kimshua@hotmail.com]
Sent: Friday, October 31, 2014 9:31 PM
To: Susan Lee
Subject: Palmer toxic dumping

We have lived in Palmer for over six years and love the area we live in. The town, farmland, lakes and hiking trails near us are what drew us in to this area near the fairgrounds. We are saddened and disgusted by the thought of a private dump being allowed to open not far from our home. Not only will this be an eyesore on the way to our quaint town of Palmer, but the environmental impact it will have on the land, the air, and in our drinking water is what concerns us the most. If this dump is approved, this will greatly impact the decision for our family to stay and live in Palmer. We didn't move to Palmer for access to dumps. We moved to Palmer to raise our family in an area that we love, filled with beautiful views, hiking trails, lakes, farmland, and the small-town feeling. This dump has no need to be put right in the middle of all of that and risking the health of the people who live here and the land we live on. Please do not allow this to go through. We greatly oppose this dump.

Josh and Kim Meals

Susan Lee

From: Christopher Sahlstrom [chrismd00@gmail.com]
Sent: Friday, October 31, 2014 6:29 PM
To: Susan Lee
Subject: Palmer Dump

>>
>> To Whom It May Concern:
>>
>> I am writing in the hopes that my voice will be heard on a issue of tremendous importance to me, my family, my neighbors and my community. The proposed dump site for Central Monofill Services is unacceptable on many levels.
>>
>> 1) The Proximity of potentially hazardous waste to an already exposed aquifer is a major health and safety concern for every household whose wells are fed by said aquifer. No one can argue that clean water is a basic human necessity and CMS has not, and I believe cannot, adequately address this very real threat.
>>
>> 2) This dump is likely to have a negative impact on the environment as it gradually pollutes the habitat of migrating birds and other animals.
>>
>> 3) Property values will decrease. Let's be honest. No one likes trash.
>>
>> It is our privilege to live in such a pristine and breathtaking place, and we can decide to keep it that way. Palmer needs to lead the way in the Valley through proactive planning. The location of this dump will destroy the beauty and appeal of our lovely town. I urge all involved to consider a more appropriate location for CMS operations.
>>
>>
>>
>> Sincerely,
>>
>> Natalia Sahlstrom
>

Susan Lee

From: Susan Franznick [sfranznick@gmail.com]
Sent: Friday, October 31, 2014 4:49 PM
To: Susan Lee
Subject: Proposed Dump in Palmer

There are several reasons that the proposed site for the monofill dump on Glenn Highway in Palmer is unacceptable:

1. The risk of contamination of the local ground water is too great. The drinking water is among the best anywhere, and it would be a tragedy to contaminate such an important natural resource.

2. This area experiences high winds which will undoubtedly spread the garbage throughout a large area of the Valley. I haven't seen appropriate safeguards proposed to prevent this.

3. There are no reliable plans to ensure that only certain, and safe, materials are brought into the dump site. Self-policing will not work. The proposing company has already proven itself to be untrustworthy because it has lied and disregarded safeguards and regulations.

4. Plans to beautify the area, and make the land usable and productive have not been published. What a site this mess will be! Unacceptable trashing of our beautiful landscape will have a detremental effect on our qualify of life, our health, our recreation options, the local wildlife, the economics of home values, and the desireability of the location for housing and business development.

The permit application for the proposed dump site must NOT be approved, at this time, or anytime in the future.

Sincerely,

Susan Franznick
3500 S Sky Ranch Loop
Palmer, AK 99645

Susan Lee

From: Vicky Ramage [fr8dogsgal82@gmail.com]
Sent: Friday, October 31, 2014 4:16 PM
To: Susan Lee
Subject: Thoughts on Central Monofill Services permit application

Dear Mat-Su Borough Assembly Members,

We live in Sky Ranch Subdivision off of Outer Springer Loop. We have several concerns about Central Monofill Services' request for a Conditional Use Permit to open a monofill just off the Glenn Highway near Palmer.

Our first concern is our water supply. It is known that the aquifer was breached by the gravel pit company, this means that if there is contaminated runoff from the monofill, our water supply is in danger. We have read of a monofill sites in Ohio that have toxins leaking. Right now we are enjoying pure clean water, the best drinking water that we have ever had and we have lived in several different areas of the United States. What will this do to our water in a few years? No one knows. That is a problem. Where will the area residents get their water if the aquifer is contaminated? Water is essential for life.

Traffic is another concern. We already have gravel trucks turning in that area. We have to deal with the train blocking Outer Springer Loop and Inner Springer. Now add more trucks turning in the same area and we are going to have traffic problems. The fair is only ten days, but the traffic on the Glenn in that area is very congested during that time. We don't even attempt to make a left hand turn onto the Glenn during the State Fair; we go around on Outer Springer Loop, through town, to the Palmer Wasilla Highway to Trunk to the Parks if we need to go to Anchorage or Wasilla.

Windblown debris is another concern. Anyone who lives in the Palmer area knows that the winds blow and blow hard here. Those who live downwind from the monofill are going to have problems with blowing debris. We have already witnessed this when Central Monofill Services started dumping before they applied for the permit last time. This also brings up the eyesore this is going to be to tourists that come to Palmer. They are going to be driving right by this site.

The monofill is probably needed, but not in a populated area. This is the biggest state in the Union with many acres of land that are not so near residential homes, yet still accessible. Yes, it will cost the company more to transport the materials, but the cost to the residents of the areas will be greater. Having been in real estate in the past, we know that this has the potential to lower home values in the area. It just doesn't seem right to allow a new company to save money while hurting the residents who have been there for many years.

Who is going to take on the resp .sibility of monitoring the monof..l and Central Monofill Services? A private company on Central Monofill Services' payroll, the Mat-Su Borough, or the State of Alaska? Who is going to pay to have water lines installed, when our private wells are contaminated? Who is going to be responsible to clean up the debris from Central Monofill Services?

Please hear the voices of the residents around the proposed site of this monofill and deny the permit for Central Monofill Services.

Thank you for your time and consideration,

Chuck and Vicky Ramage

3218 S Lakeshore Loop

Palmer, AK 99645

746-5318

<http://www.avast.com/> This email is free from viruses and malware because avast! Antivirus <http://www.avast.com/> protection is active.

Susan Lee

From: Stephanie Nowers [sjnowers@mtaonline.net]
Sent: Friday, October 31, 2014 4:09 PM
To: Susan Lee
Subject: CMS Monofill Comments; Nowers Attachments Resend
Attachments: AirThreat_C&DLandfills_2008_publichealthreport.pdf; IMG_3174.JPG

Hi Susan,

Here's my 2nd round at sending. The borough should up that 10MB limit. :) Attachments are Hydrogen Sulfide Report for US Health Dept and picture of illegal dumping

- Stephanie

Direct from ATSDR

Michelle Colledge, M.P.H., Ph.D.
Lynn Wilder, M.S.Hyg., C.I.H.

Construction and Demolition (C&D) Landfills: Emerging Public and Occupational Health Issues

Editor's note: As part of our continuing effort to highlight innovative approaches to improving the health and environment of communities, the Journal is featuring a bimonthly column from the U.S. Agency for Toxic Substances and Disease Registry (ATSDR). The ATSDR, based in Atlanta, Georgia, is a federal public health agency of the U.S. Department of Health and Human Services. ATSDR serves the public by using the best science, taking responsive public health actions, and providing trusted health information to prevent harmful exposures and diseases related to toxic substances.

The purpose of this column is to inform readers of ATSDR's activities and initiatives to better understand the relationship between exposure to hazardous substances in the environment and its impact on human health and how to protect public health. We believe that the column will provide a valuable resource to our readership by helping to make known the considerable resources and expertise that ATSDR has available to assist communities, states, and others to assure good environmental health practice for all served.

The authors of this month's installment, Michelle Colledge and Lynn Wilder are with ATSDR's Division of Regional Operations and Division of Health Studies, respectively. Dr. Colledge is a senior research officer, and earned her MPH from Florida A&M University and her Ph.D. from the University of Illinois at Chicago School of Public Health. She is a lieutenant commander in the United States Public Health Service, and has worked for ATSDR since 1999. Since working in the region 5 office, Michelle has lead multi-agency and multi-disciplinary teams in public health investigations, risk and exposure assessment, and provides technical assistance to partner agencies for emergency response activities. Lynn Wilder is a senior environmental scientist and received her M.S. in industrial hygiene from the University of Pittsburgh. She is a certified Industrial Hygienist and is a Ph.D. candidate at the University of Washington's Department of Environmental and Occupational Health. Since joining ATSDR in 1989, she has worked in areas of emergency response, health and exposure investigations, and health studies.

Historically, construction and demolition (C&D) debris landfills have been considered nonhazardous operations, containing relatively inert wastes such as concrete, asphalt, wood, metals, gypsum drywall, and roofing materials. In recent years, however, it has become increasingly clear that emissions resulting from the decomposition of gypsum drywall and organic debris are a public health issue. Drywall, comprised of gypsum ($CaSO_4 \cdot 2H_2O$), breaks down into hydrogen sulfide and other sulfur compounds under anaerobic conditions and in the presence of water. When exposed to water, the sulfate in the gypsum is dissolved in landfill leachate (Townsend, 1998). Under the same environmental conditions, organic debris degradation produces other flammable gases such as methane. As a result, surface and subsurface fires may occur at C&D landfills (Federal Emergency Management Agency [FEMA], 2002).

Drywall can be a significant constituent of C&D wastes. Depending on the type of construction, it comprises between 5% and 25% of total C&D volume generated (Townsend et al., 2000; United States Environmental Protection Agency [U.S. EPA], 1998). In the United States, C&D waste comprises a considerable portion of the overall solid waste stream. The U.S. Environmental Protection Agency (U.S. EPA) estimated that over 136 million metric tons of building-related wastes were generated in 1996 (U.S. EPA, 1998). Approximately 35%–40% of these wastes were landfilled in C&D facilities. As a comparison, this amount of C&D waste was only slightly less than the 190 million metric tons of total municipal solid waste (MSW) generated that same year (Clark, Jambeck, & Townsend, 2006). In 1996, approximately 1,900 C&D landfills were operating in the United States (U.S. EPA, 1998). At these sites, gas emissions to ambient air are influenced by a number of factors, including, but not limited to, the volume and composition of the waste (particularly gypsum drywall content); engineering design and controls; the condition, composition, and thickness

of the landfill cap; and leachate collection, removal, and handling practices.

Because U.S. EPA does not specifically regulate the operations of C&D landfills, C&D regulation is the responsibility of individual states. Clark and co-authors (2006) recently reviewed and summarized state C&D landfill regulations across the country. The authors found little consistency from state to state in the siting and engineering design requirements of these facilities, in regulatory oversight and rules, or even in a state's definition of what constitutes C&D waste. The authors did find, however, that state standards are generally far less stringent for C&D facilities than for MSW facilities (Clark, Jambeck, & Townsend, 2006).

The Agency for Toxic Substances and Disease Registry (ATSDR) and its federal, state, and local health and environmental agency partners have recently investigated a number of C&D landfills with gas emissions that caused significant community health concerns. Community exposures vary, but are generally greatest during stable meteorological conditions and are generally diurnal with the highest concentrations in ambient air in late evening and early morning hours. At some of these sites, concentrations of hydrogen sulfide gas in residential ambient air were at or above levels known to cause adverse human health effects. At an Ohio C&D landfill, hydrogen sulfide concentrations in residential ambient air approached the National Institute of Occupational Safety and Health (NIOSH) recommended exposure limit (REL) for the occupational ceiling value of 10 parts per million (ppm) (ATSDR, 2003). Improper leachate management at the same site also resulted in community hydrogen sulfide concentrations of up to 95 ppm on at least one occasion (ATSDR, 2006). This concentration is just below the NIOSH immediately dangerous to life and health (IDLH) level of 100 ppm over 15 minutes.

Under normal conditions, hydrogen sulfide is a colorless, flammable gas. It has an odor threshold as low as 0.5 parts per billion (ppb) (ATSDR, 2006), and is typically characterized as smelling like rotten eggs or sewage. When inhaled, hydrogen sulfide readily enters the blood stream via diffusion through pulmonary alveoli. The majority of hydrogen sulfide is metabolized through oxidation into thiosulfate, then further oxidized to sulfate, which is rapidly excreted in the urine. People with preexisting respiratory conditions or immature respiratory systems are more likely to experience adverse health effects from hydrogen sulfide exposure. Those with cardiac or nervous system disorders may also be more likely to experience adverse outcomes from hydrogen sulfide exposure. Although the exacerbation of preexisting respiratory conditions (e.g., asthma) and neurological effects (e.g., headache, nausea, and fatigue) have been noted at low levels (between 10 and 100 ppb), to date, quantifiable irritant effects levels have only been reported with exposures in the low ppm range (Bhambini, Burnham, Snydmillar, MacLean, & Lovlin, 1996a, 1996b; Campagna et al., 2004; Jappinen, Vilkka, Marttila, & Haahtela, 1990; Kilburn & Warshaw, 1995; Kilburn, 1997; Kilburn, 1999). With acute exposures at concentrations at or above 100 ppm, serious injury and death are possible (Hirsch & Zavala, 1999; Milby & Baselt, 1999; Parra, Monso, Gallego, & Morera, 1991; Reiffenstein, Hulbert, & Roth, 1992; Snyder, Safir, Summerville, & Middleburg, 1995; Tvedt, Edland, Skyberg, & Forberg, 1991; U.S. EPA, 2003).

Although ATSDR is not an occupational health agency, staff members have noted worker health and safety issues at numerous C&D landfills. Generally, these facilities have no employee training programs on the use of personal protective equipment and no onsite monitoring programs for common C&D gases. In one case, several employees either lost consciousness or became nauseated and evacuated the work area (Florida Department of Health [FDOH], 2007). In November 2007, four employees died as a result of exposure to high concentrations of hydrogen sulfide while attempting to repair a leachate pump at a C&D landfill in Superior, Wisconsin (Emhoin, 2007). Surface and subsurface fires at C&D landfills also pose a physical hazard to site employees.

The removal of drywall from the waste stream would reduce the potential of hydrogen sulfide generation from C&D facilities. Drywall recycling is an emerging market, and has the potential to significantly diminish the quantity of drywall going into C&D landfill facilities and reduce the potential of human health effects from exposure. Most drywall waste is generated from new construction (64%), followed by demolition (14%) (California Integrated Waste Management Board [CIWMB], 2008). Scrap from new construction is the primary focus of today's drywall recycling market, but future recycling strategies may also include recycling demolition drywall wastes (Townsend, 2003).

Weak regulations that govern C&D facilities at the state and local levels make addressing exposures at these sites an onerous and complicated process. Also, in the absence of a federal ambient air quality standard for hydrogen sulfide, many states have promulgated their own hydrogen sulfide standards—but others have not. Without these kinds of standards, requiring changes in facility operations that lead to reductions in community exposures is difficult at best.

The issues of national consistency and the potential for adverse effects on human health necessitate a dialogue about how best to manage C&D debris while minimizing its effects on neighboring communities. When health issues arise, it is challenging for some states to protect human health from the consequences of inadequate C&D management. Negative public health impacts would be avoided if more careful consideration was given to C&D landfill siting, design, management, and closure. Such an approach would protect health and quality of life for neighboring residents and employees.

Corresponding Author: Michelle Colledge, M.P.H., Ph.D., ASTDR Division of Regional Operations, 77 W. Jackson Blvd., Room 413, Chicago, IL 60604. E-mail: colledge.michelle@epa.gov.

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Susan Lee

From: Stephanie Nowers [sjnowers@mtaonline.net]
Sent: Friday, October 31, 2014 4:07 PM
To: Susan Lee
Subject: CMS Monofill Comments: Resend Attachments

Pictures of gravel pit pond 1998-2008

5-22-2003
RAILROAD

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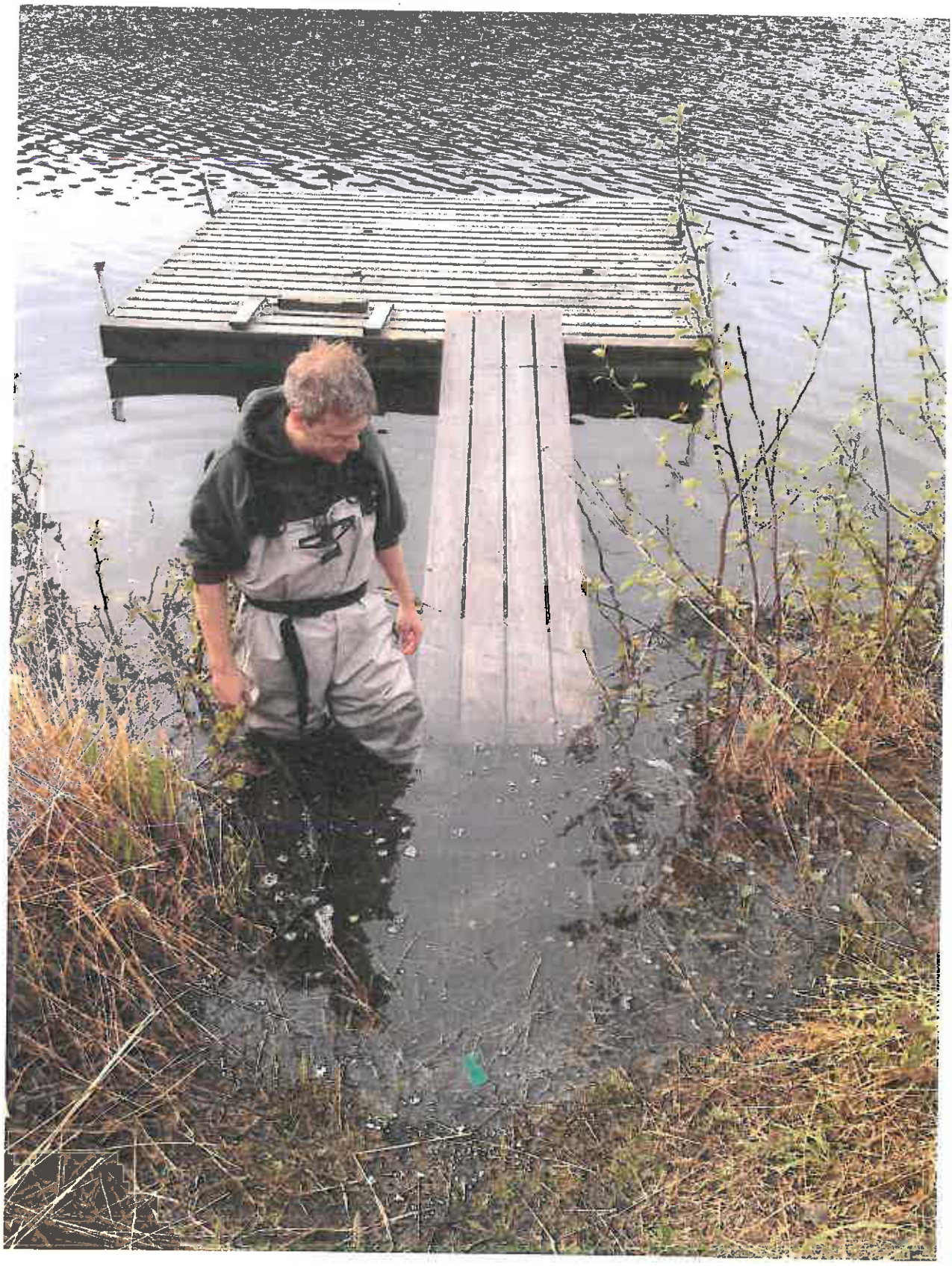
Susan Lee

From: Stephanie Nowers [sjnowers@mtaonline.net]
Sent: Friday, October 31, 2014 4:06 PM
To: Susan Lee
Subject: CMS MONOFILL COMMENTS: Resend

Hi Susan,

The file said they were under 10MB but looks like one of my emails got rejected so I am resending. Please confirm they came through.



RE: Comments on CMS proposed Monofill

From: Stephanie & Stephen Nowers, Canoe Lake Subdivision

Attachments:

- Aerial photos of Gravel Pit 1998-2008 showing expansion of gravel pit ponds
- 2009 Ohio EPA report on C&D Landfills
- 2008 Hydrogen Sulfide report from US department of Health and Human Services
- Photos of 2013 rise in Canoe Lake caused by spillway on gravel pit property.
- Photos of illegal dumping on CMS' site and into pond

The Conditional Use Permit Request from Central Monofill Services should be denied because the monofill operation as proposed poses significant potential to harm public health, safety, and welfare. This proposal is essentially the same one CMS submitted last year, which the planning commission denied and the reasons for denial are still valid. CMS proposes no extra protections for their operation this time that would protect water and air quality and in fact has removed a groundwater monitoring plan from the application that would be a first line of detecting pollution.

MINIMAL ECONOMIC BENEFIT: The proposed monofill offers minimal economic benefit while posing significant risk to millions of dollars of residential property. CMS' application states they expect to create 3 full-time jobs and 30 periodic jobs. This is a drop in the bucket compared to the value of surrounding residential property, and the value of clean water. Of note as well is that the property tax revenue paid by CMS from its 118 acres is less than we pay on our single residential home on one-acre on nearby Canoe Lake. This operation does not provide an income stream for the borough or borough residents. And should contamination occur, it will almost certainly be the taxpayers – primarily borough property owners – who will be footing the bill not CMS. CMS appears to have limited insurance and bonding that looks to total about $10 million and perhaps as low as $5 million, according to their application and records filed with Alaska Department of Environmental Conservation.

POOR RECORD OF COMPLIANCE: The borough should take CMS's record in the borough into account in judging the promises made in this application.

CMS stresses in its application that proper management is the key to keeping pollution out of the monofill and that they have the appropriate controls in place to prevent pollution from taking place. However this has not been demonstrated by their record. In its short time so far in the borough, CMS has shown an inability to comply with state and local laws. This includes illegally dumping trash on the property in violation of borough code and refusing to clean it up until cited, found guilty in court and under threat from the Alaska Department of Environmental Conservation. This shows a lack of operational controls or a culture of disregard for state and local rules and regulations. And this is not even to note that the original dumping was done directly into a small pond, which is particularly difficult to fathom given the stress and importance placed on keeping material out of water. It begs the question of how well CMS is able to handle much more difficult tasks like screening out lead paint and arsenic-tainted wood. It is also a

particularly troubling given their desire to dispose of RACM asbestos at the site, and the high hazard to human health posed by not doing that with proper controls.

This company also repeatedly states in their application that this dump is not a hazard to the community because of the controls they have in place. Yet if one pulls the Federal Motor Carrier Safety Administration Safety Measurement System (SMS) for Central Environmental Inc (U.S. DOT#: 499480), one sees a company incapable of following basic vehicle maintenance requirements. According to the FMCSA, 73% of motor carriers in the same safety event group have better on-road performance than Central Environmental Inc.; the government's intervention threshold is 80%. CEI's vehicle out of service rate is 33%, compared with a national average of 21%.

I find one example from their SMS particularly telling. On March 14, 2014, a truck and trailer combination (FSH766 and 1666SK) were cited for six violations, including a violation for tread and/or sidewall separation and, more importantly, an out of service violation for an inoperative turn signal. One month later, on April 15, this same truck and trailer combination was cited for exactly the same violations. Maybe these are small safety issues but despite active enforcement, CEI either chose not to fix the equipment failures on their vehicles or did not have the personnel to do so. This same company is asking the residents of Palmer and the Mat-Su Borough to have faith in their safety processes and procedures.

CMS is also fighting complying with the Alaska Department of Natural Resources, which has told the company that a spillway installed between two of the gravel pit ponds is not operating as permitted. Instead of complying, CMS is fighting that request. ADNR has estimated the flow through the spillway at 1,000 gpm or 1.44 million gallons a day, a rate which has reduce somewhat since CMS attempted - against DNR recommendations - to stop the flow with a modification. This is within CMS's rights to contest DNR, but does not reflect well on the company's willingness to deal with issues on its property and the impacts it has off property.

THREAT TO WATER QUALITY: Multiple studies have shown that C&D landfills can leach carcinogens that pose threats to health and water quality. According to a 2009, Ohio EPA report (*see attached), the state tested 30 C&DD landfills. All 30 had at least 3 parameters that exceeded health or water quality standards. 29 of the 30 landfills had 8 or more parameters that exceeded health or water quality standards. In particular, they were concerned about "parameters that were found in C&DD leachate that were multiples of the health based standards (such as arsenic, boron, manganese, and lead), carcinogens (such as arsenic, vinyl chloride, and benzene), mobile in the environment (such as arsenic, vinyl chloride, and benzene), persistent in the environment (such as antimony and lead), or which bioaccumulate (such as arsenic, copper, lead, mercury, nickel, and zinc). Their conclusion was that "Leachate from Ohio C&DD landfills poses a threat to public health and the environment if released to ground water or surface water. The threat is posed by a variety of organic parameters, metals, and inorganic parameters. The degree of risk associated with the threat by a release is dependent upon how the C&DD was disposed, site conditions, and circumstances surrounding the site, which often change over time".

CMS states that "expert opinion indicates no risk to groundwater" from this operation.

But there is sufficient debate on this point. CMS does not offer any extra protections such as a liner or groundwater monitoring to take that uncertainty into account. As noted in reports by J.A. Munter in February and June 2014: "There are no significant barriers to the migration of this leachate into groundwater and it is highly likely to result in measurable increases in contaminants beneath the facility and for some distance downgradient." Of particular note is a lack of viable data on the seasonal high ground water. Munter notes that CMS reports fail to show the bottom of the waste will stay dry.

CMS does not appear to have a clear handle on the hydrology of this site. CMS gave assurances and stated in its original permit that they had at least 10 foot of clearance between monofill materials and groundwater. Now they state that clearance exists on only 70% of the proposed monofill site.

They also give assurances that they will not affect area wells. CMS correctly states that the Alaska DNR has not been able to corroborate the connection between the gravel pit ponds and area lakes and wells. However, this is not because it has been disproven. Rather DNR's past records were not well kept and DNR has stated there is a need for further study on the connectivity between the gravel pit ponds and area lakes and wells.

There is a long history of trouble controlling water on this property that has been well documented and makes the monofill site a particular risk to area water quality because of need to keep water out of the materials being dumped. The connection to area lakes and probable connection to area wells is a key concern. The furthest west pond on the Gravel pit property has affected water levels in Irene, Canoe and Bradley Lakes and when water levels have been raised in it, it causes a corresponding increase in the level of the lakes. It may also be connected to area wells, including ours. Alaska Department of Natural Resources is investigating this. The borough also has documentation of previous flooding events caused by water from this property all the way across the Glenn Highway.

In a report prepared for CMS by Ralph Hulbert, it notes that should contamination occur it is simple matter to hook up residents to the nearby water main of Palmer which runs close by. If that is the plan, then CMS should have bonding to pay for those hookups and the cost of providing city water to all the area residents.

As currently proposed, CMS' application has no groundwater monitoring plan. That is not acceptable given the particular concern about the hydrology on this property, the potential for toxins that can leach out of monofills, and CMS' record of showing an inability to comply with state and local regulations in the Mat-Su Borough.

CCA WOOD: CMS also does not address in its proposal the threat from Copper Chromated Arsenate (CCA) Wood waste. Although phased out in the early 2000s, this treated wood is common in older buildings. The EPA has recommended that when disposing of CCA treated wood that it be placed in landfills with a liner and leachate collection system. There is no accommodating for that in CMS' permit application. To see the EPA recommendation go to:
http://yosemite.epa.gov/osw/rcra.nsf/23e68e459512b15f85256bf000632213/5C5ADCDA1B27269985256E990071A68D/$file/14707.pdf

AIR QUALITY ISSUES: Drywall poses a significant risk to air quality and should not be allowed at the site because of the potential for release of hydrogen sulfide. A 2008

report from U.S. Agency for Toxic Substances and Disease Registry (ATSDR) (See Attachment), a federal public health agency of the U.S. Department of Health and Human Services, notes deaths from a hydrogen sulfide release at C&D landfill in Wisconsin and other reports of hydrogen sulfide levels being close to federally recommended levels for occupational exposure or in another case just below the federal standard considered immediately dangerous to life and health. The report concludes that "In recent years, however, it has become increasingly clear that emissions resulting from the decomposition of gypsum drywall and organic debris are a public health issue."

On Page 19 of the application, CMS states that surrounding residential property totals 16 acres. The graphic does not give a radius or definition of surrounding, but this seems to be underestimated. There are more than 16 acres of residential land just in Canoe Lake and multiple subdivisions nearby, including Crimosonview and Skyranch. In addition, this site is directly adjacent to the Kepler-Bradley lake system, which according to the state Department of Fish and Game is the 2nd most popular lake fishing area in the Mat-Su, 2nd only to Finger Lake.

No ADEC Approval: CMS does not have ADEC permit approval as stated repeatedly in their application.

Incompatible with future uses. CMS states this area will be useful for in the future as recreation land. The Asbestos they proposed to dump will have to be permanently marked. According to DEC regulations, "Drawings showing the boundaries of the RACM waste management area must be filed with the department and attached to the property deed, with a written warning about health and safety hazards related to disturbing the site."

Screening and buffers. According to the Alaska Department of Transportation, the Glenn Highway expansion could take as much as 20 feet of the berm currently screening CMS's property. This will reduce the current berms to about 10 feet high along the highway. That would leave up to 20 feet of cell sticking up above the berm adjacent to the highway, according to the information supplied in CMS' application.

There are setback requirements from the property edge. Given that DOT may condemn some of the CMS property for the highway expansion, has CMS taken this into account in their cell construction? Currently it looks like they plan to start in the cells nearest the highway including the proposed asbestos cell. A prudent move would be to keep these cells far enough away from the highway to not be affected when the state DOT expands the highway.

Gravel Operations: CMS states they plan to continue gravelling. But their application states 66 acres of the property is water with the remaining 52 acres slated for the monofill operation. Where do they intend to gravel on the site. If they do not, they should comply with the reclamation requirements for this site.

State of Ohio
Environmental Protection Agency

Division of Solid and Infectious Waste Management

An Evaluation of Leachate from Ohio's Construction and Demolition Debris Landfills

Draft: June 12, 2009

Ted Strickland, Governor
Chris Korleski, Director

Contents

List of Tables 4
List of Figures 5
Executive Summary 7
Synopsis of the Ohio C&DD Leachate Analytical Data 8
Introduction 9
Materials and Methods 12
Results and Observations 13
Labeling of SMCLs as health based standards in this report 14
Description of the parameters that were sampled and analyzed 14
Description of the parameters that were detected 16
Evaluation of pH, Total Alkalinity, TDS, and COD 20
Evaluation of major cations and anions 23
Comparison against health based standards 26
Comparison against surface water quality standards 41
Comparison with ground water constituents indicating impact at Ohio C&DD landfills 56
Summary 62
Conclusions 67
Similarities and Differences with Cited Works 69
Future Research 70
Acknowledgments - Internal Activities 71
Ohio EPA, Division of Emergency and Remedial Response 71
Ohio EPA, Division of Solid and Infectious Waste Management 71
Ohio EPA, Division of Hazardous Waste Management 71
Ohio EPA, Division of Surface Water 71
Ohio EPA, Division of Drinking and Ground Waters 71
Ohio EPA, District Offices 71
Acknowledgments - External Review and Comment 72
Minnesota Pollution Control Agency 72
North Carolina Department of Environment and Natural Resources 72
U.S. EPA 72
Wisconsin Department of Natural Resources 72
Works Cited 73
Attachments 74
Attachment 1 – Ohio's Definition of C&DD
Attachment 2 – C&DD Constituent List
Attachment 3 - Ohio Administrative Code Rule 3745-27-10, Appendix I
Attachment 4 – OAC Rule 3745-27-10, Appendix II
Attachment 5 – Sampling Methods and Materials
Attachment 6 - DSIWM Work Plan Form
Attachment 7 - Example Sample Bottle Kit Request/Packing List
Attachment 8 - DSIWM C&DD LEACHATE SAMPLING LOG SHEET
Attachment 9 - DSIWM Landfill Sampling Equipment and Supplies List
Attachment 10 - DSIWM HASP Plan Form
Attachment 11 – Descriptive statistics and comparisons for 119 parameters detected in Ohio C&DD Leachate
Attachment 12 – Parameters Analyzed but not Detected above the Method Detection Limit
Attachment 13 – Analysis of the effect of adjusting the analytical results of seven landfills that had multiple samples

List of Tables

Table 1. Number of parameters in each parameter category detected at one or more Ohio C&DD landfills 16

Table 2. Number of detections in each parameter category at Ohio C&DD landfills 17

Table 3. Organic parameters detected in leachate from one or more Ohio C&DD landfills. 19

Table 4. Metals and inorganic parameters detected in leachate from one or more Ohio C&DD landfills .. 20

Table 5. Number of parameters in each parameter category that exceeded health based standards at one or more Ohio C&DD landfills. 28

Table 6. Organic parameters detected in leachate from Ohio C&DD landfills showing the parameters that exceeded health based standards (highlighted). 30

Table 7. Metals and inorganic parameters detected in Ohio C&DD leachate showing the parameters that exceeded health based standards (highlighted). 31

Table 8. Parameters of concern in Ohio C&DD leachate when compared with health based standards. .. 35

Table 9. Statistics for Ohio C&DD leachate parameters that exceeded health based standards and also showing parameters that were 70% to 100% of the standards. 38

Table 10. Surface water quality standards based on hardness of receiving stream for select metals 41

Table 11. Number of parameters in each parameter category that exceeded surface water quality standards at one or more Ohio C&DD landfills 43

Table 12. Organic parameters detected in Ohio C&DD leachate showing those that exceeded surface water quality standards (highlighted). 45

Table 13. Metals and inorganic parameters detected in Ohio C&DD leachate showing the parameters that exceeded surface water quality standards (highlighted) 46

Table 14. Parameters of concern in Ohio C&DD leachate when compared with surface water quality standards 51

Table 15. Statistics for Ohio C&DD leachate parameters that exceeded surface water quality standards also showing parameters that were between 70% and 100% of the standards. 54

Table 16. Organic parameters detected in C&DD leachate that also show indications of ground water impact at Ohio C&DD landfills (highlighted) 58

Table 17. Metals and inorganic parameters detected in C&DD leachate that also show indications of impact to ground water at Ohio C&DD landfills (highlighted) 59

Table 18. Descriptive statistics and comparisons with health based and surface water quality standards for the C&DD leachate parameters possibly impacting ground water at Ohio C&DD landfills 61

Table 19. Summary of level of concern due to health based standards and surface water quality standards for each Ohio C&DD leachate parameter. 64

Table 20. Descriptive statistics and comparisons for all parameters detected in Ohio C&DD leachate during the 2007 leachate sampling event (Attachment 11

Table 21. The 180 parameters analyzed but not detected above the method detection limit during the 2007 C&DD leachate sampling event (Attachment 12)

Table 22. Differences between comparisons of Ohio C&DD leachate descriptive statistics and health based standards for individual and adjusted analytical results (Attachment 13)

Table 23. Differences between comparisons of Ohio C&DD leachate descriptive statistics and surface water quality standards for individual and adjusted analytical results (Attachment 13)

List of Figures

Figure 1. C&DD landfills that were sampled as part for this report 12

Figure 2. Number of detections for each parameter category in Ohio C&DD Leachate sorted by parameter categories with most to fewest detections 18

Figure 3. Boxplot of pH measurements for Ohio C&DD leachate 22

Figure 4. Boxplot of Total Alkalinity measurements for Ohio C&DD leachate 22

Figure 5. Boxplot of TDS measurements of Ohio C&DD leachate 22

Figure 6. Boxplot of COD measurements of Ohio C&DD leachate 22

Figure 7. Piper diagram showing the distribution of major ions in Ohio C&DD leachate 25

Figure 8. Number of parameters in each parameter category that exceeded health based standards sorted by parameter categories with the most to fewest parameters exceeding. 29

Figure 9. Number of parameters at each landfill that exceeded the health based standards and also showing the number of parameters that were 70% to 100% of a health based standard ...40

Figure 10. Number of parameters in each parameter category that exceeded surface water quality standards sorted by parameter categories with most to fewest parameters exceeding ..44

Figure 11. Number of Parameters at each landfill that exceeded surface water quality standards and also showing the number of parameters that were 70% to 100% of surface water quality standards 55

Figure 12. Number of parameters at each Ohio C&DD landfill that exceeded health based standards, surface water quality standards, or both 63

Executive Summary

In 2005, the Ohio General Assembly required Ohio EPA to revise its construction and demolition debris disposal regulations. The agency published draft regulations in 2006 and received extensive comments from stakeholders and other interested parties. In response to comments received, Ohio EPA conducted additional technical studies, including an evaluation of leachate data from Ohio's C&DD landfills. In 2007, Ohio EPA also sampled all of the operating C&DD landfills and one closed C&DD landfill in Ohio where access to Leachate existed (30 C&DD landfills). There are 56 licensed C&DD landfills in Ohio.

The conclusions of this report are as follows:

Ohio C&DD leachate contains a wide variety of inorganic parameters including heavy metals, light metals, trace elements, and other ions. It also contains a wide variety of organic parameters including pesticides, chlorinated solvents, non-chlorinated solvents, gasoline, substituted benzenes, phenolics, chlorofluorocarbons, polycyclic aromatic hydrocarbons (PAHs), phthalates, substituted alkanes, and alcohol.

The leachate from all 30 C&DD landfills had from 3 to 29 parameters with concentrations that exceeded health based standards, surface water quality standards, or both. The median was 12.5 parameters exceeding the standards. The leachate from 29 of the 30 C&DD landfills had eight or more parameters that exceeded the standards.

The wide variety of parameters detected in C&DD leachate, the wide variation in the number of parameters that exceeded health based standards and surface water quality standards in C&DD leachate and the magnitude of the exceedances are evidence that C&DD is not harmless or inert.

There are numerous parameters that were often detected in Ohio C&DD leachate of sufficient concentration that would violate discharge limits of Ohio rules if released to ground water or surface water. They could also cause or contribute to water pollution, and could adversely impact downgradient or downstream residential and public drinking water supplies. Of particular concern are those parameters that were found in C&DD leachate that were multiples of the health based standards (such as arsenic, boron, manganese, and lead), carcinogens (such as arsenic, vinyl chloride, and benzene), mobile in the environment (such as arsenic, vinyl chloride, and benzene), persistent in the environment (such as antimony and lead), or which bioaccumulate (such as arsenic, copper, lead, mercury, nickel, and zinc).

The concentrations of the parameters in Ohio C&DD leachate exceeded secondary maximum concentration limits (SMCLs) to the extent that discharge of the leachate with the average concentrations could render good quality ground water objectionable or unusable for consumption, washing, and industrial production.

Leachate from Ohio C&DD landfills poses a threat to public health and the environment if released to ground water or surface water. The threat is posed by a variety of organic parameters, metals, and inorganic parameters. The degree of risk associated with the threat by a release is dependent upon how the C&DD was disposed, site conditions, and circumstances surrounding the site, which often change over time. This conclusion is supported by numerous studies showing that impacts by C&DD landfills to surface water and ground water have occurred or were indicated (US EPA, Draft 1995b), (Hamilton County General Health District, 2001), (Ohio EPA, 2006), (Townsend, Jambeck, & Clark, 2002), and (Ohio EPA, 2008).

This information should be taken into account by the regulated community, citizens, legislators, and regulators when developing public policy and rules for the management of C&DD and the permitting, construction, operation, closure, and post closure care of C&DD landfills.

Synopsis of the Ohio C&DD Leachate Analytical Data

The conclusions stated on the previous page are supported by the following observations:

- Of the 30 C&DD landfills that had leachate sampled:
  - Each landfill had 3 to 29 parameters that exceeded health based standards for toxicity or carcinogenicity, surface water quality standards, or both.
  - The median number of parameters exceeding standards was 12.5.
  - 29 of the landfills had eight or more parameters that exceeded standards.

- Of the 273 parameters analyzed in the leachate at each landfill:
  - 95 parameters were detected at one or more C&DD landfill.
  - 79 parameters were detected at two or more C&DD landfills.

- Of the parameters detected in C&DD leachate:
  - 30 were chlorinated solvents and pesticides.
  - 25 were heavy metals, light metals, and trace elements.
  - 7 were non-chlorinated solvents.
  - 7 were other ions.
  - 5 were gasoline components.
  - 5 were substituted benzenes.
  - 4 were phenolics.
  - 2 were chlorofluorocarbons.
  - 2 were polycyclic aromatic hydrocarbons (PAHs).
  - The remaining 8 were an alcohol, a pthalate, a substituted alkane, chemical oxygen demand (COD), pH, total dissolved solids (TDS), total alkalinity and one miscellaneous organic compound.

- Of the 95 parameters detected in C&DD leachate, 28 exceeded health based standards, including:
  - 16 heavy metals, light metals, and trace elements.
  - 4 chlorinated solvents and pesticides.
  - 4 other ions and TDS.
  - 4 that were a gasoline component, a PAH, a phenolic, and a phthalate.

- Of the 95 parameters detected in C&DD leachate, 46 exceeded surface water quality standards, including:
  - 18 heavy metals and trace elements.
  - 10 chlorinated solvents and pesticides.
  - 5 other ions and TDS.
  - 4 phenolics.
  - 2 gasoline components.
  - 2 light metals.
  - 2 PAHs.
  - 3 that were a non-chlorinated solvent, a phthalate, and a substituted benzene.

- Of the 95 parameters detected in C&DD leachate, 52 raised a concern when compared with health based standards or surface water quality standards. Of those 52 parameters, 27 raised a concern with both sets of standards.

- Of the 95 parameters detected in C&DD leachate, 18 were identified in a 2008 Ohio EPA study as showing indications of impact on ground water at Ohio C&DD landfills, including:
  - 6 light metals and trace elements.
  - 4 other ions.
  - 2 gasoline components.
  - 6 that were a substituted benzene, a heavy metal, COD, pH, TDS, and total alkalinity.

Introduction

Ohio EPA is revising its C&DD disposal rules pursuant to legislative changes that occurred in late 2005 (see Attachment 1 for Ohio's definition of C&DD). By statute, the C&DD program in Ohio is administered by Ohio EPA and local health departments approved by the director of Ohio EPA. The majority of Ohio's C&DD landfills are regulated directly by approved local health departments. Ohio EPA promulgates rules and guidance documents, and provides technical assistance to the health departments. The local health departments issue licenses, conduct inspections, review data submittals, and conduct enforcement actions when needed, at times assisted by Ohio EPA.

The first Ohio C&DD rules were developed through negotiations with stakeholders in the early 1990s. There was little environmental data available to Ohio EPA. Leachate monitoring and ground water monitoring at these landfills was rare in Ohio, as was the case nationally. When ground water monitoring was present at C&DD landfills, the standards for ground water monitoring were inadequate to document background ground water quality and to determine if landfills were impacting ground water (National Demolition Association, 1995).

The industry put forth the assumption that C&DD is largely harmless or relatively inert material and that state-of-the art demolition landfills pose no significant environmental risk (National Demolition Association, 1995). The industry also indicated that it is unlikely that leachate from a state-of-the art demolition landfill would exceed U.S. EPA primary drinking water standards (National Demolition Association, 1995). As a result, the siting, engineering, operational, and monitoring requirements in the first set of Ohio rules, which were effective in 1996, were limited. That set of rules was largely consistent with rules in 40 other states that were surveyed by the National Demolition Association (National Demolition Association, 1995).

Since the mid-1990s a number of reports were published from such organizations as U.S. EPA, the University of Florida, Hamilton County Health Department in Ohio, and the Florida Center for Environmental Solutions. The reports evaluated the characteristics of C&DD leachate and impacts C&DD landfills were having on ground water and surface water. The following are examples of such reports.

In 1995, U.S. EPA published a draft report that found 11 cases of damage from C&DD landfills. Damage included ground water contamination that exceeded state ground water protection standards or federal drinking water criteria from inorganic parameters, such as iron, manganese, total dissolved solids (TDS), and lead. Surface water and sediment contamination that exceeded applicable state standards and U.S. EPA's ambient water quality criteria for the protection of freshwater aquatic life was documented at six sites. The contamination was due, most frequently, to parameters such as iron, zinc, lead, copper, and pH, with two sites showing contamination from polynuclear aromatic hydrocarbons (PAHs). The study concluded that there was insufficient data for U.S. EPA to determine whether C&DD landfills pose sufficient risk to human health and the environment to warrant additional controls nationwide (US EPA, Draft 1995b).

In 1995, U.S. EPA also published a 305-parameter evaluation of C&DD leachate from 21 landfills. Of the 305 parameters, 93 parameters were detected at least once. Almost all of the other 212 parameters that were never detected were organic compounds. Most of the inorganic and conventional parameters sampled were detected one or more times. The report also states

that 24 parameters had at least one measured value above regulatory or health-based standards. Seven parameters in C&DD leachate were identified as potentially problematic: 1,2-dichlorethane, methylene chloride, cadmium, iron, lead, manganese, and TDS. The report indicated that having data from only 21 landfills was insufficient to determine if the results were representative of C&DD landfills nationwide. (US EPA, Draft 1995a).

In 2001, Hamilton County General Health District in Ohio published its findings of the review of ground water data from wells around seven C&DD landfills in Hamilton County. The conclusions of the report included detections, sometimes above health based standards, of such parameters as iron, manganese, sulfate, chloride, lead, nitrate-nitrite, ammonia, 1,1,1-trichloroethane, carbon disulfide, and other organic compounds. However, due to site conditions and the sporadic nature of some of the detections, the health department could not determine if the landfills were the source of the elevated parameters (Hamilton County General Health District, 2001).

After evaluating the data contained in the Hamilton County report, Ohio EPA concluded that more information is required for the seven landfills to provide a conclusive evaluation of the ground water quality. However, based solely upon the limited information provided, the data indicated that at least four of the seven landfills may be impacting ground water quality (Ohio EPA, 2006).

In 2002, Townsend et al. provided an update of current rules and an assessment of environmental impacts by C&DD landfills in the U.S. The report concluded that issues involving C&DD waste had become more of a concern, as evidenced by almost half of the states requiring some sort of liner for C&DD landfills, and hydrogen sulfide gas having been a concern at some landfills. For ground water monitoring impacts evaluated in the report, 60 of 70 landfills were shown to have at least one exceedance of a parameter in downgradient wells. From 3 to 17 Florida landfills were found to exceed ground water standards downgradient from the landfill for aluminum, TDS, sulfate, ammonia-nitrogen, iron, cadmium, lead, total phenols, bromodichloromethane, chloride, nitrite-nitrogen, benzene, chromium, copper, pH, sodium, arsenic, methyl bromide, trichloromethane, mercury, dibromochloromethane, and turbidity (Townsend, Jambeck, & Clark, 2002).

in 2004, Townsend et al. concluded that there is a potential for concern with respect to leachate quality from lined landfills, ground water quality at unlined landfills, and processed wood mulch from C&DD that includes treated lumber. Townsend also wrote that additional research was needed to determine the magnitude of the problem at actual disposal sites (Townsend, Tolaymat, Solo-Gabriele, Dubey, Stook, & Wadanambi, 2004).

In 2006, Clark et al. summarizing several other studies stated,

> Various potentially dangerous materials, however, are now recognized to occur in some sources of C&D debris. Heavy metals such as lead (paint, pipe solder, flashing, batteries), mercury (lighting, electrical switches, thermostats), cadmium (batteries, paints), and arsenic (treated wood) are common ingredients of many building components. Polychlorinated biphenyls are still encountered in many older lighting ballasts, transformers, and capacitors, as well as numerous other materials. Asbestos building products include floor tiles, roofing mastic, pipe insulation, and cement siding. As a result, the unsafe management of C&D debris can pose a risk to human health and the environment from its generation (e.g., the demolition process) to its final disposition (e.g., disposal in a landfill).

> Even the primary building components themselves (e.g., drywall, wood) can impact the quality of ground water underneath an unlined C&D debris disposal facility. The growing awareness of potential risks posed by C&D debris has spurred the development of regulatory programs to limit unsafe management practices (Clark, Jambeck, & Townsend, 2006).

Information of the type noted above raised the level of legislative, Ohio EPA, and public concerns with the protectiveness of design and operational requirements and the adequacy of monitoring at C&DD landfills in Ohio. U.S. EPA involvement in closure of one landfill in Ohio and numerous complaints from Ohio citizens about the effects of C&DD landfills on their neighborhoods led to an Ohio legislative study committee on the subject and passage of three different Ohio House bills in 2005. The resulting legislative changes to Ohio Revised Code (ORC) Chapter 3714 mandated such requirements as new fees for funding regulatory activities and ground water monitoring; significant restrictions on the locations where C&DD landfills can be sited, prohibiting acceptance of pulverized debris; prohibiting disposal of solid waste; requiring permits, operational plans, hydrogen sulfide contingency plans, compliance disclosures, increased leachate monitoring, increased ground water monitoring; a statewide C&DD information database maintained by Ohio EPA; and an overhaul of Ohio EPA's C&DD disposal rules. The agency published draft regulations in 2006 and received extensive comments from stakeholders and other interested parties

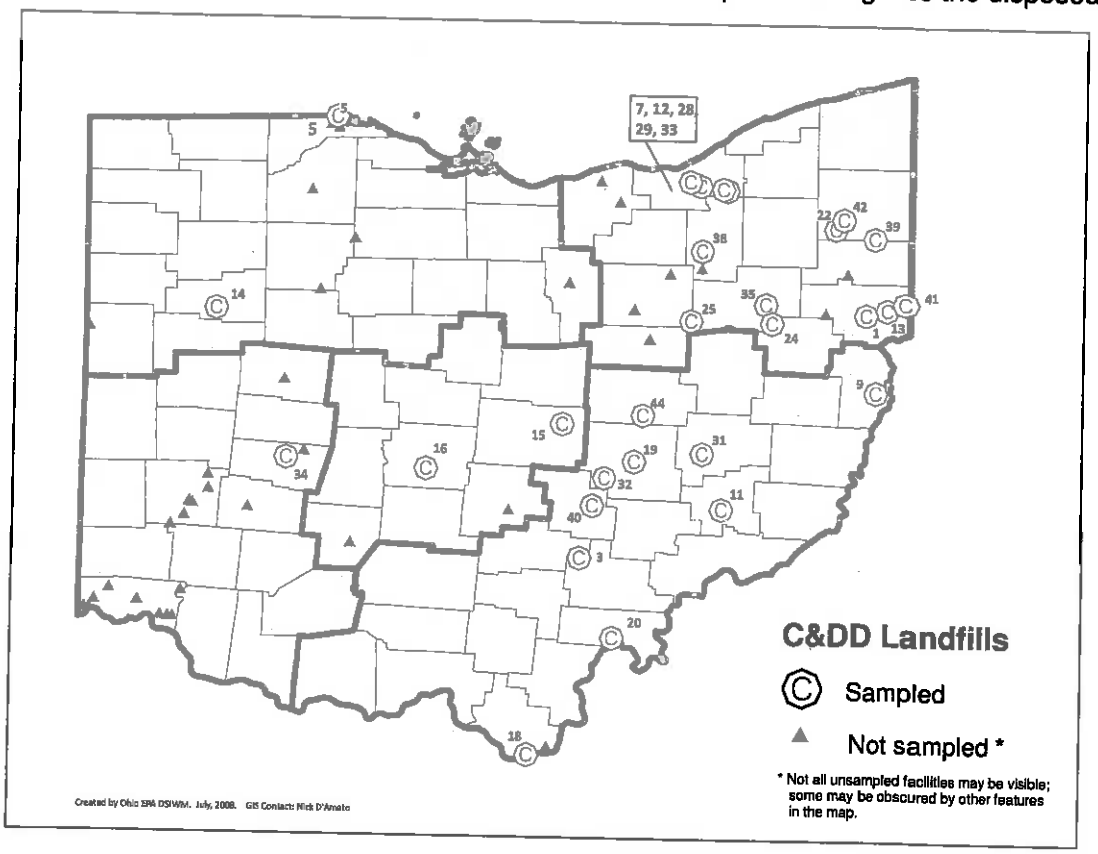
As a result, the Ohio EPA conducted a study to evaluate the hydrogeologic settings and impacts, if any, to ground water by C&DD landfills in Ohio. Ohio EPA evaluated 98 Ohio C&DD landfills. Forty-seven of the 98 landfills had complete data sets making them eligible for further evaluation. Of these 47 landfills, 31 (66 percent) had indications of ground water impact. The parameters indicating ground water impact at these landfills, in order of prevalence, included sulfate, chloride, magnesium, ammonia, sodium, potassium, organic compounds, calcium, bicarbonate, iron, chemical oxygen demand (COD), specific conductance, manganese, total alkalinity, TDS, pH, arsenic, and nitrite (Ohio EPA, 2008).

In addition, Ohio EPA conducted a study to evaluate and understand the nature of Ohio C&DD leachate. In the summer and fall of 2007, staff sampled all of the operating C&DD landfills in Ohio where access to leachate existed (30 landfills).

The evaluation of the results of the 2007 leachate sampling by Ohio EPA is the subject of this report. This report includes a description of the categories of parameters present in the leachate, and quantitative comparisons of the results of the laboratory analyses of the leachate to health based standards and surface water quality standards. This report also includes a comparison of the parameters showing indications of ground water contamination in the Ohio EPA 2008 C&DD ground water study with the 2007 Ohio C&DD leachate data.

Materials and Methods

During the statewide C&DD leachate sampling event in 2007, Ohio EPA collected samples from all of the Ohio C&DD landfills that had a sump, pipe, or tank to draw samples from (See Figure 1). This resulted in 30 landfills being sampled. No attempt was made to obtain samples from the remaining Ohio C&DD landfills since it would have required boring into the disposed debris.



Legend	NAME	COUNTY	DISTRICT	Legend	NAME	COUNTY	DISTRICT
1	A&L Salvage	Columbiana	NEDO	24	Minerva Enterprises	Stark	NEDO
3	Athens-Hocking LF	Athens	SEDO	25	Mount Eaton East Landfill	Wayne	NEDO
5	Lucas County Landfill LLC	Lucas	NWDO	28	RKDF (Kurtz)	Cuyahoga	NEDO
7	Boyas Excavating Inc	Cuyahoga	NEDO	29	Rosby Resource	Cuyahoga	NEDO
9	C&D Disposal Technologies L	Jefferson	SEDO	31	S W Land Co	Guernsey	SEDO
11	Crock Construction C & DD	Noble	SEDO	33	SILVER OAK	Cuyahoga	NEDO
12	Cuyahoga CDD	Cuyahoga	NEDO	34	Springfield LF LLC	Clark	SWDO
13	Elkrun Industries, Inc.	Columbiana	NEDO	35	Stark CDD	Stark	NEDO
14	EOLM	Allen	NWDO	32	Sidwell Materials	Muskingum	SEDO
15	Fallsburg Rd. / Roberts CDD	Licking	CDO	39	TWL – LAS	Trumbull	NEDO
16	Frank Rd. CDD	Franklin	CDO	38	Summit C & D Disposal Inc	Summit	NEDO
18	Iron Valley	Lawrence	SEDO	40	Tunnel Hill Reclamation	Perry	SEDO
19	James Bros C & D Disposal F	Muskingum	SEDO	41	TWL - Penn Ohio	Columbiana	NEDO
20	Jeffers	Meigs	SEDO	42	Warren Recycling Inc	Trumbull	NEDO
22	Lordstown Cons.	Trumbull	NEDO	44	William Albert C&DD Disposal	Coshocton	SEDO

Figure 1. C&DD landfills that were sampled as part for this report

The laboratory had specific collection requirements and supplied the containers. Ohio EPA obtained the samples. Staff followed the standard operating procedures for field sampling used by Ohio EPA. Sample containers were secured with Teflon-lined lids. Samples were stored in ice to maintain the appropriate preservation temperature until they were received by the laboratory.

For every 10 samples taken, one duplicate sample was also taken. At each sampling location, there was ample leachate present to obtain enough volume for samples. When only one sample was taken for the day, no duplicate sample was collected. The log sheets, chains of custody, and data reports contain the duplicate information. Trip blanks went with VOC samples.

See the attachments for the following information related to materials and methods:

- Attachment 2 – C&DD Constituent list
- Attachment 3 – Ohio Administrative Code (OAC) Rule 3745-27-10, Appendix I
- Attachment 4 – OAC Rule 3745-27-10, Appendix II
- Attachment 5 - Sampling Methods and Containers
- Attachment 6 – DSIWM Work Plan Form
- Attachment 7 - Example Sample Bottle Kit Request/Packing List
- Attachment 8 - DSIWM C&DD Leachate Sampling Log Sheet
- Attachment 9 – DSIWM Landfill Sampling Equipment And Supplies List
- Attachment 10 - DSIWM Health and Safety Plan (HASP) Form

Results and Observations

This section is divided into the following parts:

- A summary and evaluation of the parameters that were sampled and analyzed.
- A comparison of the descriptive statistics from the leachate analysis results against health based standards. Health based standards used in this report include the U.S. EPA Maximum Contaminant Levels And Action Levels (MCL) (US EPA, 2006), Ohio EPA, Voluntary Action Program (VAP) Generic Unrestricted Potable Use Standards (proposed OAC Rule 3745-300-08, Tables V and VI), U.S. EPA Lifetime Health Advisory (LTHA) (US EPA, 2006), U.S. EPA Drinking Water Equivalent Level (DWEL) (US EPA, 2006); and the U.S. EPA Secondary Maximum Contaminant Levels (SMCL) (US EPA, 2006).
- A comparison of the descriptive statistics for the leachate analysis results against Ohio surface water quality standards from OAC Chapter 3745-1.
- A comparison of the parameters detected in the C&DD leachate with the constituents showing indications of impact to ground water at Ohio C&DD landfills from the 2008 Ohio EPA study titled "Hydrogeologic evaluation of construction and demolition debris (C&DD) facilities in Ohio.

Labeling of SMCLs as health based standards in this report

The use of health based standards in this report is for the purpose of providing a benchmark to gauge the possible effects that C&DD leachate could have if released to the environment. The use of health based standards in this report is not intended to be used to indicate that the leachate from any given landfill should not exceed those standards and is not intended to indicate that leachate that does exceed those standards is causing harm to public health or the environment. A determination of harm to public health or the environment would require site specific evaluations, analysis, and assessment.

Although U.S. EPA SMCLs are not limits based on toxicity or carcinogenicity, they are included as health based standards in this report because they represent limits for parameters in water that would make the water objectionable for use and to simplify the narrative when discussing the standards. It is understood by Ohio EPA that SMCLs are non-regulatory recommended guidelines that were created due to adverse cosmetic (tooth and skin discoloration) and aesthetic effects (taste, odor, color) (US EPA, 2006). Every attempt has been made to be clear in the tables and narrative when exceedances of what this report terms as "health based standards" are exceedances of SMCLs.

Some ground water can naturally contain parameters that have SMCLs. However, good quality ground water that becomes degraded from human sources could require significant expense on the part of the user of the water to treat the water prior to use to avoid the objectionable effects. Eight parameters (aluminum, sodium, chloride, ammonia, sulfate, pH, TDS, and iron) use SMCLs as the health based standards in this report. The remaining parameters had health based standards derived to protect against adverse toxic or carcinogenic effects that could be used.

Description of the parameters that were sampled and analyzed

Leachate samples were collected from all of the Ohio C&DD landfills that had sampling points, such as pipes, sumps, or tanks available. This resulted in 30 landfills being sampled. The leachate from each landfill was analyzed for 299 parameters. The parameters were selected to provide a wide spectrum of analysis to account for the wide variety of materials that can be disposed in Ohio C&DD landfills. The parameters chosen for analysis also included parameters specified in Ohio statutes and rules. Information about each parameter is in Attachments 2 to 4.

Each metal parameter and trace element parameter had both the total concentration and the dissolved concentration analyzed. All nine of the heavy metals and all seven of the light metals that had total concentrations detected also had dissolved concentrations detected. Eight of the nine trace elements that had total concentrations detected also had dissolved concentrations detected. One trace element, phosphorus, had only total analysis run.

The dissolved heavy metals, dissolved trace elements, and dissolved light metals are not included as parameters in any of the tables, figures, or calculations unless specifically identified. This was done to avoid double counting each metal and trace element.

Chemical oxygen demand (COD), pH, total dissolved solids (TDS), and total alkalinity are being handled separately in this report and are not included in any of the tables, figures, or calculations unless specifically identified.

Of the 299 parameters analyzed, 26 were for dissolved metals and trace elements. This means that the leachate was analyzed for 273 distinct parameters. These 273 parameters will be the focus of this report.

The organic parameters were grouped into the following parameter categories:

- Alcohols
- Chlorinated solvents
- Chlorofluorocarbons
- Gasoline
- Non-chlorinated solvents
- PAHs
- Pesticides
- Phenolics
- Phthalates
- Substituted alkanes
- Substituted benzenes

One organic compound, Bis (2-Chloroethoxy) Methane, was difficult to categorize, so it was labeled as "Other organics".

The metals and inorganic parameters were grouped into the following parameter categories:

- Heavy metals, totals
- Heavy metals, dissolved
- Light metals, totals
- Light metals, dissolved
- Trace elements, totals
- Trace elements, dissolved
- Other ions
- COD
- pH
- TDS
- Total Alkalinity

The term "heavy metals" is poorly defined in the literature, leading some to hold it is a "meaningless term" (Duffus, 2001). Ohio EPA categorized parameters in this document as "heavy metals" if they were generally accepted as being toxic to humans, could not be categorized as micronutrients, and were denser than cobalt. Two exceptions to these criteria were included as heavy metals. The first exception is beryllium, which is toxic but less dense than cobalt. The second exception is arsenic, which is technically a nonmetal or metalloid. Some of the trace elements in this report may be toxic at higher dosages and are sometimes considered heavy metals by regulatory agencies. However, they are also considered micronutrients at low dosages. As a result, they are categorized as trace elements in this report.

Description of the parameters that were detected

Of the 273 parameters analyzed, 95 parameters were detected at one or more C&DD landfill (See Table 1) including COD, pH, TDS, and total alkalinity. Dissolved parameters were not included in the count of parameters in Table 1 so that metals and trace elements would not be counted twice.

Of those 95 parameters:

- 61 percent were organic parameters.
- 23 percent were light metals, trace elements, and other ions.
- 9 percent were heavy metals.
- The remaining percentage was made up of COD, pH, TDS, and total alkalinity.

See Attachment 11 for the descriptive statistics and comparisons for all parameters detected in Ohio C&DD Leachate during the 2007 leachate sampling event. See Attachment 12 for a listing of all of the parameters that were analyzed but not detected during the 2007 leachate sampling event. Two metals (silver and tin) were not detected at any C&DD landfill. Organic compounds comprised the remaining 176 parameters that were not detected.

Table 1. Number of parameters in each parameter category detected at one or more Ohio C&DD landfills

Parameter Category	Number of parameters detected	Percentage (%)
Organic Parameters		
Pesticides	19	20
Chlorinated solvents	11	12
Non-chlorinated solvents	7	7
Gasoline	5	5
Substituted benzenes	5	5
Phenolics	4	4
Chlorofluorocarbons	2	2
PAHs	2	2
Alcohols	1	1
Phthalates	1	1
Substituted alkanes	1	1
Other organics	1	1
Metals and Inorganic Parameters		
Heavy metals	9	9
Light metals	7	7
Trace elements	9	9
Other ions	7	7
COD	1	1
pH	1	1
TDS	1	1
Total Alkalinity	1	1
Total	95	

The parameter categories with the most parameters having detections were pesticides, chlorinated solvents, heavy metals, trace elements, light metals, non-chlorinated solvents, other ions, gasoline, substituted benzenes, and phenolics. Parameter categories with the fewest parameters having detections were chlorofluorocarbons, PAHs, phthalates, substituted alkanes, and alcohols.

Table 2 and Figure 2 show the number of detections that occurred in each parameter category. The most frequently detected parameters in order from most to fewest were trace elements, light metals, other ions, heavy metals, gasoline, chlorinated solvents, pesticides, non-chlorinated solvents, substituted benzenes, PAHs, phenolics, and chlorofluorocarbons accounting for 89 percent of the parameters detected. COD, pH, TDS, and total alkalinity were measured at all of the landfills, which accounts for 10 percent of the detections. The remaining one percent of detections included phthalates, substituted alkanes, alcohols, and one other organic parameter. Also expected was the high detection frequency of trace elements, light metals, other ions, and heavy metals.

What was unexpected was the high detection frequency of gasoline, chlorinated solvents, pesticides and non-chlorinated solvents.

The pesticides detected included both herbicides and insecticides. Pesticides usually adhere to soil particles or the materials they were applied to such as wood, carpeting, and textiles. Pesticides are often low in solubility and have relatively low mobility; yet 19 different pesticides accounted for 68 detections and were detected at numerous landfills. This may indicate that the quantity of pesticides in the disposed C&DD is quite large.

Table 2. Number of detections in each parameter category at Ohio C&DD landfills

Parameter Category	Number of Detections	Percentage (%)
Organic Parameters		
Gasoline	94	8.1
Chlorinated solvents	81	7.0
Pesticides	68	5.9
Non-chlorinated solvents	60	5.2
Substituted benzenes	23	2.0
PAHs	22	1.9
Phenolics	9	0.8
Chlorofluorocarbons	8	0.7
Phthalates	4	0.3
Substituted alkanes	4	0.3
Alcohols	2	0.2
Other organics	1	0.1
Metals and Inorganic Parameters		
Heavy metals	138	11.9
Light metals	181	15.6
Trace elements	185	15.9
Other ions	161	13.9
COD	30	2.6
pH	30	2.6
TDS	30	2.6
Total Alkalinity	30	2.6
Total Detections	1161	

The counts for dissolved parameters for 24 metals and trace elements were not shown in Table 2 or Figure 2 so that the metals and trace elements would not be counted twice.

The high number of detections for gasoline may be from fuel spills from equipment and storage containers during construction and demolition activities. It could also be coming from petroleum contaminated soils, which are often not regulated as waste by Ohio, but are used as operational cover at Ohio C&DD landfills.

Table 3 shows the 59 organic parameters grouped by parameter category that were detected in leachate at one or more Ohio C&DD landfills. Highlighted parameters in Table 3 were also listed as detected in the study, "Construction and Demolition Waste Landfills" (US EPA, Draft 1995a)

Table 4 shows the 36 metals and inorganic parameters grouped by parameter category that were detected in leachate at one or more Ohio C&DD landfills. For completeness, pH, COD, TDS and total alkalinity are also shown. Highlighted parameters in Table 4 were also listed as detected in the study, "Construction and Demolition Waste Landfills" (US EPA, Draft 1995a).

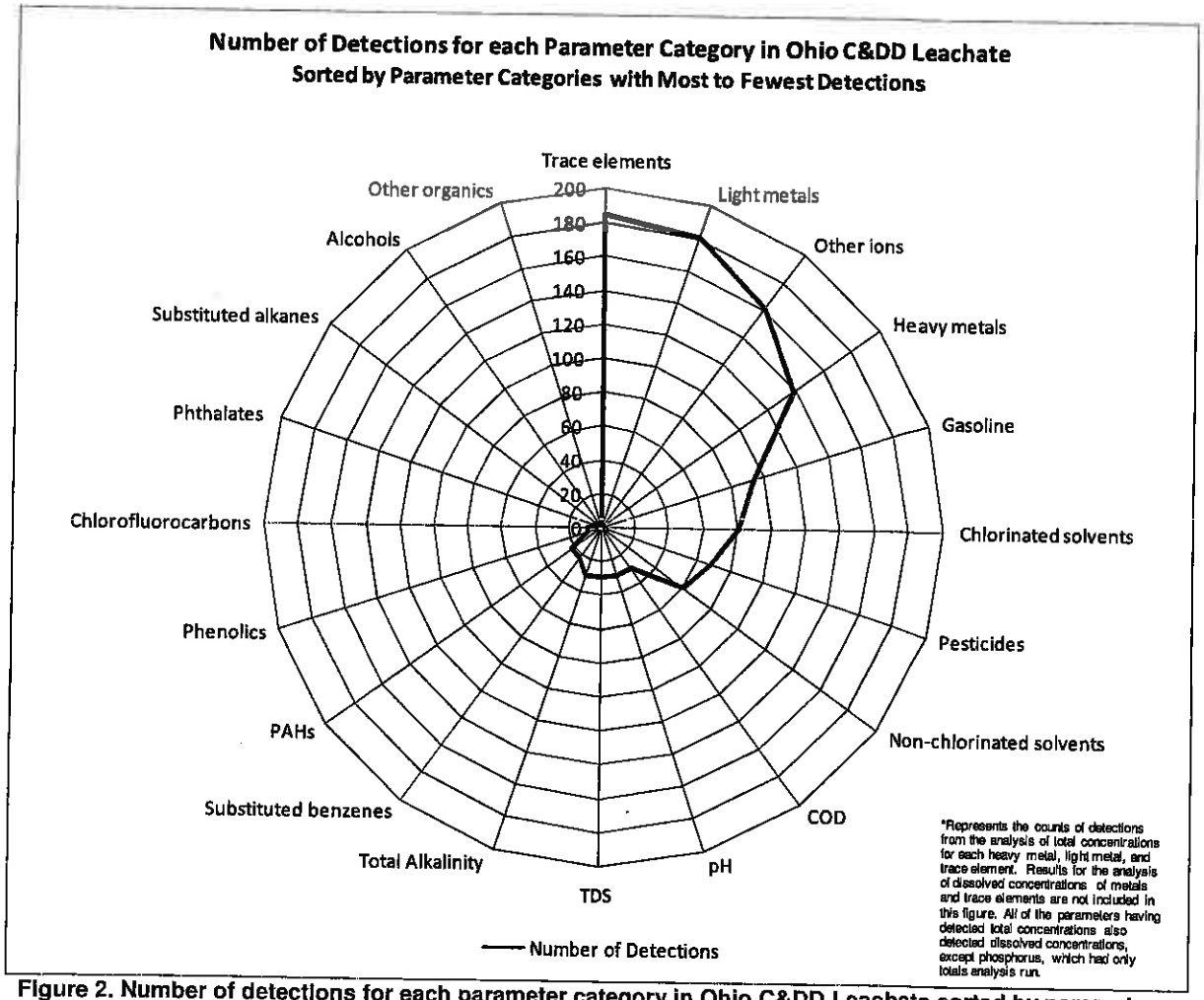


Figure 2. Number of detections for each parameter category in Ohio C&DD Leachate sorted by parameter categories with most to fewest detections

Table 3. Organic parameters detected in leachate from one or more Ohio C&DD landfills.

Category	Parameter Name
Alcohols	Isobutanol
Substituted Benzenes	1,2-Dichlorobenzene
	Chlorobenzene
	Dibenzofuran
	p-Isopropyltoluene
	Styrene
Chlorinated solvents	1,1,1-Trichloroethane
	1,1-Dichloroethane
	1,2-Dichloroethane
	Chloroethane
	Chloroform
	cis-1,2-Dichloroethene
	Methylene chloride
	Tetrachloroethene
	trans-1,2-Dichloroethene
	Trichloroethene
	Vinyl chloride
Chlorofluorocarbons	Dichlorodifluoromethane
	Trichlorofluoromethane
Gasoline	Benzene
	Ethylbenzene
	m-,p-Xylene
	o-Xylene
	Toluene
Non-chlorinated solvents	2-Butanone
	2-Hexanone
	4-Methyl-2-pentanone
	Acetone
	Acetophenone
	Benzyl alcohol
	Carbon disulfide

Category	Parameter Name
PAHs	Acenaphthene
	Naphthalene
Pesticides	1,4-Dichlorobenzene
	2,4,5-TP (Silvex)
	2,4-D
	2,4-DB
	4,4'-DDE
	4,4'-DDT
	alpha Chlordane
	Dicamba
	Dichloroprop
	Dieldrin
	Disulfoton
	EPN
	gamma Chlordane
	Heptachlor
	Heptachlor epoxide
	MCPA
	MCPP
	Methoxychlor
	Pentachlorophenol
Phenolics	2,4-Dimethylphenol
	2-Methylphenol
	3-,4-Methylphenol
	Phenol
Phthalates	bis(2-Ethylhexyl) phthalate
Substituted alkanes	1,2-Dichloropropane
Other organic	Bis(2-Chloroethoxy) Methane

*Highlighted parameters were also listed as detected in the study, "Construction and Demolition Waste Landfills" (US EPA, Draft 1995a)

Table 4. Metals and inorganic parameters detected in leachate from one or more Ohio C&DD landfills

Category	Parameter Name
Heavy metal, Totals and dissolved	Antimony
	Arsenic
	Barium
	Beryllium
	Cadmium
	Lead
	Mercury
	Nickel
	Thallium
Light metal, Totals and dissolved	Aluminum
	Calcium
	Magnesium
	Potassium
	Sodium
	Strontium
	Vanadium

Category	Parameter Name
Other ions	Chloride
	Cyanide, Weak/Dissociable
	Fluoride
	Nitrogen, Ammonia
	Nitrogen, Nitrate-Nitrite
	Sulfate
	Sulfide
Trace element, Totals and dissolved (except phosphorus)	Boron
	Chromium
	Cobalt
	Copper
	Iron
	Manganese
	Selenium
	Phosphorus
	Zinc

Chemical Oxygen Demand	COD
pH	pH
Total Dissolved Solids	TDS
Total Alkalinity	Total Alkalinity

*Highlighted parameters were also listed as detected in the study, "Construction and Demolition Waste Landfills" (US EPA, Draft 1995a).

Based on historical information, such as the sources cited in the introduction (see especially (US EPA, Draft 1995a)), it was expected that approximately 90 parameters would be detected; 95 were detected. It was also expected that metals and inorganic parameters would be the primary constituents detected in Ohio's C&DD leachate; with approximately 55 of the 90 parameters being metals and inorganic compounds. However, the results from Ohio EPA's leachate analysis provided the surprising result that only 36 metals and inorganic parameters were detected, which was lower than expected. It was also expected that approximately 35 organic parameters would be detected in Ohio's C&DD leachate. However, what was found was that 59 organic parameters were detected. There were a wide variety of organic parameters detected. It was surprising that pesticides, chlorinated solvents and non-chlorinated solvents would be such a large proportion (40 percent) of parameters detected when compared with the proportion of metals and inorganic parameters detected (38 percent).

Evaluation of pH, Total Alkalinity, TDS, and COD

pH

The pH of Ohio C&DD leachate ranges from 6.6 standard units (S.U.) to 7.94 S.U. with a mean measurement of 7.1 S.U. The 95 percent confidence limits for the mean shows that the mean is expected to be from 7.0 S.U. to 7.3 S.U. Iron Valley C&DD landfill and TWL - Penn Ohio C&DD landfill each had a pH measurement (7.71 and 7.94 S.U., respectively) that was a high outlier when compared with the other C&DD landfills (See Figure 3).

For two of the landfills that had multiple samples measured for pH (Summit C&D Disposal, Inc. and TWL-Penn Ohio), each had one result for pH recorded at 9.04 S.U. This value is extreme

when compared with the pH measurements of the other landfills and with the other pH measurement taken at each of those two landfills. It is also unusual that both landfills would have exactly the same extreme pH. It is suspected that field measurement bias resulted in the two anomalous pH readings. They were, therefore, excluded from the tables and calculations in this Ohio EPA study. If additional sampling confirms the high pH values, then the understanding of the pH of Ohio C&DD leachate will need to be revised.

C&DD landfills that dispose large amounts of concrete and cement debris may tend to have higher pH. Landfills that dispose a broad mixture of C&DD may tend to have near neutral pH. Landfills that dispose large amounts of wood and cardboard may tend to be more acidic (Townsend, Jang, & Thurn, 1999). The variation of pH across the Ohio C&DD landfills may be reflective of the differences in the types of C&DD that were disposed. Dilution from ground water infiltration, surface water, and precipitation may also have an effect on the pH from landfill to landfill.

Total Alkalinity

The total alkalinity of Ohio C&DD leachate ranges from 145 mg/L to 3750 mg/L with a mean concentration of 1692 mg/L. The 95 percent confidence limits for the mean shows that the mean is expected to be from 1400 mg/L to 1885 mg/L. Springfield C&DD landfill had the lowest total alkalinity measured at 145 mg/l. This value is a low outlier when compared with the concentrations at the rest of the C&DD landfills. TWL – LAS had the highest total alkalinity measured at 3750 mg/L. This value is a high outlier when compared with the concentrations of the rest of the C&DD landfills. The total alkalinity at all of the remaining 28 landfills ranges from 502 mg/L to 2970 mg/L (See Figure 4). The low measurements of total alkalinity at Springfield C&DD landfill may be the result of dilution by ground water infiltration, surface water, or precipitation. Springfield C&DD landfill also had lower concentrations of other parameters and fewer parameters that exceeded standards when compared with the other 29 landfills; this supports the possibility that dilution affected the concentrations of the parameters in the leachate at this landfill. The other 29 Ohio C&DD landfills show a range for total alkalinity expected (Townsend, Jang, & Thurn, 1999).

TDS

The TDS of Ohio C&DD leachate ranges from 634 mg/L to 7040 mg/L with a mean concentration of 3055 mg/L. The 95 percent confidence limits for the mean shows that the mean is expected to be from 2562 mg/L to 3549 mg/L. TWL – LAS C&DD landfill and RKDF C&DD landfill had the highest TDS measured at 7040 mg/L and 6990 mg/L, respectively. Those values are high outliers when compared with the other C&DD landfills. The maximum TDS of leachate measured at the other 28 landfills is 5460 mg/L (See Figure 5). These 28 Ohio C&DD landfills show a range for TDS that would be expected (Townsend, Jang, & Thurn, 1999). It is unknown why the TDS at TWL – LAS and RKDF would be higher than expected. It is possible that these two landfills have less dilution due to ground water infiltration, surface water run-on, and precipitation than the other landfills or it may be reflective of the type of debris being disposed.

COD

The COD of Ohio C&DD leachate ranges from 50.1 mg/L to 4390 mg/L with a mean concentration of 826 mg/L. The 95 percent confidence limits for the mean shows that the mean is expected to be from 501 mg/L to 1151 mg/L. RKDF and TWL – LAS had the highest

measured COD at 4390 mg/L and 4320 mg/L, respectively. These values are extreme when compared with the COD measurements of the other landfills. The maximum COD measurement of leachate at the remaining 28 landfills is 1560 mg/L (See Figure 6). The range of COD measurements at Ohio C&DD landfills falls in a range similar to what would be expected of C&DD leachate (Townsend, Jang, & Thurn, 1999). It is unknown why the COD measurements at RKDF and TWL-LAS are higher than the remaining 28 landfills. The TDS concentrations are higher at these two landfills also and these two landfills were among the landfills with a higher number of parameters that exceeded standards. This may support the theory that less dilution is occurring at these two landfills or that the type of debris being disposed is different.

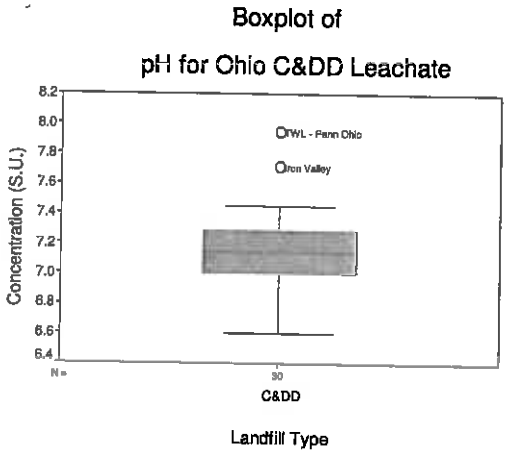


Figure 3. Boxplot of pH measurements for Ohio C&DD leachate

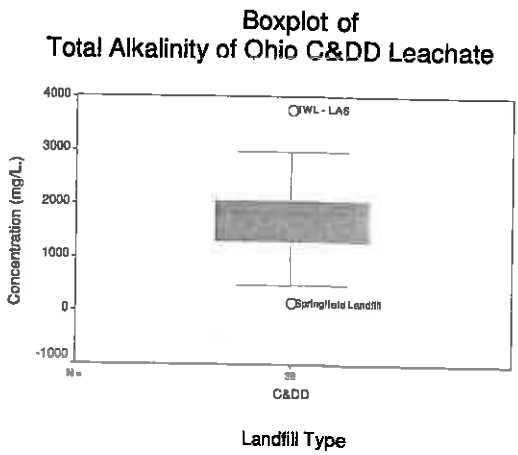


Figure 4. Boxplot of Total Alkalinity measurements for Ohio C&DD leachate

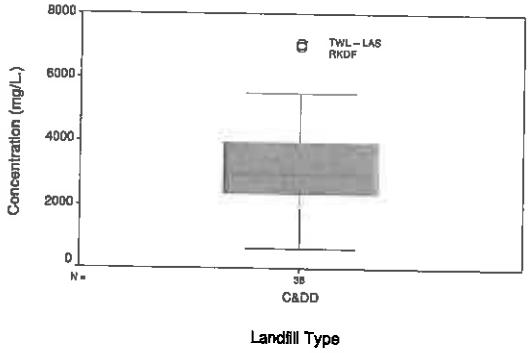


Figure 5. Boxplot of TDS measurements of Ohio C&DD leachate

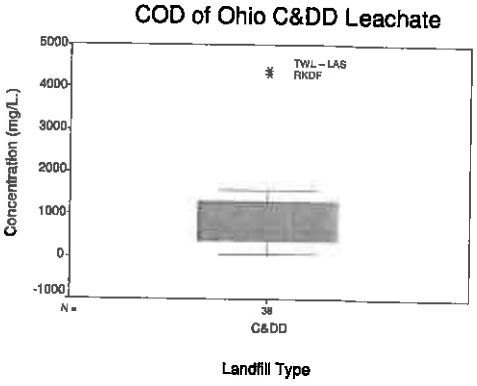


Figure 6. Boxplot of COD measurements of Ohio C&DD leachate

Notes for Figure 3 to Figure 6

o = value is an outlier compared with other landfills (an outlier concentration has a value from 1.5 to 3 box lengths from the upper or lower edge of the box. The box length is the interquartile range).

* = extreme value compared with other landfills (an extreme concentration has a value more than 3 box lengths from the upper or lower edge of the box. The box length is the interquartile range).

With a few exceptions, the measurements of pH, TDS, COD, and total alkalinity from Ohio C&DD leachate are similar to the findings in the literature for leachate from C&DD landfills in other states as described in the sources summarized in the introduction.

Evaluation of major cations and anions

Figure 7 shows a Piper diagram of the leachate analysis results for the 30 Ohio C&DD landfills. The Piper diagram displays the ratios of major anions and cations in the leachate and is useful for understanding similarities and differences between the leachate from landfill to landfill. Bicarbonate was not a parameter used by Ohio EPA during this sampling event. The following formula was used to convert the total alkalinity results to bicarbonate equivalents for the purposes of constructing the Piper diagram.

BICARBONATE (HCO_3) = TOT ALK/0.82 (Hem, 1985, reprinted 1992)

Cation Proportions

Figure 7 shows that there was no dominant type of major cation for C&DD leachate. This means the sodium plus potassium, magnesium, and calcium cations were of similar proportions in the leachate at each of the landfills. Three exceptions exist that include four landfills. The exceptions are marked A, B, and C on Figure 7.

Exception A is the James Bros. C&D landfill (ID 33488), which has a higher proportion of calcium than the other C&DD landfills.

Exception B is Ohio Demo (BFI C&D) landfill (ID 26919), which has a higher proportion of magnesium than the other C&DD landfills.

Exception C includes two landfills that had a higher proportion of sodium plus potassium than the other C&DD landfills. The two landfills are Frank Road (AGG ROK Demo LF) (ID 230321) and RKDF (ID 54266).

Anion Proportions

Figure 7 shows Ohio C&DD landfill leachate has a higher proportion of bicarbonate than chloride or sulfate. Two exceptions exist that include four landfills. The exceptions are marked D and E on Figure 7.

Exception D includes three landfills that had a higher proportion of sulfate than the other Ohio C&DD landfills. The three landfills that had leachate that were proportionately higher in sulfate are: RKDF (ID 54266), TWL – Penn Ohio C&DD landfill (ID 145884), and Springfield C&DD landfill LLC (Ron's Demolition) (ID 54297).

Exception E is the Boyas Excavating, Inc. C&DD landfill (ID 54264), which has no anions with a dominant proportion. This landfill has higher proportions of chloride and sulfate compared with the other C&DD landfills, but the sulfate was not as high as the landfills in Exception D.

Frank Road C&DD landfill (ID 230321) has a higher proportion of chloride than any other C&DD landfill. However, the proportion of chloride was not high enough to be considered dominant, so it was still considered as having a bicarbonate dominant leachate.

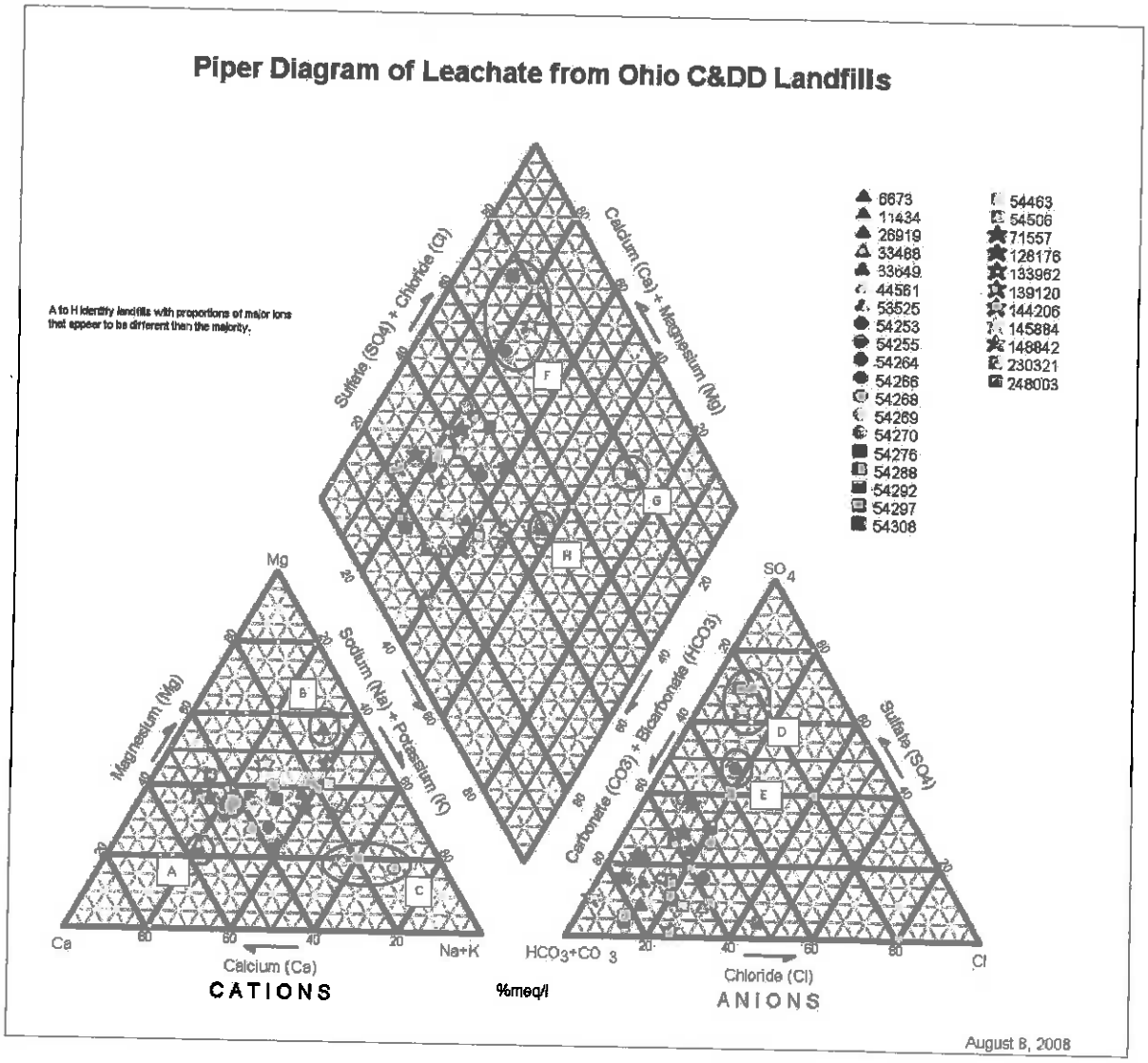
Cation-Anion Proportions

The diamond shaped portion of Figure 7 shows the plot of the cation proportions and the anion proportions together for the Ohio C&DD landfills sampled for this report. Ohio C&DD landfills had a higher proportion of calcium plus magnesium and bicarbonate in their leachate than sodium plus potassium, chloride, and sulfate. Five of the seven landfills that are exceptions in the cations or anions portions of Figure 7 are also exceptions on this part of the graph.

Exception F includes three landfills that had sulfate as higher proportion and bicarbonate in a lower proportion in their leachate than the other C&DD landfills. The three landfills in this exception are: TWL – Penn Ohio C&DD landfill (ID 145884), Springfield C&DD landfill LLC (Ron's Demolition) (ID 54297) and the Boyas Excavating, Inc. C&DD landfill (ID 54264). It can be seen on this plot that Springfield C&DD landfill LLC also has a higher proportion of calcium plus magnesium than almost all of the other C&DD landfills.

Exception G is RKDF (ID 54266), which has a higher proportion of sulfate and sodium plus potassium than the other C&DD landfills. This landfill also has a lower proportion of calcium plus magnesium and bicarbonate than the other C&DD landfills.

Exception H is Frank Road (AGG ROK Demo LF) (ID 230321), which has higher sodium plus potassium, and was among the landfills with a lower proportion of bicarbonate than the majority of the other C&DD landfills.



ID	Landfill [Number from Figure 1]	ID	Landfill [Number from Figure 1]	ID	Landfill [Number from Figure 1]
6673	Elk Run Industries, Inc. [13]	54266	RKDF (Kurtz) [28]	54506	Rosby Resource Recovery [29]
11434	Cuyahoga LF Inc.[12]	54268	Silver Oak Land Development, Inc. [33]	71557	Lordstown Construction Recovery [22]
26919	Lucas County Landfill LLC [5]	54269	Fallsburg/Roberts C&DD Landfill [15]	128176	William Albert CDD Disposal [44]
33488	James Bros. C&D Disposal [19]	54270	Stark C&D Disposal [35]	133962	Warren Recycling [42]
33649	Sidwell Materials [32]	54276	SW Land Company [31]	139120	A & L Salvage C&DD LF [1]
44561	Mount Eaton East Landfill [25]	54288	Minerva Enterprises [24]	144206	Jeffers C&DD Disposal Fac. [20]
53525	Summit C&D Disposal, Inc. [38]	54292	Iron Valley [18]	145884	TWL Penn-Ohio [41]
54253	Athens - Hocking [3]	54297	Springfield Landfill LLC [34]	148842	Tunnel Hill Reclamation [40]
54255	TWL - LAS [39]	54308	Crock Construction C&DD [11]	230321	Frank Road (AGG ROK Demo LF) [16]
54264	Boyas Excavating, Inc. [7]	54463	EOLM [14]	248003	C&D Disposal Tech., LLC [9]

Figure 7. Piper diagram showing the distribution of major ions in Ohio C&DD leachate

The dominant anion in Ohio C&DD leachate was bicarbonate. There was no dominant cation, though calcium and magnesium tended to be higher in proportion of major cations in Ohio C&DD leachate. Sulfate was the dominant anion at three landfills, with one additional landfill having sulfate higher than the other landfills, but not high enough in proportion to the other anions to be considered dominant. Chloride typically made up less than 20 percent of the major anions in Ohio C&DD leachate. Sodium and potassium were the dominant cations at two landfills.

Since the majority of the C&DD landfills plot in only one quadrant of each section of the Piper diagram, Piper diagrams may prove useful when comparing C&DD leachate with leachate from other types of landfills, ground water, and surface water. However, seven of the landfills (1/4) do not fit the typical profile of C&DD leachate demonstrated by the other 23 landfills. This shows that there was wide variability from landfill to landfill in the proportions of the major ions in leachate.

The differences in the proportions of major cations and anions identified as A through H in Figure 7 could be the result of dilution by ground water infiltration, precipitation, and surface water run-on. Other reasons for the differences could be the type of materials disposed in the landfill, the presence or absence of leachate recirculation, the amount of compaction and size reduction the disposed material undergoes as it is being disposed; the amount and type of cover used; or the amount, depth, and age of the disposed materials. Without further study, Ohio EPA cannot draw a conclusion as to which, if any, of these reasons account for the differences.

Comparison against health based standards

Health based standards used in this report were applied to each parameter in the following order:

- U.S. EPA Maximum Contaminant Levels or Action Levels (MCL).

  The U.S. EPA MCLs are the highest level of a contaminant that is allowed in drinking water (US EPA, 2006).

- Ohio EPA, Voluntary Action Program (VAP) Generic Unrestricted Potable Use Standards (GUPUS) (proposed OAC Rule 3745-300-08, Tables V and VI).

  The Ohio EPA, VAP, GUPUS contained in Table V and Table VI of proposed OAC Rule 3745-300-08 were determined using the assumption that the ground water on, underlying and emanating from the property will be used as a source of water for drinking, cooking, showering and bathing.

- U.S. EPA Lifetime Health Advisory (LTHA).

  U.S. EPA LTHAs are the concentration of a chemical in drinking water that is not expected to cause any adverse non-carcinogenic effects for a lifetime of exposure. The LTHAs are based on exposure of a 70-kg adult consuming two liters of water per day. Where appropriate, U.S. EPA has made adjustments to the LTHA for certain types of possible carcinogens (US EPA, 2006).

- U.S. EPA Drinking Water Equivalent Level (DWEL).

  U.S. EPA DWELs are the lifetime exposure concentrations protective of adverse, non-cancer health effects that assumes all of the exposure to a contaminant is from drinking water (US EPA, 2006).

- U.S. EPA Secondary Maximum Contaminant Levels (SMCL).[1]

  U.S. EPA SMCLs are non-enforceable federal guidelines regarding cosmetic effects (such as tooth or skin discoloration) or aesthetic effects (such as taste, odor, or color) of drinking water (US EPA, 2006).

Eight parameters (aluminum, sodium, chloride, ammonia, sulfate, pH, TDS, and iron) had SMCLs assigned. The remaining parameters had health based standards that could be used that were derived to protect against adverse toxic or carcinogenic effects.

Seventeen of the parameters detected did not have a health based standard to be assigned.

Ninety five parameters were detected in Ohio C&DD leachate. Of the 95 parameters that were detected, 78 parameters had health based standards assigned. Fifty of the 78 parameters that have health based standards (64 percent[2]) were below the standards and 28 of the parameters (36 percent) exceeded the standards at one or more landfill.

Table 5 and Figure 8 show the number of parameters that exceeded a health based standard in each parameter category at one or more landfill. There were 28 parameters that exceeded the health based standards (excluding dissolved heavy metals, dissolved trace elements, and dissolved light metals). Twenty one parameters exceeded health based standards determined by toxicity or carcinogenicity. The remaining seven parameters exceeded standards based on SMCLs.

Heavy metals account for 8 of the exceedances (29 percent); light metals, trace elements, and other ions account for 11 of the exceedances (39 percent); and organic parameters account for 8 of the exceedances (29 percent). TDS accounts for the remaining percentage.
The exceedances of health based standards at Ohio C&DD landfills occurred mainly due to heavy metals, light metals, trace elements, other ions, chlorinated solvents, and pesticides, with one parameter exceeding the health based standards from the categories of gasoline, PAHs, phenolics, and phthalates. TDS also exceeded the health based standard.

Seven of the parameters that exceeded the standards were aluminum, chloride, iron, ammonia, sodium, sulfate, and TDS. The standards for these parameters are SMCLs[1].

There were 12 metals and trace elements with results for dissolved concentrations that exceeded the health based standards that also had total concentration results that exceeded health based standards. To avoid double counting parameters that had both dissolved and total concentration results, the dissolved results were not counted in Table 5 or shown in Figure 8. Total cadmium was detected at two landfills and did not exceed the health based standard (it was 57 percent and 91 percent of the standard). Dissolved cadmium was detected at one landfill and did exceed the health based standard (1.17 times). This was the only heavy metal where the total concentrations measured did not exceed the standard but a dissolved concentration did. It is unusual for a dissolved concentration of a metal to be higher than the total concentration in a sample. So, some questions arise about the validity of the dissolved cadmium result. However, the literature indicates that cadmium has been identified as a parameter of concern at C&DD landfills (US EPA, Draft 1995a), (Townsend, Jambeck, & Clark, 2002), (Clark, Jambeck, & Townsend, 2006).

Because cadmium has been identified in the literature as a parameter of concern at C&DD landfills and because it was detected at 10 percent of the C&DD landfills sampled by Ohio EPA,

[1] See Labeling of SMCLs as health based standards in this report on page 13 for more information.
[2] All percentages are rounded to the nearest integer.

cadmium was included, for the purpose of discussion, in the list of heavy metals that exceeded the health based standards in Table 5, shown in Figure 8, and other figures and tables throughout the report. For clarity, cadmium is called out each time it is included in totals or subtotals of figures, tables, or in the narrative.

However, due to the questions regarding the unusual occurrence of a dissolved concentration being higher than totals concentrations, cadmium was ultimately categorized as a noteworthy parameter, rather than a parameter with a high level of concern or a parameter with a moderate level of concern (See Table 8. Parameters of concern in Ohio C&DD leachate when compared with health based standards.

Table 5. Number of parameters in each parameter category that exceeded health based standards at one or more Ohio C&DD landfills.

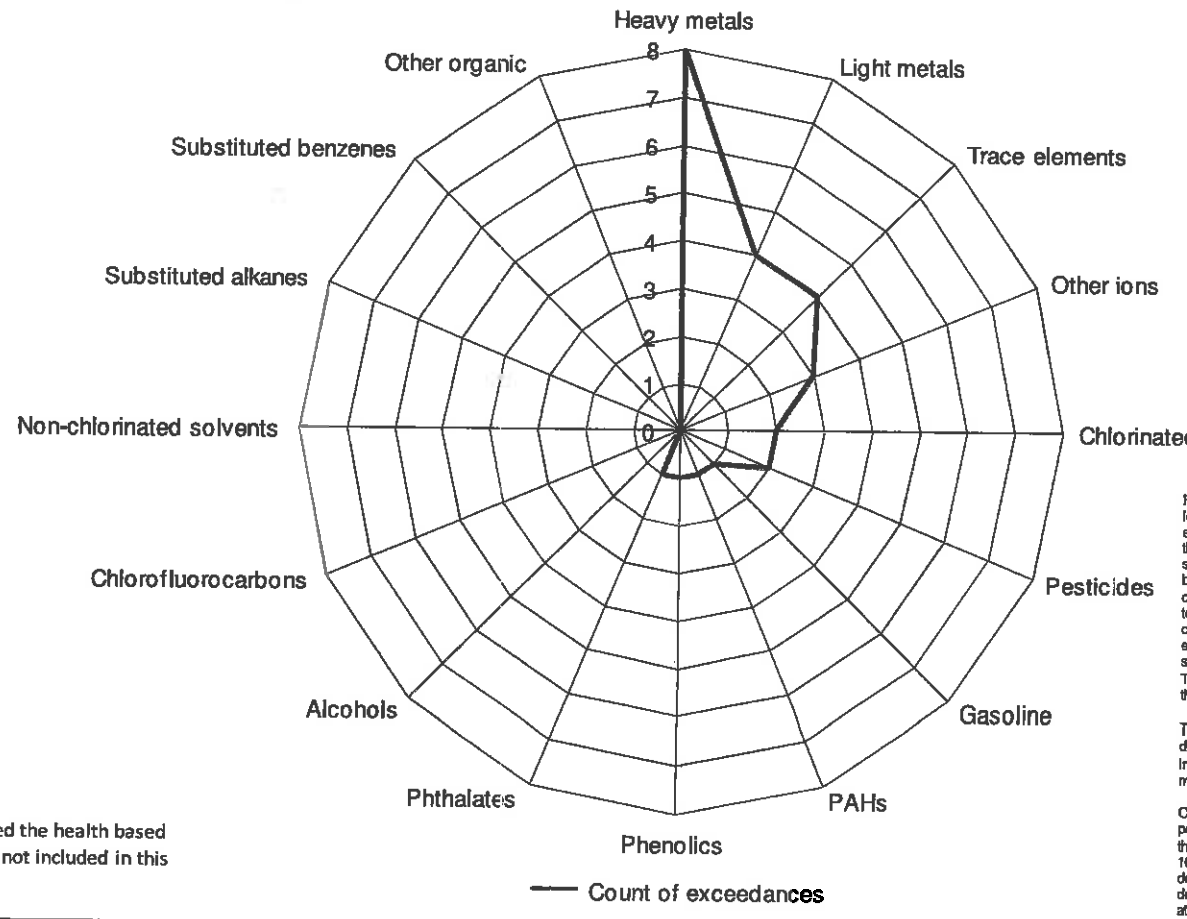
Parameter Category	Number of parameters that exceeded a HB Standard	Percentage (%)
Organic Parameters		
Chlorinated solvents	2	7
Pesticides	2	7
Gasoline	1	4
PAHs	1	4
Phenolics	1	4
Phthalates	1	4
Alcohols	0	0
Chlorofluorocarbons	0	0
Non-chlorinated solvents	0	0
Substituted alkanes	0	0
Substituted benzenes	0	0
Other organic	0	0
Metals and Inorganic Parameters		
Heavy metals	8	29
Light metals	4	14
Trace elements	4	14
Other ions	3	11
TDS	1	4
Total	28	

The pesticide, MCPA, and dissolved cadmium which exceeded the standard included in Table 5 were detected at one landfill (total cadmium was detected at two landfills though it was detected at 91 percent of the standard). All the other parameters were detected at three or more C&DD landfills.

Not shown in Table 5 are one additional parameter in the category "other ion" (fluoride), one additional pesticide, (disulfoton), and pH that were 70 percent to 100 percent of the health based standards. Fluoride was detected at all C&DD landfills, disulfoton was detected at one C&DD landfill, and pH was measured at all C&DD landfills.

Number of leachate Parameters that Exceed Health Based Standards at One or More C&DD Landfills

Sorted by Parameter Categories with Most to Fewest Parameters Exceeding



TDS also exceeded the health based standards but is not included in this figure.

Five dissolved heavy metals, (antimony, arsenic, lead, nickel, thallium), Four dissolved trace elements (boron, chromium, iron, manganese) and three dissolved light metals (aluminum, sodium, strontium) also exceeded health based standards but are not included in this figure to avoid double counting parameters that had both dissolved and total concentration results. The exception is for cadmium, where the totals concentrations did not exceed the HB standards (it was 91% of the HB standard) but the dissolved concentration did. Therefore, cadmium was counted as a heavy metal that exceeded the HB standard.

The pesticide, MCPA, included in this figure was detected at one landfill. All other parameters included in this figure were detected at three or more landfills.

One additional anion (fluoride), one additional pesticide, (disulfoton), and pH were not included in this figure, but were detected between 70% and 100% of the health based standards. Fluoride was detected at all C&DD landfills disulfoton was detected at one C&DD landfill, pH was measured at all of the C&DD landfills.

Figure 8. Number of parameters in each parameter category that exceeded health based standards sorted by parameter categories with the most to fewest parameters exceeding.

Table 6 shows the list of 59 organic parameters sorted by parameter category that were detected in C&DD leachate. Eight parameters, methylene chloride, vinyl chloride, benzene, naphthalene, MCPA, pentachlorophenol, 3-,4-methylphenol, bis(2-ethylhexyl) phthalate, are highlighted in Table 6 because they exceeded health based standards at one or more landfill.

Table 7 shows the 60 metals and inorganic parameters sorted by parameter category that were detected in C&DD leachate. The 20 parameters that exceeded health based standards at one or more landfill, antimony, arsenic, barium, beryllium, lead, nickel, thallium, aluminum, sodium, strontium, vanadium, chloride, ammonia, sulfate, boron, chromium, iron, manganese, TDS, and dissolved cadmium, are highlighted in Table 7. The other dissolved parameters are also included in the table and highlighted so that it is clear which totals parameters and which dissolved parameters exceeded the health based standard.

Table 6. Organic parameters detected in leachate from Ohio C&DD landfills showing the parameters that exceeded health based standards (highlighted).

Category	Parameter Name
Alcohols	Isobutanol
Substituted Benzenes	1,2-Dichlorobenzene
	Chlorobenzene
	Dibenzofuran
	p-Isopropyltoluene
	Styrene
Chlorinated solvents	1,1,1-Trichloroethane
	1,1-Dichloroethane
	1,2-Dichloroethane
	Chloroethane
	Chloroform
	cis-1,2-Dichloroethene
	Methylene chloride
	Tetrachloroethene
	trans-1,2-Dichloroethene
	Trichloroethene
	Vinyl chloride
Chlorofluorocarbons	Dichlorodifluoromethane
	Trichlorofluoromethane
Gasoline	Benzene
	Ethylbenzene
	m-,p-Xylene
	o-Xylene
	Toluene
Non-chlorinated solvents	2-Butanone
	2-Hexanone
	4-Methyl-2-pentanone
	Acetone
	Acetophenone
	Benzyl alcohol
	Carbon disulfide

Category	Parameter Name
PAHs	Acenaphthene
	Naphthalene
Pesticides	1,4-Dichlorobenzene
	2,4,5-TP (Silvex)
	2,4-D
	2,4-DB
	4,4'-DDE
	4,4'-DDT
	alpha Chlordane
	Dicamba
	Dichloroprop
	Dieldrin
	Disulfoton
	EPN
	gamma Chlordane
	Heptachlor
	Heptachlor epoxide
	MCPA
	MCPP
	Methoxychlor
	Pentachlorophenol
Phenolics	2,4-Dimethylphenol
	2-Methylphenol
	3-,4-Methylphenol
	Phenol
Phthalates	bis(2-Ethylhexyl) phthalate
Substituted alkanes	1,2-Dichloropropane
Other organic	Bis(2-Chloroethoxy) Methane

Table 7. Metals and inorganic parameters detected in Ohio C&DD leachate showing the parameters that exceeded health based standards (highlighted).

Category	Parameter Name
Heavy metals, dissolved	Antimony
	Arsenic
	Barium
	Beryllium
	Cadmium
	Lead
	Mercury
	Nickel
	Thallium
Heavy metals, totals	Antimony
	Arsenic
	Barium
	Beryllium
	Cadmium
	Lead
	Mercury
	Nickel
	Thallium
Light metals, dissolved	Aluminum
	Calcium
	Magnesium
	Potassium
	Sodium
	Strontium
	Vanadium
Light metals, totals	Aluminum
	Calcium
	Magnesium
	Potassium
	Sodium
	Strontium
	Vanadium
Other ions	Chloride
	Cyanide, Weak/Dissociable
	Fluoride
	Nitrogen, Ammonia
	Nitrogen, Nitrate-Nitrite
	Sulfate
	Sulfide
Trace elements, dissolved	Boron
	Chromium
	Cobalt
	Copper
	Iron
	Manganese
	Selenium
	Zinc
Trace elements, totals	Boron
	Chromium
	Cobalt
	Copper
	Iron
	Manganese
	Selenium
	Phosphorus
	Zinc
Chemical Oxygen Demand	COD
pH	pH
Total Dissolved Solids	TDS
Total Alkalinity	Total Alkalinity

Table 8 shows the parameters in Ohio C&DD leachate that are of concern due to exceedances of health based standards. The level of concern for a parameter was determined by evaluating:

- The number of landfills where it was detected.
- The type of health based standard that was exceeded (SMCL[3] vs. a health based standard derived to protect against toxic or carcinogenic effects).
- The magnitude of exceedance of a health based standard for the minimum, maximum, mean, and median concentrations.
- Whether either of the confidence limits of the mean exceeded the health based standard

[3] (See Labeling of SMCLs as health based standards in this report on page 13 for more information).

There is a high level of concern for nine parameters, including one chlorinated solvent (vinyl chloride), one gasoline component (benzene), two heavy metals (arsenic and lead), one light metal (strontium), one phenolic (3-,4-methylphenol), one phthalate (bis(2-ethylhexyl)phthalate), and two trace elements (boron and manganese).

These parameters were detected at multiple C&DD landfills and frequently exceeded health based standards. The health based standard exceeded was for protecting against toxic or carcinogenic effects. The magnitude of the exceedances were large, with maximum concentrations detected from 2.3 times (strontium) to 80 times (bis(2-ethylhexyl)phthalate) the health based standards.

Two parameters (3-,4-methylphenol and bis(2-Ethylhexyl)phthalate), were assigned a high level of concern even though they were detected less frequently because when detected they were likely to exceed the health based standards.

Based on the median concentrations measured, the leachate at half or more of the Ohio C&DD landfills exceeded the health based standards for:

- Manganese by at least 6 times.
- Boron by at least 10 times.
- Arsenic by at least 4 times.

Based on the upper and lower confidence limits of the mean, during future leachate sampling, the mean concentrations across all of the Ohio C&DD landfills of manganese, boron, arsenic, and strontium are expected to be:

- 5 to 9 times the health based standard for manganese.
- 8 to 12 times the health based standard for boron.
- 3 to 7 times the health based standard for arsenic.
- 71 percent to 96 percent of the health based standard for strontium.

Excepting three parameters, all of the parameters assigned a high level of concern had mean concentrations that exceeded the health based standards from 1.03 times (lead) to 10.12 times (boron).

Excepting two parameters, all of the parameters assigned a high level of concern had upper confidence limits of the mean that exceeded the health based standard from 1.25 times (benzene) to 12.35 times (boron).

Of the three parameters that were assigned a high level of concern even though they had mean concentrations that did not exceed the standard:

- Vinyl chloride was assigned a high level of concern because it:
  - Is a known carcinogen.
  - Is mobile in the environment.
  - Is indicative of chlorinated solvents being present in the disposed debris.
  - Was detected at 43 percent of the C&DD landfills.
  - Had a maximum concentration detected of 3.5 times the health based standard.

- Benzene was assigned a high level of concern because it:
    - Is a known carcinogen.
    - Was detected at 80 percent of the C&DD landfills.
    - Had a maximum concentration detected that was 9 times the health based standard.
    - Had an upper confidence limit of the mean that was 1.25 times the health based standard.

- Strontium was assigned a high level of concern because it:
    - Was detected at 100 percent of the C&DD landfills.
    - Had a maximum concentration detected that was 2.3 times higher than the health based standard.
    - Had mean and median concentrations at 80 percent of the health based standard or higher.
    - Is likely that the mean concentration measured across all C&DD landfills during future leachate sampling would be greater than 70 percent of the health based standard and may be as high as the standard itself.

There is a moderate level of concern for 10 parameters, including one chlorinated solvent (methylene chloride), five heavy metals (antimony, barium, beryllium, nickel, thallium), one light metal (vanadium), one PAH (naphthalene), one pesticide (pentachlorophenol) and one trace element (chromium). These parameters were determined to be of moderate concern because:

- Less than 50 percent of the landfills sampled exceeded the standard for these parameters.

- Based on the upper and lower confidence limits the mean concentration across all of Ohio's C&DD landfills would be expected to be less than 60 percent of the standard for each of these parameters, except methylene chloride, which has an upper confidence limit of 99 percent of the health based standard.

  Methylene chloride could have been assigned a high level of concern because it has toxic effects and is a suspected carcinogen. However it was assigned a moderate level of concern even though the maximum detected concentration was more than 16 times the standard and the upper confidence limit was 99 percent of the standard because the parameter was detected at seven landfills and exceeded the standard at only two landfills. If additional sampling shows that methylene chloride is detected more frequently, or exceeds the health based standard at more landfills, it is recommended that the level of concern be raised to "high."

- None of the parameters had minimum detected concentrations that exceeded a standard.

- However, the maximum concentrations detected of these parameters exceeded the health based standard from 1.15 times (naphthalene) to 16.44 times (methylene chloride).

Aluminum, chloride, iron, ammonia, sodium, sulfate, and TDS were determined to be noteworthy because they exceeded SMCLs[4] and are likely to exceed the SMCLs during future leachate sampling at C&DD landfills. For these parameters:

- They were detected at 70 percent or more of the landfills.
- With the exception of ammonia, half or more of the landfills exceeded the SMCLs by 1.2 times (chloride) to 30.9 times (iron).
- With the exception of ammonia, the mean concentrations for all ranged from 1.4 times (chloride) to 79 times (iron) the SMCL. The mean concentration for ammonia was 82 percent of the SMCL.
- The maximum concentrations detected exceeded the SMCLs from 3.1 times (ammonia) to 2,323 times (iron).
- Based on the lower and upper confidence limits, the mean concentrations across all of Ohio C&DD landfills during future leachate sampling for chloride, iron, sodium and TDS would be expected to exceed the SMCLs.
- TDS exceeded the SMCL at all C&DD landfills by at least 1.3 times.

Other noteworthy parameters include: pH, cadmium, fluoride, and the pesticides, MCPA and disulfoton either because they were found in all C&DD landfill leachate samples and exceeded 70 percent of the health based standards or were infrequently found but exceeded 100 percent of the health based standards.

For pH, the maximum detected pH was 93 percent of the SMCL for maximum pH. The minimum detected pH was 98 percent of the SMCL for minimum pH. This is noteworthy because it shows that the pH of C&DD leachate runs from the minimum standard to the maximum standard; and because pH affects leachability, the ease of migration of some parameters in the environment, and the toxicity of some metals.

The insecticide, MCPA, was considered noteworthy because, even though it was detected at only one C&DD landfill, it exceeded the health based standard by 11.2 times.

Cadmium, fluoride, and disulfoton were considered noteworthy because they were detected at concentrations above 70 percent of the health based standards. Total cadmium was detected at two landfills and dissolved cadmium exceeded the health based standard at one landfill. Fluoride was detected at all 30 landfills and the maximum detected was 84 percent of the health based standard. The insecticide, disulfoton, was detected at one landfill and the detection was 74 percent of the health based standard.

[4] (See Labeling of SMCLs as health based standards in this report on page 13 for more information).

Table 8. Parameters of concern in Ohio C&DD leachate when compared with health based standards.

Row Number	Col. No. 1	2	3	4	5	6	7	8	9	10	11	12	13
	Sample/Parameter Information							Health Based (HB) Standard Comparisons					
	Parameter Category	Parameter	Chemical Abstract Service No. (CAS)	Units	HB Standard	Standard Origin	Min. Detected/HB Standard	Max. Detected/HB Standard	Mean/HB Standard	Median/HB Standard	95% LCL/HB Standard	95% UCL/HB Standard
	High Level of Concern											
1	13 Chlorinated solvents	Vinyl chloride	75-01-4	ug/L	2	MCL	0.19	13	0.27	0.00	0.01	0.52
2	24 Gasoline	Benzene	71-43-2	ug/L	5	MCL	0.06	8.6	0.64	0.31	0.04	1.2
3	3 Phenolics	3-,4-Methylphenol	106-44-5	ug/L	78	VAP	2.0	53	2.1	0.00	-0.84	4.1
4	4 Phthalates	bis(2-Ethylhexyl)phthalate	117-81-7	ug/L	6	MCL	1.8	73	3.2	0.00	-0.14	7.2
5	23 Heavy metal, Totals	Arsenic, Total	7440-38-2	mg/L	0.01	MCL	0.50	25	5.1	4.2	3.1	7.2
6	11 Heavy metal, Totals	Lead, Total	7439-92-1	mg/L	0.015	MCL	0.35	150	1.1	0.00	0.24	1.9
7	30 Light metal, Totals	Strontium, Total	7440-24-6	mg/L	4	LTHA	0.01	2.5	0.84	0.81	0.71	0.96
8	30 Trace element, Totals	Boron, Total	7440-42-8	mg/L	1	LTHA	0.74	27	10.1	10.1	7.8	12.4
9	30 Trace element, Totals	Manganese, Total	7439-96-5	mg/L	0.3	LTHA	0.05	25	7.1	5.1	4.1	9.1
	Moderate Level of Concern											
10	7 Chlorinated solvents	Methylene chloride	75-09-2	ug/L	5	MCL	0.12	16.4	0.38	0.00	-0.22	0.99
11	21 PAHs	Naphthalene	91-20-3	ug/L	67	VAP	0.00	1.7	0.10	0.02	0.02	0.18
12	3 Pesticides	Pentachlorophenol	87-86-5	ug/L	1	MCL	0.48	1.3	0.08	0.00	-0.02	0.18
13	18 Heavy metal, Totals	Antimony, Total	7440-36-0	mg/L	0.006	MCL	0.10	2.5	0.37	0.14	0.18	0.56
14	30 Heavy metal, Totals	Barium, Total	7440-39-3	mg/L	2	MCL	0.00	2.7	0.23	0.19	0.15	0.31
15	6 Heavy metal, Totals	Beryllium, Total	7440-41-7	mg/L	0.004	MCL	0.14	4.9	0.10	0.00	-0.02	0.22
16	25 Heavy metal, Totals	Nickel, Total	7440-02-0	mg/L	0.1	LTHA	0.05	1.8	0.29	0.13	0.15	0.44
17	16 Heavy metal, Totals	Thallium, Total	7440-28-0	mg/L	0.002	MCL	0.03	3.5	0.18	0.03	0.06	0.31
18	10 Light metal, Totals	Vanadium, Total	7440-62-2	mg/L	0.13	VAP	0.04	2.3	0.10	0.00	0.01	0.18
19	26 Trace element, Totals	Chromium, Total	7440-47-3	mg/L	0.1	MCL	0.04	2.8	0.33	0.21	0.21	0.45
	Noteworthy											
20	1 Pesticides	Disulfoton	298-04-4	ug/L	0.7	LTHA	0.74	0.00				
21	1 Pesticides	MCPA	94-74-6	ug/L	30	LTHA	[illegible]	0.00				
22	3 Heavy metal, Totals	Cadmium, Total*	7440-43-9	mg/L	0.005	MCL	0.51	0.91	0.05	0.00	-0.01	0.11
23	21 Light metal, Totals	Aluminum, Total	7429-90-5	mg/L	0.2	SMCL	0.30	364	21.1	1.1	-0.45	43.0
24	30 Light metal, Totals	Sodium, Total	7440-23-5	mg/L	60	SMCL	0.51	37	6.1	4.7	3.6	8.5
25	29 Trace element, Totals	Iron, Total	7439-89-6	mg/L	0.3	SMCL	0.52	923	79.1	30.1	15.1	142.1
26	30 Other ions	Chloride	16887-00-6	mg/L	250	SMCL	0.03	4.7	1.2	1.1	1.0	1.7
27	30 Other ions	Fluoride	16984-48-8	mg/L	4	MCL	0.02	0.84	0.15	0.12	0.10	0.21
28	30 Other ions	Nitrogen Ammonia	7664-41-7	mg/L	30	SMCL	0.00	3.0	0.82	0.50	0.52	1.1
29	30 Other ions	Sulfate	14808-79-8	mg/L	250	SMCL	0.05	14	2.1	1.1	0.54	3.6
30	30 pH	pH	none-8	S.U.	6.5-8.5	SMCL	0.96	0.93				
31	30 TDS	Total Dissolved Solids	none-4	mg/L	500	SMCL	[illegible]	14	6.1	5.1	5.1	7.1

*At one landfill, dissolved cadmium exceeded the health based standard (by 1.2 times).

Table 9 shows the individual parameter information (columns 1 – 5), descriptive statistics (columns 6 – 12), and the results of the comparisons of the minimum detected, maximum detected, mean, and 95 percent confidence limits for each parameter with the health based standards (columns 13 – 20). The parameters are grouped by parameter category.

To calculate the mean concentration and the 95 percent confidence limits in Table 9, non-detects at the method detection limit were set equal to zero and estimated lab values were included in the calculation. This may have resulted in the mean concentrations being slightly lower than if analytical methods with lower method detection limits had been used.

Seven C&DD landfills had more than one sample analyzed. To ensure that the data from all of the landfills carried equal weight when making comparisons with health based standards, the results for each landfill that had more than one sample analyzed were adjusted. The adjustment that was made was to average the concentration values for each parameter for each of the seven landfills.

Some objections to this adjustment may be raised. These include, possibly having the effect of diluting the representation of the concentrations of those parameters for those landfills in the calculation of the overall mean across all landfills, lowering the upper confidence limit since the standard error of the mean could possibly be reduced because the influence of the higher maximum values was muted for those landfills, and increasing the lower confidence limit because the standard error of the mean might be reduced because of the muted influence of the lowest values for those landfills.

However, the maximum concentrations measured for each parameter across all of the landfills are also compared against the health based standards and the surface water quality standards. Doing this provides the appropriate information for this report and mitigates the possibly muted results that may have occurred for a few parameters, while at the same time providing the benefit that the seven landfills that had multiple samples analyzed would not skew the results. See Attachment 12 for a detailed discussion of this issue.

In Table 9, the minimum detected column (Column 7) is the minimum concentration measured above the method detection limit at any one landfill. The maximum detected column (Column 8) is the maximum concentration detected at any one landfill.

Columns 13 through 20 in Table 9 show the health based standards and the results of the comparisons of the descriptive statistics with those standards. The darker highlights identify comparisons that show exceedances of the health based standards. The lighter highlights identify comparisons that show results 70 percent to 100 percent of the health based standard.

The results of the comparison of the descriptive statistics to the health based standards in columns 15 through 20 of Table 9 were calculated by taking the ratio of the descriptive statistic to the health based standard. This means if a number is equal to or greater than 1.0, it can be read as the number of times the parameter exceeds the health based standard; if the number is less than 1.0 and is multiplied by 100, it can be read as the parameter being a percentage of the health based standard.

As used in Table 9 the health based standards include:

- MCL = US EPA Maximum Contaminant Level or Action Level
- VAP = Ohio EPA, Voluntary Action Program Generic Unrestricted Potable Use Standard
- LTHA = US EPA Lifetime Threshold Health Advisory
- DWEL = US EPA Drinking Water Equivalence Level
- SMCL = US EPA Secondary MCL[5]

Table 9 includes both the dissolved and total concentration results for the metals and trace elements so that the descriptive statistics and comparisons with the health based standards can be seen for both types of parameters. Table 5 does not count 12 of the dissolved[6] concentration results for metals and trace elements. That is why Table 9 contains information for 40 parameters that exceeded the health based standards and Table 5 includes a total count of 28 parameters that exceeded the health based standards.

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[5] (See Labeling of SMCLs as health based standards in this report on page 13 for more information).

[6] The 13th dissolved metal, cadmium, is counted in Table 5 as a heavy metal for the reasons discussed in the narrative found immediately above Table 5.

The 12 dissolved parameters that are shown in Table 9 but not counted in Table 5 are as follows:

- Five heavy metals (antimony, arsenic, lead, nickel, thallium).
- Four trace elements (boron, chromium, iron, manganese).
- Three light metals (aluminum, sodium, strontium).

Parameters that are also shown in Table 9, but are not counted in Table 5 because they had concentrations between 70 percent and 100 percent of the health based standards are the parameter in the category "other ion", fluoride, the pesticide, disulfoton, and pH. Fluoride was detected at all C&DD landfills, disulfoton was detected at one C&DD landfill and pH was measured at all of the C&DD landfills. These three parameters were included in Table 9 for completeness because they were discussed as noteworthy parameters previously.

Methylene chloride is a common lab contaminant. Sufficient concentrations of methylene chloride were found in trip blanks for two of the samples (Rosby Resource C&DD landfill and Silver Oak C&DD landfill) to cast doubt on the validity of the methylene chloride results for those samples. Therefore, the suspect sample results were removed from the data set used to produce this summary.

For two landfills that had multiple samples measured for pH (Summit C&D Disposal, Inc. and TWL-Penn Ohio), each had one of the results for pH recorded at 9.04 S.U. This value is extreme when compared with the pH measurements of the other landfills and with the other pH measurement taken at each of those two landfills. It is also unusual that both landfills would have exactly the same extreme pH. It is suspected that field measurement bias resulted in the two anomalous pH readings. They were, therefore, excluded from the tables and calculations in this Ohio EPA study. If additional sampling confirms the high pH values, then the understanding of the pH of Ohio C&DD leachate will need to be revised.

Table 9. Statistics for Ohio C&DD leachate parameters that exceeded health based standards and also showing parameters that were 70% to 100% of the standards.

Col. No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
	Sample / Parameter Information					Descriptive Statistics[A]							Health Based (HB) Standard Comparisons							
Row Number	Parameter Code	Parameter Category Code	Parameter Category	Parameter	Chemical Abstract Service No. (CAS)	Units	Minimum Detected[B]	Maximum Detected[B]	Mean[A]	Median[A]	95% Lower Confidence Limit (LCL)[A]	95% Upper Confidence Limit (UCL)[A]	HB Standard	Standard Origin[E]	Min. Detected/HB Standard	Max. Detected/HB Standard	Mean/HB Standard	Median/HB Standard	95% LCL/HB Standard	95% UCL/HB Standard
1	36	7	Chlorinated solvents	Methylene chloride[C]	75-09-2	ug/L	0.588	82.2	1.92193	0.00000	-1.09173	4.93556	5	MCL	0.12	16.4	0.38	0.00	-0.22	0.99
2	36	13	Chlorinated solvents	Vinyl chloride	75-01-4	ug/L	0.386	7.08	0.53022	0.00000	0.02746	1.03298	2	MCL	0.19	3.5	0.27	0.00	0.01	0.52
3	38	24	Gasoline	Benzene	71-43-2	ug/L	0.304	45	3.22212	1.55500	0.20709	6.23715	5	MCL	0.06	9	0.64	0.31	0.04	1.25
4	38	21	PAHs	Naphthalene	91-20-3	ug/L	0.291	77.2	6.56534	1.53000	1.08044	12.05025	67	VAP	0.00	1.1	0.10	0.02	0.02	0.18
5	38	1	Pesticides	MCPA	94-74-6	ug/L	335						30	LTHA	11.	0.00				
6	38	3	Pesticides	Pentachlorophenol	87-86-5	ug/L	0.481	1.37	0.07903	0.00000	-0.02361	0.18168	1	MCL	0.48	1.4	0.08	0.00	-0.02	0.18
7	38	3	Phenolics	3-,4-Methylphenol	106-44-5	ug/L	162	4180	168.06667	0.00000	-65.34232	401.47565	78	VAP	2.	53	2.	0.00	-0.84	5.1
8	38	4	Phthalates	bis(2-Ethylhexyl)phthalate	117-81-7	ug/L	87.5	479	20.86667	0.00000	-0.83513	42.56846	6	MCL	14.	79.	3.	0.00	-0.14	7.9
9	38	18	Heavy metal, Totals	Antimony, Total	7440-36-0	mg/L	0.000574	0.0169	0.00220	0.00084	0.00106	0.00334	0.006	MCL	0.10	2.	0.37	0.14	0.18	0.56
10	38	23	Heavy metal, Totals	Arsenic, Total	7440-38-2	mg/L	0.00503	0.254	0.05279	0.04048	0.03180	0.07378	0.01	MCL	0.50	25.	5.	4.	3.	7.
11	38	30	Heavy metal, Totals	Barium, Total	7440-39-3	mg/L	0.00637	5.49	0.46358	0.38200	0.30180	0.62535	2	MCL	0.00	2.	0.23	0.19	0.15	0.31
12	38	6	Heavy metal, Totals	Beryllium, Total	7440-41-7	mg/L	0.00055	0.0168	0.00041	0.00000	-0.00007	0.00088	0.004	MCL	0.14	4.	0.10	0.00	-0.02	0.22
13	38	11	Heavy metal, Totals	Lead, Total	7439-92-1	mg/L	0.00525	0.226	0.01550	0.00000	0.00355	0.02746	0.015	MCL	0.35	15.	1.	0.00	-0.24	1.8
14	38	25	Heavy metal, Totals	Nickel, Total	7440-02-0	mg/L	0.00544	0.167	0.02947	0.01330	0.01488	0.04406	0.1	LTHA	0.05	1.7	0.29	0.13	0.15	0.44
15	38	16	Heavy metal, Totals	Thallium, Total	7440-28-0	mg/L	0.0000653	0.0067	0.00037	0.00006	0.00012	0.00062	0.002	MCL	0.03	3.4	0.18	0.03	0.06	0.31
16	38	17	Heavy metals, dissolved	Antimony, Dissolved	7440-36-0	mg/L	0.000307	0.0134	0.00173	0.00041	0.00069	0.00276	0.006	MCL	0.05	2.2	0.29	0.07	0.11	0.46
17	38	26	Heavy metals, dissolved	Arsenic, Dissolved	7440-38-2	mg/L	0.00547	0.325	0.03770	0.01725	0.01464	0.06075	0.01	MCL	0.55	32.	3.	1.	1.	6.
18	38	1	Heavy metals, dissolved	Cadmium, Dissolved	7440-43-9	mg/L	0.00583						0.005	MCL	1.	0.00				
19	38	6	Heavy metals, dissolved	Lead, Dissolved	7439-92-1	mg/L	0.00267	0.0352	0.00216	0.00000	-0.00040	0.00472	0.015	MCL	0.18	2.	0.14	0.00	-0.03	0.31
20	38	26	Heavy metals, dissolved	Nickel, Dissolved	7440-02-0	mg/L	0.00545	0.217	0.02757	0.01648	0.01250	0.04264	0.1	LTHA	0.05	2.	0.28	0.16	0.13	0.43
21	38	15	Heavy metals, dissolved	Thallium, Dissolved	7440-28-0	mg/L	0.000062	0.0042	0.00027	0.00003	0.00006	0.00047	0.002	MCL	0.03	2.	0.13	0.02	0.03	0.24
22	38	21	Light metal, Totals	Aluminum, Total	7429-90-5	mg/L	0.0602	72.8	4.26417	0.30300	-0.09020	8.61855	0.2	SMCL	0.30	364.	21.	1.	-0.45	43.
23	38	30	Light metal, Totals	Sodium, Total	7440-23-5	mg/L	30.3	2240	374.51778	287.00000	228.74968	520.28587	60	SMCL	0.51	37.	6.	4.	3.	9.
24	38	30	Light metal, Totals	Strontium, Total	7440-24-6	mg/L	0.05	9.16	3.34585	3.25000	2.83230	3.85940	4	LTHA	0.01	2.	0.84	0.81	0.71	0.96
25	38	10	Light metal, Totals	Vanadium, Total	7440-62-2	mg/L	0.00524	0.285	0.01246	0.00000	0.00099	0.02394	0.13	VAP	0.04	2.	0.10	0.00	0.01	0.18
26	38	9	Light metals, dissolved	Aluminum, Dissolved	7429-90-5	mg/L	0.0581	1.41	0.11318	0.00000	0.00492	0.22144	0.2	SMCL	0.29	7.	0.57	0.00	0.02	1.1
27	38	30	Light metals, dissolved	Sodium, Dissolved	7440-23-5	mg/L	42.7	3530	438.94000	297.75000	211.16795	666.71205	60	SMCL	0.71	59.	7.	5.	3.	11.
28	38	30	Light metals, dissolved	Strontium, Dissolved	7440-24-6	mg/L	0.0467	9.24	3.37222	3.58500	2.85846	3.88598	4	LTHA	0.01	2.	0.84	0.90	0.71	0.97
29	38	30	Trace element, Totals	Boron, Total	7440-42-8	mg/L	0.735	27.1	10.11778	10.10000	7.88276	12.35280	1	LTHA	0.74	27.	10.	10.	7.	12.
30	38	26	Trace element, Totals	Chromium, Total	7440-47-3	mg/L	0.00364	0.269	0.03317	0.02078	0.02144	0.04489	0.1	MCL	0.04	3.	0.33	0.21	0.21	0.45
31	38	29	Trace element, Totals	Iron, Total	7439-89-6	mg/L	0.155	697	23.74250	9.27025	4.79680	42.68820	0.3	SMCL	0.52	2321.	79.	30.	16.	142.
32	38	30	Trace element, Totals	Manganese, Total	7439-96-5	mg/L	0.0146	7.74	2.12123	1.75000	1.42005	2.82241	0.3	LTHA	0.05	26.	7.	6.	4.	9.
33	38	30	Trace elements, dissolved	Boron, Dissolved	7440-42-8	mg/L	0.788	26.5	10.43683	10.45000	8.26662	12.60703	1	LTHA	0.79	26.	10.	10.	8.	12.
34	36	26	Trace elements, dissolved	Chromium, Dissolved	7440-47-3	mg/L	0.00349	0.125	0.02727	0.01695	0.01749	0.03705	0.1	MCL	0.03	1.	0.27	0.17	0.17	0.37
35	38	29	Trace elements, dissolved	Iron, Dissolved	7439-89-6	mg/L	0.0363	23.1	2.56871	1.15408	0.94677	4.19065	0.3	SMCL	0.12	77.	9.	4.	3.	14.
36	38	30	Trace elements, dissolved	Manganese, Dissolved	7439-96-5	mg/L	0.00873	7.79	1.91813	1.61000	1.24740	2.58886	0.3	LTHA	0.03	26.	6.	5.	4.	9.
37	38	30	Other ions	Chloride	16887-00-6	mg/L	6.84	1180	340.83689	303.33333	253.85902	427.81476	250	SMCL	0.03	4.	1.	1.	1.	2.
38	38	30	Other ions	Nitrogen, Ammonia	7664-41-7	mg/L	0.053	92.1	24.63289	15.05000	15.46904	33.79674	30	SMCL	0.00	3.	0.82	0.50	0.52	1.1
39	38	30	Other ions	Sulfate	14808-79-8	mg/L	13.6	8570	702.87778	320.12500	134.71940	1271.03616	250	SMCL	0.05	34.	2.	1.	0.54	5.
40	38	30	TDS	Total Dissolved Solids	none-4	mg/L	634	7040	3055.48889	2945.00000	2562.32622	3548.65156	500	SMCL	1.	14.	6.1	5.	5.	7.1
41	38	1	Pesticides	Disulfoton	298-04-4	ug/L	0.516						0.7	LTHA	0.74	0.00				
42	38	3	Heavy metal, Totals	Cadmium, Total	7440-43-9	mg/L	0.00255	0.00454	0.00026	0.00000	-0.00004	0.00055	0.005	MCL	0.51	0.91	0.05	0.00	-0.01	0.11
43	38	30	Other ions	Fluoride	16984-48-8	mg/L	0.0943	3.35	0.61523	0.47950	0.38107	0.84938	4	MCL	0.02	0.84	0.15	0.12	0.10	0.21
44	36	30	pH	pH[D]	none-8	S.U.	6.6	7.94	7.147556	7.14	7.039762	7.25533	6.5-8.5	SMCL	0.98	0.93				

Note A - For the purpose of calculating descriptive statistics in this table, non-detects at the method detection limit were set equal to zero and lab estimated values were included in the calculation. Because of this, minimum and median concentrations showing zero concentration value cannot be interpreted as "not present," but should be interpreted as "concentration is less than the method detection limit."

Note B - Non-detects below the method detection limit are not included in the minimum detected columns.

Note C - Methylene chloride is a common lab contaminant. Sufficient levels were found in trip blanks for two samples to cast doubt on the validity of the methylene chloride results for those samples. As a result, the suspect sample results were removed from the data set used to produce this summary.

Note D - For pH, two landfills had two suspect identical values that were extremely high compared to other pH measurements at the same facility and the pH of leachate at other C&DD landfills. The two anomalous pH measurements may possibly be from sampling bias in the field. These two landfills had two measurements for pH each. The descriptive statistics for pH were calculated excluding the two suspect high values, but included the other two values. Column 15 is calculated by dividing the minimum pH standard of 6.5 by the minimum pH measured at any one landfill . Column 16 is calculated by taking the maximum pH measured and dividing it by the maximum health based pH standard of 8.5.

Note E - MCL = US EPA Maximum Contaminant Level or Action Level; SMCL = US EPA Secondary MCL; VAP = Ohio EPA, Voluntary Action Program Generic Unrestricted Potable Use Standard; LTHA = US EPA Lifetime Threshold Health Advisory

Note G - Multiple samples were taken from seven C&DD landfills. To prevent those seven landfills from skewing the results for mean, median, and confidence limits, the results for each parameter at each landfill that had multiple samples were averaged and used as a single data point in the calculations.

All 30 C&DD landfills had from 1 to 12 parameters with concentrations that exceeded health based standards for toxicity and carcinogenicity. If parameters that exceeded SMCLs are added all 30 C&DD landfills had from 3 to 19 parameters with concentrations that exceeded health based standards. The median was 4 parameters exceeding the health based standards for toxicity or carcinogenicity. The median was 9 parameters exceeding if SMCLs are added (See Figure 9).

The leachate from 25 of the C&DD landfills had 3 or more parameters that exceeded health based standards for toxicity or carcinogenicity. When parameters that exceeded SMCLs are added, 29 landfills had five or more parameters that exceeded health based standards.

The top five landfills with the most parameters that exceeded health based standards are:

- Warren Recycling C&DD landfill with 12 (19 when parameters with SMCLs are added)
- TWL – LAS C&DD landfill with 10 (17 when parameters with SMCLs are added)
- Fallsburg Road C&DD landfill with 9 (14 when parameters with SMCLs are added)
- RKDF C&DD landfill with 8 (14 when parameters with SMCLs are added)
- C&D Disposal Tech landfill with 7 (14 when parameters with SMCLs are added)

There were from one to six additional parameters at each landfill that were 70 percent to 100 percent of the health based standards

It is known that some of the C&DD landfills have ground water infiltration, and the cover used for C&DD during operations and the C&DD itself has a relatively high hydraulic conductivity. It is unknown what effect, if any, dilution from ground water infiltration, precipitation, or surface water run-on is having on the concentration of the parameters found in the C&DD leachate.

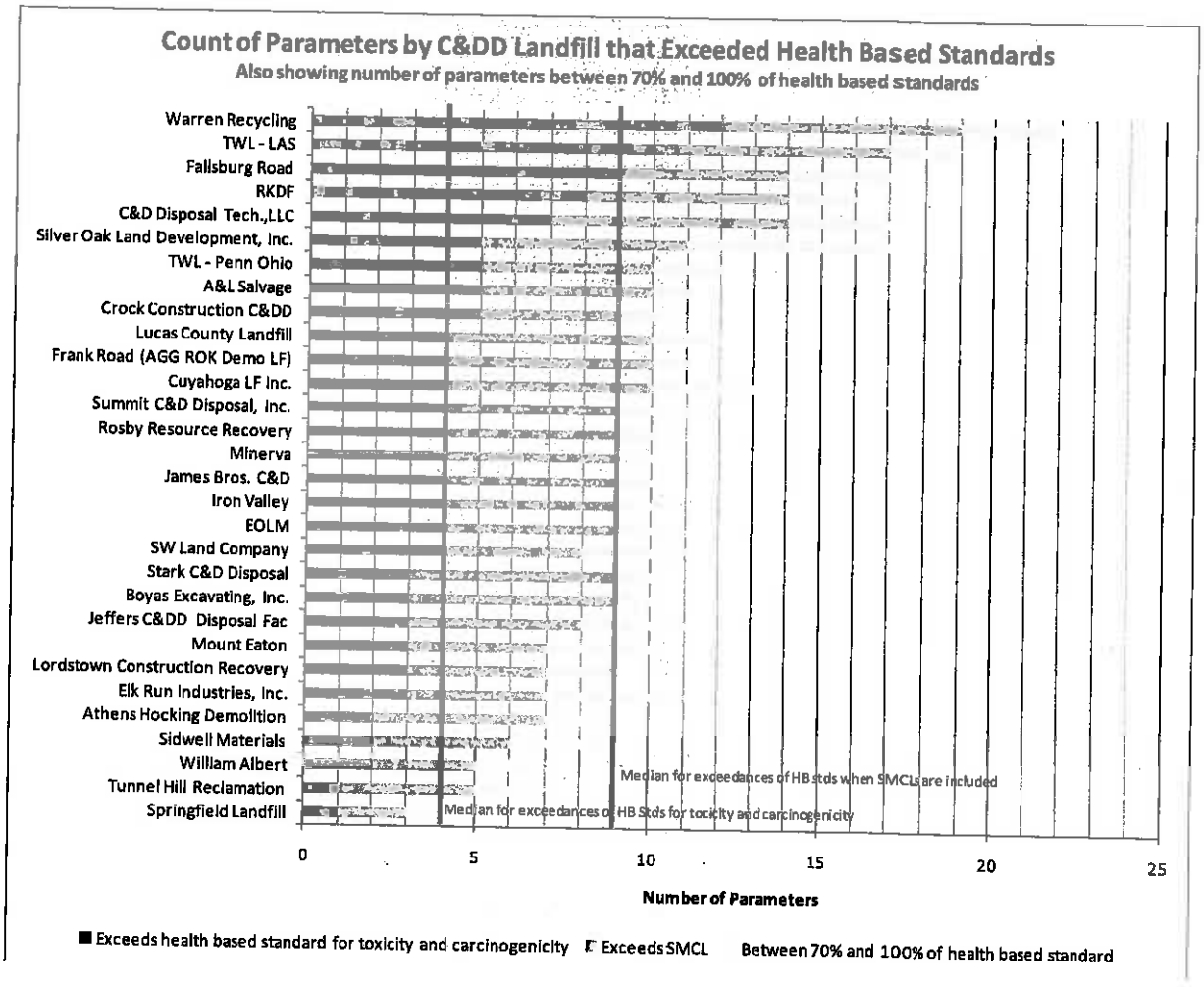


Figure 9. Number of parameters at each landfill that exceeded the health based standards and also showing the number of parameters that were 70% to 100% of a health based standard

The concentrations of the parameters in Ohio C&DD leachate that exceeded health based standards, excluding SMCLs[7], were such that discharge of C&DD leachate to the environment is not lawful in Ohio. For example, the concentrations of 21 of the parameters in C&DD leachate exceeded the endangerment standards contained in Ohio EPA's Underground Injection Control Program rules (see paragraph (A) of OAC Rule 3745-37-07). The maximum concentrations detected exceeded the endangerment standards by as much as 80 times. The mean concentrations exceeded the endangerment standards by as much as 10 times.

The concentrations of the seven parameters in Ohio C&DD leachate that exceeded SMCLs were such that discharge of the leachate with maximum concentrations of parameters (exceeding SMCLs by as much as 2,323 times) or the mean concentrations of parameters (exceeding SMCLs by as much as 79 times) could render good quality ground water objectionable or unusable for consumption, washing, and industrial production without installing treatment equipment.

[7] (See Labeling of SMCLs as health based standards in this report on page 13 for more information).

There were numerous parameters that were often detected, including a wide variety of metals, inorganic parameters, and organic parameters, in Ohio C&DD leachate of sufficient concentration that, if released to ground water would violate discharge limits of Ohio rules, could cause or contribute to water pollution, and could adversely impact downgradient residential wells and public drinking water supply wells. Of particular concern are those parameters that were detected in the C&DD leachate that were multiples of the health based standards (such as vinyl chloride, benzene, arsenic, lead, boron, and manganese), carcinogens (such as vinyl chloride and arsenic), mobile in the environment (such as vinyl chloride, benzene, and arsenic), and persistent in the environment (such as antimony and lead).

Comparison against surface water quality standards

The surface water quality standards used in this report originate with the Ohio surface water quality standards from OAC Chapter 3745-1. The surface water quality standard for strontium is being updated by Ohio EPA. The updated standard was used instead of the standard for strontium contained in OAC Chapter 3745-1.

The surface water quality standards for the aquatic life criteria for metals have a range that is based on the hardness of the stream water. The surface water quality standards shown in Table 10 that were used in this report are based on the mean water hardness in Ohio of 275 mg/L.

Table 10. Surface water quality standards based on hardness of receiving stream for select metals

Parameter	Range (ug/L)	Used in this report
Cadmium	2.5-7.3	5.5
Chromium	86-270	200
Copper	9.3-30	22
Lead	6.4-37	23
Nickel	52-170	120
Zinc	120-390	280

Ninety five parameters were detected. Of the 95 parameters that were detected, 71 parameters had surface water quality standards assigned. Twenty five of the 71 parameters that have surface water quality standards were below the standards (35 percent) and 46 of the parameters exceeded the standards at one or more landfill (65 percent).

Table 11 and Figure 10 show the 46 parameters that exceeded a surface water quality standard in each parameter category (excluding dissolved metals and dissolved trace elements). The exceedances of surface water quality standards at Ohio C&DD landfills occurred mainly due to heavy metals, trace elements, pesticides, other ions, phenolics, chlorinated solvents, gasoline, light metals, and PAHs, with one parameter exceeding the surface water quality standards from the categories of non-chlorinated solvents, phthalates, and substituted benzenes. TDS also exceeded the surface water quality standards.

Heavy metals account for 9 of the exceedances (20 percent); light metals, trace elements, and other ions account for 15 of the exceedances (33 percent); and organic parameters account for 21 of the exceedances (44 percent). TDS accounts for the remaining percentage.

Not counted in Table 11 or shown in Figure 10 are seven additional dissolved heavy metals, (antimony, arsenic, barium, lead, mercury, nickel, and thallium), six dissolved trace elements (boron, copper, iron, manganese, and selenium) and two dissolved light metals (aluminum and vanadium), which also exceeded surface water quality standards. These were not included to avoid double counting parameters that had both dissolved concentrations and total concentration results that exceeded the surface water quality standards.

Total cadmium did not exceed the surface water quality standard (it was 83 percent of the standard). Dissolved cadmium did exceed the surface water quality standard at one landfill. This was the only heavy metal where the total concentrations measured did not exceed the standard but a dissolved concentration did. Therefore, cadmium was added to the list of heavy metals that exceeded the surface water quality standards in Table 11 and shown in Figure 10.

However, due to the questions regarding the unusual occurrence of a dissolved concentration being higher than totals concentrations, cadmium was ultimately categorized as a noteworthy parameter, rather than a parameter with a high level of concern or a parameter with a moderate level of concern

Also not counted in Table 11 or shown Figure 10 is pH and one additional parameter in the category "other ion" (fluoride). These parameters were between 80 percent and 100 percent of the surface water quality standards. Fluoride was detected at all 30 landfills and pH was measured at all 30 landfills.

Of the 46 parameters counted in Table 11, one PAH (acenaphthene), five pesticides (4,4'-DDE, 4,4'-DDT, dieldrin, heptachlor, and heptachlor epoxide), one phenolic (2,4-dimethylphenol), and one substituted benzene (dibenzofuran) were detected at one landfill each. All the other parameters were detected at two or more C&DD landfills.

Table 12 shows the list of 59 organic parameters sorted by parameter category that were detected in C&DD leachate. The 21 parameters that exceeded surface water quality standards at one or more landfill are highlighted.

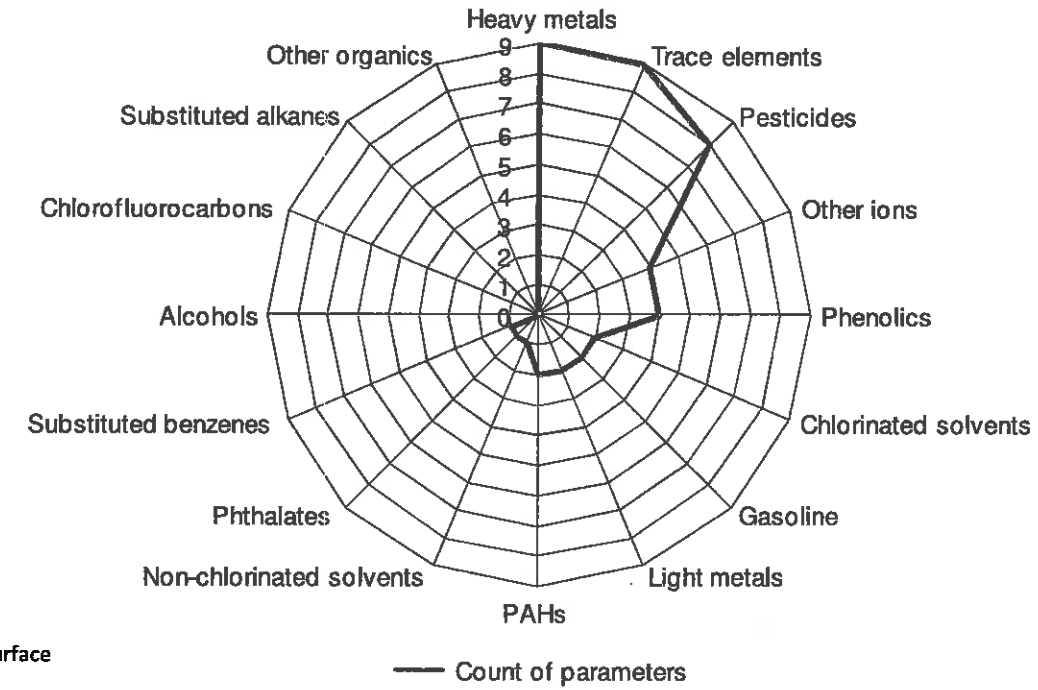
Table 13 shows the list of 36 metal and inorganic parameters sorted by parameter category that were detected in C&DD leachate. The 25 parameters that exceeded surface water quality standards (including dissolved cadmium) at one or more landfill are highlighted. For metals and trace elements, the information for both total and dissolved concentrations that exceeded the surface water quality standards are included in the table and highlighted so that it is clear which totals parameters and dissolved parameters exceeded the surface water quality standards.

Table 11. Number of parameters in each parameter category that exceeded surface water quality standards at one or more Ohio C&DD landfills

Parameter Category	Number of parameters that exceeded a SWQ	Percentage (%)
Organic Parameters		
Pesticides	8	17
Phenolics	4	9
Chlorinated solvents	2	4
Gasoline	2	4
PAHs	2	4
Non-chlorinated solvents	1	2
Phthalates	1	2
Substituted benzenes	1	2
Alcohols	0	0
Chlorofluorocarbons	0	0
Substituted alkanes	0	0
Other organics	0	0
Metals and Inorganic Parameters		
Heavy metals	9	20
Trace elements	9	20
Light metals	2	4
Other ions	4	9
TDS	1	2
Total	46	

Number of Leachate Parameters that Exceed Surface Water Quality Standards at One or More C&DD Landfills

Sorted by Parameter Categories with Most to Fewest Parameters Exceeding



TDS also exceeded the Surface Water Quality Standards

Seven additional dissolved heavy metals, (antimony, arsenic, barium, lead, mercury, nickel, and thallium), five dissolved trace elements (boron, copper, iron, manganese, and selenium) and two dissolved light metals (aluminum and vanadium), also exceeded surface water quality standards. These were not included in this figure to avoid double counting parameters that had both dissolved concentrations and total concentration results that exceeded the surface water quality standards. The exception is that dissolved cadmium exceeded the surface water quality standard, but total cadmium did not (it was 83 percent of the standard). Therefore, cadmium was counted with the heavy metals that exceeded the surface water quality standards.

One PAH (acenaphthene), five pesticides (4,4'-DDE, 4,4'-DDT, dieldrin, heptachlor, heptachlor epoxide), one phenolic (2,4-dimethylphenol), and one substituted benzene (dibenzofuran) were detected at one landfill each. All the other parameters were detected at two or more C&DD landfills.

Also not counted in this figure is one additional parameter in the category "other ion" (fluoride), one additional dissolved trace element (zinc), and pH. These parameters were between 80% and 100% of the surface water quality standards. Fluoride was detected at all 30 landfills, dissolved zinc was detected at 16 landfills, and pH was measured at all 30 landfills.

Figure 10. Number of parameters in each parameter category that exceeded surface water quality standards sorted by parameter categories with most to fewest parameters exceeding

Table 12. Organic parameters detected in Ohio C&DD leachate showing those that exceeded surface water quality standards (highlighted).

Category	Parameter Name
Alcohols	Isobutanol
Substituted Benzenes	1,2-Dichlorobenzene
	Chlorobenzene
	Dibenzofuran
	p-Isopropyltoluene
	Styrene
Chlorinated solvents	1,1,1-Trichloroethane
	1,1-Dichloroethane
	1,2-Dichloroethane
	Chloroethane
	Chloroform
	cis-1,2-Dichloroethene
	Methylene chloride
	Tetrachloroethene
	trans-1,2-Dichloroethene
	Trichloroethene
	Vinyl chloride
Chlorofluorocarbons	Dichlorodifluoromethane
	Trichlorofluoromethane
Gasoline	Benzene
	Ethylbenzene
	m-,p-Xylene
	o-Xylene
	Toluene
Non-chlorinated solvents	2-Butanone
	2-Hexanone
	4-Methyl-2-pentanone
	Acetone
	Acetophenone
	Benzyl alcohol
	Carbon disulfide

Category	Parameter Name
PAHs	Acenaphthene
	Naphthalene
Pesticides	1,4-Dichlorobenzene
	2,4,5-TP (Silvex)
	2,4-D
	2,4-DB
	4,4'-DDE
	4,4'-DDT
	alpha Chlordane
	Dicamba
	Dichloroprop
	Dieldrin
	Disulfoton
	EPN
	gamma Chlordane
	Heptachlor
	Heptachlor epoxide
	MCPA
	MCPP
	Methoxychlor
	Pentachlorophenol
Phenolics	2,4-Dimethylphenol
	2-Methylphenol
	3-,4-Methylphenol
	Phenol
Phthalates	bis(2-Ethylhexyl) phthalate
Substituted alkanes	1,2-Dichloropropane
Other organic	Bis(2-Chloroethoxy) Methane

Table 13. Metals and inorganic parameters detected in Ohio C&DD leachate showing the parameters that exceeded surface water quality standards (highlighted).

Category	Parameter Name
Heavy metals, dissolved	Antimony
	Arsenic
	Barium
	Beryllium
	Cadmium
	Lead
	Mercury
	Nickel
	Thallium
Heavy metal, totals	Antimony
	Arsenic
	Barium
	Beryllium
	Cadmium
	Lead
	Mercury
	Nickel
	Thallium
Light metals, dissolved	Aluminum
	Calcium
	Magnesium
	Potassium
	Sodium
	Strontium
	Vanadium
Light metal, totals	Aluminum
	Calcium
	Magnesium
	Potassium
	Sodium
	Strontium
	Vanadium
Other ions	Chloride
	Cyanide, Weak/Dissociable
	Fluoride
	Nitrogen, Ammonia
	Nitrogen, Nitrate-Nitrite
	Sulfate
	Sulfide
Trace elements, dissolved	Boron
	Chromium
	Cobalt
	Copper
	Iron
	Manganese
	Selenium
	Zinc
Trace element, totals	Boron
	Chromium
	Cobalt
	Copper
	Iron
	Manganese
	Phosphorus
	Selenium
	Zinc
Chemical Oxygen Demand	COD
pH	pH
Total Dissolved Solids	TDS
Total Alkalinity	Total Alkalinity

Table 14 shows the parameters in Ohio C&DD leachate that are of concern due to exceedances of surface water quality standards. The level of concern for a parameter was determined by evaluating:

- The number of landfills where it was detected.
- The magnitude of exceedance of a surface water quality standard for the minimum, maximum, mean, and median concentrations.
- Whether either of the confidence limits of the mean exceeded the surface water quality standard.

A high level of concern exists for one chlorinated solvent (vinyl chloride), one gasoline component (benzene), four heavy metals (arsenic, barium, lead, and mercury), one light metal (aluminum), four other ions (chloride, cyanide, ammonia, and sulfate), one pesticide (gamma chlordane), two phenolics (3-,4-methylphenol and phenol), one phthalate (bis(2-ethylhexyl)phthalate), seven trace elements (boron, copper, iron, manganese, phosphorus, selenium, and zinc), and TDS.

The maximum detected concentration for these parameters exceeded the surface water quality standards from 4.7 times (cyanide and chloride) to 2,323 times (iron).

Based on the median concentrations measured, the leachate at half or more of the Ohio C&DD landfills exceeded the surface water quality standards for:

- Manganese by 35 times.
- Iron by 31 times.
- Boron by 11 times.
- TDS by 6 times.
- Arsenic by 4 times.
- Ammonia by 2 times.
- Barium by 1.7 times.
- Sulfate by 1.3 times.
- Chloride by 1.2 times.

Based on the upper and lower confidence limits of the mean, during future leachate sampling, the mean concentrations across all of the Ohio C&DD landfills are expected to be:

- 28 to 56 times the standard for manganese.
- 16 to 142 times the standard for iron.
- 8 to 13 times the standard for boron.
- 7 to 11 times the standard for ammonia.
- 5 to 79 times the standard for mercury.
- 5 to 7 times the standard for TDS.
- 3 to 7 times the standard for arsenic.
- 1.4 to 3 times the standard for barium.
- 1 to 1.7 times the standard for chloride.

Excepting seven parameters, all of the parameters assigned a high level of concern had mean concentrations that exceeded the surface water quality standards from 1.1 times (vinyl chloride) to 79 times (iron).

Excepting two parameters, all of the parameters assigned a high level of concern had upper confidence limits of the mean that exceeded the surface water quality standard from 1.2 times (lead) to 142 times (iron).

Of the seven parameters that were assigned a high level of concern even though they had mean concentrations that did not exceed the standard:

- Benzene was assigned a high level of concern because it:
    - is a known carcinogen.
    - Was detected at 80 percent of C&DD landfills.
    - Had a maximum concentration detected that was 9 times higher than the surface water quality standard.
    - Had an upper confidence limit of the mean that was 1.25 times higher than the surface water quality standard.
- Copper was assigned a high level of concern because it:
    - Was detected at 50 percent of the Ohio C&DD landfills.
    - Had a maximum concentration detected that was 8.3 times higher than the surface water quality standard.
    - Had a mean concentration that was greater than 90 percent of the surface water quality standard.
    - Had an upper confidence limit of the mean that was 1.6 times the surface water quality standard.
- Cyanide was assigned a high level of concern because it:
    - Was detected at 50 percent of the C&DD landfills.
    - Had minimum concentrations detected of 1.1 times the standard and maximum concentrations detected of 4.7 times the standard.
    - The mean concentration was 90 percent of the standard.
    - The upper confidence limit was 1.3 times the standard.
- Lead was assigned a high level of concern because it:
    - Was detected at 37 percent of the landfills.
    - Had a maximum concentration detected that was 10 times the surface water quality standard.
    - And has an upper confidence limit of the mean that was 1.2 times higher than the surface water quality standard.
- Phosphorus was assigned a high level of concern because it:
    - Was detected at 67 percent of the Ohio C&DD landfills.
    - Had a maximum concentration detected of 22.8 times the surface water quality standard.
    - Had a mean concentration greater than 90 percent of the surface water quality standard.
    - Had an upper confidence limit of the mean that was 1.5 times greater than the surface water quality standard.

- Selenium was assigned a high level of concern because it:
    - Was detected at of the 20 percent of the C&DD landfills.
    - Had a minimum concentration detected that was 1.2 times higher than the surface water quality standard.
    - Had a maximum concentration detected that was 6.2 times higher than the surface water quality standard.

- Zinc was assigned a high level of concern because it:
    - Was detected at 70 percent of the C&DD landfills.
    - Had a maximum concentration detected that was 11.4 times the surface water quality standard.
    - Had a 95 percent upper confidence limit that was 90 percent of the surface water quality standard.

A moderate level of concern exists for one chlorinated solvent (methylene chloride), one gasoline component (toluene), three heavy metals (antimony, nickel, and thallium), one light metal (vanadium), one non-chlorinated solvent (carbon disulfide), one PAH (naphthalene), two pesticides (alpha chlordane and pentachlorophenol), and two trace elements (chromium and cobalt).

Toluene, antimony, nickel, thallium, vanadium, carbon disulfide, naphthalene, pentachlorophenol, chromium, and cobalt were determined to be of a moderate level of concern because:

- Based on the upper and lower confidence limits the mean concentration across all of Ohio's C&DD landfills would be expected to be less than 60 percent of the surface water quality standard for each of these parameters.

- None of the parameters had minimum detected concentrations that exceeded a standard.

- However, the maximum concentrations detected of these parameters were from 1.1 times (toluene) to 6.5 times (vanadium) the surface water quality standards.

Methylene chloride could have been assigned a high level of concern because it has toxic effects and is a suspected carcinogen. However it was assigned a moderate level of concern even though the maximum detected concentration was more than 16 times the standard and the upper confidence limit was 99 percent of the standard because the parameter was detected at seven landfills and exceeded the standard at only two landfills. If additional sampling shows that methylene chloride is detected more frequently, or exceeds the surface water quality standard at more landfills, it is recommended that the level of concern be raised to "high."

Alpha chlordane could also have been assigned a high level of concern because it is persistent in the environment and causes adverse effects to aquatic life at very low concentrations. However, it was assigned a moderate level of concern because the parameter was detected at only two landfills and exceeded the standard at both, even though the minimum concentration detected was 98 times the standard, the maximum detected concentration was 260 times the standard, and the upper confidence limit was 31 times the standard. If additional sampling

shows that alpha chlordane is detected more frequently, or exceeds the surface water quality standard at more landfills, it is recommended that the level of concern be raised to "high."

Parameters that are noteworthy are beryllium, cadmium, fluoride, acenaphthene, 4,4'-DDE, 4,4'-DDT, dieldrin, heptachlor, heptachlor epoxide, 2,4-dimethylphenol, 2-methylphenol, dibenzofuran, and pH.

The PAH, acenaphthene, the pesticides, 4,4'-DDE, 4,4'-DDT, dieldrin, heptachlor, heptachlor epoxide, and 2,4-dimethylphenol, the phenolic, 2-methylphenol, and the substituted benzene, dibenzofuran, were determined to be noteworthy because even though they exceeded the surface water quality standards from 3.6 times (acenaphthene) to 3,277 times (dieldrin), they were detected at only one or two landfills.

Beryllium was considered noteworthy because it was detected a six landfills and exceeded the standard at one landfill with the maximum concentration detected of 4.2 times the surface water quality standard.

Other parameters that were determined to be noteworthy include pH and fluoride, because the concentrations detected exceeded 80 percent of the surface water quality standards.

For pH, the minimum pH detected (6.6 S.U.) was 98 percent of the surface water quality standard for minimum pH and the maximum pH detected (7.94 S.U.) was 88 percent of the surface water quality standard for maximum pH. The effects of pH alter leachability, the ease of migration of some parameters in the environment, the toxicity of some metals, and can have adverse effects on some aquatic organisms.

For total cadmium and fluoride, detection occurred at multiple landfills (3 for cadmium, all 30 for fluoride) and the maximum detected concentrations exceeded 80 percent of the surface water quality standards. In the case of cadmium, dissolved concentrations were detected at 1.06 times the surface water quality standard at one landfill.

Table 14. Parameters of concern in Ohio C&DD leachate when compared with surface water quality standards

Row Number	No. of Facilities with Detects	Parameter Category	Parameter	Chemical Abstract Service No. (CAS)	Units	SWQ Standard	Min. Detected/SWQ Standard	Max. Detected/SWQ Standard	Mean/SWQ Standard	Median/SWQ Standard	95% LCL/SWQ Standard	95% UCL/SWQ Standard
							High Level of Concern					
1	13	Chlorinated solvents	Vinyl chloride	75-01-4	ug/L	0.48	0.60	14.79	1.10	0.00	0.06	2.15
2	24	Gasoline	Benzene	71-43-2	ug/L	5	0.06	3.00	0.64	0.31	0.04	1.25
3	3	Pesticides	gamma Chlordane	5103-74-2	ug/L	0.00025	56.00	92.00	6.48	0.00	-1.31	14.23
4	3	Phenolics	3-,4-Methylphenol	106-44-5	ug/L	53	3.03	78.87	3.17	0.00	-1.23	7.58
5	3	Phenolics	Phenol	108-95-2	ug/L	1	176.00	1130.00	42.00	0.00	-10.85	98.85
6	4	Phthalates	bis(2-Ethylhexyl)phthalate	117-81-7	ug/L	6	14.83	79.33	3.48	0.00	-0.14	7.09
7	23	Heavy metal, Totals	Arsenic, Total	7440-38-2	mg/L	0.01	0.50	25.40	5.28	4.05	3.16	7.88
8	30	Heavy metal, Totals	Barium, Total	7440-39-3	mg/L	0.22	0.03	24.55	2.11	1.74	1.37	2.84
9	11	Heavy metal, Totals	Lead, Total	7439-92-1	mg/L	0.023	0.23	9.83	0.67	0.00	0.15	1.16
10	6	Heavy metal, Totals	Mercury, Total	7439-97-6	mg/L	0.0000013	116.15	496.15	42.10	0.00	5.17	79.00
11	21	Light metal, Totals	Aluminum, Total	7429-90-5	mg/L	0.97	0.06	75.05	4.46	0.31	-0.09	8.89
12	30	Trace element, Totals	Boron, Total	7440-42-8	mg/L	0.95	0.77	28.53	10.66	10.63	8.36	13.00
13	15	Trace element, Totals	Copper, Total	7440-50-8	mg/L	0.022	0.25	8.73	0.91	0.07	0.24	1.56
14	29	Trace element, Totals	Iron, Total	7439-89-6	mg/L	0.3	0.52	2323.67	79.74	30.90	12.99	142.26
15	30	Trace element, Totals	Manganese, Total	7439-96-5	mg/L	0.05	0.29	154.80	42.52	35.00	28.45	56.45
16	20	Trace element, Totals	Phosphorus	7723-14-0	mg/L	1	0.16	22.80	0.92	0.53	0.33	1.82
17	6	Trace element, Totals	Selenium, Total	7782-49-2	mg/L	0.005	1.15	6.22	0.25	0.00	0.04	0.45
18	21	Trace element, Totals	Zinc, Total	7440-66-6	mg/L	0.28	0.02	11.36	0.48	0.05	0.05	0.90
19	30	Other ions	Chloride	16887-00-6	mg/L	250	0.03	4.72	1.36	1.21	1.02	1.71
20	15	Other ions	Cyanide, Weak/Dissociable	57-12-5	mg/L	0.0052	1.08	4.79	0.90	0.27	0.46	1.35
21	30	Other ions	Nitrogen, Ammonia	7664-41-7	mg/L	2.3	0.02	40.64	10.73	1.95	6.34	10.67
22	30	Other ions	Sulfate	14808-79-8	mg/L	250	0.05	34.28	2.81	1.28	0.54	5.08
23	30	TDS	Total Dissolved Solids	none-4	mg/L	500	1.22	14.08	6.11	5.89	5.12	7.10
							Moderate Level of Concern					
24	7	Chlorinated solvents	Methylene chloride	75-09-2	ug/L	5	0.12	16.44	0.38	0.00	-0.22	0.99
25	17	Gasoline	Toluene	108-88-3	ug/L	62	0.01	1.09	0.10	0.01	0.01	0.18
26	16	Non-chlorinated solvents	Carbon disulfide	75-15-0	ug/L	15	0.04	2.41	0.12	0.03	0.02	0.22
27	21	PAHs	Naphthalene	91-20-3	ug/L	21	0.01	3.68	0.31	0.07	0.05	0.57
28	2	Pesticides	alpha Chlordane	5103-71-9	ug/L	0.00025	96.00	259.60	11.92	0.00	-6.78	30.62
29	3	Pesticides	Pentachlorophenol	87-86-5	ug/L	1	0.48	1.37	0.08	0.00	-0.02	0.18
30	18	Heavy metal, Totals	Antimony, Total	7440-36-0	mg/L	0.006	0.10	2.62	0.37	0.14	0.18	0.56
31	25	Heavy metal, Totals	Nickel, Total	7440-02-0	mg/L	0.12	0.05	1.39	0.25	0.11	0.12	0.37
32	16	Heavy metal, Totals	Thallium, Total	7440-28-0	mg/L	0.0012	0.05	5.58	0.31	0.05	0.10	0.51
33	10	Light metal, Totals	Vanadium, Total	7440-62-2	mg/L	0.044	0.12	6.48	0.28	0.00	0.02	0.54
34	26	Trace element, Totals	Chromium, Total	7440-47-3	mg/L	0.2	0.02	1.35	0.17	0.10	0.11	0.22
35	8	Trace element, Totals	Cobalt, Total	7440-48-4	mg/L	0.024	0.15	2.67	0.17	0.00	-0.01	0.34
							Noteworthy					
36	1	PAHs	Acenaphthene	83-32-9	ug/L	15	3.64					
37	1	Pesticides	4,4'-DDE	72-55-9	ug/L	0.0059	36.14					
38	1	Pesticides	4,4'-DDT	50-29-3	ug/L	0.000011	2735.86					
39	1	Pesticides	Dieldrin	60-57-1	ug/L	0.0000065	3276.92					
40	1	Pesticides	Heptachlor	76-44-8	ug/L	0.0021	11.29					
41	1	Pesticides	Heptachlor epoxide	1024-57-3	ug/L	0.001	19.60					
42	1	Phenolics	2,4-Dimethylphenol	105-67-9	ug/L	15	6.26					
43	2	Phenolics	2-Methylphenol	95-48-7	ug/L	67	0.58	2.93	0.11	0.00	-0.09	0.31
44	1	Substituted benzenes	Dibenzofuran	132-64-9	ug/L	4	5.19					
45	6	Heavy metal, Totals	Beryllium, Total	7440-41-7	mg/L	0.004	0.14	3.20	0.10	0.00	-0.02	0.22
46	3	Heavy metal, Totals	Cadmium, Total*	7440-43-9	mg/L	0.0055	0.46	0.83	0.05	0.00	-0.01	0.10
47	30	Other ions	Fluoride	16984-48-8	mg/L	4	0.02	0.84	0.15	0.12	0.10	0.21
48	30	pH	pH	none-8	S.U.	6.5 - 9.0	0.98	0.88				

*At one landfill, dissolved cadmium exceeded the surface water quality standards by 1.1 times

Table 15 shows the parameter information (columns 1 – 5), descriptive statistics (columns 6 – 12), and the results of the comparisons of the minimum detected, maximum detected, mean, and 95 percent upper confidence limits for each parameter with the surface water quality standards (columns 13 – 19). The parameters are grouped by parameter category.

To calculate the mean concentration and the 95 percent confidence limits in Table 15, non-detects at the method detection limit were set equal to zero and estimated lab values were included in the calculation. This may have resulted in the mean concentrations being slightly lower than if analytical methods with lower method detection limits had been used.

In Table 15, the minimum detected column (Column 7) is the minimum concentration measured above the method detection limit at any one landfill. The maximum detected column (Column 8) is the maximum concentration measured at any one landfill.

In Table 15, columns 13 through 19 show the surface water quality standards and the results of the comparisons of the descriptive statistics with those standards. The darker highlights identify comparisons that show exceedances of the surface water quality standards. The lighter highlights identify comparisons that show results 70 percent to 100 percent of the surface water quality standard.

In Table 15, columns 14 through 19 were calculated by taking the ratio of the descriptive statistic to the surface water quality standard. This means that if a number is equal to or greater than one it can be read as the number of times the parameter exceeds the surface water quality standard. If the number is less than one, it can be multiplied by 100 and read as a percentage of the surface water quality standard.

Table 15 used the Ohio surface water quality standards from OAC Rule OAC 3745-1 as the standards for comparison with the descriptive statistics for each parameter. The surface water quality standard for strontium is being updated by Ohio EPA. The updated standard was used instead of the standard for strontium contained in OAC Chapter 3745-1.

Table 15 includes both the dissolved concentration and total concentration results for the metals and trace elements so that the descriptive statistics and comparisons with the surface water quality standards can be seen for both types of parameters. Table 11 does not count 14 dissolved concentration results for metals and trace elements. That is why Table 15 contains information for 60 parameters that exceeded surface water quality standards and Table 11 includes a total count of 46 parameters that exceeded surface water quality standards.

The 14 parameters that had both dissolved and totals concentrations that exceeded the surface water quality standards are as follows:

- Seven additional dissolved heavy metals (antimony, arsenic, barium, lead, mercury, nickel, and thallium).
- Five dissolved trace elements (boron, copper, iron, manganese, and selenium).
- Two dissolved light metals (aluminum and vanadium).

Parameters that are also shown in Table 15, but are not counted in Table 11 because they did not exceed the surface water quality standards are pH and one additional "other ion" (fluoride). These parameters were 80 percent to 100 percent of the surface water quality standards. Fluoride was detected at all 30 landfills and pH was measured at all 30 landfills. Fluoride and pH were included in Table 15 for completeness because they were discussed as noteworthy parameters previously.

Methylene chloride is a common lab contaminant. Sufficient concentrations of methylene chloride were found in trip blanks for two of the samples (Rosby Resource C&DD landfill and Silver Oak C&DD landfill) to cast doubt on the validity of the methylene chloride results for those samples. Therefore, the suspect sample results were removed from the data set used to produce this summary.

For two landfills that had multiple samples measured for pH (Summit C&D Disposal, Inc. and TWL-Penn Ohio), each had one of the results for pH recorded at 9.04 S.U. This value is extreme when compared with the pH measurements of the other landfills and with the other pH measurement taken at each of those two landfills. It is also unusual that both landfills would have exactly the same extreme pH. It is suspected that field measurement bias resulted in the two anomalous pH readings. They were, therefore, excluded from the tables and calculations in this Ohio EPA study. If additional sampling confirms the high pH values, then the understanding of the pH of Ohio C&DD leachate will need to be revised.

Table 15. Statistics for Ohio C&DD leachate parameters that exceeded surface water quality standards also showing parameters that were between 70% and 100% of the standards.

Col. No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Row Number	[illegible]	[illegible]	Parameter Category	Parameter	Chemical Abstract Service No. (CAS)	Units	Minimum Detected[B]	Maximum Detected[B]	Mean[G]	Median[G]	95% Lower Confidence Limit (LCL)[G]	95% Upper Confidence Limit (UCL)[G]	SWQ Standard	Min. Detected/SWQ Standard	Max. Detected/SWQ Standard	Mean/SWQ Standard	Median/SWQ Standard	95% LCL/SWQ Standard	95% UCL/SWQ Standard
1	36	7	Chlorinated solvents	Methylene chloride[C]	75-09-2	ug/L	0.586	82.2	1.92193	0.00000	-1.09173	4.93558	5	0.12	16.44	0.38	0.00	-0.22	0.99
2	38	13	Chlorinated solvents	Vinyl chloride	75-01-4	ug/L	0.386	7.08	0.53022	0.00000	0.02746	1.03298	0.48	0.80	14.75	1.10	0.00	0.06	2.15
3	38	24	Gasoline	Benzene	71-43-2	ug/L	0.304	45	3.22212	1.55500	0.20709	6.23715	5	0.06	9.00	0.64	0.31	0.04	1.25
4	38	17	Gasoline	Toluene	108-88-3	ug/L	0.385	67.7	5.91663	0.55550	0.89897	10.93430	62	0.01	1.09	0.10	0.01	0.01	0.18
5	38	18	Heavy metal, Totals	Antimony, Total	7440-36-0	mg/L	0.000574	0.0169	0.00220	0.00084	0.00106	0.00334	0.006	0.10	2.82	0.37	0.14	0.18	0.56
6	38	23	Heavy metal, Totals	Arsenic, Total	7440-38-2	mg/L	0.00503	0.254	0.05279	0.04048	0.03180	0.07378	0.01	0.50	25.40	5.28	4.05	3.18	7.38
7	38	30	Heavy metal, Totals	Barium, Total	7440-39-3	mg/L	0.00637	5.49	0.46358	0.38200	0.30180	0.62535	0.22	0.03	24.95	2.15	1.74	1.37	2.84
8	38	6	Heavy metal, Totals	Beryllium, Total	7440-41-7	mg/L	0.00055	0.0168	0.00041	0.00000	-0.00007	0.00088	0.004	0.14	4.20	0.10	0.00	-0.02	0.22
9	38	11	Heavy metal, Totals	Lead, Total	7439-92-1	mg/L	0.00525	0.226	0.01550	0.00000	0.00355	0.02746	0.023	0.23	9.83	0.67	0.00	0.15	1.19
10	38	6	Heavy metal, Totals	Mercury, Total	7439-97-6	mg/L	0.000151	0.000645	0.00005	0.00000	0.00001	0.00010	0.0000013	116.15	496.15	42.19	0.00	5.12	79.04
11	38	25	Heavy metal, Totals	Nickel, Total	7440-02-0	mg/L	0.00544	0.167	0.02947	0.01330	0.01488	0.04406	0.12	0.05	1.39	0.25	0.11	0.12	0.37
12	38	16	Heavy metal, Totals	Thallium, Total	7440-28-0	mg/L	0.0000653	0.0067	0.00037	0.00006	0.00012	0.00062	0.0012	0.05	5.58	0.31	0.05	0.10	0.51
13	38	17	Heavy metals, dissolved	Antimony, Dissolved	7440-36-0	mg/L	0.000307	0.0134	0.00173	0.00041	0.00069	0.00276	0.006	0.05	2.23	0.29	0.07	0.11	0.46
14	38	26	Heavy metals, dissolved	Arsenic, Dissolved	7440-38-2	mg/L	0.00547	0.325	0.03770	0.01725	0.01464	0.06075	0.01	0.55	32.50	3.77	1.73	1.46	6.08
15	38	30	Heavy metals, dissolved	Barium, Dissolved	7440-39-3	mg/L	0.00833	1.06	0.35249	0.29600	0.25407	0.45090	0.22	0.04	4.82	1.60	1.35	1.16	2.05
16	38	1	Heavy metals, dissolved	Cadmium, Dissolved	7440-43-9	mg/L	0.00563						0.0055	1.02					
17	38	6	Heavy metals, dissolved	Lead, Dissolved	7439-92-1	mg/L	0.00267	0.0352	0.00216	0.00000	-0.00040	0.00472	0.023	0.12	1.53	0.09	0.00	-0.02	0.21
18	38	1	Heavy metals, dissolved	Mercury, Dissolved	7439-97-6	mg/L	0.000512						0.0000013	393.85					
19	38	26	Heavy metals, dissolved	Nickel, Dissolved	7440-02-0	mg/L	0.00545	0.217	0.02757	0.01648	0.01250	0.04264	0.12	0.05	1.81	0.23	0.14	0.10	0.36
20	38	15	Heavy metals, dissolved	Thallium, Dissolved	7440-28-0	mg/L	0.000062	0.0042	0.00027	0.00003	0.00006	0.00047	0.0012	0.05	3.50	0.22	0.03	0.05	0.39
21	38	21	Light metal, Totals	Aluminum, Total	7429-90-5	mg/L	0.0802	72.8	4.26417	0.30300	-0.08020	8.61855	0.97	0.08	75.05	4.40	0.31	-0.08	8.89
22	38	10	Light metal, Totals	Vanadium, Total	7440-62-2	mg/L	0.00524	0.285	0.01246	0.00000	0.00099	0.02394	0.044	0.12	6.48	0.28	0.00	0.02	0.54
23	38	9	Light metals, dissolved	Aluminum, Dissolved	7429-90-5	mg/L	0.0581	1.41	0.11318	0.00000	0.00492	0.22144	0.97	0.06	1.45	0.12	0.00	0.01	0.23
24	38	9	Light metals, dissolved	Vanadium, Dissolved	7440-62-2	mg/L	0.00602	0.0708	0.00862	0.00000	0.00216	0.01508	0.044	0.14	1.61	0.20	0.00	0.05	0.34
25	38	16	Non-chlorinated solvents	Carbon disulfide	75-15-0	ug/L	0.614	36.2	1.83149	0.42858	0.36211	3.30087	15	0.04	2.41	0.12	0.03	0.02	0.22
26	38	30	Other Ions	Chloride	16887-00-6	mg/L	6.84	1180	340.83689	303.33333	253.85902	427.81476	250	0.03	4.72	1.36	1.21	1.02	1.71
27	38	15	Other ions	Cyanide, Weak/Dissociable	57-12-5	mg/L	0.00553	0.0246	0.00467	0.00138	0.00240	0.00694	0.0052	1.06	4.73	0.90	0.27	0.46	1.33
28	38	30	Other ions	Nitrogen, Ammonia	7664-41-7	mg/L	0.053	92.1	24.63289	15.05000	15.46904	33.79674	2.3	0.02	40.04	10.71	[illegible]	[illegible]	[illegible]
29	38	30	Other ions	Sulfate	14808-79-8	mg/L	13.6	8570	702.87778	320.12500	134.71940	1271.03616	250	0.05	34.28	2.81	1.28	0.54	5.08
30	38	1	PAHs	Acenaphthene	83-32-9	ug/L	54.6						15	3.64					
31	38	21	PAHs	Naphthalene	91-20-3	ug/L	0.291	77.2	6.56534	1.53000	1.08044	12.05025	21	0.01	3.68	0.31	0.07	0.05	0.57
32	38	1	Pesticides	4,4'-DDE	72-55-9	ug/L	0.225						0.0059	38.14					
33	38	1	Pesticides	4,4'-DDT	50-29-3	ug/L	0.0301						0.000011	2736.36					
34	38	2	Pesticides	alpha Chlordane	5103-71-9	ug/L	0.0245	0.0649	0.00298	0.00000	-0.00170	0.00766	0.00025	98.00	259.60	11.92	0.00	-6.78	30.62
35	38	1	Pesticides	Dieldrin	60-57-1	ug/L	0.0213						0.0000065	3276.92					
36	38	3	Pesticides	gamma Chlordane	5103-74-2	ug/L	0.0145	0.0232	0.00162	0.00000	-0.00033	0.00356	0.00025	58.00	92.80	6.48	0.00	-1.31	14.23
37	38	1	Pesticides	Heptachlor	76-44-8	ug/L	0.0237						0.0021	11.29					
38	38	1	Pesticides	Heptachlor epoxide	1024-57-3	ug/L	0.0196						0.001	19.60					
39	38	3	Pesticides	Pentachlorophenol	87-86-5	ug/L	0.461	1.37	0.07903	0.00000	-0.02361	0.18168	1	0.46	1.37	0.08	0.00	-0.02	0.18
40	38	1	Phenolics	2,4-Dimethylphenol	105-67-9	ug/L	94.2						15	6.28					
41	38	2	Phenolics	2-Methylphenol	95-48-7	ug/L	39.1	196	7.18500	0.00000	-6.19766	20.56766	67	0.58	2.93	0.11	0.00	-0.09	0.31
42	38	3	Phenolics	3-,4-Methylphenol	106-44-5	ug/L	162	4180	168.06667	0.00000	-65.34232	401.47565	53	3.06	78.87	3.17	0.00	-1.23	7.58
43	38	3	Phenolics	Phenol	108-95-2	ug/L	178	1130	44.00000	0.00000	-10.85114	98.85114	1	178.00	1130.00	44.00	0.00	-10.85	98.85
44	38	4	Phthalates	bis(2-Ethylhexyl)phthalate	117-81-7	ug/L	67.5	479	20.86667	0.00000	-0.83513	42.56846	6	11.25	79.83	3.48	0.00	-0.14	7.09
45	38	1	Substituted benzenes	Dibenzofuran	132-64-9	ug/L	24.4						4	6.10					
46	38	30	TDS	Total Dissolved Solids	none-4	mg/L	634	7040	3055.48689	2945.00000	2562.32622	3548.65156	500	1.27	14.08	6.11	5.89	5.12	7.10
47	38	30	Trace element, Totals	Boron, Total	7440-42-8	mg/L	0.735	27.1	10.11778	10.10000	7.88278	12.35280	0.95	0.77	28.53	10.65	10.63	8.30	13.00
48	38	28	Trace element, Totals	Chromium, Total	7440-47-3	mg/L	0.00364	0.269	0.03317	0.02078	0.02144	0.04489	0.2	0.02	1.35	0.17	0.10	0.11	0.22
49	38	8	Trace element, Totals	Cobalt, Total	7440-48-4	mg/L	0.0036	0.0641	0.00397	0.00000	-0.00022	0.00816	0.024	0.15	2.67	0.17	0.00	-0.01	0.34
50	38	15	Trace element, Totals	Copper, Total	7440-50-8	mg/L	0.00551	0.182	0.02011	0.00155	0.00534	0.03488	0.022	0.25	8.27	0.91	0.07	0.24	1.59
51	38	29	Trace element, Totals	Iron, Total	7439-89-6	mg/L	0.155	697	23.74250	9.27025	4.79680	42.68820	0.3	0.52	2323.33	79.14	30.90	15.99	142.29
52	38	30	Trace element, Totals	Manganese, Total	7439-96-5	mg/L	0.0146	7.74	2.12123	1.75000	1.42005	2.82241	0.05	0.29	154.80	42.42	35.00	28.40	56.45
53	38	20	Trace element, Totals	Phosphorus	7723-14-0	mg/L	0.155	22.8	0.82093	0.53350	0.32592	1.51595	1	0.16	22.80	0.82	0.53	0.33	1.52
54	38	6	Trace element, Totals	Selenium, Total	7782-49-2	mg/L	0.00577	0.0311	0.00123	0.00000	0.00019	0.00227	0.005	1.15	6.22	0.25	0.00	0.04	0.45
55	38	21	Trace element, Totals	Zinc, Total	7440-66-6	mg/L	0.00521	3.18	0.13302	0.01305	0.01452	0.25153	0.28	0.02	11.36	0.48	0.05	0.05	0.90
56	38	30	Trace elements, dissolved	Boron, Dissolved	7440-42-8	mg/L	0.788	26.5	10.43683	10.45000	8.26662	12.60703	0.95	0.83	27.89	10.98	11.00	8.70	13.27
57	38	14	Trace elements, dissolved	Copper, Dissolved	7440-50-8	mg/L	0.0055	0.219	0.01074	0.00000	-0.00405	0.02552	0.022	0.25	9.95	0.49	0.00	-0.18	1.16
58	38	29	Trace elements, dissolved	Iron, Dissolved	7439-89-6	mg/L	0.0363	23.1	2.56871	1.15408	0.94677	4.19065	0.3	0.12	77.00	8.56	3.85	3.16	13.97
59	38	30	Trace elements, dissolved	Manganese, Dissolved	7439-96-5	mg/L	0.00873	7.79	1.91813	1.61000	1.24740	2.58886	0.05	0.17	155.80	38.36	32.20	24.95	51.78
60	38	5	Trace elements, dissolved	Selenium, Dissolved	7782-49-2	mg/L	0.00578	0.011	0.00093	0.00000	0.00006	0.00180	0.005	1.16	2.20	0.19	0.00	0.01	0.36
61	36	3	Heavy metal, Totals	Cadmium, Total	7440-43-9	mg/L	0.00255	0.00454	0.00026	0.00000	-0.00004	0.00055	0.0055	0.46	0.83	0.05	0.00	-0.01	0.10
62	38	30	Other ions	Fluoride	16984-48-8	mg/L	0.0943	3.35	0.61523	0.47950	0.38107	0.84938	4	0.02	0.84	0.15	0.12	0.10	0.21
63	36	30	pH	pH[D]	none-8	S.U.	6.6	7.94	7.147556	7.14	7.039762	7.25533	6.5 - 9.0	0.98	0.88				
64	38	16	Trace elements, dissolved	Zinc, Dissolved	7440-66-6	mg/L	0.0056	0.226	0.01595	0.00495	0.00531	0.02659	0.26	0.02	0.81	0.06	0.02	0.02	0.09

Note A - For the purpose of calculating descriptive statistics in this table, non-detects at the method detection limit were set equal to zero and lab estimated values were included in the calculation. Because of this, minimum and median concentrations showing zero concentration value cannot be interpreted as "not present," but should be interpreted as "concentration is less than the method detection limit."

Note B - Non-detects below the method detection limit are not included in the minimum detected columns.

Note C - Methylene chloride is a common lab contaminant. Sufficient levels were found in trip blanks for two samples to cast doubt on the validity of the methylene chloride results for those samples. As a result, the suspect sample results were removed from the data set used to produce this summary.

Note D - For pH, two landfills had two suspect identical values that were extremely high compared to other pH measurements at the same facility and the pH of leachate at other C&DD landfills. The two anomalous pH measurements may possibly be from sampling bias in the field. These two landfills had two measurements for pH each. The descriptive statistics for pH were calculated excluding the two suspect high values, but included the other two values. Column 14 is calculated by dividing the minimum pH standard of 6.5 by the minimum pH measured at any one landfill . Column 15 is calculated by taking the maximum pH measured and dividing it by the maximum surface water quality pH standard of 9.0

Note E - Surface water quality standards are from chapter 3745-1 of the Ohio Administrative Code, except the standard for strontium which is being updated by Ohio EPA. The updated standard for strontium was used in this report.

Note G - Multiple samples were taken from seven C&DD landfills. To prevent those seven landfills from skewing the results for mean, median, and confidence limits, the results for each parameter at each landfill that had multiple samples were averaged and used as a single data point in the calculations.

All 30 C&DD landfills had from 3 to 26 parameters that exceeded surface water quality standards. The median was 11 parameters exceeding the standards. The leachate from 29 of the C&DD landfills had 6 or more exceedances of surface water quality standards.

The top five landfills with the most parameters that exceeded surface water quality standards are:

- TWL – LAS C&DD landfill with 26
- Warren Recycling C&DD landfill with 24
- Silver Oak Land Development C&DD landfill with 21
- RKDF C&DD landfill with 20
- Fallsburg Road C&DD landfill with 16

The one landfill that had less than six parameters that exceeded surface water quality standards is suspected of having leachate that is diluted from ground water infiltration, surface water run-on or precipitation. There was an average of two additional parameters at each landfill that were 70 percent to 100 percent of a surface water quality standards standard, with a minimum of one and a maximum of four additional parameters (See Figure 11).

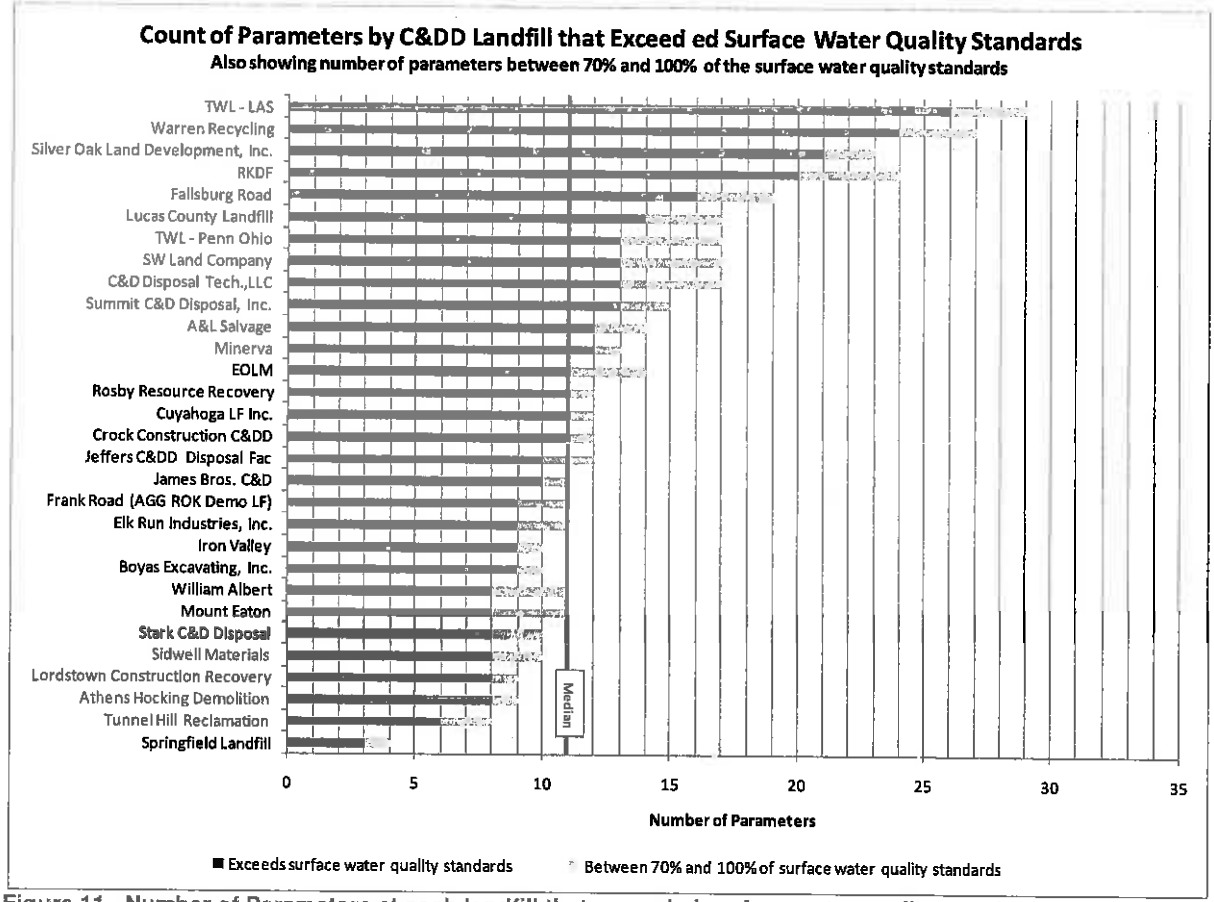


Figure 11. Number of Parameters at each landfill that exceeded surface water quality standards and also showing the number of parameters that were 70% to 100% of surface water quality standards

The concentrations of the parameters in Ohio C&DD leachate that exceeded surface water quality standards were such that discharge of C&DD leachate to surface water would not be lawful in Ohio without treatment and a permit. The concentrations of the parameters in C&DD leachate exceeded the surface water quality standards rules found in OAC Chapter 3745-1. The maximum concentrations detected exceeded the surface water quality standards by as much as much as 2,323 times. The mean concentrations for each parameter exceeded the surface water quality standards by as much as 79 times.

There are numerous parameters that were often detected in Ohio C&DD leachate, including a wide variety of metals, inorganic parameters, and organic parameters that were of sufficient concentration that, if released to surface water could cause or contribute to water pollution, possibly impact public health and the environment, and adversely affect public drinking water supplies that use surface water sources. Of particular concern are those parameters that were detected in the C&DD leachate that were multiples of the surface water quality standards (such as vinyl chloride, benzene, arsenic, barium, mercury, phenol, and gamma chlordane), carcinogens (such as vinyl chloride, benzene, and arsenic), mobile in the environment (such as vinyl chloride, benzene, arsenic, TDS, and phosphorus), persistent in the environment (such as mercury, antimony, and lead), or which bioaccumulate (such as chlordane, arsenic, copper, lead, mercury, nickel, selenium, and zinc).

Comparison with ground water constituents indicating impact at Ohio C&DD landfills

In 2007, Ohio EPA evaluated 47 C&DD landfills to determine if ground water impacts were indicated. Of the 47 landfills, 31 (66 percent) had indications of ground water impact. The parameters indicating ground water impact at these landfills, in order of frequency, included sulfate, chloride, magnesium, ammonia, sodium, potassium, organic compounds, calcium, bicarbonate, iron, COD, specific conductance, manganese, total alkalinity, TDS, pH, arsenic, and nitrite. The organic compounds included toluene, benzene, low level polycyclic aromatic hydrocarbons (PAHs), and styrene (Ohio EPA, 2008).

There were 20 parameters and one parameter category (PAHs) that were identified in the Ohio EPA 2008 study, "Hydrogeologic Evaluation of Construction and Demolition Debris (C&DD) landfills in Ohio." Of the 20 parameters, two (bicarbonate and specific conductance) were not sampled in the Ohio EPA 2007 C&DD leachate sampling event. All of the remaining 18 parameters were detected in Ohio C&DD leachate. Nine of the leachate parameters exceeded health based standards.

The 18 parameters that were detected in Ohio C&DD leachate that had indications of impacting ground water at Ohio C&DD landfills are, total alkalinity, arsenic, benzene, calcium, COD, chloride, iron, magnesium, manganese, ammonia, nitrate-nitrite, pH, potassium, sodium, styrene, sulfate, toluene, and TDS.

COD, pH, TDS, and total alkalinity can usually be measured in most leachate. The range of the measurements in Ohio C&DD leachate for COD (50.1 to 4,390 mg/L), pH (6.6 to 7.94 S.U.), TDS (634 to 7,040 mg/L), and total alkalinity (145 to 3,750 mg/L) were such that measureable impacts to ground water could occur if the leachate were released to the environment. However, the conclusion that impact by these parameters has occurred would likely require statistical comparisons with upgradient background ground water quality.

There were two PAHs detected during the Ohio EPA 2007 C&DD leachate sampling event (acenaphthene and naphthalene). Little PAH data was available for the Ohio EPA 2008 study of ground water quality at Ohio C&DD landfills. Analysis results for PAH's were rarely reported as being sampled in ground water at Ohio C&DD landfills. Naphthalene and acenaphthene were not reported as having been analyzed in the ground water of the landfills evaluated in the Ohio EPA 2008 study of ground water quality at Ohio C&DD landfills. Even so, PAHs were identified as showing indications of impacting ground water in the Ohio EPA 2008 study of ground water quality at one Ohio C&DD landfill. These include the PAHs (benzo (b) fluoranthene, benzo (k) fluoranthene, benzo (a) pyrene, benzo (ghi) perylene, di-benzo (a,h) anthracene, and indeno (1,2,3-cd) pyrene. None of these six PAHs were detected in the leachate from the 30 C&DD landfills sampled in 2007. However, the leachate from the landfill where the PAH impacts to ground water were indicated was not sampled due to lack of a location to obtain a sample without boring into the debris. This could mean that the leachate at the one landfill may have PAHs that the 30 C&DD landfills that were sampled do not or the PAHs in the ground water are from a different source than the C&DD landfill.

Table 16 shows the organic parameters that were detected in Ohio C&DD leachate.

Table 17 shows the metals and inorganic parameters that were detected in Ohio C&DD leachate.

In both tables, the shaded parameters identify the parameters from the Ohio EPA 2008 study, "Hydrogeologic Evaluation of Construction and Demolition Debris (C&DD) landfills in Ohio" that may be impacting ground water at Ohio C&DD landfills. The asterisked parameters also exceeded health based standards, surface water quality standards, or both.

Table 16. Organic parameters detected in C&DD leachate that also show indications of ground water impact at Ohio C&DD landfills (highlighted).

Category	Parameter Name
Alcohols	Isobutanol
Substituted Benzenes	1,2-Dichlorobenzene
	Chlorobenzene
	Dibenzofuran
	p-Isopropyltoluene
	Styrene
Chlorinated solvents	1,1,1-Trichloroethane
	1,1-Dichloroethane
	1,2-Dichloroethane
	Chloroethane
	Chloroform
	cis-1,2-Dichloroethene
	Methylene chloride
	Tetrachloroethene
	trans-1,2-Dichloroethene
	Trichloroethene
	Vinyl chloride
Chlorofluorocarbons	Dichlorodifluoromethane
	Trichlorofluoromethane
Gasoline	Benzene*
	Ethylbenzene
	m-,p-Xylene
	o-Xylene
	Toluene*
Non-chlorinated solvents	2-Butanone
	2-Hexanone
	4-Methyl-2-pentanone
	Acetone
	Acetophenone
	Benzyl alcohol
	Carbon disulfide

Category	Parameter Name
PAHs	Acenaphthene
	Naphthalene
Pesticides	1,4-Dichlorobenzene
	2,4,5-TP (Silvex)
	2,4-D
	2,4-DB
	4,4'-DDE
	4,4'-DDT
	alpha Chlordane
	Dicamba
	Dichloroprop
	Dieldrin
	Disulfoton
	EPN
	gamma Chlordane
	Heptachlor
	Heptachlor epoxide
	MCPA
	MCPP
	Methoxychlor
	Pentachlorophenol
Phenolics	2,4-Dimethylphenol
	2-Methylphenol
	3-,4-Methylphenol
	Phenol
Phthalates	bis(2-Ethylhexyl) phthalate
Substituted alkanes	1,2-Dichloropropane
Other organics	Bis(2-Chloroethoxy) Methane

* Exceeded health based standards, surface water quality standards, or both

Table 17. Metals and inorganic parameters detected in C&DD leachate that also show indications of impact to ground water at Ohio C&DD landfills (highlighted).

Category	Parameter Name
Heavy metals, totals and dissolved	Antimony
	Arsenic*
	Barium
	Beryllium
	Cadmium
	Lead
	Mercury
	Nickel
	Thallium
Light metals, totals and dissolved	Aluminum
	Calcium
	Magnesium
	Potassium
	Sodium*
	Strontium
	Vanadium

Category	Parameter Name
Other ions	Chloride*
	Cyanide, Weak/Dissociable
	Fluoride
	Nitrogen, Ammonia*
	Nitrogen, Nitrate-Nitrite
	Sulfate*
	Sulfide
Trace elements, totals and dissolved (except phosphorus)	Boron
	Chromium
	Cobalt
	Copper
	Iron*
	Manganese*
	Selenium
	Phosphorus
	Zinc

Chemical Oxygen Demand	COD
pH	pH
Total Dissolved Solids	TDS*
Total Alkalinity	Total Alkalinity

* Exceeded health based standards, surface water quality standards, or both

Eighteen parameters were detected in C&DD leachate that may be impacting ground water at Ohio C&DD landfills. Table 18 shows the descriptive statistics and comparisons with health based standards and surface water quality standards for the 18 parameters. Of those 18 parameters:

- 12 parameters were detected in the leachate at 30 C&DD landfills:

Total Alkalinity	Nitrogen, Ammonia
Calcium	pH
COD	Potassium
Chloride	Sodium
Magnesium	Sulfate
Manganese	TDS

- 4 parameters were detected in the leachate at from 17 to 29 landfills:

Benzene	Arsenic
Toluene	Iron

- 9 parameters exceeded a health based standard.

Ammonia	Manganese
Arsenic	Sodium
Benzene	Sulfate
Chloride	TDS
Iron	

- Two parameters were detected in the leachate at five landfills:

Nitrate-nitrite
Styrene

All of the metals listed in the above tables had both total concentration results and dissolved concentration results detected. Three metals showing indications of having impacted ground water at C&DD landfills (arsenic, iron, and manganese) also had dissolved results that exceeded health based standards and surface water quality standards.

The finding by Ohio EPA that there are indications that 18 parameters may have impacted ground water at Ohio C&DD landfills is supported as plausible by this report because of the following:

- 16 of the 18 parameters were detected at more than 60 percent of the C&DD landfills.
- 9 of the parameters exceeded a health based standard.
- The 5 parameters that do not have a health based standard were detected with mean concentrations from 109 mg/L to 1,642 mg/L.

This comparison is not to be used to conclude that impact to ground water has occurred at any C&DD landfill in Ohio. A site specific ground water assessment is necessary to determine impact to ground water at individual landfills.

Table 18. Descriptive statistics and comparisons with health based and surface water quality standards for the C&DD leachate parameters possibly impacting ground water at Ohio C&DD landfills

Col. No.	1	2	3		4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
			Sample Parameter Information				Descriptive Statistics[A]							Health Based (HB) Standard Comparisons								Surface Water Quality (SWQ) Standard Comparisons						
Row Number							Units	Minimum Detected[B]	Maximum Detected[B]	Mean[A, G]	Median[A, G]	95% Lower Confidence Limit (LCL)[G]	95% Upper Confidence Limit (UCL)[G]	HB Standard	Standard Code[E]	Min. Detected/HB Standard	Max. Detected/HB Standard	Mean/HB Standard	Median/HB Standard	95% LCL/HB Standard	95% UCL/HB Standard	SWQ Standard	Min. Detected/SWQ Standard	Max. Detected/SWQ Standard	Mean/SWQ Standard	Median/SWQ Standard	95% LCL/SWQ Standard	95% UCL/SWQ Standard
1	39	24	Gasoline	Benzene	71-43-2		ug/L	0.304	45	3.22212	1.55506	0.20709	6.23715	5	MCL	0.06	9.00	0.64	0.31	0.04	1.25	5	0.06	9.00	0.64	0.31	0.04	1.25
2	39	17	Gasoline	Toluene	108-88-3		ug/L	0.385	67.7	5.91663	0.55550	0.89597	10.93430	1000	MCL	0.00	0.07	0.01	0.00	0.00	0.01	82	0.01	1.00	0.10	0.01	0.01	0.18
3	39	5	Substituted benzenes	Styrene	100-42-5		ug/L	0.233	1.22	0.06793	0.00000	-0.00085	0.13672	100	MCL	0.00	0.01	0.00	0.00	0.00	0.00	32	0.01	0.04	0.00	0.00	0.00	0.00
4	38	23	Heavy metal, Totals	Arsenic, Total	7440-38-2		mg/L	0.00503	0.254	0.05279	0.04048	0.03180	0.07378	0.01	MCL	0.50	25.40	5.28	4.05	3.18	7.38	0.01	0.50	25.40	5.28	4.05	3.18	7.38
5	38	30	Light metal, Totals	Calcium, Total	7440-70-2		mg/L	4.94	933	327.11344	320.00000	272.03606	382.19083		NONE													
6	38	30	Light metal, Totals	Magnesium, Total	7439-95-4		mg/L	4.25	453	221.14750	208.90000	181.67934	260.61566		NONE													
7	38	30	Light metal, Totals	Potassium, Total	7440-09-7		mg/L	11	982	108.60667	74.80000	45.32601	171.86739		NONE													
8	38	30	Light metal, Totals	Sodium, Total	7440-23-5		mg/L	30.3	2240	374.51778	287.00000	228.74968	520.28587	60	SMCL	0.51	37.33	6.24	4.78	3.81	8.67							
9	36	29	Trace element, Totals	Iron, Total	7439-89-6		mg/L	0.155	697	23.74250	9.27025	4.79680	42.88820	0.3	SMCL	0.52	2323.33	79.14	30.90	15.99	142.96	0.3	0.52	2323.33	79.14	30.90	15.99	142.96
10	38	30	Trace element, Totals	Manganese, Total	7439-96-5		mg/L	0.0146	7.74	2.12123	1.75000	1.42005	2.82241	0.3	LTHA	0.05	25.80	7.07	5.83	4.73	9.41	0.05	0.29	154.80	42.39	35.00	28.40	56.45
11	39	30	Other ions	Chloride	16887-00-6		mg/L	6.84	1180	340.83689	303.33333	253.85902	427.81476	250	SMCL	0.03	4.72	1.36	1.21	1.02	1.71	250	0.03	4.72	1.36	1.21	1.02	1.71
12	38	30	Other ions	Nitrogen, Ammonia	7664-41-7		mg/L	0.053	92.1	24.53289	15.05000	15.46904	33.79574	30	SMCL	0.00	3.07	0.82	0.50	0.52	1.13	1.1 - 2.3	0.02	80.04	21.51	13.09	13.54	29.67
13	38	5	Other ions	Nitrogen, Nitrate-Nitrite	none-3		mg/L	0.195	3.15	0.09044	0.00000	-0.00779	0.16868	10	MCL	0.02	0.32	0.01	0.00	0.00	0.02	10	0.02	0.32	0.01	0.00	0.00	0.02
14	38	30	Other ions	Sulfate	14808-79-8		mg/L	13.6	8570	702.87778	320.12500	134.71940	1271.03816	250	SMCL	0.05	34.28	2.81	1.28	0.54	5.08	250	0.05	34.28	2.81	1.28	0.54	5.08
15	39	30	COD	Chemical Oxygen Demand	none-2		mg/L	50.1	4390	825.88333	559.00000	500.78123	1150.98544		NONE													
16	36	30	pH	pH[D]	none-8		S.U.	6.6	7.94	7.147556	7.14	7.039762	7.25533	6.5-8.5	SMCL	0.88	0.93					6.5 - 9.0	0.88	0.88				
17	38	30	TDS	Total Dissolved Solids	none-4		mg/L	634	7040	3055.48889	2945.00000	2562.32622	3548.65156	500	SMCL	1.27	14.08	3.11	2.89	2.51	7.10	500	1.27	14.08	3.11	2.89	2.51	7.10
18	38	30	Total Alkalinity	Alkalinity, Total	none-1		mg/L	145	3750	1642.47778	1680.00000	1399.56273	1885.39283		NONE													

Note A - For the purpose of calculating descriptive statistics in this table, non-detects at the method detection limit were set equal to zero and lab estimated values were included in the calculation. Because of this, minimum and median concentrations showing zero concentration value cannot be interpreted as "not present," but should be interpreted as "concentration is less than the method detection limit."

Note B - Non-detects below the method detection limit are not included in the minimum detected columns.

Note D - For pH, two landfills had two suspect identical values that were extremely high compared to other pH measurements at the same facility and the pH of leachate at other C&DD landfills. The two anomalous pH measurements may possibly be from sampling bias in the field. These two landfills had two measurements for pH each. The descriptive statistics for pH were calculated excluding the two suspect high values, but included the other two values. Columns 15 and 22 are calculated by dividing the minimum pH standard of 6.5 by the minimum pH measured at any one landfill. Columns 16 and 23 are calculated by taking the maximum pH measured and dividing it by the maximum pH standard of 8.5 (HB standard) or 9.0 (SWQ standard).

Note E - MCL = US EPA Maximum Contaminant Level or Action Level; SMCL = US EPA Secondary MCL; VAP = Ohio EPA, Voluntary Action Program Generic Unrestricted Potable Use Standard; LTHA = US EPA Lifetime Threshold Health Advisory

Note G - Multiple samples were taken from seven C&DD landfills. To prevent those seven landfills from skewing the results for mean, median, and confidence limits, the results for each parameter at each landfill that had multiple samples were averaged and used as a single data point in the calculations.

Summary

Ohio C&DD leachate from 30 landfills was analyzed for 273 parameters; 95 parameters were detected at one or more C&DD landfill.

Of those 95 parameters:

- 64 percent were organic parameters (59 parameters).
- 23 percent were light metals, trace elements, and other ions (23 parameters).
- 9 percent were heavy metals (9 parameters).
- The remaining percentage was made up of COD, pH, TDS, and total alkalinity.

Two metals (silver and tin) were not detected at any C&DD landfill. Organic parameters comprised the remaining 178 parameters that were not detected.

The most common parameters detected in Ohio C&DD leachate in order from most to fewest were trace elements, light metals, other ions, heavy metals, gasoline, chlorinated solvents, pesticides, non-chlorinated solvents, substituted benzenes, PAHs, phenolics, and chlorofluorocarbons accounting for 89 percent of the parameters detected. COD, pH, TDS, and total alkalinity were measured at all of the landfills, which accounts for 10 percent of the detections. The remaining one percent of detections included phthalates, substituted alkanes, alcohols, and one miscellaneous organic parameter. Also expected was the high detection frequency of trace elements, light metals, other ions, and heavy metals.

What was unexpected was the high detection frequency of gasoline, chlorinated solvents, pesticides, and non-chlorinated solvents.

The dominant anion in Ohio C&DD leachate was bicarbonate. Chloride typically made up less than 20 percent of the major anions in Ohio C&DD leachate. There was no dominant cation, though the leachate tended to have a higher proportion of calcium and magnesium than the other major cations.

Since the majority of the C&DD landfills plot in one quadrant of each section of the Piper diagram, Piper diagrams may prove useful when comparing C&DD leachate with leachate from other types of landfills, ground water, and surface water. However, seven of the landfills (1/4) did not fit the typical profile of C&DD leachate demonstrated by the other 23 landfills. This shows that there was wide variability from landfill to landfill in the proportions of the major ions.

The leachate from all 30 C&DD landfills had from 3 to 29 parameters with concentrations that exceeded health based standards, surface water quality standards, or both. The median was 12.5 parameters exceeding the standards. The leachate from 29 of the 30 C&DD landfills had eight or more parameters that exceeded the standards (See Figure 12). The one landfill that had less than eight parameters that exceeded standards is suspected of having leachate that was diluted from ground water infiltration, surface water run-on, or precipitation.

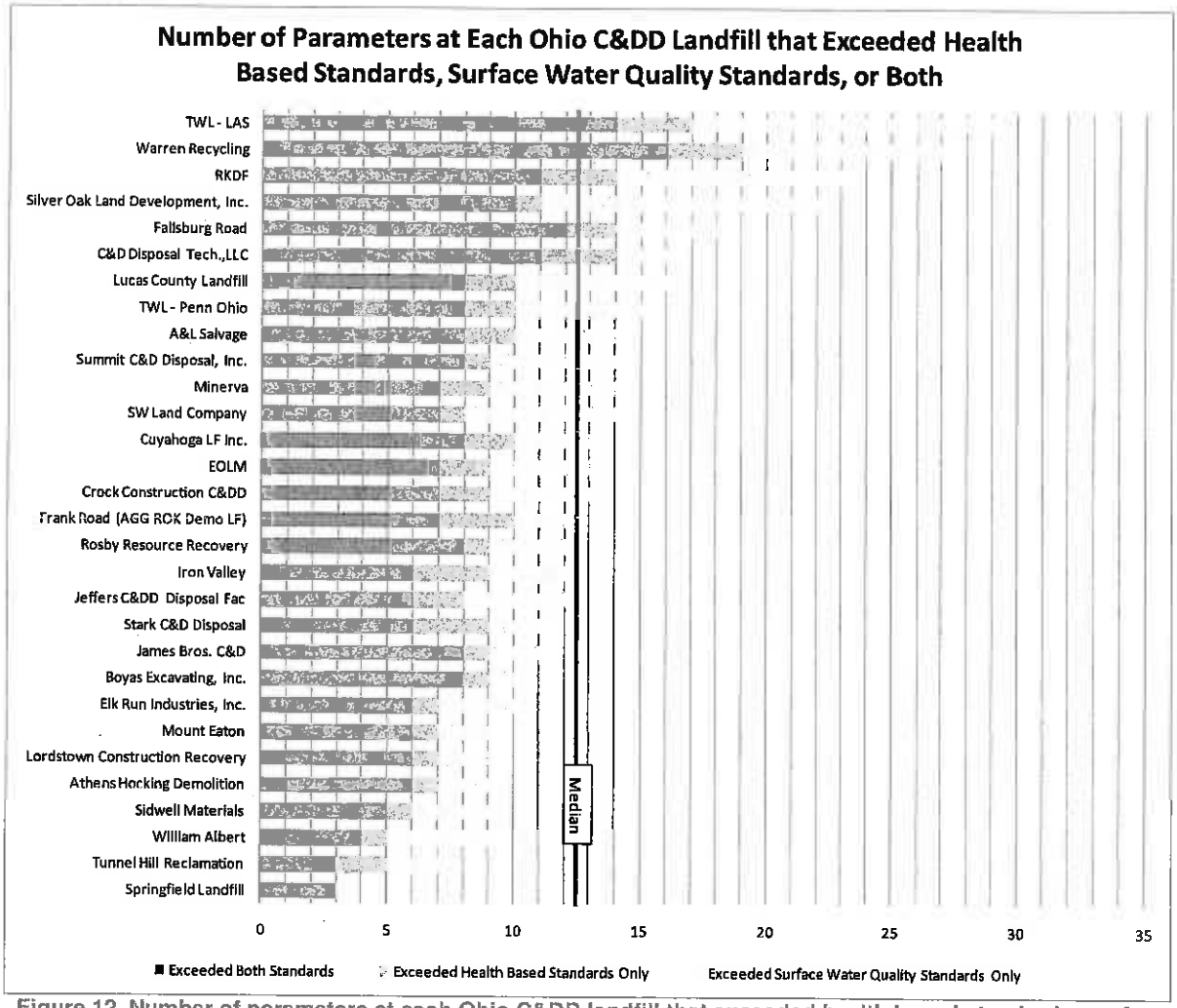


Figure 12. Number of parameters at each Ohio C&DD landfill that exceeded health based standards, surface water quality standards, or both

Of the 95 parameters detected in C&DD leachate, 52 raised a concern when compared with health based standards or surface water quality standards. Of those 52 parameters, 27 raised a concern with both sets of standards. Twenty three parameters (56 percent) were organic parameters and 29 parameters (44 percent) were metals and inorganic parameters (See Table 19).

Table 19. Summary of level of concern due to health based standards and surface water quality standards for each Ohio C&DD leachate parameter.

Row No.	No. of Facilities with Detects	Chemical Abstract Service No (CAS)	Parameter Category	Parameter	Level of Concern due to HB Standards H=High, M=Moderate, N=Noteworthy	Level of Concern due to SWQ Standards H=High, M=Moderate, N=Noteworthy
			Organic Parameters			
1	7	75-09-2	Chlorinated solvents	Methylene chloride	M	M
2	13	75-01-4	Chlorinated solvents	Vinyl chloride	H	H
3	24	71-43-2	Gasoline	Benzene	H	H
4	3	108-88-3	Gasoline	Toluene	-	M
5	18	75-15-0	Non-chlorinated solvents	Carbon disulfide	-	M
6	1	83-32-9	PAHs	Acenaphthene	-	N
7	21	91-20-3	PAHs	Naphthalene	M	M
8	1	72-55-9	Pesticides	4,4'-DDE	-	N
9	1	50-29-3	Pesticides	4,4'-DDT	-	N
10	2	5103-71-9	Pesticides	alpha Chlordane	-	M
11	1	60-57-1	Pesticides	Dieldrin	-	N
12	1	298-04-4	Pesticides	Disulfoton	N	-
13	3	5103-74-2	Pesticides	gamma Chlordane	-	H
14	1	76-44-8	Pesticides	Heptachlor	-	N
15	1	1024-57-3	Pesticides	Heptachlor epoxide	-	N
16	1	94-74-6	Pesticides	MCPA	N	-
17	3	87-86-5	Pesticides	Pentachlorophenol	M	M
18	1	105-67-9	Phenolics	2,4-Dimethylphenol	-	N
19	26	95-48-7	Phenolics	2-Methylphenol	-	N
20	3	106-44-5	Phenolics	3-,4-Methylphenol	H	H
21	3	108-95-2	Phenolics	Phenol	-	H
22	4	117-81-7	Phthalates	bis(2-Ethylhexyl)phthalate	H	H
23	1	132-64-9	Substituted benzenes	Dibenzofuran	-	N
			Metals and Inorganic Parameters			
24	18	7440-36-0	Heavy metal, Totals	Antimony, Total	M	M
25	23	7440-38-2	Heavy metal, Totals	Arsenic, Total	H	H
26	30	7440-39-3	Heavy metal, Totals	Barium, Total	M	H
27	6	7440-41-7	Heavy metal, Totals	Beryllium, Total	M	N
28	3	7440-43-9	Heavy metal, Totals	Cadmium*	N	N
29	11	7439-92-1	Heavy metal, Totals	Lead, Total	H	H
30	6	7439-97-6	Heavy metal, Totals	Mercury, Total	-	H
31	25	7440-02-0	Heavy metal, Totals	Nickel, Total	M	M
32	16	7440-28-0	Heavy metal, Totals	Thallium, Total	M	M
33	21	7429-90-5	Light metal, Totals	Aluminum, Total	N	H
34	30	7440-23-5	Light metal, Totals	Sodium, Total	N	-
35	30	7440-24-6	Light metal, Totals	Strontium, Total	H	-
36	10	7440-62-2	Light metal, Totals	Vanadium, Total	M	M
37	30	7440-42-8	Trace element, Totals	Boron, Total	H	H
38	26	7440-47-3	Trace element, Totals	Chromium, Total	M	M
39	16	7440-48-4	Trace element, Totals	Cobalt, Total	-	M
40	15	7440-50-8	Trace element, Totals	Copper, Total	-	H
41	29	7439-89-6	Trace element, Totals	Iron, Total	N	H
42	30	7439-96-5	Trace element, Totals	Manganese, Total	H	H
43	20	7723-14-0	Trace element, Totals	Phosphorus	-	H
44	6	7782-49-2	Trace element, Totals	Selenium, Total	-	H
45	21	7440-66-6	Trace element, Totals	Zinc, Total	-	H
46	30	16887-00-6	Other ions	Chloride	N	H
47	15	57-12-5	Other ions	Cyanide, Weak/Dissociable	-	H
48	30	16984-48-8	Other ions	Fluoride	N	N
49	30	7664-41-7	Other ions	Nitrogen Ammonia	N	H
50	30	14808-79-8	Other ions	Sulfate	N	H
51	30	none-8	pH	pH	N	N
52	30	none-4	TDS	Total Dissolved Solids	N	H

Cadmium, is counted as noteworty based on both total and dissolved concentrations for the reasons discussed in the narrative found immediately above Table 5.

When compared with health based standards:

- There is a high level of concern for nine parameters, including one chlorinated solvent (vinyl chloride), one gasoline component (benzene), two heavy metals (arsenic and lead), one light metal (strontium), one phenolics (3-,4-methylphenol), one phthalate (bis(2-ethylhexyl)phthalate), and two trace elements (boron and manganese).

  These parameters were detected at multiple C&DD landfills and frequently exceeded health based standards; the health based standard exceeded was for protecting against toxic or carcinogenic effects; and the magnitude of the exceedances were large, with maximum concentrations detected from 2.3 times (strontium) to 80 times (bis(2-ethylhexyl)phthalate) the health based standards.

  For four of the parameters (arsenic, boron, manganese, and strontium) it is likely that these parameters will often be detected at concentrations equal to or in excess of the health based standards during future leachate sampling.

  For two other parameters (3-,4-methylphenol and bis(2-Ethylhexyl)phthalate), which though they were detected less frequently, when detected were likely to exceed the health based standards.

- There is a moderate level of concern for 10 parameters, including one chlorinated solvent (methylene chloride), five heavy metals (antimony, barium, beryllium, nickel, and thallium), one light metal (vanadium), one PAH (naphthalene), one pesticide (pentachlorophenol) and one trace element (chromium). These parameters were determined to be of moderate concern because:

  - Less than 50 percent of the landfills sampled exceeded the standard for these parameters.

  - Based on the upper and lower confidence limits the mean concentration across all of Ohio's C&DD landfills would be expected to be less than 60 percent of the standard for each of these parameters, except methylene chloride, which has an upper confidence limit of 99 percent of the health based standard.

  - None of the parameters had minimum detected concentrations that exceeded a standard.

  - However, the maximum concentrations detected of these parameters exceeded the health based standard from 1.15 times (naphthalene) to 16.4 times (methylene chloride).

  - Methylene chloride could have been assigned a high level of concern because it has toxic effects and is a suspected carcinogen. However it was assigned a moderate level of concern even though the maximum detected concentration was more than 16 times the standard and the upper confidence limit was 99 percent of the standard because the parameter was detected at seven landfills and exceeded the standard at only two landfills. If additional sampling shows that methylene chloride is detected more frequently, or exceeds the health based standard at more landfills, it is recommended that the level of concern be raised to "high."

- Aluminum, chloride, iron, ammonia, sodium, sulfate, and TDS were determined to be noteworthy because they exceeded SMCLs and are likely to exceed the SMCLs during future leachate sampling at C&DD landfills.

- Other noteworthy parameters include: pH, cadmium, fluoride, and the pesticides, MCPA and disulfoton either because they were found in all C&DD landfill leachate samples and exceeded 70 percent of the health based standards or were infrequently found but exceeded the health based standards.

When compared with surface water quality standards:

- A high level of concern exists for one chlorinated solvent (vinyl chloride), one gasoline component (benzene), four heavy metals (arsenic, barium, lead, and mercury), one light metal (aluminum), four other ions (chloride, cyanide, ammonia, and sulfate), one pesticide (gamma chlordane), two phenolics (3-,4-methylphenol, phenol), one phthalate (bis(2-ethylhexyl)phthalate), seven trace elements (boron, copper, iron, manganese, phosphorus, selenium, and zinc), and TDS. The maximum detected concentration for these parameters exceeded the surface water quality standards from 4.7 times (cyanide and chloride) to 2,323 times (iron).

- A moderate level of concern exists for one chlorinated solvent (methylene chloride), one gasoline component (toluene), three heavy metals (antimony, nickel, and thallium), one light metal (vanadium), one non-chlorinated solvent (carbon disulfide), one PAH (naphthalene), two pesticides (alpha chlordane and pentachlorophenol), and two trace elements (chromium and cobalt). These parameters were less likely to exceed the surface water quality standards when detected in C&DD leachate. However, they can be considered typical parameters in C&DD leachate and had maximum concentrations detected were from 1.1 times (toluene) to 6.5 times (vanadium) the surface water quality standards.

  Methylene chloride could have been assigned a high level of concern because it has toxic effects and is a suspected carcinogen. However it was assigned a moderate level of concern even though the maximum detected concentration was more than 16 times the standard and the upper confidence limit was 99 percent of the standard because the parameter was detected at seven landfills and exceeded the standard at only two landfills. If additional sampling shows that methylene chloride is detected more frequently, or exceeds the surface water quality standard at more landfills, it is recommended that the level of concern be raised to "high."

  Alpha chlordane could also have been assigned a high level of concern because it persistent in the environment and causes adverse effects to aquatic life at very low concentrations. However it was assigned a moderate level of concern even though the minimum concentration detected was 98 times the standard, the maximum detected concentration 260 times the standard, and the upper confidence limit was 31 times the standard because the parameter was detected at two landfills and exceeded the standard at both. If additional sampling shows that alpha chlordane is detected more frequently, or exceeds the surface water quality standard at more landfills, it is recommended that the level of concern be raised to "high."

- Noteworthy parameters include beryllium, acenaphthene, 4,4'-DDE, 4,4'-DDT, dieldrin, heptachlor, heptachlor epoxide, 2,4-dimethylphenol, 2-methylphenol, and dibenzofuran. These parameters exceeded the surface water quality standards from 2.93 times (2-mehtylphenol) to 3,277 times (dieldrin), but were detected at between one and six C&DD landfills with less than half of the detections exceeding the surface water quality standards.

- Other parameters that are noteworthy include pH, cadmium and fluoride, because the concentrations detected exceeded 80 percent of the surface water quality standards.

The concentrations of the parameters in Ohio C&DD leachate that exceeded health based standards or surface water quality standards were such that discharge of untreated C&DD leachate to the environment is not lawful in Ohio.

As one example, the concentrations of the parameters in C&DD leachate exceeded the endangerment standards contained in Ohio EPA's Underground Injection Control Program rules (see paragraph (A) of OAC Rule 3745-37-07). The maximum concentrations detected exceeded the endangerment standards by as much as 80 times. The mean concentrations exceeded the endangerment standards by as much as 10 times.

As another example, the concentrations of the parameters in Ohio C&DD leachate exceeded the surface water quality standards rules found in OAC Chapter 3745-1. The maximum concentrations detected exceeded the surface water quality standards by as much as much as 2,323 times. The mean concentrations for each parameter exceeded the surface water quality standards by as much as 79 times.

The concentrations of the parameters in Ohio C&DD leachate that exceeded SMCLs were such that discharge of the leachate with maximum concentrations of parameters (exceeding SMCLs by as much as 2,323 times) or the mean concentrations of parameters (exceeding SMCLs by as much as 79 times) could render good quality ground water objectionable or unusable for consumption, washing, and industrial production without installing treatment equipment.

Two of twenty parameters were not sampled by Ohio EPA during the 2007 leachate sampling event that were identified by Ohio EPA as indicating impact to ground water from C&DD landfills in the 2008 "Hydrogeologic Evaluation of Construction and Demolition Debris (C&DD) landfills in Ohio." All of the remaining 18 parameters were detected in Ohio C&DD leachate during the Ohio EPA 2007 C&DD leachate sampling event. The presence, frequency, and concentrations of these parameters in the Ohio C&DD leachate support the plausibility of the finding by Ohio EPA that there are indications that Ohio C&DD leachate may have impacted ground water at 31 Ohio C&DD landfills.

Conclusions

The leachate from all 30 C&DD landfills had from 3 to 29 parameters with concentrations that exceeded health based standards, surface water quality standards, or both. The median was 12.5 parameters exceeding the standards. The leachate from 29 of the 30 C&DD landfills had eight or more parameters that exceeded the standards.

The highest level of concern from Ohio C&DD leachate due to health based standards is for vinyl chloride, benzene, arsenic, lead, strontium, 3-,4-methylphenol, bis(2-ethylhexyl)phthalate, boron and manganese.

The highest level of concern from Ohio C&DD leachate due to surface water quality standards is for vinyl chloride, benzene, arsenic, barium, lead, mercury, aluminum, chloride, cyanide, ammonia, sulfate, gamma chlordane, 3-,4-methylphenol, phenol, bis(2-ethylhexyl)phthalate), boron, copper, iron, manganese, phosphorus, selenium, zinc, and TDS.

A wide variety of metals and inorganic parameters were detected including heavy metals, light metals, trace elements, and other ions. A wide variety of organic parameters were detected, including pesticides, chlorinated solvents, non-chlorinated solvents, gasoline, substituted benzenes, phenolics, chlorofluorocarbons, PAHs, phthalates, substituted alkanes, and alcohols.

The wide variety of parameters detected, and the wide variation in the number and concentration of parameters that exceeded health based standards or surface water quality standards from landfill to landfill are evidence that C&DD is not harmless or inert. It is also evidence that it is difficult to predict which of the detected parameters will be present and at what concentrations at any given C&DD landfill. This is consistent with the variety of sources for C&DD that include building materials and contaminants applied to buildings and soils (such as pesticides, wood preservatives, and paints) from any type of structures including roads, bridges, residential buildings, commercial buildings, manufacturing buildings, agricultural buildings, medical buildings and laboratories, etc.

There were numerous parameters that were often detected in Ohio C&DD leachate of sufficient concentration that would violate discharge limits of Ohio rules if released to ground water or surface water. They could also cause or contribute to water pollution, and could adversely impact downgradient or downstream residential and public drinking water supplies. Of particular concern are those parameters that were found in C&DD leachate that were multiples of the health based standards (such as arsenic, boron, manganese, and lead), carcinogens (such as arsenic, vinyl chloride, and benzene), mobile in the environment (such as arsenic, vinyl chloride, and benzene), persistent in the environment (such as antimony and lead), or which bioaccumulate (such as arsenic, copper, lead, mercury, nickel, and zinc).

The concentrations of the parameters in Ohio C&DD leachate that exceeded SMCLs were such that discharge of the leachate with the average concentrations of parameters could render good quality ground water objectionable or unusable for consumption, washing, and industrial production without installing treatment equipment.

As a result, leachate from C&DD landfills poses a threat to public health and the environment if released to ground water or surface water. The threat is posed by a variety of organic parameters, metals, and inorganic parameters. The degree of risk associated with the threat by a release will be dependant upon how the C&DD was disposed, site conditions, and circumstances surrounding the site, which often change over time. This conclusion is supported by studies showing that impacts by C&DD landfills to surface water and ground water have occurred or were indicated (US EPA, Draft 1995b), (Hamilton County General Health District, 2001), (Townsend, Jambeck, & Clark, 2002), and (Ohio EPA, 2008).

Similarities and Differences with Cited Works

Based on historical information, such as the sources cited in the introduction (see especially (US EPA, Draft 1995a)), it was expected that approximately 90 parameters would be detected; 95 were detected. It was also expected that metals and inorganic parameters would be the primary constituents detected in Ohio's C&DD leachate; with approximately 55 of the 90 parameters being metals and inorganic compounds. However, the results from Ohio EPA's leachate analysis showed only 36 metals and inorganic parameters were detected, which was lower than expected. It was also expected that approximately 35 organic parameters would be detected in Ohio's C&DD leachate. However, a wide variety of 59 organic parameters were detected. It was surprising that pesticides, chlorinated solvents, non-chlorinated solvents, and gasoline would be such a large proportion (42 percent) of parameters detected when compared with the proportion of metals and inorganic parameters detected (38 percent).

With a few exceptions, the pH, TDS, COD, and total alkalinity of Ohio C&DD leachate were similar to findings in the literature for other states as described in the sources summarized in the introduction (Townsend, Jang, & Thurn, 1999).

Based on historical information, such as the sources referenced in the introduction it, was expected that approximately 18 metals and inorganic parameters would exceed the health based standards; 19 did. It was expected that approximately six organic parameters would exceed health based standards at one or more landfills; eight did. These results were comparable with the results of the study published by U.S. EPA in 1995 titled, "Construction and Demolition Waste Landfills" paper cited in the introduction.

Based on historical information, such as the sources referenced in the introduction, it was expected that approximately 12 metals and inorganic parameters would exceed the surface water quality standards; 24 did. Few organic parameters were expected to exceed surface water quality standards; 21 did. These results are higher than expected.

The 1995 study published by U.S. EPA titled, "Damage Cases: Construction and Demolition Waste Landfills" cited in the introduction indicated that aluminum, antimony, cadmium, copper, iron, lead, pH, TDS, vanadium, zinc and occasional PAHs were found to have caused surface water contamination. Many of these same parameters were detected in Ohio C&DD leachate in excess of the surface water quality standards. In addition, 35 other parameters were also found to exceed surface water quality standards in Ohio C&DD leachate.

The 2002 study published by Townsend et al. found that Aluminum, TDS, Sulfate, ammonia, iron, cadmium, lead, phenols, bromodichloromethane, chloride, nitrate, benzene, chromium, copper, ph sodium, arsenic, methyl bromide, trichloromethane, mercury, dibromochloromethane and turbidity exceeded ground water cleanup target levels downgradient of between 3 and 17 C&DD landfills in Florida (Townsend, Jambeck, & Clark, 2002). Many of these parameters were detected in Ohio C&DD leachate and were indicated as possibly impacting ground water at one to 14 Ohio C&DD landfills.

In addition, the literature generally indicates that the parameters of concern in C&DD leachate are 1,2-dichloroethane, methylene chloride, arsenic, barium, cadmium, chromium, lead, mercury, zinc, boron, chloride, cyanide, iron, manganese, nitrate, nitrite, pH, sodium, sulfate, and TDS (Townsend & Kibert, 1998).

The parameters of concern in Ohio C&DD leachate that matched those identified in the literature as stated above included methylene chloride, arsenic, barium, cadmium, chromium, lead, mercury, zinc, boron, chloride, cyanide, iron, manganese, pH, sulfate, sodium, and TDS

However, 1,2-dichloroethane, nitrate, and nitrite were not found to be of concern in Ohio C&DD leachate, but were listed as parameters of concern in the literature. Another difference between the literature and this report is that there were 22 additional parameters in Ohio C&DD Leachate that were of moderate or high level of concern including vinyl chloride, benzene, aluminum, ammonia, chlordane, 3-,4-methylphenol, phenol, bis(2-ethylhexyl)phthalate, copper, phosphorus, selenium, strontium, toluene, antimony, beryllium, nickel, thallium, vanadium, carbon disulfide, naphthalene, pentachlorphenol, and cobalt.

As discussed above, the results in this report have demonstrated similarities to the cited sources. However, there were some differences in Ohio's C&DD leachate, namely the higher number and wider variety of organic parameters that were detected and a larger number of parameters that are of concern in Ohio C&DD leachate when compared with health based standards and surface water quality standards.

Future Research

Future research on this topic should focus on the following:

- Repeating the leachate sampling and revisiting the analyses included in this report to evaluate trends over time.
- Evaluating if the age, size, operations, the presence of leachate recirculation, and the type of C&DD being disposed is correlated to the type and concentration of the parameters detected.
- Comparing C&DD landfill leachate with the leachate from other types of landfills, such as municipal solid waste landfills and industrial waste landfills.
- Determining the magnitude and effects of dilution from ground water infiltration, surface water run-on, and precipitation may be having on the type and concentration of parameters detected.
- Determining the types, prevalence, and concentration of pesticides in C&DD.
- Conducting studies similar to this one and the US EPA. (Draft 1995a) construction and demolition waste landfills study in other states.

To make comparisons of different study results easier, researchers may want to consider adopting a consistent list of parameters, health based standards, surface water quality standards, and approach for comparing those parameters with the standards as additional leachate sampling is conducted in different states and different types of landfills.

Another practice that may make comparisons of different studies on C&DD leachate easier would be to include the definition of C&DD used in each study. This would be helpful because different states and the U.S. EPA appear to have somewhat different definitions.

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Attachments

Attachment 1 – Ohio's Definition of C&DD

OAC 3745-400-01(F) "Construction and demolition debris" or "debris" means those materials resulting from the alteration, construction, destruction, rehabilitation, or repair of any manmade physical structure, including, without limitation, houses, buildings, industrial or commercial landfills, or roadways. "Construction and demolition debris" does not include materials identified or listed as solid wastes, infectious wastes, or hazardous wastes pursuant to Chapter 3734. of the Revised Code and rules adopted under it; or materials from mining operations, nontoxic fly ash, spent nontoxic foundry sand, and slag; or reinforced or nonreinforced concrete, asphalt, building or paving brick, or building or paving stone that is stored for a period of less than two years for recycling into a usable construction material.

For the purpose of this definition, "materials resulting from the alteration, construction, destruction, rehabilitation, or repair of any manmade physical structure," are those structural and functional materials comprising the structure and surrounding site improvements, such as brick, concrete and other masonry materials, stone, glass, wall coverings, plaster, drywall, framing and finishing lumber, roofing materials, plumbing fixtures, heating equipment, electrical wiring and components containing no hazardous fluids or refrigerants, insulation, wall-to-wall carpeting, asphaltic substances, metals incidental to any of the above, and weathered railroad ties and utility poles.

"Materials resulting from the alteration, construction, destruction, rehabilitation, or repair" do not include materials whose removal has been required prior to demolition, and materials which are otherwise contained within or exist outside the structure such as solid wastes, yard wastes, furniture, and appliances. Also excluded in all cases are liquids including containerized or bulk liquids, fuel tanks, drums and other closed or filled containers, tires, and batteries.

Asbestos can be authorized to be disposed in Ohio's C&DD landfills: ORC Section 3714.13(E) states that, No owner or operator of a construction or demolition debris landfill shall dispose of asbestos or regulated asbestos-containing materials or products at the landfill unless the owner or operator is specifically authorized to do so by the board of health of the health district in which the landfill is located, or by the director, pursuant to rules adopted under division (D) of section 3714.02 of the Revised Code.

Acceptance and disposal of pulverized debris at Ohio C&DD landfills is prohibited: ORC Section 3714.01(I) states that, "Pulverized debris" means a load of debris that, after demolition has occurred, but prior to acceptance of the load of debris for disposal, has been shredded, crushed, ground, or otherwise rendered to such an extent that the load of debris is unidentifiable as construction and demolition debris.

Disposal of solid waste is prohibited: OAC Rule 3745-27-01(S)(23) states that, "Solid waste" means such unwanted residual solid or semisolid material, including but not limited to, garbage, scrap tires, combustible and noncombustible material, street dirt and debris, as results from industrial, commercial, agricultural, and community operations, excluding earth or material from construction, mining, or demolition operations, or other waste materials of the type that normally would be included in demolition debris, nontoxic fly ash and bottom ash, including at least ash that results from combustion of coal, biomass fuels, and ash that results from the combustion of coal in combination with scrap tires where scrap tires comprise not more than fifty per cent of heat input in any month, spent nontoxic foundry sand, and slag and other substances that are not harmful or inimical to public health, and includes, but is not limited to, garbage, scrap tires, combustible and noncombustible material, street dirt, and debris. Solid waste does not include any material that is an infectious waste or a hazardous waste.

Attachment 2 – C&DD Constituent List

The constituent list for the statewide C&DD leachate sampling project included the following:

1. All constituents and parameters listed in OAC Rule 3745-27-10 Appendix I and Appendix II (attached) except ethyl methanesulfonate, CAS# 62-50-0 (Appendix II #114).
2. Seven additional volatile or semivolatile organic compounds not included in OAC Rule 3745-27-10 Appendix I or Appendix II: isopropyl benzene (cumene) (CAS# 98-82-8) 4-isopropyltoluene (p-cymene) (99-87-6) n-propylbenzene (103-65-1) tert-butylbenzene (98-06-6) 1,2,3-trichlorobenzene (87-61-6) 1,2,4-trimethylbenzene (95-63-6) 1,3,5-trimethylbenzene (108-67-8)
3. Organophosphorous pesticides not included in OAC Rule 3745-27-10 Appendix I or Appendix II, please refer to the list provided in attached description of U.S. EPA SW-846 method 8141a.
4. The following inorganic constituents and parameters not included in OAC Rule 3745-27-10 Appendix I or Appendix II: aluminum, boron, strontium, fluoride, phosphorous, COD

The following analytical methods were used:

- Volatile organic compounds, SW-846 8260 A9
- Semivolatile organic compounds, SW-8270 A9
- Herbicides, SW-846 8151
- Pesticides/PCBs, SW-846 8081/8082
- Organophosphorous pesticides, 827 OP (equivalent to SW-846 8141a) metals and free cyanide, SW-846 6010/6020, except for mercury which is SW-646 7471
- Ammonia-nitrogen, U.S. EPA 350.1 or SM-4500
- Nitrate-nitrite, U.S. EPA 353.2 or SM-4500
- COD, U.S. EPA 410.4 or SM-5220-D
- Phosphorous, U.S. EPA 365.4
- Fluoride, SM-4500-FC
- Sulfate, U.S. EPA 375.4 or SM-426-C
- Chloride, U.S. EPA 325.2
- TDS, U.S. EPA 160.1 or SM-2540-C
- Sulfide, U.S. EPA 376.1 or SM-4500-SF
- Total alkalinity, U.S. EPA 310.2

Samples were analyzed for both total and dissolved metals; the list of metals includes the following constituents: aluminum, strontium, boron, antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, nickel, selenium, silver, thallium, vanadium, zinc, sodium, potassium, magnesium, calcium, iron, manganese, mercury, tin.

The constituents and parameters analyzed in C&DD leachate included all constituents and parameters for C&DD landfill ground water monitoring under the draft 2006 C&DD rules.

Attachment 3 - Ohio Administrative Code Rule 3745-27-10, Appendix I

APPENDIX I

Compound	CAS RN2
1) Antimony	See note 3
2) Arsenic	See note 3
3) Barium	See note 3
4) Beryllium	See note 3
5) Cadmium	See note 3
6) Chromium	See note 3
7) Cobalt	See note 3
8) Copper	See note 3
9) Lead	See note 3
10) Nickel	See note 3
11) Selenium	See note 3
12) Silver	See note 3
13) Thallium	See note 3
14) Vanadium	See note 3
15) Zinc	See note 3
16) Acetone	67-64-1
17) Acrylonitrile	107-13-1
18) Benzene	71-43-2
19) Bromocholoromethane	74-97-5
20) Bromodicholoromethane	75-27-4
21) Bromoform; Tribromomethane	75-25-2
22) Carbon disulfide	75-15-0
23) Carbon tetrachloride	56-23-5
24) Chlorobenzene	108-90-7
25) Chloroethane; Ethyl cloride	75-00-3
26) Chloroform; Trichloromethane	67-66-3
27) Dibromochloromethane; Chlorodibromomethane	124-48-1
28) 1,2-Dibromo-3-chloropropane; DBCP	96-12-8
29) 1,2 Dibromoethane;Ethylene dibromide;EDB	106-93-4
30) o-Dichlorobenzene; 1,2-Dichlorobenzene	95-50-1
31) p-Dichlorobenzene; 1,4-Dichlorobenzene	106-46-7
32) trans-1,4-Dichloro-2-butene	110-57-6
33) 1,1-Dichloroethane; Ethylidene chloride	75-34-3
34) 1,2-Dichloroethane; Ethylidene dichloride	107-06-2
35)1,1-Dichloroethylene; 1,1-Dichloro-ethene;Vinylidene chloride	75-35-4
36) cis-1,2-Dichlorothylene; cis-1,2-Dichloro-ethane	156-59-2
37) trans-1,2-Dichloroethylene; trans-1,2-Dichloro-ethene	156-60-5
38) 1,2-Dichloropropane; Propylene dichloride	78-87-5
39) cis-1,3-Dichloropropene	10061-01-5
40) trans-1,3-Dichloropropene	10061-02-6
41) Ethylbenzene	100-41-4
42) 2-Hexanone; Methyl butyl ketone	591-78-6
43) Methyl bromide; Bromomethane	74-83-9
44) Methyl chloride; Chloromethane	74-87-3
45) Methylene bromide; Dibromomethane	74-95-3
46) Methylene chloride; Dichloromethane	75-09-2

47) Methyl ethyl ketone; MEK; 2-Butanone 78-93-3
48) Methyl iodide; iodomethane 74-88-4
49) 4-Methyl-2-pentanone; Methyl isobutyl ketone . . 108-10-1
50) Styrene. 100-42-5
51) 1,1,1,2-Tetrachloroethane. 630-20-6
52) 1,1,2,2-Tetrachloroethane. 79-34-5
53) Tetrachloroethylene; Tetrachloroethene; Perchloroethylene 127-18-4
54) Toluene. 108-88-3
55) 1,1,1-Trichloroethane; Methylchloroform. 71-55-6
56) 1,1,2-Trichloroethane. 79-00-5
57) Trichloroethylene; Trichloroethene 79-01-6
58) Trichloroflouromethane; CFC-11 75-69-4
59) 1,2,3-Trichloropropane 96-18-4
60) Vinyl acetate. 108-05-4
61) Vinyl chloride 75-01-4
62) Xylenes. . . . . See note 4
63) Ammonia
64) Chloride
65) Sodium
66) Potassium
67) Temperature
68) pH
69) Specific conductance
70) TDS
71) Total alkalinity
72) Nitrate-nitrite
73) Sulfate
74) Magnesium
75) Calcium
76) Turbidity
77) Iron
78) Manganese

Note 1. Common names are those widely used in government rules, scientific publications, and commerce; synonyms exist for many chemicals.

Note 2. Chemical Abstract Service registry number.

Note 3. Analysis for these compounds shall be representative of the quality background ground water that has not been affected by past or present operations at the sanitary landfill landfill and representative of the quality of ground water passing directly downgradient of the limits of solid waste placement.

Note 4. Xylene (total): this entry includes o-xylene (CAS RN 96-47-6), m-xylene (CAS RN 108-38-3), p-xylene (CAS RN 106-42-3), and unspecified xylenes (dimethylbenzenes) (CAS RN 1330-20-7).

Attachment 4 – OAC Rule 3745-27-10, Appendix II

APPENDIX II

Compound	CAS RN2
1) Acenaphthene; 1,2-Dihydroacenaphthylene	83-32-9
2) Acenaphthylene	208-96-8
3) Acetone;2-Propanone	67-64-1
4) Acetonitrile; Methyl cyanide	75-05-8
5) Acetophenone; 1-Phenylethanone	98-86-2
6) 2-Acetylaminoflourene; 2-AAF; N-9H-flouren-2-yl-acetamide	53-96-3
7) Acrolein; 2-Propenal	107-02-8
8) Acrylonitrile; 2-Propenenitrile	107-13-1
9) Aldrin; 1,2,3,4,10,10-hexachlora-1,4,4a,5,8,8ahexahydro(1a,4a,4ab,5a,8a,8ab)-1,4:5,8- Dimethanonaphthalene.	309-00-23
10) Allyl chloride; 3-Chloro-1-propene	107-05-1
11) 4-Aminobiphenyl; [1,1'-Biphenyl]-4-amine	92-67-1
12) Anthracene	120-12-7
13) Antimony	See note 4
14) Arsenic	See note 4
15) Barium	See note 4
16) Benzene	71-43-2
17) Benzo[a]anthracene; Benzanthracene	56-55-3
18) Benzo[b]flouranthene; Benz[e]acephenanthylene	205-99-2
19) Benzo[k]flouranthene	207-08-9
20) Benzo[ghi]perylene	191-24-2
21) Benzo[a]pyrene	50-32-8
22) Benzyl alcohol; Benzenemethanol	100-51-6
23) Beryllium	See note 4
24) alpha-BHC; 1,2,3,4,5,6-Hexachlorocyclohexane, (1a,2a,3b,4a,5b,6b)	319-84-63
25) beta-BHC; 1,2,3,4,5,6-Hexachlorocyclohexane, (1a,2b,3a,4b,5a,6b)	319-85-73
26) delta-BHC; 1,2,3,4,5,6-Hexachlorocyclohexane, (1a,2a,3a,4b,5a,6b)	319-86-83
27) gamma-BHC; Lindane; 1,2,3,4,5,6-Hexachlorocyclo hexane,(1a,2a,3b,4a,5a,6b)	58-89-93
28) bis(2-Chloroethoxy)methane; 1,1'-[methylenebis(oxy)] bis[2-chloroethane]	111-91-1
29) bis(2-Chloroethyl) ether; Dichloroethyl ether; 1,1'-oxybis[2-Chloroethane]	111-44-4
30) bis-(2-Chloro-1-methylethyl) Ether; 2,2'-Dichlorodiisopropyl ether; DCIP; 2,2'-oxybis[1-Chloropropane]	108-60-15
31) bis(2-Ethylhexyl) Phthalate; 1,2-Benzenedicarboxylic acid, bis(2-Ethylhexyl) ester.	117-81-7
32) Bromochloromethane; Chlorobromomethane	74-97-5
33) Bromodichloromethane; Dibromochloromethane	75-27-4
34) Bromoform; Tribromomethane	75-25-2
35) 4-Bromophenyl phenyl ether; 1-Bromo-4-phenoxy-benzene	101-55-3
36) Butyl benzyl phthalate; Benzyl butyl phthalate; 1,2-Benzenedicarboxylic acid, Butyl phenylmethyl ester	85-68-7
37) Cadmium	See note 4
38) Carbon disulfide	75-15-0
39) Carbon tetrachloride; Tetrachloromethane	56-23-5
40) Chlordane; 1,2,4,5,6,8,8-octochloro-2,3,3a,4,7,7ahexahydro-	

4,7-methano-1H-indene . . . . . See note 6
41) p-Chloroaniline; 4-Chlorobenzenamine 106-47-8
42) Chlorobenzene 108-90-7
43) Chlorobenzilate; 4-Chloro-a-(4-Chlorophenyl)-a-Hydroxybenzeneacetic acid, Ethyl ester 510-15-6
44) p-Chloro-m-Cresol; 4-Chloro-3-Methylphenol 59-50-7
45) Chloroethane; Ethyl chloride 75-00-3
46) Chloroform; Trichloromethane 67-66-3
47) 2-Chloronaphthalene 91-58-7
48) 2-Chlorophenol 95-57-8
49) 4-Chlorophenyl phenyl ether; 1-Chloro-4-phenoxy benzene ...7005-72-3
50) Chloroprene; 2-Chloro-1,3-butadiene 126-99-8
51) Chromium ..... See note 4
52) Chrysene 218-01-9
53) Cobalt ..... See note 4
54) Copper ..... See note 4
55) m-Cresol; 3-Methylphenol 108-39-4
56) o-Cresol; 2-Methylphenol 95-48-7
57) p-Cresol; 4-Methylphenol 106-44-5
58) Cyanide 57-12-5
59) 2,4-D; 2,4-Dichlorophenoxyacetic acid 94-75-7
60) 4,4'-DDD; 1,1'-(2,2-Dichloroethylidene)bis [4-chlorobenzene] 72-54-8
61) 4,4'-DDE; 1,1'-(2,2-Dichloroethyenylidene)bis [4-chlorobenzene] 72-55-9
62) 4,4'-DDT; 1,1'-(2,2,2-Trichloroethylidene)bis [4-chlorobenzene] 50-29-3
63) Diallate; bis(1-Methylethyl)-carbamothoic acid S-(2,3-Dichloro-2-propenyl) ester 2303-16-4
64) Dibenz[a,h]anthracene 53-70-3
65) Dibenzofuran 132-64-9
66) Dibromocholormethane; Chlorodibromomethane 124-48-1
67) 1,2-Dibromo-3-chloropropane; DBCP 96-12-8
68) 1,2-Dibromoethane; Ethylene dribromide; EDB 106-93-4
69) Di-n-butyl phthalate; 1,2-Benzenedicarboxylic acid dibutyl ester 84-74-2
70) o-Dichlorobenzene; 1,2-Dichlorobenzene 95-50-1
71) m-Dichlorobenzene; 1,3-Dichlorobenzene 541-73-1
72) p-Dichlorobenzene; 1,4-Dichlorobenzene 106-46-7
73) 3,3'-Dichlorobenzidine; 3,3'-Dichloro-[1,1'-bi phenyl]-4,4'-diamine 91-94-1
74) trans-1,4-Dichloro-2-butene 110-57-6
75) Dichlorodifluoromethane; CFC 12 75-71-8
76) 1,1-Dichloroethane; Ethylidene chloride 75-34-3
77) 1,2-Dichloroethane; Ethylene dichloride 107-06-2
78) 1,1-Dichloroethylene; 1,1-Dichloroethene; Vinylidene chloride 75-35-4
79) cis-1,2-Dichloroethylene; cis-1,2-Dichloroethene 156-59-2
80) trans-1,2-Dichloroethylene; trans-1,2-Dichloro ethane 156-60-5
81) 2,4-Dichlorophenol 120-83-2
82) 2,6-Dichlorophenol 87-65-0
83) 1,2-Dichloropropane; Propylene dichloride 78-87-5
84) 1,3-Dichloropropane; Trimethylene dichloride 142-28-9
85) 2,2-Dichloropropane; Isopropylidene chloride 594-20-7
86) 1,1-Dichloropropene; 1,1-Dichloro-1-propene 563-58-6

87) cis-1,3-Dichloropropene; 10061-01-5
88) trans-1,3-Dichloropropene 10061-02-6
89) Dieldrin; 3,4,5,6,9,9-Hexachloro-1a,2,2a,3,6,6a,
7,7a-octahydro-2,7:3,6-dimethanonaphthalene
[2,3-b]oxirene, (1aa,2b,2aa,3b,6b,6aa,7b,7aa). 60-57-13
90) Diethyl phthalate; 1,2-Benzenedicarboxylic
acid, Diethyl ester 84-66-2
91) O,O-Diethyl O-2-Pyrazinyl phosphorothioate; Thionazin . . . 297-97-2
92) Dimethoate; Phosphorodithoic acid O,O-Dimethyl-S-
[2-(methylamino)-2-oxoethyl] ester 60-51-5
93) p-(Dimethylamino)azobenzene; N,N-Dimethyl-4-
(phenylazo)benzenamine 60-11-7
94) 7,12-Dimethylbenz[a]anthracene 57-97-6
95) 3,3'-Dimethylbenzidene; 3,3'-Dimethyl[1,1'bi
phenyl]-4,4'-diamine 119-93-7
96) 2,4-Dimethylphenol; m-Xylenol 105-67-9
97) Dimethyl phthalate; 1,2-Benzenedicarboxylic
acid, dimethyl ester 131-11-3
98) m-Dinitrobenzene 99-65-0
99) 4,6-Dinitro-o-cresol; 4,6-Dinitro-2-methylphenol;
2-Methyl-4,6-dinitrophenol 534-52-1
100) 2,4-Dinitrophenol 51-28-5
101) 2,4-Dinitrotoluene; 1-Methyl-2,4-dinitrobenzene 121-14-2
102) 2,6-Dinitrotoluene; 2-Methyl-1,3-dinitrobenzene 606-20-2
103) Dinoseb; DMBP; 2-sec-Butyl-4,6-dinitrophenol;
2-(1-Methylpropyl)-4,5-dinitrophenol 88-85-7
104) Di-n-octyl phthalate; 1,2-Benzenedicarboxylic
acid, Dioctyl ester. 117-84-0
105) Diphenylamine; N-phenylbenzenamine 122-39-4
106) Disulfoton; Phosphorodithioic acid O,O-diethyl
S-[2-(ethylthio)ethyl] ester 298-04-4
107) Endosulfan I; 6,7,8,9,10,10-Hexachloro-1,5,5a,6,9,
9a-hexahydro-6,9-methano-2,4,3-benzodioxa thiepin,
3-oxide 959-98-8
108) Endosulfan II; 6,7,8,9,10,10-Hexachloro-1,5,5a,6,9,
9a-hexahydro-6,9-methano-2,4,3-benzodioxa
thiepin, 3-oxide (3a,5aa,6b,9b,9aa) 33213-65-93
109) Endosulfan sulfate; 6,7,8,9,10,10-hexachloro-1,5,5a,6,9,
9a-hexahydro-6,9-methano-2,4,3-benzodioxa
thiepin, 3-3-dioxide 1031-07-8
110) Endrin; 3,4,5,6,9,9-hexachloro-1a,2,2a,3,6,6a,7,7aoctahydro-
2,7:3,6-dimethanonaphth[2,3-
b]oxirene, (1aa,2b,2ab,3a,6a,6ab,7b,7aa) 72-20-83
111) Endrin aldehyde; 2,2a,3,3,4,7-hexachlorodecahydro-
1,2,4-methenocyclopenta[cd]pentalene-5-carboxaldehyde,
(1a,2b,2ab,4b,4ab,5b,6ab,6bb,7r*) 7421-93-43
112) Ethylbenzene 100-41-4
113) Ethyl methacrylate; 2-Methyl-2-propenoic acid, ehtyl
Ester 97-63-2
114) Ethyl methanesulfonate; Methanesulfonic acid, ethyl
Ester 62-50-0
115) Famphur; Phosphorothioic acid, O-[4-[(dimethylamino)
sulfonyl]phenyl]O,O-dimethyl ester 52-85-7
116) Flouranthene 206-44-0
117) Flourene; 9H-flourene 86-73-7

118) Heptachlor; 1,4,5,6,7,8,8-heptachloro-3a,4,7,7atetrahydro-4,7-methano-1H-indene 76-44-8
119) Heptachlor epoxide; 2,3,4,5,6,7,7-Heptachloro-1a,1b,5,5a,6,6a-hexahydro-2,5-methano-2h-indeno[1,2-b]oxirene, (1aa,1bb,2a,5a,5ab,6b,6aa) 1024-57-33
120) Hexachorobenzene 118-74-1
121) Hexachlorobutadiene; 1,1,2,3,4,4-Hexachloro-1,3-butadiene . 87-68-3
122) Hexachlorocyclopentadiene; 1,2,3,4,5,5-Hexachloro-1,3-cyclopentadiene 77-47-4
123) Hexachloroethane 67-72-1
124) Hexachloropropene; 1,1,2,3,3,3-Hexachloro-1-propene . . . 1888-71-7
125) 2-Hexanone; Methyl butyl ketone 591-78-6
126) Indeno(1,2,3-cd)pyrene 193-39-5
127) Isobutyl alcohol;2-Methyl-1-propanol 78-83-1
128) Isodrin; 1,2,3,4,10,10-Hexachloro-1,4,4a,5,8,8ahexahydro-1,4,5,8-dimethanonaphthalene,(1a,4a,4ab,5b,8b,8ab) 465-73-63
129) Isophorone; 3,5,5-Trimethyl-2-cyclohexen-1-one 78-59-1
130) Isosafrole; 5-(1-Propenyl)-1,3-benzodioxole 120-58-1
131) Kepone; 1,1a,3,3a,4,5,5a,5b,6-decachlorocta hydro-1,3,4-methano-2H-cyclobuta[cd9]pentalen-2-one 143-50-0
132) Lead . . . . . See note 4
133) Mercury . . . . . See note 4
134) Methacrylonitrile; 2-Methyl-2-propenenitrile 126-98-7
135) Methapyrilene; N,N-dimethyl-N'-2-pyridinyl-N'-(1/2-thienylmethyl)-1,2-ethanediamine 91-80-5
136) Methoxychlor; 1,1'-(2,2,2-Trichloroethylidene)bis[4-Methoxybenzene] 72-43-5
137) Methyl bromide; Bromomethane 74-83-9
138) Methyl chloride; Chloromethane 74-87-3
139) 3-Methylcholanthrene; 1,2-Dihydro-3-methylbenze[j]aceanthrylene 56-49-5
140) Methyl ethyl ketone; MEK; 2-Butanone 78-93-3
141) Methyl iodide; Iodomethane 74-88-4
142) Methyl methacrylate; 2-Methyl-2-propenoic acid, methyl Ester 80-62-6
143) Methyl methanesulfonate; Methanesulfonic acid, methyl Ester 66-27-3
144) 2-Methylnaphthalene 91-57-6
145) Methyl parathion; Parathion methyl; Phosphorothioic acid, O,O-dimethyl O-(4-nitrophenyl) ester 298-00-0
146) 4-Methyl-2-pentanone; Methyl isobutyl ketone 108-10-1
147) Methylene bromide; Dibromomethane 74-95-3
148) Methylene chloride; Dichloromethane 75-09-2
149) Naphthalene 91-20-3
150) 1,4-Naphthoquinone; 1,4-Naphthalenedione 130-15-4
151) 1-Naphthylamine; 1-Naphthalenamine 134-32-7
152) 2-Naphthylamine; 2-Naphthalenamine 91-59-8
153) Nickel . . . . . See note 4
154) o-Nitroaniline; 2-Nitroaniline; 2-Nitrobenzenamine 88-74-4
155) m-Nitroaniline; 3-Nitroaniline; 3-Nitrobenzenamine 99-09-2
156) p-Nitroaniline; 4-Nitroaniline; 4-Nitrobenzenamine . . . 100-01-6
157) Nitrobenzene 98-95-3
158) o-Nitrophenol; 2-Nitrophenol 88-75-5
159) p-Nitrophenol; 4-Nitrophenol 100-02-7

160) N-Nitrosodi-n-butylamine; N-Butyl-N-Nitroso-1-butanamine . .924-16-3
161) N-Nitrosodiethylamine; N-Ethyl-N-nitroso ethanamine 55-18-5
162) N-Nitrosodimethylamine; N-Methyl-N-nitroso methananmine . 62-75-9
163) N-Nitrosodiphenylamine; N-Nitroso-N-phenyl benzenamine 86-30-6
164) N-Nitrosodipropylamine; N-Nitroso-N-dipropylamine; di-n-propylnitrosamine; N-Nitroso-N-propyl- 1-propanamine ..621-64-7
165) N-Nitrosomethylethalamine; N-Methyl-N-nitroso Ethanamine 10595-95-6
166) N-Nitrsopiperidine; 1-Nitrosopiperidine 100-75-4
167) N-Nitrosopyrrolidine; 1-Nitrosopyrrolidine 930-55-2
168) 5-Nitro-o-toluidine; 2-Methyl-5-nitrobenzenamine 99-55-8
169) Parathion; Phosphorothioic acid, O,O-diethyl O-(4-nitrophenyl) ester 56-38-2
170) Pentachlorobenzene 608-93-5
171) Pentachloronitrobenzene 82-68-8
172) Pentachlorophenol 87-86-5
173) Phenacetin; N-(4-Ethoxyphenyl)acetamide 62-44-2
174) Phenanthrene 85-01-8
175) Phenol 108-95-2
176) p-Phenylenediamine; 1,4-Benzenediamine 106-50-3
177) Phorate; Phosphorodithioic acid, O,O-Diethyl S-[(ethylthio]methyl] ester 298-02-2
178) Polychlorinated biphenyls; PCBs; aroclors; 1,1'-Biphenyl, chloro derivatives ..... See note 7
179) Pronamide; 3,5-Dichloro-N-(1,1-dimethyl-2-propynyl)benzamide 23950-58-5
180) Propionitrile; Ethyl cyanide 107-12-0
181) Pyrene 129-00-0
182) Safrole; 5-(2-Propenyl)-1,3-benzodioxole 94-59-1
183) Selenium ..... See note 4
184) Silver ..... See note 4
185) Silvex; 2,4,5-TP; 2-(2,4,5-Trichlorophenoxy)propanoic Acid 93-72-1
186) Styrene; Ethenylbenzene 100-42-5
187) Sulfide 18496-25-8
188) 2,4,5-T; 2,4,5-Trichlorophenoxyacetic acid 93-76-5
189) 1,2,4,5-Tetrachlorobenzene 95-94-3
190) 1,1,1,2-Tetrachloroethane 630-20-6
191) 1,1,2,2-Tetrachloroethane 79-34-5
192) Tetrachloroethylene; Tetrachloroethene; Perchloroethylene 127-18-4
193) 2,3,4,6-Tetrachlorophenol 58-90-2
194) Thallium ..... See note 4
195) Tin ..... See note 4
196) Toluene; Methylbenzene 108-88-3
197) o-Toluidine; 2-Methylbenzenamine 95-53-4
198) Toxaphene ..... See note 8
199) 1,2,4-Trichlorobenzene 120-82-1
200) 1,1,1-Trichloroethane; Methylchloroform 71-55-6
201) 1,1,2-Trichloroethane 79-00-5
202) Trichloroethylene; Trichloroethene 79-01-6
203) Trichlorofluoromethane; CFC-11 75-69-4
204) 2,4,5-Trichlorophenol 95-95-4
205) 2,4,6-Trichlorophenol 88-06-2
206) 1,2,3-Trichloropropane 96-18-4

207) o,o,o-Triethyl phosphorothioate; Phosphorothioic acid, o,o,o-triethyl ester 126-68-1
208) sym-Trinitrobenzene; 1,3,5-Trinitrobenzene 99-35-4
209) Vanadium . . . . . See note 4
210) Vinyl acetate; Acetic acid, ethenyl ester 108-05-4
211) Vinyl chloride; Chloroethene 75-01-4
212) Xylene (total); Dimethylbenzene . . . . . See note 9
213) Zinc . . . . . See note 4

Note 1: Common names are those widely used in government rule, scientific publications, and commerce; synonyms exist for many chemicals.

Note 2: Chemical Abstract Service registry number. Where "total" is entered, all species in ground water that contain this element are included.

Note 3: When numbers and letters appear in this form at the end of a chemical name, i.E. (1a,4a,4aB,5a,8a,8aB), the following applies: "a" = small case "a"; "a" (italic) = alpha; "b" = small case "b"; and "B" (italic) = beta.

Note 4: Analysis for these compounds shall be representative of the quality background ground water that has not been affected by past or present operations at the sanitary landfill landfill and representative of the quality of ground water passing directly downgradient of the limits of solid waste placement.

Note 5: CAS No. 108-60-1. This substance is often called bis(2-Chloroisopropyl) ether, the name Chemical Abstracts Service applies to its commercial isomer, propane, 2,2"-oxybis[2-Chloro-(CAS RN 39638-32-9).

Note 6: Chlordane: This entry includes alpha-chlordane (CAS RN 5103-71-9), beta-Chlordane (CAS RN 5103-74-2), gamma-Chlordane (CAS RN 5566-34-7), and constituents of Chlordane (CAS RN 54-74-9 and CAS RN 12789-03-06).

Note 7: Polychlorinated biphenols (CAS RN 1336-36-3); This category contains congener chemicals, including constituents of Aroclor 1016 (CAS RN 12674-11-2), Aroclor 1221 (CAS RN 11104-28-2), Aroclor 1232 (CAS RN 11141-16-5), Aroclor 1242(CAS RN 53469-21-9), Aroclor 1248 (CAS RN 12672-29-6),Aroclor 1254 (CAS RN 11097-69-1), and Aroclor 1260 (CAS RN 11096-82-5).

Note 8: Toxaphene: This entry includes congener chemicals contained in technical toxaphene (CAS RN 8001-35-2, i.e., chlorinated camphene.

Note 9: Xylene (total): This entry includes o-xylene (CAS RN 96-47-6), m-xylene (CAS RN 108-38-3), p-xylene (CAS RN 106-42-3), and unspecified xylenes (dimethylbenzenes) (CAS RN 1330-20-7).

Attachment 5 – Sampling Methods and Materials

Collection methods included:

- A bailer was used 10 times to provide leachate for samples.
- A peristaltic pump into a stainless steel bucket was used four times to provide leachate for samples.
- A pipe leading to a leachate collection system or tank before leachate was released into a sewer system was used nine times to provide leachate for samples.
- A stainless steel bucket or pitcher to remove leachate from a leachate collection system, sump, holding tank or pond was used twenty times to provide leachate for samples.
- A stainless steel gallon bucket, stainless steel pitcher, and a stainless steel scoop were used to obtain two sediment samples. The results of the sediment samples were not included in this report, because they represented soils contaminated by the leachate that had been exposed to the environment, rather than leachate itself. Leachate samples were also obtained from the same landfill where sediment samples were collected.

The laboratory had specific collection requirements. The laboratory supplied the containers, and SIFU obtained the samples. Sample containers were secured with Teflon-lined lids. Samples were stored in ice to maintain the appropriate preservation temperature until they were received by the laboratory. Leachate collected at each landfill was distributed to the following containers as follows:

- Eight 1000 ml amber, wide-mouth bottles were used to collect the following samples:
  - Two herbicides.
  - Two semi-volatile organic compounds (SVOC) per U.S. EPA Method 8270
  - Two organophosphates.
  - One polychlorinated biphenyl (PCBs).
- Two 40 ml septum vials were used to collect volatile organic compounds (VOC) per U.S. EPA Method 8260.
- Four 250 ml high-density polyethylene-wide mouth bottles were use to collect the following samples:
  - One chloride, fluoride, and sulfate.
  - One cyanide, weak and dissociable.
  - One TDS.
  - One total alkalinity.
- 500 ml high-density polyethylene-wide mouth bottles were use to collect the following samples:
  - One total metals.
  - One dissolved metals.
  - One sulfide.
- 250ml glass bottle was used to collect COD, ammonia, nitrate, nitrite, and phosphate.
- One 250ml wide-mouth bottle was used to collect pesticides; PCBs; herbicides; Organophosphates; and VOCs.
- One 125 ml wide-mouth bottle was used to collect each sediment sample for the analysis of cyanide, metals, and percent solids.

Attachment 6 - DSIWM Work Plan Form

OHIO ENVIRONMENTAL PROTECTION AGENCY (OHIO EPA)

DIVISION OF SOLID AND INFECTIOUS WASTE MANAGEMENT (DSIWM)

C&DD LEACHATE SAMPLING STATEWIDE INITIATIVE WORK PLAN APPROVAL FORM

Site Name
County
DSIWM ID#

Prepared by: _____ _____
Date

Reviewed by: _____ _____
Date

Approved by: _____ _____
Date

OHIO EPA DIVISION OF SOLID AND INFECTIOUS WASTE MANAGEMENT
C&DD LEACHATE SAMPLING STATEWIDE INITIATIVE

Site Name

STATEMENT OF PURPOSE

This statewide sampling initiative will provide a comprehensive and representative sampling, analysis, and chemical characterization of leachate generated by Ohio's construction and demolition debris (C&DD) landfill landfills. The data will be used to support and develop revisions to Ohio's C&DD landfill rules under H.B. 397.

SECTION I - General Information and Personnel

Site Name: **Date(s) of Investigations:** TBD

District: **County:** **Core ID No:**

Site Address/Location:

Directions to Site: See attached map.

Latitude: **Longitude:**

USGS 7.5 Minute Series Quadrangle:

District Contact (DSIWM Inspector): **Phone:**

Site Representative: **Phone:**

List of Map(s) Attached: Site location Map, Sample Location Map

Team Members and Responsibilities:

, Project Manager

, Sampling Team Leader

, Site Health and Safety Officer

, Sampling Team Member; Alternate Health and Safety Officer

Prepared by: **Date:**

SECTION II - Site Description

SECTION III - Sampling Strategy and Methods

Samples collected during the course of this investigation will be sent to Kemron Environmental Services and may include the following analysis: volatile organic analysis (VOA-8260 A9); semi-volatile organic compounds (SVOC-8270 A9); pesticides/PCB's (8081,8082); organophosphorous (OP) pesticides (827 OP); Target Analyte List (TAL) metals and strontium, tin, and boron, both total and dissolved; chloride (Cl); fluoride (F); COD; free cyanide (CN); ammonia-nitrogen (NH_3); nitrate – nitrite ($NO_3 - NO_2$); sulfate (SO_4); sulfide (S); total alkalinity; TDS ; and total phosphorous (P).

Leachate Samples: At least one leachate sample will be collected at the landfill if the landfill has a leachate collection system or if an active leachate seep is present. This number of leachate samples collected will depend on landfill conditions, including but not necessarily limited to the number of potential sampling locations, the ability to safely access each location, and the ability to collect a representative sample at each location. Additionally, at least one duplicate sample will be collected per day of sampling and for every 10 field samples. A trip blank, provided by the laboratory, will accompany all VOA samples and be analyzed. At the request of the site owner, split samples may also be collected and given to the site owner for private analysis.

The leachate samples will be collected as close to the leachate source as possible and may include, as available, leachate tanks, sumps, wells, trenches, seeps, and other potential locations, such as an observed release to a surface water body or other receptor.

Field parameters that will be collected prior to sampling include temperature, pH, conductivity and turbidity. Field monitoring equipment will be calibrated per the manufacturer's recommendations before use.

All leachate samples, duplicates, and blanks will be collected in the appropriate containers as supplied or required by the laboratory. The samples will be preserved as required by the method and laboratory.

Sediment/Soil Samples: Sediment and/or soil samples may be collected as deemed necessary in the field. Situations that may require the collection of sediment/soil samples include leachate seeps or the accumulation of sediments in leachate collection systems. Duplicate samples will be collected at the rate of one for every 10 field samples.

Prior to submitting sediment and/or soil samples to the laboratory for analyses, DSIWM CMEU will be notified for final concurrence.

All sediment or soil samples, duplicates, and blanks will be collected in the appropriate containers as supplied or required by the laboratory. The samples will be preserved as required by the method and laboratory.

Procedures:
Personal protective procedures, sample collection, sample screening and field decontamination will all be performed according to Ohio EPA-DERR's *standard Operating Procedures*, 2007.

In the event of insufficient sample volume for a complete analysis, sample bottles will be filled in the following order: 1. VOCs 2. total metals 3. SVOCs (if insufficient sample for SVOCs, skip to #4 and continue) 4. pesticides/PCBs (if insufficient sample for pesticides/PCBs, skip to #5 and continue) 5. OP pesticides (if insufficient sample for OP pesticides, skip to #6 and continue) 6. free cyanide 7. nitrate-nitrite 8. fluoride 9. total phosphorous 10. ammonia-nitrogen 11. sulfate 12. chloride 13. TDS 14. sulfide 15. dissolved metals 16. total alkalinity 17. COD.

SECTION IV - Investigation-Derived Waste Plan

If, in the best professional judgment of the DSIWM inspector, investigation-derived wastes are non-hazardous, the wastes will be double-bagged and deposited in an industrial dumpster on site or transported back to the Ohio EPA Field Landfill in Columbus, Ohio for disposal as directed in the U.S. EPA Guide to Management of Investigation-Derived Wastes, Publication: 9345.3-03FS, January 1992.

Investigation-derived wastes will generally consist of disposable vinyl and nitrile gloves, latex boot covers, and detergent water. These items are used primarily for prevention of cross-contamination and for sanitary considerations during sampling activities.

Should contact with concentrated wastes occur, disposable gear and waste water will be secured in a steel drum, on site if possible, until sample analysis results are received. If analytical data reveals significant contamination, as determined by the site coordinator, these wastes will be disposed of properly by a contracted, licensed hauling and disposal landfill.

Attach directions and maps

Attachment 7 - Example Sample Bottle Kit Request/Packing List

Kit Request/Packing List

Account: Ohio Environmental Protection Agency
Project: OHIO EPA
Account #: 2755
Projectnum: 2755_025
Workorder: B8264
Kit Req Date: 21-AUG-07
Kit Date: 20-AUG-07

Mode	Form	Soc
SHIP	GROUND	SPOT

Attn: Wendy Vorwerk
4675 Homer Ohio Lane

Groveport OH 43125

PHONE: 614 836 8759
FAX:
EMAIL: Wendy.Vorwerk@epa.state.oh.us

Address Comments:

Workorder Comments: C&D Landfills

Matrix	Group	Products	Container Type	Preservative	Samples	Bottles/ Sample	Containers
Water	HERB	8151	A-1000-W	4C	10	2	20
Water	VOC_8260	826-SPE2	G-40-S	HCL pH <2	10	2	20
Water	SVOC_8270	827-SPE1	A-1000-W	4C	10	2	20
Water	SVOC_8270	8270P	A-1000-W	4C	10	2	20
Water	SULFIDE	S	P-500-W	ZN ACE NAOH	10	1	10
Water	CL	CL	P-250-W	4C	10		
Water	F	F	P-250-W	4C	10		
Water	SO4	SO4	P-250-W	4C	10	1	10
Water	METALS	METALS	P-500-W	HNO3 pH < 2	10	1	10
Water	DIS-MET(LAB FILTER)	DISSOLVED METALS	P-500-W	4C	10	1	10
Water	CN_WD	CN-WD	P-250-W	NaOH pH > 12	10	1	10
Water	TDS	TDS	P-250-W	4C	10	1	10
Water	ALKALINITY	ALK	P-250-W	4C	10	1	10
Water	COD	COD	G-250-B	H2SO4 pH <2	10		
Water	NH3	NH3	G-250-B	H2SO4 pH <2	10		
Water	NO3NO2	NO3NO2	G-250-B	H2SO4 pH <2	10		
Water	PHOS_T	PHOS	G-250-B	H2SO4 pH <2	10	1	10
Water	PEST	8081	A-1000-W	4C	10		
Water	PCB	8082	A-1000-W	4C	10	1	10
Soil	CN	CN	G-125-W	4C	5		
Soil	METALS	METALS	G-125-W	4C	5		
Soil	PCT_S	PCT-S	G-125-W	4C	5	1	5
Soil	PEST	8081	G-250-W	4C	5		
Soil	PCB	8082	G-250-W	4C	5		
Soil	HERB	8151	G-250-W	4C	5		
Soil	SVOC_8270	827-SPE1	G-250-W	4C	5		
Soil	SVOC_8270	8270P	G-250-W	4C	5	1	5
Soil	VOC_8260	826-SPE2	G-60-W	4C	5		
Soil	VOC	G-60-W	G-60-W	4C	5	1	5

Attachment 8 - DSIWM C&DD LEACHATE SAMPLING LOG SHEET

Landfill Name:_____ **Core ID No:**_____

Sample ID:_____ **Date/Time:**_____

Duplicate ID:_____ **Date/Time:**_____

Collected By:_____ **Lat:**_____ **Long:**_____

Sample Matrix (circle): Leachate Sediment Soil Other _____

Collected from (circle): Tank Sump Well Trench Seep Other_____

Sample Location Description:_____

Leachate Collection System: Yes No **Photo Taken:** Yes No

Field Monitoring Readings:	PID/FID	LEL/O_2	H_2S	CH_4	CO	

Field Parameters:	Color	Odor	Temp	pH	S. Cond	Turbidity

Analysis	*Preservative*	*# Bottles*	*Analysis*	*Preservative*	*# Bottles*
VOA (8260 A9)	4°C, HCL		NH_3; NO_3NO_2; COD; T-phos	4°C, H_2SO_4	
TM+B+Sr+Sn (6020)	4°C, HNO_3		Fluoride; Sulfate; Chloride	4°C	
SVOC (8270 A9)	4°C		TDS	4°C	
Pest/PCB (8081/8082)	4°C		Sulfide	4°C, ZnAceNaOH	
OP Pest (827OP)	4°C		Dissolved Metals + B+Sr+Sn	4°C	
Herbicide (8151)	4°C		Total Alkalinity	4°C	
Free Cyanide	4°C, NAOH				

Sample Collection Method and Equipment Used:

Attachment 9 - DSIWM Landfill Sampling Equipment and Supplies List

Meters

Radiation Meter
4 gas meter
PID
Methane Meter
Ultrameter II
Turbidity Meter
GPS

Documentation

Camera
Marker Board
Logsheets
Logbook
Pens
Workplan/HASP
Maps
SOPs

Sampling Supplies

Bottles
Extra Bottles
Pans
Spoons
Shovel
Machete
Wipes
Trash bags

Sample Equipment

Bailers
Rope
Caliwassa
Scoops
Leachate Scoop
Pitchers
Scoop Pole
Eckman w/ Push Pole

PPE

Gloves
Boots
Tyvex
Boot Covers
Respirator w/ Cartridges
Bug/Sun Spray
Drinks

Attachment 10 - DSIWM HASP Plan Form

OHIO EPA DIVISION OF SOLID & INFECTIOUS WASTE MANAGEMENT and DIVISION OF EMERGENCY AND REMEDIAL RESPONSE
SITE HEALTH AND SAFETY PLAN
TECHNICAL ASSISTANCE ASSESSMENT (TAA) WORK PLAN
HEALTH AND SAFETY PLAN

SECTION I - General Information and Personnel

Landfill Name: **Date(s) of Investigations:** , 2007

DSIWM CID No.: **Ohio EPA I.D. No.:**

District: **County:**

Landfill Address:

Team Members and Responsibilities:

, Project Manager

Signature/Date

, Sampling Team Leader

Signature/Date

, Site Health and Safety Officer

Signature/Date

, Sampling Team Member; Alternate Health and Safety

Signature/Date

, Sampling Team Member

Signature/Date

, Sampling Team Member

Signature/Date

, Sampling Team Member

Signature/Date

, Sampling Team Member

Signature/Date

Prepared by (name/title): Date:

SECTION II - Table A - Safety and Health Risk Analysis Overview

Complete the following table by highlighting or circling the appropriate answer based on site conditions. These answers will be used to complete Tables B and C.

Media of Possible Exposure:	Air	Leachate	Sediment	Soil	Surface Water
Overall Site Risk/Hazard:	High	Medium	Low	Unknown	
Waste Types:	Liquid	Gas	Solid	Sludge	Unknown
Waste Characteristics:	Corrosive	Flammable	Inert	Radioactive	Reactive
	Toxic	Volatile	Unknown	Other (specify):	
Hazards of Concern:	Asbestos	Biological	Radiological	Cold Stress	Heat Stress
	Noise	Explosive/ Flammable	Inorganic Chemicals	Organic Chemicals	Oxygen Deficient
	Unknown	Other (specify):			

SECTION II - Table B - Safety and Health Risk Analysis

List of Potential Physical and Biological Hazards

The following table must be included according to site-specific conditions. Example text below may be added to or removed as needed.

Task	Hazard	Description/Location	Procedure used to Monitor/Hazard
Driving to and from the site	**Vehicle or Traffic Accident**	Driving to and from the site.	Defensive Driving; switch drivers.
Sampling, Accessing Sampling Locations.	**Adverse Weather Conditions** (e.g., heat; cold-hyperthermia; rain; wind; lightning).	Soil, surface water, sediment, and ground water sampling locations.	Drink plenty of fluids; dress appropriate -- cold, warm; rain; stop working when lightning.
Sampling, Accessing Sampling Locations.	**Moving Objects** (i.e., vehicles; logging equipment, railroad tracks, property owner's truck; Geoprobe; getting boat to river).	Soil, surface water, sediment, and ground water sampling locations.	Be cautious and observe appropriate safety practices; notify property owner of our work areas.
Sampling, Accessing Sampling Locations.	**Tripping, Falling** (i.e., unstable ground steep bank along river; dense vegetation along floodplain; sharp objects -- puncture wounds; railroad bridge).	Soil, surface water, sediment, and ground water sampling locations.	Be cautious and observe appropriate safety practices; steel toed boots, safety glasses.
Sampling, Accessing Sampling Locations.	**Drowning** (i.e., unstable banks, boats if used; Steep river banks; sharp drop-offs from bank into deep water; dam; high water or flood waters).	Surface water and sediment sampling locations.	Life jackets will be worn when working on or around deeper areas of ponds or lakes.
Sampling, Accessing Sampling Locations.	**Objects fall from Overhead: Obscured Visibility** (i.e., dilapidated and falling roof; dark, unlit portions of buildings).	Walking through site buildings accessing sampling locations.	Be cautious and observe appropriate safety practices.

SECTION II - Table C - Characteristics of Chemicals of Concern

Chemicals Present at Site	Highest Observed Concentration (specify units and media)	Exposure Limits PEL/TLV ppm or mg/m3 (specify)	IDLH ppm or mg/m3 (specify)	Symptoms/Effects of Acute Exposure	Instruments Used to Monitor Contaminant
VOC's	TBD On-Site	See Section VII	Re Section VII	Dizziness, vomiting, fainting, possible death	Multi-RAE
SVOC's	"	"	"	"	Multi-RAE
Pesticides/PCB's	"	"	"	"	N/A
Inorganics/Metals	"	"	"	"	N/A
Radiation	"	"	"	Dizziness, vomiting, fainting, possible death, burns/discoloration to skin	Ludlum 14C Rad Meter

NA = Not available
NE = None established
CARC = Carcinogen
PEL = Permissible exposure limit
TLV = Threshold limit value
IDLH = Immediately dangerous to life or health

SECTION III - Site Control

Work Zones: N/A

This site assessment [does/does not] require the establishment of work zones. [If required] A work zone map is attached.

Communications:

Cellular phones are located in each vehicle. Two way radios will be provided for staff out of voice range.

Safe Work Practices:

- Eating, drinking, gum chewing and smoking will not be permitted on site.
- The "buddy system" will be used during all field work activities. This is defined as two trained people working as a team and maintaining contact.
- Avoid contact with contaminated, or potentially contaminated, surfaces. Walk around discolored areas, do not kneel or set equipment down on potentially contaminated ground.

Location of First Aid Kit: First Aid Kits are located in each Ohio EPA field vehicle.

SECTION IV - Employee Training

All Ohio EPA field staff working on-site have met the appropriate health and safety training requirements as stated in 29 CFR 1910.120(e). This includes initial health and safety training, annual refresher training, and three day on the job training. Included in this training is the recognition of the symptoms and signs of overexposure to chemical hazards. All Ohio EPA field staff have been trained to render first aid and CPR; and field supervisors have had the appropriate supervisory training. Health and safety training documentation is on file with the Ohio EPA Health and Safety Coordinator.

SECTION V - Medical Surveillance

All Ohio EPA field staff are enrolled in a medical monitoring program. This program includes initial and annual medical examinations, examinations upon termination of employment, and medical record keeping.

SECTION VI - Personal Protective Equipment

Ohio EPA has a comprehensive, written PPE program in place. Please refer to *Personal Protective Equipment*, OEPA-SM-06-004 for specific details.

[Work will be conducted wearing appropriate field clothing and steel-toed boots. Where needed, hard hats, safety glasses hearing protection, boot covers and safety gloves will be worn. Decisions to upgrade to a higher level (i.e., respiratory protection) or to evacuate/leave the site will be based on visual contamination and direct reading instruments as stated in Section VII, Air Monitoring.]

SECTION VII - Air Monitoring

Air monitoring will be conducted during initial site entry and sampling activities. All air monitoring equipment are on a maintenance and calibration schedule as recommended by the manufacturer. Background is to be established prior to site entry.

Instrument Name/Type	Hazard	Action Levels	Action Guidelines
Multi-RAE/combustible gas indicator (CGI)	Explosive	<10% LEL	No explosion hazard; continue monitoring
		10 -25% LEL	Potential explosion hazard; continue monitoring with caution
		>25%	Explosion hazard; evacuate
Multi-RAE/O_2 meter/Hydrogen Sulfide meter	O_2 deficient atmosphere/O_2 displaced by toxic vapors, hydrogen sulfide	>23.5% O_2	Evacuate area
		20.8% O_2	Oxygen normal
		20.8 - 19.5% O_2	Proceed with caution
		<19.5% O_2	Oxygen deficient; evacuate
Ludlum 14C/radiation survey meter	Gamma Radiation	3 - 5 times gamma background	Consult a Health Physicist
		<1 mR/hr	Continue instrument monitoring
		>1 mR/hr	Evacuate
Multi-RAE/ photoionization detector (PID)	Organic Vapors	1-10 ppm above background	Level C
Identify lamp ionization potential:	Gases	>10 ppm above background	Level B if certified; otherwise evacuate

SECTION VIII - Confined Space Entry Procedures

Areas defined as a confined space under 29 CFR 1910.120(j)(9) will not be entered. If it is deemed necessary to enter a confined space, Ohio EPA staff with the appropriate confined space training and equipment will be tasked under a separate investigation.

SECTION IX - Spill Containment Program

There is little to no potential for a spill or release of a hazardous substance on this site. However, if one should occur, the Ohio EPA spill hotline will be called to notify appropriate staff and to obtain guidance on the situation.

Ohio EPA Spill Hotline: 1-800-282-9378

SECTION X - Decontamination Program

Personnel Decontamination Procedures: All Ohio EPA field staff working on-site shall, (when needed) at a minimum, wear protective clothing (Tyvek or Saranex, boot covers and gloves). These disposable items will be used during all sampling events and disposed of at the end of the day per the investigation-derived waste plan in the work plan.

Equipment Decontamination Procedures: Disposable products are used when high levels of contamination are expected to be encountered. All sampling equipment shall be decontaminated per *OEPA-DERR Field standard Operating Procedure 10.01.*

The site health and safety officer may monitor decontamination procedures.

SECTION XI - Emergency Response Plan

In the event of an emergency, the Ohio EPA field team leader will take appropriate action. If evacuation from the site is required, three horn blasts or radio communications will signal evacuation. Ohio EPA field staff will then proceed to their vehicles.

If the landfill or site has a written emergency response plan in place, Ohio EPA field staff will follow it as appropriate.

In the event of a medical emergency, the following emergency information is provided.

SECTION XI - Emergency Response Plan (Continued)

Emergency Information		Hospital Information	
Is 911 available:		**Nearest Hospital:**	
Police/Sheriff Department:		**Hospital Address:**	
Fire Department:		**Hospital Phone:**	**Emergency:**
Poison Control Center:	1-800-682-7625		**General:**
Ohio EPA Spill Hotline:	1-800-282-9378	**Landfill Contact:**	
		Landfill Phone:	

***Map and directions to hospital are attached**

Attachment 11 – Descriptive statistics and comparisons for 119 parameters detected in Ohio C&DD Leachate

Table 20. Descriptive statistics and comparisons for all parameters detected in Ohio C&DD leachate during the 2007 leachate sampling event

Col. No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
	Sample Parameter Information					Descriptive Statistics							Water Quality Standard Comparisons								Soil Standard Comparisons						
Row Number	Parameter Group Number	Parameter Group Name	Parameter Name	Chemical Abstract Service (CAS) Number	Units	Minimum Detected[B]	Maximum Detected[B]	Mean[B]	Median[B]	95% Lower Confidence Limit (LCL)[B]	95% Upper Confidence Limit (UCL)[B]	HB Standard	Standard Origin[F]	Min. Exceeds HB Standard	Max. Exceeds HB Standard	Mean HB Standard	Median HB Standard	95% LCL HB Standard	95% UCL HB Standard	SWQ Standard	Min. Exceeds SWQ Standard	Max. Exceeds SWQ Standard	Mean SWQ Standard	Median SWQ Standard	95% LCL SWQ Standard	95% UCL SWQ Standard
1	38	2	Alcohols	Isobutanol	78-83-1	ug/L	68.5	123	5.24167	0.00000	-3.38488	13.86822	4700	VAP	0.01	0.03	0.00	0.00	0.00	0.00							
2	38	2	Chlorinated solvents	1,1,1-Trichloroethane	71-55-6	ug/L	0.284	1.18	0.02913	0.00000	-0.01490	0.07317	200	MCL	0.00	0.01	0.00	0.00	0.00	0.00	76	0.00	0.02	0.00	0.00	0.00	0.00
3	38	11	Chlorinated solvents	1,1-Dichloroethane	75-34-3	ug/L	0.139	5.68	0.35722	0.00000	-0.03714	0.75159	2800	VAP	0.00	0.00	0.00	0.00	0.00	0.00	500	0.00	0.00	0.00	0.00	0.00	0.00
4	38	6	Chlorinated solvents	1,2-Dichloroethane	107-06-2	ug/L	0.451	2.33	0.23210	0.00000	0.01344	0.45076	5	MCL	0.09	0.47	0.05	0.00	0.00	0.09	3.8	0.12	0.81	0.05	0.00	0.00	0.12
5	38	9	Chlorinated solvents	Chloroethane	75-00-3	ug/L	0.575	10.9	0.46545	0.00000	0.04027	0.89063	530	VAP	0.00	0.02	0.00	0.00	0.00	0.00							
6	38	1	Chlorinated solvents	Chloroform	67-66-3	ug/L	0.208						80	MCL	0.00	0.00					56	0.00					
7	38	15	Chlorinated solvents	cis-1,2-Dichloroethene	156-59-2	ug/L	0.293	3.08	0.47782	0.04883	0.18097	0.77467	70	MCL	0.00	0.04	0.01	0.00	0.00	0.01	70	0.00	0.04	0.01	0.00	0.00	0.01
8	38	7	Chlorinated solvents	Methylene chloride	75-09-2	ug/L	0.588	62.2	1.92193	0.00000	-1.09173	4.93558	5	MCL	0.12	15.4	0.38	0.00	-0.22	0.99	5	0.12	15.44	0.38	0.00	-0.22	0.99
9	38	7	Chlorinated solvents	Tetrachloroethene	127-18-4	ug/L	0.263	1.43	0.14883	0.00000	0.02517	0.27249	5	MCL	0.05	0.29	0.03	0.00	0.01	0.05	5	0.05	0.29	0.03	0.00	0.01	0.05
10	38	1	Chlorinated solvents	trans-1,2-Dichloroethene	156-60-5	ug/L	0.463						100	MCL	0.00	0.00					100	0.00					
11	38	9	Chlorinated solvents	Trichloroethene	79-01-6	ug/L	0.267	1.25	0.19532	0.00000	0.05678	0.33385	5	MCL	0.05	0.25	0.04	0.00	0.01	0.07	5	0.05	0.25	0.04	0.00	0.01	0.07
12	38	13	Chlorinated solvents	Vinyl chloride	75-01-4	ug/L	0.386	7.08	0.53022	0.00000	0.02746	1.03298	2	MCL	0.19	3.5	0.27	0.00	0.01	0.52	0.48	0.80	14.75	1.10	0.00	0.06	2.15
13	38	3	Chlorofluorocarbons	Dichlorodifluoromethane	75-71-8	ug/L	0.402	2.23	0.10915	0.00000	-0.03708	0.25538	2100	VAP	0.00	0.00	0.00	0.00	0.00	0.00							
14	38	5	Chlorofluorocarbons	Trichlorofluoromethane	75-69-4	ug/L	0.265	723	12.29543	0.00000	-12.33443	36.92530	3800	VAP	0.00	0.19	0.00	0.00	0.00	0.01							
15	38	24	Gasoline	Benzene	71-43-2	ug/L	0.304	45	3.22212	1.55500	0.20709	6.23715	5	MCL	0.06	9.0	0.64	0.31	0.04	1.25	5	0.06	9.00	0.64	0.31	0.04	1.25
16	38	19	Gasoline	Ethylbenzene	100-41-4	ug/L	0.282	6.62	1.04103	0.39850	0.53522	1.54685	700	MCL	0.00	0.01	0.00	0.00	0.00	0.00	61	0.00	0.11	0.02	0.01	0.01	0.03
17	38	19	Gasoline	m-,p-Xylene	136777-61-2	ug/L	0.556	10.1	1.88054	1.07000	0.96088	2.80043	10000	MCLF	0.00	0.00	0.00	0.00	0.00	0.00	27	0.02	0.37	0.07	0.04	0.04	0.10
18	38	15	Gasoline	o-Xylene	95-47-6	ug/L	0.298	8.02	1.45131	0.14900	0.79691	2.10370	10000	MCLF	0.00	0.00	0.00	0.00	0.00	0.00	27	0.01	0.22	0.05	0.01	0.03	0.08
19	38	17	Gasoline	Toluene	108-88-3	ug/L	0.385	67.7	5.91668	0.55550	0.89897	10.93430	1000	MCL	0.00	0.07	0.01	0.00	0.00	0.01	62	0.01	1.09	0.10	0.01	0.01	0.18
20	38	6	Non-chlorinated solvents	2-Butanone	78-93-3	ug/L	3.19	1210	54.54211	0.00000	-14.63840	123.72262	8800	VAP	0.00	0.14	0.01	0.00	0.00	0.01	22000	0.00	0.06	0.00	0.00	0.00	0.01
21	38	3	Non-chlorinated solvents	2-Hexanone	591-78-6	ug/L	3.48	6.51	0.43200	0.00000	-0.05477	0.96877		NONE													
22	38	5	Non-chlorinated solvents	4-Methyl-2-pentanone	108-10-1	ug/L	13	146	7.53000	0.00000	0.28424	14.77576	1200	VAP	0.01	0.12	0.01	0.00	0.00	0.01							
23	38	25	Non-chlorinated solvents	Acetone	67-64-1	ug/L	2.73	2140	157.75961	7.01750	-9.86357	325.38279	14000	VAP	0.00	0.15	0.01	0.00	0.00	0.02							
24	38	2	Non-chlorinated solvents	Acetophenone	98-86-2	ug/L	76.9	416	15.14833	0.00000	-13.24292	43.53959	1600	VAP	0.05	0.26	0.01	0.00	-0.01	0.03							
25	38	3	Non-chlorinated solvents	Benzyl alcohol	100-51-6	ug/L	193	1980	39.25000	0.00000	-51.30728	129.80728		NONE													
26	38	16	Non-chlorinated solvents	Carbon disulfide	75-15-0	ug/L	0.614	36.2	1.83149	0.42858	0.36211	3.30087	1400	VAP	0.00	0.03	0.00	0.00	0.00	0.00	15	0.04	2.41	0.12	0.03	0.02	0.22
27	38	1	PAHs	Acenaphthene	83-32-9	ug/L	54.6						930	VAP	0.06	0.00					15	3.64					
28	38	21	PAHs	Naphthalene	91-20-3	ug/L	0.291	77.2	6.56534	1.53000	1.08044	12.05025	67	VAP	0.00	1.2	0.10	0.02	0.02	0.18	21	0.01	3.68	0.31	0.07	0.05	0.57
29	38	9	Pesticides	1,4-Dichlorobenzene	106-46-7	ug/L	0.162	1.16	0.12435	0.00000	0.04189	0.20681	75	MCL	0.00	0.02	0.00	0.00	0.00	0.00	9.4	0.02	0.12	0.01	0.00	0.00	0.02
30	38	5	Pesticides	2,4,5-TP (Silvex)	93-72-1	ug/L	0.184	1.45	0.10993	0.00000	-0.01003	0.22989	50	MCL	0.00	0.03	0.00	0.00	0.00	0.00	10	0.02	0.15	0.01	0.00	0.00	0.02
31	38	4	Pesticides	2,4-D	94-75-7	ug/L	1.5	5.85	0.36233	0.00000	-0.08301	0.84767	70	MCL	0.02	0.08	0.01	0.00	0.00	0.01	70	0.02	0.08	0.01	0.00	0.00	0.01
32	38	9	Pesticides	2,4-DB	94-82-6	ug/L	0.716	6.66	1.12060	0.00000	0.38460	1.85660		NONE													
33	38	1	Pesticides	4,4'-DDE	72-55-9	ug/L	0.225						2.6	VAP	0.09	0.00					0.0059	38.14					
34	38	1	Pesticides	4,4'-DDT	50-29-3	ug/L	0.0301						2.3	VAP	0.01	0.00					0.000011	2736.36					
35	38	2	Pesticides	alpha Chlordane	5103-71-9	ug/L	0.0245	0.0649	0.00298	0.00000	-0.00170	0.00766	2	MCL	0.01	0.03	0.00	0.00	0.00	0.00	0.00025	88.00	259.60	11.92	0.00	-6.78	30.62
36	38	9	Pesticides	Dicamba	1918-00-9	ug/L	0.231	0.517	0.09647	0.00000	0.03675	0.15618	4000	LTHA	0.00	0.00	0.00	0.00	0.00	0.00							
37	38	13	Pesticides	Dichloroprop	120-36-5	ug/L	0.688	16.1	1.89059	0.00000	0.50837	3.25281		NONE													
38	38	1	Pesticides	Dieldrin	60-57-1	ug/L	0.0213						2	DWEL	0.01	0.00					0.0000065	3276.92					
39	38	1	Pesticides	Disulfoton	298-04-4	ug/L	0.516						0.7	LTHA	0.74	0.00											
40	38	1	Pesticides	EPN	2104-64-5	ug/L	1.26							NONE													
41	38	3	Pesticides	gamma Chlordane	5103-74-2	ug/L	0.0145	0.0232	0.00162	0.00000	-0.00033	0.00356	2	MCL	0.01	0.01	0.00	0.00	0.00	0.00	0.00025	58.00	92.80	6.48	0.00	-1.31	14.23
42	38	1	Pesticides	Heptachlor	76-44-8	ug/L	0.0237						0.4	MCL	0.06	0.00					0.0021	11.29					
43	38	1	Pesticides	Heptachlor epoxide	1024-57-3	ug/L	0.0196						0.2	MCL	0.10	0.00					0.001	19.60					
44	38	1	Pesticides	MCPA	94-74-6	ug/L	335						30	LTHA	11.1	0.00											
45	38	1	Pesticides	MCPP	93-65-2	ug/L	1040							NONE													
46	38	2	Pesticides	Methoxychlor	72-43-5	ug/L	0.0288	0.568	0.00979	0.00000	-0.00956	0.02914	40	MCL	0.00	0.01	0.00	0.00	0.00	0.00	40	0.00	0.01	0.00	0.00	0.00	0.00
47	38	3	Pesticides	Pentachlorophenol	87-86-5	ug/L	0.481	1.37	0.07903	0.00000	-0.02361	0.18168	1	MCL	0.48	1.3	0.08	0.00	-0.02	0.18	1	0.48	1.37	0.08	0.00	-0.02	0.18
48	38	1	Phenolics	2,4-Dimethylphenol	105-67-9	ug/L	94.2						300	VAP	0.31	0.00					15	6.28					
49	38	2	Phenolics	2-Methylphenol	95-48-7	ug/L	39.1	198	7.18500	0.00000	-8.19766	20.56766	780	VAP	0.05	0.25	0.01	0.00	-0.01	0.03	67	0.58	2.95	0.11	0.00	-0.09	0.31
50	38	3	Phenolics	3-,4-Methylphenol	106-44-5	ug/L	162	4180	168.06667	0.00000	-55.34232	401.47565	78	VAP	2.1	53.6	2.15	0.00	-0.84	5.11	53	3.06	78.67	3.17	0.00	-1.23	7.66
51	38	3	Phenolics	Phenol	108-95-2	ug/L	178	1130	44.00000	0.00000	-10.85114	98.85114	2000	LTHA	0.09	0.57	0.02	0.00	-0.01	0.05	1	178.00	1130.00	44.00	0.00	-10.85	98.85
52	38	4	Phthalates	bis(2-Ethylhexyl)phthalate	117-81-7	ug/L	87.5	479	20.86667	0.00000	-6.83513	42.58846	6	MCL	2.4	79.8	3.48	0.00	-0.14	7.08	6	14.58	79.83	3.48	0.00	-0.14	7.08
53	38	4	Substituted alkanes	1,2-Dichloropropane	78-87-5	ug/L	0.21	0.304	0.02737	0.00000	0.00049	0.05424	5	MCL	0.04	0.06	0.01	0.00	0.00	0.01	5	0.04	0.06	0.01	0.00	0.00	0.01
54	38	1	Substituted benzenes	1,2-Dichlorobenzene	95-50-1	ug/L	0.153						600	MCL	0.00	0.00					23	0.01					
55	38	7	Substituted benzenes	Chlorobenzene	108-90-7	ug/L	0.134	1.69	0.07517	0.00000	0.01114	0.13921	100	MCL	0.00	0.02	0.00	0.00	0.00	0.00	47	0.00	0.04	0.00	0.00	0.00	0.00
56	38	1	Substituted benzenes	Dibenzofuran	132-64-9	ug/L	24.4							NONE							4	5.19					
57	38	9	Substituted benzenes	p-Isopropyltoluene	99-87-6	ug/L	0.429	7.66	0.70217	0.00000	0.12714	1.27721		NONE							16	0.03	0.48	0.04	0.00	0.01	0.08
58	38	5	Substituted benzenes	Styrene	100-42-5	ug/L	0.233	1.22	0.06783	0.00000	-0.00085	0.13672	100	MCL	0.00	0.01	0.00	0.00	0.00	0.00	32	0.01	0.04	0.00	0.00	0.00	0.00
59	38	1	Other organic	Bis(2-Chloroethoxy)Methane	111-91-1	ug/L	94.2							NONE													
60	38	18	Heavy metal, Totals	Antimony, Total	7440-36-0	mg/L	0.000574	0.0169	0.00220	0.00084	0.00106	0.00334	0.006	MCL	0.10	2.82	0.37	0.14	0.18	0.56	0.006	0.10	2.82	0.37	0.14	0.18	0.56

Note A - For the purpose of calculating descriptive statistics in this table, non-detects at the method detection limit were set equal to zero and lab estimated values were included in the calculation. Because of this, minimum and median concentrations showing zero concentration value cannot be interpreted as "not present," but should be interpreted as "concentration is less than the method detection limit."

Note B - Non-detects below the method detection limit are not included in the minimum detected columns.

Note C - Methylene chloride is a common lab contaminant. Sufficient levels were found in trip blanks for two samples to cast doubt on the validity of the methylene chloride results for those samples. As a result, the suspect sample results were removed from the data set used to produce this summary.

Note D - For pH, column 15 is calculated by dividing the minimum pH standard of 6.5 by the minimum pH measured at any one landfill. Column 16 is calculated by taking the maximum pH measured and dividing it by the maximum pH standard of 9.5 for HB standards and 9.0 for SWQ standards.

Note E - MCL = US EPA Maximum Contaminant Level or Action Level; SMCL = US EPA Secondary MCL; VAP = Ohio EPA, Voluntary Action Program Generic Unrestricted Potable Use Standard; LTHA = US EPA Lifetime Threshold Health Advisory

Note F - The MCL for xylenes is 10,000 ug/L. O-xylene was analyzed seperately from m-,p-xylene, as the MCL applies to the sum of the two results for xylenes. However, since the results were far below the standard, the application of the standard individually to o-xylene and m-,p-xylene makes no difference for the purposes of this discussion.

Note G - Multiple samples were taken from seven C&DD landfills. To prevent those seven landfills from skewing the results for mean, median, and confidence limits, the results for each parameter at each landfill that had multiple samples were averaged and used as a single data point in the calculations.

Table 20. Continued

Col. No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
	Sample Parameter Information						Descriptive Statistics[A]						Health Based (HB) Standard Comparisons								Surface Water Quality (SWQ) Standard Comparisons						
Row Number	Template Column	Analyte	Chemical Abstract Service (CAS) Number		Units	Minimum Detected[B]	Maximum Detected[B]	Mean[C]	Median[C]	95% Lower Confidence Limit (LCL)[C]	95% Upper Confidence Limit (UCL)[C]	HB Standard	Standard Origin[E]	Min. Detected/HB Standard	Max. Detected/HB Standard	Mean/HB Standard	Median/HB Standard	95% LCL/HB Standard	95% UCL/HB Standard	SWQ Standard	Min. Detected/SWQ Standard	Max. Detected/SWQ Standard	Mean/SWQ Standard	Median/SWQ Standard	95% LCL/SWQ Standard	95% UCL/SWQ Standard
61	38	23	Heavy metal, Totals	Arsenic, Total	7440-38-2	mg/L	0.00503	0.254	0.05279	0.04048	0.03180	0.07378	0.01	MCL	0.50	25.4	5.28	4.05	3.18	7.38	0.01	0.50	25.40	5.28	4.05	3.18	7.38
62	38	30	Heavy metal, Totals	Barium, Total	7440-39-3	mg/L	0.00637	5.49	0.46358	0.38200	0.30180	0.62535	2	MCL	0.00	2.75	0.23	0.19	0.15	0.31	0.22	0.03	24.95	2.11	1.74	1.37	2.84
63	38	6	Heavy metal, Totals	Beryllium, Total	7440-41-7	mg/L	0.00055	0.0168	0.00041	0.00000	-0.00007	0.00088	0.004	MCL	0.14	4.2	0.10	0.00	-0.02	0.22	0.004	0.14	4.20	0.10	0.00	-0.02	0.22
64	38	3	Heavy metal, Totals	Cadmium, Total	7440-43-9	mg/L	0.00255	0.00454	0.00026	0.00000	-0.00004	0.00055	0.005	MCL	0.51	0.91	0.05	0.00	-0.01	0.11	0.0055	0.46	0.83	0.05	0.00	-0.01	0.10
65	38	11	Heavy metal, Totals	Lead, Total	7439-92-1	mg/L	0.00525	0.226	0.01550	0.00000	0.00355	0.02745	0.015	MCL	0.35	15.07	1.03	0.00	0.24	1.83	0.023	0.23	9.83	0.67	0.00	0.15	1.19
66	38	5	Heavy metal, Totals	Mercury, Total	7439-97-6	mg/L	0.000151	0.000645	0.00005	0.00000	0.00001	0.00010	0.002	MCL	0.08	0.32	0.03	0.00	0.00	0.05	0.0000013	116.16	496.15	42.10	0.00	8.17	79.04
67	38	25	Heavy metal, Totals	Nickel, Total	7440-02-0	mg/L	0.00544	0.167	0.02947	0.01330	0.01488	0.04406	0.1	LTHA	0.05	1.67	0.29	0.13	0.15	0.44	0.12	0.05	1.39	0.25	0.11	0.12	0.37
68	38	16	Heavy metal, Totals	Thallium, Total	7440-28-0	mg/L	0.0000853	0.0067	0.00037	0.00006	0.00012	0.00062	0.002	MCL	0.03	3.35	0.18	0.03	0.06	0.31	0.0012	0.05	5.58	0.31	0.05	0.10	0.51
69	38	17	Heavy metals, dissolved	Antimony, Dissolved	7440-36-0	mg/L	0.000307	0.0134	0.00173	0.00041	0.00069	0.00276	0.006	MCL	0.05	2.23	0.29	0.07	0.11	0.46	0.008	0.05	2.23	0.29	0.07	0.11	0.46
70	38	26	Heavy metals, dissolved	Arsenic, Dissolved	7440-38-2	mg/L	0.00547	0.325	0.03770	0.01725	0.01464	0.06075	0.01	MCL	0.55	32.5	3.77	1.73	1.46	6.08	0.01	0.55	32.50	3.77	1.73	1.46	6.08
71	38	30	Heavy metals, dissolved	Barium, Dissolved	7440-39-3	mg/L	0.00833	1.06	0.35249	0.29600	0.25407	0.45090	2	MCL	0.00	0.53	0.18	0.15	0.13	0.23	0.22	0.04	4.82	1.60	1.35	1.15	2.05
72	38	2	Heavy metals, dissolved	Beryllium, Dissolved	7440-41-7	mg/L	0.000539	0.000864	0.00004	0.00000	-0.00002	0.00010	0.004	MCL	0.13	0.17	0.01	0.00	0.00	0.02	0.004	0.13	0.17	0.01	0.00	0.00	0.02
73	38	1	Heavy metals, dissolved	Cadmium, Dissolved	7440-43-9	mg/L	0.00583						0.005	MCL	1.17	0.00					0.0055	1.06					
74	38	6	Heavy metals, dissolved	Lead, Dissolved	7439-92-1	mg/L	0.00267	0.0352	0.00216	0.00000	-0.00040	0.00472	0.015	MCL	0.18	2.35	0.14	0.00	-0.03	0.31	0.023	0.12	1.53	0.09	0.00	-0.02	0.21
75	38	1	Heavy metals, dissolved	Mercury, Dissolved	7439-97-6	mg/L	0.000512						0.002	MCL	0.26	0.00					0.0000013	393.85					
76	38	25	Heavy metals, dissolved	Nickel, Dissolved	7440-02-0	mg/L	0.00545	0.217	0.02757	0.01648	0.01250	0.04264	0.1	LTHA	0.05	2.17	0.28	0.16	0.13	0.43	0.12	0.05	1.81	0.23	0.14	0.10	0.36
77	38	15	Heavy metals, dissolved	Thallium, Dissolved	7440-28-0	mg/L	0.000062	0.0042	0.00027	0.00003	0.00006	0.00047	0.002	MCL	0.03	2.1	0.13	0.02	0.03	0.24	0.0012	0.05	3.50	0.22	0.03	0.05	0.39
78	38	21	Light metal, Totals	Aluminum, Total	7429-90-5	mg/L	0.0602	72.8	4.26417	0.30300	-0.09020	8.61855	0.2	SMCL	0.30	364.0	21.32	1.52	-0.45	43.09	0.97	0.06	75.05	4.40	0.31	-0.09	8.89
79	38	30	Light metal, Totals	Calcium, Total	7440-70-2	mg/L	4.94	933	327.11344	320.00000	272.03606	382.19083		NONE													
80	38	30	Light metal, Totals	Magnesium, Total	7439-95-4	mg/L	4.25	653	221.14750	208.90000	181.67934	260.61566		NONE													
81	38	30	Light metal, Totals	Potassium, Total	7440-09-7	mg/L	11	982	108.80667	74.80000	45.32601	171.88733		NONE													
82	38	30	Light metal, Totals	Sodium, Total	7440-23-5	mg/L	30.9	2240	374.51778	287.00000	226.74968	520.28587	60	SMCL	0.51	37.33	6.24	4.78	3.78	8.67							
83	38	30	Light metal, Totals	Strontium, Total	7440-24-6	mg/L	0.05	9.16	3.34585	3.25000	2.83230	3.85940	4	LTHA	0.01	2.29	0.84	0.81	0.71	0.96	21	0.00	0.44	0.16	0.15	0.13	0.18
84	38	10	Light metal, Totals	Vanadium, Total	7440-62-2	mg/L	0.00524	0.285	0.01246	0.00000	0.00099	0.02394	0.13	VAP	0.04	2.19	0.10	0.00	0.01	0.18	0.044	0.12	6.48	0.28	0.00	0.02	0.54
85	38	9	Light metals, dissolved	Aluminum, Dissolved	7429-90-5	mg/L	0.0581	1.41	0.11318	0.00000	0.00492	0.22144	0.2	SMCL	0.29	7.05	0.57	0.00	0.02	1.11	0.97	0.06	1.45	0.12	0.00	0.01	0.23
86	38	30	Light metals, dissolved	Calcium, Dissolved	7440-70-2	mg/L	6.01	952	331.83350	312.50000	273.78517	389.98183		NONE													
87	38	30	Light metals, dissolved	Magnesium, Dissolved	7439-95-4	mg/L	3.78	642	231.26411	214.00000	185.15162	277.37680		NONE													
88	38	30	Light metals, dissolved	Potassium, Dissolved	7440-09-7	mg/L	10.5	1500	128.05333	76.20000	30.20757	225.89910		NONE													
89	38	30	Light metals, dissolved	Sodium, Dissolved	7440-23-5	mg/L	42.7	3530	438.94000	297.75000	211.16795	666.71205	60	SMCL	0.71	58.83	7.32	4.96	3.52	11.11							
90	38	30	Light metals, dissolved	Strontium, Dissolved	7440-24-6	mg/L	0.0467	9.24	3.37222	3.58500	2.85946	3.88598	4	LTHA	0.01	2.31	0.84	0.90	0.71	0.97	21	0.00	0.44	0.16	0.17	0.14	0.19
91	38	9	Light metals, dissolved	Vanadium, Dissolved	7440-62-2	mg/L	0.00602	0.0708	0.00862	0.00000	0.00216	0.01508	0.13	VAP	0.05	0.54	0.07	0.00	0.02	0.12	0.044	0.14	1.61	0.20	0.00	0.05	0.34
92	38	30	Trace element, Totals	Boron, Total	7440-42-8	mg/L	0.735	27.1	10.11778	10.10000	7.88276	12.35280	1	LTHA	0.74	27.1	10.12	10.10	7.88	12.35	0.95	0.77	28.53	10.65	10.63	8.30	13.00
93	38	26	Trace element, Totals	Chromium, Total	7440-47-3	mg/L	0.00364	0.269	0.03317	0.02078	0.02144	0.04489	0.1	MCL	0.04	2.69	0.33	0.21	0.21	0.45	0.2	0.02	1.35	0.17	0.10	0.11	0.22
94	38	8	Trace element, Totals	Cobalt, Total	7440-48-4	mg/L	0.0036	0.0641	0.00397	0.00000	-0.00022	0.00816	0.31	VAP	0.01	0.21	0.01	0.00	0.00	0.03	0.024	0.15	2.67	0.17	0.00	-0.01	0.34
95	38	15	Trace element, Totals	Copper, Total	7440-50-8	mg/L	0.00551	0.182	0.02011	0.00155	0.00534	0.03488	1.3	MCL	0.00	0.14	0.02	0.00	0.00	0.03	0.022	0.25	8.27	0.91	0.07	0.24	1.58
96	38	29	Trace element, Totals	Iron, Total	7439-89-6	mg/L	0.155	697	23.74250	9.27025	4.79680	42.68820	0.3	SMCL	0.52	2323.3	79.14	30.90	15.99	142.29	0.3	0.52	2323.33	79.14	30.90	15.99	142.29
97	38	30	Trace element, Totals	Manganese, Total	7439-96-5	mg/L	0.0146	7.74	2.12123	1.75000	1.42005	2.82241	0.3	LTHA	0.05	25.8	7.07	5.83	4.73	9.41	0.05	0.29	154.80	42.42	35.00	28.40	56.48
98	38	20	Trace element, Totals	Phosphorus	7723-14-0	mg/L	0.155	22.8	0.92093	0.53350	0.32592	1.51595		NONE							1	0.16	22.80	0.92	0.53	0.33	1.52
99	38	6	Trace element, Totals	Selenium, Total	7782-49-2	mg/L	0.00577	0.0311	0.00123	0.00000	0.00019	0.00227	0.05	MCL	0.12	0.62	0.02	0.00	0.00	0.05	0.005	1.16	6.22	0.25	0.00	0.04	0.45
100	38	21	Trace element, Totals	Zinc, Total	7440-66-6	mg/L	0.00521	3.18	0.13302	0.01305	0.01452	0.25153	4.7	VAP	0.00	0.68	0.03	0.00	0.00	0.05	0.28	0.02	11.36	0.48	0.05	0.05	0.90
101	38	30	Trace elements, dissolved	Boron, Dissolved	7440-42-8	mg/L	0.788	26.5	10.43683	10.45000	8.26662	12.60703	1	LTHA	0.79	26.5	10.45	10.45	8.27	12.61	0.95	0.83	27.89	10.99	11.00	8.70	13.27
102	38	26	Trace elements, dissolved	Chromium, Dissolved	7440-47-3	mg/L	0.00349	0.125	0.02727	0.01685	0.01749	0.03705	0.1	MCL	0.03	1.25	0.27	0.17	0.17	0.37	0.2	0.02	0.63	0.14	0.08	0.09	0.19
103	38	7	Trace elements, dissolved	Cobalt, Dissolved	7440-48-4	mg/L	0.00294	0.00583	0.00089	0.00000	0.00022	0.00157	0.31	VAP	0.01	0.02	0.00	0.00	0.00	0.01	0.024	0.12	0.24	0.04	0.00	0.01	0.07
104	38	14	Trace elements, dissolved	Copper, Dissolved	7440-50-8	mg/L	0.0055	0.219	0.01074	0.00000	-0.00405	0.02552	1.3	MCL	0.00	0.17	0.01	0.00	0.00	0.02	0.022	0.25	9.96	0.49	0.00	-0.18	1.16
105	38	29	Trace elements, dissolved	Iron, Dissolved	7439-89-6	mg/L	0.0363	23.1	2.56871	1.15408	0.94677	4.19065	0.3	SMCL	0.12	77.0	8.56	3.85	3.16	13.97	0.3	0.12	77.00	8.56	3.85	3.16	13.97
106	38	30	Trace elements, dissolved	Manganese, Dissolved	7439-96-5	mg/L	0.00673	7.79	1.91813	1.61000	1.24740	2.58886	0.3	LTHA	0.03	25.97	6.39	5.37	4.16	8.63	0.05	0.17	155.80	38.36	32.20	24.93	51.78
107	38	5	Trace elements, dissolved	Selenium, Dissolved	7782-49-2	mg/L	0.00578	0.011	0.00093	0.00000	0.00006	0.00180	0.05	MCL	0.12	0.22	0.02	0.00	0.00	0.04	0.005	1.16	2.20	0.19	0.00	0.01	0.36
108	38	16	Trace elements, dissolved	Zinc, Dissolved	7440-66-6	mg/L	0.0056	0.226	0.01595	0.00495	0.00531	0.02659	4.7	VAP	0.00	0.05	0.00	0.00	0.00	0.01	0.28	0.02	0.81	0.06	0.02	0.02	0.09
109	38	30	Other Ions	Chloride	16887-00-6	mg/L	6.84	1180	340.83689	303.33333	253.85902	427.81476	250	SMCL	0.03	4.72	1.36	1.21	1.02	1.71	250	0.03	4.72	1.36	1.21	1.02	1.71
110	38	15	Other Ions	Cyanide, Weak/Dissociable	57-12-5	mg/L	0.00553	0.0246	0.00467	0.00138	0.00240	0.00694	0.2	MCL	0.03	0.12	0.02	0.01	0.01	0.03	0.0052	1.06	4.73	0.90	0.27	0.46	1.33
111	38	30	Other Ions	Fluoride	16984-48-8	mg/L	0.0943	3.35	0.61523	0.47950	0.38107	0.84939	4	MCL	0.02	0.84	0.15	0.12	0.10	0.21	4	0.02	0.84	0.15	0.12	0.10	0.21
112	38	30	Other Ions	Nitrogen, Ammonia	7664-41-7	mg/L	0.053	92.1	24.63289	15.05000	15.46904	33.79574	30	SMCL	0.00	3.07	0.82	0.50	0.52	1.13	1.1 - 2.3	0.02	40.04	10.71	1.95	6.50	10.57
113	38	5	Other Ions	Nitrogen, Nitrate-Nitrite	none-3	mg/L	0.195	3.15	0.08044	0.00000	-0.00779	0.16868	10	MCL	0.02	0.32	0.01	0.00	0.00	0.02	10	0.02	0.32	0.01	0.00	0.00	0.02
114	38	30	Other Ions	Sulfate	14808-79-8	mg/L	13.6	8570	702.87778	320.12500	134.71940	1271.03616	250	SMCL	0.05	34.28	2.81	1.28	0.54	5.08	250	0.05	34.28	2.81	1.28	0.54	5.08
115	38	21	Other Ions	Sulfide	18496-25-8	mg/L	0.594	55.5	4.98283	1.26500	1.72051	8.24516		NONE													
116	38	30	COD	Chemical Oxygen Demand	none-2	mg/L	50.1	4390	825.88333	559.00000	500.78123	1150.98544		NONE													
117	38	30	pH	pH	none-8	S.U.	6.6	7.94	7.147556	7.14	7.039762	7.25533	6.5-8.5	SMCL	0.98	0.93					6.5 - 9.0	0.98	0.88				
118	38	30	TDS	Total Dissolved Solids	none-4	mg/L	634	7040	3055.48889	2945.00000	2562.32622	3548.65156	500	SMCL	1.27	14.08	6.11	5.89	5.12	7.10	500	1.27	14.08	6.11	5.89	5.12	7.10
119	38	30	Total Alkalinity	Alkalinity, Total	none-1	mg/L	145	3750	1642.47778	1680.00000	1399.56273	1885.39283		NONE													

Note A - For the purpose of calculating descriptive statistics in this table, non-detects at the method detection limit were set equal to zero and lab estimated values were included in the calculation. Because of this, minimum and median concentrations showing zero concentration value cannot be interpreted as "not present," but should be interpreted as "concentration is less than the method detection limit."

Note B - Non-detects below the method detection limit are not included in the minimum detected columns.

Note C - Methylene chloride is a common lab contaminant. Sufficient levels were found in trip blanks for two samples to cast doubt on the validity of the methylene chloride results for those samples. As a result, the suspect sample results were removed from the data set used to produce this summary.

Note D - For pH, column 15 is calculated by dividing the minimum pH standard of 6.5 by the minimum pH measured at any one landfill. Column 16 is calculated by taking the maximum pH measured and dividing it by the maximum pH standard of 8.5 for HB standards and 9.0 for SWQ standards.

Note E - MCL = US EPA Maximum Contaminant Level or Action Level; SMCL = US EPA Secondary MCL; VAP = Ohio EPA, Voluntary Action Program Generic Unrestricted Potable Use Standard; LTHA = US EPA Lifetime Threshold Health Advisory

Note F - The MCL for xylenes is 10,000 ug/L. O-xylene was analyzed seperately from m-,p-xylene, so the MCL applies to the sum of the two results for xylenes. However, since the results were far below the standard, the application of the standard individually to o-xylene and m-,p-xylene makes no difference for the purposes of this discussion.

Note G - Multiple samples were taken from seven C&DD landfills. To prevent those seven landfills from skewing the results for mean, median, and confidence limits, the results for each parameter at each landfill that had multiple samples were averaged and used as a single data point in the calculations.

Attachment 12 – Parameters Analyzed but not Detected above the Method Detection Limit

Table 21. The 180 parameters analyzed but not detected above the method detection limit during the 2007 C&DD leachate sampling event

Parameter	Parameter	Parameter	Parameter
Silver, dissolved	4-Bromophenyl phenyl ether	cis-1,3-Dichloropropene	Merphos (and Merphos oxone)
Tin, dissolved	4-Chloro-3-methylphenol	Coumaphos	Methacrylonitrile
Silver, total	4-Chloroaniline	Dalapon	Methapyrilene
Tin, total	4-Chlorophenyl phenyl ether	delta-BHC	Methyl methacrylate
0,0,0-Triethylphosphorothioate	4-Nitroaniline	Demeton-O	Methyl methanesulfonate
1,1,1,2-Tetrachloroethane	4-Nitrophenol	Demeton-S	Mevinphos
1,1,2,2-Tetrachloroethane	5-Nitro-o-toluidine	Diallate	Monocrotophos
1,1,2-Trichloroethane	7,12-Dimethylbenz(a)anthracene	Diazinon	Naled
1,1-Dichloroethene	Acenaphthylene	Dibenz(a,h)anthracene	Nitrobenzene
1,1-Dichloropropene	Acetonitrile	Dibromomethane	N-Nitrosodiethylamine
1,2,3-Trichlorobenzene	Acrolein	Dichlorvos (DDVP)	N-Nitrosodimethylamine
1,2,3-Trichloropropane	Acrylonitrile	Diethyl phthalate	N-Nitrosodi-N-Butylamine
1,2,4,5-Tetrachlorobenzene	Aldrin	Dimethoate	N-Nitrosodiphenylamine
1,2,4-Trichlorobenzene	Allyl Chloride (3-Chloro-1-Propene)	Dimethyl phthalate	N-Nitrosodipropylamine
1,2-Dibromo-3-chloropropane	alpha-BHC	Di-N-Butylphthalate	N-Nitrosomethylethylamine
1,2-Dibromoethane	Anthracene	Di-n-octyl phthalate	N-Nitrosopiperidine
1,3-Dichlorobenzene	Aroclor-1016	Dinoseb	N-Nitrosopyrrolidine
1,3-Dichloropropane	Aroclor-1221	Diphenylamine	o-Toluidine
1,3-Dinitrobenzene	Aroclor-1232	Endosulfan I	Parathion Ethyl
1,4-Naphthoquinone	Aroclor-1242	Endosulfan II	Parathion Methyl
1-Naphthylamine	Aroclor-1248	Endosulfan sulfate	Parathion, ethyl
2,2-Dichloropropane	Aroclor-1254	Endrin	Parathion, methyl
2,3,4,6-Tetrachlorophenol	Aroclor-1260	Endrin aldehyde	p-Dimethylaminoazo benzene
2,4,5-T	Azinphos-Methyl (Guthion)	Endrin ketone	Pentachlorobenzene
2,4,5-Trichlorophenol	Benzo(a)anthracene	Ethoprop	Pentachloronitrobenzene
2,4,6-Trichlorophenol	Benzo(a)pyrene	Ethyl Methacrylate	Phenacetin
2,4-Dichlorophenol	Benzo(b)fluoranthene	Ethyl methanesulfonate	Phenanthrene
2,4-Dinitrophenol	Benzo(g,h,i)Perylene	Famphur	Phorate
2,4-Dinitrotoluene	Benzo(k)fluoranthene	Fensulfothion	p-Phenylenediamine
2,6-Dichlorophenol	beta-BHC	Fenthion	Pronamide
2,6-Dinitrotoluene	Bis(2-Chloroethyl)ether	Fluoranthene	Propionitrile
2-Acetylaminofluorene	bis(2-Chloroisopropyl)ether	Fluorene	Pyrene
2-Chloronaphthalene	Bolstar (Sulprofos)	gamma-BHC (Lindane)	Ronnel
2-Chlorophenol	Bromochloromethane	Hexachlorobenzene	Safrole
2-Methylnaphthalene	Bromodichloromethane	Hexachlorobutadiene	Stirofos (Tetrachlorovinphos)
2-Naphthylamine	Bromoform	Hexachlorocyclopentadiene	Sulfotepp
2-Nitroaniline	Bromomethane	Hexachloroethane	sym-Trinitrobenzene
2-Nitrophenol	Butyl benzyl phthalate	Hexachloropropene	TEPP
3,3'-Dichlorobenzidine	Carbon tetrachloride	Indeno(1,2,3-cd)pyrene	Thionazin
3,3'-Dimethylbenzidine	Chlorobenzilate	Iodomethane	Tokuthion (Prothiofos)
3-Methylcholanthrene	Chlorodibromomethane	Isodrin	Toxaphene
3-Nitroaniline	Chloromethane	Isophorone	trans-1,3-Dichloropropene
4,4'-DDD	Chloroprene	Isosafrole	trans-1,4-Dichloro-2-Butene
4,6-Dinitro-2-methylphenol	Chlorpyrifos (Dursban)	Kepone	Trichloronate
4-Aminobiphenyl	Chrysene	Malathion	Vinyl acetate

Attachment 13 – Analysis of the effect of adjusting the analytical results of seven landfills that had multiple samples

The adjustment that was made was to average the concentration values for each parameter for each of the seven landfills that had more than one sample analyzed. This resulted in each of the seven landfills having only one concentration value for each parameter instead of two or three values. Some objections to this adjustment may be raised. These include, possibly having the effect of diluting the representation of the concentrations of those parameters for those landfills in the calculation of the overall mean across all landfills, lowering the upper confidence limit since the standard error of the mean could possibly be reduced because the influence of the higher maximum values is muted for those landfills, and increasing the lower confidence limit because the standard error of the mean might be reduced because the muted influence of the lowest values for those landfills.

However, for this analysis, the minimum and maximum concentrations as measured for each parameter across all of the landfills are also compared against the health based standards and the surface water quality standards. Doing this provides the appropriate information for this report and mitigates the possibly muted results that may have occurred for a few parameters, while at the same time providing the assurance that the seven landfills that had multiple samples analyzed did not skew the results.

To verify this, comparisons against the health based standards and the surface water quality standards were conducted using two data sets. One data set included the adjusted concentrations for the seven landfills that had multiple sample analysis results along with all of the data for the remaining 23 landfills. The other data set was not adjusted.

For the health based standards comparison, three parameters (iron, methylene chloride, and sulfate) had one of the comparisons with one descriptive statistic that changed status due to the adjustment.

However, in all three cases, the parameters were already included in the list of parameters that exceeded the health based standards because one or more of the other descriptive statistics exceeded the health based standards (see Table 22).

For the surface water quality standards comparisons, 10 parameters (copper, iron, methylene chloride, phosphorus, selenium, sulfate, thallium, vanadium, vinyl chloride, zinc) had one of the comparisons with one of the descriptive statistics that changed status due to the adjustment.

However, in all 10 cases, the parameters were already included in the list of parameters that exceeded the surface water quality standards because one or more of the other descriptive statistics exceeded the surface water quality standards (see Table 23).

This demonstrates that the adjustment did not change the outcome of the determinations for which parameters exceeded health based standards or surface water quality standards, while at the same time providing assurance that the analytical results from the seven landfills that had multiple samples did not skew the determinations.

Table 22. Differences between comparisons of Ohio C&DD leachate descriptive statistics and health based standards for individual and adjusted analytical results*

Parameter Information				Descr			Health Based Standards Comparison									
Parameter Category	Parameter	CAS RN	Units	No. of Facilities with Detections	HB Standard	Standard Origin	HB Standard/Minimum	HB Standard/Maximum	HB Standard/Individual Mean	HB Standard/Adjusted Mean	HB Standard/Individual Median	HB Standard/Adjusted Median	HB Standard/Individual 95% LCL	HB Standard/Adjusted 95% LCL	HB Standard/Individual 95% UCL	HB Standard/Adjusted 95% UCL
Trace elements, totals	Iron, Total	7439-89-6	mg/L	29	0.3	SMCL	0.516667	2323.333	112.032	79.14167	28.45	30.90083	***-11.886***	***15.989***	235.9503	142.294
Chlorinated solvents	Methylene chloride	75-09-2	ug/L	7	5	MCL	0.1176	16.44	0.534156	0.384386	0	0	-0.391438	-0.218345	***1.4597***	***0.9871***
Other ions	Sulfate	14808-79-8	mg/L	30	250	SMCL	0.0544	34.28	2.619568	2.811511	1.198	1.2805	***0.7945***	***0.5389***	4.444671	5.084145

Table 23. Differences between comparisons of Ohio C&DD leachate descriptive statistics and surface water quality standards for individual and adjusted analytical results*

Parameter Information				Descr		Surface Water Standards Comparison									
Parameter Category	Parameter	CAS RN	Units	No. of Facilities with Detections	SWQ Standard	SWQ Standard/Minimum	SWQ Standard/Maximum	SWQ Standard/Individual Mean	SWQ Standard/Adjusted Mean	SWQ Standard/Individual Median	SWQ Standard/Adjusted Median	SWQ Standard/Individual 95% LCL	SWQ Standard/Adjusted 95% LCL	SWQ Standard/Individual 95% UCL	SWQ Standard/Adjusted 95% UCL
Trace elements, totals	Copper, Total	7440-50-8	mg/L	15	0.022	0.250455	8.272727	***1.0066***	***0.9141***	0.125227	0.070455	0.32027	0.24288	1.693008	1.585312
Trace elements, totals	Iron, Total	7439-89-6	mg/L	29	0.3	0.516667	2323.333	112.032	79.14167	28.45	30.90083	***-11.886***	***15.989***	235.9503	142.294
Chlorinated solvents	Methylene chloride	75-09-2	ug/L	7	5	0.1176	16.44	0.534156	0.384386	0	0	-0.391438	-0.218345	***1.4597***	***0.9871***
Trace elements, totals	Phosphorus	7723-14-0	mg/L	20	1	0.155	22.8	***1.2862***	***0.9209***	0.568	0.5335	0.077855	0.325921	2.494566	1.515946
Trace elements, totals	Selenium, Total	7782-49-2	mg/L	6	0.005	1.154	6.22	0.360947	0.245378	0	0	-0.002666	0.037141	***0.7246***	***0.4536***
Other ions	Sulfate	14808-79-8	mg/L	30	250	0.0544	34.28	2.619568	2.811511	1.198	1.2805	***0.7945***	***0.5389***	4.444671	5.084145
Heavy metals, totals	Thallium, Total	7440-28-0	mg/L	16	0.0012	0.054417	5.583333	0.419447	0.305157	0.061583	0.047979	0.107961	0.096731	***0.7309***	***0.5136***
Light metals, totals	Vanadium, Total	7440-62-2	mg/L	10	0.044	0.119091	6.477273	0.363056	0.283292	0	0	-0.021073	0.022482	***0.7472***	***0.5441***
Chlorinated solvents	Vinyl chloride	75-01-4	ug/L	13	0.48	0.804167	14.75	***0.9343***	***1.1046***	0	0	0.105025	0.057213	1.763506	2.152046
Trace elements, totals	Zinc, Total	7440-66-6	mg/L	21	0.28	0.018607	11.35714	0.670533	0.475089	0.046607	0.046607	0.00276	0.051844	***1.3383***	***0.8983***

*Dark highlight exceeds the standard. Light highlight is 70% to 100% of the standard. Bold Italic indicates numbers that changed the status of the comparison for that descriptive statistic due to the adjustment.

PLANNING COMMISSION NOVEMBER 7, 2016 Page 1584

Susan Lee

From: Michael Franznick [mfranznick@gmail.com]
Sent: Friday, October 31, 2014 3:25 PM
To: Susan Lee
Subject: Monofill

The site for the proposed monofill on the Glenn is clearly wrong for the purpose.

The water table has been punctured by quarry operations, so any decision based on a barrier under a mixed waste dump is invalid. Rain will come, floods will occur, and the containment waste will mix with the water table.

Further, no reasonable solution for waste containment during sustained 70 mph winds exists, rendering the proposal invalid. Low fences will not work.

Finally, self-policing of the materials coming in to the site will be ineffective. The company has a record of malfeasance and disregard for the law.

Please don't allow this dump to be part if the valley's heritage, nor yours.

Respectfully,

Michael Franznick
3500 S Sky Ranch Loop
Palmer, AK 99644

Susan Lee

From: landen lovell [lovell.landen@live.com]
Sent: Friday, October 31, 2014 1:09 PM
To: Susan Lee
Subject: Borough Monofill

I have worked for crs for 5 years now and been with CEI since 2005. I know that there is no hazardous material and no household trash gets sent out. I'm in support of the Monofill in Palmer. I am a valley resident and my livelihood is supported by CRS. They are a good company and will bring new jobs to the valley.

Landen Lovell Crs

Susan Lee

From: Tracy Moffitt [tamoffitt78@gmail.com]
Sent: Friday, October 31, 2014 11:01 AM
To: Susan Lee
Subject: Central Monofill permit application

Hello again,

I am a long time valley resident(55 years) and I very much support Central Monofill Services in their quest to bring a Construction and Demolition Monofill to the Mat Su Valley. I very much believe in recycling when possible and I am sickened to see what get crushed and covered at our local landfill. Please approve this permit. I see this Monofill along with Central Recyclings sorting facility as another way to divert and recover materials that would otherwise be lost into our Central Landfill. Thanks, Tracy Moffitt 355-3384

Susan Lee

From: Kathie Nelson [kathien@mtaonline.net]
Sent: Friday, October 31, 2014 10:09 AM
To: Susan Lee
Subject: Central Monofill Services Application

I am adamantly against Central Monofill Services application to operate a dump of any type at the purposed site in Matsu. There is too much at risk for our rivers and wells to gamble that nothing would affect either.

Kathie Nelson
Homeowner
Mountain View Estates Subdivision
Sent from my iPad

Susan Lee

From: Lorene Lynn [lorene.lynn.uaf@gmail.com]
Sent: Friday, October 31, 2014 9:11 AM
To: Susan Lee
Subject: Monofill permit: Palmer

To Whom It May Concern,

This is to address the monofill permit application in South Palmer. While it might be in the interest of the Valley to allow such types of land use, this location is far from ideal. My first concern is the strong winds experienced in Palmer. Even with a wind catchment fence, some plastics and small particulates will not be caught. This could be especially damaging if something like asbestos or other material that is harmful to human health is dumped and picked up by the wind. My second comment addresses the water quality issues. Considering the problems the gravel pit had with locating the depth of the groundwater and that the soils in that area are highly permeable, it seems irresponsible to allow an un-lined landfill of any sort in such close proximity to drinking wells.

It seems like this type of landfill would be best located in an area with less wind and without the groundwater concerns.

Sincerely,
Lorene Lynn
10366 N Wolverine Rd
Palmer, AK 99645

Susan Lee

From: Palmer Toxic Dumping [palmertoxicdumping@mtaonline.net]
Sent: Friday, October 31, 2014 10:16 AM
To: Susan Lee; pjpalmer@mtaonline.net
Subject: Comment Re: CMS Dump

Hi Mr Johnson, I am forwarding your e-mail to Susan Lee at the borough, but I would like ask you to e-mail her directly so that it's legitimacy will not be in question due to having been sent the palmertoxicdumping.org e-mail address. Thanks much!

Name:	Paul Johnson
E-mail:	pjpalmer@mtaonline.net
Phone	907 745 2710
Message:	Our family built our home at 2115 Killarney in the early 70s. we moved from Anchorage to escape the big city life. Our son attended Palmer schools. Forty years of our lives have been spent at this location. In my working years, paying taxes I never imagines a toxic waste dump being built within 1000 yards of my property. This is what CMS wants us to do. We have enjoyed the finest water from our wells all these years and now a proposal to contaminate our water supply with as the present application reads, primarily non toxic waste material. I don't think so and I am sure our neighbors feel the same way. We let the gravel pits in and find out it was a big mistake Lets not let this happen for Gods sake. Lake Wilder should be stocked with fish and set aside as a pristine park further enhancing the beauty of the valley. any questions please contact me.

Susan Lee

From: Cynthia Juettner [juettner@mtaonline.net]
Sent: Friday, October 31, 2014 11:25 AM
To: Susan Lee
Subject: Please support the Central Monofill Services Conditional Use Permit

To whom it may concern:
I am writing in support of Central Recycling Services' proposed monofill near Palmer.

I have seen various news stories about the project in local newspapers and on the local television news. I have friends who live near the proposed monofill site, and I was concerned about what I was seeing in the articles. I contacted Shane Durand directly, and he agreed to give my family a tour of the monofill site. He showed us where the dump site would be and how the demolition debris would be buried.

He also explained that that Central Recycling Services is locally owned by long time Alaskans, and he was born and raised in Southcentral Alaska. His company employs many folks that call the Mat-Su Borough home.

This a good project that supports Alaskan business and local Alaskan workers. Central Recycling Services should be allowed to develop this monofill.

Sincerely,
Cynthia Juettner
19424 Middleton Loop
Eagle River, Alaska

Sent from my iPhone

Susan Lee

From: pjpalmer@mtaonline.net
Sent: Friday, October 31, 2014 12:31 PM
To: Susan Lee
Subject: Fwd: Comment Re: CMS Dump

this is our take on the proposed toxic waste dump being considered at mile 38.3 of the Glen Highway. Canoe Lake sub-division and sourounding lakes will certainly be damaged. We own lot 1 and lot 2 canoe lake subdivision. Do not let this happen.

--- Begin forwarded message:

From: Palmer Toxic Dumping <palmertoxicdumping@mtaonline.net>
To: slee@matsugov.us, pjpalmer@mtaonline.net
Subject: Comment Re: CMS Dump
Date: Fri, 31 Oct 2014 10:16:22 -0800

Hi Mr Johnson, I am forwarding your e-mail to Susan Lee at the borough, but I would like ask you to e-mail her directly so that it's legitimacy will not be in question due to having been sent the palmertoxicdumping.org e-mail address. Thanks much!

Name:	Paul Johnson
E-mail:	pjpalmer@mtaonline.net
Phone	907 745 2710
Message:	Our family built our home at 2115 Killarney in the early 70s. we moved from Anchorage to escape the big city life. Our son attended Palmer schools. Forty years of our lives have been spent at this location. In my working years, paying taxes I never imagines a toxic waste dump being built within 1000 yards of my property. This is what CMS wants us to do. We have enjoyed the finest water from our wells all these years and now a proposal to contaminate our water supply with as the present application reads, primarily non toxic waste material. I don't think so and I am sure our neighbors feel the same way. We let the gravel pits in and find out it was a big mistake Lets not let this happen for Gods sake. Lake Wilder should be stocked with fish and set aside as a pristine park further enhancing the beauty of the valley. any questions please contact me.

Susan Lee

From: Vickie Lee Fenster on behalf of Permit Center
Sent: Friday, October 31, 2014 12:07 PM
To: Susan Lee
Subject: FW: Central Monofill Services Conditional use Permit Comments
Attachments: Central Monofill services HOA comments001.pdf

From: Alaska Thermal Imaging [mailto:akthermalimaging@yahoo.com]
Sent: Thursday, October 30, 2014 5:01 PM
To: Permit Center
Subject: Fw: Central Monofill Services Conditional use Permit Comments

Hi Susan

Please find Mt. View Estates HOA comments concerning the Conditional use permit for the operation of a monofill for CMS attached to this email.
Thank you for considering our comments

On a side note I have never understood how the initial conditional use permitting for this property with the previous owner was not binding by law regardless of transfer of deed.

Thank you
Emmett Leffel
MT View HOA President
(907) 746-4332

cc; Matthew Beck

Matanuska-Susitna Borough
Planning and Land Use Department
Development services Division
350 East Dahlia Avenue Palmer Ak 99645
Phone (907) 861-7822 Fax (907) 861-7876
Email:

Memorandum

Date: October 2, 2014
From: Susan Lee, Planner 11
Subject: REQUEST FOR REVIEW AND COMMENTS
Project: Application for a conditional use permit for the operation of a monofil
Parcel ID: Township 17 North, Range 2 East, Sections 18 & 19, Seward Meridian
Applicant: Central Monofill Services

Thank you for receiving and considering our comments concerning these important issues. It is with great concern that we as a Home Owners Association respond to this memorandum. Our earlier testimony on these issues pertaining to this applicant and conditional use permit has been recorded and heard by the Borough concerning this Applicant's failure to meet reasonable expectations of the Borough and its residence. This applicant has proven from day one that they are not concerned with protecting our water quality, land, air or even following basic permit guidelines and requirements. The gross violations of their previous conditional use permit and blatant degradation to surrounding environments and water quality has proven their complete disregard for community and our environment. Mt. View Estates HOA's primary concern is protecting our quality of life, property value and our water supply. With a community well serving our entire subdivision connected to the same aquifer that has been punctured on this property, we strongly urge the Planning Division, the Borough Manager and Assembly to reject this permit application for the operation of a monofil.

Respectfully

10-30-14

Emmett Leffel
Mt. View HOA President
1901 S. Kaye Marie Drive
Palmer AK 99645
(907) 746-4233

Susan Lee

From: Matthew Moffitt [moffitt34@gmail.com]
Sent: Friday, October 31, 2014 12:37 PM
To: Susan Lee
Subject: Proposed Monofill in Palmer

To whom it may concern,

My name is Matthew Moffitt and I support the Monofill being opened up in Palmer. I am an employee of Central Recycling Services (CRS) but more importantly I am a Palmer resident. I was born and raised in Palmer. In fact my family on both sides (Moffitt's and Kincaid's) goes back several generations; Moffitt's having a farm from the 1930's to today. I guess what I am trying to say is I am passionate about Palmer. I love my city and I would never be okay with any company bringing toxic materials in. That is not what CRS does; it never has and never will.

Truthfully these negative assumptions about CRS could not be further from the truth. CRS is all about going green, that is its entire identity, to put it plainly; without recycling the company would not even exist, all revenue is based on it. The company is known in the state as a forerunner in recycling and continues to find new ways to use materials that used to just fill up landfills. Case and point would be glass; CRS is the only major recycler of glass in Alaska. Not to mention they have the only C&D shredder in the state, which means thousands of tons of debris that would be sent to a landfill yearly are instead recycled and sold both domestically and internationally. This helps the economy of Alaska and helps keep our state beautiful. I guess all that being said, what bothers me most is the assumption that this is some big Anchorage corporation that doesn't give a care about small little Palmer.

The manager of CRS is a lifetime Palmer resident. The company employs a large number of valley residents. Off the top of my head I can count at least nine employees who work at CRS who also live in the Palmer/Wasilla area. This isn't some evil corporation from Anchorage that has no valley interests at heart. This company has more than half of its employees from the valley. I happen to be one of those employees and I can honestly say that I am proud to work for a recycling company that is making a difference.

I guess in the end, all I am trying to say is if we as a society deny the necessary operations to increase recycling then we should stop complaining when people don't recycle. CRS is a company attempting to make a difference, be it glass, C&D, concrete, asphalt, or metal; it is all recycling and all making a positive impact on the economy and environment. CRS is not a huge corporation that doesn't care, they will help recycling in the valley, they employee valley residents, and they will help the overall economy of the valley. I believe in recycling, I believe in going green, and I believe in CRS and their mission to help the environment.

-Matthew Moffitt

Susan Lee

From: Matthew Moffitt [moffitt34@gmail.com]
Sent: Friday, October 31, 2014 1:22 PM
To: Susan Lee
Subject: Proposed Palmer Monofill

To whom it may concern,

My name is Matthew Moffitt and I support the Monofill being opened up in Palmer. I am an employee of Central Recycling Services (CRS) but more importantly I am a Palmer resident. I was born and raised in Palmer. In fact my family on both sides (Moffitt's and Kincaid's) goes back several generations; Moffitt's having a farm from the 1930's to today. I guess what I am trying to say is I am passionate about Palmer. I love my city and I would never be okay with any company bringing toxic materials in. That is not what CRS does; it never has and never will.

Truthfully these negative assumptions about CRS could not be further from the truth. CRS is all about going green, that is its entire identity, to put it plainly; without recycling the company would not even exist, all revenue is based on it. The company is known in the state as a forerunner in recycling and continues to find new ways to use materials that used to just fill up landfills. Case and point would be glass; CRS is the only major recycler of glass in Alaska. Not to mention they have the only C&D shredder in the state, which means thousands of tons of debris that would be sent to a landfill yearly are instead recycled and sold both domestically and internationally. This helps the economy of Alaska and helps keep our state beautiful. I guess all that being said, what bothers me most is the assumption that this is some big Anchorage corporation that doesn't give a care about small little Palmer.

The manager of CRS is a lifetime Palmer resident. The company employs a large number of valley residents. Off the top of my head I can count at least nine employees who work at CRS who also live in the Palmer/Wasilla area. This isn't some evil corporation from Anchorage that has no valley interests at heart. This company has more than half of its employees from the valley. I happen to be one of those employees and I can honestly say that I am proud to work for a recycling company that is making a difference.

I guess in the end, all I am trying to say is if we as a society deny the necessary operations to increase recycling then we should stop complaining when people don't recycle. CRS is a company attempting to make a difference, be it glass, C&D, concrete, asphalt, or metal; it is all recycling and all making a positive impact on the economy and environment. CRS is not a huge corporation that doesn't care, they will help recycling in the valley, they employee valley residents, and they will help the overall economy of the valley. I believe in recycling, I believe in going green, and I believe in CRS and their mission to help the environment.

-Matthew Moffitt

Susan Lee

From: Caleb Moffitt [calebmoffitt34@gmail.com]
Sent: Friday, October 31, 2014 1:23 PM
To: Susan Lee
Subject: Fwd: Proposed Monofill

To the Mat-Su borough planning commission and Mat-Su Borough Staff:

I am a proud supporter of the CMS Proposed Monofill on the Glenn Highway. I was born and raised in the Matanuska Valley and am a lifelong Valley resident, my family has been in the Matanuska Valley since the late 1930's. I work for Central Recycling Services and I support the proposed monofill because of facts not feelings. It makes me sick to see the lies that have been said about CMS and Shane Durand. The main people in opposition of the proposed monofill have spread propaganda, mislead, and blatantly lied to the general public regarding this proposed monofill. The very premise of their opposition is a lie, "Palmer Toxic Dumping". If I was a member of the general public with no knowledge of the proposed monofill and I read this, I would be in immediate opposition. They use powerful words to incite an emotional response in people who would otherwise take no interest in the proposed monofill, which would be fine if it wasn't based on a lie. However, the truth is, this material comes from buildings and homes that are occupied by humans. The material that would be placed in the proposed monofill has undergone more screening, testing, and sorting than the material that goes into any other monofill in the State of Alaska. Any hazardous materials, including asbestos, have been removed from the waste stream and dealt with properly (this is not speculation but a fact because I have personally seen it done). This is not to say that any other monofill is doing anything wrong but to say that we are a recycling company first and foremost, we process all of the material that comes through our facility. CMS is not inventing new materials to put into a monofill, these are the same materials that go into the Mat-Su Borough's monofill and Alaska Demolition's monofill, with one differentiating fact, the material that would go into the proposed CMS monofill has been processed and sorted to ensure that all hazardous materials are properly dealt with!!!!!

Every load of material that is delivered to our recycling facility is delivered under the knowledge that we do not accept hazardous materials, this is clearly outlined in our credit application and on our website. When the load is dumped at our facility, it undergoes visual inspection by trained personnel with the following tier of importance: 1.) Does the load contain anything hazardous? 2.) What is recyclable? If the answer to the first question is not a definitive no, we put the load aside for further testing to ensure that it does not contain hazardous materials. If the load does contain hazardous material, it is cleaned up in accordance with all applicable rules and regulations. If we are sure the load contains nothing hazardous, then and only then will we pull the recyclable materials from the load. By the time any material leaves our facility it has been processed and sorted by multiple people and machines.

If you were to ask everyone in opposition to this proposed monofill the following question: Do you support recycling? I would be shocked if you were to hear a single "No" answer. Recycling and Reuse of materials is becoming more popular and necessary every day. The proposed monofill would allow for recycling in the Mat-Su valley on a level that is currently not attainable. We don't recycle materials by the pound, we recycle them by the ton and we do so without being subsidized by the government. It would allow for reusable materials to be sold in the valley at a competitive rate and it would also open the valley up for the recycling of Construction and Demolition debris at competitive prices. In my experience if it costs someone more to recycle than it does to dispose of a material, generally they are not going to recycle it. It is irresponsible not to support a company that is willing to recycle materials that are not currently being recycled, especially when it doesn't cost an extra cent in taxes!!!!

The truth is, we are a good company that is run by good men, one of those being Shane Durand. We do a job that most are unwilling to do and we do it extremely well. I have heard some people say that the employees working for this company are untrained, that is completely false and unverified, the employees here are highly trained and knowledgeable regarding recycling and identifying hazardous materials. The opposition to this proposed monofill is based entirely on fear, not facts. The facts clearly show that we are capable of running a recycling facility and a monofill.

One of the largest gatherings in the state of Alaska is located across the street from an active monofill. Alaska Demolition's monofill is right next to the Alaska State Fair. How many Alaska State Fairs have been ruined by the monofill next to it?

This is a case of a few neighbors, who can't even see the proposed monofill from their homes, doing and saying whatever it takes to garner an emotional response from people who would otherwise take no interest in the proposed monofill. The majority are misinformed, some of my friends and family have been placed on a list of people who opposed the proposed monofill, without their consent or knowledge. "Where emotions run high, logic runs low" (Unknown). Please look past the emotions and the lies, and do the logical thing, support this proposed monofill based on the facts. Thank you for your time.

Caleb Moffitt

Susan Lee

From: Art Carney [artc@mtaonline.net]
Sent: Friday, October 31, 2014 3:06 PM
To: Susan Lee
Subject: New Monofill Permit

Greetings, I'd like to recommend the monofill permit be issued to the Central Monofill services, Inc. I think we need more of them in the Mat-Su valley. Thank you, Art Carney, Wasilla, AK

Susan Lee

From: Susan Young [suzequ@gmail.com]
Sent: Friday, October 31, 2014 3:15 PM
To: Susan Lee
Subject: Construction landfill

Dear Planning Commission members,
Please don't allow the gravel pit off of Glenn Highway to become a construction dump site. I have a daughter, son-in-law, and three grandsons who live in a subdivision very near the gravel pit site. The new pit owners have been dumping materials at night and covering it up already without a permit. My daughters water has increased in sediment and poor quality. I fear for the health of many people in the area. If the owners of the pit are dumping illegally already, what makes us think that they would do it with safety for the area as their concern.

Thank you for your time.

Susan Young
5789 S. Hanson Lp.
Wasilla, AK 99623

Sent from my iPad

Susan Lee

From: Jesse Hronkin [jhronkin@hotmail.com]
Sent: Friday, October 31, 2014 3:23 PM
To: Susan Lee
Subject: Monofill

To Whom It May Concern,

I am writing to express my opposition to the proposed monofill site just across the Glenn Highway from my home. We have lived in the area for over 10 years and I am concerned about the potential environmental affects having such a site near my home could cause. I have 4 children and I feel having the monofill site nearby could also adversely affect their health should any unforeseen pollution occur. Needless to say our property values could also be negatively affected. I appreciate that we can comment on this proposal and hope that our concerns are heard.

Sincerely,

Jesse and Carrie Hronkin
3350 S. Sky Ranch Lp.
Palmer, AK 99645

Susan Lee

From: David Lewis [agdtom@gmail.com]
Sent: Friday, October 31, 2014 3:30 PM
To: Susan Lee
Subject: Regarding Central Monofill's conditional use permit application

Dear Susan Lee and Planning Commission Members,

As a homeowner and property owner located within 1 mile of the proposed monofill site I am strongly opposed to the approval of Central Monofill Service's application.

I strenuously urge you to reject Central Monofill's application for the following reasons:

For the well-being of the residents in close proximity to 2840 and 2560 S. Glenn Hwy. who may develop mesothelioma or other asbestos related diseases. Also, the well water consumed by the residents of this area may be polluted by contaminants originating from the monofill. Even the disposal companies with excellent integrity make errors in judgement that cause harm to their surrounding residential and other neighbors. The Central Monofill Services company has already been cited and fined. This demonstrates that the residents in close proximity to the monofill site cannot rely on Central Monofill Services to put their health and well-being needs first.

Adverse effects to one of the finest and most popular natural recreation areas in the valley, the Matanuska Greenbelt trail system with its multitude of lakes, makes the potential losses to Palmer too high of a risk to take.

The monofill site is a poor introduction to Palmer's scenic beauty. It will detract from residents' and visitors' enjoyment of Palmer-the historical landmarks, the Alaska State Fair, the numerous open air events held at the fairgrounds, etc.

The value of properties in close proximity will decline, with properties falling into decay and creating a location known for its depressed economic status that families reject, attracting property abandonment and irresponsible property ownership. Most responsible property owners will not choose to live next to a dump. This will exponentially grow the eyesore of the dump and the view that first confronts each traveler to Palmer. What might people of the future see as they enter the valley, stop at the new Visitors' Center and proceed to Palmer if you approve this conditional use application? Might the approval of this application lead to weightier issues and problems to be solved by the Matanuska Borough at some point in the future?

Thank You for Your Consideration!

Respectfully Submitted by a citizen who believes Palmer is a stunning and very special place live!
Mrs. Kristin Lewis
10360 East Sherrod Drive, Palmer, AK 99645
Grand View Blk #2

Susan Lee

From: Terry and Diane [terndi@gmail.com]
Sent: Friday, October 31, 2014 3:43 PM
To: Susan Lee
Subject: Public Comment: Central Monofill Services Conditional Use Permit Application

Diane Warta
1021 S Rebecca Drive, Palmer
Lot 1, Block 7, Pioneer Meadows Phase 3

My family and I live in an area surrounded by majestic mountains, well-maintained neighborhoods, and pits left by years of gravel mining. It is our desire that the land which was stripped with the gravel mining be restored. This restoration must be done safely and responsibly. It is not clear that the proposed monofill dump site will fulfill these requirements..

Of utmost importance is the protection of our water supply and aquifer. The gravel pit has open ground water, a punctured aquifer, and by the nature of a gravel pit is porous ground. In addition, it is surrounded by neighborhoods which obtain their drinking water from wells and recreational lakes. Only a few miles south of the proposed dump are wetlands which are a critical component of salmon habitat. The Flint Hill Refinery contaminated well water for miles surrounding it and we must insure this does not happen here.

In the Lower 48, monofills have been established in open mine pits. Safety precautions for these monofills include installation of a bottom liner systems, maintaining individual cells, a storm water drainage systems, and leachate collection systems used to treat ground water that comes in contact with waste material. Are these safety precautions included in the permit application? If these safety precautions fail, groundwater pollution is much more expensive to clean up than surface water pollution. Therefore, catastrophic insurance should be required. In addition, an independent monitoring system should be in place.

Strong winds prevail in our glacial valley. Any light weight material which is not secured will be blown downwind, littering our shrubs, trees, and wetlands. This effect is increased in the winter months when the winds are stronger and the cover material is frozen down. We don't want our neighborhoods to be an unsightly mess.

Additional concerns include increased truck traffic on a dangerous corridor entering our town, an ugly dumping ground visible from this same road, potentially dangerous fumes from the breakdown of gypsum in the drywall, and unpleasant smells pervading our neighborhoods.

In light of these concerns, the conditional use permit for Central Monofill services should be denied.

Susan Lee

From: Nathan kruk [nathan@mdjunk.com]
Sent: Friday, October 31, 2014 3:58 PM
To: Susan Lee
Subject: Support of the Palmer Monofill

To whom it may concern,

My name is Nathan Kruk and I fully support the Palmer Monofill. I am originally from Maryland, a state at the forefront of recycling, I grew up in the waste and recycling industry. I've dealt with most commodities of recycling from electronic, metal, plastic, cardboard, paper, x-ray, wood, sheet rock, medical the list goes on. As much as we wish to recycle 100% of everything. We have to face reality and the facts of life. We as humans will always generate waste. However it is our responsibility to reduce, reuse, recycle and dispose of our waste in a responsible manner. Monofills have been proven time and time again that they are a better source for inert debris than a landfill. It's a shame a local Alaskan company trying to do good and give back to the community is instead being relentlessly attacked and bullied. I am PROUD to say I work for Central Recycling Services, a company that gives back to their employees, gives back to their community and truly cares about the environment. Show the world that Alaska cares about the environment & Mother Nature. Please pass the Monofill.

With much hope,

Nathan Kruk

Susan Lee

From: Sheldon Air Service [sheldonair@mtaonline.net]
Sent: Friday, October 31, 2014 4:25 PM
To: Susan Lee
Subject: NO DUMP at Canoe Lake!

Dear Susan:

We wanted our opinion to be known that we totally oppose the central monofill (cms) permit for a private dump at mile 38.3 on the Glenn Highway.
The location is completely unexceptable for many reasons, first and foremost being that all the people who live there do not want a dump!
Find somewhere else away from the community for the dump, please!

Holly and David Lee
(907) 232-4063

Susan Lee

From: stephb@mtaonline.net
Sent: Friday, October 31, 2014 4:38 PM
To: Susan Lee
Subject: No to Central Monofill Services request for a Conditional Use Permit

Dear Mat-Su Borough Assembly Members,

As a resident on the bluff and with a well, within Sky Ranch Subdivision, off of Outer Springer Loop I am against the Central Monofill Services' request for a Conditional Use Permit to open a monofill near my residence.

The leaching of chemicals and other pollutants may contaminate the water supply of the same aquifer that feeds my well. Debris will blow and pollute the area. The company has a history in Anchorage of not following the rules.

Please do not allow Central Monofill Services to open a monofill near my home.

Thank you,

Stephanie Ballard

3291 South Lakeshore Loop

Palmer, AK 99645

Susan Lee

From: Alaska Thermal Imaging [akthermalimaging@yahoo.com]
Sent: Friday, October 31, 2014 4:43 PM
To: Susan Lee
Cc: Permit Center
Subject: Comments for Permit for Central Monofill Services
Attachments: October 31.docx

Susan Lee

Please find my attached email to voice my concern for wishing to have the permit for Central Monofill Services *Denied.*

Thank you
DayLa Leffel

October 31, 2014

To: Matanuska-Susitna Borough, Planning and Land Use Department
Development Services Division

Attn: Susan Lee, Planner II Email:slee@matsugov.us

Response for Comments

Project: Application for a conditional use permit for the operation of a monofil

Parcel ID: Township 17 North, Range 2 East, Sections 18 & 19, Seward Meridian

Applicant: Central Monofill Services

As a resident of Palmer, a lifelong Alaskan, a homeowner, and a mother I wish to voice my concern and oppose the permit of a monofill at location: Township 17 North, Range 2 East, Sections 18 & 19, Seward Meridian. My water source is fed by the aquifer under this proposed site, which has already been documented to have been punctured by the previous owners. In NO way is this a justified or acceptable calculated risk of potential contamination of the water that my family drinks everyday and feeds my gardens in the summer to only then be consumed by us. We must protect our water source today and for the future of our children. I believe that there is no need to have a monofill dump anywhere within a residential location. There is beautiful water recreation area that sits right next door that must be protected also for future generations. Once the damage is done it is nearly impossible to correct so the only thing we can do is not allow the potential contamination to occur to begin with. Please consider a denial in this permit process and demand that Central Monofill Services finds an acceptable location to conduct this monofill elsewhere.

DayLa Leffel
PO Box 2674
Palmer, Alaska 99645

Cc: PermitCenter@matsugov.net

Susan Lee

From: Carol Giese [akacrl@aol.com]
Sent: Friday, October 31, 2014 4:44 PM
To: Susan Lee
Subject: Central Monofill Services Conditional Use Permit Application

Dear Ms. Lee:

My husband and I live at 2135 S. Killarney Drive (Lot 3, Block 2, Canoe Lake) in Palmer. I have briefly reviewed the report regarding the potential impact on groundwater by the proposed monofill presented by Maddox & Associates of California in support of the application and those prepared by J. A. Munter Consulting of Alaska in review of the Maddox report. The reports are very disturbing. Maddox's report seems to have been prepared with inaccurate information reaching misleading conclusions. The possibility of contamination of our water is of utmost importance to us and I feel that if the applicant wishes the Borough to give consideration to its application, it should prepare its report with factual information. CMS, in submitting this misleading report, and in its prior action of beginning its dumping operation without a permit, is not presenting itself as a company that can be trusted. I would encourage the Borough to deny CMS's permit application.

Thank you.

Carol Giese

Susan Lee

From: Kolstad, Scott R [Scott.Kolstad@bp.com]
Sent: Friday, October 31, 2014 4:48 PM
To: Susan Lee
Subject: opposed to issuing Central Monofill Services Conditional Use Permit

Susan Lee,

I'm writing to express my opposition to the Matsu Borough issuing a conditional use permit to Central Monofill Services (CMS).

Residents in the area depend on private water wells, and there is too much risk of the Central Monofill Services operations at the site leading to ground water contamination. Storing primarily non-hazardous shredded residual nonrecyclable waste material from construction and demolition waste and regulated Asbestos Containing Material (RACM) and Non-RACM at a site so close to an aquifer that so many people depend on is irresponsible and unacceptable. The risk of water contamination is just too high and cannot be corrected if it occurs. The Matsu Borough would be taking on a huge liability by issuing the permit. If water contamination occurs the Borough will be found negligent.

As you may be aware, Federal studies in the lower 48 have linked monofills to suspected carcinogens and release of hydrogen sulfide gases.

Also, Given Central Monofill Services poor history of compliance with regulations and permitting requirements, the permit should be denied.

I am also concerned with blowing debris from the site as well as traffic disruptions on the Glenn Highway related to the CMS operations.

The residents of the Matsu Borough in the are sent a strong message to the Borough assembly once and have sent the same message again; please deny the permit for Central Monofill Services or any other company to use this site for operating a monofill!

Regards,

Scott Kolstad

Susan Lee

From: kathy jo johnson [canulkrs@gmail.com]
Sent: Friday, October 31, 2014 5:03 PM
To: Susan Lee
Subject: CMS permit

We oppose the CMS corporation re-application for operating a monofill/recycling facility at @~mi.38.5 of the Glen Hwy. One look at an aerial photograph of the area will say it all. The company wants to operate a C&D (construction and debris) pit right next to two open fresh water ponds (NOT industrial ponds). The water table in this area is fragile at best. All neighboring lakes will experience adverse effects from percolation and runoff from the 'dump' site. The lakes have already experienced major rising of waters and property loss due to activities directly associated with these ponds. Kepler Bradley, Canoe, Irene and Long Lake amongst others are at an all time high.

This area has a frequented State Park Recreational area that offers miles of lakes and trails that we desperately need to foster...a greenbelt in our ever growing Valley.

Please do not let this be ruined by allowing this facility free rein.

Mat Su Borough...the Heartland of Alaska. Let's keep it that way!

Susan Lee

From: Kathy Moffitt [kamoffitt@gmail.com]
Sent: Friday, October 31, 2014 5:05 PM
To: Susan Lee
Subject: Please Support the Central Monofil Services Conditional Permit

To Whom it may Concern:
I am familiar with the proposal from Central Monofill Services for a conditional permit to open a facility off the Glenn Highway. I believe in responsible disposal of waste products. Central Recycling Services (CRS) has an operational facility in Anchorage. Their proposal would monofill residual material from that facility and backhaul recyclable waste from the valley. I support this plan.

A conditional permit should be granted based on facts coupled with the required conditions to support responsible disposal. We currently have a company operating a monofill in the Valley and I believe an established business establishing a means to add additional opportunities to recycle would be Valley asset. I recognize that as long as humans generate waste responsible disposal is a necessary part of living in a community. Thank you for your time.

Kathy Moffitt
Cell: 907 355-2993

Susan Lee

From: Natalia Sahlstrom [heritagemedicine@gmail.com]
Sent: Friday, October 31, 2014 5:25 PM
To: Susan Lee
Subject: Fwd: Palmer Dump

From: Natalia Sahlstrom <nsahlstrom@gmail.com>
Subject: Palmer Dump
Date: October 31, 2014 5:23:02 PM AKDT
To: slee@matsu.gov.us

To Whom It May Concern:

I am writing in the hopes that my voice will be heard on a issue of tremendous importance to me, my family, my neighbors and my community. The proposed dump site for Central Monofill Services is unacceptable on many levels.

1) The Proximity of potentially hazardous waste to an already exposed aquifer is a major health and safety concern for every household whose wells are fed by said aquifer. No one can argue that clean water is a basic human necessity and CMS has not, and I believe cannot, adequately address this very real threat.

2) This dump is likely to have a negative impact on the environment as it gradually pollutes the habitat of migrating birds and other animals.

3) Property values will decrease. Let's be honest. No one likes trash.

It is our privilege to live in such a pristine and breathtaking place, and we can decide to keep it that way. Palmer needs to lead the way in the Valley through proactive planning. The location of this dump will destroy the beauty and appeal of our lovely town. I urge all involved to consider a more appropriate location for CMS operations.

Sincerely,

Natalia Sahlstrom

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Susan Lee

From: Johnnie Davis [jldavis@mtaonline.net]
Sent: Friday, October 31, 2014 6:28 PM
To: Susan Lee
Subject: FW: Comments on Conditional Use Permit application by Central Monofill Services Inc.

Dear Susan Lee and Mat-Su Planning Commission,

Our home is located at Canoe Lake Subdivision #2, Lot 9, on the border of the proposed landfill. We have lived in our home since 1979.

For several reasons, we strongly protest the granting of a Conditional Use Permit for Central Monofill Services, Inc. (CMS). The proposed site is located on MSB Tax Parcels: 17N02E18C010 (2840 S. Glenn Highway) and 17N02E19B006 (2560 S. Glenn Highway; within Township 17 North, Range 2 East, Sections 18 and 19, Seward Meridian.

First of all, this landfill poses a nuisance to our neighborhood. Already, wind has distributed materials from the landfill site to our neighbors' property. CMS did send workers to clean up the debris, but a walkthrough of the property by another neighbor and myself revealed that there was still a log of smaller debris that was missed. And this was before they have the operation up and running. I believe their promises to prevent future catastrophic distribution of their fill materials to neighboring properties greatly underestimates the potential for extreme high winds to pick up and spread uncovered materials for miles around during a heavy, unpredictable, wind storm. The cost and of such a cleanup would be very high, and the complete success of such an effort questionable.

Not only could such a windstorm greatly soil neighboring properties, I find it hard to believe that there would be no concern for health issues related to breathing the fine materials in the air itself.

Second, the loud "beep" "beep" of heavy equipment at all hours during the day can be quite disturbing. And it appears that this could go on for six days out of the week from early morning to late in the evening, right behind our home.

Third, based on the facts that the owners originally starting working the landfill (testing?) before receipt of a permit, denied the trash was theirs, pumped soiled water (indirectly) into the ponds that feed our water table, buried instead of removing as directed some of the material they had placed in the landfill, resulting in a stop order from your code compliance division, received several citations – I cannot imagine trusting their word on anything, however well-intentioned they may be; they are out to make money.

Fourth, how can we trust that the operation will not have a negative impact on our drinking water? Much of the runoff from the dumpsite could potentially find its way into the aquifer that supplies drinking water for hundreds if not thousands (all the way to Anchorage) of private wells. We are looking to the Borough to look out for its citizens health and welfare. Is the Borough prepared to respond to a class action lawsuit of a sizeable magnitude should such an event occur? This could be a financial disaster for the borough.

We are trusting in our Borough leadership to recognize the unsuitability of the property in question to be used for CMS's intended purpose.

Please do not let us down.

Sincerely,

Johnnie and Donna Davis
Home (907) 745-3687
Cell (907) 315-3687

Work (907) 761-9251
Email jldavis@mtaonline.net

Susan Lee

From: E. Christenson [ekchristenson@gmail.com]
Sent: Friday, October 31, 2014 6:55 PM
To: Susan Lee
Subject: Please Support the Central Monofill Services Conditional Use Permit

As a recreational family property owner in the Mat-Su Valley, I would like to express my support for the Central Monofill Services monofilll project adjacent to the Glenn Highway in the Palmer gravel pit complex.

As a contract manager, laborer and safety specialist for the construction and oil and gas extraction industry I have dealt with Central Recycling Services and related companies for several years. Their service has been excellent and the concern for the local conditions and environment can not be paralleled. Their concern for Alaska is brought up from the ownership & management team, Alaskans taking care of Alaska.

The emotional hyperbole being thrown about by the detractors of the project has been unscientific at best, and blatant mis-information in many cases. If the group was so concerned about the Mat-Su Valley, perhaps they would have participated in the Spring Property Clean-up, dispose of the yard cars, maybe even register their cars in Alaska. Instead we have "transplants" from California and Portland, Oregon adding cars to the parking lots of public meetings with expired out of state plates attempting to "Portlandify" Anchorage and the Mat-Su Valley. Why are they making decisions for Alaskans when they can barely claim residency?

The science behind construction and demolition waste management has proven screened inert waste does not create health hazards. Even an Asbestos Cell in a monofill has no waste migration hazard in 40,000 years (my loose recollection of the State of California and Demolition Industry Statistics).

Worker protection for a company the size of CRS is a huge concern, and has been addressed through engineering controls to protect employees from dust, heavy materials and mobile equipmen, administrative controls through handling proceedures governed by the EPA, OSHA, ADEC, AKOSH and industry best practice that is supported by the courts. I have witnessed the systems in place at CRS touring the Anchorage facility and frequently find them to be on a par with the controls in the oil and gas industry as well.

I can not even begin to cover the arguements for the monofill on a point for point basis compared to the detractors. There is no real argument against the landfill outside of the "Not in My Back Yard" scenario.

Relative to the recycling options and pro-active waste reduction management CRS provides to all of south central Alaska the monofill is the only option if the Mat-Su Borough wants to reduce the burden on the tax payer by prolonging the life of the existing landfill.

Thank you,
Erik Christenson
Eagle River, Alaska

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Susan Lee

From: Martin L. Meigs [giantcoak@yahoo.com]
Sent: Friday, October 31, 2014 7:13 PM
To: Susan Lee
Cc: Shane Durand
Subject: CEI Landfill Permit
Attachments: Mat Su Letter.doc

Comment letter Attached

Martin L. Meigs

ALASKA SPORT FISHING ASSOCIATION

31 October, 2014

Greetings!

As a representative of the Alaska Sport Fishing Association, I would like to make a few comment regarding the landfill being proposed by CEI

1. This Association has finds no reason to oppose the proposed CEI landfill as it will not affect our fishing resource in any way. Quite the contrary. Having a place to dispose of the construction waste generated in the Mat-Su Borough is essential to prevent the random, unsupervised dumping of such material in areas where there might be an impact on the general environment and/or fishing quality in the area.
2. CEI is operated by local Alaskans who do have a stake in the State whereas an out of state run company might be a lot less inclined to be as responsible (and accessible).
3. The need for such a landfill is obvious and it might well fall on the backs of the Borough taxpayers if this private, local-job-providing company is prevented from moving forward with their plan.
4. The objections from the nearby residents (NIMBYs) are not valid, legitimate or relevant. Any dust generated by the landfill would pale by comparison to the dust generate by the winds blowing over the glacial till in the area.
5. The proposed project will lower disposal and recycling costs and thereby reduce new construction costs, extend the life of the other landfills in the area that can and do handle hazardous materials.
6. Central Recycling Services has helped several nonprofits in the Matanuska Valley and employees many valley residents. Our organization is just one of many that has benefitted from the Companies' generosity and sense of civic responsibility.

Denying the permit will have far greater consequences than those feared by the local homeowners. Indeed, some of those residents may well benefit from employment opportunities resulting from the project!

I would urge you to not delay or deny the permit.

Martin L. Meigs

Martin L. Meigs
Vice President
Alaska Sport Fishing Association

6620 Lakeway Dr. Anchorage, AK 99502 Phone: 907-348-6193 cell 907-250-5232
Website: www.alaskasfa.org Alternate personal E-Mail: giantcoak@yahoo.com
ASFA is a 501(c)(3) non-profit corporation

Susan Lee

From: Mark & Melanie Glatt [mica@mtaonline.net]
Sent: Saturday, November 01, 2014 12:02 AM
To: Susan Lee
Subject: CMS private dumping

To whom it may concern,
My husband & I live in the area being considered for a private dump, located on the Glenn highway in Palmer.
We are opposed to this business for the following reasons:
a) groundwater (drinking water) & surface (recreational) water pollution since the pit will be unlined and monitored for toxics substances
b) decrease in property values
c) windblown debris
d) hazards to local wildlife
e) air pollution due to illegal burning of trash
f) non-approved substances being dumped into site due to non-monitoring of site contents
g) lack of bonding
h) history of non-compliance
i) undue burden (medically & financially) on adjacent property owner's when groundwater is contaminated
j) agricultural water contamination of adjacent farms

In closing, established landfill practices, should be followed to prevent unnecessary contamination of local water and air.
Without 3rd party monitoring, the risks to the public will violate the conditions of the permit.
There is another waste dump site immediately east and within a 2 mile distance from our home already. Is this site being monitored?

Thank you for your consideration,
Sincerely,
Melanie & Mark Glatt

Susan Lee

From: pjpalmer@mtaonline.net
Sent: Saturday, November 01, 2014 8:32 AM
To: Palmer Toxic Dumping
Cc: Susan Lee
Subject: Re: Comment Re: CMS Dump

I was on the Port commission for 10 years and was one of those dedicated to see some economic development here in the Valley. There are thousands of acres surrounding the Port development and I'm sure a site could be found acceptable to all the parties concerned. Placing a "TOXIC" dump between two housing developments makes no sense at all. A dump site at Port Makensie could be one more reason to construct the Knick Arm Crossing and further the boroughs development plans enhancing economic development. Future generations of the Valley should not be left to deal with this problem. Lets all do some sound planning and blueprint all future projects that have vital importance to our beautiful "VALLEY"and it's citizens.

--- palmertoxicdumping@mtaonline.net wrote:

From: Palmer Toxic Dumping <palmertoxicdumping@mtaonline.net>
To: slee@matsugov.us, pjpalmer@mtaonline.net
Subject: Comment Re: CMS Dump
Date: Fri, 31 Oct 2014 10:16:22 -0800

Hi Mr Johnson, I am forwarding your e-mail to Susan Lee at the borough, but I would like ask you to e-mail her directly so that it's legitimacy will not be in question due to having been sent the palmertoxicdumping.org e-mail address. Thanks much!

Name:	Paul Johnson
E-mail:	pjpalmer@mtaonline.net
Phone	907 745 2710
Message:	Our family built our home at 2115 Killarney in the early 70s. we moved from Anchorage to escape the big city life. Our son attended Palmer schools. Forty years of our lives have been spent at this location. In my working years, paying taxes I never imagines a toxic waste dump being built within 1000 yards of my property. This is what CMS wants us to do. We have enjoyed the finest water from our wells all these years and now a proposal to contaminate our water supply with as the present application reads, primarily non toxic waste material. I don't think so and I am sure our neighbors feel the same way. We let the gravel pits in and find out it was a big mistake Lets not let this happen for Gods sake. Lake Wilder should be stocked with fish and set aside as a pristine park further enhancing the beauty of the valley. any questions please contact me.

Susan Lee

From: Teresa [tbeck@mtaonline.net]
Sent: Saturday, November 01, 2014 10:37 AM
To: Susan Lee
Subject: Fwd: Palmer Toxic Dumping

Sent from my iPhone

Begin forwarded message:

From: "Teresa Beck" <tbeck@mtaonline.net>
Date: October 31, 2014 at 10:29:15 PM AKDT
To: <slee@matsu.gov>
Subject: Palmer Toxic Dumping

To Whom it may concern,

My name is Teresa Beck and I live in Palmer a quarter mile from the Alaska Demolition landfill for inert waste. I just forwarded you the letter I wrote to Frontiersman this past February. Palmer does not need another landfill of inert or recycled waste. In winter months, there is a distinct smell emanating from the Alaska Demolition site off Rebarchek Road. I recorded 8 days in March 2013 in which I could detect the hydrogen sulfide smell. In December 2012, there was distinct smoke coming from the landfill site. Palmer Police dispatch told me it was an underground fire in the landfill in the morning as they had just confirmed it with an officer going to the scene. By the afternoon, the story had changed and even though I saw huge clouds of smoke in that area, I was told it was from another location.

The fact is that we don't need another mess that is uncontrolled. CMS has misbehaved already by dumping prior to their permit. The public cannot monitor these sites enough to make sure the right things are put there. No one can prevent decomposition that will eventually smell or spontaneously decombust. No one can predict the future impact on our water table and wells. This new south Palmer location is not the right place for this the water table is too sensitive. Do we want to smell hydrogen sulfide every time we drive into Palmer? CMS is doing this for their profit. They can find another location or pay to dispose of their waste in public landfills.

Sincerely,

Teresa Beck

Susan Lee

From: Herb Bischoff [herbbischoff@gmail.com]
Sent: Sunday, November 02, 2014 1:08 PM
To: Susan Lee
Subject: No to CMS dump on Glenn

I am expressing my opposition to CMS's permit application to operate a dump off the Glenn Highway in Palmer. As a Palmer resident (even if I weren't), I oppose approval based on the risk for safety of the water supply, aesthetics of the surrounding area and disregard of corporate social responsibility (no apparent contingencies for potential damages).

Thank you for your consideration.

Herb Bischoff
Palmer, AK

Susan Lee

From: Jeremy Craner [jeremycraner@hotmail.com]
Sent: Monday, November 03, 2014 7:30 PM
To: Susan Lee
Subject: Comment

I live at 1294 South Thalo Drive near the proposed waste disposal location. I strongly oppose the current proposed location and have the same concerns as the Palmer Toxic Dumping Community Group (potential introduction of asbestos and other contaminants to soil, groundwater, and surface water including the eyesore of wind blown debris). Please consider other sites with less risk to human heath and environment.

Jeremy Craner
Professional Geologist (P. G.)
State of Alaska

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CORRESPONDENCE

CMS CORRESPONDENCE

Susan Lee

From: Durand, Shane [shane@cei-alaska.com]
Sent: Monday, October 27, 2014 4:19 PM
To: Alex Strawn
Cc: Susan Lee
Subject: Buisness Incorporation

Alex

To clarify comments on our businesses Central Recycling Services and Central Monofill Services are both incorporated. Neither are LLC.

Shane Durand

Central Recycling Services
2400 Railroad Ave.
Anchorage, AK 99501
(907)748-7400
(907)770-5084 fax
www.centralrecyclingservices.com
www.crssurplusmaterials.com
www.cicequipment.com

Susan Lee

From: Susan Lee
Sent: Monday, October 20, 2014 1:30 PM
To: 'Durand, Shane'
Cc: Alex Strawn
Subject: Screening

Shane:

This is a follow-up to our earlier discussion regarding screening the monofill from the section line easements. MSB 17.60.110(A) states *"No junkyard or auto wrecking yard shall be established or operated unless the wrecking yard is completely obscured from the view of any traveled or public right-of-way. the permit may require the junkyard or auto wrecking yard not within a building to be contained within a continuous solid fence no less than eight feet in height. if such requirement is necessary to prevent the unsightly display of the yard or for public safety purposes. Fencing may be of one or a combination of the following:*

(1) conventional solid wood or metal fencing;
(2) evergreen or other natural planting sufficient to provide year-round screening; and
(3) earthen berm or topography.

MSB 17.60.110(B) states *"In all cases, fencing provided shall be continuous and of sufficient density to provide visual screening required by this chapter on a year-round basis".*

Please let us know how you plan on providing year-round screening of the monofill operation from the section line easements, as this issue will have to be addressed in the staff report.

Susan

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

Susan Lee

From: Durand, Shane [shane@cei-alaska.com]
Sent: Thursday, October 23, 2014 7:31 AM
To: Alex Strawn; Susan Lee
Subject: Flyer final
Attachments: CRS Mailing PC prf3.pdf

Opps I sent you the draft this is the final version.

Shane Durand

Central Recycling Services
2400 Railroad Ave.
Anchorage, AK 99501
(907)748-7400
(907)770-5084 fax
www.centralrecyclingservices.com
www.crssurplusmaterials.com
www.cicequipment.com

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CENTRAL
Recycling Services
2400 Railroad Ave • Anchorage, AK 99501

PRSRT STD
US Postage
PAID
Anchorage, AK
Permit No. 69

Support Recycling In Alaska

Learn more at:

www.centralrecyclingservices.com

Or

www.matsugov.us/publicnotices/2618-central-monofill-services-conditional-use-permit

Don't let misinformation and stereotypes form your opinion...

Get the facts!

Call today for more information or to schedule a tour

907-748-7400

Susan Lee

From: Durand, Shane [shane@cei-alaska.com]
Sent: Friday, October 10, 2014 5:56 PM
To: Alex Strawn; Susan Lee
Subject: Update and adder
Attachments: 2014 Canaday ADEC Inspection.pdf

Susan,

I was wondering if I could get an update on the status of our CUP application? Everything still on for Dec 1st?
Not waiting for anything from us?
Any new concerns been raised?
What is the time frame for public notice?

I would also like to submit the attached ADEC inspection report. Many people at the last hearing made comments that the ADEC does not inspect monofills. This proves they do inspect and further more we are proud of getting a perfect score on the inspection of our existing facility in Salcha. This proves we are a good operator.

The only negative with this report was ADEC noted they had received a complaint from a neighbor about traffic, road conditions, etc. upon investigation we found out the trucks the neighbor had complaints about were State of Alaska trucks that were improving Canaday Road, which is state maintained. The complaint although directed at our operation was with something not affiliated with our facility and ADEC took no action.

If you have any questions or need anything more from us please don't hesitate to ask.

Respectfully,

Shane Durand

Central Recycling Services
2400 Railroad Ave.
Anchorage, AK 99501
(907)748-7400
(907)770-5084 fax
www.centralrecyclingservices.com
www.crssurplusmaterials.com
www.cicequipment.com

THE STATE of ALASKA
GOVERNOR SEAN PARNELL

Department of Environmental Conservation

DIVISION OF ENVIRONMENTAL HEALTH
Solid Waste Program

610 University Avenue
Fairbanks, Alaska 99709-3643
Main: 907.451.2108
fax: 907.451.2188

October 01, 2014

Certified Mail #7002 3150 0003 6567 4238
Return Receipt Requested

File Number: 100.15.089

Stuart Jacques, President
Central Monofill Services, Inc.
311 N Sitka Street
Anchorage, AK 99501

Re: September 09, 2014 Inspection of Salcha Canaday Road C & D Monofill, Permit #SWZA063-17

Dear Mr. Jacques:

The Alaska Department of Environmental Conservation Solid Waste Program (ADEC) completed its first annual inspection of the Salcha Canaday Road C & D Monofill on September 09, 2014. I would like to thank Sean Holland for assisting me with the inspection.

The facility is being managed and operated excellently and received a compliance score of 100% during this year's inspection. Great Job! Specific details of the inspection are provided in the enclosed inspection checklist.

The Regulated Asbestos Containing Material (RACM) cell was nearly completed at the time of the inspection and has likely been completed. However, since the cell was not completed at the time of the inspection and RACM was not being received, the questions in the inspection checklist pertaining to RACM were not scored since they were not applicable at the time. During next year's inspection, these sections will be applicable.

Thank you for running a great operation. If you have any questions about this letter or the enclosed inspection checklist, please contact me by telephone at 907-451-2134 or by email at neil.lehner@alaska.gov.

Sincerely,

Neil Lehner
Environmental Program Specialist
Solid Waste Program

Enclosure: Inspection Checklist and Photos

G\EH\SW\Companies & Organizations\Salcha Canaday Homestead C & D\Inspections\2014\2014-10-01 Salcha Canaday Homestead Monofill inspection letter.docx

Inert Waste Monofill Inspection Checklist

Alaska Department of Environmental Conservation
Division of Environmental Health
Solid Waste Program

Landfill: Salcha Canaday Homestead Monofill

Date of Inspection: 09/09/14

ADEC Inspector: Neil Lehner

Participants: Sean Holland

Weather Conditions: Sunny and 60 degrees F

Past Month Rainfall: 2.61 Inches

Scoring

Total points awarded:	250
Total possible points:	250
Final Score (percent):	100%

ADEC Signature:

Printed Name: Neil Lehner

Title: Environmental Program Specialist

Inert Waste Monofill Inspection Checklist

Alaska Department of Environmental Conservation
Division of Environmental Health
Solid Waste Program

Part One: ADEC Information Gathering

This section should be filled out completely, prior to the site visit. This section is not scored, but the information will be used during the site visit to determine compliance with requirements.

#	Part One: ADEC Information Gathering
1	**PERMIT AND OPERATING PLAN** – Review permit and operating plan to familiarize yourself with the requirements and approved operations for this landfill. Does the facility have a current ADEC permit? [X] Yes [ ] No Permit Number: SWZA063-17 Expiration Date: 6/17/2017
2	**SITE/DEVELOPMENT PLANS** – Review site plans and development plans to familiarize yourself with the approved layout of the landfill and the conditions at the site. Check the conditions that exist at the landfill: [X] Is the landfill located in or near wetlands? [X] Is the landfill located on permafrost? (It is in a general area of discontinuous permafrost) [ ] Is the landfill located in a 100-year floodplain? [ ] Are there any drinking water wells within 500 feet of the landfill property boundary? Has a current/up-to-date site map been submitted? Yes
3	**PREVIOUS INSPECTIONS** – Review previous inspection forms. List any issues that may still be outstanding that should be investigated. This is the first inspection.
4	**COMPLAINTS** – If ADEC has received any complaints regarding the facility, list and describe them below: One complaint was received in June. The individual was concerned with the truck traffic and degradation to the road and also concerned with the number of trucks going to the site. Individual also reported trucks arriving later in the evening.
5	**AUTHORIZED WASTE TYPES** – *The landfill is required to have a permit that authorizes all types of waste disposed at the site.* Check the types of waste that the facility is authorized to dispose: [X] Inert or C&D Waste [X] Regulated Asbestos Containing Material (RACM) *(Must be disposed in separate cell)* [ ] Other
6	**SIGN REQUIREMENTS** – *Many permits require signage that identifies the owner or operator, hours of operation, emergency contacts, or other information.* List any signage requirements specified in the permit:

Inert Waste Monofill Inspection Checklist

Alaska Department of Environmental Conservation
Division of Environmental Health
Solid Waste Program

#	Part One: ADEC Information Gathering
7	**LAND OWNERSHIP** – *The landfill application must contain documentation that the operator is the landowner, or that the operator has obtained authorization from the land owner.* Central Monofill Services is the landowner, Central Recycling Services is now the operator Check the appropriate box. [ ] The operator is the landowner [X] The landowner has authorized the landfill
8	**WAIVERS** – *The landfill may obtain waivers for requirements related to development or operation.* List any ADEC-approved waivers: None
9	**MONITORING REQUIREMENTS** – *A facility may be required to monitor groundwater or surface water. Requirements are specified in the permit or approved monitoring plan. By regulation, monitoring reports must be submitted to ADEC for groundwater and surface water. This information will help you determine if the operating record is complete.* Check the types of monitoring that the facility is required to conduct, note the required sampling frequency, and check if reports must be submitted to DEC:
10	**MONITORING LOCATIONS** – *Sampling must be conducted at approved wells or sites. Locations are specified in the monitoring plan.* Make a copy of a site plan or map that shows the locations of monitoring wells, surface water sampling sites, or other approved monitoring locations. Take the map with you to assist in field inspection.
11	**ADDITIONAL PERMIT REQUIREMENTS** List any additional permit requirements that are not addressed in the inspection checklist. 1. Notify ADEC when large quantities of RACM are accepted 2. Submit updated site development plans by Dec. 31 each year 3. Notify ADEC before the amount of waste deposited exceeds the annual expected average

✓	Type	Sampling frequency	Report to DEC required?
	Groundwater		
	Surface Water		

Part Two: ADEC Records Review

This section should be completed and scored in the office, prior to conducting the site visit.

Inert Waste Monofill Inspection Checklist

Alaska Department of Environmental Conservation
Division of Environmental Health
Solid Waste Program

#	Part Two: ADEC Records Review	POINTS Possible	POINTS Score
1	**FEES** – *The landfill is required to pay annual and other fees to ADEC.* 18 AAC 60.700 Is the facility current on payment of all fees? [X] Yes [ ] No Date of last payment: 12/26/13 OR Amount owed:	5	5
2	**MONITORING REPORTS** – *A facility may be required to monitor groundwater or surface water. Groundwater and surface water reports MUST be submitted to ADEC.* ***NOTE to Inspector:*** *The project manager should be reviewing and communicating about monitoring reports as they are received.* 18 AAC 60.810, 18 AAC 60.830, permit condition Is Monitoring required? If so, does the facility submit the required monitoring reports to ADEC? Do monitoring reports address all required types of monitoring? Are monitoring reports complete and contain required analyses?	NA	NA
3	**FINANCIAL ASSURANCE** –*The landfill may need to demonstrate financial assurance to cover closure and post closure costs if monitoring is being done. The local government financial test is the most commonly used mechanism. Some financial assurance mechanisms require an annual update.* 18 AAC 60.235, 18 AAC 60.265 Check the type of financial assurance used : [ ] Local government financial test (requires annual update) [ ] Corporate financial test (requires annual update) [ ] Trust Fund [ ] Surety Bond guaranteeing payment or performance [ ] Letter of credit [ ] Insurance [ ] Corporate guarantee [ ] Local government guarantee [ ] Other state-approved mechanism What is the date of the latest financial assurance documentation?	NA	NA

Part Three: Landfill Records

This section should be completed at the landfill facility during the site visit.

Inert Waste Monofill Inspection Checklist

Alaska Department of Environmental Conservation
Division of Environmental Health
Solid Waste Program

#	Part Three: Landfill Records	POINTS Possible	POINTS Score
1	**PERMIT** – *A copy of the permit application and current permit must be kept in the operating plan.* 18 AAC 60.235 Is a copy of the permit application and current permit in the operating record? Yes	10	10
2	**OPERATIONS PLAN** – *The operations plan should be used as a guide for day to day operation of the landfill. A copy must be kept in the operating record.* 18 AAC 60.210, 18 AAC 60.235, permit Does the operating record contain a copy of the operations plan? Yes	10	10
3	**TRAINING** – *Landfill staff must receive training to recognize regulated hazardous waste and PCB waste. Records of training must be kept in the operating record.* 18 AAC 60.240 Does the landfill have a record showing that operators have received training to recognize regulated hazardous waste and PCB waste? Yes. All staff are current on multiple trainings including HAZWOP, Asbestos Abatement, HAZMAT	5	5
4	**RANDOM INSPECTION RECORDS** – *The landfill must perform random inspections of incoming waste loads to identify any regulated hazardous waste or PCB waste. Records of the inspections must be available for review.* 18 AAC 60.235, 18 AAC 60.240 Are random waste inspections performed and recorded? Yes. All loads are inspected as they are loaded and unloaded. A building survey is always done at site and recorded.	20	20
5	**ASBESTOS RECORDS** – *The landfill must maintain asbestos shipment records for each load of RACM. Records must include contact information for the waste generator and waste transporter, the amount (cy) disposed, and the date of receipt. The landfill must maintain an up-to-date map or site plan showing the boundaries of the asbestos cell. The landfill must maintain up-to-date records of the amount of waste in the RACM cell, including depth and the total volume.* 18 AAC 60.450 **The permit was modified to include a RACM cell. However, no RACM has been received at the site yet so this is still Not Applicable until RACM is received.** Does the landfill maintain complete asbestos shipment records for each load of RACM received? Does the operating record contain an adequate, up-to-date map of the asbestos cell? Does the operating record contain up-to-date information about the depth and total volume of RACM in the asbestos cell?	NA	NA

Inert Waste Monofill Inspection Checklist

Alaska Department of Environmental Conservation
Division of Environmental Health
Solid Waste Program

#	Part Three: Landfill Records	POINTS Possible	POINTS Score
6	**VISUAL MONITORING** – *Visual monitoring must be performed at least monthly and recorded on a form approved by ADEC. Records must be maintained for at least 5 years.* 18 AAC 60.800 Does the operating record contain copies of monthly visual monitoring reports? Yes, since opening [X] Violations of permit conditions, or regulatory requirements [X] Settlement [X] Ponding [X] Leakage [X] Thermal instability (permafrost landfills only) [X] Frost action [X] Erosion [X] Signs of damage to due to operations [X] Damage to monitoring devices [X] Escape of leachate [X] Escape of waste [X] Unauthorized waste disposal [ ] Wind blown litter [X] Damage to a containment structure, retaining wall, erosion control, or diversion structure [X] Fire or combustion in the waste [X] Impacts to fish, wildlife, or vegetation [ ] Any other conditions that threaten public health or the environment:	10	10
7	**COST ESTIMATES AND FINANCIAL ASSURANCE** – *The landfill may need to update closure and post closure cost estimates annually to adjust for inflation. The landfill may need to demonstrate financial assurance to cover closure and post closure costs if monitoring is being done. The local government financial test is the most commonly used mechanism. Documentation must be kept in the operating record. Some financial assurance mechanisms require an annual update.* 18 AAC 60.235, 18 AAC 60.265 Does the operating record contain appropriate and up-to-date (i.e. annual) closure and post-closure cost estimates? Does the operating record contain appropriate and up-to-date financial assurance documentation? What is the date of the latest estimate? _____	NA	NA
8	**AS-BUILT DRAWINGS** – *The facility is required to maintain as-built drawings in the operating record.* 18 AAC 60.235 Does the operating record contain as-built drawings? Yes	5	5

Inert Waste Monofill Inspection Checklist

Alaska Department of Environmental Conservation
Division of Environmental Health
Solid Waste Program

#	Part Three: Landfill Records	POINTS Possible	POINTS Score
9	**MONITORING PLAN** – *If the facility is monitoring groundwater or surface water, it needs a plan to be kept in the operating record.* 18 AAC 60.810, 18 AAC 60.830 Is the facility required to monitor surface water or groundwater? If so, is the monitoring plan in the operating record?	NA	NA

Part Four: Landfill Development

This section should be completed at the landfill facility during the site visit.

#	Part Four: Landfill Development	POINTS Possible	POINTS Score
1	**LANDFILL DEVELOPMENT** – *The facility is required to follow the approved landfill site plans and development plans. If minor changes are made, they should not be detrimental to regular operations. Any major changes must be approved by ADEC.* 18 AAC 60.233, 18 AAC 60.210, permit Is the facility following the site and developments plans? Yes If any minor changes have been made, are they detrimental to operations? NA Is the waste disposal area at least 50 feet from the property boundary? Yes	30	30
2	**WATER WELLS** – *Waste may not be disposed of within 500 feet of a drinking water well. If any wells exist within 500 feet of the property boundary, the site must be developed and operated to ensure that waste is not deposited too near the wells.* 18 AAC 60.040 A new survey indicated that a drinking water well identified on the previous surveys was actually not a well. Therefore, no drinking water wells are located within 500 feet of the landfill boundary. Has development of the landfill or surrounding area impacted this separation zone?	NA	NA

Part Five: Access

This section should be completed at the landfill facility during the site visit.

#	Part Five: Access	POINTS Possible	POINTS Score
1	**SIGNAGE** – *A clearly legible sign must be posted at the entrance to the landfill. The sign must prohibit disposal of regulated hazardous waste and polychlorinated biphenyl (PCB) waste. Most permits also require signage that identifies the owner or operator, hours of operation, and emergency contacts.* 18 AAC 60.240, permit Are signs prohibiting hazardous waste and PCB waste posted and clearly legible? Yes If additional signage is required, is it posted and clearly legible? Yes Do the existing signs meet all of the requirements noted in Part One, Question 6? Na	5	5

Inert Waste Monofill Inspection Checklist

Alaska Department of Environmental Conservation
Division of Environmental Health
Solid Waste Program

#	Part Five: Access	POINTS Possible	POINTS Score
2	**ACCESS** – *Access to the landfill facility must be limited by the use of fencing, berms, or natural barriers to control public access to the site. This should prevent unauthorized traffic or dumping.* 18 AAC 60.220 Is access to and within the facility limited? Yes. Locked gates at entrance. Is there any evidence of unauthorized access to the landfill (target shooting, off-road vehicles, etc) No Is there any evidence of dumping outside the permitted areas? No	20	20

Part Six: Working Cell Operations

This section should be completed at the landfill facility during the site visit.

#	Part Six: Working Cell Operations	POINTS Possible	POINTS Score
1	**AUTHORIZED WASTE TYPES** – *The landfill is required to have a permit that authorizes all types of waste disposed at the site.* 18 AAC 60.200 Is there evidence that the facility has accepted or is accepting any wastes that are not addressed or authorized in the permit? *(See answers in Part One, Question 5)* No	20	20

Part Seven: General Operations

This section should be completed at the landfill facility during the site visit.

#	Part Seven: General Operations	POINTS Possible	POINTS Score
1	**LITTER** - *Litter must be controlled so that it does not become a nuisance or hazard and must be removed from access roads and other areas of the facility.* 18 AAC 60.233, 18 AAC 60. Is excessive litter evident at or near the landfill? No, none at all. Check the types of measures that are used to control litter at the landfill: [X] Litter fencing [ ] Litter collection [ ] Other _____	5	5
2	**DUST, ODOR, NOISE, ETC.** - *Dust, odor, noise, traffic, and other effects from the landfill must not become a nuisance or hazard to the public health, safety, or welfare.* 18 AAC 60.233 Are dust, odor, noise, traffic or other effects from the operation causing, or likely to cause, a nuisance to neighboring homes or businesses? No.	5	5

Inert Waste Monofill Inspection Checklist

Alaska Department of Environmental Conservation
Division of Environmental Health
Solid Waste Program

#	Part Seven: General Operations	POINTS Possible	POINTS Score
3	**SALVAGING** - *Public salvaging, if allowed, must be limited to an area that does not hinder facility operation, create a safety hazard, or cause pollution.* 18 AAC 60.220 This facility does not have any public salvaging. CRS (the operator of the landfill) does have a nicely organized laydown/reuse area where reusable/recyclable materials are stored. These materials are used by the company on other projects or sold. Is public salvaging restricted to a controlled area away from the working face? Is the salvage area managed with respect to safety and pollution control?	NA	NA
4	**DISEASE VECTORS AND ANIMALS** - *Disease vectors, including wildlife and domestic animals, must be controlled so that the public health, safety, or welfare are not endangered by the spread of disease or contact with animals, and that the animals are not harmed by contact with the waste or become a nuisance.* 18 AAC 60.230 Is there any evidence (prints, scat, digging, etc.) of bear, fox, or other animals around the waste? No Were there excessive numbers of birds present? None Are there any reports of wildlife being harmed, or conditions that are likely to harm wildlife? No	5	5
5	**INACTIVE AREAS** - *Areas that have not received waste for more than 90 days, but have not yet reached the final capacity or elevation, must receive an intermediate cover. The area must be covered with 12 inches of soil and graded to prevent ponding and erosion.* 18 AAC 60.243 Have inactive areas been appropriately covered and graded? Yes	10	10
6	**MAINTENANCE AND REPAIR** - *The landfill must maintain structures and components of the facility, and repair any structural changes or damage to the facility.* 18 AAC 60.815 Are there signs of damage to any component of the facility? No	10	10

Part Eight: Special Waste

This section should be completed at the landfill facility during the site visit.

Inert Waste Monofill Inspection Checklist

Alaska Department of Environmental Conservation
Division of Environmental Health
Solid Waste Program

#	Part Eight: Special Waste	POINTS Possible	POINTS Score
1	**RACM CELL-** *If the facility accepts RACM, it must be disposed of in a separate cell. Access to the asbestos site must be restricted, and there must be no visible emissions.* 40 CFR 61.154 *Asbestos loads must be inspected and handled to insure that all friable asbestos is sealed in leak-proof containers, deposited in the asbestos cell without damaging the containers, and covered by the end of the day with 6 inches of soil.* 18 AAC 60.450 **This question is currently not applicable but will be once RACM is received** Is RACM disposed of in a separate cell from MSW? It will be once it is received. Is there evidence of visible emissions? NA What measures are used to prevent public access to the asbestos disposal area? The site is not open to the public, locked gate at entrance, asbestos cell will be completely fenced with required signage. Are any exposed or broken bags evident? NA Has adequate cover been applied to the waste? NA	NA	NA
2	**NON-RACM HANDLING** - *Non-RACM waste must be handled so that it does not become friable. It must be covered within 24 hours using procedures that prevent the release of asbestos fibers.* 18 AAC 60.450 Does the facility handle non-RACM waste so that it does not become friable and does the facility cover it within 24 hours? Yes	10	10
3	**LIQUID WASTE** - *Liquid waste may not be disposed at the landfill, with the exception of small quantities (one gallon or less) of containerized household waste. This includes leachate and baler squeezings, unless recirculation has been approved under an RD&D permit.* 18 AAC 60.420 Are any prohibited liquids disposed at the landfill? No Are any fluids generated at the landfill (leachate or baler squeezings)? No If so, how are they disposed? Na	10	10
4	**VEHICLES** - *Vehicles may not be disposed at the landfill unless all fluids and batteries have been removed. If undrained vehicles, or the fluids and batteries removed from them, are stored at the landfill for later disposal or recycling, they must be managed to prevent release of fluids.* 18 AAC 60.035, 18 AAC 60.010 Are vehicles disposed at the landfill? No Are all fluids and batteries removed prior to disposal? Na	NA	NA

Part Nine: Surface Water Controls/Impacts

This section should be completed at the landfill facility during the site visit.

Inert Waste Monofill Inspection Checklist

Alaska Department of Environmental Conservation
Division of Environmental Health
Solid Waste Program

#	Part Nine: Surface Water Controls/Impacts	POINTS Possible	POINTS Score
1	**RUN-ON/RUN-OFF** - *The landfill must have a control system to prevent run-on water from flowing into the active cell.* 18 AAC 60.225 Does the control system prevent run-on from flowing into the active cell? Yes Is there evidence that run-off may be impacting nearby waters? No	10	10
2	**SURFACE WATER AND PONDING** - *Waste may not be placed in surface water, including ponded rainwater. Landfill surfaces should be graded to prevent ponding, and all ponded water must be removed within 30 days.* 18 AAC 60.225 Is there any evidence of waste in contact with surface water, including ponded rainwater? No	5	5
3	**LEACHATE SEEPS** - *Leachate seeps must be prevented, or contained and controlled at the boundary of the waste management area if the department finds it necessary.* 18 AAC 60.225 Has the department found it necessary to contain or control leachate seeps? No Are there any visible leachate seeps outside the landfill cell? No What measures have been taken to contain and control the seeps? Na	30	30
4	**PERMAFROST** - *If the landfill is located on permafrost, it must be designed and operated so that the permafrost remains frozen. If the landfill settles and water is pooling, the operator must take corrective action.* 18 AAC 60.227 Are there any indications that permafrost is thawing (pooled water or settlement)?	NA	NA

Part Ten: Monitoring Locations

This section should be completed at the landfill facility during the site visit.

#	Part Ten: Monitoring Locations	POINTS Possible	POINTS Score
1	**MONITORING LOCATIONS** – *Monitoring, if done, must be conducted at approved locations. Surface water monitoring sites must be properly maintained. Groundwater monitoring wells must be properly maintained.* 18 AAC 60.810, 18 AAC 60.825, permit Are surface water monitoring sites clearly identified and marked? Are surface water monitoring sites located according to the approved plan? Are monitoring wells in good condition and locked? Are other monitoring devices well maintained and located as required?	NA	NA

Part Eleven: Additional Permit Requirements

This section should be completed at the landfill facility during the site visit.

Inert Waste Monofill
Inspection Checklist

Alaska Department of Environmental Conservation
Division of Environmental Health
Solid Waste Program

#	Part Eleven: Additional Permit Requirements	POINTS	
		Possible	Score
1	**ADDITIONAL PERMIT REQUIREMENTS** Is the facility complying with the additional permit requirements listed in Part One, Question 11? Only one of the additional permit requirements applies at this point since RACM has not been accepted yet.	10 each	10

Fig 1 Signage at landfill entrance

Fig 2 Entrance road to monofill

Fig 3 View of active disposal cell

Fig 4 View on top of active disposal cell

Fig 5 C & D working face

Fig 6 Eastern slope of active cell

Fig 7 View of active disposal cell from top of RACM cell berm

Fig 8 Newly constructed RACM cell

Fig 9 View of berm around RACM cell

Fig 10 Recycle/Reuse lay down area

Fig 11 Another view of Recycle/Reuse lay down area

Fig 12 View from the lay down area towards the western berm

MATANUSKA-SUSITNA BOROUGH
Planning and Land Use Department
Development Services Division
350 East Dahlia Avenue • Palmer, AK 99645
Phone (907) 861-7822 • Fax (907) 861-7876
E-mail: permitcenter@matsugov.us

August 12, 2014

Shane Durand
Central Monofill Services
311 N. Sitka Street
Anchorage, AK 99501

SUBJECT: **Central Monofill Services Conditional Use Permit Application**
LOCATION: 17N02E18C010 & 17N02E19B006

Dear Mr. Durand:

This letter is a follow-up to the conversation that Alex Strawn and myself had with you today regarding the CMS conditional use permit application. We discussed the possibility of section line easements adjacent to the south and west sides of the above referenced property (See attached map). Since we spoke you sent us an e-mail stating that the title policy says *"Reservation of section line easement 33 feet in width along each side of the section line as provided by 43 U.S.C.932"*. However, this does not specify if this the north/south or east/west section line easement or both. A verification of section line easement(s) will need to be provided by a registered land surveyor.

In addition, we discussed the requirement to obtain an MSB Permit for Construction within Public Easements & Rights-of-Way to conduct any work within a section line easement. This permit will require a survey to determine the width of the section line easement and will require that the easement be left in a condition in which a road can be constructed. An application form is attached for your use. If you have any questions regarding this application please contact the MSB Right-of-Way Coordinator, Andy Dean, at 861-7803.

We also discussed that should the conditional use permit be a approved, a condition of approval would be that the section line easement(s) be vacated prior to any work being conducted within them.

Should you have any questions or require additional information please let me know.

Sincerely,

Susan Lee

Susan Lee
Planner II

Susan Lee

From: Durand, Shane [shane@cei-alaska.com]
Sent: Tuesday, August 12, 2014 11:40 AM
To: Alex Strawn
Cc: Susan Lee
Subject: RE: Potential easement on section line

There is nothing in the Title Report for this. We have had locates done on the property and they do not have any underground lines on the property or section line.

Shane

From: Alex Strawn [mailto:Alex.Strawn@matsugov.us]
Sent: Tuesday, August 12, 2014 11:31 AM
To: Durand, Shane
Cc: Susan Lee
Subject: Potential easement on section line

Hi Shane,

The attached DNR case file abstract indicates that there may be a private easement along the east-west section line easement.

Zoom to the project area using the following link and you will see the easement.

http://dnr.alaska.gov/MapAK/browser?url=Case%20Search&reqtype=LINK&fn=230702&ft=ADL

Alex Strawn
Development Services Manager
Matanuska-Susitna Borough
350 E. Dahlia Palmer, AK 99645
(907) 861-7854

Susan Lee

From: Alex Strawn
Sent: Tuesday, August 12, 2014 11:31 AM
To: Durand, Shane
Cc: Susan Lee
Subject: Potential easement on section line
Attachments: ADL 230702.pdf; CMS_ADL.pdf

Hi Shane,

The attached DNR case file abstract indicates that there may be a private easement along the east-west section line easement.

Zoom to the project area using the following link and you will see the easement.

http://dnr.alaska.gov/MapAK/browser?url=Case%20Search&reqtype=LINK&fn=230702&ft=ADL

Alex Strawn
Development Services Manager
Matanuska-Susitna Borough
350 E. Dahlia Palmer, AK 99645
(907) 861-7854

We are now accepting payments online for case agreements and mining claims bills! To make a payment by credit card or from your bank account, click here (https://dnr.alaska.gov/ccpayments).

Results - Case File Abstract

Summary

File: ADL 230702

Customer: 000162572 ALASCOM, INC.
C/O AT AND T CRE LEASE ADMIN. ONE A T AND T WAY, ROOM 1B201
BEDMINSTER NJ 07921
Doing Business As: AT&T ALASCOM, INC.

Case Type: 582 PRIVATE EASEMENT
DNR Unit: 200 LAND MANAGEMENT
File Location: SCDOLD SCDO LAND SECTION
Case Status: 09 APPLICATION RECEIVED
Status Date: 04/10/2009
Total Acres: 1.000
Date Initiated: 04/10/2009
Office of Primary Responsibility: LSC LAND-SOUTHCNTRL REG
Last Transaction Date: 01/13/2014
Case Subtype: 8715 UPLD FIBER OPTIC RWE
Last Transaction: ADJAGN ADJUDICATOR ASSIGNMENT

Land Records

Meridian: S	**Township:** 017N	**Range:** 001E	**Section:** 23	**Section Acres:** 1
Meridian: S	**Township:** 017N	**Range:** 001E	**Section:** 24	**Section Acres:** 1
Meridian: S	**Township:** 017N	**Range:** 002E	**Section:** 04	**Section Acres:** 1
Meridian: S	**Township:** 017N	**Range:** 002E	**Section:** 05	**Section Acres:** 1
Meridian: S	**Township:** 017N	**Range:** 002E	**Section:** 07	**Section Acres:** 1
Meridian: S	**Township:** 017N	**Range:** 002E	**Section:** 08	**Section Acres:** 1
Meridian: S	**Township:** 017N	**Range:** 002E	**Section:** 18	**Section Acres:** 1
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Meridian: S	**Township:** 019N	**Range:** 003E	**Section:** 29	**Section Acres:** 1
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Meridian: S	**Township:** 019N	**Range:** 004E	**Section:** 18	**Section Acres:** 1

Meridian: S	**Township:** 019N	**Range:** 004E	**Section:** 19	**Section Acres:** 1
Meridian: S	**Township:** 019N	**Range:** 004E	**Section:** 21	**Section Acres:** 1
Meridian: S	**Township:** 019N	**Range:** 005E	**Section:** 03	**Section Acres:** 1
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Meridian: S	**Township:** 019N	**Range:** 005E	**Section:** 07	**Section Acres:** 1
Meridian: S	**Township:** 019N	**Range:** 005E	**Section:** 08	**Section Acres:** 1
Meridian: S	**Township:** 020N	**Range:** 005E	**Section:** 25	**Section Acres:** 1
Meridian: S	**Township:** 020N	**Range:** 005E	**Section:** 34	**Section Acres:** 1
Meridian: S	**Township:** 020N	**Range:** 005E	**Section:** 35	**Section Acres:** 1
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Meridian: S	**Township:** 020N	**Range:** 006E	**Section:** 24	**Section Acres:** 1
Meridian: S	**Township:** 020N	**Range:** 006E	**Section:** 25	**Section Acres:** 1
Meridian: S	**Township:** 020N	**Range:** 006E	**Section:** 26	**Section Acres:** 1
Meridian: S	**Township:** 020N	**Range:** 006E	**Section:** 27	**Section Acres:** 1
Meridian: S	**Township:** 020N	**Range:** 006E	**Section:** 28	**Section Acres:** 1
Meridian: S	**Township:** 020N	**Range:** 006E	**Section:** 29	**Section Acres:** 1
Meridian: S	**Township:** 020N	**Range:** 006E	**Section:** 30	**Section Acres:** 1
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Meridian: S	**Township:** 020N	**Range:** 007E	**Section:** 21	**Section Acres:** 1
Meridian: S	**Township:** 020N	**Range:** 007E	**Section:** 22	**Section Acres:** 1
Meridian: S	**Township:** 020N	**Range:** 007E	**Section:** 23	**Section Acres:** 1
Meridian: S	**Township:** 020N	**Range:** 007E	**Section:** 24	**Section Acres:** 1
Meridian: S	**Township:** 020N	**Range:** 007E	**Section:** 30	**Section Acres:** 1
Meridian: S	**Township:** 020N	**Range:** 008E	**Section:** 19	**Section Acres:** 1
Meridian: S	**Township:** 020N	**Range:** 008E	**Section:** 22	**Section Acres:** 1
Meridian: S	**Township:** 020N	**Range:** 008E	**Section:** 23	**Section Acres:** 1
Meridian: S	**Township:** 020N	**Range:** 008E	**Section:** 25	**Section Acres:** 1
Meridian: S	**Township:** 020N	**Range:** 008E	**Section:** 26	**Section Acres:** 1
Meridian: S	**Township:** 020N	**Range:** 008E	**Section:** 27	**Section Acres:** 1
Meridian: S	**Township:** 020N	**Range:** 008E	**Section:** 28	**Section Acres:** 1
Meridian: S	**Township:** 020N	**Range:** 008E	**Section:** 29	**Section Acres:** 1
Meridian: S	**Township:** 020N	**Range:** 008E	**Section:** 30	**Section Acres:** 1
Meridian: S	**Township:** 020N	**Range:** 009E	**Section:** 20	**Section Acres:** 1
Meridian: S	**Township:** 020N	**Range:** 009E	**Section:** 25	**Section Acres:** 1
Meridian: S	**Township:** 020N	**Range:** 009E	**Section:** 26	**Section Acres:** 1
Meridian: S	**Township:** 020N	**Range:** 009E	**Section:** 27	**Section Acres:** 1
Meridian: S	**Township:** 020N	**Range:** 009E	**Section:** 28	**Section Acres:** 1
Meridian: S	**Township:** 020N	**Range:** 009E	**Section:** 29	**Section Acres:** 1
Meridian: S	**Township:** 020N	**Range:** 009E	**Section:** 30	**Section Acres:** 1
Meridian: S	**Township:** 020N	**Range:** 010E	**Section:** 29	**Section Acres:** 1
Meridian: S	**Township:** 020N	**Range:** 010E	**Section:** 30	**Section Acres:** 1

Case Actions

04-10-2009	**MULTIPLE CUSTOMERS FROM CASE INITIATION**		
	RELATION CODE A	11	APPLICANT
	CUSTOMER NUMBER A	000016019	NEW HORIZONS TELECOM
04-10-2009	**APPLICATION RECEIVED**		
	FEE PD?:	Y	YES
	FEE AMOUNT:	100	
	APPLICATION FEES PAID		
09-20-2011	**SEE OTHER ASSOCIATED FILE**		
	ASSOC FILE TYPE	ADL	ALASKA DIV OF LANDS
	ASSOC FILE NUMBER	230669	
	CONNECTING FIBER OPTIC CABLE LINE APPLICATION RECEIVED FROM SAME PARTY (DIFFERENT UNDERLYING EASEMENTS REQUESTED FOR CO-LOCATION).		

09-20-2011	**SEE OTHER ASSOCIATED FILE**		
	ASSOC FILE TYPE	ADL	ALASKA DIV OF LANDS
	ASSOC FILE NUMBER	230808	
	CONNECTING FIBER OPTIC CABLE LINE APPLICATION RECEIVED FROM SAME PARTY (DIFFERENT UNDERLYING EASEMENTS REQUESTED FOR CO-LOCATION).		
03-12-2013	**SEE OTHER ASSOCIATED FILE**		
	ASSOC FILE TYPE	RPT	TITLE REPORT
	ASSOC FILE NUMBER	4392	
	T. 17 N., R. 1 E., S.M., SEC. 23 N2, SEC. 24 N2		
03-20-2013	**SEE OTHER ASSOCIATED FILE**		
	ASSOC FILE TYPE	RPT	TITLE REPORT
	ASSOC FILE NUMBER	4396	
	T. 17 N., R. 2 E., S.M., SECS. 4, 5, 7, 8, 18, 19		
03-21-2013	**ADD LAND SECTIONS TO CASE**		
	THIS LAND IS	Y	PART OF ORIGINAL CAS
03-21-2013	**ADD LAND SECTIONS TO CASE**		
	THIS LAND IS	Y	PART OF ORIGINAL CAS
03-21-2013	**ADD LAND SECTIONS TO CASE**		
	THIS LAND IS	Y	PART OF ORIGINAL CAS
03-21-2013	**ADD LAND SECTIONS TO CASE**		
	THIS LAND IS	Y	PART OF ORIGINAL CAS
03-21-2013	**ADD LAND SECTIONS TO CASE**		
	THIS LAND IS	Y	PART OF ORIGINAL CAS
03-21-2013	**ADD LAND SECTIONS TO CASE**		
	THIS LAND IS	Y	PART OF ORIGINAL CAS
03-21-2013	**ADD LAND SECTIONS TO CASE**		
	THIS LAND IS	Y	PART OF ORIGINAL CAS
03-21-2013	**ADD LAND SECTIONS TO CASE**		
	THIS LAND IS	Y	PART OF ORIGINAL CAS
03-21-2013	**ADD LAND SECTIONS TO CASE**		
	THIS LAND IS	Y	PART OF ORIGINAL CAS
03-21-2013	**ADD LAND SECTIONS TO CASE**		
	THIS LAND IS	Y	PART OF ORIGINAL CAS
03-27-2013	**SEE OTHER ASSOCIATED FILE**		
	ASSOC FILE TYPE	RPT	TITLE REPORT
	ASSOC FILE NUMBER	4398	
	T. 18 N., R. 2 E., S.M., SECS. 1, 2, 3, 9, 10, 16, 20, 29, 32, 33		
04-23-2013	**SEE OTHER ASSOCIATED FILE**		
	ASSOC FILE TYPE	RPT	TITLE REPORT
	ASSOC FILE NUMBER	4400	
	T. 19 N., R. 3 E. S.M., SECS. 23, 24, 26 TO 29, 31, 32		
05-02-2013	**SEE OTHER ASSOCIATED FILE**		
	ASSOC FILE TYPE	RPT	TITLE REPORT
	ASSOC FILE NUMBER	4409	
05-06-2013	**SEE OTHER ASSOCIATED FILE**		
	ASSOC FILE TYPE	RPT	TITLE REPORT
	ASSOC FILE NUMBER	4399	
	T. 18 N., R. 3 E., S.M., SEC. 6		
05-07-2013	**SEE OTHER ASSOCIATED FILE**		
	ASSOC FILE TYPE	RPT	TITLE REPORT
	ASSOC FILE NUMBER	4401	
	T. 19 N., R. 4 E., S.M., SECS. 12 TO 19, 21		
05-08-2013	**SEE OTHER ASSOCIATED FILE**		
	ASSOC FILE TYPE	RPT	TITLE REPORT
	ASSOC FILE NUMBER	4408	
05-14-2013	**SEE OTHER ASSOCIATED FILE**		
	ASSOC FILE TYPE	RPT	TITLE REPORT
	ASSOC FILE NUMBER	4407	

05-20-2013 **SEE OTHER ASSOCIATED FILE**		
ASSOC FILE TYPE	RPT	TITLE REPORT
ASSOC FILE NUMBER	4402	
T. 19 N., R. 5 E., S.M., SECS. 3, 4, 5, 7, 8		
05-22-2013 **SEE OTHER ASSOCIATED FILE**		
ASSOC FILE TYPE	RPT	TITLE REPORT
ASSOC FILE NUMBER	4405	
05-31-2013 **SEE OTHER ASSOCIATED FILE**		
ASSOC FILE TYPE	RPT	TITLE REPORT
ASSOC FILE NUMBER	4404	
06-05-2013 **SEE OTHER ASSOCIATED FILE**		
ASSOC FILE TYPE	RPT	TITLE REPORT
ASSOC FILE NUMBER	4403	

Legal Description

04-10-2009
APPLICATION RECEIVED FROM NEW HORIZONS TELECOM, INC. FOR ATT ALASCOM, INC. FOR FIBER OPTIC CABLE FROM PALMER TO CARIBOU CREEK ALONG THE GLENN HIGHWAY.
LEGAL DESCRIPTION
SEWARD MERIDIAN
TOWNSHIP 17 NORTH, RANGE 1 EAST, SECTION 23.
TOWNSHIP 19 NORTH, RANGE 4 EAST, SECTION 16.
TOWNSHIP 20 NORTH, RANGE 6 EAST, SECTION 25.
TOWNSHIP 20 NORTH, RANGE 7 EAST, SECTION 20, 21, 22, 23.
TOWNSHIP 20 NORTH, RANGE 8 EAST, SECTION 19, 25, 26, 27, 28, 29.
TOWNSHIP 20 NORTH, RANGE 9 EAST, SECTION 27.
TOWNSHIP 20 NORTH, RANGE 10 EAST, SECTION 29, 30.
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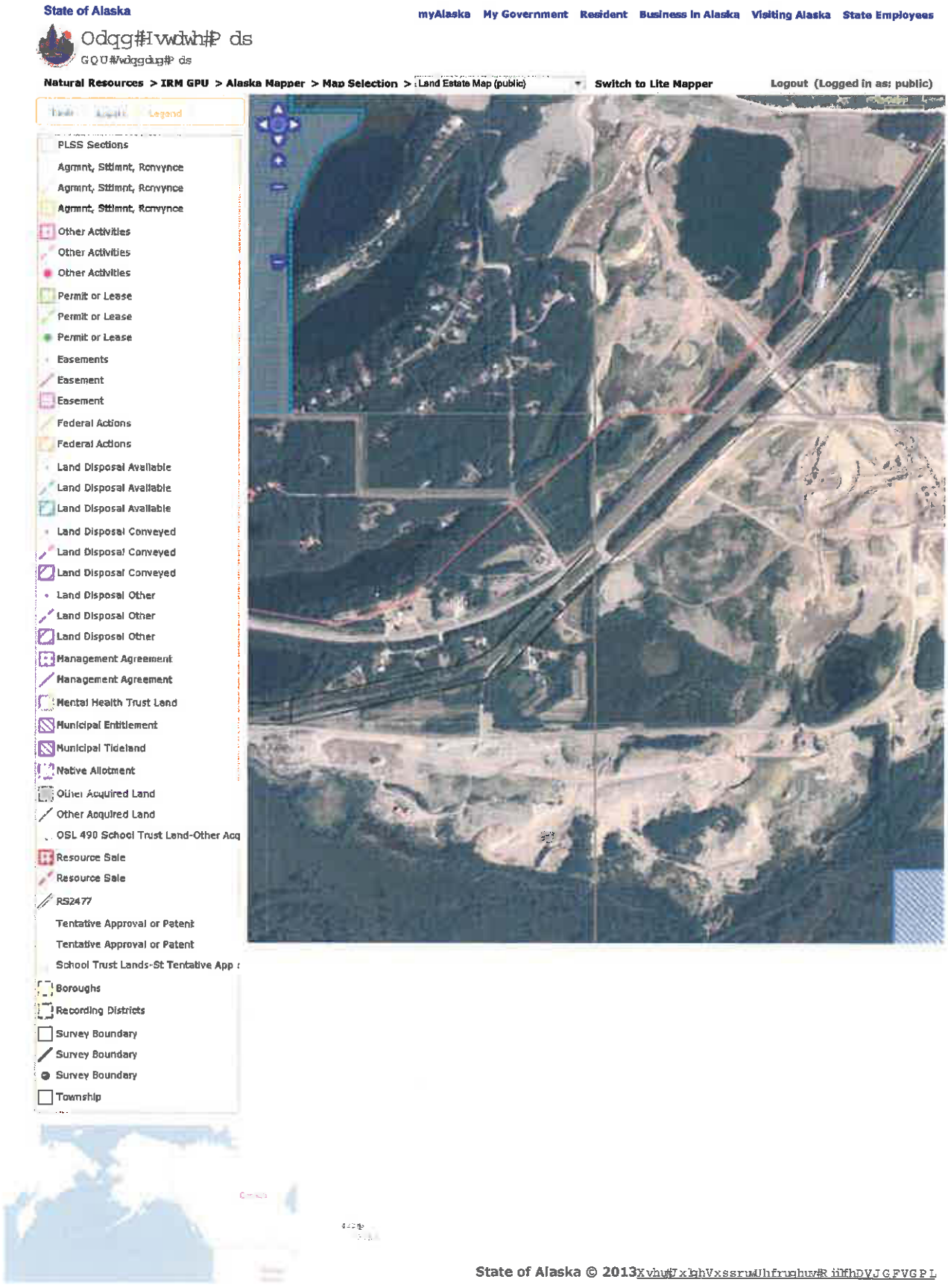
State of Alaska
myAlaska My Government Resident Business in Alaska Visiting Alaska State Employees
Natural Resources > IRM GPU > Alaska Mapper > Map Selection > Land Estate Map (public)
Switch to Lite Mapper
Logout (Logged in as: public)
Legend
PLSS Sections
Other Activities
Permit or Lease
Easements
Easement
Federal Actions
Land Disposal Available
Land Disposal Conveyed
Land Disposal Other
Management Agreement
Mental Health Trust Land
Municipal Entitlement
Municipal Tideland
Native Allotment
Other Acquired Land
OSL 490 School Trust Land-Other Acq
Resource Sale
RS2477
Tentative Approval or Patent
School Trust Lands-St Tentative App
Boroughs
Recording Districts
Survey Boundary
Township
State of Alaska © 2013

MATANUSKA-SUSITNA BOROUGH
Planning and Land Use Department
Development Services Division
350 East Dahlia Avenue • Palmer, AK 99645
Phone (907) 861-7822 • Fax (907) 861-7876
E-mail: permitcenter@matsugov.us

February 13, 2014

Shane Durand
Central Monofill Services
311 N. Sitka Street
Anchorage, AK 99501

SUBJECT: **Central Monofill Services Conditional Use Permit Application**
PROPERTY ID#: 17N02E18C010 &17N02E19B006

Dear Mr. Durand:

Borough staff has reviewed the application material for the proposed monofill on the above referenced property and have determined that the following information will need to be submitted and/or clarified before we can process the conditional use permit application:

1. The Borough hired J.A. Munter Consulting, Inc. to review the application material. A copy of Munter's report, dated February 7, 2014, is attached for your review and comments. In addition to specific issues outlined below, address all issues raised in the Munter report.

2. The application material states "*There are three industrial ponds located on the northern half of the property which cover 66 of the acres*". "*Of the remaining 52 acres, the monofill footprint is proposed to be 35.5 acres with 16.5 acres used for recycling operations*". "*The CUP is needed for 52 acres of the property*". The site plan does not depict the conditionally permitted area. The proposed permitted area is irregular and does not correspond to lot lines. A surveyed delineation of the 52 acre boundary must be shown on the site plan. MSB 17.60.040(B) *Site Plan* requires "*the specific location of the use or uses to be made of the development shall be submitted with the application*".

3. Do you have a drainage plan for this site? If so, provide a copy. For example, what direction will material flow off the monofill? What direction will surface water be draining during construction of the monofill? MSB code section 17.60.040(B) *Site Plan*, states that "*drainage*" must be shown on the site plan.

4. Is there a SWPPP (Storm Water Pollution Prevention Plan) for this site? If not, explain why one is not required?

5. Please address the State of Alaska, Department of Transportation's plans for widening the Glenn Highway and placing an intersection at Colleen Street and how that might affect this project.

6. Provide a copy of the wetlands review performed by Hemlock Scientific, as addressed on Page 15 of 38 of the application material.

7. Page 16 of 38 states *"Water level data is being shared with Alaska Department of Natural Resources for regional study of ground water table elevations"*. Provide a copy of all water level data that you have submitted to ADNR in regard to this project.

8. Page 17 of 38 states *"Alaska Department of Environmental Conservation (ADEC) reviewed the CMS Monofill Permit application for this site and has approved the permit conditioned upon receipt of the MSB CUP"*. ADEC has indicated to the borough that the permit has not been approved (See attached e-mail from ADEC). Please clarify and provide a copy of any approved ADEC permit.

9. Page 21 of 38 states "*The adjoining residential lots are screened from view of the property by trees*". Page 28 of 38 states "*The vegetation that is remaining on site is the forest located along the top of the mined banks and helps create a visual barrier between the public and the CUP activities. The existing trees will be left in place and used as a visual and noise buffer*". The monofill goes to the top of the bluff. It is not appropriate to use adjacent properties for the buffer. Any buffer should be located on your property. Provide a plan for buffering the neighboring properties as the monofill is built up and out towards those properties.

10. Page 22 of 38 states *"per the ADEC permit municipal and household waste will not be accepted at the facility"*. Provide a specific list of materials that can be accepted at the facility. For example, are the following items part of the residual material being deposited in the monofill: pressure treated wood, containers that contain residual materials, drywall, lead paint, formaldehyde containing materials, glues, mastics, and adhesives. What is the volume of residual material accepted? Are residues not considered hazardous due to their volume compared to the total cumulative volume?

11. Page 22 of 38 states *"Loads hauled into the facility that have not been previously inspected by CRS personnel will be dumped onto a lined pad for inspection"*. Page 35 of 38, #4, also states *"All waste delivered directly to the monofill is first placed within a lined area and inspected"*. Page 29 Sequence of Fill, does not address the separate inspection area. It states that trucks will place their loads in the operational cell. Page 37 of 38, #12, does not discuss this lined inspection pit as a non-permeable surface at the site. Clarify these inconsistencies and explain what is the actual process. Is the lined pad nonpermeable? In addition, will this inspection pad be moved around the site or will it remain in the same place so that it can be shown on the site plan?

12. Page 22 of 38 discusses the inspection pad that will be capped with 2" of soil. What is the plan for disposal of this soil? Will this soil be tested prior to its disposal or use? What is the plan for managing the run-off coming from the inspection area?

13. Page 22 of 38 discusses the careful handling of "hazardous wastes". The proposed monofill proposes to exclude "hazardous waste". It is not clear what this means and in

particular, that all waste that may be hazardous to water supplies will be excluded. Provide a specific list of everything that is tested for in the Building Material Survey.

14. Page 22 of 38 states that CRS and CMS have specific policies outlined in the Operations Plan. Provide a copy of the CRS and CMS Operations Plan.

15. Pages 22 - 23 of 38 states in part *"suspect materials delivered to CRS are tested and, if found, removed from the waste stream..."*. What criteria will be used to determine suspect materials?

16. Page 23 of 38 states *"suspect material will be tested in accordance with regulatory required test methods to identify hazardous materials content, if any"*. How regularly will Toxicity Characteristic Leaching Procedure (TCLP) occur? Does visually seeing paint make it "suspect"? Will any materials with lead paint be accepted?

17. Page 23 of 38 regarding asbestos. Asbestos will be placed in plastic bags which heavy equipment can perforate. Asbestos does not dissolve, however, it does become easily airborne. The fences proposed to stop blowing trash on a windy day will do nothing to stop asbestos. What type of fence will surround the asbestos cell? What is your policy for handling RACM during the wind?

18. Page 30 of 38 states *"Other materials deposited into the monofill are placed within the cells and will be covered intermittently, however not necessarily daily"*. Page 18 of 38 states *"Regularly covering the waste with soil further prevents blowing debris"*. What is meant by "covered intermittently" and "regularly covering"?

19. Page 31 of 38 states *"the ADEC permit requires the owner to provide bonding or other financial assurance to cover the cost of monofill closure"*. CMS also claims that it has *"sufficient Environmental and Pollution Insurance to cover this project"*. Provide copies of the bond, insurance policy and certificate of insurance.

20. Page 34 of 38 Hours of Operation. How will CMS be handling hours of operation during the Alaska State Fair?

21. What will be the actual maximum height of the finished monofill above the bottom of the cell?

22. What is the maximum square footage that will be exposed and not covered at any one time during the operation of the monofill?

23. Has the site been evaluated for impacts that would occur from a large earthquake, including, but not limited to susceptibility to liquefaction, potential changes in hydrology, i.e. raised water levels, and impacts on the tire bale structure?

24. What is the fire preparedness plan for this site? What would be the impacts from a fire and how would you address them?

25. Based on the application material and information in the February 7, 2014 Munter report, staff has determined that a Core Area Conditional Use Permit is required, per the requirements of MSB 17.61. Page 3 of 14 of Munter's report states in part *"... it would be*

reasonable to assume that there will be a sufficient amount of waste accumulated to generate leachate that will exceed one or more drinking water Maximum Contaminant Levels." In addition the report states in part *",,,it is highly likely to result in measurable increases in contaminants beneath the facility and for some distance downgradient."* A Core Area Conditional Use Permit application form is attached for your use.

26. Staff is currently researching whether or not the tire bale walls and monofill constitute a structure and are subject to the setback requirements in MSB 17.55 – Setbacks. We will forward our determination to you as soon as it is complete.

Once this information has been submitted and determined to be complete, the public hearing will be scheduled. Should you have any questions or require additional information please contact me at the above address, phone# 861-7862 or e-mail: slee@matsugov.us.

Sincerely,

Susan Lee

Susan Lee
Planner II

ADEC Correspondence

Susan Lee

From: Aldrich, Lori (DEC) [lori.aldrich@alaska.gov]
Sent: Friday, October 31, 2014 11:57 AM
To: Susan Lee
Cc: Stephanie & Stephen Nowers; Shane Durand; Rich Harbuck; William Quantick; Blankenburg, Robert J (DEC)
Subject: Comment: Central Monofill Services Conditional Use Permit

The Alaska Department of Environmental Conservation (ADEC) Solid Waste Program has been asked to submit official comment on the Central Monofill Services (CMS) Matanuska Susitna Borough (MSB) Conditional Use Permit (CUP) Application.

On page 17of 38 of the CMS MSB CUP application it states:
Alaska Department of Environmental Conservation (ADEC) reviewed the CMS Monofill Permit application for this site and has approved the permit conditioned upon receipt of the MSB CUP.

This issue was addressed in the application by CMS in response letter to you , dated May 12, 2014.

The ADEC Solid Waste Program has reviewed the CMS Inert Waste Monofill Permit application submitted January 12, 2013, including additional information submitted January 23, 2013. ADEC Solid Waste determined that the application was complete, and posted a public notice in the Frontiersman on March 12 & 15, 2013. No comment was received on the public notice.

Due to an error in the original public notice, which excluded the permitting of an Asbestos waste cell at the monofill, ADEC will be publishing an additional 30-day public notice in the near future.

At this time, NO DECISION has been issued by ADEC on the CMS Inert Waste Monofill Permit application other than it is complete based on our January 2013 regulations.

Thank you,
Lori

Lori Aldrich
REGIONAL PROGRAM MANAGER
Solid Waste Program
Department of Environmental Conservation
555 Cordova Street
Anchorage, AK 99501
(907) 269-7622

Susan Lee

From: Aldrich, Lori (DEC) [lori.aldrich@alaska.gov]
Sent: Friday, October 31, 2014 10:56 AM
To: Stephanie & Stephen Nowers
Cc: Susan Lee; Blankenburg, Robert J (DEC); Rich Harbuck; Stephanie Figon; William Quantick; Shane Durand
Subject: RE: URGENT: DEC correction on misstatements about approval of monofill design

Below is a copy of the email sent to CMS & MSB in March 2014. Please note that CMS responded appropriately in their application materials to this issue on March 12, 2014.

CMS MSB CUP Application

From	Aldrich, Lori (DEC)	**Date**	March 7, 2014 at 7:51:00 PM EST
To	Shane Durand ; Stuart Jacques		
Cc			
Bcc	Susan Lee		
Subject	CMS MSB CUP Application		

Shane and Stuart,

I was sent a copy of the Matanuska-Susitna Borough (MSB) Conditional Use Permit (CUP) Application. It included additional information that had not been previously submitted to ADEC. I did a brief review of the application. Although, this is not an official review of the application, I do have some comments regarding some of the language and information in the CUP application as it relates to the Inert Waste Monofill Permit Application submitted to ADEC.

CUP Application

Page 16 – These wells and monitoring plan are not required by ADEC but will allow CMS to monitor the groundwater for any concerns long term.

See comment below on Groundwater Monitoring Plan

Page 17 - Alaska Department of Environmental Conservation (ADEC) reviewed the CMS Monofill Permit application for this site and has approved the permit conditioned upon receipt of the MSB CUP.

ADEC has NOT APPROVED the permit – the permit application was deemed complete and a public notice was issued. ADEC also noted, in discussions with CMS, that if any significant changes were made to the permit application information in regard to the requirements of the Conditional Use Permit (CUP) issued by MSB a new complete ADEC monofill application would need to be submitted, including a new public comment period.

Page 28 - More than 70% of the existing monofill footprint is already in excess of 10' above the seasonal ground water table. Those areas with insufficient separation from ground water will be filled with onsite earthen materials to obtain a minimum separation of 10'.

The original permit application indicated that the low point of the monofill was more than 10 feet above the groundwater table. In discussions, CMS indicated that additional groundwater studies would be performed in May 2013 to determine the seasonal high groundwater levels, and the reports submitted to ADEC. The groundwater contours were developed from data collected on July 13, 2013, which would identify seasonal low groundwater levels. In addition, no discussion of fill to attain the proper groundwater separation was discussed. If areas are filled, you will need to resurvey the site and submit a new drawing of the present conditions.

Page 31 - The ADEC permit requires the owner to provide bonding or other financial assurance to cover the cost of monofill closure. The ADEC has a predetermined method for calculating the amount required for the bond or other financial assurance to make sure it is enough to cover all closure costs. CMS has met this obligation as part of the ADEC permit.

CMS has not presented adequate financial assurance to meet this requirement, and we would not expect CMS to submit this until ADEC had determined that a permit would be issued or denied. This will be based on a final review of the application and any other information gathered regarding the site conditions and facility plans.

Page 33 - ADEC has approved the proposed monofill design pending receipt of the MSB CUP.

ADEC has determined that the monofill design package is complete, but has not issued an approval for the design.

Maddox & Associates Report

Pg B-29 – states "the planned elevation of the bottom of the inert refuse in the monofill is a minimum of 10-feet below the normal seasonal high [water table].

Above, the CUP text indicates that this is not true, based on the ADEC monofill permit application, which does not include fill.

Groundwater Monitoring Plan

If CMS will be performing Groundwater monitoring at the site, a Groundwater Monitoring Plan that meets the conditions of 18 AAC 60.820-860 must be submitted to and approved by ADEC. This would be considered a significant change to the landfill operations.

RACM Cell

As I believe you were informed, the original Public Notice by ADEC did not include mention of the RACM cell. The only possible correction would be to issue an additional public notice if you will include a RACM cell at the monofill. I thought we had communicated to you and suggested that, if ADEC did permit the monofill, you might wait to begin a RACM cell at the site, and we could make the necessary permit modifications (including a public notice) at that time. In addition, we are somewhat concerned regarding comments on the wind issues at the site and our ability to permitRACM disposal.

If you have any questions or wish to discuss the comments, you can contact me after March 17. I will be out of the office in training all next week.

Thanks,

Lori

Lori Aldrich
REGIONAL PROGRAM MANAGER
Solid Waste Program
Department of Environmental Conservation
555 Cordova Street
Anchorage, AK 99501

From: Stephanie & Stephen Nowers [mailto:snowers@mtaonline.net]
Sent: Tuesday, October 28, 2014 9:07 PM
To: Aldrich, Lori (DEC)
Cc: susan.lee@matsugov.us; Blankenburg, Robert J (DEC); Rich Harbuck; Stephanie Figon; William Quantick
Subject: Re: URGENT: DEC correction on misstatements about approval of monofill design

Hi Lori,

I trust you are doing your best, and I appreciate your quick responses.

I do think it's relevant (and good government) that ADEC straighten out the record given that this matter is in front of a government body that will be deliberating using the official record. There are misstatements in that record that ADEC has approved the permit and no corresponding statement from ADEC to the contrary.

Sending a letter or email to the borough simply ensures that everyone is on the same page and has the correct information straight from ADEC and can refer to that if questions arise.

Thank you,

Stephanie Nowers

Sent from my iPhone

On Oct 28, 2014, at 8:21 AM, "Aldrich, Lori (DEC)" <lori.aldrich@alaska.gov> wrote:

Thank you for checking.

Sent from my iPhone

On Oct 28, 2014, at 11:39 AM, Susan Lee <Susan.Lee@matsugov.us> wrote:

Lori:

I have not received an e-mail from you.

Susan

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

From: Aldrich, Lori (DEC) [mailto:lori.aldrich@alaska.gov]
Sent: Tuesday, October 28, 2014 3:08 AM
To: Stephanie & Stephen Nowers
Cc: Blankenburg, Robert J (DEC); Rich Harbuck; Stephanie Figon; Susan Lee; William Quantick
Subject: Re: URGENT: DEC correction on misstatements about approval of monofill design

Actually, now that you mention it, I may have sent an email to Susan Lee. I was searching for one sent to CMS. Unfortunately I do not currently have access to my email archives. I will check when access is available. It may also be quoted in a frontiersman article if you check those.

It was reiterated several times to several sources, but as we did not do a formal review of the CUP application, and, it is irrelevant until we make a permit decision, it was not documented to the file.

Thank you,
Lori

Sent from my iPhone

On Oct 28, 2014, at 3:06 AM, Stephanie & Stephen Nowers <snowers@mtaonline.net> wrote:

Hi Lori,

I hate to be a bother. But ADEC, as a state agency, needs to be clear about its record and actions.

Central Monofill Services' repeatedly states in their application to the Mat-Su Borough that they have ADEC approval for their monofill design. From what you say in your email below, this is not true.

I think it is incumbent on ADEC to correct the record and send a formal statement to the Mat-Su Borough and CMS to make sure the record is clear for all involved. Saying you corrected CMS' misstatements verbally with no record of that communication is not a clear record.

I also believe it is incumbent on ADEC to send this formal statement to the Mat-Su Borough before the Oct. 31 deadline for comments so that it is part of the official record to the Mat-Su Borough Planning Commission and they are operating with correct and true information. This can be done simply by sending a letter to Mat-Su Borough Planner Susan Lee who is in charge of collecting comments at slee@matsugov.us

Below are cited some but perhaps not all of the references in CMS' application where they state they have ADEC approval. This can all be confirmed by looking at CMS' application which is online at the Mat-Su borough website.

Thanks Lori. And sorry again to be a bother since I know you are busy. I have copied Bob as your email indicated you might not be checking your email regularly this week and there is a public comment deadline looming.

907.229.1982

2nd page of CMS application intro Letter: "CMS submits this CUP application and attachments to address the requirements described in MSB 17.60 and other requests made by staff. The MSB does not have design standards or specific CUP standards for a recycle facility or monofill. The facility has been designed to meet the State of Alaska DEC standards for an inert waste monofill. ADEC has approved the proposed Monofill design."

Page 17: "Alaska Department of Environmental Conservation (ADEC) reviewed the CMS Monofill Permit application for this site and has approved the permit conditioned upon receipt of the MSB CUP."

Page 33: "Alaska Department of Environmental Conservation (ADEC) reviewed the CMS Monofill Permit application for this site and has approved the permit conditioned upon receipt of the MSB CUP."

Screenshot below from Page 282, the borough asks specifically about the ADEC permit and CMS responds maintaining they have approval and have met the requirements for the monofill.
<Screen Shot 2014-10-27 at 11.09.02 PM.png>

Sent from my iPhone

On Oct 27, 2014, at 8:38 PM, "Aldrich, Lori (DEC)" <lori.aldrich@alaska.gov> wrote:

I could not locate documentation, as I believe I responded verbally to the issues I had when I received a copy of the CUP application.

Sent from my iPhone

On Oct 27, 2014, at 5:51 PM, Stephanie & Stephen Nowers <snowers@mtaonline.net> wrote:

Hi Lori,

I worded that poorly. I just meant please send me the email/letter you sent to CMS telling them they are inaccurately describing their monofill as having approval from DEC in the proposal they have submitted to the Mat-Su Borough. I thought when we talked, you said you had communicated that to them. I just want that documentation.

Thanks,
Stephanie
Sent from my iPhoneo

On Oct 27, 2014, at 12:57 PM, "Aldrich, Lori (DEC)" <lori.aldrich@alaska.gov> wrote:

Stephanie,

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Thanks,
Lori

-----Original Message-----
From: Stephanie & Stephen Nowers [mailto:snowers@mtaonline.net]
Sent: Monday, October 27, 2014 12:01 AM
To: Aldrich, Lori (DEC)
Subject: DEC approval of CMS permit

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Thanks much!

Sent from my iPhone

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Susan Lee

From: Susan Lee
Sent: Thursday, October 23, 2014 9:02 AM
To: 'Aldrich, Lori (DEC)'
Cc: Alex Strawn; 'Durand, Shane'
Subject: Central Monofill Services

Lori:

Central Monofill Services has requested that you attend the MSB Planning Commission meeting on Monday, December 1, 2014 for the public hearing on the conditional use permit for the proposed monofill. Public hearings begin at 6:15 in the Borough Assembly Chambers, 350 E. Dahlia Avenue, Palmer.

Susan

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

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Susan Lee

From: Durand, Shane [shane@cei-alaska.com]
Sent: Wednesday, October 29, 2014 8:13 AM
To: Aldrich, Lori (DEC)
Cc: Susan Lee
Subject: FW: URGENT: DEC correction on misstatements about approval of monofill design

As you may remember Stephanie's concerns with the original January application to the MSB were addressed with our comments to the Borough in our May 14, 2014 supplement page 6.

Respectfully,
Shane Durand

From: Susan Lee [mailto:Susan.Lee@matsugov.us]
Sent: Wednesday, October 29, 2014 7:53 AM
To: Durand, Shane
Subject: FW: URGENT: DEC correction on misstatements about approval of monofill design

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
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Sent: Tuesday, October 28, 2014 9:07 PM
To: Aldrich, Lori (DEC)
Cc: Susan Lee; Blankenburg, Robert J (DEC); Rich Harbuck; Stephanie Figon; William Quantick
Subject: Re: URGENT: DEC correction on misstatements about approval of monofill design

Hi Lori,

I trust you are doing your best, and I appreciate your quick responses.

I do think it's relevant (and good government) that ADEC straighten out the record given that this matter is in front of a government body that will be deliberating using the official record. There are misstatements in that record that ADEC has approved the permit and no corresponding statement from ADEC to the contrary.

Sending a letter or email to the borough simply ensures that everyone is on the same page and has the correct information straight from ADEC and can refer to that if questions arise.

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Susan Lee

From: Aldrich, Lori (DEC) [lori.aldrich@alaska.gov]
Sent: Friday, October 31, 2014 11:57 AM
To: Susan Lee
Cc: Stephanie & Stephen Nowers; Shane Durand; Rich Harbuck; William Quantick; Blankenburg, Robert J (DEC)
Subject: Comment: Central Monofill Services Conditional Use Permit

The Alaska Department of Environmental Conservation (ADEC) Solid Waste Program has been asked to submit official comment on the Central Monofill Services (CMS) Matanuska Susitna Borough (MSB) Conditional Use Permit (CUP) Application.

On page 17of 38 of the CMS MSB CUP application it states:
Alaska Department of Environmental Conservation (ADEC) reviewed the CMS Monofill Permit application for this site and has approved the permit conditioned upon receipt of the MSB CUP.

This issue was addressed in the application by CMS in response letter to you , dated May 12, 2014.

The ADEC Solid Waste Program has reviewed the CMS Inert Waste Monofill Permit application submitted January 12, 2013, including additional information submitted January 23, 2013. ADEC Solid Waste determined that the application was complete, and posted a public notice in the Frontiersman on March 12 & 15, 2013. No comment was received on the public notice.

Due to an error in the original public notice, which excluded the permitting of an Asbestos waste cell at the monofill, ADEC will be publishing an additional 30-day public notice in the near future.

At this time, NO DECISION has been issued by ADEC on the CMS Inert Waste Monofill Permit application other than it is complete based on our January 2013 regulations.

Thank you,
Lori

Lori Aldrich
REGIONAL PROGRAM MANAGER
Solid Waste Program
Department of Environmental Conservation
555 Cordova Street
Anchorage, AK 99501
(907) 269-7622

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Susan Lee

From: Aldrich, Lori (DEC) [lori.aldrich@alaska.gov]
Sent: Friday, October 31, 2014 10:56 AM
To: Stephanie & Stephen Nowers
Cc: Susan Lee; Blankenburg, Robert J (DEC); Rich Harbuck; Stephanie Figon; William Quantick; Shane Durand
Subject: RE: URGENT: DEC correction on misstatements about approval of monofill design

Below is a copy of the email sent to CMS & MSB in March 2014. Please note that CMS responded appropriately in their application materials to this issue on March 12, 2014.

CMS MSB CUP Application

From Aldrich, Lori (DEC) **Date** March 7, 2014 at 7:51:00 PM EST

To Shane Durand ; Stuart Jacques

Cc

Bcc Susan Lee

Subject CMS MSB CUP Application

Shane and Stuart,

I was sent a copy of the Matanuska-Susitna Borough (MSB) Conditional Use Permit (CUP) Application. It included additional information that had not been previously submitted to ADEC. I did a brief review of the application. Although, this is not an official review of the application, I do have some comments regarding some of the language and information in the CUP application as it relates to the Inert Waste Monofill Permit Application submitted to ADEC.

CUP Application

Page 16 – These wells and monitoring plan are not required by ADEC but will allow CMS to monitor the groundwater for any concerns long term.

See comment below on Groundwater Monitoring Plan

Page 17 - Alaska Department of Environmental Conservation (ADEC) reviewed the CMS Monofill Permit application for this site and has approved the permit conditioned upon receipt of the MSB CUP.

ADEC has NOT APPROVED the permit – the permit application was deemed complete and a public notice was issued. ADEC also noted, in discussions with CMS, that if any significant changes were made to the permit application information in regard to the requirements of the Conditional Use Permit (CUP) issued by MSB a new complete ADEC monofill application would need to be submitted, including a new public comment period.

Page 28 - More than 70% of the existing monofill footprint is already in excess of 10' above the seasonal ground water table. Those areas with insufficient separation from ground water will be filled with onsite earthen materials to obtain a minimum separation of 10'.

The original permit application indicated that the low point of the monofill was more than 10 feet above the groundwater table. In discussions, CMS indicated that additional groundwater studies would be performed in May 2013 to determine the seasonal high groundwater levels, and the reports submitted to ADEC. The groundwater contours were developed from data collected on July 13, 2013, which would identify seasonal low groundwater levels. In addition, no discussion of fill to attain the proper groundwater separation was discussed. If areas are filled, you will need to resurvey the site and submit a new drawing of the present conditions.

Page 31 - The ADEC permit requires the owner to provide bonding or other financial assurance to cover the cost of monofill closure. The ADEC has a predetermined method for calculating the amount required for the bond or other financial assurance to make sure it is enough to cover all closure costs. CMS has met this obligation as part of the ADEC permit.

CMS has not presented adequate financial assurance to meet this requirement, and we would not expect CMS to submit this until ADEC had determined that a permit would be issued or denied. This will be based on a final review of the application and any other information gathered regarding the site conditions and facility plans.

Page 33 - ADEC has approved the proposed monofill design pending receipt of the MSB CUP.

ADEC has determined that the monofill design package is complete, but has not issued an approval for the design.

Maddox & Associates Report

Pg B-29 – states "the planned elevation of the bottom of the inert refuse in the monofill is a minimum of 10-feet below the normal seasonal high [water table].

Above, the CUP text indicates that this is not true, based on the ADEC monofill permit application, which does not include fill.

Groundwater Monitoring Plan

If CMS will be performing Groundwater monitoring at the site, a Groundwater Monitoring Plan that meets the conditions of 18 AAC 60.820-860 must be submitted to and approved by ADEC. This would be considered a significant change to the landfill operations.

RACM Cell

As I believe you were informed, the original Public Notice by ADEC did not include mention of the RACM cell. The only possible correction would be to issue an additional public notice if you will include a RACM cell at the monofill. I thought we had communicated to you and suggested that, if ADEC did permit the monofill, you might wait to begin a RACM cell at the site, and we could make the necessary permit modifications (including a public notice) at that time. In addition, we are somewhat concerned regarding comments on the wind issues at the site and our ability to permitRACM disposal.

If you have any questions or wish to discuss the comments, you can contact me after March 17. I will be out of the office in training all next week.

Thanks,

Lori

Lori Aldrich
REGIONAL PROGRAM MANAGER
Solid Waste Program
Department of Environmental Conservation
555 Cordova Street
Anchorage, AK 99501

From: Stephanie & Stephen Nowers [mailto:snowers@mtaonline.net]
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Cc: susan.lee@matsugov.us; Blankenburg, Robert J (DEC); Rich Harbuck; Stephanie Figon; William Quantick
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Matanuska-Susitna Borough
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907.229.1982

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Lori

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From: Stephanie & Stephen Nowers
[mailto:snowers@mtaonline.net]
Sent: Monday, October 27, 2014 12:01 AM
To: Aldrich, Lori (DEC)
Subject: DEC approval of CMS permit

Hi Lori,

Thank you again for meeting with us about the monofill in Mat- Su. I'm reading through CMS' application to the borough and they repeatedly state that DEC has APPROVED their monofill design. You said that was not the case. Can you send me the documentation proving that. Do you have a letter or email you sent them to that effect. I want to include it in my comments to the borough.

Thanks much!

Sent from my iPhone

Susan Lee

From: Aldrich, Lori (DEC) [lori.aldrich@alaska.gov]
Sent: Tuesday, October 28, 2014 3:08 AM
To: Stephanie & Stephen Nowers
Cc: Blankenburg, Robert J (DEC); Rich Harbuck; Stephanie Figon; Susan Lee; William Quantick
Subject: Re: URGENT: DEC correction on misstatements about approval of monofill design

Actually, now that you mention it, I may have sent an email to Susan Lee. I was searching for one sent to CMS. Unfortunately I do not currently have access to my email archives. I will check when access is available. It may also be quoted in a frontiersman article if you check those.

It was reiterated several times to several sources, but as we did not do a formal review of the CUP application, and, it is irrelevant until we make a permit decision, it was not documented to the file.

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On Oct 28, 2014, at 3:06 AM, Stephanie & Stephen Nowers <snowers@mtaonline.net> wrote:

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Thanks Lori. And sorry again to be a bother since I know you are busy. I have copied Bob as your email indicated you might not be checking your email regularly this week and there is a public comment deadline looming.

- Stephanie Nowers
907.229.1982

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Susan Lee

From: Stephanie & Stephen Nowers [snowers@mtaonline.net]
Sent: Tuesday, October 28, 2014 12:07 AM
To: Aldrich, Lori (DEC)
Cc: bob.blankenburg@alaska.gov; Rich Harbuck; Stephanie Figon; Susan Lee; William Quantick
Subject: URGENT: DEC correction on misstatements about approval of monofill design

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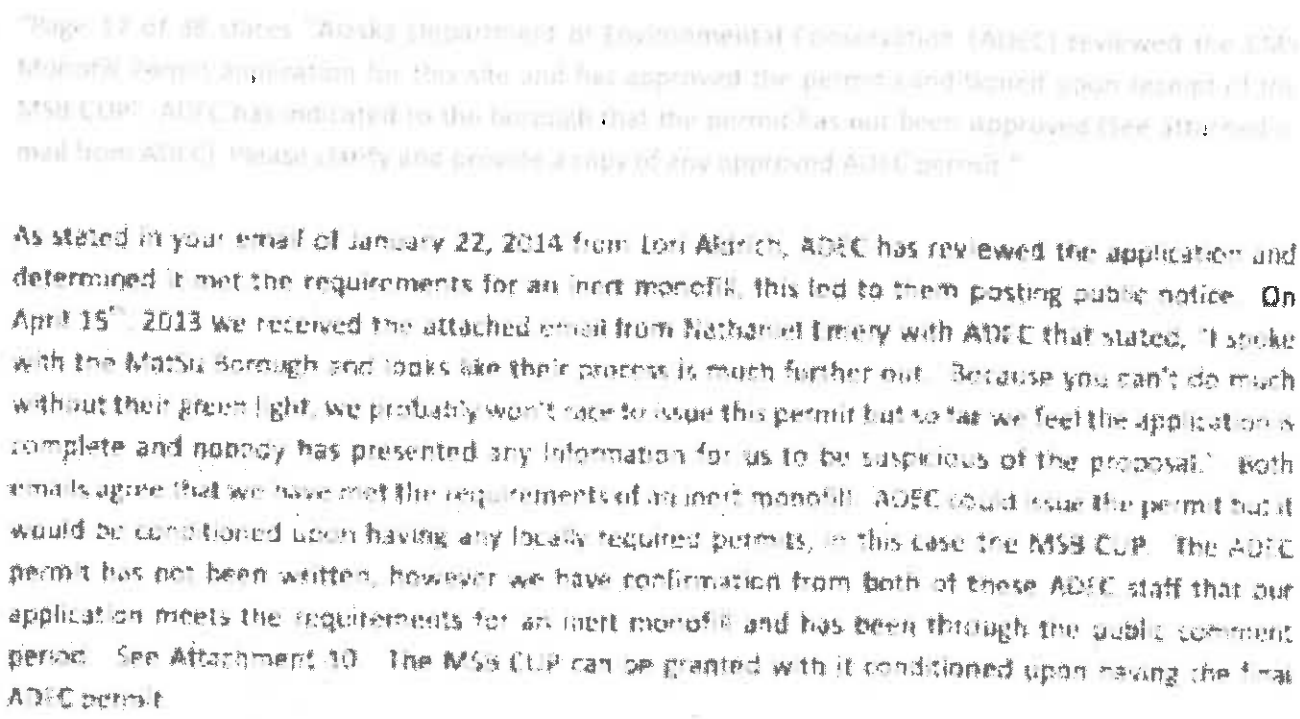

As stated in your email of January 22, 2014 from Lori Aldrich, ADEC has reviewed the application and determined it met the requirements for an inert monofill, this led to them posting public notice. On April 15th 2013 we received the attached email from Nathaniel Emery with ADEC that stated, "I spoke with the Matsu Borough and looks like their process is much further out. Because you can't do much without their green light, we probably won't race to issue this permit but so far we feel the application is complete and nobody has presented any information for us to be suspicious of the proposal." Both emails agree that we have met the requirements of an inert monofill. ADEC could issue the permit but it would be conditioned upon having any locally required permits, in this case the MSB CUP. The ADEC permit has not been written, however we have confirmation from both of these ADEC staff that our application meets the requirements for an inert monofill and has been through the public comment period. See Attachment 10. The MSB CUP can be granted with it conditioned upon having the final ADEC permit.

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Thanks much!

Sent from my iPhone

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Susan Lee

From: Richard Harbuck [superglide@mtaonline.net]
Sent: Tuesday, October 28, 2014 7:23 AM
To: Stephanie & Stephen Nowers
Cc: lori.aldrich@alaska.gov; bob.blankenburg@alaska.gov; sfigon@mtaonline.net; Susan Lee; abxwilliam@aol.com
Subject: Re: URGENT: DEC correction on misstatements about approval of monofill design

Good luck with getting a straight answer, she always just fails to actually answer the questions.

--- snowers@mtaonline.net wrote:

From: Stephanie & Stephen Nowers <snowers@mtaonline.net>
To: "Aldrich, Lori (DEC)" <lori.aldrich@alaska.gov>
Cc: "bob.blankenburg@alaska.gov" <bob.blankenburg@alaska.gov>, Rich Harbuck <superglide@mtaonline.net>, Stephanie Figon <sfigon@mtaonline.net>, Susan Lee <Susan.Lee@matsugov.us>, William Quantick <abxwilliam@aol.com>
Subject: URGENT: DEC correction on misstatements about approval of monofill design
Date: Tue, 28 Oct 2014 00:06:32 -0800

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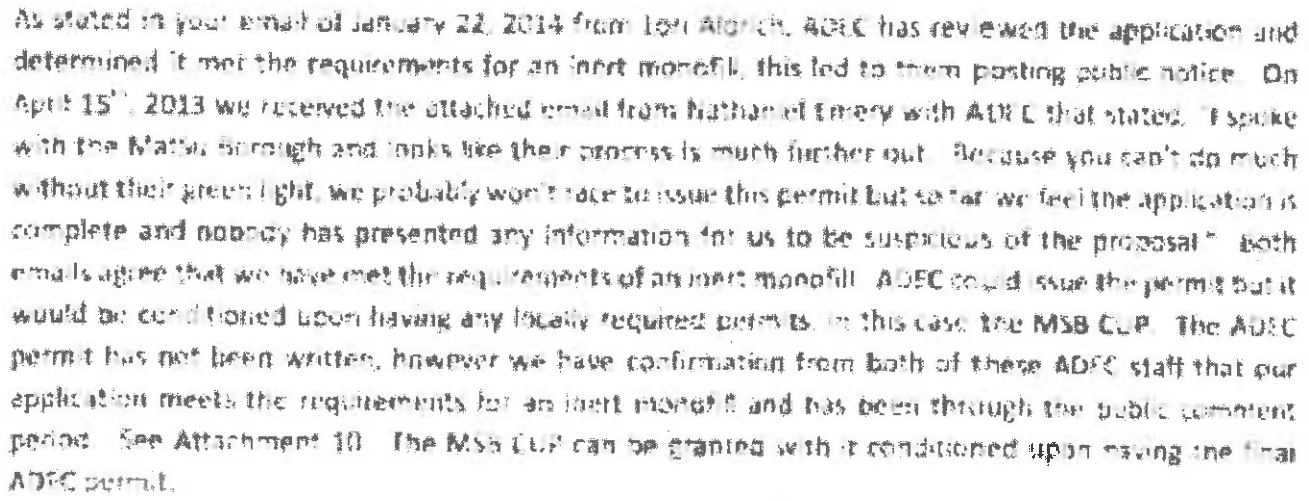

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Cc: Susan Lee; Blankenburg, Robert J (DEC); Rich Harbuck; Stephanie Figon; William Quantick
Subject: Re: URGENT: DEC correction on misstatements about approval of monofill design

Hi Lori,

I trust you are doing your best, and I appreciate your quick responses.

I do think it's relevant (and good government) that ADEC straighten out the record given that this matter is in front of a government body that will be deliberating using the official record. There are misstatements in that record that ADEC has approved the permit and no corresponding statement from ADEC to the contrary.

Sending a letter or email to the borough simply ensures that everyone is on the same page and has the correct information straight from ADEC and can refer to that if questions arise.

Thank you,

Stephanie Nowers

Sent from my iPhone

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> > Lori:
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> >
> > Susan
> >
> > Susan Lee
> > Planner II
> > Matanuska-Susitna Borough
> > 907-861-7862 (Direct Line)
> > 907-861-7876 (FAX)
> > PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

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From: Aldrich, Lori (DEC) [lori.aldrich@alaska.gov]
Sent: Thursday, October 30, 2014 7:50 AM
To: Durand, Shane
Cc: Stephanie & Stephen Nowers; Susan Lee; Blankenburg, Robert J (DEC)
Subject: Re: URGENT: DEC correction on misstatements about approval of monofill design

Shane,
Thank you for adding to the discussion.

Lori

Sent from my iPhone

On Oct 30, 2014, at 11:09 AM, Durand, Shane <shane@cei-alaska.com> wrote:

> Lori,
>
> To quote your email of March 19, 2014.
>
> "Page 17 - Alaska Department of Environmental Conservation (ADEC) reviewed the CMS Monofill Permit application for this site and has approved the permit conditioned upon receipt of the MSB CUP.
>
> ADEC has NOT APPROVED the permit – the permit application was deemed complete and a public notice was issued. ADEC also noted, in discussions with CMS, that if any significant changes were made to the permit application information in regard to the requirements of the Conditional Use Permit (CUP) issued by MSB a new complete ADEC monofill application would need to be submitted, including a new public comment period."
>
> Per your email and questions raised by MSB staff of the original January 2014 application this was clarified in the May supplemental package to the MSB.
>
> Shane Durand
> Central Recycling Services
> 2400 Railroad Ave.
> Anchorage, AK 99501
> (907)748-7400
> (907)770-5084 fax
> www.centralrecyclingservices.com
> www.crssurplusmaterials.com
> www.cicequipment.com

From: Aldrich, Lori (DEC) [mailto:lori.aldrich@alaska.gov]
Sent: Wednesday, October 29, 2014 5:10 PM
To: Stephanie & Stephen Nowers
Cc: susan.lee@matsugov.us; Blankenburg, Robert J (DEC); Rich Harbuck; Stephanie Figon; William

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Intentionally

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Susan Lee

From: Aldrich, Lori (DEC) [lori.aldrich@alaska.gov]
Sent: Thursday, October 30, 2014 7:48 AM
To: Stephanie & Stephen Nowers
Cc: Susan Lee; Blankenburg, Robert J (DEC); Rich Harbuck; Stephanie Figon; William Quantick
Subject: Re: URGENT: DEC correction on misstatements about approval of monofill design

Stephanie,
I am doing well, if you exclude trying to deal with email systems. I do apologize for the term irrelevant. My travel weary response was not well worded. I intended

I have managed to locate an email that I sent to CMS on March 7, 2014, and BCC'd to Susan Lee. I will go into work on Friday so I am able to forward the email, and will submit an official comment to the Borough to reiterate that ADEC has not made any decisions regarding the landfill permit, including issuing a design approval.

Sent from my iPhone

On Oct 29, 2014, at 1:07 AM, Stephanie & Stephen Nowers <snowers@mtaonline.net> wrote:

> Hi Lori,
>
> I trust you are doing your best, and I appreciate your quick responses.
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I have not received an e-mail from you.

Susan

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

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To: Stephanie & Stephen Nowers
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Subject: Re: URGENT: DEC correction on misstatements about approval of monofill design

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Thanks Lori. And sorry again to be a bother since I know you are busy. I have copied Bob as your email indicated you might not be checking your email regularly this week and there is a public comment deadline looming.

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907.229.1982

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Sent: Monday, October 27, 2014 12:01 AM
To: Aldrich, Lori (DEC)
Subject: DEC approval of CMS permit

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Thanks much!

Sent from

my
iPhone

Susan Lee

From: Durand, Shane [shane@cei-alaska.com]
Sent: Thursday, October 30, 2014 7:08 AM
To: Aldrich, Lori (DEC); Stephanie & Stephen Nowers
Cc: Susan Lee; Blankenburg, Robert J (DEC)
Subject: RE: URGENT: DEC correction on misstatements about approval of monofill design

Lori,

To quote your email of March 19, 2014.

"Page 17 - Alaska Department of Environmental Conservation (ADEC) reviewed the CMS Monofill Permit application for this site and has approved the permit conditioned upon receipt of the MSB CUP.

ADEC has NOT APPROVED the permit – the permit application was deemed complete and a public notice was issued. ADEC also noted, in discussions with CMS, that if any significant changes were made to the permit application information in regard to the requirements of the Conditional Use Permit (CUP) issued by MSB a new complete ADEC monofill application would need to be submitted, including a new public comment period."

Per your email and questions raised by MSB staff of the original January 2014 application this was clarified in the May supplemental package to the MSB.

Shane Durand
Central Recycling Services
2400 Railroad Ave.
Anchorage, AK 99501
(907)748-7400
(907)770-5084 fax
www.centralrecyclingservices.com
www.crssurplusmaterials.com
www.cicequipment.com

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Sent: Wednesday, October 29, 2014 5:10 PM
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Back to the question at hand, I have located the comment email that I sent to CMS, which was also BCC'd to Susan Lee on March 7, 2014. I will come into the office on Friday to send you a copy, as I have not been able

to properly recover the archive using my available electronics. I will also make sure it is submitted as record to MSB, and I will reiterate that we have not issued any approvals for the permit or the submitted design. Any decisions will be documented at the time we issue our permit decision.

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Thanks
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Susan Lee

From: Aldrich, Lori (DEC) [lori.aldrich@alaska.gov]
Sent: Friday, March 07, 2014 3:51 PM
To: Shane Durand; Stuart Jacques
Subject: CMS MSB CUP Application

Shane and Stuart,

I was sent a copy of the Matanuska-Susitna Borough (MSB) Conditional Use Permit (CUP) Application. It included additional information that had not been previously submitted to ADEC. I did a brief review of the application. Although, this is not an official review of the application, I do have some comments regarding some of the language and information in the CUP application as it relates to the Inert Waste Monofill Permit Application submitted to ADEC.

CUP Application

Page 16 – These wells and monitoring plan are not required by ADEC but will allow CMS to monitor the groundwater for any concerns long term.

See comment below on Groundwater Monitoring Plan

Page 17 - Alaska Department of Environmental Conservation (ADEC) reviewed the CMS Monofill Permit application for this site and has approved the permit conditioned upon receipt of the MSB CUP.

ADEC has NOT APPROVED the permit – the permit application was deemed complete and a public notice was issued. ADEC also noted, in discussions with CMS, that if any significant changes were made to the permit application information in regard to the requirements of the Conditional Use Permit (CUP) issued by MSB a new complete ADEC monofill application would need to be submitted, including a new public comment period.

Page 28 - More than 70% of the existing monofill footprint is already in excess of 10' above the seasonal ground water table. Those areas with insufficient separation from ground water will be filled with onsite earthen materials to obtain a minimum separation of 10'.

The original permit application indicated that the low point of the monofill was more than 10 feet above the groundwater table. In discussions, CMS indicated that additional groundwater studies would be performed in May 2013 to determine the seasonal high groundwater levels, and the reports submitted to ADEC. The groundwater contours were developed from data collected on July 13, 2013, which would identify seasonal low groundwater levels. In addition, no discussion of fill to attain the proper groundwater separation was discussed. If areas are filled, you will need to resurvey the site and submit a new drawing of the present conditions.

Page 31 - The ADEC permit requires the owner to provide bonding or other financial assurance to cover the cost of monofill closure. The ADEC has a predetermined method for calculating the amount required for the bond or other financial assurance to make sure it is enough to cover all closure costs. CMS has met this obligation as part of the ADEC permit.

CMS has not presented adequate financial assurance to meet this requirement, and we would not expect CMS to submit this until ADEC had determined that a permit would be issued or denied. This will be based on a final review of the application and any other information gathered regarding the site conditions and facility plans.

Page 33 - ADEC has approved the proposed monofill design pending receipt of the MSB CUP.

ADEC has determined that the monofill design package is complete, but has not issued an approval for the design.

Maddox & Associates Report

Pg B-29 – states "the planned elevation of the bottom of the inert refuse in the monofill is a minimum of 10-feet below the normal seasonal high [water table].

Above, the CUP text indicates that this is not true, based on the ADEC monofill permit application, which does not include fill.

Groundwater Monitoring Plan

If CMS will be performing Groundwater monitoring at the site, a Groundwater Monitoring Plan that meets the conditions of 18 AAC 60.820-860 must be submitted to and approved by ADEC. This would be considered a significant change to the landfill operations.

RACM Cell

As I believe you were informed, the original Public Notice by ADEC did not include mention of the RACM cell. The only possible correction would be to issue an additional public notice if you will include a RACM cell at the monofill. I thought we had communicated to you and suggested that, if ADEC did permit the monofill, you might wait to begin a RACM cell at the site, and we could make the necessary permit modifications (including a public notice) at that time. In addition, we are somewhat concerned regarding comments on the wind issues at the site and our ability to permit RACM disposal.

If you have any questions or wish to discuss the comments, you can contact me after March 17. I will be out of the office in training all next week.

Thanks,
Lori

Lori Aldrich
REGIONAL PROGRAM MANAGER
Solid Waste Program
Department of Environmental Conservation
555 Cordova Street
Anchorage, AK 99501
(907) 269-7622

Susan Lee

From: Aldrich, Lori (DEC) [lori.aldrich@alaska.gov]
Sent: Wednesday, February 19, 2014 12:06 PM
To: Susan Lee
Subject: CMS Monofill

Hi Susan,

Apparently things are happening with the Borough council, as I am getting a lot of phone calls. Can you direct me to where I can find all the Borough produced information on the monofill, so I can help delineate the Borough's issues from the State's issues – people are not accepting my answers that I cannot do much until I see what conditions the Borough might require.

Thanks,
Lori

Lori Aldrich
Solid Waste Program Coordinator
Department of Environmental Conservation
555 Cordova Street
Anchorage, AK 99501
(907) 269-7622

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Susan Lee

From: Aldrich, Lori (DEC) [lori.aldrich@alaska.gov]
Sent: Tuesday, February 11, 2014 3:10 PM
To: Susan Lee
Subject: RE: CMS application

Susan,
Straight form the regulations:

18 AAC 60.265. Proof of financial responsibility. Unless the applicant has provided equivalent surety through a government agency or has demonstrated financial assurance under 18 AAC 60.398, the department will require proof of financial responsibility to cover the cost of closing a landfill and, if monitoring is required, the cost of post-closure monitoring if the department determines proof of financial responsibility is necessary to protect the public health, safety, or welfare, or the environment. Proof of financial responsibility under this section may be demonstrated by self-insurance, insurance, surety, or other guarantee approved by the department to assure compliance with applicable closure standards and post-closure monitoring requirements. (Eff. 1/28/96, Register 137; am 10/29/98, Register 148)

Most Companies use insurance, bonding, or a letter of credit.

Lori

From: Susan Lee [mailto:Susan.Lee@matsugov.us]
Sent: Tuesday, February 11, 2014 3:05 PM
To: Aldrich, Lori (DEC)
Subject: RE: CMS application

Lori:

If their permit gets approved what kind of bond do they need to obtain?

Thanks, Susan

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

From: Aldrich, Lori (DEC) [mailto:lori.aldrich@alaska.gov]
Sent: Tuesday, February 11, 2014 2:42 PM
To: Susan Lee
Subject: RE: CMS application

Susan,

I apologize for the late reply, I am just going thru to see if I missed any emails. They have not provided the financial assurance at this point – this generally does not happen until the permit is ready to be issued. We have agreed on a closure cost and they have documentation to support their cost.

Lori

From: Susan Lee [mailto:Susan.Lee@matsugov.us]
Sent: Tuesday, February 04, 2014 10:18 AM
To: Aldrich, Lori (DEC)
Subject: CMS application

Lori:

CMS has stated that the ADEC permit requires the owner to provide bonding or other financial assurance to cover the cost of monofill closure. Has this information been provided by CMS and if so, can you provide a copy of it to the MSB?

Susan

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

Susan Lee

From: Susan Lee
Sent: Tuesday, February 04, 2014 10:18 AM
To: 'Aldrich, Lori (DEC)'
Subject: CMS application

Lori:

CMS has stated that the ADEC permit requires the owner to provide bonding or other financial assurance to cover the cost of monofill closure. Has this information been provided by CMS and if so, can you provide a copy of it to the MSB?

Susan

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

Susan Lee

From: Susan Lee
Sent: Tuesday, January 28, 2014 7:38 AM
To: 'Aldrich, Lori (DEC)'
Subject: Central Monofill Services
Attachments: SKMBT_C65414012807320.pdf

Hi Lori:

I have a couple of questions regarding CMS's proposed monofill. I attached one of the cross sections drawings from their application material for your reference.

1. Can fill be used to meet the 10' separation from the watertable?
2. If fill can be used, what types of material are acceptable for fill?
3. Do they have to disclose the type of material that was used for fill?

Thanks for your help!

Susan

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

Susan Lee

From: Aldrich, Lori (DEC) [lori.aldrich@alaska.gov]
Sent: Wednesday, January 22, 2014 12:55 PM
To: Susan Lee
Subject: RE: Central Monofill Services

Susan,

Whether they must submit a new application remains to be seen, and will be determined by ADEC. They are required to submit their more comprehensive hydrological study and any potential changes as they relate to that. In addition, I presume they have made some concessions to the Borough to resubmit for the conditional use permit.

Thanks for keeping me posted.

Lori

From: Susan Lee [mailto:Susan.Lee@matsugov.us]
Sent: Wednesday, January 22, 2014 12:52 PM
To: Aldrich, Lori (DEC)
Subject: RE: Central Monofill Services

Lori:

Shane Durand of CMS stated that they will not be submitting a new ADEC permit application. I will be forwarding their MSB application material to you when it goes out for public review.

Susan

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

From: Aldrich, Lori (DEC) [mailto:lori.aldrich@alaska.gov]
Sent: Wednesday, January 22, 2014 12:46 PM
To: Susan Lee
Subject: RE: Central Monofill Services

Susan,

We do not have a draft permit, as the application has been on hold. We had reviewed the application and determined that it met the requirements for an inert waste monofill, and had posted a public notice. However, if they make even minor changes to the plan, the must submit a new application, including posting another public notice. At this point, the permit would likely

include any stipulations required by the conditional use permit as well as others initiated by ADEC.

Attached is the permit for the Alaska Demolition Palmer Inert Waste Monofill.

Please call or email if you have any additional questions.

Thanks,
Lori

Lori Aldrich
Solid Waste Program Coordinator
Department of Environmental Conservation
555 Cordova Street
Anchorage, AK 99501
(907) 269-7622

From: Susan Lee [mailto:Susan.Lee@matsugov.us]
Sent: Wednesday, January 22, 2014 12:36 PM
To: Aldrich, Lori (DEC)
Subject: Central Monofill Services

Hi Lori:

I am processing the conditional use permit for Central Monofill Services proposed monofill outside of Palmer. I know the ADEC permit was not issued since the MSB permit was not approved. However, I was wondering if there is a draft permit that I could review. CMS's application material states that " ADEC reviewed the CMS Monofill Permit application for this site and has approved the permit conditioned upon receipt of the MSB CUP".

In addition, could you send me a copy of the Alaska Demolition permit for their operation in Palmer.

If you have any questions or need additional information please let me know.

Susan

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

Susan Lee

From: Aldrich, Lori (DEC) [lori.aldrich@alaska.gov]
Sent: Wednesday, January 22, 2014 12:46 PM
To: Susan Lee
Subject: RE: Central Monofill Services
Attachments: 2009-4-23 SWZA004-14 Palmer Inert - AK Demo.pdf

Susan,

We do not have a draft permit, as the application has been on hold. We had reviewed the application and determined that it met the requirements for an inert waste monofill, and had posted a public notice. However, if they make even minor changes to the plan, the must submit a new application, including posting another public notice. At this point, the permit would likely include any stipulations required by the conditional use permit as well as others initiated by ADEC.

Attached is the permit for the Alaska Demolition Palmer Inert Waste Monofill.

Please call or email if you have any additional questions.

Thanks,
Lori

Lori Aldrich
Solid Waste Program Coordinator
Department of Environmental Conservation
555 Cordova Street
Anchorage, AK 99501
(907) 269-7622

From: Susan Lee [mailto:Susan.Lee@matsugov.us]
Sent: Wednesday, January 22, 2014 12:36 PM
To: Aldrich, Lori (DEC)
Subject: Central Monofill Services

Hi Lori:

I am processing the conditional use permit for Central Monofill Services proposed monofill outside of Palmer. I know the ADEC permit was not issued since the MSB permit was not approved. However, I was wondering if there is a draft permit that I could review. CMS's application material states that " ADEC reviewed the CMS Monofill Permit application for this site and has approved the permit conditioned upon receipt of the MSB CUP".

In addition, could you send me a copy of the Alaska Demolition permit for their operation in Palmer.

If you have any questions or need additional information please let me know.

Susan

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

STATE OF ALASKA

SARAH PALIN, GOVERNOR

DEPT. OF ENVIRONMENTAL CONSERVATION
DIVISION OF ENVIRONMENTAL HEALTH
SOLID WASTE & PESTICIDES PROGRAM

555 Cordova Street
Anchorage, Alaska 99501
PHONE: (907) 269-7622
FAX: (907) 269-7600
http://www.dec.state.ak.us/

Certified Mail # 7007 0710 0004 3850 8040
Return Receipt Requested

April 23, 2009

Mr. Justin T.F. Green
Alaska Demolition, LLC
2903 Tanglewood
Anchorage, AK 99517

RE: Solid Waste Disposal Permit, Palmer Reclamation Site – Inert Waste Monofill
Permit No. SWZA004-14

Dear Mr. Green:

The Alaska Department of Environmental Conservation (ADEC) has completed its evaluation of your permit application for the Palmer Reclamation Site Inert Waste Monofill. This permit is being issued in accordance with Alaska Statute (AS) 46.03; Title 18, Chapter 15 of the Alaska Administrative Code (18 AAC 15); and the Solid Waste Regulations (18 AAC 60). Please review the conditions and stipulations in the permit and ensure that people who conduct waste disposal operations understand them.

Any person who disagrees with this decision may request an adjudicatory hearing in accordance with 18 AAC 15.195 - 18 AAC 15.340 or an informal review by the Division Director in accordance with 18 AAC 15.185. **Informal review requests** must be delivered to the Division Director, Alaska Department of Environmental Conservation, 555 Cordova Street, Anchorage, AK 99501 within 15 days of the permit decision. **Adjudicatory hearing requests** must be delivered to the Commissioner of the Department of Environmental Conservation, 410 Willoughby Avenue, Suite 303, Juneau, Alaska 99801, within 30 days of the permit decision. If a hearing is not requested within 30 days, the right to appeal is waived. Even if an adjudicatory hearing has been requested and granted, all permit conditions remain in effect unless a stay has been granted.

If you have any questions, or require any additional information, please contact me at (907) 269-7622 or by email at *Lori.Aldrich@Alaska.gov*.

Sincerely,

Lori Aldrich
Solid Waste Program Coordinator

Attachment: **Permit # SWZA004-14 expiring on April 1, 2014**

STATE OF ALASKA
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
555 Cordova Street
Anchorage, AK 99501

SOLID WASTE DISPOSAL PERMIT

Permit No. **SWZA004-14**

Date Issued: April 23, 2009
Date Expires: April 1, 2014

The Alaska Department of Environmental Conservation (ADEC), under authority of AS 46.03 and 18 AAC 60, issues a solid waste disposal permit to:

Alaska Demolition, LLC
2903 Tanglewood
Anchorage, AK 99501

Palmer Reclamation Site – Inert Waste Monofill

and designated representatives for the management and operation of an inert solid waste landfill. It authorizes the disposal of construction and demolition debris and other inert waste.

The landfill is located within the North ½ of the Southeast ¼, Section 8, Township 17 North, Range 2 East, Seward Meridian.

The permit holder shall manage and operate the facility in accordance with 18 AAC 60 and the incorporated permit application materials:

1. Permit application dated April 1, 2009
2. Operations Plan dated March 30, 2004, and addendum dated, December 29, 2005.

Waivers

Alaska Demolition, LLC has requested a waiver for the requirement for design documents to be stamped and sealed by a registered engineer. The monofill is constructed in an existing gravel pit with limited additional design features. ADEC approves the waiver with the condition that the site is surveyed annually and the site plan updated to reflect the survey information.

Specific Conditions

1. Erect and maintain signs at the facility entrance which clearly identify
   - Landfill owner/operator
   - Hours of operation
   - Emergency contacts
   - Prohibited waste, including, but not limited to liquid waste, food waste, oily waste, hazardous waste, and polychlorinated biphenyls.

2. Maintain a minimum separation distance of 50 feet between the active placement of solid waste and the facility boundary.

3. Maintain a separation distance of 500 feet between active placement of solid waste and any drinking water well.

4. Prohibit the disposal of regulated asbestos containing material as defined under 18 AAC 60.990(108).

5. Handle non-RACM waste to prevent the release of asbestos fibers to the air or to surface water
   - Place non-RACM waste directly at the working face of the landfill
   - Do not compact uncovered non-RACM waste
   - Cover non-RACM waste within 24 hours after placement.

6. Update financial assurance documentation annually, no later than April 1.

General Conditions

1. Access and inspection - The Permittee shall allow the Commissioner or his representative access to the permitted facilities at reasonable times to conduct scheduled or unscheduled inspections or tests to determine compliance with this permit, State laws, and regulations.

2. Information access - Except for information relating to confidential processes or methods of manufacture, all records and reports submitted in accordance with the terms of this permit shall be available for public inspection at the State of Alaska, Department of Environmental Conservation, 555 Cordova Street, Anchorage, AK 99501.

3. Civil and criminal liability - Nothing in this permit shall relieve the Permittee from civil or criminal penalties for noncompliance, whether or not such noncompliance is due to factors beyond his control, including, but not limited to, accidents, equipment breakdowns, or labor disputes.

4. Availability - The Permittee shall post or maintain a copy of this permit available to the public at the disposal facility.

5. Adverse impact - The Permittee shall take all necessary means to minimize any adverse impacts to the receiving waters or lands resulting from noncompliance with any limitation specified in this permit, including any additional monitoring needed to determine the nature and impact of the noncomplying activity. The Permittee shall clean up and restore all areas adversely impacted by the noncompliance.

6. Cultural or paleontological resources - Should cultural or paleontological resources be discovered as a result of this activity, work which would disturb such resources is to be stopped, and the State Historic Preservation Office, Division of Parks and Outdoor Recreation, Department of Natural Resources, is to be notified immediately (907-269-8721).

7. Applications for renewal - In accordance with 18 AAC 15.100(d), applications for renewal or amendment of this permit must be made no later than 30 days before the expiration date of the permit, or the planned effective date of the amendment.

8. Other legal obligations - The requirements, duties, and obligations set forth in this permit are in addition to any requirements, duties, or obligations contained in any permit that the Alaska Department of Environmental Conservation or the U.S. Environmental Protection Agency has issued or may issue to the Permittee. This permit does not relieve the Permittee from the duty to obtain any and all necessary permits and to comply with the requirements contained in any such permit or with applicable state and federal laws and regulations. All activities conducted by the Permittee pursuant to the terms of this permit and all plans implemented by the Permittee pursuant to the terms of this permit shall comply with all applicable state and federal laws and regulations.

9. Pollution prevention - In order to prevent and minimize present and future pollution, when making management decisions that affect waste generation, the Permittee shall consider the following order of priority options: waste source reduction; recycling of waste; waste treatment; and waste disposal.

This permit expires on **April 1, 2014**, and may be revoked or amended in accordance with 18 AAC 60.260. The permit can be renewed if the facility will operate beyond this date. To avoid expiration of this permit, a renewal application must be submitted to ADEC at least 30 days before the expiration date, as set forth in 18 AAC 15.110.

Lori Aldrich
Solid Waste Program Coordinator

Susan Lee

From: Susan Lee
Sent: Wednesday, January 22, 2014 12:36 PM
To: 'lori.aldrich@alaska.gov'
Subject: Central Monofill Services

Hi Lori:

I am processing the conditional use permit for Central Monofill Services proposed monofill outside of Palmer. I know the ADEC permit was not issued since the MSB permit was not approved. However, I was wondering if there is a draft permit that I could review. CMS's application material states that " ADEC reviewed the CMS Monofill Permit application for this site and has approved the permit conditioned upon receipt of the MSB CUP".

In addition, could you send me a copy of the Alaska Demolition permit for their operation in Palmer.

If you have any questions or need additional information please let me know.

Susan

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

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ADNR Correspondence

Susan Lee

From: Durand, Shane [shane@cei-alaska.com]
Sent: Tuesday, August 12, 2014 10:23 AM
To: Alex Strawn; Susan Lee
Cc: Larry Helgeson
Subject: FW: DEC No Exposure Certification
Attachments: DEC No Exposure Certification- Palmer Monofill.pdf

Alex

I believe this is what you were looking for on the non-exposure certificate .

Looking at the title policy it says "Reservation of section line easement 33 feet in width along each side of the section line as provided by 43 U.S.C.932

Shane

From: Kauai Alpha
Sent: Monday, June 03, 2013 3:01 PM
To: Greuey, John J (DEC)
Cc: brent.anderson@alaksa.gov; Shane Durand
Subject: DEC No Exposure Certification

Hello Jake,

It was nice putting a face to a name earlier this afternoon! I have attached the DEC NOE, will you accept the scanned version- if not, I can drop the original later today.

Thank you for your help,

Kauai Alpha, *LEED AP BD+C*
Central Recycling Services
2400 Railroad Avenue
Anchorage, Alaska 99501
907-748-7400

www.centralrecyclingservices.com

For Agency Use

Permit Tracking #

No Exposure Certification for Exclusion from APDES Storm Water Permitting

Submission of this No Exposure Certification constitutes notice that the entity identified in Section I does not require permit authorization for its storm water discharges associated with industrial activity in Alaska identified in Section II under ADEC's Storm Water Multi-Sector General Permit (MSGP) due to the existence of a condition of no exposure.

A condition of no exposure exists at an industrial facility when all industrial materials and activities are protected by a storm resistant shelter to prevent exposure to rain, snow, snowmelt, and/or runoff. Industrial materials or activities include, but are not limited to, material handling equipment or activities, industrial machinery, raw materials, intermediate products, by-products, final products, or waste products. Material handling activities include the storage, loading and unloading, transportation, or conveyance of any raw material, intermediate product, final product, or waste product. A storm resistant shelter is not required for the following industrial materials and activities:

- drums, barrels, tanks, and similar containers that are tightly sealed, provided those containers are not deteriorated and do not leak. "Sealed" means banded or otherwise secured and without operational taps or valves;
- adequately maintained vehicles used in material handling; and
- final products, other than products that would be mobilized in storm water discharges (e.g., rock salt).

A No Exposure Certification must be provided for each facility qualifying for the no exposure exclusion. In addition, the exclusion from APDES permitting is available on a facility-wide basis only, not for individual outfalls. If any industrial activities or materials are or will be exposed to precipitation, the facility is not eligible for the no exposure exclusion.

By signing and submitting this No Exposure Certification form, the entity in Section I is certifying that a condition of no exposure exists at its facility or site, and is obligated to comply with the terms and conditions of 40 CFR 122.26(g), adopted by reference at 18 AAC 83.010(b)(3).

ALL INFORMATION MUST BE PROVIDED ON THIS FORM.

Detailed instructions for completing this form and obtaining the no exposure exclusion are provided on page 3.

Section I. Facility Operator Information

Name: Central Recycling Services

Mailing Address:

Street (PO Box): 2400 Railroad Ave.

City: Anchorage State: Alaska Zip: 99501

Phone: 907-748-7400 Fax(optional):

Email: crs@crs-alaska.com

Section II. Facility/Site Location Information

Facility Name: Central Monofill Services

Street Address: 2480 and 2560 S. Glenn Highway

City: Palmer State: Alaska Zip: 99645

Borough or similar government subdivision: Matanuska-Susitna Borough

Is this facility located on Indian Lands? ☐ Yes ☑ No

Is this a Federal facility? ☐ Yes ☑ No

Latitude: 61.540833 Longitude: 149.169444

Determined By: ☐ GPS ☐ USGS topographic map ■ Other: Google Earth

Was the facility or site previously covered under an NPDES or APDES storm water permit? ☐ Yes ☑ No

If yes, enter the NPDES or APDES permit number or tracking number?

SIC/Activity Codes: Primary: 561210 Secondary (if applicable):

Total size of site associated with industrial activity (in acres): 40 acres

Have you paved or roofed over a formerly exposed, pervious area in order to qualify for the no exposure exclusion? ☐ Yes ☑ No

If yes, please indicate approximately how much area was paved or roofed over. Completing this question does not disqualify you for the no exposure exclusion. However, your permitting authority may use this information in considering whether storm water discharges from your site are likely to have an adverse impact on water quality, in which case you could be required to obtain permit coverage.

Less than one acre ☐ One to five acres ☐ More than five acres ☐

For Agency Use

Permit Tracking #_____

Section III. Exposure Checklist

Are any of the following materials or activities exposed to precipitation, now or in the foreseeable future? (Please check either "Yes" of "No" in the appropriate box.) **If you answer "Yes" to any of these questions, (1) through (11), you are not eligible for the no exposure exclusion.**

	Yes	No
1. Using, storing, or cleaning industrial machinery or equipment, and areas where residuals from using, storing, or cleaning industrial machinery or equipment remain and are exposed to storm water.	☐	☑
2. Materials or residuals on the ground or in storm water inlets from spills/leaks.	☐	☑
3. Materials or products from past industrial activity.	☐	☑
4. Material handling equipment (except adequately maintained vehicles).	☐	☑
5. Materials or products during loading/unloading or transporting activities.	☐	☑
6. Materials or products stored outdoors (except final products intended for outside use [e.g., new cars] where exposure to storm water does not result in the discharge of pollutants).	☐	☑
7. Materials contained in open, deteriorated, or leaking storage drums, barrels, tanks, and similar containers.	☐	☑
8. Materials or products handled/stored on roads or railways owned or maintained by the discharger.	☐	☑
9. Waste material (except waste in covered, non-leaking containers [e.g., dumpsters]).	☐	☑
10. Application or disposal of process wastewater (unless otherwise permitted).	☐	☑
11. Particulate matter or visible deposits of residuals from roof stacks and/or vents not otherwise regulated (i.e., under an air quality control permit) and evident in the storm water outflow.	☐	☑

Section IV. Certification Statement

I certify under penalty of law that I have read and understand the eligibility requirements for claiming a condition of "no exposure" and obtaining an exclusion from APDES storm water permitting under ADEC's Multi-Sector General Permit.

I certify under penalty of law that there are no discharges of storm water contaminated by exposure to industrial activities or materials from the industrial facility or site identified in this document (except as allowed under 40 CFR 122.26(g)(2)).

I understand that I am obligated to submit a no exposure certification form once every five years to the APDES permitting authority and, if requested, to the operator of the local municipal separate storm sewer system (MS4) into which the facility discharges (where applicable). I understand that I must allow the APDES permitting authority, or MS4 operator where the discharge is into the local MS4, to perform inspections to confirm the condition of no exposure and to make such inspection reports publicly available upon request. I understand that I must obtain coverage under an APDES permit prior to any point source discharge of storm water from the facility.

Additionally, I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Print Name of Authorized Official: Shane Durand Title: Secretary/Treasurer

Signature: Date Signed: 6-3-13 Email: shane@cei-alaska.com

Instructions for the No Exposure Certification for Exclusion from APDES Storm Water Permitting

Who May File a No Exposure Certification

Federal law at 40 CFR Part 122.26, adopted by reference at 18 AAC 83.010(b)(3), prohibits point source discharges of storm water associated with industrial activity to waters of the U.S. without an Alaska Pollutant Discharge Elimination System (APDES) permit. However, APDES permit coverage is not required for discharges of storm water associated with industrial activities identified at 40 CFR 122.26(b)(14)(i)-(ix) and (xi) if the discharger can certify that a condition of "no exposure" exists at the industrial facility or site.

Storm water discharges from construction activities identified in 40 CFR 122.26(b)(14)(x) and (b)(15) are not eligible for the no exposure exclusion.

Obtaining and Maintaining the No Exposure Exclusion

This form is used to certify that a condition of no exposure exists at the industrial facility or site described herein. This certification is only applicable in jurisdictions where ADEC is the NPDES permitting authority and must be re-submitted at least once every five years.

The industrial facility operator must maintain a condition of no exposure at its facility or site in order for the no exposure exclusion to remain applicable. If conditions change resulting in the exposure of materials and activities to storm water, the facility operator must obtain coverage under an APDES storm water permit immediately.

Completing the Form

You must type or print in appropriate areas only. One form must be completed for each facility or site for which you are seeking to certify a condition of no exposure. Additional guidance on completing this form can be accessed at ADEC's Storm water Program website: http://www.dec.state.ak.us/water/wnpspc/stormwater/stormwater.htm .

Please make sure you have addressed all applicable questions and have made a photocopy for your records before sending the completed form to the above address.

Section I. Facility Operator Information

- Provide the legal name of the person, firm, public organization, or any other entity that operates the facility or site described in this certification. The name of the operator may or may not be the same as the name of the facility. The operator is the legal entity that controls the facility's operation, rather than the plant or site manager.
- Provide the telephone number of the facility operator.
- Provide the email address of the facility operator.
- Provide the mailing address of the operator (P.O. Box numbers may be used). Include the city, state, and zip code. All correspondence will be sent to this address.

Section II. Facility/Site Location Information

- Enter the official or legal name of the facility or site.
- Enter the complete street address (if no street address exists, provide a geographic description [e.g., Intersection of Routes 9 and 55]), city, state, zip code, and borough or similar government subdivision. Do not use a P.O. Box number.
- Indicate whether the facility is located on Indian Lands.
- Indicate whether the industrial facility is operated by a department or agency of the Federal Government (see also Section 313 of the Clean Water Act).
- Enter the latitude and longitude of the approximate center of the facility or site. The latitude and longitude of your facility can be determined in several different ways, including through the use of global positioning system (GPS) receivers, U.S. Geological Survey (U.S.G.S.) topographic or quadrangle maps, and EPA's web-based siting tools, among others.
- Indicate whether the facility was previously covered under an NPDES or APDES storm water permit. If so, include the permit number or permit tracking number.
- List the four-digit Standard Industrial Classification (SIC) code and/or two character activity code that best describes the primary industrial activities performed by your facility. Your primary industrial activity includes any activities performed on-site which are:
  (1) identified by the facility's one SIC code for which the facility is primarily engaged; and
  (2) included in the narrative descriptions of 40 CFR 122.26(b)(14)(i), (iv), (v), or (vii), and (ix). See Appendix D of the MSGP for a complete list of SIC codes and activities codes.
- Enter the total size of the site associated with industrial activity in acres. Acreage may be determined by dividing square footage by 43,560.
- Check "Yes" or "No" as appropriate to indicate whether you have paved or roofed over a formerly exposed, pervious area (e.g., lawn, meadow, dirt or gravel road/parking lot) in order to qualify for no exposure. If yes, also indicate approximately how much area was paved or roofed over and is now impervious area.

Section III. Exposure Checklist

Check "Yes" or "No" as appropriate to describe the exposure condition at your facility. If you answer "Yes" to **ANY** of the questions, (1) through (11), in this section, a potential for exposure exists at your site and you cannot certify to a condition of no exposure. You must obtain (or already have) coverage under an APDES storm water permit. After obtaining permit coverage, you can institute modifications to eliminate the potential for a discharge of storm water exposed to industrial activity and then certify to a condition of no exposure.

Section IV. Certification Information
The Certification of No Exposure, must be signed as follows:

(1) For a corporation, a responsible corporate officer shall sign the Certification, a responsible corporate officer means:

(A) a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation; or

(B) the manager of one or more manufacturing, production, or operating facilities, if

(i) the manager is authorized to make management decisions that govern the operation of the regulated facility, including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental statutes and regulations;

(ii) the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and

(iii) authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

(2) For a partnership or sole proprietorship, the general partner or the proprietor, respectively; or

(3) for a municipality, state, or other public agency, either a principal executive officer or ranking elected official shall sign the application; in this subsection, a principal executive officer of an agency means

(A) the chief executive officer of the agency; or

(B) a senior executive officer having responsibility for the overall operations of a principal geographic unit or division of the agency.

Include the name, title, and email address of the person signing the form and the date of signing. An unsigned or undated Certification form will not be considered valid exclusion from permit coverage.

Where to File Certification form
Please submit the Certification to ADEC as follows:

If you file by mail, please submit the original form with a signature in ink. ADEC will not accept a photocopied signature. Remember to retain a copy for your records.

Certifications sent by mail:

Alaska Dept. of Environmental Conservation
Wastewater Discharge Authorization Program
555 Cordova Street
Anchorage, AK 99501
Phone: (907) 269-6285

Susan Lee

From: Ashton, William S (DEC) [william.ashton@alaska.gov]
Sent: Friday, August 29, 2014 12:18 PM
To: 'Durand, Shane'
Cc: Larry Helgeson; Susan Lee
Subject: RE: No Exposure Certificate for Multi-Sector General Permit

Yes the questions were prompted by MSB. They are copied on this email.
Thanks for a copy of the Corps JD.

William Ashton
Storm Water & Wetlands
Wastewater Discharge Authorization Program, Division of Water
Alaska Dept. of Environmental Conservation
555 Cordova St
Anchorage, AK 99501
ph 907-269-6283
william.ashton@alaska.gov

From: Durand, Shane [mailto:shane@cei-alaska.com]
Sent: Friday, August 29, 2014 11:47 AM
To: Ashton, William S (DEC)
Cc: Larry Helgeson
Subject: RE: No Exposure Certificate for Multi-Sector General Permit

I assume your questions were prompted by MSB?

Was this response or something similar sent to them?

Just for further clarification I have attached the JD from the COE establishing no waters of the US.

Shane

From: Ashton, William S (DEC) [mailto:william.ashton@alaska.gov]
Sent: Friday, August 29, 2014 10:59 AM
To: Durand, Shane
Cc: Larry Helgeson
Subject: RE: No Exposure Certificate for Multi-Sector General Permit

Shane,

Based on the fact that there is no discharge to a water of the US, the facility does not need permit coverage under the Multi-Sector General Permit. Therefore no No Exposure Certificate needs to be submitted to DEC.

Thank you for your prompt reply.

William Ashton
Storm Water & Wetlands
Wastewater Discharge Authorization Program, Division of Water
Alaska Dept. of Environmental Conservation
555 Cordova St
Anchorage, AK 99501
ph 907-269-6283
wiiiiam.ashton@aiaska.gov

From: Durand, Shane [mailto:shane@cei-alaska.com]
Sent: Friday, August 29, 2014 9:47 AM
To: Ashton, William S (DEC)
Cc: Larry Helgeson
Subject: RE: No Exposure Certificate for Multi-Sector General Permit

1. Inert Construction and Demolition Debris and soils.
2. Waste handled at the facility will be per a DEC Solid Waste Inert Monofill Permit. See Answer to #3 as well. Per the permit mono-filled waste is routinely covered with soil to reduce any infiltration. The working face where waste is placed for compaction and covering is built such that storm water will not run into the working face. Lori Aldrich in Solid Waste at ADEC can answer questions particular to our permit application. Monofills etc.
3. Attached is a copy of the drainage plan for the site. There are no "water of the US" on this site. All storm water stays on site and newly constructed surfaces will be graded to drain runoff away from waste as designed. Even the driveway slopes back into the site so there is no way for runoff to leave site or enter waters of US.

We have hundreds of pages of modeling, consultants reports and design information on the water infiltration, precipitation, soil types, waste etc. if you have further questions let me know. All of the supplemental information is fairly large and would need to be burned to a disc. If it helps I could stop by and go through any of this information as well.

Shane Durand
Central Recycling Services
2400 Railroad Ave.
Anchorage, AK 99501
(907)748-7400
www.centralrecyclingservices.com
www.crssurplusmaterials.com

From: Ashton, William S (DEC) [mailto:william.ashton@alaska.gov]
Sent: Friday, August 29, 2014 9:00 AM
To: Durand, Shane
Subject: No Exposure Certificate for Multi-Sector General Permit

Shane,

I reviewed the No-Exposure Certificate for your facility "Central Monofill Services" and have some follow-up questions.

1. Please describe the type of waste being handled and disposed of at the facility.
2. Please describe how this waste avoids exposure to precipitation.
3. Please describe the flow path of the storm water discharge from the facility. Does the discharge enter a water of the US?

Please provide me answers to these questions by Sept 9, 2014 or sooner.

Thank you for your attention to this matter.

William Ashton
Storm Water & Wetlands
Wastewater Discharge Authorization Program, Division of Water
Alaska Dept. of Environmental Conservation
555 Cordova St
Anchorage, AK 99501
ph 907-269-6283
william.ashton@alaska.gov

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Susan Lee

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Sent: Friday, August 29, 2014 10:59 AM
To: 'Durand, Shane'
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Subject: RE: No Exposure Certificate for Multi-Sector General Permit

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William Ashton
Storm Water & Wetlands
Wastewater Discharge Authorization Program, Division of Water
Alaska Dept. of Environmental Conservation
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Anchorage, AK 99501
ph 907-269-6283
william.ashton@alaska.gov

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To: Ashton, William S (DEC)
Cc: Larry Helgeson
Subject: RE: No Exposure Certificate for Multi-Sector General Permit

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Shane Durand
Central Recycling Services

2400 Railroad Ave.
Anchorage, AK 99501
(907)748-7400
www.centralrecyclingservices.com
www.crssurplusmaterials.com

From: Ashton, William S (DEC) [mailto:william.ashton@alaska.gov]
Sent: Friday, August 29, 2014 9:00 AM
To: Durand, Shane
Subject: No Exposure Certificate for Multi-Sector General Permit

Shane,

I reviewed the No-Exposure Certificate for your facility "Central Monofill Services" and have some follow-up questions.

1. Please describe the type of waste being handled and disposed of at the facility.
2. Please describe how this waste avoids exposure to precipitation.
3. Please describe the flow path of the storm water discharge from the facility. Does the discharge enter a water of the US?

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William Ashton
Storm Water & Wetlands
Wastewater Discharge Authorization Program, Division of Water
Alaska Dept. of Environmental Conservation
555 Cordova St
Anchorage, AK 99501
ph 907-269-6283
william.ashton@alaska.gov

Susan Lee

From: Susan Lee
Sent: Wednesday, August 27, 2014 3:39 PM
To: 'william.ashton@alaska.gov'
Cc: Alex Strawn
Subject: site plan
Attachments: SKMBT_C65414082715360.pdf

Hi William:

Attached is the site plan that Alex Strawn discussed with you. Refer to Note #3 regarding drainage into the ponds.

Thanks for your help.

Susan

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

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Susan Lee

From: Schade, David W (DNR) [david.w.schade@alaska.gov]
Sent: Tuesday, April 01, 2014 2:30 PM
To: Susan Lee; Hill, Melissa E (DNR)
Cc: Cobb, Charles F (DNR); Aldrich, Lori (DEC); Walton, Michael L (DNR)
Subject: RE: Central Monofill Services
Attachments: C.P.P. Dam Letter 9-26-13.pdf

Susan,
Thanks for the contact. I too had contact with Zennon today.

Here is a copy of the letter sent to Central Recycling Services on Sept 26, 2013. It gave the company until May 30 to have an engineered plan in to our office, and until August to stop the diversion.
There is an option for applying to DNR for a permit to divert the water, but since there are continuing complaints and legislative inquiries, at this point without significant additional information being presented, I doubt that I would issue a permit. The Alaska Hydrologic Survey (Melissa Hill and her staff) have been conducting some field investigation in the area. We would be happy to brief you on that process.

I would appreciate getting a copy of the entire "new" application package. We look forward to a review of those materials, including the "groundwater study" that they "had conducted".
We would also be interested in your request for additional information as well.

Please feel free to give me a call or e-mail at any time. I am the primary contact for this project.

Sincerely,
Dave

David W. Schade, MPA
Natural Resources Manager III
Chief, Water Resources Section
Division of Mining Land and Water
Alaska Department of Natural Resources
Phone 907-269-8645
Fax 907-269-8904
e-mail: david.w.schade@alaska.gov

From: Susan Lee [mailto:Susan.Lee@matsugov.us]
Sent: Tuesday, April 01, 2014 1:59 PM
To: Schade, David W (DNR); Hill, Melissa E (DNR)
Subject: Central Monofill Services

Hi David & Melissa:

I am processing the conditional use permit for Central Monofill Services proposed monofill outside of Palmer. This morning I received a call from a member of the public, Zennon McNeill, regarding their project. I am looking for some clarification and/or additional information regarding the information that he relayed to me. He stated that DNR has given CMS a deadline of May 31, 2014 to stop the flow of water from the middle lake. He stated that DNR told CMS that they could apply for a permit (he did not say what type of permit), but that DNR would deny the permit. He also stated that DNR is conducting a hydrological study of the area and was monitoring the wells and lake levels in the area. He stated that the water table will be raised when the water flow is stopped.

Do you need a copy of the application material we have received from CMS for this project? Their application material contains a groundwater study that they had conducted for this project. We are waiting for additional information from them in order to process the application. I would appreciate it if you would let me know what their status is with DNR.

Thank you for your assistance.

Susan

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

THE STATE of ALASKA
GOVERNOR SEAN PARNELL

Department of Natural Resources
Division of Mining, Land & Water
Water Resources Section
550 West 7th Avenue, Suite 1020
Anchorage, Alaska 99501-3579
Main: 907.269.8600
TDD: 907.269.8411
Fax: 907.269.8947

September 26, 2013

Central Recycling Services
311 N. Sitka Street
Anchorage, AK 99501-1841

Attention: Mr. Stuart M. Jacques

RE: C. P. P. Dam (AK00401)

Dear Mr. Jacques:

As you are aware, the ADNR MLW/Water Resources section has been involved with ongoing issues related to the C.P.P Dam (Dam). This letter is a follow up to the meetings and discussions that our staff have had with Central Recycling Services staff concerning the Dam and diversion of water. In 2012, the Water Resources Section of the Alaska Department of Natural Resources (ADNR) approved an application from Granite Construction Company (Granite) for a *Certificate of Approval to Modify a Dam* for an artificial barrier to the flow of water between two gravel pits in Palmer, Alaska. Previously, this structure was determined to be under the jurisdiction of the Alaska dam safety regulations contained in Article 3 of 11 AAC 93. The barrier was named the C.P.P. Dam and assigned the National Inventory of Dams identification number AK00401. As indicated in the application, ADNR understood the purpose of the modification was to reduce the height of the "dam embankment" so that the Dam would no longer be within the definition of a state jurisdictional dam described in Alaska Statute (AS) 46.17.900 (3), while at the same time, maintaining the normal water level of the "Middle Pond." Based on historical observations, the normal water level of the Middle Pond was observed to be several feet higher than the adjacent pond to the west, referred to herein as the "West Pond."

The modification to said Dam was completed by Granite Construction Company in late 2012, and ADNR thereafter determined the modified structure no longer was a "jurisdictional" dam. In the spring of 2013, after the Middle Pond level recovered from the dam modification activities, a significant amount of flow was observed through the pore space in the rip rap lined spillway, and the Middle Pond water level appeared to be in the process of stabilizing at a level below the normal water level indicated in the approved design. ADNR, staff has estimated this flow rate through the pore space in the rip rap lined spillway on the order of 1000 gallons per minute (gpm), which is equivalent to 1.44 million gallons per day. As a result of this development, in July of 2013, your company installed a concrete barrier to the flow within the rip rap. Although this work appears to have reduced this flow to some degree, a significant amount of flow through the rip rap in the spillway downstream of the barrier continues to be easily observed.

An application for water right or application for temporary use of water was not submitted to ADNR during the application process for the *Certificate of Approval to Modify a Dam*. The Alaska Water Use Act (AS

46.15) requires a water right application or temporary water use application for the diversion of more than 500 gallons per day for more than ten days per calendar year. This equates to approximately 0.35 gpm. Installation of the barrier makes calculating an estimated flow more complex, but by observation, ADNR believes that the current diversion flow rate substantially exceeds 0.35 gpm. Consequently, ADNR requests that you improve the performance of the barrier to flow to reach a rate below the rate that requires an application, or apply for authorization to operate a diversion structure in accordance with Alaska Administrative Code Section 11 AAC 93.035. Because it is late in the construction season, ADNR requests that you apply for a permit to divert water or provide DNR with an engineered plan to stop the water diversion by May 30, 2014. This plan must include a timeline to accomplish the reduction in flow across the "dam" no later than August 31, 2014.

Further, please note that AS 46.15, and the 11 AAC 93.035 application requirements thereunder, also apply to any water use or diversion that may adversely affect the public interest. In the past and again in 2013, ADNR has received numerous complaints about high water levels in the nearby Canoe and Irene Lakes. Starting in 2006, ADNR began collecting water level data at those and other lakes in the area, including, with permission, the Middle and West Ponds at the gravel pits. ADNR now requests your permission to continue this monitoring until a technically sound understanding of the regional hydrogeology is developed. If you are willing to grant access, ADNR would like to install a temporary bench mark at a mutually convenient location and conduct monthly water level monitoring on your facility, as described in the attached permission request. Please sign and return this form if you are willing to grant this permission.

I want to thank you for your continued cooperation with ADNR as we seek to resolve this situation. If you would like to discuss this matter I can be reached at (907) 269-8645 or by cell (907) 230-6061. Further, please contact Melissa Hill, PhD, CPG at (907) 269-8646 in order to discuss establishing a benchmark and monitoring activities.

Sincerely,

M. Walker NRM II

for David W. Schade, MPA

Section Chief

Temporary Access and Monitoring Request

Introduction

The Department of Natural Resources is developing regional scale groundwater monitoring programs in the Mat-Su Valley, Anchorage Bowl, and Kenai Peninsula. The purpose for these programs is to gain a better understanding of available groundwater resources in these areas.

Why am I being contacted?

Success of the monitoring programs is highly dependent on the cooperation of businesses and homeowners granting staff from the Department of Natural Resources, Alaska Hydrologic Survey Unit temporary access to their property and well(s).

What do these programs involve?

The Alaska Hydrologic Survey is comprised of trained professional hydrologists. These professionals will measure lake level changes and well water depths on your property on a monthly basis. Alaska Hydrologic Survey staff will notify the property owner 24 to 48 hours before each site visit, which will take approximately 1 to 2 hours. The property owner is not required to be present for the site visit, which will occur on weekdays, during normal business hours 8:00 am to 5:00 pm. All data collected will be provided to the property owner free of charge.

What do I need to do to participate?

Participation in the program is voluntary and may be terminated at any time at the sole discretion of the participant.

Should you choose to participate in these important programs, the Department of Natural Resources, Alaska Hydrologic Survey Unit requests that you complete, sign and date the attached temporary access and monitoring agreement and return it, along with a copy of your well log[1] (should you have one available) to:

Alaska Hydrologic Survey
Attn: Dr. Hill
550 W. 7th Ave, Suite 1020
Anchorage, Alaska 99501

The Department of Natural Resources, Alaska Hydrologic Survey Unit thanks you for your cooperation and greatly appreciates your participation in these important projects.

[1]Well logs are requested as they will provide useful information for distinguishing water levels in different aquifer(s).

Temporary Access and Monitoring Agreement

This temporary access and monitoring agreement grants Department of Natural Resources staff access to your property to install a benchmark to use as a reference point to measure lake level changes, survey top of casing and to access the wells on your property to measure depths to water.

_____

_____.

This agreement becomes effective as of _____ (month) ____ (day) _____(year). Participation in the program is voluntary and may be terminated at any time at the sole discretion of the participant.

Printed name _____

Signature _____

Date _____

Alaska Hydrologic Survey staff can notify the property owner 24 to 48 hours before each site visit via the contact information provided below:

mobile phone: _____
home phone: _____
email address: _____

E-Mail Correspondence

Susan Lee

From: Shane Durand [Shane@cei-alaska.com]
Sent: Friday, December 20, 2013 7:42 AM
To: Alex Strawn
Cc: Susan Lee
Subject: Meeting

Happy Holidays.

I was wondering if the two of you may have some time in the next couple weeks, after xmas, to get together and walk through a draft of our CUP application?

Having the holidays on Wednesday make for weird work weeks but I am open if a time works for the two of you.

Respectfully,

Shane Durand
Central Environmental Inc.
311 N. Sitka St.
Anchorage, AK 99501
(907)561-0125
(907)561-0178 fax
www.cei-alaska.com
www.cicontractorsinc.com
www.emi-alaska.com
www.centerpointsvcsinc.com

Central Recycling Services
2400 Railroad Ave.
Anchorage, AK 99501
(907)748-7400
www.centralrecyclingservices.com
www.crssurplusmaterials.com

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Susan Lee

From: Shane Durand [Shane@cei-alaska.com]
Sent: Friday, December 20, 2013 3:15 PM
To: Susan Lee; Alex Strawn
Subject: RE: Meeting

Sounds good
Thanks
Shane

From: Susan Lee [mailto:Susan.Lee@matsugov.us]
Sent: Friday, December 20, 2013 2:48 PM
To: Shane Durand; Alex Strawn
Subject: RE: Meeting

Shane:

How does Friday, January 3, 2014 at 10 a.m. work for you?

Susan

From: Shane Durand [mailto:Shane@cei-alaska.com]
Sent: Friday, December 20, 2013 7:42 AM
To: Alex Strawn
Cc: Susan Lee
Subject: Meeting

Happy Holidays.

I was wondering if the two of you may have some time in the next couple weeks, after xmas, to get together and walk through a draft of our CUP application?

Having the holidays on Wednesday make for weird work weeks but I am open if a time works for the two of you.

Respectfully,

Shane Durand
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www.centerpointsvcsinc.com

Central Recycling Services
2400 Railroad Ave.
Anchorage, AK 99501
(907)748-7400

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www.crssurplusmaterials.com

Susan Lee

From: Jim Munter [jamunter@arctic.net]
Sent: Tuesday, January 07, 2014 2:32 PM
To: Susan Lee
Subject: Re: Central Monofill Services

Hi Susan,

I estimate that the review will take about 16 hours for a total cost of $2400.00 to conduct the review and prepare draft and final letters describing the results of the review. While I endeavor to make the draft letter as "perfect" as possible, I have found that it is frequently useful to prepare a draft letter and have a client review it to make sure that everything is clear and with sufficient detail or backup for the intended use. If the review goes smoothly, I could attend a meeting in Palmer to go over the packet and my review with the above budget, otherwise we could do a teleconference if needed.

I am not anticipating any major schedule conflicts during the next month or two.

Thanks,

Jim Munter, Principal Hydrogeologist
J. A. Munter Consulting, Inc.
5701 Penny Circle
Anchorage, AK 99516
(907) 345-0165

----- Original Message -----
From: Susan Lee
To: Jim Munter
Sent: Monday, January 06, 2014 1:33 PM
Subject: Central Monofill Services

Hi Jim:

Happy New Year! Central Monofill Services (CMS) is anticipating submitting another conditional use permit application by the end of this week. It is the same project and same location. We want you to review the application material. So I need to know approximately how long it will take you to review the material and what the anticipated cost may be. I would appreciate hearing back from you in the next couple of days.

Thanks,

Susan

Susan Lee
Planner II
Matanuska-Susitna Borough
Phone 907-861-7862
e-mail: slee@matsugov.us

Susan Lee

From: Jim Munter [jamunter@arctic.net]
Sent: Tuesday, January 07, 2014 2:55 PM
To: Susan Lee
Subject: Re: Central Monofill Services

OK.

thx

---- Original Message ----
From: Susan Lee
To: Jim Munter
Sent: Tuesday, January 07, 2014 2:36 PM
Subject: RE: Central Monofill Services

Thanks for the info. I will let you know when we receive the application.

Susan

From: Jim Munter [mailto:jamunter@arctic.net]
Sent: Tuesday, January 07, 2014 2:32 PM
To: Susan Lee
Subject: Re: Central Monofill Services

Hi Susan,

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Thanks,

Susan

Susan Lee
Planner II
Matanuska-Susitna Borough
Phone 907-861-7862
e-mail: slee@matsugov.us

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Susan Lee

From: Shane Durand [Shane@cei-alaska.com]
Sent: Thursday, January 09, 2014 10:24 AM
To: Alex Strawn; Susan Lee
Subject: Weekend relief

I am pretty close to having the package ready for submission but it will most likely be Monday.

Shane

Susan Lee

From: Susan Lee
Sent: Thursday, January 09, 2014 10:28 AM
To: 'Shane Durand'
Subject: RE: Weekend relief

Thanks for letting us know.

From: Shane Durand [mailto:Shane@cel-alaska.com]
Sent: Thursday, January 09, 2014 10:24 AM
To: Alex Strawn; Susan Lee
Subject: Weekend relief

I am pretty close to having the package ready for submission but it will most likely be Monday.

Shane

Susan Lee

From: Susan Lee
Sent: Thursday, January 16, 2014 11:52 AM
To: Shane Durand
Subject: receipt
Attachments: SKMBT_C65414011611430.pdf

Shane:

Here's a copy of your receipt for payment of the CUP application fee.

Susan

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

☐	17.55 Shoreline Setback Exception Application {100.000.000.341.350}	$250.00
☐	17.60 Conditional Use Permit Application {100.000.000.341.350} CUP Pre-Application	$500.00 $25.00
☐	17.61 Core Area Land Use Permit Application {100.000.000.341.356} Commercial/Industrial Core Area Conditional Use Permit {100.000.000.341.357}	$200.00 $500.00
☐	17.62 Coal Bed Methane (100.000.000.341.350)	$500.00
☐	17.63 Conditional Use Pe	$100.00
☐	17.65 Variance {100.00(	$500.00
☐	17.70 Regulation of Alcol 000.000.341.980}	$500.00
☐	17.73 Multi-Family Land	$300.00
☐	17.75 Single-Family Resi {100.000.000.341.:	$500.00
☐	17.76 Large Lot Single-F Conditional Use Pe	$500.00
☐	17.80 Nonconforming St {100.000.000.341.: {100.000.000.341.:	$500.00
☐	17.90 Regulation of Adul {100.000.000.341.:	$500.00

Matanuska Susitna Borough

Payment Date Wednesday, January 15
Deposit Number 6150
Operator ls03879

Real 2014 $0.00
MCR (MCUP -Core Area CUP) $500.00
Misc Rec
Tax Map # 3MISC

Total Paid $500.00
Check $500.00
Change $0.00

Receipt Number MSB90627246
1/15/2014 3:24:39 PM
Paid By CENTRAL RECYCLING SERVIC
Cashier Id. LS03879

	RIGHT-OF-WAY FEES	
☐	Driveway	$25.00
☐	Construction	$50.00
☐	Distance Fee	
☐	Encroachment	$150.00
☐	Subdivision Agreement	
	PLATTING PRE-APPLIC	
☐	Pre-Application Fee	$25.00
	FEES: {100.000.000.34	
☐	Flood Plain Developmen	$10.00
☐	CD/DVD/DVD-R	$7.50
☐	Construction Manual/Titl	$5.00
☐	Plat Map/Tax Map Copie	$5.00
☐	Xerox Copies	
☐	Advertising Fees	
☐	Cultural Resources Books or Maps {100.000.000.341.600}	

$ 500.00 Amount Paid Date: 1-15-14 Receipt # 90627246 By:

Revised: 5/2/2012

Susan Lee

From: Shane Durand [Shane@cei-alaska.com]
Sent: Thursday, January 16, 2014 11:57 AM
To: Susan Lee
Subject: RE: receipt

Thank You

From: Susan Lee [mailto:Susan.Lee@matsugov.us]
Sent: Thursday, January 16, 2014 11:52 AM
To: Shane Durand
Subject: receipt

Shane:

Here's a copy of your receipt for payment of the CUP application fee.

Susan

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

Susan Lee

From: Richard Harbuck [superglide@mtaonline.net]
Sent: Tuesday, January 21, 2014 1:47 PM
To: Susan Lee
Cc: Mark Whisenhunt
Subject: CMS CUP application 2014.

Hello Susan , could you inform me as to the state of the CMS application process, have they or have the not yet applied? Thanks, Richard Harbuck.

Susan Lee

From: Susan Lee
Sent: Tuesday, January 21, 2014 2:31 PM
To: 'superglide@mtaonline.net'
Subject: RE: CMS CUP application 2014.

Hi Rich:

The CUP application was submitted on January 15. Staff is currently reviewing it. It has also been sent to a consultant for review.

Susan

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
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Susan Lee

From: Richard Harbuck [superglide@mtaonline.net]
Sent: Tuesday, January 21, 2014 6:52 PM
To: Susan Lee
Cc: Mark Whisenhunt; Matthew Beck
Subject: Resident Nofacation for the CMS CUP 2014

To;
Susan Lee
Planner II
Matanuska Susitna Borough
Code Compliance

Dear Susan, I would like to make a request, In light of concerns in regards to monofills and discoveries made about the proposed site during the 2013 application by Central Monofill Services. Due to the potential of water table and other contamination in the area around the proposed dump site and the lack of confirmed and reliable data on the spread of any contamination if it should occur. Can the property owner notification area around the proposed site be expanded significantly. I think any property owner that may suffer in the near or far future if water table or other contamination should occur has the right to be notified and heard by the borough before any CUP is granted. The fact that this activity is even being considered within the Core Use Area as established by the Borough, and against the Core Use Area Plans land use Guidelines should warrant that the greater majority of this area be notified. The Core Use Area was established in part so that people moving to and living within this area would have a reasonable expectation of land usage allowed by government. Now that it seems government may be choosing to ignore this plan for area growth, it seem to me they have the obligation to notify all parties within that plan area who worked in conjunction with government to establish it.

Thank You,
Richard Harbuck

Susan Lee

From: Susan Lee
Sent: Wednesday, January 22, 2014 7:16 AM
To: Alex Strawn; Eileen Probasco
Subject: FW: Resident Nofacation for the CMS CUP 2014

I would like to discuss the notification area for CMS with both of you.

Thanks - Susan

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

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Thank You,
Richard Harbuck

Susan Lee

From: Susan Lee
Sent: Wednesday, January 22, 2014 7:17 AM
To: 'superglide@mtaonline.net'
Subject: RE: Resident Nofacation for the CMS CUP 2014

Rich:

I will discuss this request with the planning director.

Susan

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

From: Richard Harbuck [mailto:superglide@mtaonline.net]
Sent: Tuesday, January 21, 2014 6:52 PM
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Cc: Mark Whisenhunt; Matthew Beck
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To;
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Thank You,
Richard Harbuck

Susan Lee

From: Susan Lee
Sent: Wednesday, January 22, 2014 12:36 PM
To: 'lori.aldrich@alaska.gov'
Subject: Central Monofill Services

Hi Lori:

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In addition, could you send me a copy of the Alaska Demolition permit for their operation in Palmer.

If you have any questions or need additional information please let me know.

Susan

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

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Susan Lee

From: Aldrich, Lori (DEC) [lori.aldrich@alaska.gov]
Sent: Wednesday, January 22, 2014 12:46 PM
To: Susan Lee
Subject: RE: Central Monofill Services
Attachments: 2009-4-23 SWZA004-14 Palmer Inert - AK Demo.pdf

Susan,

We do not have a draft permit, as the application has been on hold. We had reviewed the application and determined that it met the requirements for an inert waste monofill, and had posted a public notice. However, if they make even minor changes to the plan, the must submit a new application, including posting another public notice. At this point, the permit would likely include any stipulations required by the conditional use permit as well as others initiated by ADEC.

Attached is the permit for the Alaska Demolition Palmer Inert Waste Monofill.

Please call or email if you have any additional questions.

Thanks,
Lori

Lori Aldrich
Solid Waste Program Coordinator
Department of Environmental Conservation
555 Cordova Street
Anchorage, AK 99501
(907) 269-7622

From: Susan Lee [mailto:Susan.Lee@matsugov.us]
Sent: Wednesday, January 22, 2014 12:36 PM
To: Aldrich, Lori (DEC)
Subject: Central Monofill Services

Hi Lori:

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If you have any questions or need additional information please let me know.

Susan

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

STATE OF ALASKA

SARAH PALIN, GOVERNOR

DEPT. OF ENVIRONMENTAL CONSERVATION
DIVISION OF ENVIRONMENTAL HEALTH
SOLID WASTE & PESTICIDES PROGRAM

555 Cordova Street
Anchorage, Alaska 99501
PHONE: (907) 269-7622
FAX: (907) 269-7600
http://www.dec.state.ak.us/

Certified Mail # 7007 0710 0004 3850 8040
Return Receipt Requested

April 23, 2009

Mr. Justin T.F. Green
Alaska Demolition, LLC
2903 Tanglewood
Anchorage, AK 99517

RE: Solid Waste Disposal Permit, Palmer Reclamation Site – Inert Waste Monofill
Permit No. SWZA004-14

Dear Mr. Green:

The Alaska Department of Environmental Conservation (ADEC) has completed its evaluation of your permit application for the Palmer Reclamation Site Inert Waste Monofill. This permit is being issued in accordance with Alaska Statute (AS) 46.03; Title 18, Chapter 15 of the Alaska Administrative Code (18 AAC 15); and the Solid Waste Regulations (18 AAC 60). Please review the conditions and stipulations in the permit and ensure that people who conduct waste disposal operations understand them.

Any person who disagrees with this decision may request an adjudicatory hearing in accordance with 18 AAC 15.195 - 18 AAC 15.340 or an informal review by the Division Director in accordance with 18 AAC 15.185. **Informal review requests** must be delivered to the Division Director, Alaska Department of Environmental Conservation, 555 Cordova Street, Anchorage, AK 99501 within 15 days of the permit decision. **Adjudicatory hearing requests** must be delivered to the Commissioner of the Department of Environmental Conservation, 410 Willoughby Avenue, Suite 303, Juneau, Alaska 99801, within 30 days of the permit decision. If a hearing is not requested within 30 days, the right to appeal is waived. Even if an adjudicatory hearing has been requested and granted, all permit conditions remain in effect unless a stay has been granted.

If you have any questions, or require any additional information, please contact me at (907) 269-7622 or by email at *Lori.Aldrich@Alaska.gov*.

Sincerely,

Lori Aldrich
Solid Waste Program Coordinator

Attachment: **Permit # SWZA004-14 expiring on April 1, 2014**

STATE OF ALASKA
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
555 Cordova Street
Anchorage, AK 99501

SOLID WASTE DISPOSAL PERMIT

Permit No. **SWZA004-14**

Date Issued: April 23, 2009
Date Expires: April 1, 2014

The Alaska Department of Environmental Conservation (ADEC), under authority of AS 46.03 and 18 AAC 60, issues a solid waste disposal permit to:

Alaska Demolition, LLC
2903 Tanglewood
Anchorage, AK 99501

Palmer Reclamation Site – Inert Waste Monofill

and designated representatives for the management and operation of an inert solid waste landfill. It authorizes the disposal of construction and demolition debris and other inert waste.

The landfill is located within the North ½ of the Southeast ¼, Section 8, Township 17 North, Range 2 East, Seward Meridian.

The permit holder shall manage and operate the facility in accordance with 18 AAC 60 and the incorporated permit application materials:

1. Permit application dated April 1, 2009
2. Operations Plan dated March 30, 2004, and addendum dated, December 29, 2005.

Waivers

Alaska Demolition, LLC has requested a waiver for the requirement for design documents to be stamped and sealed by a registered engineer. The monofill is constructed in an existing gravel pit with limited additional design features. ADEC approves the waiver with the condition that the site is surveyed annually and the site plan updated to reflect the survey information.

Specific Conditions

1. Erect and maintain signs at the facility entrance which clearly identify
   - Landfill owner/operator
   - Hours of operation
   - Emergency contacts
   - Prohibited waste, including, but not limited to liquid waste, food waste, oily waste, hazardous waste, and polychlorinated biphenyls.

2. Maintain a minimum separation distance of 50 feet between the active placement of solid waste and the facility boundary.

3. Maintain a separation distance of 500 feet between active placement of solid waste and any drinking water well.

4. Prohibit the disposal of regulated asbestos containing material as defined under 18 AAC 60.990(108).

5. Handle non-RACM waste to prevent the release of asbestos fibers to the air or to surface water
   - Place non-RACM waste directly at the working face of the landfill
   - Do not compact uncovered non-RACM waste
   - Cover non-RACM waste within 24 hours after placement.

6. Update financial assurance documentation annually, no later than April 1.

General Conditions

1. Access and inspection - The Permittee shall allow the Commissioner or his representative access to the permitted facilities at reasonable times to conduct scheduled or unscheduled inspections or tests to determine compliance with this permit, State laws, and regulations.

2. Information access - Except for information relating to confidential processes or methods of manufacture, all records and reports submitted in accordance with the terms of this permit shall be available for public inspection at the State of Alaska, Department of Environmental Conservation, 555 Cordova Street, Anchorage, AK 99501.

3. Civil and criminal liability - Nothing in this permit shall relieve the Permittee from civil or criminal penalties for noncompliance, whether or not such noncompliance is due to factors beyond his control, including, but not limited to, accidents, equipment breakdowns, or labor disputes.

4. Availability - The Permittee shall post or maintain a copy of this permit available to the public at the disposal facility.

5. Adverse impact - The Permittee shall take all necessary means to minimize any adverse impacts to the receiving waters or lands resulting from noncompliance with any limitation specified in this permit, including any additional monitoring needed to determine the nature and impact of the noncomplying activity. The Permittee shall clean up and restore all areas adversely impacted by the noncompliance.

6. Cultural or paleontological resources - Should cultural or paleontological resources be discovered as a result of this activity, work which would disturb such resources is to be stopped, and the State Historic Preservation Office, Division of Parks and Outdoor Recreation, Department of Natural Resources, is to be notified immediately (907-269-8721).

7. Applications for renewal - In accordance with 18 AAC 15.100(d), applications for renewal or amendment of this permit must be made no later than 30 days before the expiration date of the permit, or the planned effective date of the amendment.

8. Other legal obligations - The requirements, duties, and obligations set forth in this permit are in addition to any requirements, duties, or obligations contained in any permit that the Alaska Department of Environmental Conservation or the U.S. Environmental Protection Agency has issued or may issue to the Permittee. This permit does not relieve the Permittee from the duty to obtain any and all necessary permits and to comply with the requirements contained in any such permit or with applicable state and federal laws and regulations. All activities conducted by the Permittee pursuant to the terms of this permit and all plans implemented by the Permittee pursuant to the terms of this permit shall comply with all applicable state and federal laws and regulations.

9. Pollution prevention - In order to prevent and minimize present and future pollution, when making management decisions that affect waste generation, the Permittee shall consider the following order of priority options: waste source reduction; recycling of waste; waste treatment; and waste disposal.

This permit expires on **April 1, 2014**, and may be revoked or amended in accordance with 18 AAC 60.260. The permit can be renewed if the facility will operate beyond this date. To avoid expiration of this permit, a renewal application must be submitted to ADEC at least 30 days before the expiration date, as set forth in 18 AAC 15.110.

Lori Aldrich
Solid Waste Program Coordinator

Susan Lee

From: Susan Lee
Sent: Wednesday, January 22, 2014 12:52 PM
To: 'Aldrich, Lori (DEC)'
Subject: RE: Central Monofill Services

Lori:

Shane Durand of CMS stated that they will not be submitting a new ADEC permit application. I will be forwarding their MSB application material to you when it goes out for public review.

Susan

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

From: Aldrich, Lori (DEC) [mailto:lori.aldrich@alaska.gov]
Sent: Wednesday, January 22, 2014 12:46 PM
To: Susan Lee
Subject: RE: Central Monofill Services

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Please call or email if you have any additional questions.

Thanks,
Lori

Lori Aldrich
Solid Waste Program Coordinator
Department of Environmental Conservation
555 Cordova Street
Anchorage, AK 99501
(907) 269-7622

From: Susan Lee [mailto:Susan.Lee@matsugov.us]
Sent: Wednesday, January 22, 2014 12:36 PM
To: Aldrich, Lori (DEC)
Subject: Central Monofill Services

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Susan

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Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

Susan Lee

From: Susan Lee
Sent: Wednesday, January 22, 2014 12:53 PM
To: 'Jim Munter'
Subject: FW: Central Monofill Services
Attachments: 2009-4-23 SWZA004-14 Palmer Inert - AK Demo.pdf

FYI - Susan

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

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Solid Waste Program Coordinator
Department of Environmental Conservation
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(907) 269-7622

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To: Aldrich, Lori (DEC)
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Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

Susan Lee

From: Aldrich, Lori (DEC) [lori.aldrich@alaska.gov]
Sent: Wednesday, January 22, 2014 12:55 PM
To: Susan Lee
Subject: RE: Central Monofill Services

Susan,

Whether they must submit a new application remains to be seen, and will be determined by ADEC. They are required to submit their more comprehensive hydrological study and any potential changes as they relate to that. In addition, I presume they have made some concessions to the Borough to resubmit for the conditional use permit.

Thanks for keeping me posted.

Lori

From: Susan Lee [mailto:Susan.Lee@matsugov.us]
Sent: Wednesday, January 22, 2014 12:52 PM
To: Aldrich, Lori (DEC)
Subject: RE: Central Monofill Services

Lori:

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Susan

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Lori

Lori Aldrich
Solid Waste Program Coordinator
Department of Environmental Conservation
555 Cordova Street
Anchorage, AK 99501
(907) 269-7622

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Susan

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

Susan Lee

From: Sandra Garley [sgarley@palmerak.org]
Sent: Thursday, January 23, 2014 4:04 PM
To: Susan Lee
Subject: Re: Alaska Demo Permit

Susan I am in Maryland this week. If you can wait, I will be back in the office on Monday. If this is a rush, call Kimberly at 761-1306.

Sent from my iPad

On Jan 22, 2014, at 3:22 PM, "Susan Lee" <Susan.Lee@matsugov.us> wrote:

> Hi Sandy:
>
> Would you send me a copy of the Alaska Demo Permit? If you have a copy of their DEC permit could you also send me a copy of that too.
>
> Thanks, Susan
>
> Susan Lee
> Planner II
> Matanuska-Susitna Borough
> 907-861-7862 (Direct Line)
> 907-861-7876 (FAX)
> PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

Susan Lee

From: Shane Durand [Shane@cei-alaska.com]
Sent: Monday, January 27, 2014 1:25 PM
To: Susan Lee
Cc: Alex Strawn
Subject: Update

I was curious how the review of our application was going and if you had any questions, comments or concerns?

Respectfully,

Shane Durand
Central Recycling Services
2400 Railroad Ave.
Anchorage, AK 99501
(907)748-7400
www.centralrecyclingservices.com
www.crssurplusmaterials.com

Susan Lee

From: Susan Lee
Sent: Monday, January 27, 2014 2:06 PM
To: 'Shane Durand'
Subject: RE: Update

We are still reviewing the application material and hope to finish our review by the end of the week. We will then be in touch with you regarding any question, comments or additional info.

Susan

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

From: Shane Durand [mailto:Shane@cei-alaska.com]
Sent: Monday, January 27, 2014 1:25 PM
To: Susan Lee
Cc: Alex Strawn
Subject: Update

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Respectfully,

Shane Durand
Central Recycling Services
2400 Railroad Ave.
Anchorage, AK 99501
(907)748-7400
www.centralrecyclingservices.com
www.crssurplusmaterials.com

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Susan Lee

From: Susan Lee
Sent: Tuesday, January 28, 2014 7:38 AM
To: 'Aldrich, Lori (DEC)'
Subject: Central Monofill Services
Attachments: SKMBT_C65414012807320.pdf

Hi Lori:

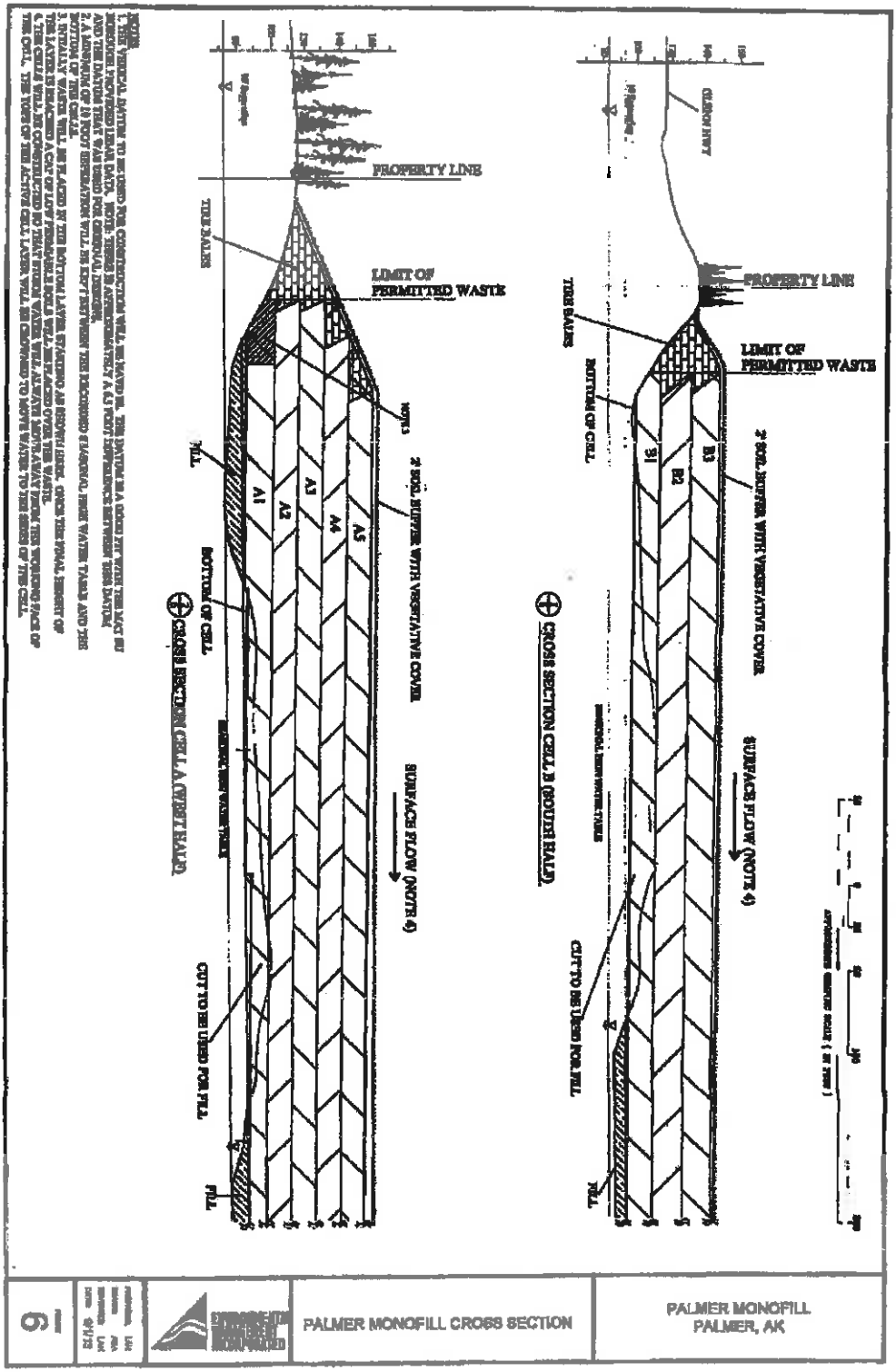
I have a couple of questions regarding CMS's proposed monofill. I attached one of the cross sections drawings from their application material for your reference.

1. Can fill be used to meet the 10' separation from the watertable?
2. If fill can be used, what types of material are acceptable for fill?
3. Do they have to disclose the type of material that was used for fill?

Thanks for your help!

Susan

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER


PROPERTY LINE
LIMIT OF PERMITTED WASTE
TREE BAFFLE
BOTTOM OF CELL
CROSS SECTION CELL A (NORTH HALF)
CROSS SECTION CELL B (SOUTH HALF)
SURFACE FLOW (NOTE 4)
CUT TO BE USED FOR FILL
FILL
A1
A2
A3
A4
A5
B1
B2
B3
PALMER MONOFILL CROSS SECTION
PALMER MONOFILL
PALMER, AK

COPY

Susan Lee

From: Susan Lee
Sent: Wednesday, January 29, 2014 10:59 AM
To: Richard Boothby
Cc: Michelle Wagner
Subject: Central Monofill Services
Attachments: CMS App 1-15-2014.pdf; CMS Figures 1-15-2014.pdf; central_monofill_17N02E18_19 (2).pdf

Hi Rich:

I am processing a conditional use permit for a proposed monofill for construction and demolition material. Could you take a look at their info on Fire Risk, pages 17 - 18 and let me know what your think. Can you give me any info on the combustibility of the shredded residual waste and the combustibility of the tire bales.

I have attached the application material (minus most of the attachments) and the figures for your reference.

The site is part of the old Granite gravel pit just outside of Palmer.

Thanks for your help!!!!!!!!!!!!!!!!

Susan

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

Susan Lee

From: Richard Harbuck [supergilde@mtaonline.net]
Sent: Wednesday, January 29, 2014 12:06 PM
To: Susan Lee
Subject: proper address.

Hello Susan, The Gateway Community Council Exutive Board will be sending a letter of request to expand the notification area regarding the CMS monofill CUP. I informed them that you would forward all requests to the proper people, instead they would like to address the letter to the person at the top. I assume that would be Lauren Driscoll, would this be correct? Richard H.

Susan Lee

From: Susan Lee
Sent: Wednesday, January 29, 2014 12:21 PM
To: 'superglide@mtaonline.net'
Subject: RE: proper address.

The proper person to address the letter to is Eileen Probasco, the Planning Director.

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
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Susan Lee

From: Richard Boothby
Sent: Wednesday, January 29, 2014 12:32 PM
To: Susan Lee
Cc: James Steele; Otto Feather
Subject: RE: Central Monofill Services

Hi Susan,

Looks good. They are using their Anchorage facility for the actual grinding up of the product that cannot be recycled. Our biggest problems in the landfills are the residential waste. This C/D waste has gone thru a process so we know what it is and more important that it is not on fire. With residential waste they could have emptied their wood stove into the can and we do not know that until the dump is on fire. They have a water supply for summer but in winter the pond may not work so well. The city of Palmers water system runs in front of the property so it would be easy to get hydrants added on the property which gives a year round water supply. This is in the Greater Palmer Fire Department area and in the State Fire Marshal is the authority having jurisdiction. I am going to forward this to the Fire Chief there in Palmer if that is ok just so he has a heads up.

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Sent: Wednesday, January 29, 2014 10:59 AM
To: Richard Boothby
Cc: Michelle Wagner
Subject: Central Monofill Services

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PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

Susan Lee

From: Susan Lee
Sent: Wednesday, January 29, 2014 3:22 PM
To: Richard Boothby
Subject: RE: Central Monofill Services

So what type of fire risk are we looking at with the tire bales?

When I send this out for official review, who should I send it to at the Palmer Fire Dept? Anybody in particular at the State Fire Marshal?

Thanks,
Susan

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
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Susan Lee

From: Richard Boothby
Sent: Wednesday, January 29, 2014 3:27 PM
To: Susan Lee
Subject: RE: Central Monofill Services

Not much. They are compacted and then covered with dirt. All the waste has been gone thru and then chewed up and then gets compacted. The tire bales are not much of a risk. If it were open tire piles this would be a significant risk and the building could speaks to it. This is ok.

Rich

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Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

Susan Lee

From: Richard Harbuck [superglide@mtaonline.net]
Sent: Wednesday, January 29, 2014 4:43 PM
To: Susan Lee
Subject: RE: proper address.

Thank You. Rich H.

--- Susan.Lee@matsugov.us wrote:

From: Susan Lee <Susan.Lee@matsugov.us>
To: "superglide@mtaonline.net" <superglide@mtaonline.net>
Subject: RE: proper address.
Date: Wed, 29 Jan 2014 21:21:01 +0000

The proper person to address the letter to is Eileen Probasco, the Planning Director.

Susan Lee

Planner II

Matanuska-Susitna Borough

907-861-7862 (Direct Line)

907-861-7876 (FAX)

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Susan Lee

From: Eileen Probasco
Sent: Monday, February 03, 2014 1:44 PM
To: Susan Lee; Alex Strawn
Subject: FW: CMS Monofill

Importance: High

What was our notification area last time?

-----Original Message-----
From: Dody [mailto:dody@dodykettler.com]
Sent: Monday, February 03, 2014 12:53 PM
To: Eileen Probasco
Subject: CMS Monofill
Importance: High

Hi Eileen,
I am requesting that the notification area for the CUP on the mono fill, but extended to a MUCH larger area in Palmer. The home owners in the neighboring subdivisions like Pioneer Meadows and Crimsonview have wells very near this property and possibly attached to the aquifer. I believe the CITY OF PALMER, who was NOT notified last time, is an adjoining neighbor of this property and needs to be notified also. Please let me know if this expansion can be put in place.
Thank you

Dody Kettler, REALTOR®

CRS, GRI, ABR, e-Pro

Jack White Real Estate MatSu

865 N Seward Meridian St. 200

Wasilla, AK 99654

907-232-7331

wasillarealestateandbeyond.com

dody@dodykettler.com

Susan Lee

From: Susan Lee
Sent: Monday, February 03, 2014 1:51 PM
To: Eileen Probasco
Cc: Alex Strawn
Subject: RE: CMS Monofill

We notified property owners within one-half mile of the site. No we did not notify the City of Palmer. I forwarded you and Alex a request from Richard Harbuck also wanting an extended notification area to include the entire Gateway CC area. We need to chat about this.

Susan Lee
Planner II
Matanuska-Susitna Borough
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Wasilla, AK 99654

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dody@dodykettler.com

Susan Lee

From: Susan Lee
Sent: Monday, February 03, 2014 3:33 PM
To: Eileen Probasco
Subject: FW: CMS Monofill

When I said we did not notify Palmer, I meant as an agency review. If they own property within the mailing distance they would have gotten a public hearing notice.

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
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Wasilla, AK 99654

907-232-7331

wasillarealestateandbeyond.com

dody@dodykettler.com

Susan Lee

From: Eileen Probasco
Sent: Monday, February 03, 2014 4:56 PM
To: Dody
Cc: Alex Strawn; Susan Lee
Subject: RE: CMS Monofill

We are reviewing our notification from the last time they applied, and will let you know what we come up with.
Thanks
Eileen Probasco

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Sent: Monday, February 03, 2014 12:53 PM
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dody@dodykettler.com

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Susan Lee

From: Kimberly McClure [kmcclure@palmerak.org]
Sent: Tuesday, February 04, 2014 9:10 AM
To: Susan Lee
Subject: FW: Alaska Demo
Attachments: AK Demolition Ordinance 612-Z-57.pdf; AK Demolition CUP.pdf

Good morning Susan,

Because of the size of the attachments, I will send the rezone ordinance and CUP from 2004 in this email and will follow up with a second email that includes the current ordinance and CUP for AK Demo for 2014.

Thanks,

Kimberly McClure
Planning & Code Compliance Technician
City of Palmer
Department of Community Development
645 E. Cope Industrial Way
Palmer, AK 99645-6748
Phone (907) 761-1306
Fax (907) 745-5443
mailto:kmcclure@palmerak.org

From: Sandra Garley
Sent: Tuesday, February 04, 2014 8:42 AM
To: Kimberly McClure
Subject: FW: Alaska Demo

Kimberly, please email a copy of the AK Demo 2014 rezone ordinance & CUP and a copy of the 2004 rezone & CUP to Susan Lee.
Thank you,

Sandra G

From: Susan Lee [mailto:Susan.Lee@matsugov.us]
Sent: Tuesday, February 04, 2014 7:54 AM
To: Sandra Garley
Subject: Alaska Demo

Hi Sandy!

Could you e-mail me a copy of the Alaska Demo permit?

Thanks!

Susan

Susan Lee

Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

COPY

Introduced by: Mayor Cooper
Date: January 27, 2004
Public Hearing: February 10, 2004
Action: During council discussion postponed to a time definite of the February 24, 2004, council meeting
Date: February 24, 2004 Substitute
Action: Adopted
Vote: Unanimous

CITY OF PALMER, ALASKA

ORDINANCE NO. 612-Z-57 (SUBSTITUTE)

AN ORDINANCE TO REZONE ALASKA STATE FAIR, INC. PROPERTY, TAX PARCEL D-8, FROM R-1, SINGLE FAMILY RESIDENTIAL, TO I, INDUSTRIAL

WHEREAS, the City of Palmer Planning and Zoning Commission (the Commission) received a request from Alaska State Fair, Inc., to rezone the below described property from R-1, Single Family Residential district to I, Industrial; and,

WHEREAS, the Commission duly gave required notices, held the required public hearing on November 4, 2003, and made its written report, as contained in the Commission's November 4, 2003, minutes of the meeting, of its findings as to such need, justification and effect of the change of zoning and, by unanimous vote, denied the request to rezone the property as I, Industrial, and,

WHEREAS, the decision of the Commission denying the rezone is final unless the initiating party files a written statement with the city clerk requesting that the amendment be considered by the city council in accordance with the procedures of Palmer Municipal Code 17.80.040, and the property owner in this case did file a timely request for such consideration by the City Council, and;

WHEREAS, the City Council duly gave required notices and has duly considered the request to rezone the property, all evidence and testimony presented including any comments of the persons attending the public hearing, and the report and actions of the Commission, and being fully advised in the premises,

The City Council hereby acts as follows:

Section 1. Having considered the effect the proposed change would have on the public health, safety, welfare and convenience, the City Council hereby adopts the following legislative findings:

A. The proposed change to Industrial zoning classification, as restricted by this ordinance, is in accordance with the borough and city comprehensive plans. The use of the property at one time prior to annexation to the city was as a commercial gravel pit, and there currently exists on the property a very large open pit that poses health and safety risks and makes the use of the property for other productive purposes impractical. These risks include not only the risk of injury resulting from the current

configuration of the terrain, but also a risk of ground water contamination presented by drainage patterns in the area. The proposed change will allow reclamation of property for useful purposes and will contribute to making Palmer an attractive place to live; eliminates an unsafe condition and an attractive nuisance; reduces and eventually eliminates the negative impact of an industrial site on adjacent properties; and will encourage the creation of new uses compatible with uses in the adjacent zoning districts following the reclamation of the property.

B. The proposed change is necessary to allow reclamation and establish the long range compatibility of the property with the zoning districts in the neighboring area as the current condition of the property is not compatible with the surrounding area. The property is presently owned by the Alaska State Fair and may possibly be suited for future use by the Fair after reclamation. Anticipated future development in the surrounding area requires that, following reclamation of the gravel pit within a specified, reasonable length of time, the property be re-designated in a more restrictive zoning district to assure its continued compatibility with established and anticipated land use patterns.

C. Public facilities such as schools and utilities are adequate to support the proposed change; however, there are public safety concerns involving truck traffic associated with activities allowed on the property. It is in the public interest to place conditions on truck traffic to and from the property and to divert the traffic away from Inner Springer Loop Road.

D. Changed conditions affecting the subject parcel or the surrounding neighborhood support the proposed change. Development currently taking place in the near vicinity, specifically residential uses, causes increasing public health, safety and welfare concerns over the existing condition of the property as an attractive nuisance and supports the need to abate the condition of the property. Also, increasing demand for useable property in the area supports the need to reclaim the property for meaningful economic use.

E. The proposed change, as restricted by this ordinance, is consistent with the public health, safety, and welfare and does not grant a special privilege to the owners. The public health, safety, and welfare requires that the property be reclaimed from its present unsafe condition. It is appropriate and necessary to allow, for a limited time, the specific industrial activity of filling the pit with inert materials in order to eliminate the unsafe conditions. To assure eventual compatibility of land uses in the area, and to prohibit the expansion of industrial use of the property beyond those activities required to address the overriding public interest to eliminate hazards and unsightly conditions, industrial activities on the property shall be limited by time and extent to those necessary to remedy hazards to public health and safety, and shall not extend beyond those activities that mitigate or eliminate those hazards.

F. Section 17.36.030(B)(1), Palmer Municipal Code, requires an industrial use of property similar to that envisioned to reclaim this property (operation of an inert waste mono-fill to fill the pit) to require a conditional use permit to be granted by the Palmer Planning Commission.

G. In order to address public health, safety, and welfare concerns, including those contained in testimony presented to the City Council, the public interest requires that the Planning Commission approve a conditional use permit imposing conditions on the reclamation activities. In so doing, it is necessary that the Planning Commission

consider the following factors and impose such permit conditions on the reclamation of this property that will:

1. allow only those industrial activities to occur on the property that are necessary to reclaim the property by filling the existing gravel pit with materials authorized by the Alaska Department of Environmental Conservation for disposal on the property;
2. allow the use of gravel materials presently on the property as may be necessary to reclaim the property;
3. allow the use of gravel materials presently on the property as may be necessary to meet the needs of the Alaska State Fair for use on its property;
4. allow the excavation and export of gravel material from the site, provided that:
   i. on an annual basis as of July 31 of each year the areas excavated shall be refilled to eighty-five percent of the excavated volume with exempt material;
   ii. exempt materials delivered to the site shall also be utilized to fill the existing gravel pit area to meet the primary intent of reclaiming the property in a timely manner; and,
   iii. at such time as fifty percent of the surface area of the southern portion of the property, excluding identified buffer areas, has been utilized for excavation of gravel, the property owner shall not excavate additional gravel without approval from the city council, with such approval based on a review that shows reasonable progress in reclaiming the exempt material area of the property in relation to the amount of gravel excavated to that time.
5. place restrictions on truck routes to prevent heavy truck traffic impacts on Inner Springer Loop Road and adjacent properties; and
6. return the property to a more restrictive zoning classification within a reasonable period of time (for example, ten years), or sooner if the reclamation activities are completed in less time.

Section 2. The City Council hereby amends the City of Palmer Zoning Map designation for the following described property from R-1, Single Family Residential, to I, Industrial, subject to the limitations and requirements of section 3 of this ordinance:

Township 17 North, Range 2 East, Section 8, Seward Meridian, Palmer Recording District, tax parcel D-8.

Section 3. In light of the findings expressed above, and to ensure that the use of the property pursuant to this rezoning does serve to advance the public health, safety and welfare of the citizens of Palmer in both the short term and the long term, the City Council further imposes the following limitations and requirements on the use of the property pursuant to the Industrial zoning classification:

A. The industrial use of the property is limited to only the reclamation of the property through the operation of an inert waste mono-fill and those activities incidental thereto that are necessary to reclaim the property in a manner consistent with the findings set forth above.
B. No use of the property authorized by subparagraph A shall commence or continue except in conformance with a conditional use permit approved by the Palmer

Planning Commission, consistent with the above findings.

C. The Industrial zoning classification of this property shall terminate no later than 10 years after the effective date of this ordinance, unless terminated sooner pursuant to subparagraph D or by subsequent rezoning.

D. If prior to ten years after the effective date of this ordinance the Palmer Planning Commission finds that the reclamation of the property has been completed, the Industrial zoning classification shall then terminate on the effective date thereof. Such a finding shall be made only after notice to the property owner and a public hearing.

E. Upon the effective date of termination of the Industrial zoning classification pursuant to subparagraph C or D above, the property shall revert to the zoning classification in effect prior to the adoption of this ordinance (R-1, Single Family Residential), unless otherwise rezoned.

Section 4. Effective Date. This ordinance shall become effective immediately upon its adoption.

Adopted by the City Council of the City of Palmer, Alaska, this 24th day of February, 2004.

Anthony Pippel, Mayor Pro-Tempore

Janette M. Persinger, City Clerk

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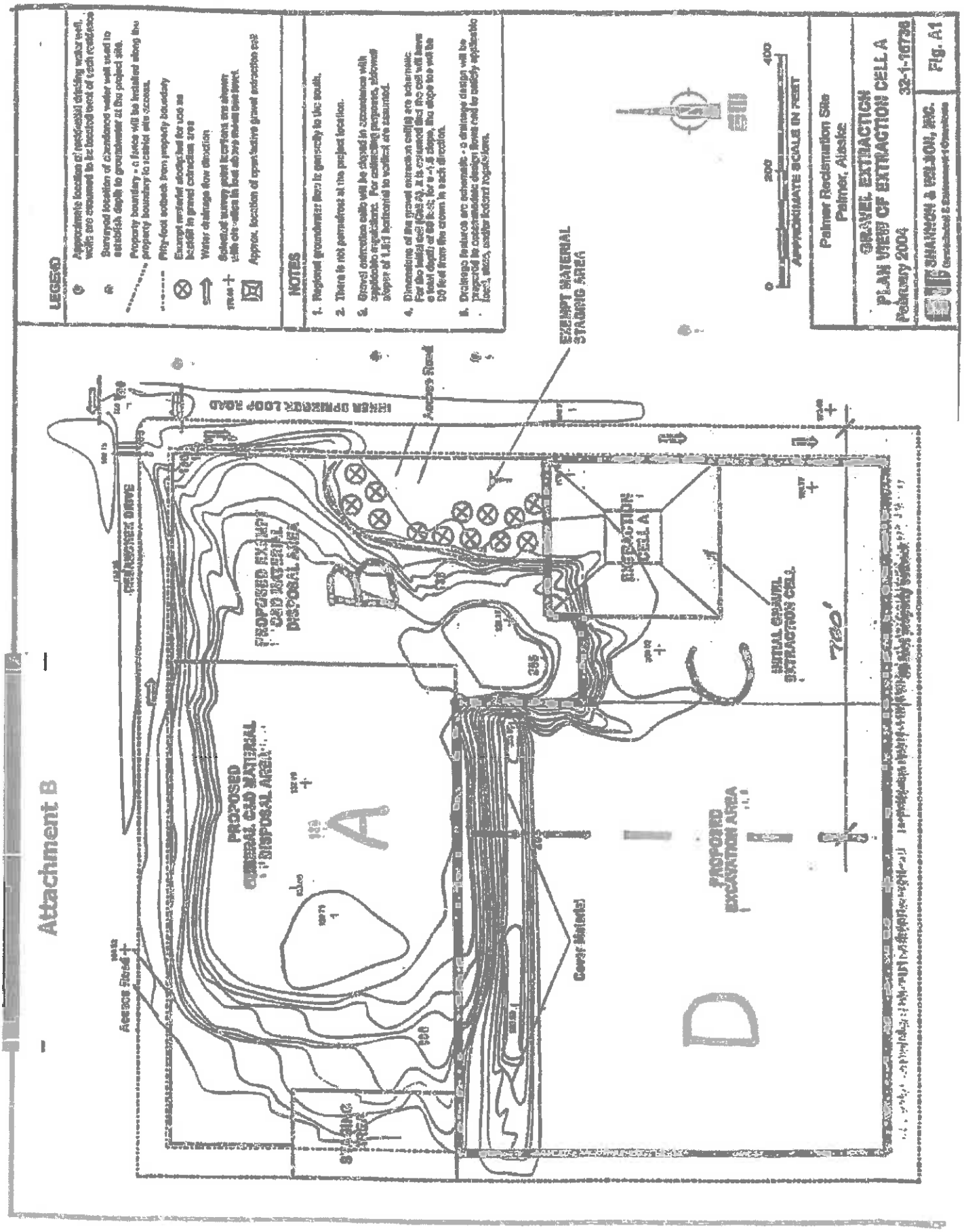
LEGEND
NOTES
Palmer Reclamation Site
Palmer, Alaska
GRAVEL EXTRACTION
PLAN VIEW OF EXTRACTION CELL A
February 2004
32-1-16736
SHANNON & WILSON, INC.
Fig. A1
EXEMPT MATERIAL STAGING AREA
INNER SPRENGER LOOP ROAD
Access Road
SPRENGER DRIVE
PROPOSED EXEMPT CBD MATERIAL DISPOSAL AREA
EXTRACTION CELL A
INITIAL GRAVEL EXTRACTION CELL
PROPOSED CBD MATERIAL DISPOSAL AREA
PROPOSED EXCAVATION AREA
Cover Material
Access Road
Staging Area
760'
A
D
Attachment B

Copy

City of Palmer
231 W. Evergreen Ave.
Palmer AK 99645
907-745-3271

PLANNING AND ZONING COMMISSION

CONDITIONAL USE PERMIT
Tax Parcel 17N02E08D008

The City of Palmer Planning and Zoning Commission (Commission) upon consideration of an application for conditional use permit by Alaska State Fair, Inc. ("Owner"), hereby approves the use of tax parcel 17N02E08D008 for the use stated in this permit, subject to the conditions, controls, and safeguards stated in this permit. The purpose of this conditional use permit is to insure that the stated uses and appropriate future uses described in the attached reclamation plan will be compatible with the surrounding area and will not create a health or safety hazard to the public.

The Palmer City Council changed the zoning designation of this parcel at its regular meeting of February 24, 2004. The council passed ordinance No. 612-Z-57 (Substitute) (the "ordinance") which is attached and incorporated by reference into this conditional use permit as if fully stated in the permit. The conditions contained in the ordinance and in this permit, when accepted by the Owner's signature below, constitute an agreement between the Owner and the city, which may be enforced by the city pursuant to Palmer Municipal Code Chapter 17.04.

The only allowable Industrial use of the property is described in Section 3 of the ordinance as "reclamation of the property through the operation of an inert waste mono-fill and those activities incidental thereto that are necessary to reclaim the property," (the "Permitted Use") subject to a conditional use permit. Such Permitted Use is permitted on the property only pursuant to this permit under the following conditions:

Permit Term

1. This conditional use permit shall terminate no later than 10 years after the effective date of Ordinance No. 612-Z-57 (Substitute).

2. The Industrial zoning classification of this property shall terminate no later than 10 years after the effective date of Ordinance No. 612-Z-57 (Substitute), unless terminated sooner pursuant to conditions contained within the ordinance.

Other Permits

3. The owner shall comply with all local, state, and federal ordinances, regulations, and statutes applicable to the proposed activities.

4. The owner shall provide copies of all permits issued by state and federal agencies to the City of Palmer prior to commencement of the Permitted Use. The owner shall also provide to the City of Palmer a copy of every application for an amendment to any such permit at the time the application is filed with the permitting agency, and a copy of any amendment approved by the permitting agency shall be provided to the City within five days of issuance.

Other Conditions

The reclamation activity shall be conducted in a manner to minimize the impact on adjacent lands and residents and allow only those industrial activities necessary to reclaim the property to establish the long range compatibility of the property with zoning districts in the neighboring areas. The attached site plan identifies the property and areas within the property, as follows: Area A (general construction and demolition material disposal area), Area B (exempt construction and demolition material disposal area), Area C (gravel extraction and exempt material disposal area), and Area D (gravel extraction and exempt material disposal area).

5. The existing driveway on the Inner Springer Loop which provides access to the eastern edge of the property shall be used only until a new access driveway can be constructed on Rebarchek road, which shall be done as soon as practical and no later than September 5, 2005. Once the new access driveway is opened, the existing driveway on Inner Springer Loop shall be closed to truck traffic.

6. All traffic entering the property shall approach the property from the Glenn Highway, through lands owned by the Alaska State Fair, Inc. and access the property by using Rebarchek Road

7. Fencing shall be installed at the boundary of the property along Rebarchek Road and the Inner Springer Loop Road by June 1, 2004.

8. Gates with locks shall be placed at all entrances to the property. The gates must be locked at all times when supervisory personnel are not on site.

9. A fifty foot setback shall be maintained from all property boundaries in which no excavation of material shall occur.

10. A natural buffer of twenty five feet shall be maintained on the east, west and north boundaries of the property.

11. A natural buffer of fifty feet shall be maintained on the southern boundary of the property.

12. A stormwater plan which meets applicable state law shall be prepared and implemented as approved. Copies of the approved plan and amendments shall be provided to the City according to paragraph 4 of this permit.

13. The owner shall maintain and operate watering equipment on site to prevent and suppress the creation of wind blown dust and dirt.

14. The owner shall pick up and contain any and all paper, debris and other materials on and around the property.

15. All equipment shall be operated in a manner to minimize the disturbance of neighboring residents and shall conform with PMC 8.36.020 F (Nuisances, Specific Acts Designated – Noise) and PMC 8.36.025 (Certain Acts Requiring a Permit).

16. The owner shall conduct Permitted Use activities on the property only between the hours of 6:00 am to 10:00 pm, Monday through Sunday.

17. To prevent accumulation of uncovered and exposed debris, the placement of construction and demolition debris shall be executed by the construction of defined "cells" or active fill zones with average dimensions of sixty feet wide by 150 feet in length and ten feet in depth. Each cell shall be covered with clean material when fully constructed.

18. Any portion of the property from which gravel is extracted pursuant to this permit shall be brought back to original grade by the fill and placement of mineral soils, exempt fill and land clearing debris.

19. Except as provided in the following paragraph, exempt fill consists of stumps, brush, peat, and similar land clearing debris; clay, silt and other mineral soils; and other items as listed in 18 AAC 60.005.

20. For purposes of this permit, exempt fill specifically excludes the following material and other similar material:
    a. domestic wastewater, nondomestic wastewater, and other wastes that are subject to a permit under AS 46.03, 18 AAC 72, or 33 U.S.C. 1342 (Federal Water Pollution Control Act, sec. 402), as amended through August 21, 1998;
    b. sewage, septage and septic tank pumpings, regardless of the amount of solids and regardless of whether regulated under 18 AAC 72

21. The eastern and southern portions of the property (Areas B and C, respectively) used to accept exempt fill material and extract gravel shall be operated in a manner to minimize the total excavated area at any one time. As of July 31 of each year, the areas excavated pursuant to this permit shall be refilled to not less than eighty-five percent (85%) of the excavated volume with exempt materials.

22. For purposes of section 1.G. 4. iii. of the ordinance, the boundary of the area representing fifty percent of the southern portion of the property is shown on the attached map as a dashed line running parallel to and seven hundred (700) feet west of the east property boundary.

23. Excavation of all side slopes shall not exceed one and one half to one (1.5/1). Within 180 days after issuance of this permit, all existing side slopes shall be reduced to not exceed one and one half to one.

24. The depth of gravel extraction shall not exceed a depth of 130 feet above mean sea level, as indicated on the September 2003 "Site Map-Fig.2" prepared by Shannon and Wilson, Inc.

25. Gravel extraction on the eastern and southern portions of the property shall cease when the existing pit (Areas A and B) has been filled and brought back to the grade of adjacent undisturbed land.

26. The completed landfill cover shall be graded to promote surface water runoff and be in compliance with 18AAC60.460.

27. Every term and condition of this permit is binding upon the Owner, Owner's assigns and successors in interest, and every person occupying or operating on the property. The use of the term Owner in reference to the terms and condition of this permit shall be construed to include every person operating on the property by, through, or under the authority or consent of the Owner.

Any changes, alterations or deletions of the intended uses, unless permitted by ordinance, must receive prior approval of the Planning and Zoning Commission.

Dated this 8th day of March, 2004, for the Palmer Planning and Zoning Commission

By: _____
Detlef Wanke, Vice-Chairperson

ACCEPTANCE

The Owner hereby accepts and agrees to abide by the terms and conditions of this permit.

Dated this 5th day of March, 2004, for the owners, Alaska State Fair, Inc.

By: _____
Joe Lawton, General Manager

STATE OF ALASKA)
) ss:
THIRD DISTRICT)

THIS IS TO CERTIFY that on this 9th day of March, 2004, before the undersigned Notary Public in and for the State of Alaska, duly commissioned and sworn, personally appeared Detlef Wanke, Vice-Chairperson of the City of Palmer Planning and Zoning Commission and he acknowledged that he had signed the same freely and voluntarily for the uses and purposes therein stated.

WITNESS my hand and official seal the day and year in this certificate first written.

Official Seal
State of Alaska
NOTARY PUBLIC
JOAN E. PATTERSON

Joan E. Patterson
NOTARY PUBLIC FOR STATE OF ALASKA
My Commission Expires: 11/11/2005

STATE OF ALASKA)
) ss:
THIRD DISTRICT)

THIS IS TO CERTIFY that on this 5th day of March, 2004, before the undersigned Notary Public in and for the State of Alaska, duly commissioned and sworn, personally appeared Joe Lawton. General Manager of Alaska State Fair, Inc., and he acknowledged that he had signed the same freely and voluntarily for the uses and purposes therein stated on behalf of the corporation.

WITNESS my hand and official seal the day and year in this certificate first written.

Official Seal
State of Alaska
NOTARY PUBLIC
JOAN E. PATTERSON

Joan E. Patterson
NOTARY PUBLIC FOR STATE OF ALASKA
My Commission Expires: 11/11/2005

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Susan Lee

From: Kimberly McClure [kmcclure@palmerak.org]
Sent: Tuesday, February 04, 2014 9:13 AM
To: Susan Lee
Subject: FW: Alaska Demo
Attachments: Ordinance No. 14-001-Z-1.pdf; CUP #14-001.pdf

Hey Susan,

Attached are copies of Ordinance 14-001-Z-1 for the rezone that just passed on January 28, 2014 and the unsigned copy of CUP #14-001. CUP#14-001 is not signed yet since the rezone just passed a few day ago.

Kimberly McClure
Planning & Code Compliance Technician
City of Palmer
Department of Community Development
645 E. Cope Industrial Way
Palmer, AK 99645-6748
Phone (907) 761-1306
Fax (907) 745-5443
mailto:kmcclure@palmerak.org

From: Kimberly McClure
Sent: Tuesday, February 04, 2014 9:10 AM
To: 'Susan.Lee@matsugov.us'
Subject: FW: Alaska Demo

Good morning Susan,

Because of the size of the attachments, I will send the rezone ordinance and CUP from 2004 in this email and will follow up with a second email that includes the current ordinance and CUP for AK Demo for 2014.

Thanks,

Kimberly McClure
Planning & Code Compliance Technician
City of Palmer
Department of Community Development
645 E. Cope Industrial Way
Palmer, AK 99645-6748
Phone (907) 761-1306
Fax (907) 745-5443
mailto:kmcclure@palmerak.org

From: Sandra Garley
Sent: Tuesday, February 04, 2014 8:42 AM
To: Kimberly McClure
Subject: FW: Alaska Demo

Kimberly, please email a copy of the AK Demo 2014 rezone ordinance & CUP and a copy of the 2004 rezone & CUP to Susan Lee.

Thank you,

Sandra G

From: Susan Lee [mailto:Susan.Lee@matsugov.us]
Sent: Tuesday, February 04, 2014 7:54 AM
To: Sandra Garley
Subject: Alaska Demo

Hi Sandy!

Could you e-mail me a copy of the Alaska Demo permit?

Thanks!

Susan

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

Commission Information:	
Initiated by:	Planning and Zoning Commission
First on Agenda:	November 21, 2013
Action:	Approved
Vote:	Unanimously
Council Information:	
Introduced by:	City Manager Griffin
Introduced:	January 14, 2014
Public Hearing:	January 28, 2014
Action:	Adopted
Vote:	Unanimous

Yes:	No:
Best	
Carrington	
Combs	
DeVries	
Hanson	
Johnson	

CITY OF PALMER, ALASKA

Ordinance No. 14-001-Z-1

An Ordinance of the Palmer City Council Amending the Zoning Map to Revise the Designation of Tax Parcel D8, Section 8, Township 17 North, Range 2 East, Seward Meridian from R-1, Single Family Residential to I-Industrial with Special Limitations

THE CITY OF PALMER, ALASKA ORDAINS:

Section 1. Classification. This ordinance shall be permanent in nature and shall be incorporated into the Palmer Municipal Code.

Section 2. Severability. If any provision of this ordinance or any application thereof to any person or circumstance is held invalid, the remainder of this ordinance and the application to other persons or circumstances shall not be affected thereby.

Section 3. Authority for zoning map amendments with special limitations. Pursuant to 17.80.015, the City Council may include special limitations that restrict structures, or use of land to a degree greater than otherwise provided for by the zoning district to which the property is rezoned by amendment.

Section 4. Authority and legislative findings. Pursuant to 17.80.040, the City Council hereby adopts the following zoning map amendment in accordance with the legislative findings set below:

WHEREAS, the City of Palmer Planning and Zoning Commission (the Commission) received an application on October 11, 2013, from Steve Agni, Development Manager for Alaska Demolition, LLC, the property owners of Tax Parcel D8 located in Section 08, Township 17

North, Range 2 East, Seward Meridian, Alaska to rezone the subject property from R-1 Single Family Residential to I-Industrial with Special Limitations; and

WHEREAS, the Commission duly gave required notices, held its required public hearing on November 21, 2013, made a written report of its decision as to such need, justification and effect of the change of zoning in Commission Resolution 13-012, and voted unanimously to recommend that such amendment to the zoning map be approved; and

WHEREAS, the Commission adopted finding of fact as to such need, justification and effect of the change of zoning on November 21, 2013; and

WHEREAS, the City Council duly gave required notices, held its required public hearing on this date, and has duly considered the request to rezone the property, all evidence and testimony presented including any comments of the persons attending the public hearing, the findings of fact set forth in Planning and Zoning Commission Resolution 13-012, and the recommendation of the Commission; and

Section 5. The City of Palmer Zoning Districts map dated March 2012 is hereby amended to revise the zoning designation of Tax Parcel D8 located in Section 08, Township 17 North, Range 2 East, Seward Meridian, Alaska from R-1 Single Family Residential to I-Industrial subject to the Special Limitations and requirements of Section 6.

Section 6. To ensure that the use of the property pursuant to this rezoning does serve to advance the public health, safety and welfare of the citizens of Palmer in both the short term and the long term, the City Council further imposes the following limitations and requirements on the use of the property pursuant to the Industrial zoning classification:

A. The industrial use of the property is limited to only the reclamation of the property through the operation of an inert waste mono-fill and those activities incidental thereto that are necessary to reclaim the property in a manner consistent with the findings set forth in Planning and Zoning Commission Resolution 13-012.
B. No use of the property authorized by subparagraph A shall commence or continue except in conformance with a conditional use permit approved by the Palmer Planning Commission, consistent with the above findings.
C. The Industrial zoning classification of this property shall terminate no later than 10 years after the effective date of this ordinance, unless terminated sooner pursuant to subparagraph D or by subsequent rezoning.
D. If prior to ten years after the effective date of this ordinance the Palmer Planning Commission finds that the reclamation of the property has been completed, the Industrial zoning classification shall then terminate on the effective date thereof. Such a finding shall be made only after notice to the property owner and a public hearing.
E. Upon the effective date of termination of the Industrial zoning classification pursuant to subparagraph C or D above, the property shall revert to the zoning classification in effect prior to the adoption of this ordinance (R-1, Single Family Residential), unless otherwise rezoned.

Section 7. Effective Date. Ordinance 14-001-Z-1 shall take effect upon adoption by the Palmer City Council.

Passed and approved this twenty-eighth day of January, 2014.

DeLena Goodwin Johnson, Mayor

Janette M. Bower, MMC, City Clerk

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City of Palmer
PLANNING AND ZONING COMMISSION

Conditional Use Permit #14-001
Tax Parcel ID #: 17N02E08D008

The City of Palmer Planning and Zoning Commission (Commission) upon consideration of an application for a conditional use permit by Alaska Demolition LLC ("Owner"), hereby approves the use of tax parcel 17N02E08D008 for the use stated in this permit subject to the conditions, controls, and safeguards stated in this permit. The purpose of this conditional use permit is to insure that the stated uses and appropriate future uses described in the reclamation plan attached to the 2004 CUP will be compatible with the surrounding area and will not create a health or safety hazard to the public.

The Palmer City Council approved the zoning designation of I-Industrial with Special Limitations for this parcel at its regular meeting of January 28, 2014. The City Council passed Ordinance 14-001-Z-1 which is attached and incorporated by reference into this conditional use permit as is fully stated in the permit. The conditions contained in the ordinance and in this permit, when accepted by the Owner's signature below, constitute an agreement between the Owner and the city, which may be enforced by the city pursuant to Palmer Municipal Code Chapter 17.04.

The only allowable Industrial use of the property is described in Section 3 of Ordinance No. 612-Z-57 (Substitute) as "reclamation of the property through the operation of an inert waste mono-fill and those activities incidental thereto that are necessary to reclaim the property," (the "Permitted Use") subject to a conditional use permit. Such Permitted Use is permitted on the property only pursuant to this permit under the following conditions:

<u>Permit Term:</u>

1) This conditional use permit shall become effective only upon the approval of Ordinance No. 14-001-Z-1, zone change from R-1 Single-family Residential to I-Industrial with Special Limitations, for a period of 10 years with a review by the Planning and Zoning Commission in 5 years.

2) The Industrial zoning classification of this property shall terminate no later than 10 years after the effective date of Ordinance No. 14-001-Z-1, unless terminated sooner pursuant to conditions contained within the ordinance.

<u>Other Permits:</u>

3) The owner shall comply with all local, state, and federal ordinances, regulations, and statutes applicable to the proposed activities.

4) The owner shall provide copies of all permits issued by state and federal agencies to the City of Palmer prior to commencement of the Permitted Use. The owner shall also provide to the City of Palmer a copy of every application for an amendment to any such permit at the time the application is filed with the permitting agency, and a copy of any amendment approved by the permitting agency shall be provided to the City within five days of issuance.

<u>Other Conditions</u>

The reclamation activity shall be conducted in a manner to minimize the impact on adjacent lands and residents and allow only those industrial activities necessary to reclaim the property to establish the long range compatibility of the property with zoning districts in the neighboring areas. The attached site plan identifies the property and areas within the property, as follows: Area A (general construction and demolition material disposal area), Area B (exempt construction and demolition material disposal area), Area C (gravel extraction and exempt material disposal area), and Area D (gravel extraction and exempt material disposal area).

5) The existing driveway on the Inner Springer Loop which provides access to the eastern edge of the property shall be used only until a new access driveway can be constructed on Rebarchek Road, which shall be done as soon as practical and no later than September 5, 2005. Once the new access driveway is opened, the existing driveway on Inner Springer Loop shall be closed to truck traffic. [Construction of access onto Rebarchek Road has been completed]

6) All traffic entering the property shall approach the property from the Glenn Highway, through lands owned by the Alaska State Fair, Inc. and access the property by using Rebarchek Road.

7) Fencing shall be installed at the boundary of the property along Rebarchek Road and the Inner Springer Loop Road by June 1, 2004. [This condition has been met.]

8) Gates with locks shall be placed at all entrances to the property. The gates must be locked at all times when supervisory personnel are not on site.

9) A fifty foot setback shall be maintained from all property boundaries in which no excavation of material shall occur.

10) A natural buffer of twenty five feet shall be maintained on the east, west and north boundaries of the property.

11) A natural buffer of fifty feet shall be maintained on the southern boundary of the property.

12) A stormwater plan which meets applicable state law shall be prepared and implemented as approved. Copies of the approved plan and amendments shall be provided to the City according to paragraph 4 of this permit. [A storm water plan dated November 8, 2005 by Shannon & Wilson, Inc. is on file in our office.]

13) The owner shall maintain and operate watering equipment on site to prevent and suppress the creation of windblown dust and dirt.

14) The owner shall pick up and contain any and all paper, debris and other materials on and around the property.

15) All equipment shall be operated in a manner to minimize the disturbance of neighboring residents and shall conform with PMC 8.36.020 F (Nuisances, Specific Acts Designated – Noise) and PMC 8.36.025 (Certain Acts Requiring a Permit).

16) The owner shall conduct Permitted Use activities on the property only between the hours of 6:00 am to 10:00 pm, Monday through Sunday.

17) To prevent accumulation of uncovered and exposed debris, the placement of construction and demolition debris shall be executed by the construction of defined "cells" or active fill zones with average dimensions of sixty feet wide by 150 feet in length and ten feet in depth. Each cell shall be covered with clean material when fully constructed.

18) Any portion of the property from which gravel is extracted pursuant to this permit shall be brought back to original grade by the fill and placement of mineral soils, exempt fill and land clearing debris. [Amended December 19, 2013; new condition listed as #37.]

19) Except as provided in the following paragraph, exempt fill consists of stumps, brush, peat, and similar land clearing debris; clay, silt and other mineral soils; and other items as listed in 18 AAC 60.005.

20) For purposes of this permit, exempt fill specifically excludes the following material and other similar material:
   a. domestic wastewater, nondomestic wastewater, and other wastes that are subject to a permit under AS 46.03, 18 AAC 72, or 33 U.S.C. 1342 (Federal Water Pollution Control Act, sec. 402), as amended through August 21, 1998;
   b. sewage, septage and septic tank pumpings, regardless of the amount of solids and regardless of whether regulated under 18 AAC 72

21) The eastern and southern portions of the property (Areas B and C, respectively) used to accept exempt fill material and extract gravel shall be operated in a manner to minimize the total excavated area at any one time. As of July 31 of each year, the areas excavated pursuant to this permit shall be refilled to not less than eighty-five percent (85%) of the excavated volume with exempt materials.

22) For purposes of section 1.G. 4. iii. of the ordinance, the boundary of the area representing fifty percent of the southern portion of the property is shown on the attached map as a dashed line running parallel to and seven hundred (700) feet west of the east property boundary.

23) Excavation of all side slopes shall not exceed one and one half to one (1.5/1). Within 180 days after issuance of this permit, all existing side slopes shall be reduced to not exceed one and one half to one. [This condition has been met.]

24) The depth of gravel extraction shall not exceed a depth of 130 feet above mean sea level, as indicated on the September 2003 "Site Map-Fig.2" prepared by Shannon and Wilson, Inc.

25) Gravel extraction on the eastern and southern portions of the property shall cease when the existing pit (Areas A and B) has been filled and brought back to the grade of adjacent undisturbed land. [Amended December 19, 2013; new condition listed as #37.]

26) The completed landfill cover shall be graded to promote surface water runoff and be in compliance with 18AAC60.460.

Best Management Practices

27) All disposals of exempt or Construction Demolition materials (C & D) in the Mono-fill area require written authorization to dispose by Management Site Representative (MSR).

28) Mono-fill shall be gated and locked when not in operation or when not supervised by MSR. All visitors to the Site must check in with MSR prior to disposal of any materials.

29) All C & D disposal loads entering the site must be secured and covered with a tarp or other containment and the loads manifested by MSR.

30) All C & D loads are placed into separate earthen cells contained by gravel backfills on the bottom of the cell and all four sides and then covered by not less than one foot of backfill.

31) All cells are capped and covered not less than weekly. Cells to be covered daily if wind or other conditions require.

32) Supervisory labor to be present on all operating days and Mono-fill area to be inspected daily for compliance.

33) Surrounding earthen berm and drainage ditches are inspected not less than weekly or more seasonally, as required to ensure correct conditions.

34) Annual topographic survey of the site to be conducted by Alaska Demolition and cubic volume of site disposal calculated by registered licensed surveyor quantifying disposal fills and gravel extractions if any during the annual period preceding the date of survey.

Additional Conditions:

35) The Conditional Use Permit #14-001 shall terminate no later than 10 years after the effective date of Ordinance No. 14-001-Z-1.

36) There shall be a mandatory review five years after the effective date of Conditional Use Permit #14-001 by the Planning and Zoning Commission.

37) There shall be no gravel extraction allowed.

38) The site shall be two-thirds complete within 5 years of the effective date of Conditional Use Permit #14-001.

39) A reclamation bond shall be required in an amount sufficient to cover the total costs of reclamation.

Any changes, alterations or deletions of the intended uses, must receive prior approval of the Planning and Zoning Commission.

Every term and condition of this permit is binding upon the Owner, Owner's assigns and successors in interest, and every person occupying or operating on the property. The use of the term Owner in reference to the terms and conditions of this permit shall be construed to include every person operating on the property by, through, or under the authority or consent of the Owner.

Dated this _____day of _____, 2014 for the Palmer Planning and Zoning Commission.

By: _____
Michael W. Madar, Chairman

THIS IS TO CERTIFY that on this _____ day of _____, 2014, before the undersigned Notary Public in and for the State of Alaska, duly commissioned and sworn, personally appeared, Michael W. Madar, Chairman of the Palmer Planning and Zoning Commission and he acknowledged that he had signed the same freely and voluntarily for the uses and purposes therein stated.

WITNESS my hand and official seal the day and year in this certificate first written.

_____
NOTARY PUBLIC FOR STATE OF ALASKA

My Commission Expires: _____

Acceptance

The Owner, Steve Agni, Development Manager for Alaska Demolition, LLC, hereby accepts and agrees to abide by the terms and conditions of this permit.

Dated this _____ day of _____, 2014.

By: _____
Steve Agni, (Owner, or Designated Rep)

STATE OF ALASKA)
) ss:
THIRD DISTRICT)

THIS IS TO CERTIFY that on this _____ day of _____, 2014, before the undersigned Notary Public in and for the State of Alaska, duly commissioned and sworn, personally appeared, Steve Agni, Development Manager of Alaska Demolition, LLC, and he acknowledged that he had signed the same freely and voluntarily for the uses and purposes therein stated on behalf of the corporation.

WITNESS my hand and official seal the day and year in this certificate first written.

_____
NOTARY PUBLIC FOR STATE OF ALASKA

My Commission Expires: _____

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Susan Lee

From: Eileen Probasco
Sent: Tuesday, February 04, 2014 9:55 AM
To: trhealy@gci.net
Cc: Mary Brodigan; Susan Lee; Alex Strawn
Subject: Upcoming CUP application

Tom,
This is just a head's up that a new CUP application for the monofill is pending.
As you are the PC Representative for District 2, I want to remind you to avoid conversations with individuals about this topic.
In addition, if you receive any written correspondence or e-mails, please do not respond, but forward them to Mary Brodigan, and she will make sure they are forwarded appropriately here at the borough.

Thanks
Eileen Probasco

Susan Lee

From: Mary Brodigan
Sent: Tuesday, February 04, 2014 10:27 AM
To: Brian Endle; Bruce Walden; John Klapperich; Thomas Healy (trhealy@gci.net); Tom Adams; Vern Rauchenstein (vern@swissalaska.com); William Kendig (billydoc56@hotmail.com)
Cc: Eileen Probasco; Alex Strawn; Susan Lee
Subject: FW: Upcoming CUP application

Good Morning Commissioners,

The borough Planning Department has a new CUP application pending for the monofill. Please see the email below from Eileen Probasco, and forward any and all emails that you may receive directly to me. Please do not respond to the applicant or anyone else that may contact you. As always, if you choose to respond to this email, do not "Reply to All".

Mary

Mary Brodigan
Administrative Secretary II
PH 907-861-7851
FX 907-745-9876
PLANNING & LAND USE DEPARTMENT

"Community of Choice to live and work where every citizen matters"

From: Eileen Probasco
Sent: Tuesday, February 04, 2014 9:55 AM
To: trhealy@gci.net
Cc: Mary Brodigan; Susan Lee; Alex Strawn
Subject: Upcoming CUP application

Tom,
This is just a head's up that a new CUP application for the monofill is pending.
As you are the PC Representative for District 2, I want to remind you to avoid conversations with individuals about this topic.
In addition, if you receive any written correspondence or e-mails, please do not respond, but forward them to Mary Brodigan, and she will make sure they are forwarded appropriately here at the borough.

Thanks
Eileen Probasco

Susan Lee

From: Susan Lee
Sent: Tuesday, February 04, 2014 10:18 AM
To: 'Aldrich, Lori (DEC)'
Subject: CMS application

Lori:

CMS has stated that the ADEC permit requires the owner to provide bonding or other financial assurance to cover the cost of monofill closure. Has this information been provided by CMS and if so, can you provide a copy of it to the MSB?

Susan

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

Susan Lee

From: Aldrich, Lori (DEC) [lori.aldrich@alaska.gov]
Sent: Tuesday, February 04, 2014 12:35 PM
To: Susan Lee
Subject: Re: CMS application

I am out of the office most of the week, but I will provide it on Monday.

Lori

Sent from my iPhone

On Feb 4, 2014, at 10:18 AM, "Susan Lee" <Susan.Lee@matsugov.us> wrote:

> Lori:
>
> CMS has stated that the ADEC permit requires the owner to provide bonding or other financial assurance to cover the cost of monofill closure. Has this information been provided by CMS and if so, can you provide a copy of it to the MSB?
>
> Susan
>
> Susan Lee
> Planner II
> Matanuska-Susitna Borough
> 907-861-7862 (Direct Line)
> 907-861-7876 (FAX)
> PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

Susan Lee

From: Jim Munter [jamunter@arctic.net]
Sent: Thursday, February 06, 2014 8:51 AM
To: Susan Lee
Subject: Re: Message from KMBT_C654

Hi Susan,

The edits look straightforward and helpful to the document. thanks. I'll get going on a revision and get back to you.

Jim

---- Original Message ----
From: Susan Lee
To: Jim Munter
Sent: Thursday, February 06, 2014 8:33 AM
Subject: FW: Message from KMBT_C654

Jim:

Attached are comments/edits to your report.

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

From: Planning@matsugov.us [mailto:Planning@matsugov.us]
Sent: Thursday, February 06, 2014 8:33 AM
To: Susan Lee
Subject: Message from KMBT_C654

Susan Lee

From: Richard Harbuck [superglide@mtaonline.net]
Sent: Monday, February 10, 2014 12:01 PM
To: Susan Lee
Subject: CMS CUP application

Hello Susan, please advise on whether it is time to file a public records request sometime this week. A simple Yes or No is fine. Thank You, Richard Harbuck.

Susan Lee

From: Susan Lee
Sent: Monday, February 10, 2014 12:08 PM
To: 'superglide@mtaonline.net'
Subject: RE: CMS CUP application

Nope. **Still working on our letter to them for additional info.**

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

From: Richard Harbuck [mailto:superglide@mtaonline.net]
Sent: Monday, February 10, 2014 12:01 PM
To: Susan Lee
Subject: CMS CUP application

Hello Susan, please advise on whether it is time to file a public records request sometime this week. A simple Yes or No is fine. Thank You, Richard Harbuck.

Susan Lee

From: Mark Whisenhunt
Sent: Tuesday, February 11, 2014 8:37 AM
To: kents56@gmail.com
Cc: Susan Lee; Alex Strawn; Charles Cobb (charles.cobb@alaska.gov); Laura Eldred (laura.eldred@alaska.gov)
Subject: FW:
Attachments: Irene lake iron oxide 2 14.jpg; irene lake iron oxide ice 2 14.jpg; irene lake level feb 14.jpg

Good Morning Mr. Johnson,

Thank you for contacting me and sharing the information. I believe Mr. Charlie Cobb of the State of Alaska - Dam Safety Program, is working with the spillway/dam owner to address such concerns. I do not have much detail on the issue and what is being required of the spillway owner, but I am sure that Mr. Cobb would be more than willing to provide you with the information.

I have included Mr. Cobb and Ms. Eldred in this email for your convenience. Thank you for your time and consideration on this matter.

Respectfully,

Mark Whisenhunt, CFM
Planner II
Matanuska-Susitna Borough
Office: (907) 861-8527
Fax: (907) 861-7876
mark.whisenhunt@matsugov.us

From: kent johnson [mailto:kents56@gmail.com]
Sent: Monday, February 10, 2014 8:31 PM
To: Mark Whisenhunt
Subject:

Hi Mark, I am sending you a few photos of Irene Lake and the consequences of the CMS spillway. Water is flowing continually at a rate that prevents freezing. There is unfrozen surface water in the Anchorage Sand and Gravel pit. Irene Lake shows a level almost 3 foot above the benchmark placed just a few years ago. Keep in mind the benchmark was put there after the levels had already risen more than 3 feet. Please note the color of the frozen water in the pictures. Laura Eldridge, with the D.E.C. Has done some water testing and found high levels of iron oxide. She can be reached at 376-1855.
When CMS put in their spillway they opened a can of worms that the gravel companies had been trying to hide for years.

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Susan Lee

From: Aldrich, Lori (DEC) [lori.aldrich@alaska.gov]
Sent: Tuesday, February 11, 2014 2:42 PM
To: Susan Lee
Subject: RE: CMS application

Susan,

I apologize for the late reply, I am just going thru to see if I missed any emails. They have not provided the financial assurance at this point – this generally does not happen until the permit is ready to be issued. We have agreed on a closure cost and they have documentation to support their cost.

Lori

From: Susan Lee [mailto:Susan.Lee@matsugov.us]
Sent: Tuesday, February 04, 2014 10:18 AM
To: Aldrich, Lori (DEC)
Subject: CMS application

Lori:

CMS has stated that the ADEC permit requires the owner to provide bonding or other financial assurance to cover the cost of monofill closure. Has this information been provided by CMS and if so, can you provide a copy of it to the MSB?

Susan

Susan Lee
Planner II
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Susan Lee

From: Susan Lee
Sent: Tuesday, February 11, 2014 3:05 PM
To: 'Aldrich, Lori (DEC)'
Subject: RE: CMS application

Lori:

If their permit gets approved what kind of bond do they need to obtain?

Thanks, Susan

Susan Lee
Planner II
Matanuska-Susitna Borough
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Susan Lee
Planner II
Matanuska-Susitna Borough

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Susan Lee

From: Aldrich, Lori (DEC) [lori.aldrich@alaska.gov]
Sent: Tuesday, February 11, 2014 3:10 PM
To: Susan Lee
Subject: RE: CMS application

Susan,
Straight form the regulations:

18 AAC 60.265. Proof of financial responsibility. Unless the applicant has provided equivalent surety through a government agency or has demonstrated financial assurance under 18 AAC 60.398, the department will require proof of financial responsibility to cover the cost of closing a landfill and, if monitoring is required, the cost of post-closure monitoring if the department determines proof of financial responsibility is necessary to protect the public health, safety, or welfare, or the environment. Proof of financial responsibility under this section may be demonstrated by self-insurance, insurance, surety, or other guarantee approved by the department to assure compliance with applicable closure standards and post-closure monitoring requirements. (Eff. 1/28/96, Register 137; am 10/29/98, Register 148)

Most Companies use insurance, bonding, or a letter of credit.

Lori

From: Susan Lee [mailto:Susan.Lee@matsugov.us]
Sent: Tuesday, February 11, 2014 3:05 PM
To: Aldrich, Lori (DEC)
Subject: RE: CMS application

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Thanks, Susan

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Sent: Tuesday, February 04, 2014 10:18 AM
To: Aldrich, Lori (DEC)
Subject: CMS application

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Susan

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

Susan Lee

From: Susan Lee
Sent: Thursday, February 13, 2014 3:42 PM
To: 'Shane Durand'
Subject: Central Monofill Services CUP application
Attachments: Request for Info 2-13-2014.pdf; Munter Report 2-7-2014.pdf; ADEC e-mail 1-22-2014.pdf; Core Area CUP applicaiton.doc

Shane:

Please see attached.

Susan

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

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MATANUSKA-SUSITNA BOROUGH
Planning and Land Use Department
Development Services Division
350 East Dahlia Avenue • Palmer, AK 99645
Phone (907) 861-7822 • Fax (907) 861-7876
E-mail: permitcenter@matsugov.us

February 13, 2014

Shane Durand
Central Monofill Services
311 N. Sitka Street
Anchorage, AK 99501

SUBJECT: **Central Monofill Services Conditional Use Permit Application**
PROPERTY ID#: 17N02E18C010 &17N02E19B006

Dear Mr. Durand:

Borough staff has reviewed the application material for the proposed monofill on the above referenced property and have determined that the following information will need to be submitted and/or clarified before we can process the conditional use permit application:

1. The Borough hired J.A. Munter Consulting, Inc. to review the application material. A copy of Munter's report, dated February 7, 2014, is attached for your review and comments. In addition to specific issues outlined below, address all issues raised in the Munter report.

2. The application material states *"There are three industrial ponds located on the northern half of the property which cover 66 of the acres". "Of the remaining 52 acres, the monofill footprint is proposed to be 35.5 acres with 16.5 acres used for recycling operations". "The CUP is needed for 52 acres of the property".* The site plan does not depict the conditionally permitted area. The proposed permitted area is irregular and does not correspond to lot lines. A surveyed delineation of the 52 acre boundary must be shown on the site plan. MSB 17.60.040(B) *Site Plan* requires *"the specific location of the use or uses to be made of the development shall be submitted with the application".*

3. Do you have a drainage plan for this site? If so, provide a copy. For example, what direction will material flow off the monofill? What direction will surface water be draining during construction of the monofill? MSB code section 17.60.040(B) *Site Plan*, states that *"drainage"* must be shown on the site plan.

4. Is there a SWPPP (Storm Water Pollution Prevention Plan) for this site? If not, explain why one is not required?

5. Please address the State of Alaska, Department of Transportation's plans for widening the Glenn Highway and placing an intersection at Colleen Street and how that might affect this project.

6. Provide a copy of the wetlands review performed by Hemlock Scientific, as addressed on Page 15 of 38 of the application material.

7. Page 16 of 38 states *"Water level data is being shared with Alaska Department of Natural Resources for regional study of ground water table elevations"*. Provide a copy of all water level data that you have submitted to ADNR in regard to this project.

8. Page 17 of 38 states *"Alaska Department of Environmental Conservation (ADEC) reviewed the CMS Monofill Permit application for this site and has approved the permit conditioned upon receipt of the MSB CUP"*. ADEC has indicated to the borough that the permit has not been approved (See attached e-mail from ADEC). Please clarify and provide a copy of any approved ADEC permit.

9. Page 21 of 38 states *"The adjoining residential lots are screened from view of the property by trees"*. Page 28 of 38 states *"The vegetation that is remaining on site is the forest located along the top of the mined banks and helps create a visual barrier between the public and the CUP activities. The existing trees will be left in place and used as a visual and noise buffer"*. The monofill goes to the top of the bluff. It is not appropriate to use adjacent properties for the buffer. Any buffer should be located on your property. Provide a plan for buffering the neighboring properties as the monofill is built up and out towards those properties.

10. Page 22 of 38 states *"per the ADEC permit municipal and household waste will not be accepted at the facility"*. Provide a specific list of materials that can be accepted at the facility. For example, are the following items part of the residual material being deposited in the monofill: pressure treated wood, containers that contain residual materials, drywall, lead paint, formaldehyde containing materials, glues, mastics, and adhesives. What is the volume of residual material accepted? Are residues not considered hazardous due to their volume compared to the total cumulative volume?

11. Page 22 of 38 states *"Loads hauled into the facility that have not been previously inspected by CRS personnel will be dumped onto a lined pad for inspection"*. Page 35 of 38, #4, also states *"All waste delivered directly to the monofill is first placed within a lined area and inspected"*. Page 29 Sequence of Fill, does not address the separate inspection area. It states that trucks will place their loads in the operational cell. Page 37 of 38, #12, does not discuss this lined inspection pit as a non-permeable surface at the site. Clarify these inconsistencies and explain what is the actual process. Is the lined pad nonpermeable? In addition, will this inspection pad be moved around the site or will it remain in the same place so that it can be shown on the site plan?

12. Page 22 of 38 discusses the inspection pad that will be capped with 2" of soil. What is the plan for disposal of this soil? Will this soil be tested prior to its disposal or use? What is the plan for managing the run-off coming from the inspection area?

13. Page 22 of 38 discusses the careful handling of "hazardous wastes". The proposed monofill proposes to exclude "hazardous waste". It is not clear what this means and in

particular, that all waste that may be hazardous to water supplies will be excluded. Provide a specific list of everything that is tested for in the Building Material Survey.

14. Page 22 of 38 states that CRS and CMS have specific policies outlined in the Operations Plan. Provide a copy of the CRS and CMS Operations Plan.

15. Pages 22 - 23 of 38 states in part *"suspect materials delivered to CRS are tested and, if found, removed from the waste stream..."*. What criteria will be used to determine suspect materials?

16. Page 23 of 38 states *"suspect material will be tested in accordance with regulatory required test methods to identify hazardous materials content, if any"*. How regularly will Toxicity Characteristic Leaching Procedure (TCLP) occur? Does visually seeing paint make it "suspect"? Will any materials with lead paint be accepted?

17. Page 23 of 38 regarding asbestos. Asbestos will be placed in plastic bags which heavy equipment can perforate. Asbestos does not dissolve, however, it does become easily airborne. The fences proposed to stop blowing trash on a windy day will do nothing to stop asbestos. What type of fence will surround the asbestos cell? What is your policy for handling RACM during the wind?

18. Page 30 of 38 states *"Other materials deposited into the monofill are placed within the cells and will be covered intermittently, however not necessarily daily"*. Page 18 of 38 states *"Regularly covering the waste with soil further prevents blowing debris"*. What is meant by "covered intermittently" and "regularly covering"?

19. Page 31 of 38 states *"the ADEC permit requires the owner to provide bonding or other financial assurance to cover the cost of monofill closure"*. CMS also claims that it has *"sufficient Environmental and Pollution Insurance to cover this project"*. Provide copies of the bond, insurance policy and certificate of insurance.

20. Page 34 of 38 Hours of Operation. How will CMS be handling hours of operation during the Alaska State Fair?

21. What will be the actual maximum height of the finished monofill above the bottom of the cell?

22. What is the maximum square footage that will be exposed and not covered at any one time during the operation of the monofill?

23. Has the site been evaluated for impacts that would occur from a large earthquake, including, but not limited to susceptibility to liquefaction, potential changes in hydrology, i.e. raised water levels, and impacts on the tire bale structure?

24. What is the fire preparedness plan for this site? What would be the impacts from a fire and how would you address them?

25. Based on the application material and information in the February 7, 2014 Munter report, staff has determined that a Core Area Conditional Use Permit is required, per the requirements of MSB 17.61. Page 3 of 14 of Munter's report states in part *"... it would be*

reasonable to assume that there will be a sufficient amount of waste accumulated to generate leachate that will exceed one or more drinking water Maximum Contaminant Levels." In addition the report states in part *",,,it is highly likely to result in measurable increases in contaminants beneath the facility and for some distance downgradient."* A Core Area Conditional Use Permit application form is attached for your use.

26. Staff is currently researching whether or not the tire bale walls and monofill constitute a structure and are subject to the setback requirements in MSB 17.55 – Setbacks. We will forward our determination to you as soon as it is complete.

Once this information has been submitted and determined to be complete, the public hearing will be scheduled. Should you have any questions or require additional information please contact me at the above address, phone# 861-7862 or e-mail: slee@matsugov.us.

Sincerely,

Susan Lee

Susan Lee
Planner II

J. A. MUNTER CONSULTING, INC.

February 7, 2014

Ms. Susan Lee
Planning Department
Matanuska Susitna Borough
350 E. Dahlia Avenue
Palmer, AK 99645-6488

Re: Review of an application for a Conditional Use Permit for a proposed monofill near Palmer, Alaska

Dear Ms. Lee:

This letter is to provide the findings of my recent review of the application by Central Recycling Services and supporting documents related to a proposed monofill consisting primarily of shredded construction and demolition (C & D) waste near Palmer, Alaska.

A key part of the application packet is a report by Maddox and Associates, Inc (M & A) entitled Evaluation of proposed Palmer monofill with respect to potential impact on groundwater" dated December 13, 2013.

Since the application relies heavily on the findings of this report, it is reviewed first, followed by comments on the main application.

I. Review of: Evaluation of Proposed Palmer Monofill with Respect to Potential Effect on Groundwater by Maddox and Associates, Inc., Murrieta CA, December 13, 2013.

Page 1-3 Executive Summary

The executive summary contains information that repeats information found elsewhere in the report, and is not separately reviewed here.

Page 3 Introduction
While Maddox and Associates, Inc. (M &A) reports "working in all regions of the United States and in Canada", there is no specific mention of having worked in Alaska. Subsequent portions of the report seem to indicate a lack of familiarity with Alaska conditions (see p. 6 of this review). The summary of work performed does not contain any mention of a site visit.

Section 2.2 Site Conceptual Model
The site conceptual model in this report does not comply with Alaska guidance and normal use in Alaska of site conceptual models (see, for example, http://dec.alaska.gov/spar/csp/guidance/FINAL%20CSM%20Guidance%20MASTER%20Nov%202010.pdf). In particular, site conceptual models should not be used to quantify or assess health or environmental risk, only to identify pathways and potential receptors and exposures.

5701 PENNY CIRCLE, ANCHORAGE, AK, 99516
jamunter@arctic.net
PHONE (907) 345-0165; FAX (907) 348-8592

Page 4. Last paragraph
This paragraph provides a reasonable definition of inert waste as it seems to be commonly used in the solid waste disposal industry. The term, "inert", as used in this context, however should not be confused with the more common usage of the term as meaning "not chemically reactive" or, perhaps more importantly, soluble in water. For example, drywall is comprised mainly of the mineral gypsum, which is essentially calcium sulfate. When exposed to water, gypsum dissolves into the ions calcium and sulfate. This is the most likely source of elevated sulfate levels found in monofill leachate. The leachability tests conducted on waste for this project, for example, found sulfate levels of 520 to 673 mg/L, compared to the secondary drinking water standard of 250 mg/L.

Other materials disposed of at "inert" monofills will also eventually rot, decay, and leach constituents into groundwater. At least 27 states now require groundwater monitoring from such landfills, in increasing recognition of their potential to contaminate groundwater.

Studies have shown increased concentrations of some contaminants from C & D landfills. A study conducted for the U.S. EPA in 1995, for example, (ICF Incorporated, 1995) found groundwater contaminants that exceeded primary or secondary Maximum Contaminant Levels (MCLs) for drinking water at 11 C & D landfills. Potential contaminants from the proposed facility include sulfate, iron, manganese, total dissolved solids, arsenic and other metals, and organic compounds.

A more thorough and recent study of leachate from 30 Construction and Demolition Debris (C & DD) landfills in Ohio (Ohio, 2009) found the following conclusions:

> Ohio C&DD leachate contains a wide variety of inorganic parameters including heavy metals, light metals, trace elements, and other ions. It also contains a wide variety of organic parameters including pesticides, chlorinated solvents, non-chlorinated solvents, gasoline, substituted benzenes, phenolics, chlorofluorocarbons, polycyclic aromatic hydrocarbons (PAHs), phthalates, substituted alkanes, and alcohol.
>
> The leachate from all 30 C&DD landfills had from 3 to 29 parameters with concentrations that exceeded health based standards, surface water quality standards, or both. The median was 12.5 parameters exceeding the standards. The leachate from 29 of the 30 C&DD landfills had eight or more parameters that exceeded the standards.
>
> The wide variety of parameters detected in C&DD leachate, the wide variation in the number of parameters that exceeded health based standards and surface water quality standards in C&DD leachate and the magnitude of the exceedances are evidence that C&DD is not harmless or inert.

Many of the wastes proposed for the monofill, including wood, drywall, carpet, and probably even tire bales are not geologically stable in the Palmer area. Waste breakdown will inevitably result in dissolution and entrainment of waste constituents in leachate if water flows through the waste.

While the proposed monofill proposes to exclude "Hazardous Waste", it is not clear what this means, and in particular, that all waste that may be hazardous to water supplies will be excluded. For example, it appears that treated lumber containing compounds or elements known to be hazardous to human health appear to be allowable in the waste stream. The application does not address whether materials from buildings demolished as a result of building fires will be disposed at the facilities. Building fires are known to create compounds adverse to public health.

The term "Hazardous Waste" has numerous technical definitions that stem from the numerous laws and regulations that govern them. In this case, there will be a reliance on pre-demolition "Hazardous Building Material Surveys" and the proper exclusion of items described therein. The existence, thoroughness, and accuracy of these surveys is therefore important to the process, however it is difficult for the Borough to know or be assured that all materials that are potentially hazardous are appropriately excluded.

An important aspect of water contamination is that only a small amount of some compounds or elements are needed to contaminate a large volume of water. Arsenic, for example, has a drinking water primary MCL of 10 µg/L, or approximately 1 part in 100 million. The waste will be shredded, thus making for a relatively large surface area of waste in contact with percolating waters. It is not unreasonable to expect that even small percentages of leachable wastes in the 2 million cubic yards of waste will result in measurable quantities of contamination.

Considering that the proposed facility has a planned capacity of 2 million cubic yards of material and will have a service life of over 25 years, it would be reasonable to assume that there will be a sufficient amount of waste accumulated to generate leachate that will exceed one or more drinking water Maximum Contaminant Levels.

There are no significant barriers to the migration of this leachate into groundwater and it is highly likely to result in measurable increases in contaminants beneath the facility and for some distance downgradient.

Page 5 Paragraph 2

The seasonal high groundwater level has not been determined at this site. Review of the groundwater data and design drawings do not establish where the base of the waste will be in absolute elevation terms. The report fails to show that the bottom of the waste will stay dry during high water events.

Page 5 Paragraph 3

The description of secondary MCLs is somewhat simplified and misleading, at least with regard to sulfate. Sulfate was detected in three leachate samples from CRS at levels ranging from 520 to 673 mg/L. The secondary MCL for sulfate is 250 mg/L, based largely on the fact that elevated sulfate levels have a laxative effect. At levels up to about 600 mg/L, humans generally can adjust to this effect (Rowden, 2008). At levels above 600 mg/L, because of the laxative effect and effects on taste, it is an over-simplification and misleading to characterize such effects as "cosmetic" or "aesthetic". Background levels of sulfate in groundwater in the Palmer area are generally less than 50 mg/L, so local residents would not be expected to be adapted to high sulfate levels. So, if local wells were contaminated at levels between 250 and 600 mg/L,

homeowners could be in the awkward position of advising guests to not drink the water in order to avoid laxative effects, even if the residents themselves had adjusted to the effect. Home treatment systems to reduce sulfate levels would probably require a membrane filter technology such as reverse osmosis, which can be expensive to install, maintain and operate.

Page 5 Paragraph 5
The opinion that "it is not likely that a significant volume of liquids will pass through the monofill bottom into the water table" is not considered reliable as discussed subsequently in this review.

Page 5 Paragraph 6
Modeling analysis and results are reviewed in a subsequent section of this review. There is no evidence that the modeling results have been or will be used to "determine the proper location of guard wells". The monitoring plan included in the packet was written in the spring of 2013, well before the modeling studies were performed. Also, the well locations shown in the plan would not intersect the leachate plumes modeled. See further comments later in this review about monitoring.

Page 6 Paragraph 1
The following paragraph is not adequately supported by the analysis presented:

> The SCM indicates that the construction and operation of the proposed monofill is not likely to have a detrimental impact on the groundwater beneath or down gradient of the site

Furthermore, the normal Site Conceptual Model purpose of identifying potential pathways and receptors appears to have been subverted by premature dismissal of a likely pathway – that of contaminant migration to groundwater. The CSM also does not address potential impacts to surface water downgradient of the proposed monofill.

Page 7 Paragraph 2
The ADEC permit is not attached. The ADEC information attached identifies substances that may be prohibited from being disposed in the monofill, but there does not appear to be a list of materials that are allowed.

Page 7 Paragraph 4
This paragraph states that water levels have been measured over four seasons and that the seasonal high groundwater table has been determined. If this information has been collected, it has not been provided. The water-table map was constructed based on water levels measured on July 1, 2013, which is known to not be when peak water levels generally occur in this part of Alaska. Peak water levels typically occur during spring, after snowmelt, or in late fall.

Page 7 Paragraph 9
The following statement is, at a minimum, unclear and is also misleading.

> Where present, such grades will greatly facilitate the flow of precipitation from the monofill surface, thus significantly reducing the amount of infiltration into the refuse.

The grades referred to, of 50% and 33%, are clearly designed only for the sideslopes of the final fill structure which are only approximately one quarter or so of the surface area of fill. Approximately three quarters of the fill area is designed with a relatively flat final cap (with a finished grade of 2% to 3%), which will be very conducive to groundwater recharge and downward percolation through the waste. The nearly flat top surface of the monofill is illustrated graphically in figure 3-2 of the M &A report. It is misleading to suggest that the small area of steep slopes around the perimeter will "greatly facilitate" runoff from the "monofill surface", without noting the larger area of almost flat surface.

Page 10 Paragraph 1
This section does not address changes in water levels caused by gravel mining. Historical information and analyses (Munter (2010) and the water table map all illustrate that the creation of dredge ponds or dewatering activities can have a significant influence on water levels in the unconfined aquifer. In addition to natural seasonal fluctuations, the possibility of water level changes caused by future gravel mining or dewatering should be addressed.

Page 13 Paragraph 5
The direct comparison of pond water to City of Palmer drinking water is not appropriate because public water systems such as at Palmer are required to complete a broader panel of water quality tests prior to use of the system. There are no data to show that the pond water would meet those additional tests. The comparison to Alaska Drinking Water Standards is appropriate only for the parameters tested, not a blanket statement that the pond water "does not exceed Alaska Drinking Water Standards."

Page 14 Paragraph 2
It is not likely that the three samples of shredded material are representative of the entire volume of fill to eventually fill the 35.5 acre site. There is no information on the sampling technique (random, composite, etc.) or the sample size, compared to the individual particle size of the waste. Considering the diversity of materials allowed in the fill that are not reported to be part of the samples (carpet, treated lumber, semi-burned materials, etc.) or that may escape detection and end up in the fill, it is unlikely that the three samples accurately reflect the average composition of the fill. This limits the interpretive value of the data.

Page 14 Paragraph 3
The analytes do not encompass all of the water quality parameters that have been known to exceed water quality standards. Total Dissolved Solids is one example of a missing analyte.

The usefulness of the SPLP leaching test results is limited by the unusually high Limits of Quantitation (LOQs) reported by the lab (see appendix of report). Iron, for example, has a reported LOQ of 50 mg/L, compared to the water quality criteria of 0.3 mg/L. This means that if

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It is not likely that the three samples of shredded material are representative of the entire volume of fill to eventually fill the 35.5 acre site. There is no information on the sampling technique (random, composite, etc.) or the sample size, compared to the individual particle size of the waste. Considering the diversity of materials allowed in the fill that are not reported to be part of the samples (carpet, treated lumber, semi-burned materials, etc.) or that may escape detection and end up in the fill, it is unlikely that the three samples accurately reflect the average composition of the fill. This limits the interpretive value of the data.

Page 14 Paragraph 3
The analytes do not encompass all of the water quality parameters that have been known to exceed water quality standards. Total Dissolved Solids is one example of a missing analyte.

The usefulness of the SPLP leaching test results is limited by the unusually high Limits of Quantitation (LOQs) reported by the lab (see appendix of report). Iron, for example, has a reported LOQ of 50 mg/L, compared to the water quality criteria of 0.3 mg/L. This means that if

iron levels were less than 50 mg/L, they were reported as not detected. So, while the sample results technically did not exceed the LOQs, the results cannot be interpreted as confirming that the samples did not exceed water qualitystandards other than those provided in Table 7.1. A similar situation exists for arsenic, which has an LOQ of 0.250 mg/L, compared to a drinking water standard of 0.010 mg/L. The cause for the high LOQs appears to be unusually high dilution factors used in the laboratory analyses. In summary, the SPLP tests did not produce results that demonstrate that the leachate generally meets primary water quality standards.

Page 15 Paragraph 1
Manganese and sulfate are noted to exceed secondary Drinking Water Standards in the leachate tests, which are described as non-enforceable guidelines, only affecting cosmetic or aesthetic characteristics of water. As previously described, the effects of sulfate may go well beyond cosmetic or aesthetic effects, and the history and reasons of why it is not regulated differently go beyond the scope of this review.

Sulfate is described as being not a "problematic constituent" by USEPA. This may be irrelevant to the Matanuska Susitna Borough because the drinking water standards used by EPA are applicable to public drinking water supplies. Private domestic wells in Alaska are left to local governments to regulate or not. In Anchorage, for example, while all public water supplies are required to meet a standard for nitrates of 10 mg/L, the Municipality of Anchorage will issue a Certificate of On-Site Adequacy (i.e. the well is "approved") for wells with water containing concentrations of nitrates over the 10 mg/L limit applicable to public water systems.

In this situation, if the MSB decides, after an appropriate decision-making process, that sulfate levels are important to local well owners, then it would not seem to make any difference what the USEPA thinks is suitable for public water systems.

Section 7.1.1, Pages 15-17
The ICF Incorporated study reportedly identifies 24 parameters from C & D leachate samples from numerous facilities that exceeded water quality parameters at least one time. The Ohio study notes that C & D leachate is not expected to meet water quality standards for discharge to groundwater. The Wyoming memorandum mainly seems to be saying that C & D leachate is not as bad as that from regular landfills. Take-away messages from these three studies seem to be that C & D leachate should be considered a pollutant, this pollutant should be expected from C & D landfills that generate leachate, and that good management practices can be helpful in reducing the impact of the leachate.

It seems that there could be some parallels between the regulation of C & D landfills and septic systems. Even properly designed and operating septic systems, for example, are known to release effluent that exceeds drinking water standards for one or more constituents. One of the principal successful tools for managing septic systems is through mandatory separation distances to drinking water wells. Septic systems continue to be popular because: 1) they are inexpensive compared to other options; 2) they are effective in treating household waste for long periods of time: and 3) they have been shown generally not to result in groundwater contamination most of the time.

The M & A report essentially makes the case that the leachate from the proposed monofill, while modestly exceeding water quality standards, would be sufficiently diluted prior to reaching offsite water wells or surface water receptors such that it would not be a problem. This brings up the concept of a separation distance to surrounding wells or receptors. The current ADEC permit for Alaska Demolitions C & D landfill, for example requires a 500-foot separation distance to surrounding wells. (ADEC Solid Waste Disposal Permit SWZA004-14).

Section 7.2, Pages 17-20
This section contains numerous deficiencies, as detailed below.

Page 17 Paragraph 6
This paragraph erroneously states that the 15.49 inches of annual precipitation at Palmer occurs as rain. There seems to be an unawareness of local climate conditions. Nowhere in the report have I found the words "snow", "snowpack", or "snowmelt". Furthermore, there is no evidence to support the supposition that there is more surface runoff than infiltration. In contrast, Kikuchi (2013, Appendix C) used a deep percolation model to estimate that recharge is approximately three times the amount of surface runoff in this area.

M & A references a course from the Lund Institute of Technology in Sweden to conclude that "a fully-saturated soil becomes almost an impermeable layer". This may be true in the context of a high-intensity rainfall on a low-permeability soil, however it has practically no relevance to the proposed monofill. The final cap materials for this monofill will be local materials, primarily sand and gravel, overlain by a porous organic soil that will support a vegetative cover. Such well-drained soils should not be characterized as "almost impermeable", even if saturated. Also, most precipitation and snowmelt in the Palmer area does not occur as high intensity rainfall. It is more common to have long-duration, low-intensity rain that contribute significant amounts of water to groundwater recharge. Kikuchi (2013) reports that the "core area" of the Matanuska-Susitna Borough receives approximately 5 inches of annual groundwater recharge, demonstrating the prevalence and importance of groundwater recharge processes in the local area.

M &A suggests that compacting the fill will greatly reduce its capacity for infiltration. Consider the situation when the monofill is completely filled and closed. With a 2 percent slope on the top surface, water will infiltrate into the cover. The issue here is whether the compacted fill materials are permeable enough to transmit water vertically downward through the filled cells. There are no data provided on the permeability of the fill. Suppose 5 inches of rain infiltrates the surface and percolates down to the top layer of fill. Darcy's Law shows that the hydraulic conductivity for the fill needed to transmit 5 inches/yr of water downward at a uniform rate is only 0.001 ft/day. This value is typical of silt (Freeze and Cherry, 1979). Reviewing the results of geotechnical testing performed on the compacted fill (Attachment H of the Application packet), it is highly unlikely that the compacted fill would exhibit a hydraulic conductivity as low as 0.001 ft/day. Thus, it would be prudent to assume that the compacted fill has a sufficiently high hydraulic conductivity to pass all the water that infiltrates into the landfill cover and to allow it to percolate downward through the waste at the site.

M & A also suggests that the steep slopes at the site will promote runoff rather than infiltration. M & A fails to note however, that the vast majority of the completed fill structure will have an almost flat (2-3%) slope, which will be very conducive to promoting groundwater recharge. To illustrate this, for example, the application packet suggests that the completed structure may be suitable for agriculture, park lands, or sports fields.

M & A compares the climate of Palmer to that of Los Angeles, California, and describes both as semiarid and "without significant annual precipitation". This assessment is incorrect. Climate classification schemes also use potential evapotranspiration and temperature regimes to classify climates. Palmer has much lower average annual temperatures and much lower potential evapotranspiration rate than Los Angeles. Kikuchi (2013) classifies the climate at Palmer as transitional between maritime and continental. There is significant annual precipitation in the Palmer area. It is sufficient to support mature deciduous and coniferous forest, hundreds if not thousands of household water-supply wells, numerous municipal and irrigation wells, non-irrigated agriculture, perennial flows in numerous streams and rivers, and many stable lakes. All these water uses are supported by annual precipitation without causing any significant net long-term change in groundwater storage (as noted by M & A).

M &A describes a cyclic infiltration process characterized by short periods of intense rain followed by evapotranspiration and drying out of surficial materials. This model may apply some places, but is not suitable for the proposed monofill.

According to a weather summary for Palmer, rain is usually not intense (http://weatherspark.com/averages/32899/Palmer-Alaska-United-States):

> "Over the entire year, the most common forms of precipitation are light rain and light snow.
>
> *Light rain* is the most severe precipitation observed during 46% of those days with precipitation. It is most likely around August 9, when it is observed during 37% of all days."

Furthermore, recharge processes in the spring and fall occur at times when evapotranspiration is low to very low and the soils and fill at the site are expected to be sufficiently well-drained that they can readily absorb relatively large quantities snowmelt and precipitation. There is no presentation of data to support M & A's infiltration scenario and it should not be relied upon.

M & A summarizes this section with the following major conclusion:

> "...it is likely that none of the precipitation will make its way through the considerable thickness of the proposed monofill. It follows, then, that it is unlikely that any of the monofill constituents will leach into the water table."

This conclusion is not supported by data or sound analysis and I do not concur for the reasons cited above. The thickness of the monofill is largely irrelevant. If water enters the top of the structure, it will percolate down and eventually exit. Water that goes in must come out.

Kikuchi (2013, Appendix C) tabulates modeled values of groundwater recharge in the vicinity of the proposed monofill. While most of the core area of the Borough has around 5 inches of annual recharge, the area around the proposed monofill (the lower Matanuska river area) is shown as receiving an average of 1.4 inches per year. A detailed review of this calculation (Kikuchi, 2014, written communication) shows that the mean annual precipitation at MAES (the Palmer Agriculture Station) during 2002-2010 (the period selected for recharge modeling) was 14.8 inches. However, the mean annual precipitation at Palmer Airport during 2002-2010 was 10.2 inches. The DPM model calculates daily precipitation at the centroid of each Hydrologic Response Unit (MRU) using an inverse distance squared weighting. The relatively low annual precipitation (11.09 in/yr) for Outlet Matanuska River HRU (190204020709) is due to the relatively low annual precipitation at Palmer Airport.

Further analyses has shown that the long-term average precipitation at the Palmer Airport is 11.89 in/yr (http://average-rainfall.weatherdb.com/l/19817/Palmer-Alaska) rather than the 10.2 in/yr modeled by Kikuchi (2013). This means that the likely recharge near the proposed monofill is likely higher than the 1.4 inches/yr modeled.

Considering annual variations and long term averages, therefore, annual groundwater recharge at the location of the proposed monofill is likely to be in the range of 1-5 inches per year. For a 30-acre surface area at the top of the fill structure, this translates to approximately 800,000 – 4 million gallons per year. This is also the amount of water that is expected to flow through the fill material and enter the water table beneath the site as leachate.

Section 7.3, Pages 20-21

This analysis probably overestimates the amount of groundwater passing beneath the site. The value of transmissivity of 100,000 ft^2/d is applicable to areas where the thickness of the aquifer is about 200 ft, which is generally somewhat north and east of the proposed monofill site. The aquifer appears to be somewhat thinner at the proposed site, only about 120 ft. The Darcy's law calculation should have assumed a relatively constant value of hydraulic conductivity similar to that estimated for other areas, of 500 ft/day. This would reflect an assumption that the aquifer materials do not change significantly across the area, only the aquifer thickness varies. Using the lower value of hydraulic conductivity of 500 ft/day, the estimated groundwater flow quantity beneath the site would be approximately 4.0 million gallons per day.

Section 8.0 Groundwater Modeling, Pages 21-25, including figures

The model presents several relatively straightforward hypothetical scenarios of contaminant fate and transport. The results are consistent with what is generally known about this site and with contaminant behavior in these types of flow systems. While the results show that concentrations of all the hypothetical contaminants would be greatly reduced, all of them are shown to persist at values greater than the respective Maximum Contaminant Levels (MCLs) for each constituent (Benzene = 5 µg/L, PCE = 5 µg/L and 1,2-DCE = 70 µg/L). Thus, the modeling shows that domestic drinking water wells could be contaminated even at distances of about a mile from the proposed monofill.

The modeling is also based on a slug input of hypothetical contaminants, which might apply to a spill or leak of a finite amount of contaminant. If there is a persistent source of contaminant such

as sometimes emanates from landfills, the plumes would not detach from the source area and long continuous plumes would tend to form from the source to the leading edge of the plume.

Another limitation of the model is that the flow field is extrapolated from hydrogeologic data collected only from the proposed site of the monofill and does not incorporate any data from downgradient areas. As hydrogeologic conditions commonly change over the distances of a mile or more, the actual conditions and fate and transport results in a downgradient direction may be different than those modeled.

The modeling conclusion that the contaminants "will essentially cease to be present in detectable concentration after only a short transport distance beyond the monofill boundaries" is incorrect and unreliable. The laboratory analyses for the three compounds measured had unusually high detection limits as a result of high dilution factors of up to 200 used in the analyses. Groundwater samples from monitoring wells do not usually have such large dilution factors, and detection limits are much lower. Benzene, for example, had an LOQ (essentially a detection limit) of 80 micrograms/liter for Residual A, however the LOQ for the sample blank used for quality assurance purposes had an LOQ of only 0.400 micrograms/liter. Recall that the MCL for benzene is 5 micrograms/liter. Thus, since groundwater monitoring samples routinely have detection limits much lower than those used in the leachate tests, the modeling fails to demonstrate that contaminant concentrations will be below detection limits or any applicable water quality standards.

Finally, such a modeling exercise may be useful for planning permit conditions for the proposed monofill. As previously noted, separation distances between the monofill and surrounding drinking watr wells may be appropriate conditions for approval of the facility. Unfortunately, there is no information provided as to the locations of surrounding wells, so planning appropriate separation distances is challenging.

The reliability of the model would be improved by obtaining and incorporating data from the groundwater flow field downgradient of the facility.

Guard Wells, Page 26
It is not clear what guard wells are contemplated. The groundwater monitoring plan was prepared prior to the modeling study and recommends only three monitoring wells, two on the west side of the fill and one upgradient. None of the proposed plan wells are located in places that would have detected any of the plumes shown in the groundwater modeling effort. The wells installed in 2013 appear to be located in areas that will be filled, so the long term use of those wells appears doubtful. Thus, it appears that the existing and/or proposed monitoring wells will be ineffective at detecting contaminants leaving the proposed monofill.

Section 9.0 Conclusions Page 26-28
There are 17 bulleted conclusions, followed by a brief concluding paragraph. For convenience, the bullets are numbered according to sequence.

Bullet 1. The site conceptual model does not provide sufficient data and analysis to adequately support this conclusion.

Bullet 2. Substantially agree, except that man-caused changes in water levels related to potential future gravel operations should be considered.

Bullet 3. Disagree. Groundwater occurs at depths of less than 10 ft beneath the current land surface, however design of the facility requires regrading to occur to create a 10-ft buffer prior to depositing waste. Recommend further analysis of seasonal high water table elevations and inspection prior to depositing waste to confirm bottom elevation of the site relative to an updated high-water table map.

Bullet 4. Disagree. Most likely closer to 4,000,000 gallons/day.

Bullet 5. Agree.

Bullet 6. Agree.

Bullet 7. Detection limits (LOQs) were far in excess of Maximum Contaminant Levels, meaning that non-detects cannot be used to rule out the presence of contaminants above MCLs. It is highly questionable that only three samples are representative of the future waste pile.

Bullet 8. It is not clear what the criteria of "properly evaluated' and "properly managed" mean. In the absence of greater clarification, it is not proper to conclude that the site meets these criteria. In particular, there is no information presented about private wells or surface water bodies in actual or potential downgradient directions and no comprehensive groundwater monitoring plan to assure protection of those wells. Lacking these details, "properly managed" could mean almost anything, including prohibition of the use of water wells for up to a mile in a downgradient direction in the absence of a more robust monitoring program and an action-plan to deal with exceedances.

Bullets 9, 10, 11, 12, 13, 14, and 15. Precipitation at the site is probably in the range of 12-15 inches/yr and infiltration is likely lower in the winter than in the summer. The remainder of these bullet points, however, are generally not supported with data and contain inaccuracies. It should be expected that 800,000 to 4 million gallons per year of water from precipitation and snowmelt will infiltrate and percolate through the waste and this fluid will become leachate that will recharge the water table both during operations and during the post-closure period far into the future. The leachate should be expected to exceed multiple water quality standards applicable to drinking water wells.

Bullets 16 and 17. These conclusions fail to note that all three contaminants could travel approximately a mile downgradient and still exceed drinking water standards, even after experiencing the modeled reductions in concentration.

Concluding Paragraph. The conclusion that the proposed facility "will not pose a threat to the underlying aquifer" is not sufficiently supported by data or analysis and should not be relied upon.

II. COMMENTS ON APPLICATION AND OTHER ATTACHMENTS

The cover letter suggests that this packet addresses the concerns expressed regarding the previous application. As detailed above, the hydrogeologic studies, monitoring plans, and inventory of surrounding wells are inadequate. The letter also states that they have obtained ADEC approval of the design. This contrasts with my understanding that a permit for this facility has not yet been granted by ADEC.

In response to the question: Will the granting of the conditional use permit be harmful to the public health, safety, convenience and welfare? (Page 1 of 3 of the MSB CUP application), the applicant answered "yes". It is not clear that this was the intent of the applicant.

The map showing adjoining property types on page 11 does not extend far enough to the south and west to show the existing land uses within the one-mile downgradient groundwater flow field described by the groundwater modeling. Other work (Munter (2010)) indicates that there are residential wells and property in this area.

The application (p. 16) relies on the report by Maddox and Associates to conclude that the "proposed monofill will not present a threat to groundwater…". As detailed above, this opinion is not sufficiently supported to be reliable.

The application (p. 16) also proposes a groundwater monitoring plan to "monitor the groundwater for any concerns long term". The monitoring plan presented does not achieve that objective. Following are samples of some concerns that are not adequately addressed:

1. What is the plan for long-term monitoring well locations, considering that some of the existing wells are in locations that apparently will be buried by fill material?

2. There are an insufficient number of wells to monitor a potential groundwater plume, considering its potential breadth (over 1000 ft wide) and complexity.

3. How will groundwater be monitored in the aquifer up to one mile downgradient of the facility that is vulnerable to contamination?

4. How will the identification of contaminated groundwater affect operations or management of the site? Who will pay for removal of the disposed material, installation of an impermeable cap, or other actions that may be needed to clean up groundwater? Who will pay for treatment systems or alternate water supplies for private well owners who may have their wells contaminated from the facility?

5. At what level, if any, will exceedance of secondary water quality standards be regarded as unacceptable? For example, an ADEC fact sheet indicates that the relevant standard for sulfate in groundwater may be natural background concentrations. (Water Quality Standards for Assessment Monitoring of Groundwater accessed at: http://dec.alaska.gov/eh/docs/sw/Monitoring/Water_Quality_Standards_Groundawter.pdf)

The leachate tests performed on sample waste material almost assure that groundwater contamination will result, if this is the applicable standard.

6. What agency will review and potentially act on groundwater monitoring results?

Comparisons to findings at other landfills in Alaska (p. 15-16) that report minimal or no environmental or public health problems are of limited value to this project. This is because of potentially large differences in geological conditions and down-gradient receptors. For example, there may be no water wells in use downgradient of the other landfills reported. The other landfills may not be situated on top of an extensive, thick, and permeable water-table aquifer.

The monitoring wells (p. 28) were installed between April 22-24, 2013. Reporting that they have been "measured over the last year" is somewhat inaccurate. The only water-table map in the packet is based on water-level measurements made on July 1, 2013, and these measurements should not have been used to determine the seasonal high water table and the base elevation of the fill. Approximately monthly measurements for a period of a full year should be used to define the peak water table, and that should be used to define the 10 feet of separation required to the base of the fill.

Below are the general standards that appear to be applicable to this site from the MSB website:

> **17.60.100 GENERAL STANDARDS.**
>
> (A) A conditional use may be approved only if it meets with the requirements of this section in addition to any other standards required by this chapter.
>
> (B) In granting a conditional use permit, the planning commission must make the following findings:
>
> (1) the conditional use will preserve or not detract from the value, character, and integrity of the surrounding area;
>
> (2) that granting the conditional use permit will not be harmful to the public health, safety, convenience, and welfare;
>
> (3) that sufficient setback, lot area, buffers, or other safeguards are being provided to meet the conditions listed in subsections (B)(1) through (3) of this section; and
>
> (4) the conditional use fulfills all other requirements of this chapter pertaining to the conditional use in this section.

The Maddox and Associates report fails to present sufficient data and sound analysis to support their conclusion that the proposed use of the site does not present a threat to groundwater. Insufficient data and analysis have been provided to accurately evaluate the effects of the proposed monofill.

Should you have any questions about this review, please call me at 345-0165 or 727-6310.

Sincerely,
J. A. Munter Consulting, Inc.

James A. Munter
Principal Hydrogeologist
Certified Ground Water Professional No. 119481
Alaska Licensed Professional Geologist No. 568

References Cited

Freeze, R. Allan and John A. Cherry, 1979, Groundwater, Prentice-Hall, Inc., Englewood Cliffs, New Jersey.

ICF Incorporated, 1995, Damage Cases: Construction and Demolations Waste Landfills, report for U. S. Environmental Protection Agency, Office of Solid Waste. (draft) found at: http://www.epa.gov/osw/hazard/generation/sqg/damages/dam-pdf/damage.pdf

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Kikuchi, Colin P., 2013, Shallow Groundwater in the Matanuska-Susitna Valley, Alaska—Conceptualization and Simulation of Flow, U. S. Geological Survey, Scientific Investigations report 2013-5049.

Ohio, 2009, An Evaluation of Leachate from Ohio's Construction and Demolition Debris Landfills. Ohio Environmental Protection Agency Division of Solid and Infectious Waste Management Draft: June 12, 2009. Found at: http://www.epa.ohio.gov/Portals/34/document/newspdfs/n_cdd_leachate_evaluation.pdf

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Susan Lee

From: Aldrich, Lori (DEC) [lori.aldrich@alaska.gov]
Sent: Wednesday, January 22, 2014 12:46 PM
To: Susan Lee
Subject: RE: Central Monofill Services
Attachments: 2009-4-23 SWZA004-14 Palmer Inert - AK Demo.pdf

Susan,

We do not have a draft permit, as the application has been on hold. We had reviewed the application and determined that it met the requirements for an inert waste monofill, and had posted a public notice. However, if they make even minor changes to the plan, the must submit a new application, including posting another public notice. At this point, the permit would likely include any stipulations required by the conditional use permit as well as others initiated by ADEC.

Attached is the permit for the Alaska Demolition Palmer Inert Waste Monofill.

Please call or email if you have any additional questions.

Thanks,
Lori

Lori Aldrich
Solid Waste Program Coordinator
Department of Environmental Conservation
555 Cordova Street
Anchorage, AK 99501
(907) 269-7622

From: Susan Lee [mailto:Susan.Lee@matsugov.us]
Sent: Wednesday, January 22, 2014 12:36 PM
To: Aldrich, Lori (DEC)
Subject: Central Monofill Services

Hi Lori:

I am processing the conditional use permit for Central Monofill Services proposed monofill outside of Palmer. I know the ADEC permit was not issued since the MSB permit was not approved. However, I was wondering if there is a draft permit that I could review. CMS's application material states that " ADEC reviewed the CMS Monofill Permit application for this site and has approved the permit conditioned upon receipt of the MSB CUP".

In addition, could you send me a copy of the Alaska Demolition permit for their operation in Palmer.

If you have any questions or need additional information please let me know.

Susan

MATANUSKA-SUSITNA BOROUGH
Planning and Land Use Department
Development Services Division
350 East Dahlia Avenue • Palmer, AK 99645
Phone (907) 861-7822 • Fax (907) 861-7876
Email: permitcenter@matsugov.us

APPLICATION FOR A CORE AREA CONDITIONAL USE PERMIT – MSB 17.61

Carefully read instructions and applicable borough code. Fill out forms completely. Attach information as needed. Incomplete applications will not be processed.

Application fee must be attached:
_____ **$500 for Core Area Conditional Use Permit**

Prior to the public hearing, the applicant must also pay the mailing and advertising fees associated with the application. Applicants will be provided with a statement of advertising and mailing charges. Payment must be made prior to the application presentation before the Borough Planning Commission.

Subject Property Township: _____, Range: _____, Section: _____, Meridian ____
MSB Tax Parcel ID# _____
SUBDIVISION: _____ BLOCK(S): _____, LOT(S): _____
STREET ADDRESS: _____
(US Survey, Aliquot Part, Lat. /Long. etc) _____

Ownership A *written authorization by the owner must be attached for an agent or contact person, if the owner is using one for the application.* Is authorization attached? **o Yes o No o N/A**

Name of Property Owner	**Name of Agent/ Contact for application**
_____	_____
Address: _____	Address: _____
_____	_____
Phne: Hm _____ Fax _____	Phne: Hm _____ Fax _____
Wk _____ Cell _____	Wk _____ Cell _____
E-mail _____	E-mail _____

Required Application Information	**Attached**
1. Written detailed description of the proposed project	
2. Copy of the local covenants	
3. Copies of any current report on hazardous substances or hazardous waste prepared for submittal to state or federal agencies, and expected types and quantities of combustible fiber to be stored or combustible dust to be produced	

Nonconforming Uses and Structures	Yes	No	Attached
1. Is this an expansion of a pre-existing legal nonconforming use or structure?			
2. If yes, has the nonconforming use been discontinued for more than 12 consecutive months since January 1, 2003?			
3. Describe the proposed expansion/increase of the pre-existing legal nonconforming use.			
4. To establish pre-existing legal nonconforming rights for a use, complete this form (including attachments). Also include a copy of the 2003 Business Licenses for the use and evidence of the continued existence of the use at this site since January 1, 2003?			

SITE PLAN – Attach a detailed site plan, drawn to scale, showing the following information:	Attached
1. Setback distances of structure(s) from the lot lines, rights-of-way, and waterbodies.	
2. Adjacent streets, pubic easements and rights-of-way	
3. Existing and proposed buildings and structures (including tanks and chemical processing equipment)	
4. Access points	
5. Buffering – Visual and Sound	
6. Vehicular and pedestrian circulation patterns	
7. Location and dimensions of parking areas to be provided, including individual parking spaces	
8. Loading areas	
9. Storage and processing areas	
10. Lighting	
11. Topography	
12. Drainage management plan	
13. Sources of noise	
14. Fences	
15. Berms	
16. Landscaping	
17. Signage	
18. Scale and North Arrow	

DIMENSIONAL DRAWING(S) – Attach a dimensional drawing of the horizontal views of the structure(s), drawn to scale, showing the following information: ***(*If more than one structure is proposed, attach requested information about each.)***	**Attached**
1. Dimensions of all structures	
2. Appearance	
3. Modifications	
4. Identification of use areas with locations and dimensions	
5. Delineate areas of expansion or change in use	
6. Other details sufficient to adjudicate the application	
7. Scale and North Arrow	

NOISE	**Yes**	**No**	**Attached**
1. Will the use generate noise beyond the project site lot lines exceeding Maximum Permissible sound levels shown in the Table below?			
2. Are **any** of the sounds exceeding permissible levels **generated by source(s) that are exempt from regulations under MSB 17.61.080(C)?** ***If yes, attach a detailed description of source and levels and days and times of day the levels will be exceeded by exempt generators.***			
3. **Are all of the sounds exceeding permissible levels generated by source(s) that are exempt from regulations under MSB 17.61.080(C)?** ***If no, attach a detailed description of source and levels and days and times of day the levels will be exceeded by regulated generators.***			

Maximum Permissible A-weighted Sound levels (MSB 17.61.080)

Land Use of Sound Source	Land Use of Adjacent Property				
	Residential			Commercial	Industrial
	Day	Night			
	Monday through Friday 7 a.m. to 10 p.m. or 9 a.m. to 10 p.m. on weekends	Monday through Friday 10 p.m. to 7 a.m.	Weekend **10 p.m. to 9 a.m.**		
Commercial	60dB(A)	50dB(A)	50dB(A)	70dB(A)	75dB(A)
Industrial	60dB(A)	50dB(A)	50dB(A)	70dB(A)	80dB(A)

TRAFFIC GENERATION	Yes	No	Attached
1. Is the Traffic Impact Worksheet attached?			
2. Will the use generate traffic in excess of 100 vehicles during the morning or afternoon peak hour? *If yes, attach a detailed description of the type of vehicles and schedule.*			
3. Will the use generate a total of more than 750 vehicles per day (12 a.m. to 12 p.m.)? *If yes, attach a detailed description of the type of vehicles and schedule.*			
4. If the trip generation rates estimated on the Traffic Impact Worksheet exceed the volumes described in MSB 17.61.020(A)(2) a Traffic Impact Analysis (TIA) and management plan for traffic, parking, and loading, demonstrating compliance with MSB 17.61.090 must be attached with the application.			

HAZARDOUS MATERIAL	Yes	No	Attached
1. Will the use process, manufacture, or store hazardous substances over threshold established by federal or state community right-of-know laws and regulations (40 CFR 370; AS 29.35.500)?			
2. Will the use at any time generate combustible dust in sufficient quantity to produce an explosion or combustion hazard?			
3. Will the use store or handle combustible fiber in quantities greater than 100 cubic feet (2.8 m^3)?			
4. Will the use generate or manage more than 2,200 pounds of hazardous waste per month as defined by federal regulations (40 CFR 261, 262)? *If yes, attach a detailed description of the type, quantity, schedule, and use of the hazardous material demonstrating compliance with MSB 17.61.090.*			
5. Are <u>any</u> of the Hazardous Materials exceeding the regulated thresholds originating from use(s) that are exempt from regulations under MSB 17.61.100(B) and (C)? *If yes, attach a detailed description of the type, quantity, schedule, and use of the hazardous material, and the specific code that authorizes the exemption(s).*			
6. Are <u>all</u> of the Hazardous Materials exceeding the regulated thresholds originating from use(s) that are exempt from regulations under MSB 17.61.100(B) and (C)?			

DRAINAGE AND RUNOFF	Yes	No	Attached
Will the use generate contaminated water runoff or other discharges that are likely to violate state water quality standards or negatively impact groundwater or surface water quality beyond adjacent property lines? *If yes, attach a detailed description of type, quantity, source, and management plan to prevent violation of state water quality standards and negative impact to groundwater and surface water quality.*			

In order to grant a conditional use permit under MSB 17.61, the Planning Commission must find that each of the following requirements has been met. Explain the following:	**Attached**
1. Will the conditional use preserve and not detract from the value, character and integrity of the surrounding area?	
2. Will the granting of the conditional use permit be harmful to the health, safety, convenience or general welfare of the public?	
3. Are sufficient setbacks, lot area, buffers, or other safeguards being provided?	
4. Will the proposed use, even with mitigation, be incompatible with and adversely affect surrounding residential neighborhoods?	
5. Will the proposed use adversely affect property values of surrounding areas?	
6. Will the proposed use create unreasonable noise levels beyond the property lines of the proposed location?	
7. Will the proposed use adversely affect the safe and efficient flow of traffic on any highway, arterial, collector, or street from which access to and from the business occurs?	
8. Are there adequate off-street parking facilities to accommodate a reasonably expected increased demand for parking generated by the business?	
9. What measures are being proposed to reduce any negative effect upon adjacent properties by property line buffers and roadway buffers, berms, landscaping, clustering with other similar uses, and where the surrounding area is predominantly residential in character, whether the site and building design features contribute to the residential character of the surrounding development?	
10. Are the proposed site plans and plan of operations consistent with the purposes of MSB Chapter 17.61?	

OWNER'S STATEMENT: I am owner of the following property:

MSB Tax parcel ID #(s) _____ and,
I hereby apply for approval a Core Area conditional use permit on that property as described in this application.

I understand all activity must be conducted in compliance with all applicable standards of MSB 17.61 and with all other applicable borough, state or federal laws.

I understand that other rules such as local, state and federal regulations, covenants, plat notes, and deed restrictions may be applicable and other permits or authorization may be required. I understand that the borough may also impose conditions and safeguards designed to protect the public's health, safety and welfare and ensure the compatibility of the use with other adjacent uses.

I understand that it is my responsibility to identify and comply with all applicable rules and conditions, covenants, plat notes, and deed restrictions, including changes that may occur in such requirements.

I understand that this permit and zoning status may transfer to subsequent owners of this land and that it is my responsibility to disclose the requirements of this status to the buyer when I sell the land.

I understand that changes from the approved conditional use permit may require further authorization by the Borough Planning Commission. I understand that failure to provide applicable documentation of compliance with approved requirements, or violation of such requirements will nullify legal status, and may result in penalties.

I grant permission for borough staff members to enter onto the property as needed to process this application and monitor compliance. Such access will at a minimum, be allowed when the activity is occurring and, with prior notice, at other times necessary to monitor compliance.

The information submitted in this application is accurate and complete to the best of my knowledge.

Signature: Property Owner Printed Name Date

Signature: Agent Printed Name Date

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Susan Lee

From: Richard Harbuck [superglide@mtaonline.net]
Sent: Sunday, February 16, 2014 1:54 PM
To: Susan Lee
Subject: buffer zone!

Dear Susan, just read the frontiersman article and I see that CMS is calling my property's trees a buffer zone for his use. Is this in the application, I would like to have an official response from CMS. Thank you Richard H.

Susan Lee

From: Susan Lee
Sent: Tuesday, February 18, 2014 2:01 PM
To: 'matthewb@mtaonline.net'
Cc: Alex Strawn
Subject: FW: Central Monofill Services CUP application
Attachments: Request for Info 2-13-2014.pdf; Munter Report 2-7-2014.pdf; ADEC e-mail 1-22-2014.pdf; Core Area CUP applicaiton.doc

Matthew:

Here's the info we sent to CMS last week.

Susan

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

From: Susan Lee
Sent: Thursday, February 13, 2014 3:42 PM
To: 'Shane Durand'
Subject: Central Monofill Services CUP application

Shane:

Please see attached.

Susan

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

Susan Lee

From: Matthew Beck [matthewb@mtaonline.net]
Sent: Tuesday, February 18, 2014 2:20 PM
To: Susan Lee
Subject: Re: Central Monofill Services CUP application

Thank you!

Sent from my iPhone

On Feb 18, 2014, at 2:01 PM, Susan Lee <Susan.Lee@matsugov.us> wrote:

> Matthew:
>
> Here's the info we sent to CMS last week.
>
> Susan
>
> Susan Lee
> Planner II
> Matanuska-Susitna Borough
> 907-861-7862 (Direct Line)
> 907-861-7876 (FAX)
> PLEASE NOTE NEW DIRECT LINE PHONE NUMBER
>
> **From:** Susan Lee
> **Sent:** Thursday, February 13, 2014 3:42 PM
> **To:** 'Shane Durand'
> **Subject:** Central Monofill Services CUP application
>
> Shane:
>
> Please see attached.
>
> Susan
>
> Susan Lee
> Planner II
> Matanuska-Susitna Borough
> 907-861-7862 (Direct Line)
> 907-861-7876 (FAX)
> PLEASE NOTE NEW DIRECT LINE PHONE NUMBER
>
> <Request for Info 2-13-2014.pdf>
> <Munter Report 2-7-2014.pdf>
> <ADEC e-mail 1-22-2014.pdf>
> <Core Area CUP applicaiton.doc>

Susan Lee

From: Richard Harbuck [superglide@mtaonline.net]
Sent: Tuesday, February 18, 2014 2:25 PM
To: Alex Strawn
Cc: Susan Lee
Subject: Tax Revenue Implications

Dear Alex, In reference to code ref. 17.60.030 in which the borough recognizes the potential damage to property values ect. around junkyard areas. Will or has the borough studied the potential impact to tax revenue losses if the CMS monofill is approved and surrounding property owners contest their appraisals. Studies show the impact on home values to reach up 1 mile around dump sites. This could have unintended consequences to the borough's tax revenues if approved.

Susan Lee

From: Richard Harbuck [superglide@mtaonline.net]
Sent: Tuesday, February 18, 2014 3:00 PM
To: Susan Lee
Subject: Fwd: Tax Revenue Implications

Dear Susan, I tried to send this to Alex but the boroughs web site address for him is not up to date and it bounced this letter back. could you please forward it to him. Thanks, Richard

--- Begin forwarded message:

From: "Richard Harbuck" <superglide@mtaonline.net>
To: "Alex Strawn" <astrawn@matsuguv.us>
Cc: "Susan Lee" <Susan.Lee@matsugov.us>
Subject: Tax Revenue Implications
Date: Tue, 18 Feb 2014 15:25:14 -0800

Dear Alex, In reference to code ref. 17.60.030 in which the borough recognizes the potential damage to property values ect. around junkyard areas. Will or has the borough studied the potential impact to tax revenue losses if the CMS monofill is approved and surrounding property owners contest their appraisals. Studies show the impact on home values to reach up 1 mile around dump sites. This could have unintended consequences to the borough's tax revenues if approved.

Susan Lee

From: Aldrich, Lori (DEC) [lori.aldrich@alaska.gov]
Sent: Wednesday, February 19, 2014 12:06 PM
To: Susan Lee
Subject: CMS Monofill

Hi Susan,

Apparently things are happening with the Borough council, as I am getting a lot of phone calls. Can you direct me to where I can find all the Borough produced information on the monofill, so I can help delineate the Borough's issues from the State's issues – people are not accepting my answers that I cannot do much until I see what conditions the Borough might require.

Thanks,
Lori

Lori Aldrich
Solid Waste Program Coordinator
Department of Environmental Conservation
555 Cordova Street
Anchorage, AK 99501
(907) 269-7622

Susan Lee

From: Susan Lee
Sent: Wednesday, February 19, 2014 12:51 PM
To: 'Aldrich, Lori (DEC)'
Subject: RE: CMS Monofill

Lori:

The application material is too big for us to e-mail, so we are burning a CD and putting it in the mail to you today. I will e-mail you the letter I sent to CMS last week and a copy of the report that Jim Munter prepared for us.

Susan

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

From: Aldrich, Lori (DEC) [mailto:lori.aldrich@alaska.gov]
Sent: Wednesday, February 19, 2014 12:06 PM
To: Susan Lee
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Thanks,
Lori

Lori Aldrich
Solid Waste Program Coordinator
Department of Environmental Conservation
555 Cordova Street
Anchorage, AK 99501
(907) 269-7622

Susan Lee

From: Susan Lee
Sent: Wednesday, February 19, 2014 12:54 PM
To: 'Aldrich, Lori (DEC)'
Subject: CMS
Attachments: SKMBT_C65414021912540.pdf

Lori:

Attached is the February 13, 2014 letter to CMS, Munter report, and other attachments.

Susan

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

Susan Lee

From: Aldrich, Lori (DEC) [lori.aldrich@alaska.gov]
Sent: Wednesday, February 19, 2014 12:54 PM
To: Susan Lee
Subject: RE: CMS Monofill

Susan,
Thanks so much – I had a caller this morning that accused me of corruption for not reviewing and considering documents I did not know existed. This project is so much fun....can't wait for their next one – it is even more controversial.

Lori

From: Susan Lee [mailto:Susan.Lee@matsugov.us]
Sent: Wednesday, February 19, 2014 12:51 PM
To: Aldrich, Lori (DEC)
Subject: RE: CMS Monofill

Lori:

The application material is too big for us to e-mail, so we are burning a CD and putting it in the mail to you today. I will e-mail you the letter I sent to CMS last week and a copy of the report that Jim Munter prepared for us.

Susan

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

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Thanks,
Lori
Lori Aldrich

Solid Waste Program Coordinator
Department of Environmental Conservation
555 Cordova Street
Anchorage, AK 99501
(907) 269-7622

Susan Lee

From: Richard Harbuck [superglide@mtaonline.net]
Sent: Sunday, March 02, 2014 6:45 AM
To: Mark Whisenhunt
Cc: Susan Lee
Subject: Fwd: www.municode.com/Library#/AK/Anchorage/Code_of_Ordinances/TIT26UT_CH26.80SOWADI_26.80.010LODI

Hi Mark, just noticed this read 26.80.010 of the Anchorage Muni Code. Are CMS and AK Demolition in compliance?

http://www.municode.com/Library#/AK/Anchorage/Code_of_Ordinances/TIT26UT_CH26.80SOWADI_26.80.010LODI

Susan Lee

From: Mark Whisenhunt
Sent: Monday, March 03, 2014 11:20 AM
To: superglide@mtaonline.net
Cc: Susan Lee
Subject: RE: www.municode.com/Library#/AK/Anchorage/Code_of_Ordinances/TIT26UT_CH26.80SOWADI_26.80.010LODI

Good Morning Rich,

Susan and I just got out of a meeting and were told you stopped by. I apologize for the inconvenience.

We are unable to make a determination of compliance pertaining to the Anchorage Muni Code, as it is not within our purview or jurisdiction.

Thanks for your time.

Respectfully,

Mark Whisenhunt, CFM
Planner II
Matanuska-Susitna Borough
Office: (907) 861-8527
Fax: (907) 861-7876
mark.whisenhunt@matsugov.us

From: Richard Harbuck [mailto:superglide@mtaonline.net]
Sent: Sunday, March 02, 2014 6:45 AM
To: Mark Whisenhunt
Cc: Susan Lee
Subject: Fwd: www.municode.com/Library#/AK/Anchorage/Code_of_Ordinances/TIT26UT_CH26.80SOWADI_26.80.010LODI

HI Mark, just noticed this read 26.80.010 of the Anchorage Muni Code. Are CMS and AK Demolition in compliance?

http://www.municode.com/Library#/AK/Anchorage/Code_of_Ordinances/TIT26UT_CH26.80SOWADI_26.80.010LODI

Susan Lee

From: Eileen Probasco
Sent: Tuesday, March 04, 2014 11:24 AM
To: Shannon Bodolay
Cc: Alex Strawn; Susan Lee
Subject: FW: Mat Su loss of Taxable Income

FYI

From: Bill [mailto:abxwilliam@aol.com]
Sent: Tuesday, March 04, 2014 10:37 AM
To: larry.devildiss@matsugov.us
Cc: John Moosey; Eric Phillips; Don Dyer; tammyclayton@matsugov.us; Cheyenne Heindel; elizabth.hartley@matsugov.us; Eileen Probasco; Frankie Barker; jimsykesdistrict1@gmail.com; matthewb@mtaonline.net; ronarvin@mtaonline.net; steyecolligan@mtaonline.net; darciesalmon@mtaonline.net; jimcolver@mtaonline.net; vernhalter@mtaonline.net; andrew.wellner@frontiersman.com; kents56@gmail.com; snowers@mtaonline.net; ralph@dodykettler.com; sfigon@mtaonline.net; zennmcn@gmail.com; superglide@mtaonline.net
Subject: Mat Su loss of Taxable Income

William Quantick
P.O.Box 3001
Palmer, Alaska 99645
March 4,2014
Matanuska-Susitna Borough
350 East Dahlia Ave.
Palmer, Alaska 99645
Attn: Mayor Larry DeVilbiss
Dear Mayor Larry DeVilbiss,

I am writing to you with great respect and the position you hold as Mayor of the Matanuska-Susitna Borough, and I do believe in the same principals as you do.

" The Mat-Su Borough needs a strong and sustainable economy; which is obtainable through common-sense leadership." With that statement it bring up some of the mistakes the Borough has done in the past that has caused excess of amount spending such as the Ferry. Planning is a very import part of the economic growth, by building the Ferry before a deal to secure dockage was putting tax pay's money at risk and now we are paying the consequence.

"Open for Business" is your statement and we all understand the only way to grow is to develop. But in developing we need to attract the "Right Kind of Business" that will employee more than a hand full of people, Public safety and health and business that require Industrial locations to be placed in Industrial zoned areas.

I would like to bring to your attention to the CMS Monofill that is becoming a major issue for a lot of people. It's not to say we don't want businesses to be developing in the Mat-Su or "Palmer" but the Right Kind of Businesses. I sure you are well aware of the all the problems that are occurring and the hard ship on the people who choose to live in Palmer.

CMS is not a partner who I would say is on the "WIN WIN" side of things. Just look at the problems they have started, Anchorage Daily News Reports, "Recycler Sues City Over Disposal Discount for $100,000.00" (ADN 03/ 01/14), In Palmer Court they were found guilty in 6 citations for Illegal Dumping. I've been in business and my rule of thumb, is Strong Business Ethics, Trust, and a "Win Win Partnership." No matter what CMS promises and how they think they will take care of problems that arise, their records show it all.

Mr. Mayor I took the liberty to do some research to show you that this is a bad deal all based on how much the Borough will lose in taxable income. Taxable Income is a vital need to keep the Mat-Su Growing but if you start losing it, where will you find it to make it up, by Raising Taxes? Not good for someone in your position who wants to lower them. I went to the "Mat-Su Borough Parcel Viewer" to first see how many properties are located with in a one-mile area of CMS property boundaries. From my calculation there are 415 +/- private property owners, some with million dollar homes on them. My process, I took 5 random properties assessments from each subdivision (Canoe Lake, Crimson View and Sky Ranch). I worked out the loss of income that will generate if this Dump goes through. Based on the assessment tax for these 15 properties the loss will be from $270,126.00 to $675,315.00, not good. And not to mention the other loss of income to the Boroughs own land fill, CMS will be dumping tonnage on their on property to avoid paying it fair share.

You have the power to make the right choice to protect the Gateway of Palmer from the smell of Leaking Decomposing Gas (Same Smell at Highland Facility), Unsightly Trash, Contaminating Drinking Water and to the 415 property owners of Palmer who's hard earned investments that are at stake. None of this would have come to a head if the Borough enforced the "Reclamation clause in the gravel pit agreements."

Sincerely,
William Quantick

Susan Lee

From: Matthew Beck [matthewb@mtaonline.net]
Sent: Tuesday, March 04, 2014 10:55 PM
To: Susan Lee
Subject: Fwd: Website feedback Code Question

Sent from my iPhone

Begin forwarded message:

> **From:** Ralph Kettler <ralph@dodykettler.com>
> **Date:** March 4, 2014 at 10:58:03 AM AKST
> **To:** AlcantarPF@muni.org
> **Cc:** andrew.wellner@frontiersman.com, matthewb@mtaonline.net
> **Subject: Website feedback Code Question**
>
> My question is in reference to 26.80.010 listed below: Has AK Demo or Central Monofill Services/Central Recycling Services been given a letter of exemption to haul trash out of the municipality and dump it in the Mat-Su Borough?
>
> 26.80.010 Locations for disposal.
>
> All solid waste generated within the municipality shall, unless exempted in writing by the director, be disposed of by delivery to state-permitted solid waste processing and disposal facilities located in the municipality.
>
> Ralph Kettler

Susan Lee

From: Matthew [mattbeck@mtaonline.net]
Sent: Wednesday, March 05, 2014 6:44 AM
To: Susan Lee
Subject: Fwd: CMS CUP Application 2014 : NOT FINALIZED. email 1 of 2

Sent from my iPhone

Begin forwarded message:

From: Dody <dody@dodykettler.com>
Date: March 4, 2014 at 7:48:02 PM AKST
To: superglide@mtaonline.net
Cc: Stephanie Figon <sfigon@mtaonline.net>, Zennon McNeill <zennmcn@gmail.com>, Stephanie Nowers <snowers@mtaonline.net>, Ralph Kettler <ralph@dodykettler.com>, Matthew Beck <mattbeck@mtaonline.net>, Adam Hall <adam_hall09@yahoo.com>, William Quantick <abxwilliam@aol.com>
Subject: Re: CMS CUP Application 2014 : NOT FINALIZED. email 1 of 2

Hey Rich. In the application for permit, there is a question asking whether the conditional use permit would be harmful…they answered YES. I believe this was a mistake, but this is something that needs to be stated to the borough folks.

Dody Kettler, REALTOR®

CRS, GRI, ABR, e-Pro

Jack White Real Estate MatSu

865 N Seward Meridian St. 200

Wasilla, AK 99654

907-232-7331

wasillarealestateandbeyond.com

dody@dodykettler.com

On Mar 4, 2014, at 4:07 PM, Richard Harbuck <superglide@mtaonline.net> wrote:

OK folks, some light reading for you..... here is the Application as submitted, not finalized / with no clarifications yet submitted by CMS.

<CMS Palmer 2014 CUP Final Application Document.pdf>

Susan Lee

From: Matthew [mattbeck@mtaonline.net]
Sent: Wednesday, March 05, 2014 6:44 AM
To: Susan Lee
Subject: Fwd: CMS CUP Application 2014 : NOT FINALIZED. email 1 of 2

Sent from my iPhone

Begin forwarded message:

> **From:** Dody <dody@dodykettler.com>
> **Date:** March 4, 2014 at 7:48:02 PM AKST
> **To:** superglide@mtaonline.net
> **Cc:** Stephanie Figon <sfigon@mtaonline.net>, Zennon McNeill <zennmcn@gmail.com>, Stephanie Nowers <snowers@mtaonline.net>, Ralph Kettler <ralph@dodykettler.com>, Matthew Beck <mattbeck@mtaonline.net>, Adam Hall <adam_hall09@yahoo.com>, William Quantick <abxwilliam@aol.com>
> **Subject: Re: CMS CUP Application 2014 : NOT FINALIZED. email 1 of 2**
>
> Hey Rich. In the application for permit, there is a question asking whether the conditional use permit would be harmful…they answered YES. I believe this was a mistake, but this is something that needs to be stated to the borough folks.
>
> Dody Kettler, REALTOR®
>
> CRS, GRI, ABR, e-Pro
>
> Jack White Real Estate MatSu
>
> 865 N Seward Meridian St. 200
>
> Wasilla, AK 99654
>
> 907-232-7331
>
> wasillarealestateandbeyond.com
>
> dody@dodykettler.com
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> On Mar 4, 2014, at 4:07 PM, Richard Harbuck <superglide@mtaonline.net> wrote:
>
> OK folks, some light reading for you..... here is the Application as submitted, not finalized / with no clarifications yet submitted by CMS.

<CMS Palmer 2014 CUP Final Application Document.pdf>

Susan Lee

From: Susan Lee
Sent: Wednesday, March 05, 2014 10:40 AM
To: 'Matthew Beck'
Cc: Alex Strawn; Eileen Probasco
Subject: RE: Website feedback Code Question

We are unaware of any exemption given to CMS for dumping at the MSB landfill.

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

From: Matthew Beck [mailto:matthewb@mtaonline.net]
Sent: Tuesday, March 04, 2014 10:55 PM
To: Susan Lee
Subject: Fwd: Website feedback Code Question

Sent from my iPhone

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> **Date:** March 4, 2014 at 10:58:03 AM AKST
> **To:** AlcantarPF@muni.org
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>
> 26.80.010 Locations for disposal.
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> All solid waste generated within the municipality shall, unless exempted in writing by the director, be disposed of by delivery to state-permitted solid waste processing and disposal facilities located in the municipality.
>
> Ralph Kettler

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Susan Lee

From: Aldrich, Lori (DEC) [lori.aldrich@alaska.gov]
Sent: Friday, March 07, 2014 3:51 PM
To: Shane Durand; Stuart Jacques
Subject: CMS MSB CUP Application

Shane and Stuart,

I was sent a copy of the Matanuska-Susitna Borough (MSB) Conditional Use Permit (CUP) Application. It included additional information that had not been previously submitted to ADEC. I did a brief review of the application. Although, this is not an official review of the application, I do have some comments regarding some of the language and information in the CUP application as it relates to the Inert Waste Monofill Permit Application submitted to ADEC.

CUP Application

Page 16 – These wells and monitoring plan are not required by ADEC but will allow CMS to monitor the groundwater for any concerns long term.

See comment below on Groundwater Monitoring Plan

Page 17 - Alaska Department of Environmental Conservation (ADEC) reviewed the CMS Monofill Permit application for this site and has approved the permit conditioned upon receipt of the MSB CUP.

ADEC has NOT APPROVED the permit – the permit application was deemed complete and a public notice was issued. ADEC also noted, in discussions with CMS, that if any significant changes were made to the permit application information in regard to the requirements of the Conditional Use Permit (CUP) issued by MSB a new complete ADEC monofill application would need to be submitted, including a new public comment period.

Page 28 - More than 70% of the existing monofill footprint is already in excess of 10' above the seasonal ground water table. Those areas with insufficient separation from ground water will be filled with onsite earthen materials to obtain a minimum separation of 10'.

The original permit application indicated that the low point of the monofill was more than 10 feet above the groundwater table. In discussions, CMS indicated that additional groundwater studies would be performed in May 2013 to determine the seasonal high groundwater levels, and the reports submitted to ADEC. The groundwater contours were developed from data collected on July 13, 2013, which would identify seasonal low groundwater levels. In addition, no discussion of fill to attain the proper groundwater separation was discussed. If areas are filled, you will need to resurvey the site and submit a new drawing of the present conditions.

Page 31 - The ADEC permit requires the owner to provide bonding or other financial assurance to cover the cost of monofill closure. The ADEC has a predetermined method for calculating the amount required for the bond or other financial assurance to make sure it is enough to cover all closure costs. CMS has met this obligation as part of the ADEC permit.

CMS has not presented adequate financial assurance to meet this requirement, and we would not expect CMS to submit this until ADEC had determined that a permit would be issued or denied. This will be based on a final review of the application and any other information gathered regarding the site conditions and facility plans.

Page 33 - ADEC has approved the proposed monofill design pending receipt of the MSB CUP.

ADEC has determined that the monofill design package is complete, but has not issued an approval for the design.

Maddox & Associates Report
Pg B-29 – states "the planned elevation of the bottom of the inert refuse in the monofill is a minimum of 10-feet below the normal seasonal high [water table].

Above, the CUP text indicates that this is not true, based on the ADEC monofill permit application, which does not include fill.

Groundwater Monitoring Plan

If CMS will be performing Groundwater monitoring at the site, a Groundwater Monitoring Plan that meets the conditions of 18 AAC 60.820-860 must be submitted to and approved by ADEC. This would be considered a significant change to the landfill operations.

RACM Cell

As I believe you were informed, the original Public Notice by ADEC did not include mention of the RACM cell. The only possible correction would be to issue an additional public notice if you will include a RACM cell at the monofill. I thought we had communicated to you and suggested that, if ADEC did permit the monofill, you might wait to begin a RACM cell at the site, and we could make the necessary permit modifications (including a public notice) at that time. In addition, we are somewhat concerned regarding comments on the wind issues at the site and our ability to permit RACM disposal.

If you have any questions or wish to discuss the comments, you can contact me after March 17. I will be out of the office in training all next week.

Thanks,
Lori

Lori Aldrich
REGIONAL PROGRAM MANAGER
Solid Waste Program
Department of Environmental Conservation
555 Cordova Street
Anchorage, AK 99501
(907) 269-7622

Susan Lee

From: Richard Harbuck [superglide@mtaonline.net]
Sent: Wednesday, March 26, 2014 12:43 PM
To: Susan Lee
Subject: Progress on CMS application

HI Susan, Has CMS been responding to your requests, and if so are we anywhere near a final version of the application yet? I'm thinking the answers are #1 yes and #2 no....but I told inquiring persons that I would ask. Thank You, Rich H.

Susan Lee

From: Susan Lee
Sent: Wednesday, March 26, 2014 12:50 PM
To: 'superglide@mtaonline.net'
Subject: RE: Progress on CMS application

We have not heard back from CMS.

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

From: Richard Harbuck [mailto:superglide@mtaonline.net]
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To: Susan Lee
Subject: Progress on CMS application

Hi Susan, Has CMS been responding to your requests, and if so are we anywhere near a final version of the application yet? I'm thinking the answers are #1 yes and #2 no....but I told inquiring persons that I would ask. Thank You, Rich H.

Susan Lee

From: Shane Durand [Shane@cei-alaska.com]
Sent: Thursday, March 27, 2014 3:27 PM
To: Susan Lee
Cc: Alex Strawn
Subject: CUP Update

Susan

We are working on a response to your February 13th, 2014 letter and will have to you as soon as complete.

Shane Durand
Central Recycling Services
2400 Railroad Ave.
Anchorage, AK 99501
(907)748-7400
www.centralrecyclingservices.com
www.crssurplusmaterials.com

Susan Lee

From: Susan Lee
Sent: Tuesday, April 01, 2014 1:59 PM
To: 'david.w.schade@alaska.gov'; 'melissa.hill@alaska.gov'
Subject: Central Monofill Services

Hi David & Melissa:

I am processing the conditional use permit for Central Monofill Services proposed monofill outside of Palmer. This morning I received a call from a member of the public, Zennon McNeill, regarding their project. I am looking for some clarification and/or additional information regarding the information that he relayed to me. He stated that DNR has given CMS a deadline of May 31, 2014 to stop the flow of water from the middle lake. He stated that DNR told CMS that they could apply for a permit (he did not say what type of permit), but that DNR would deny the permit. He also stated that DNR is conducting a hydrological study of the area and was monitoring the wells and lake levels in the area. He stated that the water table will be raised when the water flow is stopped.

Do you need a copy of the application material we have received from CMS for this project? Their application material contains a groundwater study that they had conducted for this project. We are waiting for additional information from them in order to process the application. I would appreciate it if you would let me know what their status is with DNR.

Thank you for your assistance.

Susan

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

Susan Lee

From: Schade, David W (DNR) [david.w.schade@alaska.gov]
Sent: Tuesday, April 01, 2014 2:30 PM
To: Susan Lee; Hill, Melissa E (DNR)
Cc: Cobb, Charles F (DNR); Aldrich, Lori (DEC); Walton, Michael L (DNR)
Subject: RE: Central Monofill Services
Attachments: C.P.P. Dam Letter 9-26-13.pdf

Susan,
Thanks for the contact. I too had contact with Zennon today.

Here is a copy of the letter sent to Central Recycling Services on Sept 26, 2013. It gave the company until May 30 to have an engineered plan in to our office, and until August to stop the diversion.
There is an option for applying to DNR for a permit to divert the water, but since there are continuing complaints and legislative inquiries, at this point without significant additional information being presented, I doubt that I would issue a permit. The Alaska Hydrologic Survey (Melissa Hill and her staff) have been conducting some field investigation in the area. We would be happy to brief you on that process.

I would appreciate getting a copy of the entire "new" application package. We look forward to a review of those materials, including the "groundwater study" that they "had conducted".
We would also be interested in your request for additional information as well.

Please feel free to give me a call or e-mail at any time. I am the primary contact for this project.

Sincerely,
Dave

David W. Schade, MPA
Natural Resources Manager III
Chief, Water Resources Section
Division of Mining Land and Water
Alaska Department of Natural Resources
Phone 907-269-8645
Fax 907-269-8904
e-mail: david.w.schade@alaska.gov

From: Susan Lee [mailto:Susan.Lee@matsugov.us]
Sent: Tuesday, April 01, 2014 1:59 PM
To: Schade, David W (DNR); Hill, Melissa E (DNR)
Subject: Central Monofill Services

Hi David & Melissa:

I am processing the conditional use permit for Central Monofill Services proposed monofill outside of Palmer. This morning I received a call from a member of the public, Zennon McNeill, regarding their project. I am looking for some clarification and/or additional information regarding the information that he relayed to me. He stated that DNR has given CMS a deadline of May 31, 2014 to stop the flow of water from the middle lake. He stated that DNR told CMS that they could apply for a permit (he did not say what type of permit), but that DNR would deny the permit. He also stated that DNR is conducting a hydrological study of the area and was monitoring the wells and lake levels in the area. He stated that the water table will be raised when the water flow is stopped.

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Thank you for your assistance.

Susan

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

Susan Lee

From: Susan Lee
Sent: Tuesday, April 01, 2014 2:46 PM
To: 'Schade, David W (DNR)'
Subject: RE: Central Monofill Services

David:

Thanks for the update. We would like to get a briefing on the Hydrologic Study that Melissa Hill is conducting.

I am mailing you a CD with all of the CMS application material. The file is too big to e-mail. In addition, to the CD, I will be mailing the letter we sent to CMS on February 13, 2014 requesting additional information. There is also a copy of a the report that Munter Consulting conducted for the MSB. I will get that in today's mail.

Susan

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

From: Schade, David W (DNR) [mailto:david.w.schade@alaska.gov]
Sent: Tuesday, April 01, 2014 2:30 PM
To: Susan Lee; Hill, Melissa E (DNR)
Cc: Cobb, Charles F (DNR); Aldrich, Lori (DEC); Walton, Michael L (DNR)
Subject: RE: Central Monofill Services

Susan,
Thanks for the contact. I too had contact with Zennon today.

Here is a copy of the letter sent to Central Recycling Services on Sept 26, 2013. It gave the company until May 30 to have an engineered plan in to our office, and until August to stop the diversion.
There is an option for applying to DNR for a permit to divert the water, but since there are continuing complaints and legislative inquiries, at this point without significant additional information being presented, I doubt that I would issue a permit. The Alaska Hydrologic Survey (Melissa Hill and her staff) have been conducting some field investigation in the area. We would be happy to brief you on that process.

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We would also be interested in your request for additional information as well.

Please feel free to give me a call or e-mail at any time. I am the primary contact for this project.

Sincerely,
Dave

David W. Schade, MPA

Natural Resources Manager III
Chief, Water Resources Section
Division of Mining Land and Water
Alaska Department of Natural Resources
Phone 907-269-8645
Fax 907-269-8904
e-mail: david.w.schade@alaska.gov

From: Susan Lee [mailto:Susan.Lee@matsugov.us]
Sent: Tuesday, April 01, 2014 1:59 PM
To: Schade, David W (DNR); Hill, Melissa E (DNR)
Subject: Central Monofill Services

Hi David & Melissa:

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Thank you for your assistance.

Susan

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

THE STATE of ALASKA
GOVERNOR SEAN PARNELL

Department of Natural Resources
Division of Mining, Land & Water
Water Resources Section
550 West 7th Avenue, Suite 1020
Anchorage, Alaska 99501-3579
Main: 907.269.8600
TDD: 907.269.8411
Fax: 907.269.8947

September 26, 2013

Central Recycling Services
311 N. Sitka Street
Anchorage, AK 99501-1841

Attention: Mr. Stuart M. Jacques

RE: C. P. P. Dam (AK00401)

Dear Mr. Jacques:

As you are aware, the ADNR MLW/Water Resources section has been involved with ongoing issues related to the C.P.P Dam (Dam). This letter is a follow up to the meetings and discussions that our staff have had with Central Recycling Services staff concerning the Dam and diversion of water. In 2012, the Water Resources Section of the Alaska Department of Natural Resources (ADNR) approved an application from Granite Construction Company (Granite) for a *Certificate of Approval to Modify a Dam* for an artificial barrier to the flow of water between two gravel pits in Palmer, Alaska. Previously, this structure was determined to be under the jurisdiction of the Alaska dam safety regulations contained in Article 3 of 11 AAC 93. The barrier was named the C.P.P. Dam and assigned the National Inventory of Dams identification number AK00401. As indicated in the application, ADNR understood the purpose of the modification was to reduce the height of the "dam embankment" so that the Dam would no longer be within the definition of a state jurisdictional dam described in Alaska Statute (AS) 46.17.900 (3), while at the same time, maintaining the normal water level of the "Middle Pond." Based on historical observations, the normal water level of the Middle Pond was observed to be several feet higher than the adjacent pond to the west, referred to herein as the "West Pond."

The modification to said Dam was completed by Granite Construction Company in late 2012, and ADNR thereafter determined the modified structure no longer was a "jurisdictional" dam. In the spring of 2013, after the Middle Pond level recovered from the dam modification activities, a significant amount of flow was observed through the pore space in the rip rap lined spillway, and the Middle Pond water level appeared to be in the process of stabilizing at a level below the normal water level indicated in the approved design. ADNR, staff has estimated this flow rate through the pore space in the rip rap lined spillway on the order of 1000 gallons per minute (gpm), which is equivalent to 1.44 million gallons per day. As a result of this development, in July of 2013, your company installed a concrete barrier to the flow within the rip rap. Although this work appears to have reduced this flow to some degree, a significant amount of flow through the rip rap in the spillway downstream of the barrier continues to be easily observed.

An application for water right or application for temporary use of water was not submitted to ADNR during the application process for the *Certificate of Approval to Modify a Dam*. The Alaska Water Use Act (AS

46.15) requires a water right application or temporary water use application for the diversion of more than 500 gallons per day for more than ten days per calendar year. This equates to approximately 0.35 gpm. Installation of the barrier makes calculating an estimated flow more complex, but by observation, ADNR believes that the current diversion flow rate substantially exceeds 0.35 gpm. Consequently, ADNR requests that you improve the performance of the barrier to flow to reach a rate below the rate that requires an application, or apply for authorization to operate a diversion structure in accordance with Alaska Administrative Code Section 11 AAC 93.035. Because it is late in the construction season, ADNR requests that you apply for a permit to divert water or provide DNR with an engineered plan to stop the water diversion by May 30, 2014. This plan must include a timeline to accomplish the reduction in flow across the "dam" no later than August 31, 2014.

Further, please note that AS 46.15, and the 11 AAC 93.035 application requirements thereunder, also apply to any water use or diversion that may adversely affect the public interest. In the past and again in 2013, ADNR has received numerous complaints about high water levels in the nearby Canoe and Irene Lakes. Starting in 2006, ADNR began collecting water level data at those and other lakes in the area, including, with permission, the Middle and West Ponds at the gravel pits. ADNR now requests your permission to continue this monitoring until a technically sound understanding of the regional hydrogeology is developed. If you are willing to grant access, ADNR would like to install a temporary bench mark at a mutually convenient location and conduct monthly water level monitoring on your facility, as described in the attached permission request. Please sign and return this form if you are willing to grant this permission.

I want to thank you for your continued cooperation with ADNR as we seek to resolve this situation. If you would like to discuss this matter I can be reached at (907) 269-8645 or by cell (907) 230-6061. Further, please contact Melissa Hill, PhD, CPG at (907) 269-8646 in order to discuss establishing a benchmark and monitoring activities.

Sincerely,

M. Wall NRM II

for David W. Schade, MPA

Section Chief

Temporary Access and Monitoring Request

Introduction

The Department of Natural Resources is developing regional scale groundwater monitoring programs in the Mat-Su Valley, Anchorage Bowl, and Kenai Peninsula. The purpose for these programs is to gain a better understanding of available groundwater resources in these areas.

Why am I being contacted?

Success of the monitoring programs is highly dependent on the cooperation of businesses and homeowners granting staff from the Department of Natural Resources, Alaska Hydrologic Survey Unit temporary access to their property and well(s).

What do these programs involve?

The Alaska Hydrologic Survey is comprised of trained professional hydrologists. These professionals will measure lake level changes and well water depths on your property on a monthly basis. Alaska Hydrologic Survey staff will notify the property owner 24 to 48 hours before each site visit, which will take approximately 1 to 2 hours. The property owner is not required to be present for the site visit, which will occur on weekdays, during normal business hours 8:00 am to 5:00 pm. All data collected will be provided to the property owner free of charge.

What do I need to do to participate?

Participation in the program is voluntary and may be terminated at any time at the sole discretion of the participant.

Should you choose to participate in these important programs, the Department of Natural Resources, Alaska Hydrologic Survey Unit requests that you complete, sign and date the attached temporary access and monitoring agreement and return it, along with a copy of your well log[1] (should you have one available) to:

Alaska Hydrologic Survey
Attn: Dr. Hill
550 W. 7th Ave, Suite 1020
Anchorage, Alaska 99501

The Department of Natural Resources, Alaska Hydrologic Survey Unit thanks you for your cooperation and greatly appreciates your participation in these important projects.

[1]Well logs are requested as they will provide useful information for distinguishing water levels in different aquifer(s).

Temporary Access and Monitoring Agreement

This temporary access and monitoring agreement grants Department of Natural Resources staff access to your property to install a benchmark to use as a reference point to measure lake level changes, survey top of casing and to access the wells on your property to measure depths to water.

_____

_____.

This agreement becomes effective as of _____ (month) _____ (day) _____(year). Participation in the program is voluntary and may be terminated at any time at the sole discretion of the participant.

Printed name _____

Signature _____

Date _____

Alaska Hydrologic Survey staff can notify the property owner 24 to 48 hours before each site visit via the contact information provided below:

mobile phone: _____
home phone: _____
email address: _____

Susan Lee

From: Hilary Schwaderer
Sent: Wednesday, April 02, 2014 11:54 AM
To: Susan Lee
Subject: FW: Public Records Request Form
Attachments: records request 2014 001.jpg

Hilary Schwaderer
Administrative Secretary I
Matanuska-Susitna Borough
350 E. Dahlia Ave.
Palmer, AK 99645
(907) 861-8505

From: Zennon McNeill [mailto:zennmcn@gmail.com]
Sent: Wednesday, April 02, 2014 11:52 AM
To: Hilary Schwaderer
Subject: Re: Public Records Request Form

Here is the records request form returned. would you please forward it to susan lee in the planning department. Thankyou, Zennon McNeill Gateway Community Council President

On Wed, Apr 2, 2014 at 11:00 AM, Hilary Schwaderer <Hilary.Schwaderer@matsugov.us> wrote:

Here is the form you requested. Have a great day.

Hilary Schwaderer

Administrative Secretary I

Matanuska-Susitna Borough

350 E. Dahlia Ave.

Palmer, AK 99645

(907) 861-8505

MATANUSKA-SUSITNA BOROUGH

PUBLIC RECORDS REQUEST FORM

Name: JENNON McNEILL Date: 4/2/14

Address: 10700 E. GRANDVIEW RD.

City/State/Zip Code: PALMER, AK, 99645

Telephone No.: (907) 4409048 Email: JENNMCN@GMAIL.COM.

RECORD(S) REQUESTED

If this matter is currently under litigation, record(s) must be requested through the Law Department

Date of Record(s): 2014

Title of Record(s): CMS CUP APPLICATION & CORRESPONDENCE

MSB Department of Record(s): PLANNING (SUSAN LEE)

Description of Record(s) – Please provide any additional information that will assist us in locating the record(s) for you as quickly as possible: CMS 2014 CUP APPLICATION & CORRESPONDENCE (LETTERS EMAILS)

The Matanuska-Susitna Borough grants every person the right to inspect any public record unless exempt from disclosure per MSB 1.30.020 or State or Federal law. The record owner of the record(s) will respond to this request within ten (10) business days. If the record(s) are exempt from disclosure, the manager and requestor will be contacted immediately in writing. If the record(s) cannot be provided within 10 business days of receipt of this request, the manager and requestor will be promptly advised. If the party still desires the record(s), a reasonable and diligent search will be made for them. See the Public Records Request Policy for full details.

FOR OFFICE USE ONLY

Date Received: _____ Staff Name: _____ Director Approval: _____

1. When filling the request, complete the applicable line below:
   A. _____ copies provided at $_____ per page/tape/CD* for a total cost of $_____ on (date): _____
   B. Record or information is exempt from disclosure and public access is denied. Cite code or statutory reason for denial: _____
   C. Record or information cannot be located and the requestor was so notified on (date): _____

FINANCE OFFICE: Please credit to account number 100-000-000-341-900

2. Send a copy of this completed request form, with copies of the receipt and record(s) provided, when appropriate, to the Manager's office. If the request is denied, a memo explaining the reason for the denial must be sent to the Manager's office. See the Public Records Request Policy for clarification.
3. If you have questions regarding the appropriateness of releasing the records requested, send a copy of the request, along with the records requested, to the Law Department for review. Do not release the records until they have approved the distribution.

Okay to distribute. _____
Nicholas Spiropoulos, Borough Attorney

Record Fees: see Borough Manager Memo of [illegible]

Susan Lee

From: Richard Harbuck [superglide@mtaonline.net]
Sent: Tuesday, May 06, 2014 3:00 PM
To: Susan Lee
Subject: CMS

Hello Susan, any word or communication from CMS.

Susan Lee

From: Shane Durand [Shane@cei-alaska.com]
Sent: Tuesday, May 20, 2014 1:06 PM
To: Susan Lee
Cc: Alex Strawn
Subject: Meeting tomorrow

I wanted to touch base and make sure we were still on for 10am tomorrow?

Thanks

Shane Durand
Central Recycling Services
2400 Railroad Ave.
Anchorage, AK 99501
(907)748-7400
www.centralrecyclingservices.com
www.crssurplusmaterials.com

Susan Lee

From: Shane Durand [Shane@cei-alaska.com]
Sent: Tuesday, May 20, 2014 1:13 PM
To: Susan Lee
Cc: Alex Strawn
Subject: RE: Meeting tomorrow

Great thanks

From: Susan Lee [mailto:Susan.Lee@matsugov.us]
Sent: Tuesday, May 20, 2014 1:08 PM
To: Shane Durand
Cc: Alex Strawn
Subject: RE: Meeting tomorrow

Yes we are still on for 10 am tomorrow.

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

From: Shane Durand [mailto:Shane@cei-alaska.com]
Sent: Tuesday, May 20, 2014 1:06 PM
To: Susan Lee
Cc: Alex Strawn
Subject: Meeting tomorrow

I wanted to touch base and make sure we were still on for 10am tomorrow?

Thanks

Shane Durand
Central Recycling Services
2400 Railroad Ave.
Anchorage, AK 99501
(907)748-7400
www.centralrecyclingservices.com
www.crssurplusmaterials.com

Susan Lee

From: Durand, Shane [shane@cei-alaska.com]
Sent: Wednesday, June 25, 2014 10:26 AM
To: Susan Lee
Cc: Alex Strawn
Subject: CMS CUP

I hope all is well.

I was wondering if I could get a status update on our package? Do you have any questions? Would you like to have any further meetings to review the materials we submitted?

Thanks

Shane Durand

Susan Lee

From: Susan Lee
Sent: Wednesday, June 25, 2014 12:20 PM
To: 'Durand, Shane'
Cc: Alex Strawn
Subject: RE: CMS CUP

Shane:

The application material is still under review and we will have a response as soon as we can. Thank you for your patience.

Susan

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

From: Durand, Shane [mailto:shane@cei-alaska.com]
Sent: Wednesday, June 25, 2014 10:26 AM
To: Susan Lee
Cc: Alex Strawn
Subject: CMS CUP

I hope all is well.

I was wondering if I could get a status update on our package? Do you have any questions? Would you like to have any further meetings to review the materials we submitted?

Thanks

Shane Durand

Susan Lee

From: Durand, Shane [shane@cei-alaska.com]
Sent: Tuesday, July 08, 2014 9:07 AM
To: Alex Strawn
Cc: Susan Lee
Subject: Update

Alex/Susan

What is the current status of the CMS application?

I am concerned reading articles in the paper that everything is being pushed aside so staff can deal with the B&E application. I assume they will be held to the same standards we have been. If so I would expect it will take them at least several weeks to compile all of the data needed for a 17.60 CUP for a monofill. Which would provide staff enough time to complete review of our application?

Have there been any enforcement actions or citations issued to B&E or others for the waste pile shown in the newspaper photos?

Do you expect the B&E issues to negativly impact our application in any way?

Shane Durand
Central Recycling Services

Susan Lee

From: Richard Harbuck [superglide@mtaonline.net]
Sent: Wednesday, July 09, 2014 12:18 PM
To: Susan Lee
Subject: CMS application.

Hello Susan, Have you started a review of the latest CMS application yet or is it still on the to do list? Thanks, Rich H.

Susan Lee

From: Susan Lee
Sent: Wednesday, July 09, 2014 1:41 PM
To: 'superglide@mtaonline.net'
Subject: RE: CMS application.

Starting very soon.

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

From: Richard Harbuck [mailto:superglide@mtaonline.net]
Sent: Wednesday, July 09, 2014 12:18 PM
To: Susan Lee
Subject: CMS application.

Hello Susan, Have you started a review of the latest CMS application yet or is it still on the to do list? Thanks, Rich H.

Susan Lee

From: Alex Strawn
Sent: Wednesday, July 16, 2014 2:22 PM
To: Durand, Shane
Cc: Susan Lee
Subject: RE: Update

Hi Shane,

Susan will be spending quality time with your application very soon. We have been handling B&E's case within legal timeframes and their junkyard/refuse area CUP will be reviewed against the same standards as yours. We have issued an enforcement order to B&E for their junk pile and their application is being processed. B&E's operation should not impact your application.

Alex Strawn
Development Services Manager
Matanuska-Susitna Borough
350 E. Dahlia Palmer, AK 99645
(907) 861-7854

From: Durand, Shane [mailto:shane@cei-alaska.com]
Sent: Tuesday, July 08, 2014 9:07 AM
To: Alex Strawn
Cc: Susan Lee
Subject: Update

Alex/Susan

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Do you expect the B&E issues to negativly impact our application in any way?

Shane Durand
Central Recycling Services

Susan Lee

From: Durand, Shane [shane@cel-alaska.com]
Sent: Tuesday, July 22, 2014 2:39 PM
To: Alex Strawn; Susan Lee
Subject: Update

Susan

I was wondering how the review of our supplemental documents was going. Do you have any questions or need any further clarifications? Any kind of a time line?

Shane Durand

Central Recycling Services
2400 Railroad Ave.
Anchorage, AK 99501
(907)748-7400
www.centralrecyclingservices.com

Susan Lee

From: Durand, Shane [shane@cei-alaska.com]
Sent: Wednesday, July 30, 2014 4:22 PM
To: Susan Lee
Cc: Alex Strawn
Subject: questions

Susan

How is your review going?
Can I answer any questions?

Shane Durand
Central Environmental Inc.
311 N. Sitka St.
Anchorage, AK 99501
(907)561-0125
(907)561-0178 fax
www.cei-alaska.com
www.cicontractorsinc.com
www.emi-alaska.com
www.centerpointsvcsinc.com

Central Recycling Services
2400 Railroad Ave.
Anchorage, AK 99501
(907)748-7400
www.centralrecyclingservices.com
www.crssurplusmaterials.com
www.cicequipment.com

Susan Lee

From: Susan Lee
Sent: Thursday, July 31, 2014 12:30 PM
To: 'Durand, Shane'
Cc: Alex Strawn
Subject: RE: questions

I will compile questions and hopefully get them to you next week. No promises.

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

From: Durand, Shane [mailto:shane@cei-alaska.com]
Sent: Wednesday, July 30, 2014 4:22 PM
To: Susan Lee
Cc: Alex Strawn
Subject: questions

Susan

How is your review going?
Can I answer any questions?

Shane Durand
Central Environmental Inc.
311 N. Sitka St.
Anchorage, AK 99501
(907)561-0125
(907)561-0178 fax
www.cei-alaska.com
www.cicontractorsinc.com
www.emi-alaska.com
www.centerpointsvcsinc.com

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Anchorage, AK 99501
(907)748-7400
www.centralrecyclingservices.com
www.crssurplusmaterials.com
www.cicequipment.com

Susan Lee

From: Durand, Shane [shane@cei-alaska.com]
Sent: Monday, August 04, 2014 8:36 AM
To: Susan Lee
Cc: Alex Strawn
Subject: RE: questions

Would you like to schedule a meeting to go over any of the materials or answer any questions?

Can we do anything to assist the process.

Thanks
Shane

From: Susan Lee [mailto:Susan.Lee@matsugov.us]
Sent: Thursday, July 31, 2014 12:30 PM
To: Durand, Shane
Cc: Alex Strawn
Subject: RE: questions

I will compile questions and hopefully get them to you next week. No promises.

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

From: Durand, Shane [mailto:shane@cei-alaska.com]
Sent: Wednesday, July 30, 2014 4:22 PM
To: Susan Lee
Cc: Alex Strawn
Subject: questions

Susan

How is your review going?
Can I answer any questions?

Shane Durand
Central Environmental Inc.
311 N. Sitka St.
Anchorage, AK 99501
(907)561-0125
(907)561-0178 fax
www.cei-alaska.com
www.cicontractorsinc.com
www.emi-alaska.com
www.centerpointsvcsinc.com

Central Recycling Services
2400 Railroad Ave.
Anchorage, AK 99501
(907)748-7400
www.centralrecyclingservices.com
www.crssurplusmaterials.com
www.cicequipment.com

Susan Lee

From: Richard Harbuck [supergiide@mtaonline.net]
Sent: Wednesday, August 06, 2014 6:31 PM
To: Susan Lee
Subject: update for CMS 2014 application.

Hello Susan, how is the review going on the current application for the CMS CUP? Thanks, Rich H.

Susan Lee

From: Susan Lee
Sent: Thursday, August 07, 2014 7:05 AM
To: 'superglide@mtaonline.net'
Subject: RE: update for CMS 2014 application.

I am reviewing the additional material that CMS submitted.

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

From: Richard Harbuck [mailto:superglide@mtaonline.net]
Sent: Wednesday, August 06, 2014 6:31 PM
To: Susan Lee
Subject: update for CMS 2014 application.

Hello Susan, how is the review going on the current application for the CMS CUP? Thanks, Rich H.

Susan Lee

From: Durand, Shane [shane@cei-alaska.com]
Sent: Thursday, August 07, 2014 12:07 PM
To: Susan Lee
Subject: RE: questions

In the May 14 package:
Attachment 6 is a completely new drawing Sheet 8 Drainage Plan that could be added to the original package Attachment A section of drawings.
Attachment 7 is a replacement drawing Sheet 6, which replaces page A-8 of Attachment A the old Sheet 6
Attachment 17 replaces Page 16
Completely remove Attachment N from the original package.
Attachment 5 is a replacement drawing Sheet A, which replaces Page A-2 of Attachment A.

I hope this helps.

Shane

From: Susan Lee [mailto:Susan.Lee@matsugov.us]
Sent: Thursday, August 07, 2014 11:50 AM
To: Durand, Shane
Subject: RE: questions

Shane:

Do you have a list of all of the replacement sheets that are referenced in the revised info? I want to make sure I don't miss any of them.

Susan

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

From: Durand, Shane [mailto:shane@cei-alaska.com]
Sent: Monday, August 04, 2014 8:36 AM
To: Susan Lee
Cc: Alex Strawn
Subject: RE: questions

Would you like to schedule a meeting to go over any of the materials or answer any questions?

Can we do anything to assist the process.

Thanks

Shane

From: Susan Lee [mailto:Susan.Lee@matsugov.us]
Sent: Thursday, July 31, 2014 12:30 PM
To: Durand, Shane
Cc: Alex Strawn
Subject: RE: questions

I will compile questions and hopefully get them to you next week. No promises.

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

From: Durand, Shane [mailto:shane@cei-alaska.com]
Sent: Wednesday, July 30, 2014 4:22 PM
To: Susan Lee
Cc: Alex Strawn
Subject: questions

Susan

How is your review going?
Can I answer any questions?

Shane Durand
Central Environmental Inc.
311 N. Sitka St.
Anchorage, AK 99501
(907)561-0125
(907)561-0178 fax
www.cei-alaska.com
www.cicontractorsinc.com
www.emi-alaska.com
www.centerpointsvcsinc.com

Central Recycling Services
2400 Railroad Ave.
Anchorage, AK 99501
(907)748-7400
www.centralrecyclingservices.com
www.crssurplusmaterials.com
www.cicequipment.com

Susan Lee

From: Durand, Shane [shane@cei-alaska.com]
Sent: Friday, August 08, 2014 8:24 AM
To: Susan Lee
Subject: RE: questions

Any other questions or concerns?

Do you think there is any way we will make the Sept meeting?

Shane

From: Susan Lee [mailto:Susan.Lee@matsugov.us]
Sent: Thursday, August 07, 2014 11:50 AM
To: Durand, Shane
Subject: RE: questions

Shane:

Do you have a list of all of the replacement sheets that are referenced in the revised info? I want to make sure I don't miss any of them.

Susan

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

From: Durand, Shane [mailto:shane@cei-alaska.com]
Sent: Monday, August 04, 2014 8:36 AM
To: Susan Lee
Cc: Alex Strawn
Subject: RE: questions

Would you like to schedule a meeting to go over any of the materials or answer any questions?

Can we do anything to assist the process.

Thanks
Shane

From: Susan Lee [mailto:Susan.Lee@matsugov.us]
Sent: Thursday, July 31, 2014 12:30 PM
To: Durand, Shane
Cc: Alex Strawn
Subject: RE: questions

I will compile questions and hopefully get them to you next week. No promises.

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

From: Durand, Shane [mailto:shane@cei-alaska.com]
Sent: Wednesday, July 30, 2014 4:22 PM
To: Susan Lee
Cc: Alex Strawn
Subject: questions

Susan

How is your review going?
Can I answer any questions?

Shane Durand
Central Environmental Inc.
311 N. Sitka St.
Anchorage, AK 99501
(907)561-0125
(907)561-0178 fax
www.cei-alaska.com
www.cicontractorsinc.com
www.emi-alaska.com
www.centerpointsvcsinc.com

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Anchorage, AK 99501
(907)748-7400
www.centralrecyclingservices.com
www.crssurplusmaterials.com
www.cicequipment.com

Susan Lee

From: Durand, Shane [shane@cei-alaska.com]
Sent: Tuesday, August 12, 2014 9:08 AM
To: Susan Lee
Subject: CMS Status

How are things going? Any other questions or concerns? What kind of schedule are we looking like to move forward?

Thanks

Shane

Susan Lee

From: Durand, Shane [shane@cei-alaska.com]
Sent: Tuesday, August 12, 2014 10:23 AM
To: Alex Strawn; Susan Lee
Cc: Larry Helgeson
Subject: FW: DEC No Exposure Certification
Attachments: DEC No Exposure Certification- Palmer Monofill.pdf

Alex

I believe this is what you were looking for on the non-exposure certificate .

Looking at the title policy it says "Reservation of section line easement 33 feet in width along each side of the section line as provided by 43 U.S.C.932

Shane

From: Kauai Alpha
Sent: Monday, June 03, 2013 3:01 PM
To: Greuey, John J (DEC)
Cc: brent.anderson@alaksa.gov; Shane Durand
Subject: DEC No Exposure Certification

Hello Jake,

It was nice putting a face to a name earlier this afternoon! I have attached the DEC NOE, will you accept the scanned version- if not, I can drop the original later today.

Thank you for your help,

Kauai Alpha, *LEED AP BD+C*
Central Recycling Services
2400 Railroad Avenue
Anchorage, Alaska 99501
907-748-7400

www.centralrecyclingservices.com

For Agency Use

Permit Tracking #_____

No Exposure Certification for Exclusion from APDES Storm Water Permitting

Submission of this No Exposure Certification constitutes notice that the entity identified in Section I does not require permit authorization for its storm water discharges associated with industrial activity in Alaska identified in Section II under ADEC's Storm Water Multi-Sector General Permit (MSGP) due to the existence of a condition of no exposure.

A condition of no exposure exists at an industrial facility when all industrial materials and activities are protected by a storm resistant shelter to prevent exposure to rain, snow, snowmelt, and/or runoff. Industrial materials or activities include, but are not limited to, material handling equipment or activities, industrial machinery, raw materials, intermediate products, by-products, final products, or waste products. Material handling activities include the storage, loading and unloading, transportation, or conveyance of any raw material, intermediate product, final product, or waste product. A storm resistant shelter is not required for the following industrial materials and activities:

- drums, barrels, tanks, and similar containers that are tightly sealed, provided those containers are not deteriorated and do not leak. "Sealed" means banded or otherwise secured and without operational taps or valves;
- adequately maintained vehicles used in material handling; and
- final products, other than products that would be mobilized in storm water discharges (e.g., rock salt).

A No Exposure Certification must be provided for each facility qualifying for the no exposure exclusion. In addition, the exclusion from APDES permitting is available on a facility-wide basis only, not for individual outfalls. If any industrial activities or materials are or will be exposed to precipitation, the facility is not eligible for the no exposure exclusion.

By signing and submitting this No Exposure Certification form, the entity in Section I is certifying that a condition of no exposure exists at its facility or site, and is obligated to comply with the terms and conditions of 40 CFR 122.26(g), adopted by reference at 18 AAC 83.010(b)(3).

ALL INFORMATION MUST BE PROVIDED ON THIS FORM.

Detailed instructions for completing this form and obtaining the no exposure exclusion are provided on page 3.

Section I. Facility Operator Information

Name: Central Recycling Services

Mailing Address:

Street (PO Box): 2400 Railroad Ave.

City: Anchorage State: Alaska Zip: 99501

Phone: 907-748-7400 Fax(optional):

Email: crs@crs-alaska.com

Section II. Facility/Site Location Information

Facility Name: Central Monofill Services

Street Address: 2480 and 2560 S. Glenn Highway

City: Palmer State: Alaska Zip: 99645

Borough or similar government subdivision: Matanuska-Susitna Borough

Is this facility located on Indian Lands? ☐ Yes ☑ No

Is this a Federal facility? ☐ Yes ☑ No

Latitude: 61.540833 Longitude: 149.169444

Determined By: ☐ GPS ☐ USGS topographic map ■ Other: Google Earth

Was the facility or site previously covered under an NPDES or APDES storm water permit? ☐ Yes ☑ No

If yes, enter the NPDES or APDES permit number or tracking number?

SIC/Activity Codes: Primary: 561210 Secondary (if applicable):

Total size of site associated with industrial activity (in acres): 40 acres

Have you paved or roofed over a formerly exposed, pervious area in order to qualify for the no exposure exclusion? ☐ Yes ☑ No

If yes, please indicate approximately how much area was paved or roofed over. Completing this question does not disqualify you for the no exposure exclusion. However, your permitting authority may use this information in considering whether storm water discharges from your site are likely to have an adverse impact on water quality, in which case you could be required to obtain permit coverage.

Less than one acre ☐ One to five acres ☐ More than five acres ☐

For Agency Use
Permit Tracking #_____

Section III. Exposure Checklist

Are any of the following materials or activities exposed to precipitation, now or in the foreseeable future? (Please check either "Yes" of "No" in the appropriate box.) If you answer "Yes" to any of these questions, (1) through (11), you are not eligible for the no exposure exclusion.

	Yes	No
1. Using, storing, or cleaning industrial machinery or equipment, and areas where residuals from using, storing, or cleaning industrial machinery or equipment remain and are exposed to storm water.	☐	☑
2. Materials or residuals on the ground or in storm water inlets from spills/leaks.	☐	☑
3. Materials or products from past industrial activity.	☐	☑
4. Material handling equipment (except adequately maintained vehicles).	☐	☑
5. Materials or products during loading/unloading or transporting activities.	☐	☑
6. Materials or products stored outdoors (except final products intended for outside use [e.g., new cars] where exposure to storm water does not result in the discharge of pollutants).	☐	☑
7. Materials contained in open, deteriorated, or leaking storage drums, barrels, tanks, and similar containers.	☐	☑
8. Materials or products handled/stored on roads or railways owned or maintained by the discharger.	☐	☑
9. Waste material (except waste in covered, non-leaking containers [e.g., dumpsters]).	☐	☑
10. Application or disposal of process wastewater (unless otherwise permitted).	☐	☑
11. Particulate matter or visible deposits of residuals from roof stacks and/or vents not otherwise regulated (i.e., under an air quality control permit) and evident in the storm water outflow.	☐	☑

Section IV. Certification Statement

I certify under penalty of law that I have read and understand the eligibility requirements for claiming a condition of "no exposure" and obtaining an exclusion from APDES storm water permitting under ADEC's Multi-Sector General Permit.

I certify under penalty of law that there are no discharges of storm water contaminated by exposure to industrial activities or materials from the industrial facility or site identified in this document (except as allowed under 40 CFR 122.26(g)(2)).

I understand that I am obligated to submit a no exposure certification form once every five years to the APDES permitting authority and, if requested, to the operator of the local municipal separate storm sewer system (MS4) into which the facility discharges (where applicable). I understand that I must allow the APDES permitting authority, or MS4 operator where the discharge is into the local MS4, to perform inspections to confirm the condition of no exposure and to make such inspection reports publicly available upon request. I understand that I must obtain coverage under an APDES permit prior to any point source discharge of storm water from the facility.

Additionally, I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Print Name of Authorized Official: Shane Durand Title: Secretary/Treasurer

Signature: Date Signed: 6-3-13 Email: shane@cei-alaska.com

Instructions for the No Exposure Certification for Exclusion from APDES Storm Water Permitting

Who May File a No Exposure Certification

Federal law at 40 CFR Part 122.26, adopted by reference at 18 AAC 83.010(b)(3), prohibits point source discharges of storm water associated with industrial activity to waters of the U.S. without an Alaska Pollutant Discharge Elimination System (APDES) permit. However, APDES permit coverage is not required for discharges of storm water associated with industrial activities identified at 40 CFR 122.26(b)(14)(i)-(ix) and (xi) if the discharger can certify that a condition of "no exposure" exists at the industrial facility or site.

Storm water discharges from construction activities identified in 40 CFR 122.26(b)(14)(x) and (b)(15) are not eligible for the no exposure exclusion.

Obtaining and Maintaining the No Exposure Exclusion

This form is used to certify that a condition of no exposure exists at the industrial facility or site described herein. This certification is only applicable in jurisdictions where ADEC is the NPDES permitting authority and must be re-submitted at least once every five years.

The industrial facility operator must maintain a condition of no exposure at its facility or site in order for the no exposure exclusion to remain applicable. If conditions change resulting in the exposure of materials and activities to storm water, the facility operator must obtain coverage under an APDES storm water permit immediately.

Completing the Form

You must type or print in appropriate areas only. One form must be completed for each facility or site for which you are seeking to certify a condition of no exposure. Additional guidance on completing this form can be accessed at ADEC's Storm water Program website: http://www.dec.state.ak.us/water/wnpspc/stormwater/stormwater.htm .

Please make sure you have addressed all applicable questions and have made a photocopy for your records before sending the completed form to the above address.

Section I. Facility Operator Information

- Provide the legal name of the person, firm, public organization, or any other entity that operates the facility or site described in this certification. The name of the operator may or may not be the same as the name of the facility. The operator is the legal entity that controls the facility's operation, rather than the plant or site manager.
- Provide the telephone number of the facility operator.
- Provide the email address of the facility operator.
- Provide the mailing address of the operator (P.O. Box numbers may be used). Include the city, state, and zip code. All correspondence will be sent to this address.

Section II. Facility/Site Location Information

- Enter the official or legal name of the facility or site.
- Enter the complete street address (if no street address exists, provide a geographic description [e.g., Intersection of Routes 9 and 55]), city, state, zip code, and borough or similar government subdivision. Do not use a P.O. Box number.
- Indicate whether the facility is located on Indian Lands.
- Indicate whether the industrial facility is operated by a department or agency of the Federal Government (see also Section 313 of the Clean Water Act).
- Enter the latitude and longitude of the approximate center of the facility or site. The latitude and longitude of your facility can be determined in several different ways, including through the use of global positioning system (GPS) receivers, U.S. Geological Survey (U.S.G.S.) topographic or quadrangle maps, and EPA's web-based siting tools, among others.
- Indicate whether the facility was previously covered under an NPDES or APDES storm water permit. If so, include the permit number or permit tracking number.
- List the four-digit Standard Industrial Classification (SIC) code and/or two character activity code that best describes the primary industrial activities performed by your facility. Your primary industrial activity includes any activities performed on-site which are:
  (1) identified by the facility's one SIC code for which the facility is primarily engaged; and
  (2) included in the narrative descriptions of 40 CFR 122.26(b)(14)(i), (iv), (v), or (vii), and (ix). See Appendix D of the MSGP for a complete list of SIC codes and activities codes.
- Enter the total size of the site associated with industrial activity in acres. Acreage may be determined by dividing square footage by 43,560.
- Check "Yes" or "No" as appropriate to indicate whether you have paved or roofed over a formerly exposed, pervious area (e.g., lawn, meadow, dirt or gravel road/parking lot) in order to qualify for no exposure. If yes, also indicate approximately how much area was paved or roofed over and is now impervious area.

Section III. Exposure Checklist

Check "Yes" or "No" as appropriate to describe the exposure condition at your facility. If you answer "Yes" to ANY of the questions, (1) through (11), in this section, a potential for exposure exists at your site and you cannot certify to a condition of no exposure. You must obtain (or already have) coverage under an APDES storm water permit. After obtaining permit coverage, you can institute modifications to eliminate the potential for a discharge of storm water exposed to industrial activity and then certify to a condition of no exposure.

Section IV. Certification Information

The Certification of No Exposure, must be signed as follows:

(1) For a corporation, a responsible corporate officer shall sign the Certification, a responsible corporate officer means:

(A) a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation; or

(B) the manager of one or more manufacturing, production, or operating facilities, if

(i) the manager is authorized to make management decisions that govern the operation of the regulated facility, including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental statutes and regulations;

(ii) the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and

(iii) authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

(2) For a partnership or sole proprietorship, the general partner or the proprietor, respectively; or

(3) for a municipality, state, or other public agency, either a principal executive officer or ranking elected official shall sign the application; in this subsection, a principal executive officer of an agency means

(A) the chief executive officer of the agency; or

(B) a senior executive officer having responsibility for the overall operations of a principal geographic unit or division of the agency.

Include the name, title, and email address of the person signing the form and the date of signing. An unsigned or undated Certification form will not be considered valid exclusion from permit coverage.

Where to File Certification form

Please submit the Certification to ADEC as follows:

If you file by mail, please submit the original form with a signature in ink. ADEC will not accept a photocopied signature. Remember to retain a copy for your records.

Certifications sent by mail:

Alaska Dept. of Environmental Conservation
Wastewater Discharge Authorization Program
555 Cordova Street
Anchorage, AK 99501
Phone: (907) 269-6285

Susan Lee

From: Alex Strawn
Sent: Tuesday, August 12, 2014 11:31 AM
To: Durand, Shane
Cc: Susan Lee
Subject: Potential easement on section line
Attachments: ADL 230702.pdf; CMS_ADL.pdf

Hi Shane,

The attached DNR case file abstract indicates that there may be a private easement along the east-west section line easement.

Zoom to the project area using the following link and you will see the easement.

http://dnr.alaska.gov/MapAK/browser?url=Case%20Search&reqtype=LINK&fn=230702&ft=ADL

Alex Strawn
Development Services Manager
Matanuska-Susitna Borough
350 E. Dahlia Palmer, AK 99645
(907) 861-7854

We are now accepting payments online for case agreements and mining claims bills! To make a payment by credit card or from your bank account, click here (https://dnr.alaska.gov/ccpayments).

Results - Case File Abstract

Summary

File: ADL 230702

Customer: 000182572 ALASCOM, INC.
C/O AT AND T CRE LEASE ADMIN. ONE A T AND T WAY, ROOM 1B201
BEDMINSTER NJ 07921
Doing Business As: AT&T ALASCOM, INC.

Case Type: 582 PRIVATE EASEMENT
DNR Unit: 200 LAND MANAGEMENT
File Location: SCDOLD SCDO LAND SECTION
Case Status: 09 APPLICATION RECEIVED
Status Date: 04/10/2009
Total Acres: 1.000
Date Initiated: 04/10/2009
Office of Primary Responsibility: LSC LAND-SOUTHCNTRL REG
Last Transaction Date: 01/13/2014
Case Subtype: 8715 UPLD FIBER OPTIC RWE
Last Transaction: ADJAGN ADJUDICATOR ASSIGNMENT

Land Records

Meridian: S	Township: 017N	Range: 001E	Section: 23	Section Acres: 1
Meridian: S	Township: 017N	Range: 001E	Section: 24	Section Acres: 1
Meridian: S	Township: 017N	Range: 002E	Section: 04	Section Acres: 1
Meridian: S	Township: 017N	Range: 002E	Section: 05	Section Acres: 1
Meridian: S	Township: 017N	Range: 002E	Section: 07	Section Acres: 1
Meridian: S	Township: 017N	Range: 002E	Section: 08	Section Acres: 1
Meridian: S	Township: 017N	Range: 002E	Section: 18	Section Acres: 1
Meridian: S	Township: 017N	Range: 002E	Section: 19	Section Acres: 1
Meridian: S	Township: 018N	Range: 002E	Section: 01	Section Acres: 1
Meridian: S	Township: 018N	Range: 002E	Section: 02	Section Acres: 1
Meridian: S	Township: 018N	Range: 002E	Section: 03	Section Acres: 1
Meridian: S	Township: 018N	Range: 002E	Section: 10	Section Acres: 1
Meridian: S	Township: 018N	Range: 002E	Section: 16	Section Acres: 1
Meridian: S	Township: 018N	Range: 002E	Section: 20	Section Acres: 1
Meridian: S	Township: 018N	Range: 002E	Section: 29	Section Acres: 1
Meridian: S	Township: 018N	Range: 002E	Section: 32	Section Acres: 1
Meridian: S	Township: 018N	Range: 002E	Section: 33	Section Acres: 1
Meridian: S	Township: 018N	Range: 003E	Section: 06	Section Acres: 1
Meridian: S	Township: 019N	Range: 003E	Section: 23	Section Acres: 1
Meridian: S	Township: 019N	Range: 003E	Section: 24	Section Acres: 1
Meridian: S	Township: 019N	Range: 003E	Section: 26	Section Acres: 1
Meridian: S	Township: 019N	Range: 003E	Section: 27	Section Acres: 1
Meridian: S	Township: 019N	Range: 003E	Section: 28	Section Acres: 1
Meridian: S	Township: 019N	Range: 003E	Section: 29	Section Acres: 1
Meridian: S	Township: 019N	Range: 003E	Section: 31	Section Acres: 1
Meridian: S	Township: 019N	Range: 003E	Section: 32	Section Acres: 1
Meridian: S	Township: 019N	Range: 004E	Section: 12	Section Acres: 1
Meridian: S	Township: 019N	Range: 004E	Section: 13	Section Acres: 1
Meridian: S	Township: 019N	Range: 004E	Section: 14	Section Acres: 1
Meridian: S	Township: 019N	Range: 004E	Section: 15	Section Acres: 1
Meridian: S	Township: 019N	Range: 004E	Section: 16	Section Acres: 1
Meridian: S	Township: 019N	Range: 004E	Section: 17	Section Acres: 1
Meridian: S	Township: 019N	Range: 004E	Section: 18	Section Acres: 1

Meridian: S	Township: 019N	Range: 004E	Section: 19	Section Acres: 1
Meridian: S	Township: 019N	Range: 004E	Section: 21	Section Acres: 1
Meridian: S	Township: 019N	Range: 005E	Section: 03	Section Acres: 1
Meridian: S	Township: 019N	Range: 005E	Section: 04	Section Acres: 1
Meridian: S	Township: 019N	Range: 005E	Section: 05	Section Acres: 1
Meridian: S	Township: 019N	Range: 005E	Section: 07	Section Acres: 1
Meridian: S	Township: 019N	Range: 005E	Section: 08	Section Acres: 1
Meridian: S	Township: 020N	Range: 005E	Section: 25	Section Acres: 1
Meridian: S	Township: 020N	Range: 005E	Section: 34	Section Acres: 1
Meridian: S	Township: 020N	Range: 005E	Section: 35	Section Acres: 1
Meridian: S	Township: 020N	Range: 005E	Section: 36	Section Acres: 1
Meridian: S	Township: 020N	Range: 006E	Section: 23	Section Acres: 1
Meridian: S	Township: 020N	Range: 006E	Section: 24	Section Acres: 1
Meridian: S	Township: 020N	Range: 006E	Section: 25	Section Acres: 1
Meridian: S	Township: 020N	Range: 006E	Section: 26	Section Acres: 1
Meridian: S	Township: 020N	Range: 006E	Section: 27	Section Acres: 1
Meridian: S	Township: 020N	Range: 006E	Section: 28	Section Acres: 1
Meridian: S	Township: 020N	Range: 006E	Section: 29	Section Acres: 1
Meridian: S	Township: 020N	Range: 006E	Section: 30	Section Acres: 1
Meridian: S	Township: 020N	Range: 007E	Section: 19	Section Acres: 1
Meridian: S	Township: 020N	Range: 007E	Section: 20	Section Acres: 1
Meridian: S	Township: 020N	Range: 007E	Section: 21	Section Acres: 1
Meridian: S	Township: 020N	Range: 007E	Section: 22	Section Acres: 1
Meridian: S	Township: 020N	Range: 007E	Section: 23	Section Acres: 1
Meridian: S	Township: 020N	Range: 007E	Section: 24	Section Acres: 1
Meridian: S	Township: 020N	Range: 007E	Section: 30	Section Acres: 1
Meridian: S	Township: 020N	Range: 008E	Section: 19	Section Acres: 1
Meridian: S	Township: 020N	Range: 008E	Section: 22	Section Acres: 1
Meridian: S	Township: 020N	Range: 008E	Section: 23	Section Acres: 1
Meridian: S	Township: 020N	Range: 008E	Section: 25	Section Acres: 1
Meridian: S	Township: 020N	Range: 008E	Section: 26	Section Acres: 1
Meridian: S	Township: 020N	Range: 008E	Section: 27	Section Acres: 1
Meridian: S	Township: 020N	Range: 008E	Section: 28	Section Acres: 1
Meridian: S	Township: 020N	Range: 008E	Section: 29	Section Acres: 1
Meridian: S	Township: 020N	Range: 008E	Section: 30	Section Acres: 1
Meridian: S	Township: 020N	Range: 009E	Section: 20	Section Acres: 1
Meridian: S	Township: 020N	Range: 009E	Section: 25	Section Acres: 1
Meridian: S	Township: 020N	Range: 009E	Section: 26	Section Acres: 1
Meridian: S	Township: 020N	Range: 009E	Section: 27	Section Acres: 1
Meridian: S	Township: 020N	Range: 009E	Section: 28	Section Acres: 1
Meridian: S	Township: 020N	Range: 009E	Section: 29	Section Acres: 1
Meridian: S	Township: 020N	Range: 009E	Section: 30	Section Acres: 1
Meridian: S	Township: 020N	Range: 010E	Section: 29	Section Acres: 1
Meridian: S	Township: 020N	Range: 010E	Section: 30	Section Acres: 1

Case Actions

04-10-2009	MULTIPLE CUSTOMERS FROM CASE INITIATION		
	RELATION CODE A	11	APPLICANT
	CUSTOMER NUMBER A	000016019	NEW HORIZONS TELECOM
04-10-2009	APPLICATION RECEIVED		
	FEE PD?:	Y	YES
	FEE AMOUNT:	100	
	APPLICATION FEES PAID		
09-20-2011	SEE OTHER ASSOCIATED FILE		
	ASSOC FILE TYPE	ADL	ALASKA DIV OF LANDS
	ASSOC FILE NUMBER	230669	
	CONNECTING FIBER OPTIC CABLE LINE APPLICATION RECEIVED FROM SAME PARTY (DIFFERENT UNDERLYING EASEMENTS REQUESTED FOR CO-LOCATION).		

09-20-2011 SEE OTHER ASSOCIATED FILE		
ASSOC FILE TYPE	ADL	ALASKA DIV OF LANDS
ASSOC FILE NUMBER	230808	
CONNECTING FIBER OPTIC CABLE LINE APPLICATION RECEIVED FROM SAME PARTY (DIFFERENT UNDERLYING EASEMENTS REQUESTED FOR CO-LOCATION).		
03-12-2013 SEE OTHER ASSOCIATED FILE		
ASSOC FILE TYPE	RPT	TITLE REPORT
ASSOC FILE NUMBER	4392	
T. 17 N., R. 1 E., S.M., SEC. 23 N2, SEC. 24 N2		
03-20-2013 SEE OTHER ASSOCIATED FILE		
ASSOC FILE TYPE	RPT	TITLE REPORT
ASSOC FILE NUMBER	4396	
T. 17 N., R. 2 E., S.M., SECS. 4, 5, 7, 8, 18, 19		
03-21-2013 ADD LAND SECTIONS TO CASE		
THIS LAND IS	Y	PART OF ORIGINAL CAS
03-21-2013 ADD LAND SECTIONS TO CASE		
THIS LAND IS	Y	PART OF ORIGINAL CAS
03-21-2013 ADD LAND SECTIONS TO CASE		
THIS LAND IS	Y	PART OF ORIGINAL CAS
03-21-2013 ADD LAND SECTIONS TO CASE		
THIS LAND IS	Y	PART OF ORIGINAL CAS
03-21-2013 ADD LAND SECTIONS TO CASE		
THIS LAND IS	Y	PART OF ORIGINAL CAS
03-21-2013 ADD LAND SECTIONS TO CASE		
THIS LAND IS	Y	PART OF ORIGINAL CAS
03-21-2013 ADD LAND SECTIONS TO CASE		
THIS LAND IS	Y	PART OF ORIGINAL CAS
03-21-2013 ADD LAND SECTIONS TO CASE		
THIS LAND IS	Y	PART OF ORIGINAL CAS
03-21-2013 ADD LAND SECTIONS TO CASE		
THIS LAND IS	Y	PART OF ORIGINAL CAS
03-21-2013 ADD LAND SECTIONS TO CASE		
THIS LAND IS	Y	PART OF ORIGINAL CAS
03-27-2013 SEE OTHER ASSOCIATED FILE		
ASSOC FILE TYPE	RPT	TITLE REPORT
ASSOC FILE NUMBER	4398	
T. 18 N., R. 2 E., S.M., SECS. 1, 2, 3, 9, 10, 16, 20, 29, 32, 33		
04-23-2013 SEE OTHER ASSOCIATED FILE		
ASSOC FILE TYPE	RPT	TITLE REPORT
ASSOC FILE NUMBER	4400	
T. 19 N., R. 3 E. S.M., SECS. 23, 24, 26 TO 29, 31, 32		
05-02-2013 SEE OTHER ASSOCIATED FILE		
ASSOC FILE TYPE	RPT	TITLE REPORT
ASSOC FILE NUMBER	4409	
05-06-2013 SEE OTHER ASSOCIATED FILE		
ASSOC FILE TYPE	RPT	TITLE REPORT
ASSOC FILE NUMBER	4398	
T. 18 N., R. 3 E., S.M., SEC. 6		
05-07-2013 SEE OTHER ASSOCIATED FILE		
ASSOC FILE TYPE	RPT	TITLE REPORT
ASSOC FILE NUMBER	4401	
T. 19 N., R. 4 E., S.M., SECS. 12 TO 19, 21		
05-08-2013 SEE OTHER ASSOCIATED FILE		
ASSOC FILE TYPE	RPT	TITLE REPORT
ASSOC FILE NUMBER	4408	
05-14-2013 SEE OTHER ASSOCIATED FILE		
ASSOC FILE TYPE	RPT	TITLE REPORT
ASSOC FILE NUMBER	4407	

06-20-2013 SEE OTHER ASSOCIATED FILE		
ASSOC FILE TYPE	RPT	TITLE REPORT
ASSOC FILE NUMBER	4402	
T. 19 N., R. 5 E., S.M., SECS. 3, 4, 5, 7, 8		
06-22-2013 SEE OTHER ASSOCIATED FILE		
ASSOC FILE TYPE	RPT	TITLE REPORT
ASSOC FILE NUMBER	4405	
05-31-2013 SEE OTHER ASSOCIATED FILE		
ASSOC FILE TYPE	RPT	TITLE REPORT
ASSOC FILE NUMBER	4404	
06-05-2013 SEE OTHER ASSOCIATED FILE		
ASSOC FILE TYPE	RPT	TITLE REPORT
ASSOC FILE NUMBER	4403	

Legal Description

04-10-2009
APPLICATION RECEIVED FROM NEW HORIZONS TELECOM, INC. FOR ATT ALASCOM, INC. FOR FIBER OPTIC CABLE FROM PALMER TO CARIBOU CREEK ALONG THE GLENN HIGHWAY.
LEGAL DESCRIPTION
SEWARD MERIDIAN
TOWNSHIP 17 NORTH, RANGE 1 EAST, SECTION 23.
TOWNSHIP 19 NORTH, RANGE 4 EAST, SECTION 16.
TOWNSHIP 20 NORTH, RANGE 6 EAST, SECTION 25.
TOWNSHIP 20 NORTH, RANGE 7 EAST, SECTION 20, 21, 22, 23.
TOWNSHIP 20 NORTH, RANGE 8 EAST, SECTION 19, 25, 26, 27, 28, 29.
TOWNSHIP 20 NORTH, RANGE 9 EAST, SECTION 27.
TOWNSHIP 20 NORTH, RANGE 10 EAST, SECTION 29, 30.
****

State of Alaska
Natural Resources > DNR GPU > Alaska Mapper > Map Selection > Land Estate Map (public)
Switch to Lite Mapper
Logout (Logged in as: public)
PLSS Sections
Other Activities
Permit or Lease
Easements
Easement
Federal Actions
Land Disposal Available
Land Disposal Conveyed
Land Disposal Other
Management Agreement
Mental Health Trust Land
Municipal Entitlement
Municipal Tideland
Native Allotment
Other Acquired Land
Resource Sale
RS2477
Tentative Approval or Patent
Boroughs
Recording Districts
Survey Boundary
Township
State of Alaska © 2013

Susan Lee

From: Durand, Shane [shane@cei-alaska.com]
Sent: Tuesday, August 12, 2014 11:40 AM
To: Alex Strawn
Cc: Susan Lee
Subject: RE: Potential easement on section line

There is nothing in the Title Report for this. We have had locates done on the property and they do not have any underground lines on the property or section line.

Shane

From: Alex Strawn [mailto:Alex.Strawn@matsugov.us]
Sent: Tuesday, August 12, 2014 11:31 AM
To: Durand, Shane
Cc: Susan Lee
Subject: Potential easement on section line

Hi Shane,

The attached DNR case file abstract indicates that there may be a private easement along the east-west section line easement.

Zoom to the project area using the following link and you will see the easement.

http://dnr.alaska.gov/MapAK/browser?url=Case%20Search&reqtype=LINK&fn=230702&ft=ADL

Alex Strawn
Development Services Manager
Matanuska-Susitna Borough
350 E. Dahlia Palmer, AK 99645
(907) 861-7854

Susan Lee

From: Susan Lee
Sent: Tuesday, August 12, 2014 2:08 PM
To: 'Durand, Shane'
Cc: Alex Strawn; Andy Dean
Subject: CUP application
Attachments: Request for Info 8-12-14.pdf; Map for 8-12-14.pdf; Construction Permit App for 8-12-14.pdf

Shane:

Please see attached.

Susan

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

MATANUSKA-SUSITNA BOROUGH
Planning and Land Use Department
Development Services Division
350 East Dahlia Avenue • Palmer, AK 99645
Phone (907) 861-7822 • Fax (907) 861-7876
E-mail: permitcenter@matsugov.us

August 12, 2014

Shane Durand
Central Monofill Services
311 N. Sitka Street
Anchorage, AK 99501

SUBJECT: **Central Monofill Services Conditional Use Permit Application**
LOCATION: 17N02E18C010 & 17N02E19B006

Dear Mr. Durand:

This letter is a follow-up to the conversation that Alex Strawn and myself had with you today regarding the CMS conditional use permit application. We discussed the possibility of section line easements adjacent to the south and west sides of the above referenced property (See attached map). Since we spoke you sent us an e-mail stating that the title policy says *"Reservation of section line easement 33 feet in width along each side of the section line as provided by 43 U.S.C.932"*. However, this does not specify if this the north/south or east/west section line easement or both. A verification of section line easement(s) will need to be provided by a registered land surveyor.

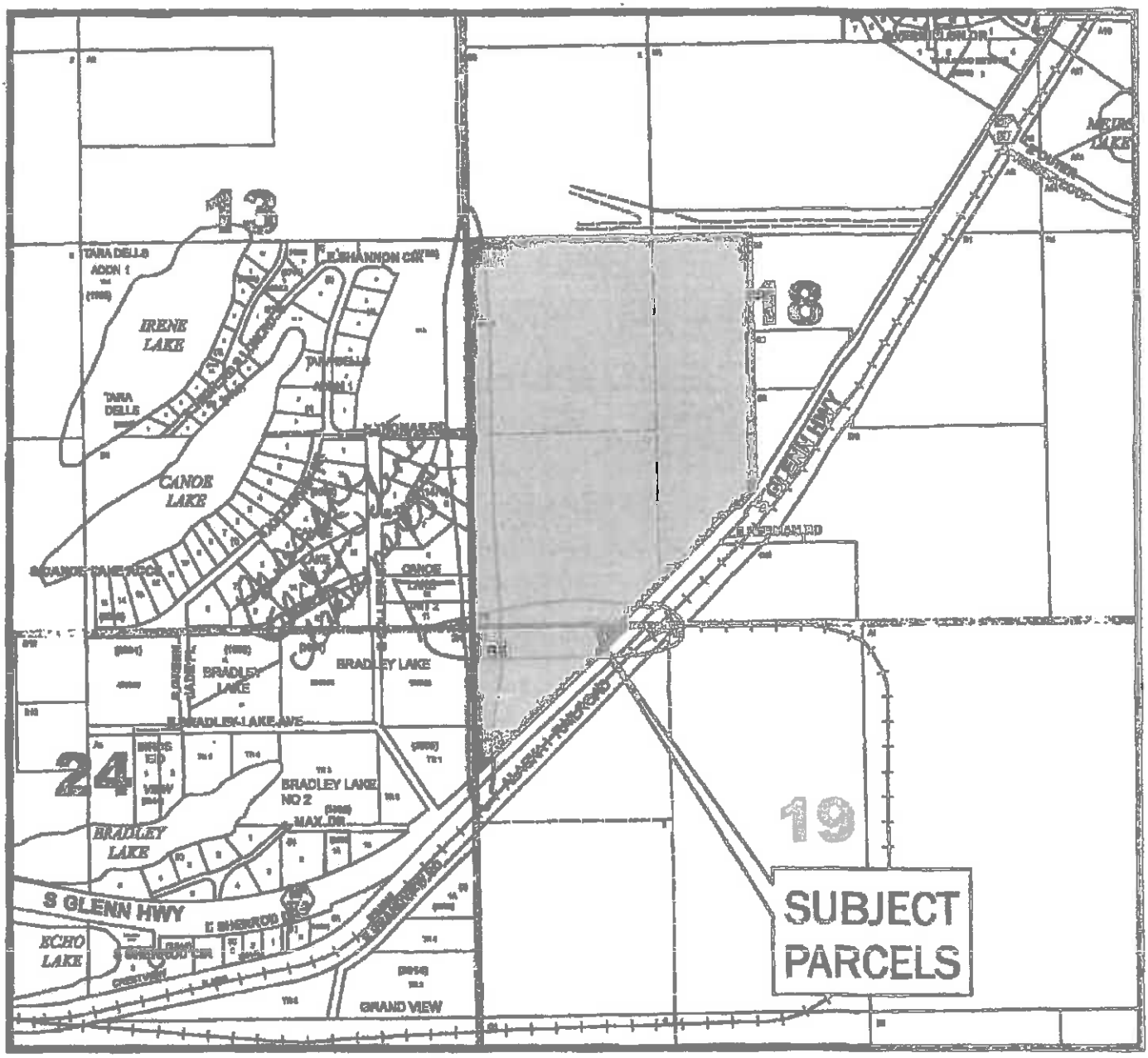
In addition, we discussed the requirement to obtain an MSB Permit for Construction within Public Easements & Rights-of-Way to conduct any work within a section line easement. This permit will require a survey to determine the width of the section line easement and will require that the easement be left in a condition in which a road can be constructed. An application form is attached for your use. If you have any questions regarding this application please contact the MSB Right-of-Way Coordinator, Andy Dean, at 861-7803.

We also discussed that should the conditional use permit be a approved, a condition of approval would be that the section line easement(s) be vacated prior to any work being conducted within them.

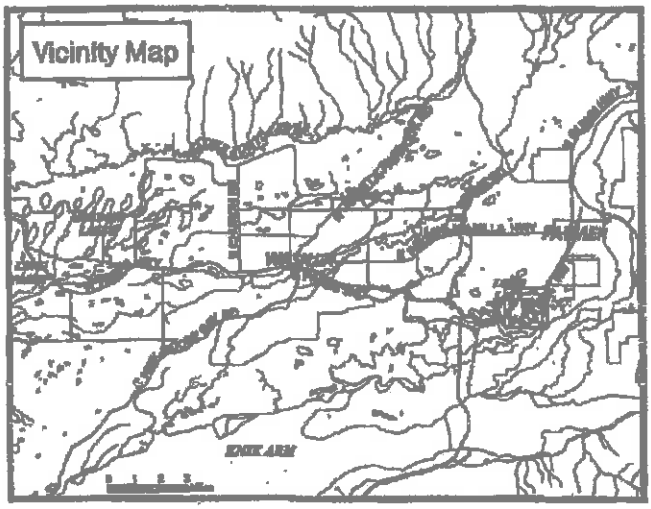
Should you have any questions or require additional information please let me know.

Sincerely,

Susan Lee
Planner II



17N02E18C010
17N02E19B006



This map is solely for informational purposes only. The Borough makes no express or implied warranties with respect to the character, function, or capabilities of the map or the suitability of the map for any particular purpose beyond those originally intended by the Borough. For information regarding the full disclaimer and policies related to acceptable uses of this map, please contact the Matanuska-Susitna Borough GIS Division at 907-746-4801.

N

0 500 1,000 Feet

MATANUSKA-SUSITNA BOROUGH
Planning and Land Use Department
Development Services
350 East Dahlia Avenue • Palmer, AK 99645
Phone (907) 745-9822 • Fax (907) 745-9876
Email: PermitCenter@matsugov.us

APPLICATION FOR CONSTRUCTION WITHIN PUBLIC EASEMENTS & RIGHTS-OF-WAY

Applicant: _____ Date: _____
Address: _____ Phone: _____
_____ Fax: _____

Office Use Only		
TRS: _____	Permit No: _____	Tax Map: _____ Inspection: _____

1. Give the legal description of property owned by applicant adjacent to construction:
   _____ _____
2. Describe the location where construction will occur, (legal description, public easement, or road name):
   _____ _____
   _____ _____
3. Proposed length and width of construction (include map or sketch showing construction limits and cross section & plan drawings, if available. Drawings may be required in cases of steep terrain):
   _____ _____
   _____ _____
4. Proposed start up date: _____ _____ (minimum of 2 weeks from date application received)
   Expected completion date: _____ _____
5. This construction is necessary for the following reason(s):
   _____ _____
   _____ _____
6. Proposed method for disposal of vegetation and grubbed material:
   _____ _____
   _____ _____
7. List types of construction equipment that will be used for this project:
   _____ _____
   _____ _____
8. Identify any special conditions and problems that may be encountered during construction (i.e. Swampy ground, water bodies, steep slopes, forested areas):
   _____ _____
   _____ _____

Construction permit (application fee prior to construction) $50 each

No work is authorized, including clearing of vegetation, within public easements & rights-of-way until a PERMIT is issued by the Borough and accepted by the applicant. The applicant certifies with their signature below, that they have read the conditions on the reverse side and completed this form accurately to the best of their knowledge.

_____
Applicant's Signature

SAMPLE STANDARD CONDITIONS

Prior to Construction:

A. Registered Professional Land Surveyor to verify, survey and mark exterior limits prior to construction and reference and preserve any survey corners and monuments in construction area. Upon completion, Surveyor to certify in writing to the Borough that all construction is in right-of-way and all survey corners are undisturbed or reset.

B. Notify adjacent property owners by certified mail two weeks prior to construction.

C. Complete a pre-construction meeting on site with Borough Right-Of-Way Agent after condition "A" is complete and prior to beginning any vegetation clearing.

Other Conditions:

1. No public money will be spent on maintenance or capital improvements.

2. Roads within public right-of-ways or public easements are for public use and cannot be gated or blocked.

3. Trees belong to adjacent property owners. Trees left in the right-of-way shall be cut into 4' lengths. Other arrangements made between the Permittee and the property owners are acceptable.

4. Disturb and clear only that area necessary for permitted use.

5. In site specific locations where public rights-of-way widths are 100 feet or greater the Borough may authorize slit trenching to be in the (southern) (western) 20' of right-of-way.

6. All construction debris, including brush, limbs, tree tops, uprooted stumps, organic material and large rocks must be removed from narrow rights-of-way. Construction debris may not be placed onto adjacent properties without written authorization.

7. It is the applicant's responsibility to obtain any required permits from local, state, or federal agencies for the proposed construction.

8. Permits are subject to additional conditions, as deemed necessary by the Borough, to address special circumstances and construction limitations.

9. A Damage Bond and/or Liability Insurance may be required for the proposed construction activity.

Susan Lee

From: Durand, Shane [shane@cei-alaska.com]
Sent: Tuesday, August 12, 2014 2:13 PM
To: Susan Lee
Cc: Alex Strawn; Andy Dean
Subject: RE: CUP application

Thanks for the response. We will get this back to you shortly.

Shane

From: Susan Lee [mailto:Susan.Lee@matsugov.us]
Sent: Tuesday, August 12, 2014 2:08 PM
To: Durand, Shane
Cc: Alex Strawn; Andy Dean
Subject: CUP application

Shane:

Please see attached.

Susan

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

Susan Lee

From: Alex Strawn
Sent: Thursday, August 14, 2014 5:07 PM
To: Susan Lee
Subject: FW: Central Monofill CUP application

From: Jacques, Stuart [mailto:stuart@cei-alaska.com]
Sent: Thursday, August 14, 2014 5:00 PM
To: Alex Strawn
Cc: Durand, Shane
Subject: Central Monofill CUP application

Alex,

I understand from your conversation with Shane a couple of days ago that our CUP may not come before the Board until October. Is there any way to move that date up to the September meeting? I have had a trip out of the country planned in October for some time now. As we had discussed months ago, we need to get the CUP before Winter or we run the risk of not being able to complete the site improvements needed to operate until next Spring. I know that your office has been slammed with CUP applications and I appreciate that due to the sensitive nature of the Monofill request review of our CUP application is more time consuming that the normal package, but please consider that we submitted our initial package in January.

I don't want to delay going before the Board until November.

If it is not possible to move it to September, I understand and we will stay on the October schedule, but please consider my request.

Thank you for your consideration.

Stuart M. Jacques
President
Central Environmental, Inc.
(907) 561-0125 phone
(907) 561-0178 fax
311 North Sitka St.
Anchorage, AK 99501
stuart@cei-alaska.com
www.cei-alaska.com

Susan Lee

From: Alex Strawn
Sent: Wednesday, August 20, 2014 1:29 AM
To: Susan Lee
Subject: Fwd: Potential easement on section line

Sent from my iPhone

Begin forwarded message:

From: Tiani Brandner <tbrandner@alyeskatitle.com>
Date: August 19, 2014 at 3:16:51 PM AKDT
To: 'Alex Strawn' <Alex.Strawn@matsugov.us>
Subject: **RE: Potential easement on section line**

Alex,
Thank you for the email. To answer your question regarding the section line, wherever there is a section line there is a section line ezt of 33' both East-West & North South.

Tiani Brandner
Business Development / Title Officer w (907) 339-8849 c (907) 764-5073 tbrandner@alyeskatitle.com
Alyeska Title Guaranty Agency
3801 Centerpoint Drive Suite 102
Anchorage AK 99503

From: Alex Strawn [mailto:Alex.Strawn@matsugov.us]
Sent: Monday, August 18, 2014 2:32 PM
To: Tiani Brandner
Subject: FW: Potential easement on section line

Hi Tiani,

I am glad we finally connected. Please see email below with attachments and let me know if you have any questions. Also, you said that the section line is 33' on each side; is that the section line that runs east-west through the middle of the property or the north-south line along the west side of the property?

Alex Strawn
Development Services Manager
Matanuska-Susitna Borough
350 E. Dahlia Palmer, AK 99645
(907) 861-7854

From: Alex Strawn
Sent: Tuesday, August 12, 2014 11:31 AM
To: 'Durand, Shane'

Cc: Susan Lee
Subject: Potential easement on section line

Hi Shane,

The attached DNR case file abstract indicates that there may be a private easement along the east-west section line easement.

Zoom to the project area using the following link and you will see the easement.

http://dnr.alaska.gov/MapAK/browser?url=Case%20Search&reqtype=LINK&fn=230702&ft=ADL

Alex Strawn
Development Services Manager
Matanuska-Susitna Borough
350 E. Dahlia Palmer, AK 99645
(907) 861-7854

Susan Lee

From: Durand, Shane [shane@cel-alaska.com]
Sent: Friday, August 22, 2014 5:29 PM
To: Alex Strawn
Cc: Susan Lee; Jacques, Stuart
Subject: CMS Monofill Follow up
Attachments: FIGURE 10 - CONDITIONED VIEW CROSS SECTIONS.PDF; FIGURE 9 - CONDITIONED PLAN VIEW.PDF

Alex

Please find attached two supplemental drawings to address the section easement concerns. These can be used to show the "conditioned" status of the CUP area. Let me know if you have any questions or concerns on these.

We have done a lot of research on the Alascom Private easement concern. From our research nothing more than an application for easement exists. Nothing is recorded and we have not been approached as the landowner for an easement.

Per the Title Company

"Shane,
Thank you for taking the time to talk with Sharon and I this morning. Per our conversation this email is to follow up and summarize what we have found. Also attached is a copy of the existing MTA Easement that is recorded to the official public record through the State Recorders office at the Department of Natural Resources.

The Section Line Easement was shown on the Title Policy you received and we found it to be 33 feet from the center of each section line boundary of your property.
As for the conflict with a "private easement" as Alex Strawn of the MSB is concerned about, the ADL 230702 in the Land Management filing appears to be an *application* for an easement. We do not find anything of record that reflects this application to have been finalized or the steps taken to create a valid easement. For an easement to be made valid would require it to be transferred by the owner of the fee simple of the property, which being private property would be Central Monofill Services Inc.," " to perfect the position the easement would require the instrument to be recorded in the official public records through the Recorders Office. if this process has been completed and filed of record we would need to receive a copy of the recorded instrument before we could further comment on its affect to title.
I hope that this provides some assistance to you. Please feel free to contact Sharon Elliott or myself directly if we may be of further service.

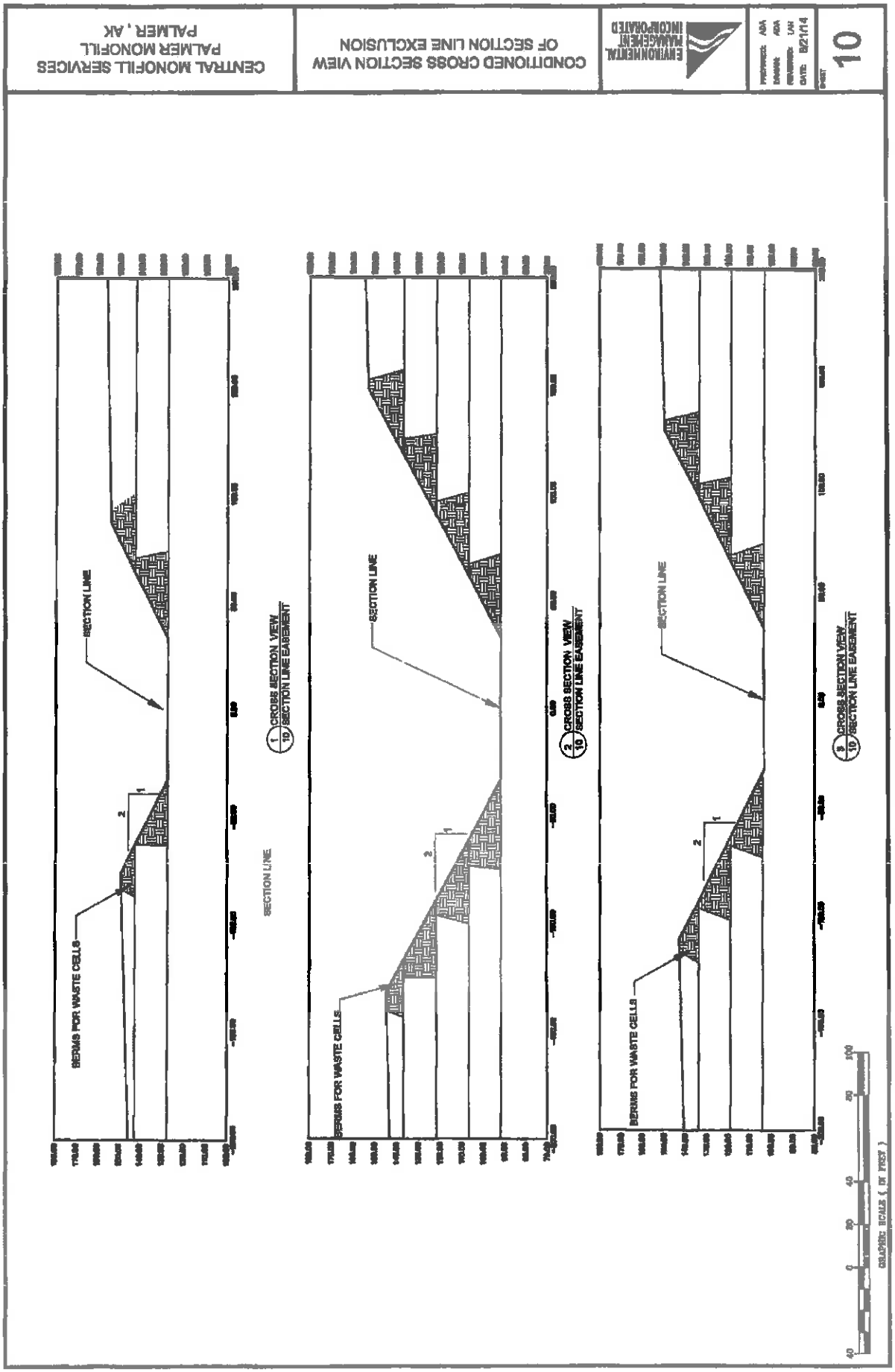
Tiani Brandner
Business Development / Title Officer w (907) 339-8849 c (907) 764-5073 tbrandner@alyeskatitle.com
Alyeska Title Guaranty Agency
3801 Centerpoint Drive Suite 102
Anchorage AK 99503"

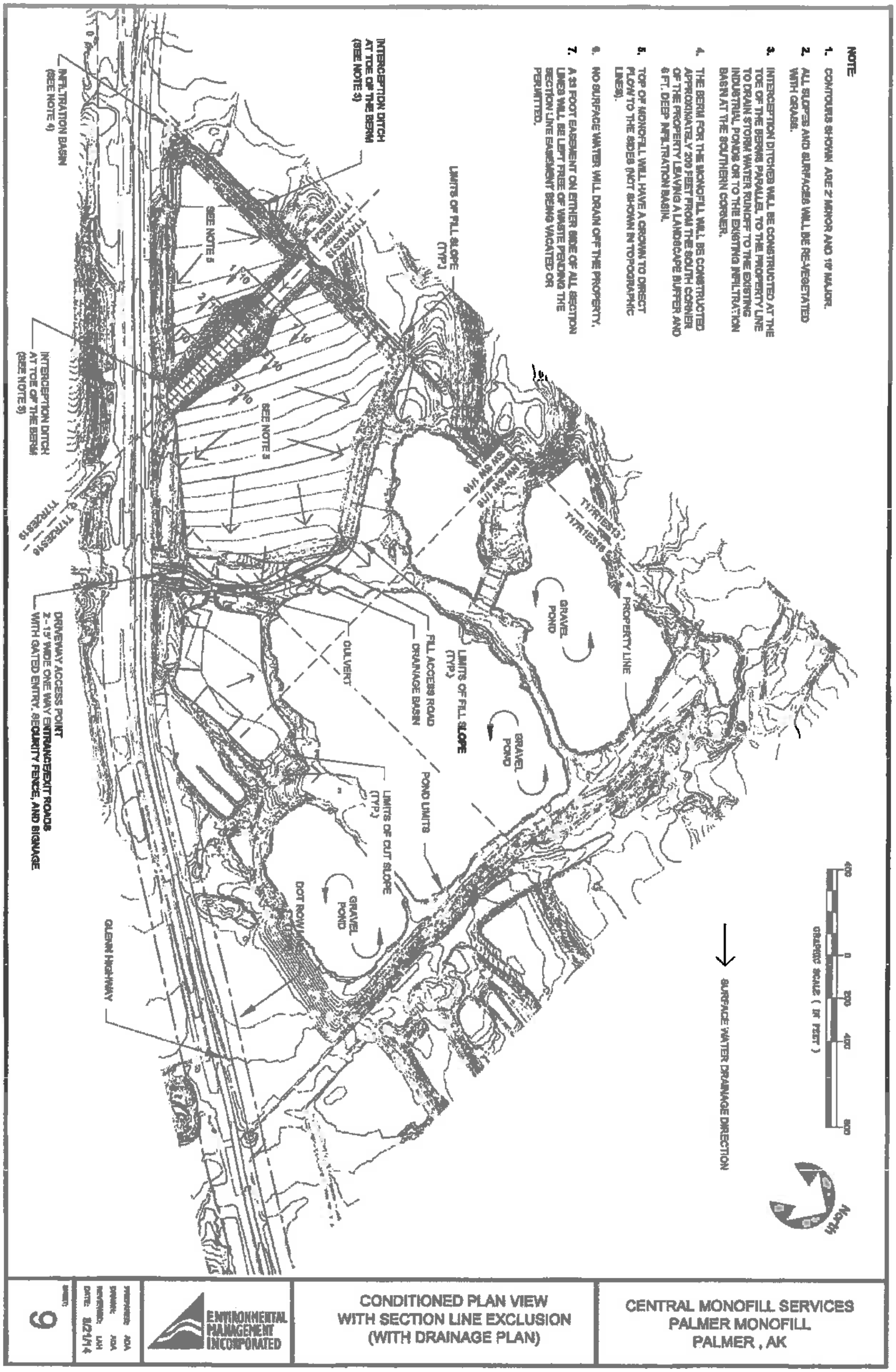
We have made multiple contacts to DNR and Alascom and have found nothing more than an application at this time. This easement application appears to be primarily within the Section line easement and other existing utility easement so it shouldn't conflict at this time anyways.

Let us know if you need anything further on the easement issues or anything else.

Do you have a timeline for our permit moving forward?

Shane Durand
Central Recycling Services
2400 Railroad Ave.
Anchorage, AK 99501
(907)748-7400
www.centralrecyclingservices.com
www.crssurplusmaterials.com
www.cicequipment.com


CENTRAL MONOFILL SERVICES
PALMER MONOFILL
PALMER, AK
CONDITIONED CROSS SECTION VIEW
OF SECTION LINE EXCLUSION
ENVIRONMENTAL MANAGEMENT INCORPORATED
DESIGNED: ADA
DRAWN: ADA
REVIEWED: LAW
DATE: 8/21/14
SHEET 10
SECTION LINE
BERMS FOR WASTE CELLS
1
2
1 CROSS SECTION VIEW
10 SECTION LINE EASEMENT
2 CROSS SECTION VIEW
10 SECTION LINE EASEMENT
3 CROSS SECTION VIEW
10 SECTION LINE EASEMENT
GRAPHIC SCALE (IN FEET)
40
0
20
40
80
100


NOTE:
1. CONTOURS SHOWN ARE 2' MINOR AND 10' MAJOR.
2. ALL SLOPES AND SURFACES WILL BE RE-VEGETATED WITH GRASS.
3. INTERCEPTION DITCHES WILL BE CONSTRUCTED AT THE TOE OF THE BERMS PARALLEL TO THE PROPERTY LINE TO DRAIN STORM WATER RUNOFF TO THE EXISTING INDUSTRIAL PONDS OR TO THE EXISTING INFILTRATION BASIN AT THE SOUTHERN CORNER.
4. THE BERM FOR THE MONOFILL WILL BE CONSTRUCTED APPROXIMATELY 200 FEET FROM THE SOUTH CORNER OF THE PROPERTY LEAVING A LANDSCAPE BUFFER AND 6 FT. DEEP INFILTRATION BASIN.
5. TOP OF MONOFILL WILL HAVE A CROWN TO DIRECT FLOW TO THE SIDES (NOT SHOWN IN TOPOGRAPHIC LINES).
6. NO SURFACE WATER WILL DRAIN OFF THE PROPERTY.
7. A 33 FOOT EASEMENT ON EITHER SIDE OF ALL SECTION LINES WILL BE LEFT FREE OF WASTE PENDING THE SECTION LINE EASEMENT BEING VACATED OR PERMITTED.
GRAPHIC SCALE (IN FEET)
400 0 200 400 800
North
SURFACE WATER DRAINAGE DIRECTION
PROPERTY LINE
GRAVEL POND
GRAVEL POND
GRAVEL POND
LIMITS OF FILL SLOPE (TYP.)
LIMITS OF FILL SLOPE (TYP.)
FILL ACCESS ROAD
DRAINAGE BASIN
POND LIMITS
LIMITS OF CUT SLOPE (TYP.)
CULVERT
DOT ROW
INTERCEPTION DITCH AT TOE OF THE BERM (SEE NOTE 3)
SEE NOTE 5
SEE NOTE 5
GLENN HIGHWAY
INFILTRATION BASIN (SEE NOTE 4)
INTERCEPTION DITCH AT TOE OF THE BERM (SEE NOTE 3)
DRIVEWAY ACCESS POINT
2 - 15' WIDE ONE WAY ENTRANCE/EXIT ROADS
WITH GATED ENTRY, SECURITY FENCE, AND SIGNAGE
CONDITIONED PLAN VIEW
WITH SECTION LINE EXCLUSION
(WITH DRAINAGE PLAN)
CENTRAL MONOFILL SERVICES
PALMER MONOFILL
PALMER , AK
ENVIRONMENTAL MANAGEMENT INCORPORATED
PREPARED: ADA
DRAWN: ADA
REVIEWED: LAH
DATE: 8/21/14
SHEET:
9

Susan Lee

From: Durand, Shane [shane@cei-alaska.com]
Sent: Monday, August 25, 2014 1:18 PM
To: Alex Strawn
Cc: Susan Lee
Subject: Confirmation

Can one of you confirm getting my email with the drawings late Friday? We moved offices last week and still working a few bugs out of the computer system.

Thanks

Shane Durand
Central Environmental Inc.
311 N. Sitka St.
Anchorage, AK 99501
(907)561-0125
(907)561-0178 fax
www.cei-alaska.com
www.cicontractorsinc.com
www.emi-alaska.com
www.centerpointsycsinc.com

Central Recycling Services
2400 Railroad Ave.
Anchorage, AK 99501
(907)748-7400
www.centralrecyclingservices.com
www.crssurplusmaterials.com
www.ciceguipment.com

Susan Lee

From: Susan Lee
Sent: Monday, August 25, 2014 1:30 PM
To: 'Durand, Shane'; Alex Strawn
Subject: RE: Confirmation

Yes, we did receive it.

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

From: Durand, Shane [mailto:shane@cei-alaska.com]
Sent: Monday, August 25, 2014 1:18 PM
To: Alex Strawn
Cc: Susan Lee
Subject: Confirmation

Can one of you confirm getting my email with the drawings late Friday? We moved offices last week and still working a few bugs out of the computer system.

Thanks

Shane Durand
Central Environmental Inc.
311 N. Sitka St.
Anchorage, AK 99501
(907)561-0125
(907)561-0178 fax
www.cei-alaska.com
www.cicontractorsinc.com
www.emi-alaska.com
www.centerpointsvcsinc.com

Central Recycling Services
2400 Railroad Ave.
Anchorage, AK 99501
(907)748-7400
www.centralrecyclingservices.com
www.crssurplusmaterials.com
www.cicequipment.com

Susan Lee

From: Susan Lee
Sent: Wednesday, August 27, 2014 2:04 PM
To: 'Durand, Shane'; Alex Strawn
Cc: Jacques, Stuart
Subject: RE: CMS Monofill Follow up

Shane:

The revised site plan, dated August 21, 2014, shows how the monofill will slope away from the east/west section line easement. However, this site plan does not indicate how the monofill will slope away from the north/south section line easement. This needs to be shown on the site plan.

Susan

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

From: Durand, Shane [mailto:shane@cel-alaska.com]
Sent: Friday, August 22, 2014 5:29 PM
To: Alex Strawn
Cc: Susan Lee; Jacques, Stuart
Subject: CMS Monofill Follow up

Alex

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www.cicequipment.com

Susan Lee

From: Susan Lee
Sent: Wednesday, August 27, 2014 3:39 PM
To: 'william.ashton@alaska.gov'
Cc: Alex Strawn
Subject: site plan
Attachments: SKMBT_C65414082715360.pdf

Hi William:

Attached is the site plan that Alex Strawn discussed with you. Refer to Note #3 regarding drainage into the ponds.

Thanks for your help.

Susan

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
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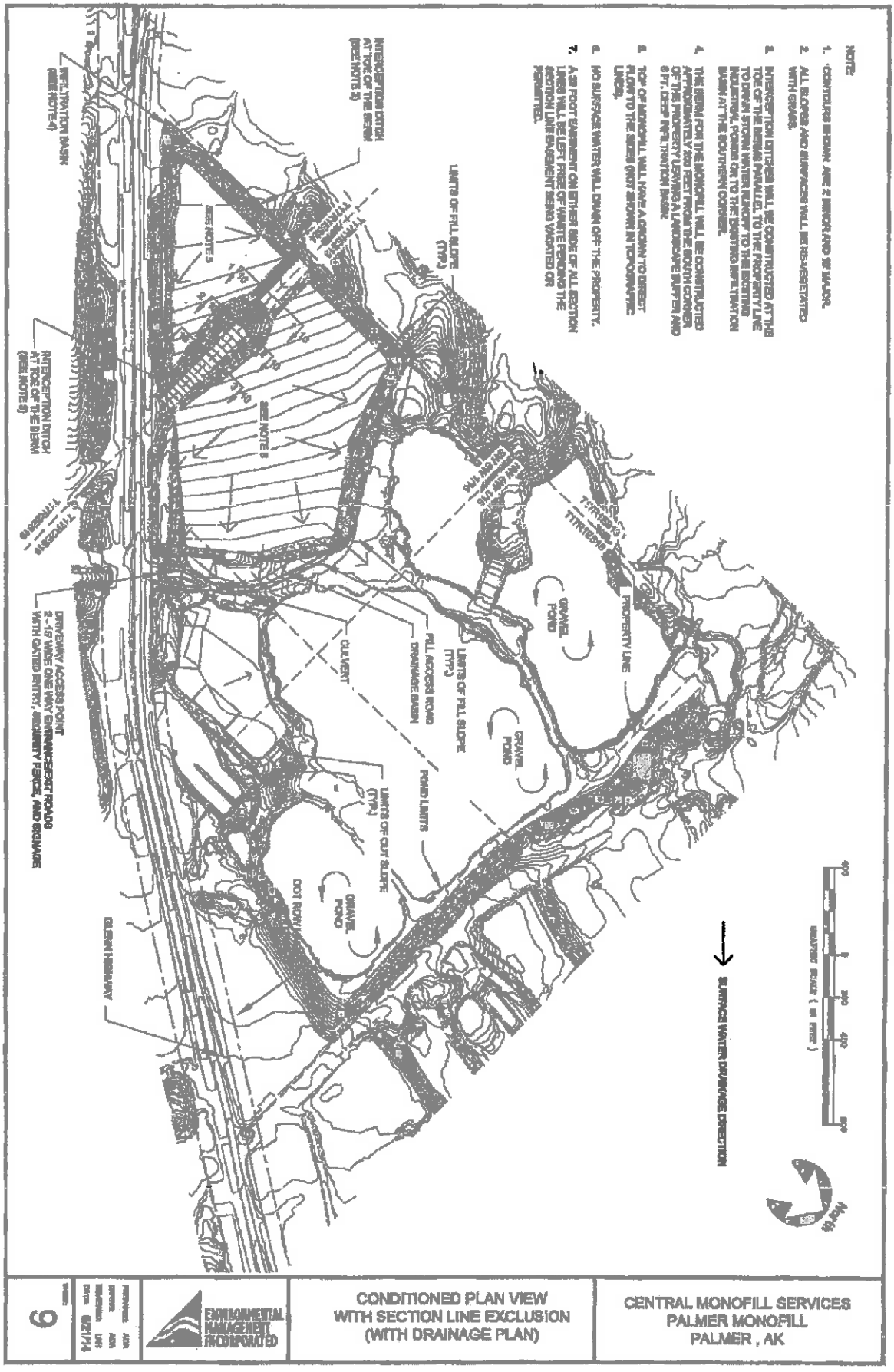
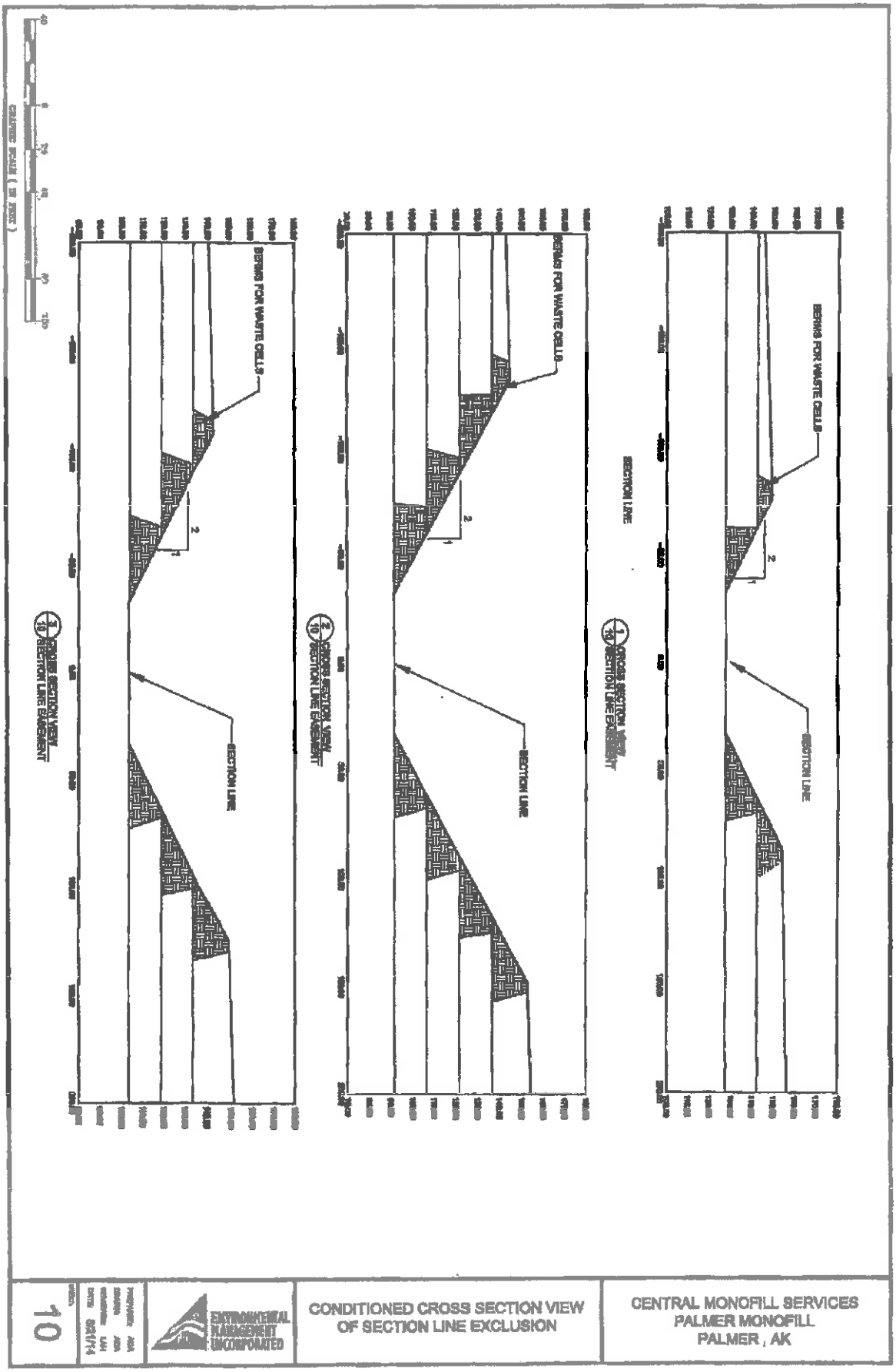


9	ENVIRONMENTAL MANAGEMENT INCORPORATED	CONDITIONED PLAN VIEW WITH SECTION LINE EXCLUSION (WITH DRAINAGE PLAN)	CENTRAL MONOFILL SERVICES PALMER MONOFILL PALMER , AK


BERMS FOR WASTE CELLS
SECTION LINE
2
1
BERMS FOR WASTE CELLS
SECTION LINE
2
1
SECTION LINE
BERMS FOR WASTE CELLS
SECTION LINE
2
1
10
ENVIRONMENTAL MANAGEMENT INCORPORATED
CONDITIONED CROSS SECTION VIEW OF SECTION LINE EXCLUSION
CENTRAL MONOFILL SERVICES
PALMER MONOFILL
PALMER , AK

Susan Lee

From: Ashton, William S (DEC) [william.ashton@alaska.gov]
Sent: Wednesday, August 27, 2014 3:47 PM
To: Susan Lee
Cc: Alex Strawn
Subject: RE: site plan

Hi Susan,

Please send me a copy of the No Exposure Certifiifcate.

Thanks

William Ashton
Storm Water & Wetlands
Wastewater Discharge Authorization Program, Division of Water
Alaska Dept. of Environmental Conservation
555 Cordova St
Anchorage, AK 99501
ph 907-269-6283
william.ashton@alaska.gov

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Susan Lee

From: Durand, Shane [shane@cei-alaska.com]
Sent: Thursday, August 28, 2014 8:47 AM
To: Susan Lee; Alex Strawn
Cc: Jacques, Stuart
Subject: RE: CMS Monofill Follow up
Attachments: CMS Sheet 9 Aug 28 marked up with color.pdf

Susan

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Shane

From: Susan Lee [mailto:Susan.Lee@matsugov.us]
Sent: Wednesday, August 27, 2014 2:04 PM
To: Durand, Shane; Alex Strawn
Cc: Jacques, Stuart
Subject: RE: CMS Monofill Follow up

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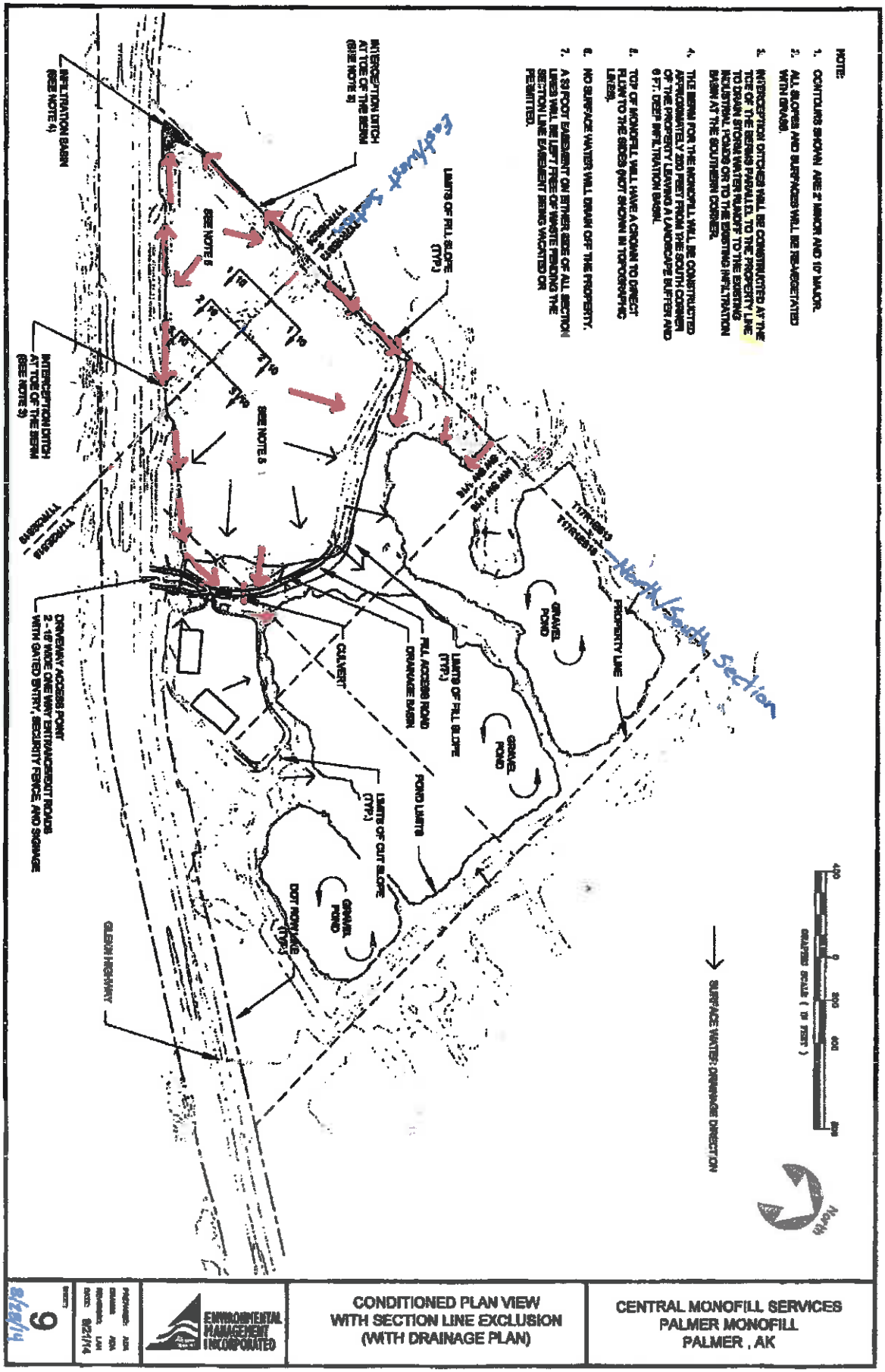
NOTE:
1. CONTOURS SHOWN ARE 2' MINOR AND 10' MAJOR.
2. ALL SLOPES AND SURFACES WILL BE REVEGETATED WITH GRASS.
3. INTERCEPTION DITCHES WILL BE CONSTRUCTED AT THE TOE OF THE BERMS PARALLEL TO THE PROPERTY LINE TO DRAIN STORM WATER RUNOFF TO THE EXISTING INDUSTRIAL PONDS OR TO THE EXISTING INFILTRATION BASIN AT THE SOUTHERN CORNER.
4. THE BERM FOR THE MONOFILL WILL BE CONSTRUCTED APPROXIMATELY 200 FEET FROM THE SOUTH CORNER OF THE PROPERTY LEAVING A LANDSCAPE BUFFER AND 6 FT. DEEP INFILTRATION BASIN.
5. TOP OF MONOFILL WILL HAVE A CROWN TO DIRECT FLOW TO THE SIDES (NOT SHOWN IN TOPOGRAPHIC LINES).
6. NO SURFACE WATER WILL DRAIN OFF THE PROPERTY.
7. A 33 FOOT EASEMENT ON EITHER SIDE OF ALL SECTION LINES WILL BE LEFT FREE OF WASTE PENDING THE SECTION LINE EASEMENT BEING VACATED OR PERMITTED.
INFILTRATION BASIN (SEE NOTE 4)
INTERCEPTION DITCH AT TOE OF THE BERM (SEE NOTE 3)
LIMITS OF FILL SLOPE (TYP.)
SEE NOTE 5
SEE NOTE 6
GRAVEL POND
PROPERTY LINE
CULVERT
FILL ACCESS ROAD
DRAINAGE BASIN
LIMITS OF FILL SLOPE (TYP.)
POND LIMITS
LIMITS OF CUT SLOPE (TYP.)
DOT ROW LINE (TYP.)
DRIVEWAY ACCESS POINT
2 - 16' WIDE ONE WAY ENTRANCE/EXIT ROADS WITH GATED ENTRY, SECURITY FENCE, AND SIGNAGE
GLENN HIGHWAY
SURFACE WATER DRAINAGE DIRECTION
NORTH
GRAPHIC SCALE (IN FEET)
ENVIRONMENTAL MANAGEMENT INCORPORATED
CONDITIONED PLAN VIEW WITH SECTION LINE EXCLUSION (WITH DRAINAGE PLAN)
CENTRAL MONOFILL SERVICES
PALMER MONOFILL
PALMER , AK
9

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Susan Lee

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Sent: Thursday, August 28, 2014 11:34 AM
To: 'Durand, Shane'; Alex Strawn
Cc: Jacques, Stuart
Subject: RE: CMS Monofill Follow up

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Sent: Thursday, August 28, 2014 12:28 PM
To: Susan Lee; Alex Strawn
Cc: Jacques, Stuart
Subject: RE: CMS Monofill Follow up

Susan

Would you like Sheet 9 cleaned up or colored differently?

Based on the information provided do you anticipate recommending our CUP?

Respectfully,
Shane

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Susan Lee

From: Ashton, William S (DEC) [william.ashton@alaska.gov]
Sent: Friday, August 29, 2014 9:00 AM
To: 'shane@cei-alaska.com'
Subject: No Exposure Certificate for Multi-Sector General Permit

Shane,

I reviewed the No-Exposure Certificate for your facility "Central Monofill Services" and have some follow-up questions.

1. Please describe the type of waste being handled and disposed of at the facility.
2. Please describe how this waste avoids exposure to precipitation.
3. Please describe the flow path of the storm water discharge from the facility. Does the discharge enter a water of the US?

Please provide me answers to these questions by Sept 9, 2014 or sooner.

Thank you for your attention to this matter.

William Ashton
Storm Water & Wetlands
Wastewater Discharge Authorization Program, Division of Water
Alaska Dept. of Environmental Conservation
555 Cordova St
Anchorage, AK 99501
ph 907-269-6283
william.ashton@alaska.gov

Susan Lee

From: Ashton, William S (DEC) [william.ashton@alaska.gov]
Sent: Friday, August 29, 2014 10:59 AM
To: 'Durand, Shane'
Cc: Larry Helgeson
Subject: RE: No Exposure Certificate for Multi-Sector General Permit

Shane,

Based on the fact that there is no discharge to a water of the US, the facility does not need permit coverage under the Multi-Sector General Permit. Therefore no No Exposure Certificate needs to be submitted to DEC.

Thank you for your prompt reply.

William Ashton
Storm Water & Wetlands
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Cc: Larry Helgeson
Subject: RE: No Exposure Certificate for Multi-Sector General Permit

1. Inert Construction and Demolition Debris and soils.
2. Waste handled at the facility will be per a DEC Solid Waste Inert Monofill Permit. See Answer to #3 as well. Per the permit mono-filled waste is routinely covered with soil to reduce any infiltration. The working face where waste is placed for compaction and covering is built such that storm water will not run into the working face. Lori Aldrich in Solid Waste at ADEC can answer questions particular to our permit application. Monofills etc.
3. Attached is a copy of the drainage plan for the site. There are no "water of the US" on this site. All storm water stays on site and newly constructed surfaces will be graded to drain runoff away from waste as designed. Even the driveway slopes back into the site so there is no way for runoff to leave site or enter waters of US.

We have hundreds of pages of modeling, consultants reports and design information on the water infiltration, precipitation, soil types, waste etc. if you have further questions let me know. All of the supplemental information is fairly large and would need to be burned to a disc. If it helps I could stop by and go through any of this information as well.

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Susan Lee

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Sent: Friday, August 29, 2014 12:18 PM
To: 'Durand, Shane'
Cc: Larry Helgeson; Susan Lee
Subject: RE: No Exposure Certificate for Multi-Sector General Permit

Yes the questions were prompted by MSB. They are copied on this email.
Thanks for a copy of the Corps JD.

William Ashton
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I assume your questions were prompted by MSB?

Was this response or something similar sent to them?

Just for further clarification I have attached the JD from the COE establishing no waters of the US.

Shane

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Subject: RE: No Exposure Certificate for Multi-Sector General Permit

1. Inert Construction and Demolition Debris and soils.
2. Waste handled at the facility will be per a DEC Solid Waste Inert Monofill Permit. See Answer to #3 as well. Per the permit mono-filled waste is routinely covered with soil to reduce any infiltration. The working face where waste is placed for compaction and covering is built such that storm water will not run into the working face. Lori Aldrich in Solid Waste at ADEC can answer questions particular to our permit application. Monofills etc.
3. Attached is a copy of the drainage plan for the site. There are no "water of the US" on this site. All storm water stays on site and newly constructed surfaces will be graded to drain runoff away from waste as designed. Even the driveway slopes back into the site so there is no way for runoff to leave site or enter waters of US.

We have hundreds of pages of modeling, consultants reports and design information on the water infiltration, precipitation, soil types, waste etc. if you have further questions let me know. All of the supplemental information is fairly large and would need to be burned to a disc. If it helps I could stop by and go through any of this information as well.

Shane Durand
Central Recycling Services
2400 Railroad Ave.
Anchorage, AK 99501
(907)748-7400
www.centralrecyclingservices.com
www.crssurplusmaterials.com

From: Ashton, William S (DEC) [mailto:william.ashton@alaska.gov]
Sent: Friday, August 29, 2014 9:00 AM
To: Durand, Shane
Subject: No Exposure Certificate for Multi-Sector General Permit

Shane,

I reviewed the No-Exposure Certificate for your facility "Central Monofill Services" and have some follow-up questions.

1. **Please describe the type of waste being handled and disposed of at the facility.**
2. **Please describe how this waste avoids exposure to precipitation.**
3. **Please describe the flow path of the storm water discharge from the facility. Does the discharge enter a water of the US?**

Please provide me answers to these questions by Sept 9, 2014 or sooner.

Thank you for your attention to this matter.

William Ashton
Storm Water & Wetlands
Wastewater Discharge Authorization Program, Division of Water
Alaska Dept. of Environmental Conservation
555 Cordova St
Anchorage, AK 99501
ph 907-269-6283
william.ashton@alaska.gov

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Susan Lee

From: Susan Lee
Sent: Tuesday, September 02, 2014 7:33 AM
To: 'Durand, Shane'
Subject: RE: CMS Monofill Follow up

It's fine the way it is.

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

From: Durand, Shane [mailto:shane@cei-alaska.com]
Sent: Thursday, August 28, 2014 12:28 PM
To: Susan Lee; Alex Strawn
Cc: Jacques, Stuart
Subject: RE: CMS Monofill Follow up

Susan

Would you like Sheet 9 cleaned up or colored differently?

Based on the information provided do you anticipate recommending our CUP?

Respectfully,
Shane

From: Susan Lee [mailto:Susan.Lee@matsugov.us]
Sent: Thursday, August 28, 2014 11:34 AM
To: Durand, Shane; Alex Strawn
Cc: Jacques, Stuart
Subject: RE: CMS Monofill Follow up

Shane:

This site plan will work.

We are considering your application complete and are tentatively scheduling your public hearing for the December 1, 2014 planning commission meeting. We are unable to schedule the public hearing any earlier due to scheduling conflicts.

Susan

Susan Lee
Planner II

Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

From: Durand, Shane [mailto:shane@cei-alaska.com]
Sent: Thursday, August 28, 2014 8:47 AM
To: Susan Lee; Alex Strawn
Cc: Jacques, Stuart
Subject: RE: CMS Monofill Follow up

Susan

I am unsure I clearly understand the question. I have attached sheet 9 (with Drainage Plan) with the drainage lines colored and the section lines labeled to make sure we are talking about the same north south or east west lines. The interception ditch would collect storm water runoff around the perimeter of the monofill along what I have labeled the North/South Section line. The section line easement I have labeled East/West would collect water that runs off the adjacent slope but not the surface of the monofill. The East/West Section line does not drain off the property.

Let me know if this doesn't answer your question or if you would like me to come out and go through this with you.

Thanks

Shane

From: Susan Lee [mailto:Susan.Lee@matsugov.us]
Sent: Wednesday, August 27, 2014 2:04 PM
To: Durand, Shane; Alex Strawn
Cc: Jacques, Stuart
Subject: RE: CMS Monofill Follow up

Shane:

The revised site plan, dated August 21, 2014, shows how the monofill will slope away from the east/west section line easement. However, this site plan does not indicate how the monofill will slope away from the north/south section line easement. This needs to be shown on the site plan.

Susan

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

From: Durand, Shane [mailto:shane@cei-alaska.com]
Sent: Friday, August 22, 2014 5:29 PM
To: Alex Strawn
Cc: Susan Lee; Jacques, Stuart
Subject: CMS Monofill Follow up

Alex

Please find attached two supplemental drawings to address the section easement concerns. These can be used to show the "conditioned" status of the CUP area. Let me know if you have any questions or concerns on these.

We have done a lot of research on the Alascom Private easement concern. From our research nothing more than an application for easement exists. Nothing is recorded and we have not been approached as the landowner for an easement.

Per the Title Company

"Shane,
Thank you for taking the time to talk with Sharon and I this morning. Per our conversation this email is to follow up and summarize what we have found. Also attached is a copy of the existing MTA Easement that is recorded to the official public record through the State Recorders office at the Department of Natural Resources.

The Section Line Easement was shown on the Title Policy you received and we found it to be 33 feet from the center of each section line boundary of your property.
As for the conflict with a "private easement" as Alex Strawn of the MSB is concerned about, the ADL 230702 in the Land Management filing appears to be an *application* for an easement. We do not find anything of record that reflects this application to have been finalized or the steps taken to create a valid easement. For an easement to be made valid would require it to be transferred by the owner of the fee simple of the property, which being private property would be Central Monofill Services Inc.," " to perfect the position the easement would require the instrument to be recorded in the official public records through the Recorders Office. If this process has been completed and filed of record we would need to receive a copy of the recorded instrument before we could further comment on its affect to title.
I hope that this provides some assistance to you. Please feel free to contact Sharon Elliott or myself directly if we may be of further service.

Tiani Brandner
Business Development / Title Officer w (907) 339-8849 c (907) 764-5073 tbrandner@alyeskatitle.com
Alyeska Title Guaranty Agency
3801 Centerpoint Drive Suite 102
Anchorage AK 99503"

We have made multiple contacts to DNR and Alascom and have found nothing more than an application at this time. This easement application appears to be primarily within the Section line easement and other existing utility easement so it shouldn't conflict at this time anyways.

Let us know if you need anything further on the easement issues or anything else.

Do you have a timeline for our permit moving forward?

Shane Durand
Central Recycling Services
2400 Railroad Ave.
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(907)748-7400
www.centralrecyclingservices.com
www.crssurplusmaterials.com
www.cicequipment.com

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Susan Lee

From: Mary Brodigan
Sent: Friday, September 05, 2014 12:58 PM
To: Susan Lee
Subject: Please call Lori Aldrich at DEC...

Please call Lori Aldrich at DEC at 269-7622. She wants to know when you plan on sending out notices for the Monofill.

Mary Brodigan
Administrative Secretary II
PH 907-861-7851
FX 907-745-9875
PLANNING & LAND USE DEPARTMENT

"Community of Choice to live and work where every citizen matters"

Susan Lee

From: Richard Harbuck [superglide@mtaonline.net]
Sent: Monday, September 15, 2014 4:02 PM
To: Susan Lee
Subject: CMS Monofill CUP App 2014

Dear Susan, I have been informed by the Governors office that the application process is complete and that public hearings are to be set by the MSB. I have also been informed that DEC will be opening a comment period on the original application...does this mean they CMS will not be required to submit a new application to DEC as the public had hoped? Any information you can give on this current matter would be greatly appreciated. Rich H.

Susan Lee

From: Alex Strawn
Sent: Thursday, September 25, 2014 9:23 AM
To: Susan Lee
Subject: Fwd: CMS application?

Sent from my iPhone

Begin forwarded message:

> **From:** Zaz Hollander <zhollander@alaskadispatch.com>
> **Date:** September 25, 2014 at 8:54:24 AM AKDT
> **To:** Alex Strawn <alex.strawn@matsugov.us>
> **Subject: CMS application?**
>
> Hey Alex -- I'm doing a quick story on the Chugiak monofill and wanted to check in on Palmer. What's the status of that application these days?
>
> --
> **Zaz Hollander**
> Reporter
> *Alaska Dispatch News*
> (907) 232-2315

Susan Lee

From: Susan Lee
Sent: Thursday, September 25, 2014 10:02 AM
To: Alex Strawn; 'zhollander@alaskadispatch.com'
Subject: RE: CMS application?

Hi Zaz:

The public hearing is being scheduled for the December 1, 2014 planning commission meeting. I am getting all of the information together so that it can go out for public review soon.

Susan

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

From: Alex Strawn
Sent: Thursday, September 25, 2014 9:23 AM
To: Susan Lee
Subject: Fwd: CMS application?

Sent from my iPhone

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> **Subject: CMS application?**
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>
> --
> **Zaz Hollander**
> Reporter
> *Alaska Dispatch News*
> (907) 232-2315

Susan Lee

From: Zaz Hollander [zhollander@alaskadispatch.com]
Sent: Thursday, September 25, 2014 10:11 AM
To: Susan Lee
Subject: Re: CMS application?

Thanks, Susan.

On Thu, Sep 25, 2014 at 10:01 AM, Susan Lee <Susan.Lee@matsugov.us> wrote:

Hi Zaz:

The public hearing is being scheduled for the December 1, 2014 planning commission meeting. I am getting all of the information together so that it can go out for public review soon.

Susan

Susan Lee

Planner II

Matanuska-Susitna Borough

907-861-7862 (Direct Line)

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--

Zaz Hollander

Reporter

Alaska Dispatch News

(907) 232-2315

--
Zaz Hollander
Reporter
Alaska Dispatch News
(907) 232-2315

Susan Lee

From: Richard Harbuck [superglide@mtaonline.net]
Sent: Tuesday, September 30, 2014 7:00 AM
To: Susan Lee

Hello Susan, please update on the progress of the monofill application and any information on a timeline for notification to the public to be sent out. I would like to be able to report to the Gateway Community Council on Thursday at the members meeting. Thank you, Rich H.

Susan Lee

From: Susan Lee
Sent: Tuesday, September 30, 2014 7:14 AM
To: 'superglide@mtaonline.net'
Subject: RE:

I hope to get it out sometime next week. The application material is so large we have to figure out how to get it posted on the web site.

Susan

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

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Sent: Tuesday, September 30, 2014 7:00 AM
To: Susan Lee
Subject:

Hello Susan, please update on the progress of the monofill application and any information on a timeline for notification to the public to be sent out. I would like to be able to report to the Gateway Community Council on Thursday at the members meeting. Thank you, Rich H.

Susan Lee

From: Richard Harbuck [superglide@mtaonline.net]
Sent: Wednesday, October 01, 2014 2:14 PM
To: Susan Lee
Subject: public comment

Hello Susan, once this monofill thing gets out for public comment, to what email and or physical address can comments be made. Just getting my ducks in a row for when the proper time comes. Thanks Rich H.

Susan Lee

From: Susan Lee
Sent: Thursday, October 02, 2014 7:35 AM
To: 'superglide@mtaonline.net'
Subject: RE: public comment

Comments can be e-mailed to me: slee@matsugov.us or mailed to MSB Development Services, 350 E. Dahlia Avenue, Palmer, AK 99645

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

From: Richard Harbuck [mailto:superglide@mtaonline.net]
Sent: Wednesday, October 01, 2014 2:14 PM
To: Susan Lee
Subject: public comment

Hello Susan, once this monofill thing gets out for public comment, to what email and or physical address can comments be made. Just getting my ducks in a row for when the proper time comes. Thanks Rich H.

Susan Lee

From: Richard Harbuck [superglide@mtaonline.net]
Sent: Tuesday, October 07, 2014 5:49 PM
To: Susan Lee
Subject: more pestering about the cms application.

Hello Susan, sorry to bother you, how is the application proceeding?

Susan Lee

From: Susan Lee
Sent: Wednesday, October 08, 2014 7:27 AM
To: 'superglide@mtaonline.net'
Subject: RE: more pestering about the cms application.

The application material is posted on the MSB website. You can access it by going to www.matsugov.us and clicking on 'Public Notices'. There is a hard copy of the application material at the Permit Center. The public hearing notices will be mailed today. Comments are due October 31.

susan

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

From: Richard Harbuck [mailto:superglide@mtaonline.net]
Sent: Tuesday, October 07, 2014 5:49 PM
To: Susan Lee
Subject: more pestering about the cms application.

Hello Susan, sorry to bother you, how is the application proceeding?

Susan Lee

From: Richard Harbuck [superglide@mtaonline.net]
Sent: Wednesday, October 08, 2014 7:44 AM
To: Susan Lee
Subject: RE: more pestering about the cms application.

Do I understand you correctly that the public comment period is only open for three weeks and the borough is just now putting out a mailing. How far will the information to the public mailing extend from the dump?
--- Susan.Lee@matsugov.us wrote:

From: Susan Lee <Susan.Lee@matsugov.us>
To: "superglide@mtaonline.net" <superglide@mtaonline.net>
Subject: RE: more pestering about the cms application.
Date: Wed, 8 Oct 2014 15:27:14 +0000

The application material is posted on the MSB website. You can access it by going to www.matsugov.us and clicking on 'Public Notices'. There is a hard copy of the application material at the Permit Center. The public hearing notices will be mailed today. Comments are due October 31.

susan

Susan Lee

Planner II

Matanuska-Susitna Borough

907-861-7862 (Direct Line)

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To: Susan Lee
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Susan Lee

From: Susan Lee
Sent: Wednesday, October 08, 2014 7:50 AM
To: 'superglide@mtaonline.net'
Cc: Alex Strawn
Subject: RE: more pestering about the cms application.

MSB code only requires a 15 day notification period. It is a large amount of material 1031 pages and we had difficulty getting it posted on the web site. The notification area is the same as last year, one-half mile.

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

From: Richard Harbuck [mailto:superglide@mtaonline.net]
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Subject: RE: more pestering about the cms application.

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--- Susan.Lee@matsugov.us wrote:

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susan

Susan Lee

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Sent: Tuesday, October 07, 2014 5:49 PM
To: Susan Lee
Subject: more pestering about the cms application.

Hello Susan, sorry to bother you, how is the application proceeding?

Susan Lee

From: Durand, Shane [shane@cei-alaska.com]
Sent: Friday, October 10, 2014 5:56 PM
To: Alex Strawn; Susan Lee
Subject: Update and adder
Attachments: 2014 Canaday ADEC Inspection.pdf

Susan,

I was wondering if I could get an update on the status of our CUP application? Everything still on for Dec 1st?
Not waiting for anything from us?
Any new concerns been raised?
What is the time frame for public notice?

I would also like to submit the attached ADEC inspection report. Many people at the last hearing made comments that the ADEC does not inspect monofills. This proves they do inspect and further more we are proud of getting a perfect score on the inspection of our existing facility in Salcha. This proves we are a good operator.

The only negative with this report was ADEC noted they had received a complaint from a neighbor about traffic, road conditions, etc. upon investigation we found out the trucks the neighbor had complaints about were State of Alaska trucks that were improving Canaday Road, which is state maintained. The complaint although directed at our operation was with something not affiliated with our facility and ADEC took no action.

If you have any questions or need anything more from us please don't hesitate to ask.

Respectfully,

Shane Durand

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Anchorage, AK 99501
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(907)770-5084 fax
www.centralrecyclingservices.com
www.crssurplusmaterials.com
www.cicequipment.com

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Susan Lee

From: Durand, Shane [shane@cei-alaska.com]
Sent: Monday, October 13, 2014 7:30 AM
To: Susan Lee
Subject: RE: Update and adder

Yes please add to the package.

Can you send me a copy of the public notice please.

Thanks
Shane

From: Susan Lee [mailto:Susan.Lee@matsugov.us]
Sent: Monday, October 13, 2014 7:28 AM
To: Durand, Shane
Subject: RE: Update and adder

Shane:

The public hearing notices were mailed last week. Comments are due October 31. So far I have only received two written comments - in opposition to the monofill. I will forward those e-mails to you.

Do you want this ADEC report included in your packet to the planning commission?

Susan

Susan Lee
Planner II
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www.cicequipment.com

Susan Lee

From: Durand, Shane [shane@cei-alaska.com]
Sent: Monday, October 13, 2014 9:39 AM
To: Susan Lee
Subject: RE: Update and adder

When you and Alex have a minute could you give me a call. I would like to give you an update on our project with Eklutna Inc.

Shane

From: Susan Lee [mailto:Susan.Lee@matsugov.us]
Sent: Monday, October 13, 2014 7:33 AM
To: Durand, Shane
Subject: RE: Update and adder

Will do.

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
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Respectfully,

Shane Durand

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www.crssurplusmaterials.com
www.cicequipment.com

Susan Lee

From: Richard Harbuck [superglide@mtaonline.net]
Sent: Monday, October 13, 2014 2:37 PM
To: Susan Lee
Subject: size info CMS apps.

Hello Susan could you please tell me the number of pages in the 2013 application and the number of pages in the 2014 application as finalized by the borough from CMS. Thank you. Rich H.

Susan Lee

From: Susan Lee
Sent: Tuesday, October 14, 2014 8:42 AM
To: 'superglide@mtaonline.net'
Subject: RE: size info CMS apps.

It looks like the 2013 application material was around 143 pages and the 2014 application material is 774 pages.

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

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Susan Lee

From: Durand, Shane [shane@cei-alaska.com]
Sent: Friday, October 17, 2014 11:43 AM
To: Susan Lee
Cc: Mary Brodigan
Subject: RE: Attachment 3

Is it the entire Attachment 3 section or just the appendices?

Shane

From: Susan Lee [mailto:Susan.Lee@matsugov.us]
Sent: Friday, October 17, 2014 11:01 AM
To: Durand, Shane
Cc: Mary Brodigan
Subject: Attachment 3
Importance: High

Shane:

Can you send a better copy of Attachment 3 from the May submittal. The print on that attachment is very light and as we copy and scan it becomes illegible.

I will be out of the office starting at 12:30 today, so if you send it later than that please send it to Mary Brodigan.

Thanks, Susan

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

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Susan Lee

From: Durand, Shane [shane@cei-alaska.com]
Sent: Friday, October 17, 2014 11:51 AM
To: Susan Lee
Subject: RE: Attachment 3

Ok
Have it over in a minute.

From: Susan Lee [mailto:Susan.Lee@matsugov.us]
Sent: Friday, October 17, 2014 11:46 AM
To: Durand, Shane
Subject: RE: Attachment 3

The Appendices

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
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Is it the entire Attachment 3 section or just the appendices?

Shane

From: Susan Lee [mailto:Susan.Lee@matsugov.us]
Sent: Friday, October 17, 2014 11:01 AM
To: Durand, Shane
Cc: Mary Brodigan
Subject: Attachment 3
Importance: High

Shane:

Can you send a better copy of Attachment 3 from the May submittal. The print on that attachment is very light and as we copy and scan it becomes illegible.

I will be out of the office starting at 12:30 today, so if you send it later than that please send it to Mary Brodigan.

Thanks, Susan

Susan Lee

Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

Susan Lee

From: Durand, Shane [shane@cei-alaska.com]
Sent: Friday, October 17, 2014 12:17 PM
To: Susan Lee
Cc: Mary Brodigan
Subject: RE: Attachment 3
Attachments: 20141017121022.pdf

This is the best I have. If this is not sufficient I will get with Terrastat and have them resend the original.

Shane

From: Susan Lee [mailto:Susan.Lee@matsugov.us]
Sent: Friday, October 17, 2014 11:46 AM
To: Durand, Shane
Subject: RE: Attachment 3

The Appendices

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

From: Durand, Shane [mailto:shane@cei-alaska.com]
Sent: Friday, October 17, 2014 11:43 AM
To: Susan Lee
Cc: Mary Brodigan
Subject: RE: Attachment 3

Is it the entire Attachment 3 section or just the appendices?

Shane

From: Susan Lee [mailto:Susan.Lee@matsugov.us]
Sent: Friday, October 17, 2014 11:01 AM
To: Durand, Shane
Cc: Mary Brodigan
Subject: Attachment 3
Importance: High

Shane:

Can you send a better copy of Attachment 3 from the May submittal. The print on that attachment is very light and as we copy and scan it becomes illegible.

I will be out of the office starting at 12:30 today, so if you send it later than that please send it to Mary Brodigan.

Thanks, Susan

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

Susan Lee

From: Susan Lee
Sent: Monday, October 20, 2014 9:56 AM
To: 'Durand, Shane'
Subject: advertising fees
Attachments: Fee Letter CMS.pdf

Shane:

Please see attached.

Susan

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

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MATANUSKA-SUSITNA BOROUGH
Planning and Land Use Department
Development Services Division
350 East Dahlia Avenue • Palmer, AK 99645
Phone (907) 861-7822 • Fax (907) 861-7876
E-mail: permitcenter@matsugov.us

October 20, 2014

Shane Durand
Central Recycling Services
2400 Railroad Avenue
Anchorage, AK 99501

SUBJECT: **Central Monofill Services Conditional Use Permit Application**
LOCATION: 17N02E18C010 and 17N02E19B006

Dear Mr. Durand:

The application for a conditional use permit on the above referenced property has been distributed for comments. In accordance with the requirements of MSB 17.03 – Public Notification, the applicant shall pay the cost of mailings or advertisements required by ordinance specific to that action. Payment must be received by the Matanuska-Susitna Borough **prior** to the public hearing. Please be advised of the following charges:

Advertising:	$191.25
Mailing:	108.25
TOTAL DUE:	$299.50

The advertisement was published in the October 17, 2014 Frontiersman. The public hearing is scheduled for the **December 1, 2014** Planning Commission meeting. Public hearings begin at 6:15 p.m. and it would be in your best interest to be in attendance or to be represented at that meeting.

Should you have any questions or require additional information please contact me at the above address, phone# 861-7862, or e-mail: slee@matsugov.us.

Sincerely,

Susan Lee
Planner II

Susan Lee

From: Durand, Shane [shane@cei-alaska.com]
Sent: Monday, October 20, 2014 10:02 AM
To: Susan Lee
Subject: RE: advertising fees

I will put this in for payment ASAP.

From: Susan Lee [mailto:Susan.Lee@matsugov.us]
Sent: Monday, October 20, 2014 9:56 AM
To: Durand, Shane
Subject: advertising fees

Shane:

Please see attached.

Susan

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

Susan Lee

From: Durand, Shane [shane@cei-alaska.com]
Sent: Monday, October 20, 2014 10:05 AM
To: Alex Strawn
Cc: Susan Lee
Subject: CMS Public Hearing

Are there any of our experts you would like to attend the hearing?

Would you please request Lori Aldrich of the ADEC to attend the hearing.

Thanks

Shane Durand
Central Recycling Services
2400 Railroad Ave.
Anchorage, AK 99501
(907)748-7400
(907)770-5084 fax
www.centralrecyclingservices.com
www.crssurplusmaterials.com
www.cicequipment.com

Susan Lee

From: Zaz Hollander [zhollander@alaskadispatch.com]
Sent: Monday, October 20, 2014 11:53 AM
To: Susan Lee
Subject: Monofill application

Hi Susan -- I'm trying to get a look at Central's monofill application but can't find it online and it sounds like a huge document. Is there any way for you to email me the smaller application itself without attachments? I've heard that's only about 40 pages.

I could also come in and look at it, whatever's easier for you. Or, obviously, if it's posted online somewhere, just direct me to the right link!
Zaz

--
Zaz Hollander
Reporter
Alaska Dispatch News
(907) 232-2315

Susan Lee

From: Susan Lee
Sent: Monday, October 20, 2014 11:56 AM
To: 'Zaz Hollander'
Subject: RE: Monofill application

Yes, it is a huge document. We posted 1031 pages on the website. You can find it by going to www.matsugov.us and clicking on 'Public Notices'. We have a hard copy at the Permit Center for people to look at. Or you can make a public records request and we can burn you a CD for $7.50.

Let me know what works best for you.

Susan

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

From: Zaz Hollander [mailto:zhollander@alaskadispatch.com]
Sent: Monday, October 20, 2014 11:53 AM
To: Susan Lee
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I could also come in and look at it, whatever's easier for you. Or, obviously, if it's posted online somewhere, just direct me to the right link!
Zaz

--

Zaz Hollander
Reporter
Alaska Dispatch News
(907) 232-2315

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Susan Lee

From: Zaz Hollander [zhollander@alaskadispatch.com]
Sent: Monday, October 20, 2014 12:03 PM
To: Susan Lee
Subject: Re: Monofill application

Thanks, Susan. I'll get it off the web site.
z

On Mon, Oct 20, 2014 at 11:58 AM, Susan Lee <Susan.Lee@matsugov.us> wrote:

Yes, it is a huge document. We posted 1031 pages on the website. You can find it by going to www.matsugov.us and clicking on 'Public Notices'. We have a hard copy at the Permit Center for people to look at. Or you can make a public records request and we can burn you a CD for $7.50.

Let me know what works best for you.

Susan

Susan Lee

Planner II

Matanuska-Susitna Borough

907-861-7862 (Direct Line)

907-861-7876 (FAX)

PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

From: Zaz Hollander [mailto:zhollander@alaskadispatch.com]
Sent: Monday, October 20, 2014 11:53 AM
To: Susan Lee
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I could also come in and look at it, whatever's easier for you. Or, obviously, if it's posted online somewhere, just direct me to the right link!

Zaz

--

Zaz Hollander

Reporter

Alaska Dispatch News

(907) 232-2315

--

Zaz Hollander
Reporter
Alaska Dispatch News
(907) 232-2315

Susan Lee

From: Susan Lee
Sent: Monday, October 20, 2014 1:30 PM
To: 'Durand, Shane'
Cc: Alex Strawn
Subject: Screening

Shane:

This is a follow-up to our earlier discussion regarding screening the monofill from the section line easements. MSB 17.60.110(A) states *"No junkyard or auto wrecking yard shall be established or operated unless the wrecking yard is completely obscured from the view of any traveled or public right-of-way. the permit may require the junkyard or auto wrecking yard not within a building to be contained within a continuous solid fence no less than eight feet in height. if such requirement is necessary to prevent the unsightly display of the yard or for public safety purposes. Fencing may be of one or a combination of the following:*

(1) conventional solid wood or metal fencing;
(2) evergreen or other natural planting sufficient to provide year-round screening; and
(3) earthen berm or topography.

MSB 17.60.110(B) states *"In all cases, fencing provided shall be continuous and of sufficient density to provide visual screening required by this chapter on a year-round basis".*

Please let us know how you plan on providing year-round screening of the monofill operation from the section line easements, as this issue will have to be addressed in the staff report.

Susan

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

Susan Lee

From: Durand, Shane [shane@cei-alaska.com]
Sent: Tuesday, October 21, 2014 11:31 AM
To: Susan Lee
Subject: Re: Screening

Great

Sent from my iPhone

> On Oct 21, 2014, at 11:16 AM, "Susan Lee" <Susan.Lee@matsugov.us> wrote:
>
> That will work for us. See you at 3 tomorrow.
>
> Susan Lee
> Planner II
> Matanuska-Susitna Borough
> 907-861-7862 (Direct Line)
> 907-861-7876 (FAX)
> PLEASE NOTE NEW DIRECT LINE PHONE NUMBER
>
> -----Original Message-----
> From: Durand, Shane [mailto:shane@cei-alaska.com]
> Sent: Tuesday, October 21, 2014 11:11 AM
> To: Susan Lee; Alex Strawn
> Subject: Screening
>
> Do you have time tomorrow around 3 I could stop by and talk about the screening. Probably alot better with drawings in front of us.
>
> Shane
>
> Sent from my iPhone

Susan Lee

From: Durand, Shane [shane@cei-alaska.com]
Sent: Tuesday, October 21, 2014 1:04 PM
To: Susan Lee
Subject: Public notice web site

The web site says End Date 1/02/15 ???? http://www.matsugov.us/publicnotices/2618-central-monofill-services-conditional-use-permit

Shane Durand
Central Recycling Services
2400 Railroad Ave.
Anchorage, AK 99501
(907)748-7400
(907)770-5084 fax
www.centralrecyclingservices.com
www.crssurplusmaterials.com
www.cicequipment.com

Susan Lee

From: Susan Lee
Sent: Tuesday, October 21, 2014 1:07 PM
To: 'Durand, Shane'
Subject: RE: Public notice web site

That is when it will be unpublished off the web site. We keep notices posted until after the appeal period runs out.

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

From: Durand, Shane [mailto:shane@cei-alaska.com]
Sent: Tuesday, October 21, 2014 1:04 PM
To: Susan Lee
Subject: Public notice web site

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(907)748-7400
(907)770-5084 fax
www.centralrecyclingservices.com
www.crssurpiusmateriais.com
www.cicequipment.com

Susan Lee

From: Durand, Shane [shane@cei-alaska.com]
Sent: Tuesday, October 21, 2014 1:10 PM
To: Susan Lee
Subject: RE: Public notice web site

Ok thanks just wanted to check

From: Susan Lee [mailto:Susan.Lee@matsugov.us]
Sent: Tuesday, October 21, 2014 1:07 PM
To: Durand, Shane
Subject: RE: Public notice web site

That is when it will be unpublished off the web site. We keep notices posted until after the appeal period runs out.

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
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To: Susan Lee
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www.centralrecyclingservices.com
www.crssurplusmaterials.com
www.cicequipment.com

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Susan Lee

From: Durand, Shane [shane@cei-alaska.com]
Sent: Tuesday, October 21, 2014 3:07 PM
To: Susan Lee
Subject: RE: question
Attachments: 20141021144155.pdf

Susan

This may be easier to explain tomorrow with the drawings in front of us and I will bring some pictures. I attached a sketch.

Our Jan package, page 29 of 38, states the cells are about 125' wide. We would build sub cells 125' center of one wall to the other but they would extend the length of a Cell. He says 120' wide as you have the width of the berm to account for.

I assume you are looking at the May 13 Maddox report page 15. The 120'x50' he is referring to is the "Working Face" This is the area where material is actively being dumped and compacted. After this step it is covered. Maddox is indicating the working face, where material is loose and not completely compacted is most vulnerable to infiltration. As the compactor densifies and compacts the working face the sub cell is filled to depth.

As the working face advances and the sub cell is filled to depth the soil cover is placed on top. The largest area exposed from the front of the working face to soil cover is 25,000 sf

Hopefully this helps.

Shane

From: Susan Lee [mailto:Susan.Lee@matsugov.us]
Sent: Tuesday, October 21, 2014 1:55 PM
To: Durand, Shane
Subject: question

I need some clarification on the cell sizes. Maddox says they will be 120' x 50' and the CMS application material says they will be 125' wide. What dimension is correct?

Also, I just want to clarify that 25,000 square feet, not cubic feet, is the maximum area that will be exposed and not covered at aany one time during the monofill operation.

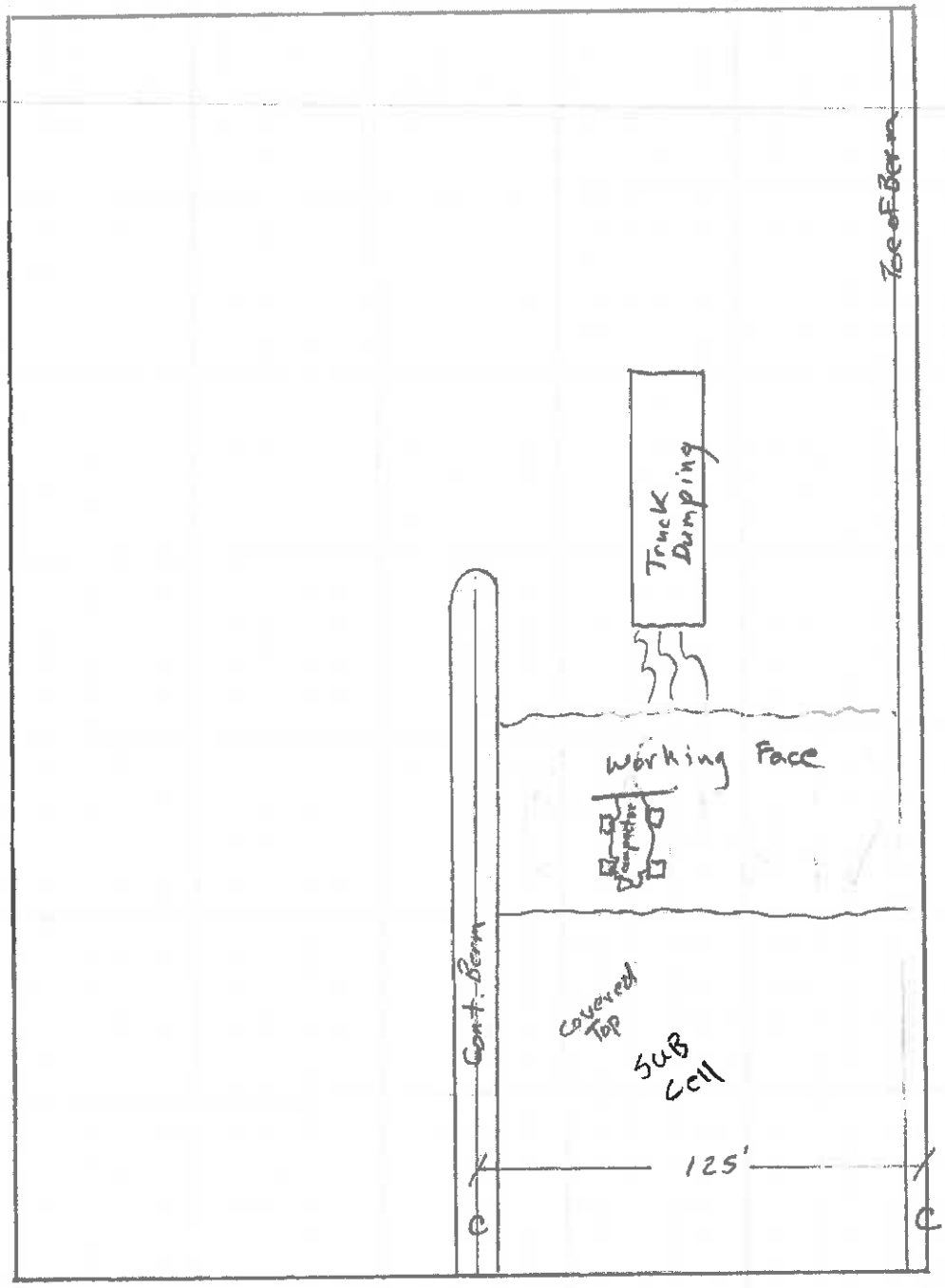
Susan

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

PROJECT			
BY	DATE	ORDERED BY	DATE

Central Environmental, Inc.
General Contractor Licence #18162
311 N Sitka St. Phone: (907) 561-0125
Anchorage, AK 99501 Fax: (907) 561-0178

Cell B



NOT TO SCALE

FEATURE	JOB NO.	SHEET 1 OF 1

Susan Lee

From: Durand, Shane [shane@cei-alaska.com]
Sent: Wednesday, October 22, 2014 7:23 AM
To: Susan Lee
Cc: Alex Strawn
Subject: RE: question

No problem. See you at 3.

From: Susan Lee [mailto:Susan.Lee@matsugov.us]
Sent: Wednesday, October 22, 2014 7:15 AM
To: Durand, Shane
Cc: Alex Strawn
Subject: RE: question

It helps some, but I think explaining it in person will help. I just want to make sure I get the info correct in the staff report.

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

From: Durand, Shane [mailto:shane@cei-alaska.com]
Sent: Tuesday, October 21, 2014 3:07 PM
To: Susan Lee
Subject: RE: question

Susan

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Hopefully this helps.

Shane

From: Susan Lee [mailto:Susan.Lee@matsugov.us]
Sent: Tuesday, October 21, 2014 1:55 PM
To: Durand, Shane
Subject: question

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Susan

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

Susan Lee

From: Durand, Shane [shane@cei-alaska.com]
Sent: Wednesday, October 22, 2014 3:44 PM
To: Susan Lee; Alex Strawn
Subject: Palmer Mailer re Palmer Monofill Site 10.22.14.pdf
Attachments: Palmer Mailer re Palmer Monofill Site 10.22.14.pdf; ATT00001.txt

Palmer Toxic Dumping Community Group
P.O. Box 3042
Palmer, AK 99645

PRSRT STD
U.S. POSTAGE PAID
Palmer, Alaska
Permit No. 75

Current Resident Or

Palmer, AK 99645-0407

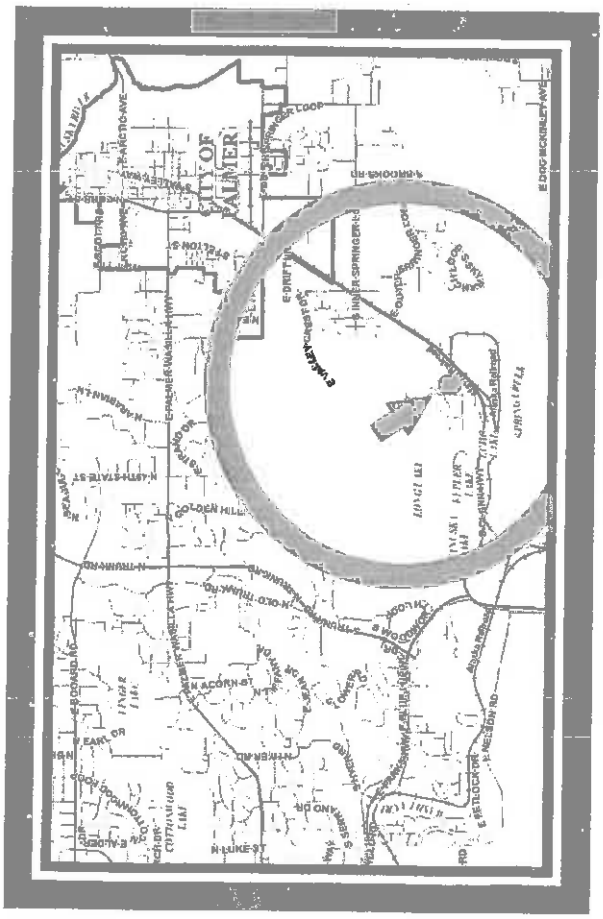
Speak up for our community

Deadline: October 31 for written comments to be included in the planning commission information packet.
Final Deadline: November 31 for written comments.

Come To the meeting

Attend the December 1
Planning Commission Meeting
@ 6:30 pm in MSB Assembly Chambers

Help get the word out:
To download and print flyers, visit
PalmerToxicDumping.Org



LOCATION: Glenn Hwy. at mile 38.3 behind the shooting range across from the Granite gravel pit.

MOTIVE: CMS is a private, for-profit shell corporation that will dispose of mostly Anchorage building waste on private land so that its owners can profit by avoiding the necessary cost of public dump fees. Because CMS operates as a shell corporation without large corporate assets, its owners can operate without incurring any significant liability for the future environmental damage that is predicted.

A DUMP IS FOREVER

Comment now
e-mail comments to slee@matsugov.us
Fax comments to 861-7876

Page 2087
NOVEMBER 7, 2016
PLANNING COMMISSION

ASBESTOS

There is no independent inspection process to assure proper asbestos containment at this PRIVATELY OWNED, FOR PROFIT dump. The Palmer dump already has an asbestos cell and C&D (construction and demolition) section with proper oversight. AK Demo already runs a private C&D dump 2 miles away.

POISON WELLS UP TO A MILE FROM THE SITE

A borough sponsored hydrological evaluation concludes: "Contaminants could travel approximately a mile down-gradient and still exceed drinking water standards". A quote from CT.gov states, "wood waste from construction, renovation and demolition, pressure treated timber … may contain creosote, lead, acrylic, chromium, pentachlorophenol, phenol-formaldehyde resins, and other known carcinogens and ground water contaminants…. These pollutants can leach into the ground water" (http://www.ct.gov/deep/cwp/view.asp?a=2718&q=325342)

ENVIRONMENTAL CRIME HISTORY

While being cited for **illegally dumping** waste without a permit or even a business license, CMS Corporate Officer Shane Durand stated, "the solution to pollution is dilution." The company was later fined and were repeatedly ordered to clean up although they claimed the dumped material was not trash-see photo.

(MSB Code compliance case summary G20130022 page 5—Read the official report at PalmerToxicDumping.Org)

CONTAMINATION OF FISHING IN THE KEPLER-BRADLEY LAKE SYSTEM

The site sits on top of the open aquifer that flows through fishing and recreation areas at Canoe Lake, Kepler-Bradley Lake, and beyond. Approval of a combination dump & junkyard permit for this property will allow fuel tanks and potentially leaky equipment to be parked on the edge of man-made gravel pit lakes OPEN TO THE AQUIFER.

WINDBLOWN TRASH

"Valley Trash" *will* be what people see on their way to Palmer. That affects tourism, business, property values and tax revenues.

PalmerToxicDumping.Org

Junkyard permit will allow fuel tanks next to gravel-pond lakes that feed directly into wells and our aquifer

Alaska DEC has already "tentatively approved" the project pending a borough permit

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Susan Lee

From: Durand, Shane [shane@cei-alaska.com]
Sent: Thursday, October 23, 2014 7:20 AM
To: Alex Strawn
Cc: Susan Lee
Subject: flyer
Attachments: CRS Mailing PC prf2.pdf

FYI this is a mailer we have going out.

Shane Durand

Central Recycling Services
2400 Railroad Ave.
Anchorage, AK 99501
(907)748-7400
(907)770-5084 fax
www.centralrecyclingservices.com
www.crssurplusmaterials.com
www.cicequipment.com

CENTRAL
Recycling Services

2400 Railroad Ave • Anchorage, AK 99501

PRSRT STD
US Postage
PAID
Anchorage, AK
Permit No. 69

Support Recycling In Alaska

Learn more at:

www.centralrecyclingservices.com

Or

www.matsugov.us/publicnotices/2618-central-monofill-services-conditional-use-permit

Don't let misinformation and stereotyes form your opinion...

Get the facts!

Call today for more information or to schedule a tour

907-748-7400

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Susan Lee

From: Durand, Shane [shane@cei-alaska.com]
Sent: Thursday, October 23, 2014 7:31 AM
To: Alex Strawn; Susan Lee
Subject: Flyer final
Attachments: CRS Mailing PC prf3.pdf

Opps I sent you the draft this is the final version.

Shane Durand

Central Recycling Services
2400 Railroad Ave.
Anchorage, AK 99501
(907)748-7400
(907)770-5084 fax
www.centralrecyclingservices.com
www.crssurplusmaterials.com
www.cicequipment.com

CENTRAL
Recycling Services
2400 Railroad Ave • Anchorage, AK 99501

PRSRT STD
US Postage
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Anchorage, AK
Permit No. 69

Support Recycling In Alaska

Learn more at:

www.centralrecyclingservices.com

Or

www.matsugov.us/publicnotices/2618-central-monofill-services-conditional-use-permit

Don't let misinformation and stereotypes form your opinion...

Get the facts!

Call today for more information or to schedule a tour

907-748-7400

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Susan Lee

From: Susan Lee
Sent: Thursday, October 23, 2014 9:02 AM
To: 'Aldrich, Lori (DEC)'
Cc: Alex Strawn; 'Durand, Shane'
Subject: Central Monofill Services

Lori:

Central Monofill Services has requested that you attend the MSB Planning Commission meeting on Monday, December 1, 2014 for the public hearing on the conditional use permit for the proposed monofill. Public hearings begin at 6:15 in the Borough Assembly Chambers, 350 E. Dahlia Avenue, Palmer.

Susan

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

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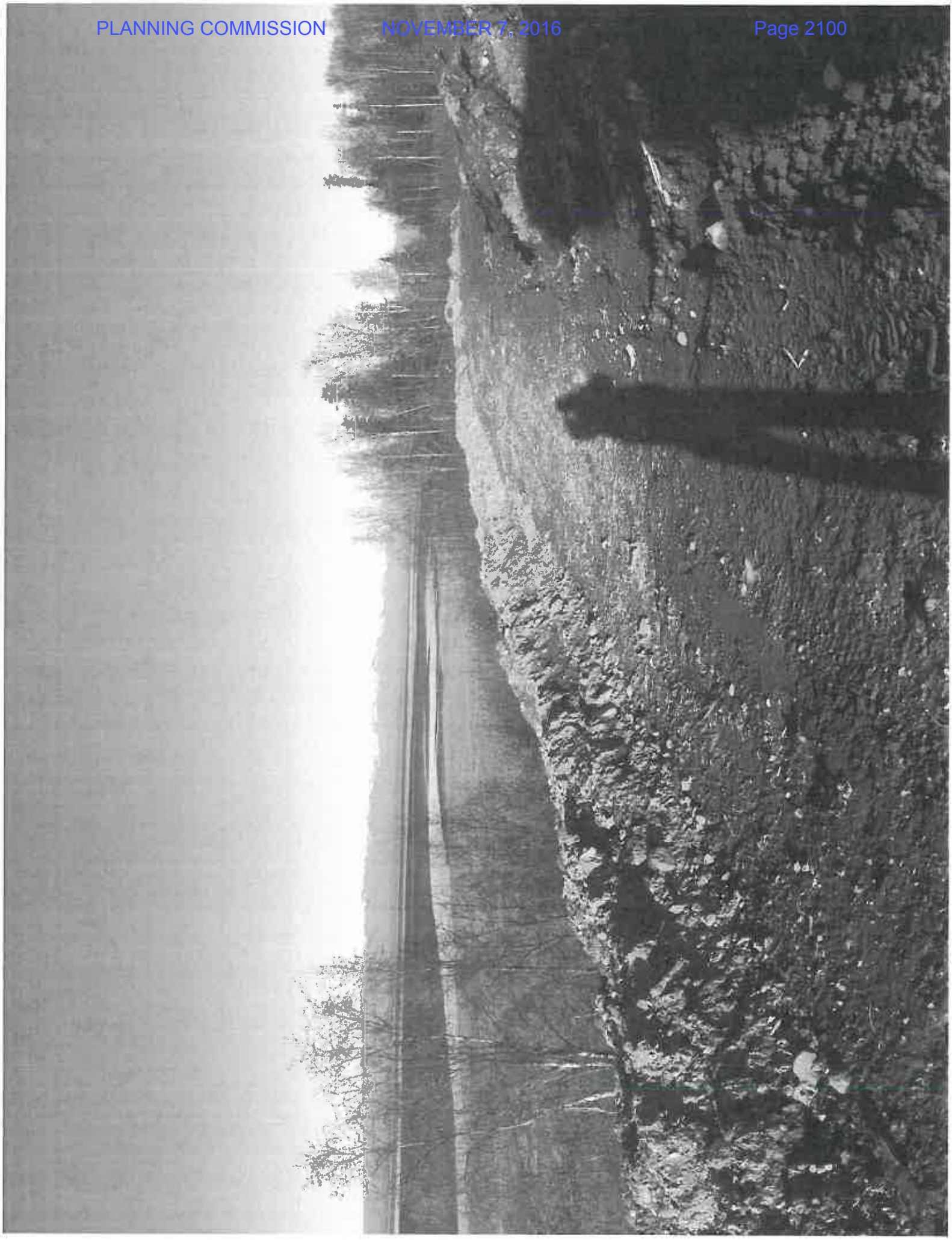
Susan Lee

From: Durand, Shane [shane@cei-alaska.com]
Sent: Thursday, October 23, 2014 4:43 PM
To: Susan Lee; Alex Strawn
Subject: Teaser shot of birchwood
Attachments: image.jpeg; ATT00001.txt



Susan Lee

From: Durand, Shane [shane@cei-alaska.com]
Sent: Friday, October 24, 2014 8:24 AM
To: Susan Lee
Subject: Birchwood

It may be beneficial even if Alex can't make it for you to stop by and take a look today. I think it will help with perspective as you write things up.

Shane Durand

Central Recycling Services
2400 Railroad Ave.
Anchorage, AK 99501
(907)748-7400
(907)770-5084 fax
www.centralrecyclingservices.com
www.crssurplusmaterials.com
www.cicequipment.com

Susan Lee

From: Durand, Shane [shane@cei-alaska.com]
Sent: Friday, October 24, 2014 8:26 AM
To: Susan Lee
Cc: Moffitt, Caleb
Subject: RE: field trip

Ok sounds good

From: Susan Lee [mailto:Susan.Lee@matsugov.us]
Sent: Friday, October 24, 2014 8:20 AM
To: Durand, Shane
Subject: field trip

It looks like Monday, Oct. 27 will work for us. We will be there around 10:30 - 10:45.

Susan

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

Susan Lee

From: Durand, Shane [shane@cei-alaska.com]
Sent: Monday, October 27, 2014 8:41 AM
To: Susan Lee
Subject: RE: Birchwood site visit

Ok sounds good.

From: Susan Lee [mailto:Susan.Lee@matsugov.us]
Sent: Monday, October 27, 2014 8:39 AM
To: Durand, Shane
Subject: Birchwood site visit
Importance: High

Shane:

Alex and I are going to run over to Birchwood today. We will be there around 11 am. We will check in with Fred the Operator.

Susan

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Planner II
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Susan Lee

From: Durand, Shane [shane@cei-alaska.com]
Sent: Monday, October 27, 2014 4:19 PM
To: Alex Strawn
Cc: Susan Lee
Subject: Buisness Incorporation

Alex

To clarify comments on our businesses Central Recycling Services and Central Monofill Services are both incorporated. Neither are LLC.

Shane Durand

Central Recycling Services
2400 Railroad Ave.
Anchorage, AK 99501
(907)748-7400
(907)770-5084 fax
www.centralrecyclingservices.com
www.crssurplusmaterials.com
www.cicequipment.com

Susan Lee

From: Durand, Shane [shane@cei-alaska.com]
Sent: Tuesday, October 28, 2014 10:17 AM
To: Susan Lee
Subject: RE: question

The unlined C&D cell at the Central Landfill and the AK Demo/Rebarcheck Pit. Page M-37 of the application package depicts the 2 sites.

Shane

From: Susan Lee [mailto:Susan.Lee@matsugov.us]
Sent: Tuesday, October 28, 2014 10:06 AM
To: Durand, Shane
Subject: question

Shane:

The application material states that there are 2 C & D sites within two miles of the CMS site. I assume one of them is Alaska Demo. What is the other one?

Susan

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Susan Lee

From: Durand, Shane [shane@cei-alaska.com]
Sent: Wednesday, October 29, 2014 8:13 AM
To: Aldrich, Lori (DEC)
Cc: Susan Lee
Subject: FW: URGENT: DEC correction on misstatements about approval of monofill design

As you may remember Stephanie's concerns with the original January application to the MSB were addressed with our comments to the Borough in our May 14, 2014 supplement page 6.

Respectfully,
Shane Durand

From: Susan Lee [mailto:Susan.Lee@matsugov.us]
Sent: Wednesday, October 29, 2014 7:53 AM
To: Durand, Shane
Subject: FW: URGENT: DEC correction on misstatements about approval of monofill design

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

From: Stephanie & Stephen Nowers [mailto:snowers@mtaonline.net]
Sent: Tuesday, October 28, 2014 9:07 PM
To: Aldrich, Lori (DEC)
Cc: Susan Lee; Blankenburg, Robert J (DEC); Rich Harbuck; Stephanie Figon; William Quantick
Subject: Re: URGENT: DEC correction on misstatements about approval of monofill design

Hi Lori,

I trust you are doing your best, and I appreciate your quick responses.

I do think it's relevant (and good government) that ADEC straighten out the record given that this matter is in front of a government body that will be deliberating using the official record. There are misstatements in that record that ADEC has approved the permit and no corresponding statement from ADEC to the contrary.

Sending a letter or email to the borough simply ensures that everyone is on the same page and has the correct information straight from ADEC and can refer to that if questions arise.

Thank you,

Stephanie Nowers

Sent from my iPhone

On Oct 28, 2014, at 8:21 AM, "Aldrich, Lori (DEC)" <lori.aldrich@alaska.gov> wrote:

Thank you for checking.

Sent from my iPhone

On Oct 28, 2014, at 11:39 AM, Susan Lee <Susan.Lee@matsugov.us> wrote:

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I have not received an e-mail from you.

Susan

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Sent: Tuesday, October 28, 2014 3:08 AM
To: Stephanie & Stephen Nowers
Cc: Blankenburg, Robert J (DEC); Rich Harbuck; Stephanie Figon; Susan Lee; William Quantick
Subject: Re: URGENT: DEC correction on misstatements about approval of monofill design

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It was reiterated several times to several sources, but as we did not do a formal review of the CUP application, and, it is irrelevant until we make a permit decision, it was not documented to the file.

Thank you,
Lori

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Central Monofill Services' repeatedly states in their application to the Mat-Su Borough that they have ADEC approval for their monofill design. From what you say in your email below, this is not true.

I think it is incumbent on ADEC to correct the record and send a formal statement to the Mat-Su Borough and CMS to make sure the record is clear for all involved. Saying you corrected CMS' misstatements verbally with no record of that communication is not a clear record.

I also believe it is incumbent on ADEC to send this formal statement to the Mat-Su Borough before the Oct. 31 deadline for comments so that it is part of the official record to the Mat-Su Borough Planning Commission and they are operating with correct and true information. This can be done simply by sending a letter to Mat-Su Borough Planner Susan Lee who is in charge of collecting comments at slee@matsugov.us

Below are cited some but perhaps not all of the references in CMS' application where they state they have ADEC approval. This can all be confirmed by looking at CMS' application which is online at the Mat-Su borough website.

Thanks Lori. And sorry again to be a bother since I know you are busy. I have copied Bob as your email indicated you might not be checking your email regularly this week and there is a public comment deadline looming.

- Stephanie Nowers
907.229.1982

2nd page of CMS application intro Letter: "CMS submits this CUP application and attachments to address the requirements described in MSB 17.60 and other requests made by staff. The MSB does not have design standards or specific CUP standards for a recycle facility or monofill. The facility has been designed to meet the State of Alaska DEC standards for an inert waste monofill. ADEC has approved the proposed Monofill design."

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Screenshot below from Page 282, the borough asks specifically about the ADEC permit and CMS responds maintaining they have approval and have met the requirements for the monofill.
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Stephanie,

ADEC has never issued any approval of the design. At the time we first went to public notice, we agreed that the application and the design met the regulations, as presented. The purpose of the public notice was to identify any items that might have been at issue in our understanding of the conditions and potential impacts of the site. If no additional information had surfaced, and the retesting of the groundwater elevations had confirmed the distance to groundwater, we could have issued a permit for the facility without the asbestos cell, which would have been conditioned upon receiving the MSB Conditional Use Permit. However, since that appeared to be the larger hurdle, we chose to wait until they completed the CUP rather than research the information collected. Since CMS has submitted updated site conditions (survey) and we need to add the question of the asbestos cell, the new public notice is being issued.

When the permit application was first submitted, our regulations did not require a specific design approval. We have since issued new regulations that do require it (18 AAC 60.203). A design decisions will be provided at the time the permit decision is provided.

I was hoping to get the public notice issued today, but that is looking less and less likely, and I will be out of the office the rest of the week. I will let you know when it is issued and will be published in the Frontiersman.

Thanks,
Lori

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From: Stephanie & Stephen Nowers [mailto:snowers@mtaonline.net]
Sent: Monday, October 27, 2014 12:01 AM
To: Aldrich, Lori (DEC)
Subject: DEC approval of CMS permit

Hi Lori,

Thank you again for meeting with us about the monofill in Mat- Su. I'm reading through CMS' application to the borough and they repeatedly state that DEC has APPROVED their monofill design.

You said that was not the case. Can you send me the documentation proving that. Do you have a letter or email you sent them to that effect. I want to include it in my comments to the borough.

Thanks much!

Sent from my iPhone

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Susan Lee

From: Durand, Shane [shane@cei-alaska.com]
Sent: Wednesday, October 29, 2014 12:37 PM
To: Alex Strawn; Susan Lee
Subject: Chain link
Attachments: Bull_Litter_Fence_with_canopy.pdf

The normal size of opening in chain link fencing is 2"x2" . Attached is a standard product used at landfills similar to what we would build. If you go much smaller than this you run the risk of the entire fence going air borne.

Shane Durand

Central Recycling Services
2400 Railroad Ave.
Anchorage, AK 99501
(907)748-7400
(907)770-5084 fax
www.centralrecyclingservices.com
www.crssurplusmaterials.com
www.cicequipment.com

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BULL

The BULL™: BEST mobile litter fence

New Canopy Design

Our 15ft high BULL with Canopy™ and Side-nets™ captures and holds litter better. Our standard outriggers, shown here deployed at the 1st setting, provide maximum stability.

THE BULL: Blowing Litter's Worst Enemy

- Designed to withstand winds over 65mph—outriggers, standard on the BULL, can be deployed to provide maximum overturning resistance.
- The BULL Canopy™ and Side-nets™ keep litter from escaping—no litter slipping off the edges between adjacent units. They also catch their share of litter in shifting winds.
- Fully adjustable hooks—operators can easily pick up and move the Bull using a wide selection of equipment.
- Strong steel back net—galvanized and vinyl coated.
- Wear-plates on front surfaces—provide additional stability and protection.
- Net supports with steel framing—easily take on harsh landfill conditions.

Five year warranty.
Move the BULL everyday in rough landfill conditions without damage. The BULL is designed and built to be strong.

Lower your operating costs.
Reduce manual labor picking up litter.

Increase your profit.
Stay open on windy days when you would normally close.

Keep your regulators and neighbors satisfied and avoid fines.
Stop your blowing litter at the working face.

Specifications:
Height: 15ft Length: 24ft Weight: 3070lbs
Depth: 8ft without outriggers deployed
Depth with Outriggers: 1st Setting- 11ft 6in, 2nd Setting- 15ft
Specifications subject to change without notification.

1-800-889-4601 www.LitterFences.com

METTA TECHNOLOGIES

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Susan Lee

From: Aldrich, Lori (DEC) [lori.aldrich@alaska.gov]
Sent: Wednesday, October 29, 2014 5:10 PM
To: Stephanie & Stephen Nowers
Cc: Susan Lee; Blankenburg, Robert J (DEC); Rich Harbuck; Stephanie Figon; William Quantick; Shane Durand
Subject: Re: URGENT: DEC correction on misstatements about approval of monofill design

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First, let me apologize for the term "irrelevant", I should not be answering emails when I am travel weary. My intent was to that communicate that the MSB CUP is not material to our permitting process, other than the fact that the monofill could not operate without both permits.

Back to the question at hand, I have located the comment email that I sent to CMS, which was also BCC'd to Susan Lee on March 7, 2014. I will come into the office on Friday to send you a copy, as I have not been able to properly recover the archive using my available electronics. I will also make sure it is submitted as record to MSB, and I will reiterate that we have not issued any approvals for the permit or the submitted design. Any decisions will be documented at the time we issue our permit decision.

Thanks,
Lori

Sent from my iPhone

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from
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To: Aldrich, Lori (DEC); Stephanie & Stephen Nowers
Cc: Susan Lee; Blankenburg, Robert J (DEC)
Subject: RE: URGENT: DEC correction on misstatements about approval of monofill design

Lori,

To quote your email of March 19, 2014.

"Page 17 - Alaska Department of Environmental Conservation (ADEC) reviewed the CMS Monofill Permit application for this site and has approved the permit conditioned upon receipt of the MSB CUP.

ADEC has NOT APPROVED the permit – the permit application was deemed complete and a public notice was issued. ADEC also noted, in discussions with CMS, that if any significant changes were made to the permit application information in regard to the requirements of the Conditional Use Permit (CUP) issued by MSB a new complete ADEC monofill application would need to be submitted, including a new public comment period."

Per your email and questions raised by MSB staff of the original January 2014 application this was clarified in the May supplemental package to the MSB.

Shane Durand
Central Recycling Services
2400 Railroad Ave.
Anchorage, AK 99501
(907)748-7400
(907)770-5084 fax
www.centralrecyclingservices.com
www.crssurplusmaterials.com
www.cicequipment.com

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Stephanie
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On Oct 27, 2014, at 12:57 PM, "Aldrich, Lori (DEC)" <lori.aldrich@alaska.gov> wrote:

> Stephanie,
>
> **ADEC has never issued any approval of the design.** At the time we first went to public notice, we agreed that the application and the design met the regulations, as presented. The purpose of the public notice was to identify any items that might have

been at issue in our understanding of the conditions and potential impacts of the site. If no additional information had surfaced, and the retesting of the ground water elevations had confirmed the distance to ground water, we could have issued a permit for the facility without the asbestos cell, which would have been conditioned upon

receivin g the MSB Conditi onal Use Permit. Howev er, since that appear ed to be the larger hurdle, we chose to wait until they comple ted the CUP rather than researc h the informa tion collecte d. Since CMS has submitt ed update d site conditi ons (survey) and we need to add the questio n of the asbesto s cell, the new

public notice is being issued.

When the permit appiication was first submitted, our regulations did not require a specific design approval. We have since issued new regulations that do require it (18 AAC 60.203). A design decisions will be provided at the time the permit decision is provided.

I was hoping to get

the public notice issued today, but that is looking iess and less likely, and I will be out of the office the rest of the week. I will let you know when it is issued and will be publish ed in the Frontier sman.

Thanks, Lori

Original Messag e----- From: Stepha nie & Stephe n Nowers [mailto: snower s@mta online. net] Sent:

Monday, October 27, 2014 12:01 AM
To: Aldrich, Lori (DEC)
Subject: DEC approval of CMS permit

Hi Lori,

Thank you again for meeting with us about the monofil l in Mat-Su. I'm reading through CMS' applicat ion to the boroug h and they repeate dly state that DEC has APPRO VED their monofil l

design. You said that was not the case. Can you send me the documentation proving that. Do you have a letter or email you sent them to that effect. I want to include it in my comments to the borough.

Thanks much!

Sent from my iPhone

Susan Lee

From: Aldrich, Lori (DEC) [lori.aldrich@alaska.gov]
Sent: Thursday, October 30, 2014 7:48 AM
To: Stephanie & Stephen Nowers
Cc: Susan Lee; Blankenburg, Robert J (DEC); Rich Harbuck; Stephanie Figon; William Quantick
Subject: Re: URGENT: DEC correction on misstatements about approval of monofill design

Stephanie,
I am doing well, if you exclude trying to deal with email systems. I do apologize for the term irrelevant. My travel weary response was not well worded. I intended

I have managed to locate an email that I sent to CMS on March 7, 2014, and BCC'd to Susan Lee. I will go into work on Friday so I am able to forward the email, and will submit an official comment to the Borough to reiterate that ADEC has not made any decisions regarding the landfill permit, including issuing a design approval.

Sent from my iPhone

On Oct 29, 2014, at 1:07 AM, Stephanie & Stephen Nowers <snowers@mtaonline.net> wrote:

> Hi Lori,
>
> I trust you are doing your best, and I appreciate your quick responses.
>
> I do think it's relevant (and good government) that ADEC straighten out the record given that this matter is in front of a government body that will be deliberating using the official record. There are misstatements in that record that ADEC has approved the permit and no corresponding statement from ADEC to the contrary.
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> Sending a letter or email to the borough simply ensures that everyone is on the same page and has the correct information straight from ADEC and can refer to that if questions arise.
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> Thank you,
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> On Oct 28, 2014, at 8:21 AM, "Aldrich, Lori (DEC)" <lori.aldrich@alaska.gov> wrote:
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> > Thank you for checking.
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> > Sent from my iPhone
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> > On Oct 28, 2014, at 11:39 AM, Susan Lee <Susan.Lee@matsugov.us> wrote:
> >
> > Lori:

I have not received an e-mail from you.

Susan

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

From: Aldrich, Lori (DEC) [mailto:lori.aldrich@alaska.gov]
Sent: Tuesday, October 28, 2014 3:08 AM
To: Stephanie & Stephen Nowers
Cc: Blankenburg, Robert J (DEC); Rich Harbuck; Stephanie Figon; Susan Lee; William Quantick
Subject: Re: URGENT: DEC correction on misstatements about approval of monofill design

Actually, now that you mention it, I may have sent an email to Susan Lee. I was searching for one sent to CMS. Unfortunately I do not currently have access to my email archives. I will check when access is available. It may also be quoted in a frontiersman article if you check those.

It was reiterated several times to several sources, but as we did not do a formal review of the CUP application, and, it is irrelevant until we make a permit decision, it was not documented to the file.

Thank you,
Lori

Sent from my iPhone

On Oct 28, 2014, at 3:06 AM, Stephanie & Stephen Nowers <snowers@mtaonline.net> wrote:

> Hi Lori,
>
> I hate to be a bother. But ADEC, as a state agency, needs to be clear about its record and actions.
>
> Central Monofill Services' repeatedly states in their application to the Mat-Su Borough that they have ADEC approval for their monofill

design. From what you say in your email below, this is not true.

I think it is incumbent on ADEC to correct the record and send a formal statement to the Mat-Su Borough and CMS to make sure the record is clear for all involved. Saying you corrected CMS' misstatements verbally with no record of that communication is not a clear record.

I also believe it is incumbent on ADEC to send this formal statement to the Mat-Su Borough before the Oct. 31 deadline for comments so that it is part of the official record to the Mat-Su Borough Planning Commission and they are operating with correct and true information. This can be done simply by sending a letter to Mat-Su Borough Planner Susan Lee who is in charge of collecting comments at slee@matsugov.us

Below are cited some but perhaps not all of the references in CMS' application where they state they have ADEC approval. This can all be confirmed by looking at CMS' application which is online at the Mat-Su borough website.

Thanks Lori. And sorry again to be a bother since I know you are busy. I have copied Bob as your email indicated you might not be checking your email regularly this week and there is a public comment deadline looming.

- Stephanie Nowers
907.229.1982

2nd page of CMS application intro
Letter: "CMS submits this CUP application and attachments to address the requirements described in MSB 17.60 and other requests made by staff. The

MSB does not have design standards or specific CUP standards for a recycle facility or monofill. The facility has been designed to meet the State of Alaska DEC standards for an inert waste monofill. ADEC has approved the proposed Monofill design."

Page 17: "Alaska Department of Environmental Conservation (ADEC) reviewed the CMS Monofill Permit application for this site and has approved the permit conditioned upon receipt of the MSB CUP."

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Screenshot below from Page 282, the borough asks specifically about the ADEC permit and CMS responds maintaining they have approval and have met the requirements for the monofill.
<Screen Shot 2014-10-27 at 11.09.02 PM.png>

Sent from my iPhone

On Oct 27, 2014, at 8:38 PM, "Aldrich, Lori (DEC)" <lori.aldrich@alaska.gov> wrote:

> I could not locate documentation, as I believe I responded verbally to the issues I had when I received a copy of the CUP application.
>
> Sent from my iPhone
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> On Oct 27, 2014, at 5:51 PM, Stephanie & Stephen Nowers <snowers@mtaonline.net> wrote:
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> > Hi Lori,
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> > I worded that poorly. I just meant please send me the email/letter you sent to CMS telling them they are inaccurately describing their

monofill as having approval from DEC in the proposal they have submitted to the Mat-Su Borough. I thought when we talked, you said you had communicated that to them. I just want that documentation.

Thanks,
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Sent from my iPhoneo

On Oct 27, 2014, at 12:57 PM, "Aldrich, Lori (DEC)" <lori.aldrich@alaska.gov> wrote:

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Thanks,
Lori

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Thanks much!

Sent from

my
iPhone

Susan Lee

From: Aldrich, Lori (DEC) [lori.aldrich@alaska.gov]
Sent: Thursday, October 30, 2014 7:50 AM
To: Durand, Shane
Cc: Stephanie & Stephen Nowers; Susan Lee; Blankenburg, Robert J (DEC)
Subject: Re: URGENT: DEC correction on misstatements about approval of monofill design

Shane,
Thank you for adding to the discussion.

Lori

Sent from my iPhone

On Oct 30, 2014, at 11:09 AM, Durand, Shane <shane@cei-alaska.com> wrote:

> Lori,
>
> To quote your email of March 19, 2014.
>
> "Page 17 - Alaska Department of Environmental Conservation (ADEC) reviewed the CMS Monofill Permit application for this site and has approved the permit conditioned upon receipt of the MSB CUP.
>
> ADEC has NOT APPROVED the permit – the permit application was deemed complete and a public notice was issued. ADEC also noted, in discussions with CMS, that if any significant changes were made to the permit application information in regard to the requirements of the Conditional Use Permit (CUP) issued by MSB a new complete ADEC monofill application would need to be submitted, including a new public comment period."
>
> Per your email and questions raised by MSB staff of the original January 2014 application this was clarified in the May supplemental package to the MSB.
>
> Shane Durand
> Central Recycling Services
> 2400 Railroad Ave.
> Anchorage, AK 99501
> (907)748-7400
> (907)770-5084 fax
> www.centralrecyclingservices.com
> www.crssurplusmaterials.com
> www.cicequipment.com

From: Aldrich, Lori (DEC) [mailto:lori.aldrich@alaska.gov]
Sent: Wednesday, October 29, 2014 5:10 PM
To: Stephanie & Stephen Nowers
Cc: susan.lee@matsugov.us; Blankenburg, Robert J (DEC); Rich Harbuck; Stephanie Figon; William

Quantick; Durand, Shane
Subject: Re: URGENT: DEC correction on misstatements about approval of monofill design

Stephanie,

First, let me apologize for the term "irrelevant", I should not be answering emails when I am travel weary. My intent was to that communicate that the MSB CUP is not material to our permitting process, other than the fact that the monofill could not operate without both permits.

Back to the question at hand, I have located the comment email that I sent to CMS, which was also BCC'd to Susan Lee on March 7, 2014. I will come into the office on Friday to send you a copy, as I have not been able to properly recover the archive using my available electronics. I will also make sure it is submitted as record to MSB, and I will reiterate that we have not issued any approvals for the permit or the submitted design. Any decisions will be documented at the time we issue our permit decision.

Thanks,
Lori

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> Hi Lori,
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Thanks, Lori

-----Original Message-----

From: Ste

phanie & Stephen Nowers [mailto:snowers@mtaonline.net

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Sent: Monday, October 27, 2014 12:01 AM

To: Aldri

Lori (DEC)

Subject: DEC approval of CMS permit

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my comments to the borough.

Thanks much!

Sent fro

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Susan Lee

From: Durand, Shane [shane@cei-alaska.com]
Sent: Thursday, October 30, 2014 2:46 PM
To: Susan Lee
Subject: Community Council Resolution
Attachments: Gateway Com Coun CMS.pdf

Please find attached relevant correspondence.

Shane Durand

Central Recycling Services
2400 Railroad Ave.
Anchorage, AK 99501
(907)748-7400
(907)770-5084 fax
www.centralrecyclingservices.com
www.crssurplusmaterials.com
www.cicequipment.com

CENTRAL MONOFILL SERVICES

Anchorage
311 N. Sitka Street
Anchorage, AK 99501

Fairbanks
1301 Wells Street
Fairbanks, AK 99701

Scotti MacDonald
Registered Agent
Gateway Community Council
PO Box 578
Palmer, AK 99645

Reference: Gateway Community Council Resolution 01-14

Central Monofill Services (CMS) as a property owner in the Gateway Community Council would like to respond to Resolution 01-14.

CMS is disappointed that the Gateway Community Council elected to pass this resolution without providing us the opportunity to present the project at a council meeting. We understand that the proposed use of a portion of our property as a Recycle Facility and Monofill has raised concerns with members of the council and that to many people any type of Landfill has a negative stereotype. CMS recommends the Council review the CMS 2014 Conditional Use Permit application in its entirety or contact us for more details and information on the proposed project. Concerns and issues raised by the community have been addressed in detail in our 2014 Conditional Use Permit (CUP), application. We have had informational meetings for the community and have an open door policy to see our operations in efforts to help educate the community on our proposed operations. Concerns raised by neighbors over contamination and water issues led CMS to commission engineering studies by both local engineers and nationally recognized experts in the field. These subject matter experts determined our design at this location to be safe and protective of public health.

CMS has operated a similar Monofill in Salcha, Alaska since 2012. Prior to receipt of our permits for the Salcha facility we heard many of the same concerns and misconceptions from our Salcha neighbors. Today those same neighbors have firsthand knowledge of our successful operations and have written letters of support. If after a review of the application materials questions still exist we will gladly have another informational meeting for the community council.

Thank you for the consideration.

Shane Durand

PH (907) 770-7470 FAX (907) 770-5084
www.centralmonofillalaska.com • cms@centralmonofillalaska.com

Susan Lee

From: Durand, Shane [shane@cei-alaska.com]
Sent: Wednesday, November 05, 2014 11:10 AM
To: Susan Lee
Subject: Re: question

Yes we have had other trail cameras. Have not decided long term what system will be in place.

Sent from my iPhone

On Nov 5, 2014, at 11:53 AM, "Susan Lee" <Susan.Lee@matsugov.us> wrote:

> I know there was a security camera at the CMS gate? Are there other cameras at the site or will there be other cameras at the site?
>
> Susan
>
> Susan Lee
> Planner II
> Matanuska-Susitna Borough
> 907-861-7862 (Direct Line)
> 907-861-7876 (FAX)
> PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

Susan Lee

From: Durand, Shane [shane@cei-alaska.com]
Sent: Wednesday, November 05, 2014 11:36 AM
To: Susan Lee
Subject: Re: question

Yes

Sent from my iPhone

On Nov 5, 2014, at 12:12 PM, "Susan Lee" <Susan.Lee@matsugov.us> wrote:

> So it would be safe to say that there are security cameras installed on the site.
>
> Susan Lee
> Planner II
> Matanuska-Susitna Borough
> 907-861-7862 (Direct Line)
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> Sent from my iPhone
>
> On Nov 5, 2014, at 11:53 AM, "Susan Lee" <Susan.Lee@matsugov.us> wrote:
>
> > I know there was a security camera at the CMS gate? Are there other cameras at the site or will there be other cameras at the site?
> >
> > Susan
> >
> > Susan Lee
> > Planner II
> > Matanuska-Susitna Borough
> > 907-861-7862 (Direct Line)
> > 907-861-7876 (FAX)
> > PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

Susan Lee

From: Durand, Shane [shane@cei-alaska.com]
Sent: Thursday, November 06, 2014 10:46 AM
To: Susan Lee
Cc: Durand, Shane
Subject: Re: clarification

Some stored in and some out. Yes they will be screened. This would generaly be area behind scales and around shop building. Clearly separated from the monofill. We would sell to the public but would not be open for people to come and go at will. Acess is controled.

Shane

Sent from my iPhone

On Nov 6, 2014, at 11:37 AM, "Susan Lee" <Susan.Lee@matsugov.us> wrote:

> Shane:
>
> Will the recycled materials, such as wood, glass, doors, windows, etc. be stored outside or in the storage buildings? I am asking this because any outdoor storage of these types of materials must also be screened. It looks like if they are stored outside they should be screened by the berms. Also, will the recycle yard be open to the public for purchasing materials?
>
> Susan
>
> Susan Lee
> Planner II
> Matanuska-Susitna Borough
> 907-861-7862 (Direct Line)
> 907-861-7876 (FAX)
> PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

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Susan Lee

From: Durand, Shane [shane@cei-alaska.com]
Sent: Thursday, November 06, 2014 12:32 PM
To: Alex Strawn; Susan Lee
Subject: Outline of Data Collection Plan to Document Hydrological Subsurface Conditions.pdf
Attachments: Outline of Data Collection Plan to Document Hydrological Subsurface Conditions.pdf; ATT00001.txt

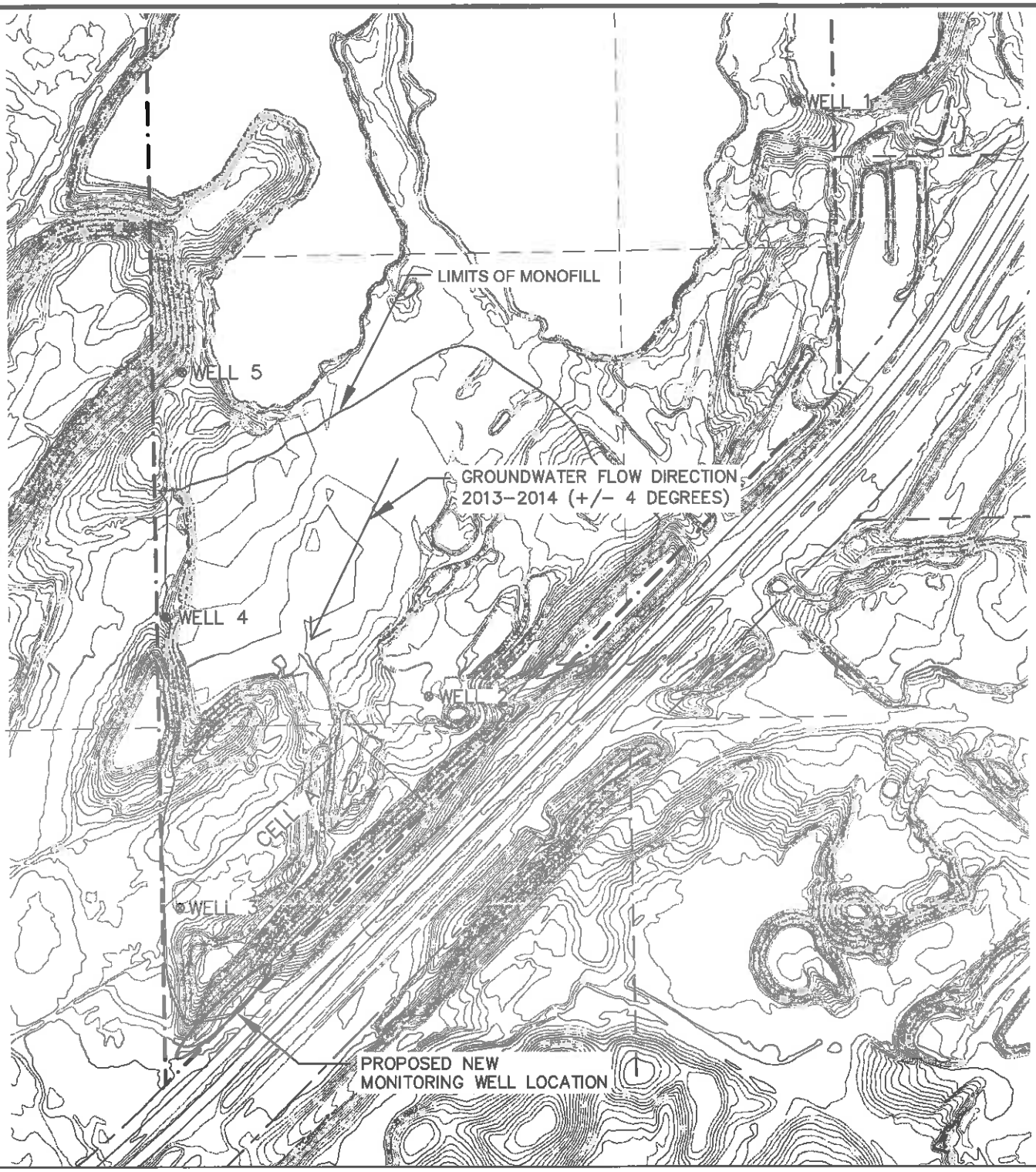
Based on our conversations i have attached a proposed plan that may help with fears associated with water in relation to the monofill. Let me know if you have any questions. Shane

Outline: Data Collection Plan to Document Hydrological Subsurface Conditions

CMS Monofill, Palmer

1. Introduction
   a. Based on the site location within a zone of low precipitation (< 25" per year), there are no regulatory requirements for a ground water monitoring plan for the proposed monofill.
   b. At the request of the Matanuska-Susitna Borough Planning Department, CMS has contracted a professional hydrologist to develop a subsurface hydrological testing plan. The plan is in the process of being developed and will be submitted to the Matanuska-Susitna Borough Planning Department for final approval before placement of any waste in the monofill.
2. Well Placement
   a. Locations: Existing wells were used to establish baseline hydrological conditions at the site. The locations of the five wells closest to the monofill are shown in Figure 1 as well as the proposed location of a new well. The new well will be placed directly down gradient of Cell A.
   b. Well Installation: The existing wells were installed and the new well will be installed based on Alaska's Monitoring Well Guidance, updated November 2011.
3. Results of Baseline Testing
   a. Water Levels: A full year (23 events) of water level measurements have been collected and show consistent ground flow at the site. Figure 1 shows the flow direction based on this data.
   b. Chemical Data: Baseline chemical data of the ground water at the site has been collected with several thousand individual results from three different seasons (spring, fall and winter).
   c. A statistical analysis will be performed on the baseline data in accordance with ASTM D 6312 to determine appropriate indicator tests to be used in future testing. This statistical approach is designed to be used as an early detection program.
4. Future Testing
   a. Data Collection Frequency: Bi-annual hydrological data collection during the spring and fall.
   b. Duration of Data Collection Program: For the life of the monofill operations.

Attached: Figure 1 Well Locations



WELL LOCATIONS	CENTRAL MONOFILL SERVICES PALMER MONOFILL PALMER, AK	ENVIRONMENTAL MANAGEMENT INCORPORATED	PREPARED: ADA DRAWN: ADA REVIEWED: LAH DATE: 11/05/14	FIGURE 1

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Susan Lee

From: Aldrich, Lori (DEC) [lori.aldrich@alaska.gov]
Sent: Monday, November 10, 2014 11:42 AM
To: Stephanie & Stephen Nowers; William Quantick; Rich Harbuck
Cc: Susan Lee; Shane Durand; Thieme, Reese (DEC); Bronson, Kym J (DEC)
Subject: Palmer CMS Inert Waste Monofill Public Notice

Please forward this to any interested parties:

The Public Notice for the Palmer CMS Inert Waste Monofill has been posted on the ADEC Website http://dec.alaska.gov/commish/public_notices.htm

It should be posted in the Frontiersman on November 14 & 16.

Since I will be out of the office for two weeks at the 30-day mark, I have extended the closing date to December 29.

A copy of the application will be available on our website - http://dec.alaska.gov/eh/sw/index.htm, for review, by the first posting in the Frontiersman.

Thank you,
Lori

Lori Aldrich
REGIONAL PROGRAM MANAGER
Solid Waste Program
Department of Environmental Conservation
555 Cordova Street
Anchorage, AK 99501
(907) 269-7622

Susan Lee

From: Durand, Shane [shane@cei-alaska.com]
Sent: Thursday, November 13, 2014 12:11 PM
To: Susan Lee
Subject: Re: info

Give me a call at 1:45
I will write up something

Sent from my iPhone

On Nov 13, 2014, at 12:05 PM, "Susan Lee" <Susan.Lee@matsugov.us> wrote:

> Shane:
>
> As previously discussed, we need you to provide a brief synopsis of the relationship of CEI, CRS, and CMS. Explain how CMS was formed specifically for this site, etc.
>
> Also, Alex and I need to chat with you regarding the working face again. Will you be available around 1:45 for a phone call?
>
> Susan
>
> Susan Lee
> Planner II
> Matanuska-Susitna Borough
> 907-861-7862 (Direct Line)
> 907-861-7876 (FAX)
> PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

Susan Lee

From: Durand, Shane [shane@cei-alaska.com]
Sent: Thursday, November 13, 2014 12:22 PM
To: Susan Lee
Subject: Re: info

I have to leave the office close to that time you can call my cell 350-6062

Sent from my iPhone

On Nov 13, 2014, at 12:16 PM, "Susan Lee" <Susan.Lee@matsugov.us> wrote:

> Our time got bumped to around 2 - 2:30 if that works for you.
>
> Susan Lee
> Planner II
> Matanuska-Susitna Borough
> 907-861-7862 (Direct Line)
> 907-861-7876 (FAX)
> PLEASE NOTE NEW DIRECT LINE PHONE NUMBER
>
> ---
>
> **From:** Durand, Shane [mailto:shane@cei-alaska.com]
> **Sent:** Thursday, November 13, 2014 12:11 PM
> **To:** Susan Lee
> **Subject:** Re: info
>
> Give me a call at 1:45
> I will write up something
>
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>
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> >
> > Susan
> >
> > Susan Lee
> > Planner II
> > Matanuska-Susitna Borough
> > 907-861-7862 (Direct Line)
> > 907-861-7876 (FAX)
> > PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

Susan Lee

From: Durand, Shane [shane@cei-alaska.com]
Sent: Friday, November 14, 2014 9:32 AM
To: Susan Lee
Subject: RE: info

To follow up
Central Monofill Services CMS owns the monofill properties and holds the permits for the properties.
Central Recycling services CRS owns and operates the recycle facilities and holds the operations contract with CMS to run the monofills
Central Environmental Inc. CEI is the demolition and abatement company and is a customer of CRS.

Separate companies but same owners.

Shane

From: Susan Lee [mailto:Susan.Lee@matsugov.us]
Sent: Thursday, November 13, 2014 12:06 PM
To: Durand, Shane
Subject: info

Shane:

As previously discussed, we need you to provide a brief synopsis of the relationship of CEI, CRS, and CMS. Explain how CMS was formed specifically for this site, etc.

Also, Alex and I need to chat with you regarding the working face again. Will you be available around 1:45 for a phone call?

Susan

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

Susan Lee

From: Durand, Shane [shane@cei-alaska.com]
Sent: Friday, November 14, 2014 2:59 PM
To: Susan Lee
Subject: RE: info
Attachments: IMG_2511.JPG; bales_of_tire.JPG

Attached are the first couple tire bale photos I came to. If you want something different let me know.

Not sure what you mean by asphalt in asphalt? If your are referring to asphalt oil cement in its liquid state, that is used to make asphalt pavement, the answer is no. We will not dispose of asphalt cement oil. Asphalt cement oil is mixed with rock aggregates at high temperature to make asphalt pavement. We crush old asphalt pavement into a State of Alaska Department of Transportation specified product, RAP. Asphalt pavement is a product we recycle into Recycled Asphalt Pavement (RAP). RAP may be used within the monofill foot print to build roads or other surfaces but would not be disposed of or thrown away per say as it has a commodity value.

Hopefully this helps.

Shane

From: Susan Lee [mailto:Susan.Lee@matsugov.us]
Sent: Friday, November 14, 2014 2:01 PM
To: Durand, Shane
Subject: info

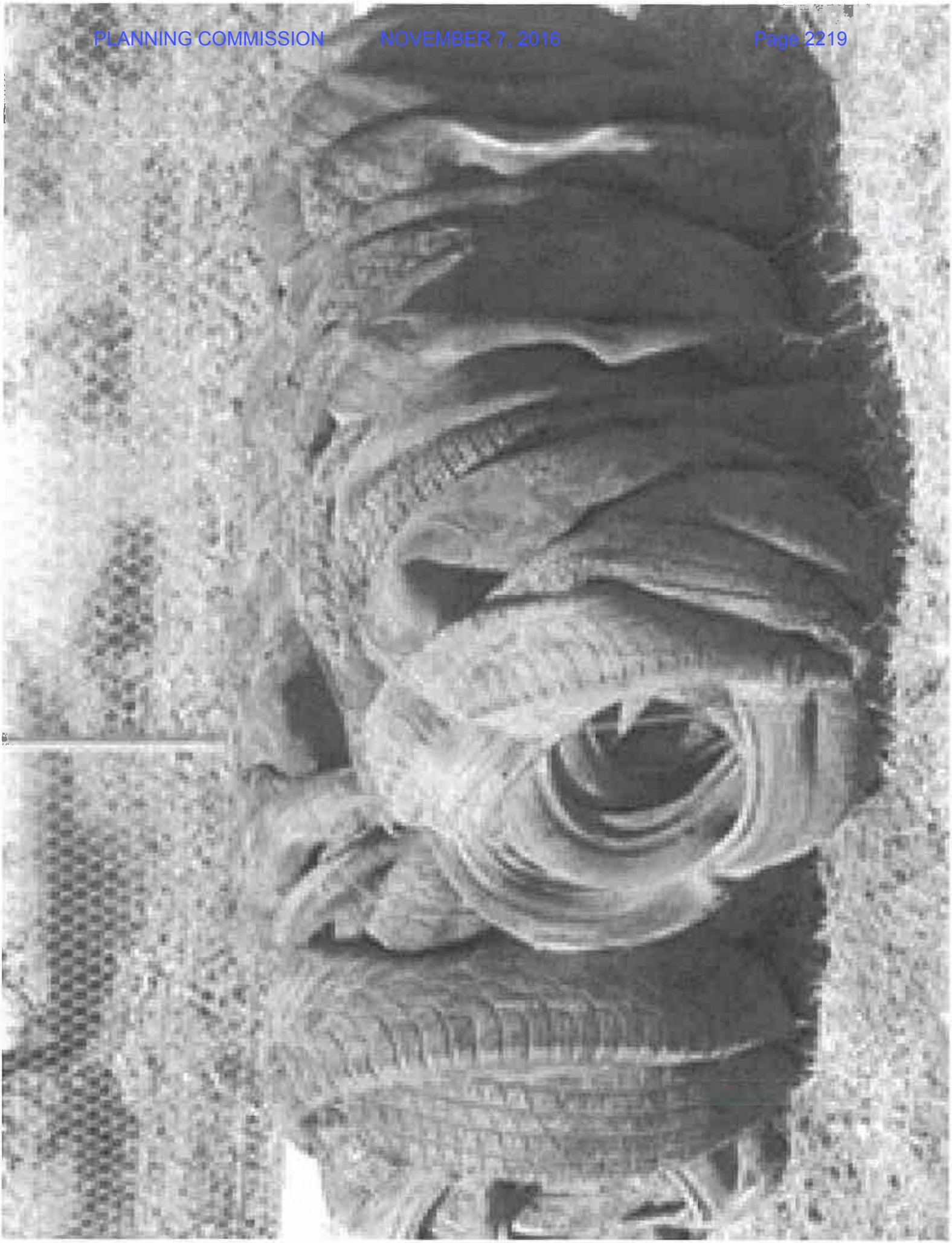
Shane:

Can you e-mail me a picture of a tire bale? We want to include one in the staff report.

Also, will asphalt be deposited in the monofill? Specifically asphalt that does or does not contain asphalt.

Thanks, Susan

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER



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Susan Lee

From: Durand, Shane [shane@cei-alaska.com]
Sent: Friday, November 14, 2014 3:12 PM
To: Susan Lee
Subject: RE: info

The only time we see something like this is an asphaltic type of mastic sometimes used as water proofing or adhesive on concrete. We can't recycle this concrete if the mastic has asbestos on it. This material would be monofilled, typically as a non-friable asbestos. The asbestos fibers are locked in to the mastic coating.

Shane

From: Susan Lee [mailto:Susan.Lee@matsugov.us]
Sent: Friday, November 14, 2014 3:04 PM
To: Durand, Shane
Subject: RE: info

I meant to say asphalt that contains asbestos. sorry about that

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

From: Durand, Shane [mailto:shane@cei-alaska.com]
Sent: Friday, November 14, 2014 2:59 PM
To: Susan Lee
Subject: RE: info

Attached are the first couple tire bale photos I came to. If you want something different let me know.

Not sure what you mean by asphalt in asphalt? If your are referring to asphalt oil cement in its liquid state, that is used to make asphalt pavement, the answer is no. We will not dispose of asphalt cement oil. Asphalt cement oil is mixed with rock aggregates at high temperature to make asphalt pavement. We crush old asphalt pavement into a State of Alaska Department of Transportation specified product, RAP. Asphalt pavement is a product we recycle into Recycled Asphalt Pavement (RAP). RAP may be used within the monofill foot print to build roads or other surfaces but would not be disposed of or thrown away per say as it has a commodity value.

Hopefully this helps.

Shane

From: Susan Lee [mailto:Susan.Lee@matsugov.us]
Sent: Friday, November 14, 2014 2:01 PM
To: Durand, Shane
Subject: info

Shane:

Can you e-mail me a picture of a tire bale? We want to include one in the staff report.

Also, will asphalt be deposited in the monofill? Specifically asphalt that does or does not contain asphalt.

Thanks, Susan

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

PLANNING COMMISSION
RESOLUTION 14-33

By: Susan Lee
Introduced: November 3, 2014
Public Hearing: December 1, 2014
Action:

MATANUSKA-SUSITNA BOROUGH
PLANNING COMMISSION RESOLUTION NO. 14-33

A RESOLUTION OF THE MATANUSKA-SUSITNA BOROUGH PLANNING COMMISSION APPROVING A CONDITIONAL USE PERMIT UNDER MSB CODE 17.60 FOR THE OPERATION OF A MONOFILL FOR THE DISPOSAL OF INERT CONSTRUCTION AND DEMOLITION DEBRIS, INCLUDING REGULATED ASBESTOS-CONTAINING MATERIAL (RACM) AND NON-REGULATED ASBESTOS-CONTAINING MATERIAL (NON-RACM) AND AN OUTDOOR STORAGE YARD FOR THE SALE OF SALVAGEABLE/RECYCLABLE MATERIALS, LOCATED AT 2840 S. GLENN HIGHWAY (TAX ID: 17N02E18C010) AND 2560 S. GLENN HIGHWAY (TAX ID: 17N02E19B006); WITHIN TOWNSHIP 17 NORTH, RANGE 2 EAST, SECTIONS 18 AND 19, SEWARD MERIDIAN

WHEREAS, an application for a conditional use permit under MSB 17.60 has been received for the operation of a monofill for the disposal of inert construction and demolition debris and an outdoor storage yard for the sale of salvageable/recyclable materials at 2840 S. Glenn Highway (Tax ID: 17N02E18C010) and 2560 S. Glenn Highway (Tax ID: 17N02E19B006); and

WHEREAS, the planning commission reviewed this application, associated materials, and the staff report, with respect to standards set forth in MSB 17.60.100 and 1760.110; and

WHEREAS, findings of fact and conclusions of law have been listed in the staff report dated December 1, 2014; and

WHEREAS, the planning commission conducted a public hearing on December 1, 2014 on this matter; and

WHEREAS, in 2013 Borough staff documented trash and daily cover (screened fines) that had blown from the monofill site onto adjacent properties; and

WHEREAS, ADEC regulations (18 AAC 60.420(2)) state a monofill must be operated so that litter is controlled by fencing or other approved means, and is removed from access roadways and other areas in the facility; and

WHEREAS, this region experiences frequent multiple-day high-wind events each year since it is at the confluence of the Matanuska and Knik River valleys. Loose debris and dust from the fill has, and is, expected to continue to scatter beyond the boundaries of the site; and

WHEREAS, the 15' tall cell berms will be constructed prior to waste placement; and

WEHREAS, as the cells increase in height the sides will be built up with tire bales that will be covered with topsoil and seeded for revegetation; and

WHEREAS, the use of a large sheep's foot landfill compactor to place and immediately compact the waste in the cell is the next method to prevent loose and blowing debris; and

WHEREAS, regularly covering the waste with soil further prevents blowing debris; and

WHEREAS, the daily cover/screened fines consist of shredded materials that are less than three inches in size. Material this size is easily distributed by the wind; and

WHEREAS, the inert debris that will be deposited on the site will be shredded into pieces 12 inches or smaller. Material this size can also become windblown; and

WHEREAS, after the residual material is deposited and compacted it will be covered with the daily cover/screened fines, which will also be compacted. The monofill material will be covered with soil weekly; and

WHEREAS, the applicant has stated that a remote weather station will be placed on the site to monitor wind and when sustained wind conditions on the site exceed 20 mph, waste will not be unloaded without secondary containment in place; and

WHEREAS, secondary containment proposed by the applicant involves the use of portable catch fences up to 15' tall and of variable lengths. The catch fences are used to slow the wind down and catch blown debris downwind; and

WHEREAS, normal size opening on the catch fences is 2" x 2"; and

WHEREAS, the openings on the catch fences are still large enough that smaller pieces of material could still blow through them; and

WHEREAS, the previous use of this site was for earth materials extraction. There are pre-existing legal nonconforming use rights for earth materials extraction for this property, which means that the industrial use was not approved under the current regulatory structure or evaluated for compatibility with surrounding land uses; and

WHEREAS, the surrounding land uses include earth material extraction sites to the north and on the south side of the Glenn Highway; residential subdivisions to the west and northeast; and agricultural uses to the east of the site; and

WHEREAS, the site is required to be visually screened on a year round basis from the view of any traveled or public right-of-way. The site must be screened from the Glenn Highway and from the section line easement on the west side of the property and the east-west section line running through the middle of the property. Staff is recommending the site also be screened from the residential properties on the west side; and

WHEREAS, the proposed monofill is an industrial use. The monofill can be screened with existing berms and by building up the berms and constructing site obscuring fencing. Screening from the western properties will have to be developed as the site is built up; and

WHEREAS, salvageable/recyclable materials that are stored outside must also be screened from the Glenn Highway and section line easements on the property; and

WHEREAS, the maximum finished elevation of the monofill will be 162 feet Above Sea Level. The adjacent Glenn Highway has an average finished elevation of 117 feet Above Sea Level, so the maximum height will be a little more than 40 feet above the Glenn Highway. The existing tree covered berm along the highway has an average elevation of 130 feet Above Sea Level. The finished revegetated height of the monofill will be above the berm on the south side, adjacent to the Glenn Highway. The maximum depth of the monofill will be 75 feet with an average depth of 50 feet; and

WHEREAS, should the site be modified as a result of the Glenn Highway Reconstruction Project, an updated site plan and plan of operations will need to be submitted to the Borough; and

WHEREAS, conditions can be set to prevent material from blowing off-site; and

WHEREAS, documentation has been provided demonstrating that the monofill operation does not have the potential for groundwater contamination that could have negative effects on drinking water and surface water quality; and

WHEREAS, the monofill can be developed with proper engineering and operational controls to protect the natural resources and public health and safety; and

WHEREAS, with conditions, the proposed conditional use is consistent tithe goals and policies of the Borough-Wide Comprehensive Plan (2005 Update) and the Core Area Comprehensive Plan (2007 Update); and

WHEREAS, the proposed monofill will preserve and will not detract from the value, character and integrity of the surrounding area as the monofill will be screened from the Glenn Highway, section line easements, and residential properties. Conditions will be set to address trash and debris containment on the site. Documentation has been provided showing that the proposed monofill will not contaminate the groundwater or have negative effects on drinking water or surface water quality; and

WHEREAS, comments received regarding the proposed monofill raised the following concerns: dumping of material without MSB or ADEC permits; dumping of hazardous waste; trash in the water; waster pollution; health problems; pollution of surrounding lakes; protection of watershed and aquifer; compromising the aquifer; windblown unhealthy dust and particulates from the monofill; contamination of water wells; windblown materials/debris onto surrounding properties; previous problems with gravel extraction on this property and rising water table;

breaching of berm between two of the manmade lakes and impact on surrounding water levels; lack of oversight and planning; applicants disregard for regulations; lack of CMS's ability to manage and provide oversight of the facility; concerns about reclamation of the property; contamination of soil; lowering of property values; the Glenn Highway is a Scenic Byway; threat to migratory and breeding birds; how the redesign of the Glenn Highway will affect this site; rising water levels of nearby lakes; improper handling and disposal of asbestos; concerns about lead based paint, mercury and heavy metals deposited in the monofill; too close to residential area; contamination of fish in Canoe, Kepler-Bradley Lake system; inconsistent with comprehensive plans, and highway safety and access issues; and

WHEREAS, there have been many concerns and comments regarding the potential for groundwater contamination that could have negative effects on drinking water and surface water quality. The applicant has provided documentation from four consultants that this will not be the case: Groundwater data has been collected. Based on the groundwater data the monofill will be designed to be at least 10 feet above groundwater. Water level data is continually being collected. The water table generally fluctuates less than one foot. The water that supplies the unconfined aquifer that underlies the proposed monofill is primarily through infiltration from the Matanuska

River. The bottom of the monofill cells will be established based on all of the water data that is collected up to the time of construction of that cell. On-site groundwater monitoring wells were installed. Three wells lie under the footprint of the proposed monofill, which can be utilized to indicate the depth of water beneath the refuse. Historical groundwater levels will be used to determine the historical high groundwater levels beneath the proposed monofill site. If there is any leachate at all, the monofill is designed to minimize the moisture levels in the material, so that the rate of decay and rot will not significantly impact any leachate that leaves the monofill. The monofill is designed so that waste will not stay in a saturated condition. CMS submitted a groundwater monitoring plan with their application. Subsequently CMS withdrew the plan after their consultant EMI found that the probability of creating a leachate that would impact the groundwater is so low. The proposed monofill is located in a semi-arid climate where the balance between the annual precipitation and the annual evaporation precludes the formation of any significant volume of leachate. The average annual precipitation rate in the area of the proposed monofill is approximately 15 inches. Under these climatic conditions, particularly when the precipitation is less than 15.75 inches per year, leachate is not formed in a landfill. Material brought to the facility is sorted, screened

and processed to ensure that the material is free of hazardous waste and putrescible material and/or liquids. CRS removes large quantities of drywall from the waste stream for recycling. No significant water will be available to percolate through the inert waste, nor to "pond" at any level within the refuse mass. ADEC requirements are met for an inert landfill with respect to the 10' minimum separation distance between the bottom of the refuse and the recorded historic high water table and no liner is required. Testing for potential contamination from the waste has occurred. EMI tested the residual material using the Synthetic Precipitation Leaching Procedures (SPLP) to check for potential contaminants of concern from the waste. This method is not used to test water for drinking water standards. It is designed to identify contaminants that may be of potential concern in waste water. Modeling results have indicated that there will be no contaminant plume extending down gradient from the landfill mass. Leachate modeling identified two potential contaminants of concern: sulfate and manganese. The results predict that the analytes will likely comply with ADEC's drinking water standards. The development of a vegetative cover will result in increased evaporation (evapotranspiration) and the minimal infiltration will be reduced as the landfill evolves, cell by cell. Establishment of the native ground cover

on the final cap of each cell will result in increased evapotranspiration and reduced potential for infiltration; and

WHEREAS, a total of ten cells will be constructed over the life of the monofill. The working face receiving the inert materials will comprise, at any one time, an area measuring 120' x 50'. Therefore, the surface of the monofill most vulnerable to infiltration by precipitation at any one time will be kept to a minimum; and

WHEREAS, the monofill is designed to minimize the moisture levels in the material so that the rate of decay and rot will be very slow and will not significantly impact any leachate, if there is any leachate at all that leaves the monofill; and

WHEREAS, ADEC regulations state that an unlined landfill may not be located closer than 10 feet above the highest measured level of an aquifer of resource value unless the landfill is constructed two feet or more above the natural ground surface (18 AAC 60.217); and

WHEREAS, under Alaskan administrative regulations, this proposed monofill is exempt from providing groundwater monitoring and corrective action to state agencies, as it is located in an area with 25 inches or less in total precipitation each year, per ADEC regulations (18 AAC 60.820(a)(8); and

WHERAS, CMS withdrew their groundwater monitoring plan from the application material. Staff is recommending that a

groundwater monitoring plan be required by the Borough Planning Commission and implemented in the conditional use permit; and

WHEREAS, the monofill is being designed so that a significant amount of leachate will not be produced; the groundwater level has been determined; no contaminant plume will extend down gradient from the monofill; and there will be minimal infiltration. A condition will be set to implement a groundwater monitoring plan at this site; and

WHEREAS, materials brought to the facility that have not been previously inspected will be deposited onto an impermeable pad for inspection, recyclable materials removed and the remaining non-recyclable material placed in the active monofill cell; and

WHEREAS, the applicant states that the following material will not be accepted at this monofill: PCBs or other hazardous wastes, household waste, putrescible waste, liquids, compressed gas cylinders, batteries, appliances with CFC/HCFC, animal carcasses, and petroleum contaminated materials; and

WHEREAS, Alaska Statutes 46.03.900(1) – defines "hazardous waste" as "A waste or combination of waste that because of quantity, concentration, or physical, chemical, or infectious characteristics may: cause or significantly contribute to, an increase in mortality or an increase in serious irreversible or incapacitating reversible illness; or pose a substantial present

or potential hazard to human health or the environment when improperly managed, treated, stored, transported, or disposed of"; and

WHEREAS, material haulers transporting any demolition and/or renovation material to a CRS facility or this monofill must provide the following documentation: (1) A copy of all Hazardous Building Material Surveys for each project that will be bringing their demolition and/or renovation material to the facility. Should the Survey indicate the presence of any hazard materials, then (2) a letter from the Contractor of each project is also submitted to CRS stating that all hazardous material has been properly removed from the project and there is no hazardous material being brought to the CRS facility. For their operations, CRS defines hazardous material as a material containing any percentage of asbestos; and

WHEREAS, Regulated Asbestos Containing Material (RACM) and Non-RACM will be accepted for disposal at the monofill in accordance with all applicable federal and state regulations for packaging, labeling, transport handling and disposal; and

WHERAS, materials that can be accepted at this monofill are described in the State of Alaska's Solid Waste Regulations, 18 AAC 60; and

WHEREAS, the Plan of Operations submitted to ADEC will prevent hazardous waste, as defined by the Federal government (40 CFR 261.3) from being placed in the monofill; and

WHEREAS, testing for potential contaminants from the waste has occurred; and

WHEREAS, leachate modeling identified two potential contaminants of concern: sulfate and manganese. The results predict that the analytes will likely comply with the ADEC's drinking water standards; and

WHEREAS, baseline data for water quality has been provided; and

WHEREAS, the site is less than one mile from the Palmer Hay Flats Refuge, which is a major migratory bird refuge in Southcentral Alaska; and

WHEREAS, with conditions, the proposed monofill should not be harmful to the public health, safety, convenience, and welfare; and

WHEREAS, ADEC regulations require that monofill waste be set back a minimum of 50 feet from all property lines; and

WHEREAS, no material will be placed or stockpiled within 25 feet of the industrial ponds on the site; and

WHEREAS, no waste will be placed within 100 feet of the industrial ponds on the site; and

WHEREAS, in addition to the monofill, two storage or shop buildings, a scale house, and field office are proposed for the site; and

WHEREAS, the site plan depicts the proposed structures in compliance with setback requirements; and

WHEREAS, the operation will be required to comply with the maximum permissible sound level limits in MSB Code, per the requirements of MSB 17.61.080 - Noise Standards and MSB 8.52 - Noise, Amplified Sounds, and Vibration; and

WHEREAS, the driveway to the site will be secured with a locked gate; and

WHEREAS, the site is monitored with camera security systems; and

WHEREAS, only approved contractors will be allowed to bring material to the facility. This is controlled by gates and on-site personnel that will inspect all loads delivered to the facility; and

WHEREAS, the public will not be allowed to drop off or dispose of material at the monofill; and

WHEREAS, the sale yard will be open to the public with controlled access; and

WHEREAS, with conditions, there will be adequate safeguards in place to prevent blowing debris and incidental trash onto adjacent properties and roadways. Additional conditions will be

set regarding the handling and storage of materials during wind events; and

WHEREAS, the application material adequately addresses the impacts of the climate, geology, hydrology and geography of the site and the impacts to surrounding land uses; and

WHEREAS, the conditional use does fulfill all other requirements of this chapter; and

WHEREAS, screening of the site will be accomplished by using the existing topography and berms, building up berms and installing site obscuring fencing.

NOW, THEREFORE, BE IT RESOLVED, that the Matanuska-Susitna Borough Planning Commission hereby finds this application does meet the standards of MSB 17.60.100 and 17.60.110 and hereby approves the conditional use permit for the operation of a monofill for the disposal of inert construction and demolition debris, including Regulated Asbestos-Containing Material (RACM) and Non-Regulated Asbestos-Containing Material (Non-RACM) and an outdoor storage yard for the sale of salvageable/recyclable materials on parcels 17N02E18C010 and 17N02E19B006 with the following conditions:

1. It is the responsibility of the property owner and operator to identify and comply with all applicable local, state, and federal regulations applicable to

this development and obtain all necessary authorizations and permits and update as appropriate.

2. Upon issuance of a permit under MSB Chapter 17.60, the permittee shall provide and maintain all necessary documentation to demonstrate continued compliance with permit conditions.

3. The property owner and the permittee shall be responsible for maintaining all aspects of the operation, improvements, and development, and the site in compliance with the terms and conditions of the permit and all applicable local, state, and federal requirements.

4. Authorized representative of the borough shall be allowed to inspect the site at reasonable times for the purpose of monitoring compliance with all permit conditions. Upon reasonable notice from the Borough, the permittee shall provide necessary assistance to facilitate authorized inspections.

5. Except as otherwise specified by code, the privileges and requirements of a conditional use permit shall run with the land, subject to the following requirements: Within 90 days of recording the transfer of ownership of the subject land, the new owner shall provide written notification and a signed acknowledgement that

the new owner assumes responsibility for compliance with the requirements of the permit.

6. If the operation expands or alters, an amendment to the conditional use permit shall be required.

7. The operation shall be limited to what is described in the development plan submitted to the Matanuska-Susitna Borough and the Plan of Operations submitted to the Alaska Department of Environmental Conservation.

8. An area no larger than 120' x 50' shall remain uncompacted at any one time.

9. The maximum square footage that shall be exposed and not covered at any one time during the monofill operation shall be 25,000 square feet.

10. At a minimum, the monofill material shall be covered with soil weekly.

11. Immediately after the tire bales used for the side walls are installed they shall be covered with topsoil and seeded for revegetation.

12. A remote weather station shall be installed at the site to monitor wind speed. The weather station shall be set up where the wind flows freely and is not influenced by nearby objects or topography.

13. When sustained wind conditions on the site exceed 10 mph, waste material shall not be deposited at the site.

14. When sustained wind speeds exceed 15 mph, all open areas shall be covered with soil, secured with tarps, or other appropriate measures until sustained winds decrease to less than 10 mph.

15. The applicant shall install catch fences downwind of active monofill cells at all times. The fencing mesh shall be a maximum of one inch (1") in size.

16. At the end of each day the stockpiled daily cover shall either be contained within a covered trailer or completely covered with tarps that are secured to ensure that material does not become airborne.

17. The site shall be monitored daily for windblown material. If materials are found to have blown off-site a corrective measures plan shall be submitted to the Borough for approval.

18. If material is windblown onto adjacent properties, reasonable attempts shall be made to obtain permission to gain access to these properties for debris removal

19. The site shall be visually screened on a year round basis from all traveled or public rights-of-way and

from the residential properties on the west side of the property.

20. The maximum finished elevation of the monofill shall not exceed 162 feet Above Sea Level.

21. Upon completion, the monofill shall be covered with two feet of topsoil, seeded, and sloped as described in the development plan.

22. Should the operation be modified as a result of the Glenn Highway Reconstruction Project, an updated site plan and plan of operations shall be submitted to the Borough.

23. The bottom of the monofill shall not be located closer than 10 feet above the seasonal high water table.

24. If it is found that groundwater has been contaminated, a corrective measures plan shall be submitted to the Borough for approval.

25. The Groundwater Monitoring Plan prepared for this site by TERRASAT, Inc., dated May 17, 2013, shall be implemented and maintained, except that a final laboratory report resulting from a release investigation shall be submitted to the Borough within 48 hours of receiving the report.

26. Materials that can be accepted at this monofill are described in the State of Alaska Solid Waste Regulations, 18 AAC 60.

27. The following materials shall not be accepted at this monofill: PCBs or other hazardous wastes, household waste, putrescible waste, liquids, compressed gas cylinders, batteries, appliances with CFC/HCFC, animal carcasses, and petroleum contaminated materials.

28. Materials brought to the facility that have not been previously inspected by qualified personnel shall be deposited onto an impermeable pad for inspection prior to being deposited in the active monofill cell.

29. If prohibited materials are found, they shall be properly handled and disposed of in accordance with all state and federal laws.

30. Regulated Asbestos Containing Material (RACM) and Non-RACM shall be handled and disposed of at the site in accordance with state and federal regulations for packaging, labeling, transport handling and disposal.

31. Monofill waste shall be set back a minimum of 50 feet from all property lines.

32. No waste shall be placed or stockpiled within 100 feet of the industrial ponds on the site.

33. Only previously approved haulers shall be allowed to bring material to the facility.

34. The operation shall comply with the maximum permissible sound level limits allowed in MSB Code, per the requirements of MSB 17.61.080 - Noise Standards and MSB 8.52 – Noise, Amplified Sounds, and Vibration.

35. The site shall be gated and locked when not in operation. All visitors to the site must check in with personnel.

36. Hours of operation shall be limited to 7 a.m. to 7 p.m., Monday through Saturday, May through September and 8 a.m. to 5 p.m., Monday through Saturday, October through April.

37. Environmental and Pollution Insurance shall be maintained in the amount of $1 million single with a minimum $5 million aggregate.

38. This conditional use permit shall expire December 31, 2045.

39. The owner shall provide copies of all permits issued by state and federal agencies to the Matanuska-Susitna Borough prior to commencement of the permitted use. The owner shall also provide to the borough a copy of

every application for an amendment to any such permit at the time the application is filed with the permitting agency, and a copy of any amendment approved by the permitting agency shall be provided to the borough within five days of issuance.

40. This permit has been approved by the Matanuska-Susitna Borough Planning Commission. The decision may be appealed within 21 days of the date of approval by the Planning Commission in accordance with MSB 15.39 – Board of Adjustment and Appeals.

ADOPTED by the Matanuska-Susitna Borough Planning Commission this ___ day of ___, 2014.

JOHN KLAPPERICH, Chair

ATTEST

MARY BRODIGAN, Planning Clerk

(SEAL)

YES:

NO:

REFERENCE MATERIAL

PLANNING COMMISSION
RESOLUTION NO. 13-30(AM)

MATANUSKA-SUSITNA BOROUGH
PLANNING COMMISSION RESOLUTION NO. 13-30 (Am)

A RESOLUTION OF THE MATANUSKA-SUSITNA BOROUGH PLANNING COMMISSION ADOPTING FINDINGS OF FACT AND CONCLUSIONS TO SUPPORT THEIR FAILURE TO APPROVE RESOLUTION 13-22.

WHEREAS, Resolution 13-22 recommended approval of a conditional use permit for the operation by Central Monofill Services (CMS) of an inert material monofill on parcels 17N02E18C010 and 17N02E19B006, within Township 17 North, Range 2 East, Sections 18 and 19, Seward Meridian; and

WHEREAS, Resolution 13-30 contains findings of fact and conclusions of law which support denial of the conditional use permit; and

WHEREAS, on June 3, 2013, the Planning Commission held a public hearing on Resolution 13-22; and

WHEREAS, the Planning Commission's vote on the motion failed to garner a majority vote on June 3, 2013; and

NOW, THEREFORE, BE IT RESOLVED, that the Matanuska-Susitna Borough Planning Commission denied the conditional use permit based on the following findings of fact and conclusions of law:

1. Borough staff has documented trash and the Daily Cover (screened fines) that have blown from the monofill onto adjacent properties.

2. Borough staff has documented trash and/or the Daily Cover blown over the 40 foot hill on the west side of the property.

3. ADEC regulations (18 AAC 60.420(2)) states a monofill must be operated so that litter is controlled by fencing or another approved means, and is removed from access roadways and other areas in the facility.

4. This region experiences frequent multiple-day high-wind events each year since it is at the confluence of the Matanuska and Knik River valleys. Loose debris and dust from the fill has and is expected to continue to scatter beyond the boundaries of the site.

5. Fencing is not expected to contain the trash and/or the Daily Cover/screened fines on the site. The trash and/or Daily Cover/screened fines will get blown into the trees and surrounding properties.

6. CMS has not provided adequate mitigation plans for preventing trash and debris from leaving the site.

7. The Daily Cover/screened fines consist of shredded materials that are less than two inches in size. Material this size is easily distributed by the wind.

8. The inert debris that will be deposited on the site will be shredded into pieces 12 inches or smaller. Material this size can also become windblown.

9. The previous use of this site was for earth materials extraction. There are pre-existing legal nonconforming use rights for earth materials extraction for this property, which means that the industrial use was not approved under the current regulatory structure or evaluated for compatibility with surrounding land uses.

10. The proposed monofill is an industrial use and is an incompatible use with the surrounding residential areas as it cannot be completely screened from the surrounding residences to the west, debris from the monofill will blow onto the surrounding residences and roadways, and there is the possibility of contamination of drinking water wells in the area.

11. The final height of the monofill is proposed to be at 150 feet above sea level (ASL). The proposed monofill will have 2700 feet of frontage along the Glenn Highway. The proposed completed height of the monofill will be 35 to 40 feet above the adjacent berms on the southwest perimeter of the site.

12. The monofill will be unsightly from the Glenn Highway, and from the surrounding properties, including the residential subdivision directly to the west. It is not possible to completely screen the monofill because of topography and because the project is proposed to be 150 feet (ASL) high at completion.

13. The proposed monofill is inconsistent with some of the land use goals and policies of the Borough-Wide Comprehensive Plan (2005 Update) and the monofill is an industrial use and incompatible with the neighboring residential areas.

14. The proposed monofill is inconsistent with some of the goals and policies of the Borough-Wide Comprehensive Plan (2005 Update) and the Core Area Comprehensive Plan (2007) as there is the potential for groundwater contamination that could have negative effects on drinking water and surface water quality.

15. The proposed monofill is inconsistent with the goals and policies of the Borough-Wide Comprehensive Plan (2005 Update) and the Core Area Comprehensive Plan (2007 Update)

16. The proposed monofill will not preserve and will detract from the value, character, and integrity of the surrounding area as the monofill will be unsightly from the Glenn Highway and from the surrounding properties including the residential subdivision directly to the west. It is not possible to completely screen the monofill because of topography and because the project is proposed to be 150 feet (ASL) high at completion. Conditions may be set to address trash and debris containment on the site (17.60.100(B)(1)).

17. Comments received regarding the proposed monofill raised the following concerns:
    - Dumping of material without MSB or ADEC permits.

- Dumping of hazardous waste
- Trash in the water
- Water pollution
- Health problems
- Pollution of surrounding lakes
- Protection of watershed and aquifer
- Compromising the aquifer
- Windblown unhealthy dust and particulates from the monofill
- Pollution of drinking water
- Windblown materials/debris onto surrounding properties
- Impact on downstream waterways
- Long term safety of water quality
- Contamination of water table
- Use the existing landfill for disposal of material
- Previous problems with gravel extraction on this property and rising water table
- Trash in the trees is an eyesore
- Breaching of berm between two of the manmade lakes and impact on surrounding water levels
- Long term impact of contamination of drinking water
- Disregard for lakes, streams, and drinking water
- Lack of oversight and planning
- Lack of CMS's ability to manage and provide oversight of the facility
- Concerns about reclamation of the property
- Dumping of garbage/monofill near standing water
- High wind area will cover surrounding area with dust and debris from monofill
- Contamination of soil
- Residents are entitled to clean air, land and water
- Lowering of property values
- The Glenn Highway is a Scenic Byway
- Threat to migratory and breeding birds
- How the redesign of the Glenn Highway will affect this site

- Rising water level of Canoe Lake due to dam breach
- Concerns about asbestos being dumped at this site
- Concerns about lead based paint, mercury and heavy metals deposited in the monofill
- Too close to residential area

18. The monofill will be unlined.

19. Materials brought to the site will not be deposited on an impermeable surface that will contain any prohibited and/or contaminated materials.

20. No system is proposed to capture, treat, or monitor leachate leaving the site.

21. Alaska Department of Environmental Conservation (ADEC) regulations state that an unlined landfill may not be located closer than 10 feet above the highest measured level of an aquifer of resource value unless the landfill is constructed two feet or more above the natural ground surface (18 AAC 60.217).

22. The applicant has not addressed how they will monitor or manage the seasonal high water table fluctuations to ensure that the bottom of the monofill is not annually saturated by groundwater.

23. Soils in the area of the monofill site are very porous, loose gravels and glacial loess, and offer little or no filtering capacity for fluids being emitted or drained from the fill. Without a liner, a ten foot separation is not sufficient to prevent leachate from reaching the water table increasing the risk of potential contamination of the water resources in the area.

24. Contaminants typically found in groundwater surrounding construction and demolition landfills include cadmium, lead, iron, manganese, several chlorinated volatile organic compounds, sulfate, hydrogen sulfide, and TDS (Total Dissolved Solids). Chromium and arsenic are found if chrominated copper arsenate-treated wood is disposed in the landfill.

25. The site appears to be up gradient of the groundwater flow direction from private drinking water wells. Without a Fate and Transport Model for compounds of concern to evaluate the risk posed by the proposed monofill to down gradient wells, there is no way to evaluate if these compounds will reach the drinking water wells at concentrations posing risk to health.

26. Baseline data for water quality has not been provided.

27. Seasonal water table elevation fluctuations have not been established.

28. The top of the completed monofill drops 40 feet from one end to the other. The run-off from this slope could pose problems with the dredge ponds at the base of the monofill causing problems with the aquifer.

29. Migratory birds, especially waterfowl, are attracted to the ponds already on the site. Material used as daily cover includes material potentially hazardous to birds if ingested.

30. This site is less than one mile from the Palmer Hay Flats Refuge, which is the major migratory bird refuge in Southcentral Alaska.

31. It is not possible to set conditions to adequately protect the groundwater and aquifer from anticipated negative effects of the monofill. The stormwater management proposed by the applicant will maximize the volume of water infiltrating the monofill. This infiltrating meltwater and rainfall will percolate through the placed materials, enter the groundwater and a large unconfined aquifer. The leachate from the construction and debris monofill may contain compounds at concentrations above drinking water standards. That water will impact private and public water wells used by homes, neighborhoods and farms, and could also enter nearby lakes that are heavily used. Adequate baseline water quality data monitoring to establish the quality of the existing water, the level of the groundwater throughout the monofill site, and the porosity of the materials under the monofill, has not been provided.

32. The proposed monofill will be harmful to the public health, safety, convenience, and welfare (17.60.100(B)(2)).

33. The site plan depicts the proposed structures in compliance with setback requirements.

34. The application minimally addresses the impacts of the climate, geology, hydrology and geography of the site and the impacts to surrounding land uses.

35. According to documentation and studies the proposed monofill site is located where the topography, geology, hydrology and soil are inadequate for protection of ground and surface water quality.

36. The conditional use does not fulfill all other requirements of this chapter (17.60.100(B)(4)).

37. The berm adjacent to the Glenn Highway will have to extend in height in order to obscure the view of the monofill from the highway.

BE IT FUTHER RESOLVED that this is a final determination which may be appealed in accordance with MSB 15.39.140 by filing a written notice of appeal with the Borough Clerk within 21 days from the date this determination was issued. If an appeal is not filed as described in the preceding sentence, the right to appeal is forfeited.

ADOPTED by the Matanuska-Susitna Borough Planning Commission this 17th day of June, 2013.

JOHN KLAPPERICH, Chair

ATTEST:

MARY BRODIGAN, Planning Clerk

(SEAL)

YES: Endle, Healy, Klapperich, Walden, and Rauchenstein

NO: Haller

Potential Hydrologic Effects of Gravel Extraction South of Palmer, Alaska, J. A. Munter Consulting, Inc, April 2010

Potential Hydrologic Effects of Gravel Extraction South of Palmer, Alaska

Report to:

Matanuska-Susitna Borough
350 East Dahlia Avenue
Palmer, Alaska, 99645

Prepared by:

J. A. Munter Consulting, Inc.
5701 Penny Circle
Anchorage AK, 99516

April 2010

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Potential Hydrologic Effects of Gravel Extraction

South of Palmer, Alaska

Executive Summary

Past and possible future gravel extraction in an area south of Palmer, Alaska, have created concerns about potential effects on nearby water wells serving individual residences and public water systems and potential hydrologic effects on other resources. This report examines available geologic and water resources data, along with current gravel extraction plans by major operators, to determine if any significant hydrologic effects may result from the planned activities.

Three hydrogeologic cross sections show that water is obtained from a thick and widely present alluvial and glacial outwash aquifer that is also mined for gravel. Several lakes in the project area are considered to be in good hydraulic connection with the aquifer. Most wells only tap into the upper portion of the aquifer and are reported to have standing columns of water under static conditions of 10 to 30 feet.

One of the lakes to be created by gravel extraction is projected to extend into the Matanuska River braidplain, and is projected to equilibrate close to the current level of the water table in the braidplain. That lake will extend into the adjacent uplands where the current water table position is approximately 30 feet higher than the projected lake level. This is expected to lower water levels in the aquifer in the vicinity of the lake. A simple mathematical model was applied to the mining scenario and surrounding aquifer to estimate the extent and magnitude of potential water-level declines. Model calculations indicate that water levels may decline up to several feet at a distance of 1.5 miles or more northward from the planned lake. The magnitude and extent of these potential declines, as well as future planned lakes, are shown on the cross sections.

The amount of water-level decline is likely to cause some wells to fail as a result of the water table dropping to levels near or below the bottom of the well. Other wells may experience reduced yields or sporadic outages. Additional information is needed in order to determine the potential number and locations of wells that may be affected and the likely effects on any specific well.

Additional wells may have capture zones that overlap areas subject to gravel mining and the water-supply aquifer may be subject to risks of water quality impairment; however the degree of risk associated with this is not determinable with existing information.

The surface of Meirs Lake is expected to be lowered by approximately six feet as a result of the planned extraction, and other lakes may also experience observable declines. The plans include mining through a stream in the Matanuska River braidplain listed in the ADF&G Anadromous Waters Catalog as rearing habitat for Coho salmon. Well and lake water is currently used for irrigating farmland, and there are a number of

public water systems in the area. It is not known whether the lower water levels would have an effect on those systems.

To mitigate the effects of water-level declines, most wells could probably be deepened or redrilled to deeper parts of the aquifer to restore sufficient yield. Also, reducing the extent of planned gravel mining is expected to reduce the extent and magnitude of water-level declines.

Acknowledgements

The Matanuska-Susitna Borough provided funding for this study and also provided aerial imagery, assistance in determining well locations, and graphical support for report figures. We would also like to thank and acknowledge Alaska Department of Natural Resources Hydrologist Roy Ireland and Alaska Department of Environmental Conservation Hydrologist Charley Palmer for providing helpful technical review comments that improved the report, although this does not suggest or imply concurrence with the findings of the report.

Introduction

Background

Gravel mining has occurred south of Palmer, Alaska, along both sides of the Glenn Highway for decades. Much of the gravel is shipped to Anchorage via the Alaska Railroad for general construction purposes. Land surrounding the gravel pits consists of agricultural, residential, state park land, and the braidplain of the Matanuska River. Water supplies for residential areas are served by a combination of on-site wells and small- to medium-sized public water systems based on wells. Concerns have risen in recent years with an increased number of private wells in the vicinity of the gravel pits and the release of plans by the pit operators detailing wider and deeper extraction of gravel and the creation of ponds and lakes. Several ponds have been created in recent years, with some history of changes in water levels in the area caused by gravel extraction activities (Brailey Hydrologic Consultants, 2007).

Goal

The goal of this study is to determine if potential future mining scenarios may result in significant adverse effects. These effects include, but are not limited to, changes in water levels affecting current or future well owners, changes in water quality, or changes in water conditions affecting other structures or resources.

Methods

The project area for this study is a 12-square mile area generally bounded by the Alaska State Fairgrounds on the northeast, the Matanuska River braidplain on the southeast, Spring Creek on the south, Matanuska Lake on the southwest, and the Matanuska-Susitna College campus of the University of Alaska Anchorage on the northwest (figure 1). The project area includes gravel pits operated by the major gravel producers Anchorage Sand and Gravel, Inc., on the north side of the Glenn Highway,

and Granite Construction Company on both the north and south sides of the highway. Quality Asphalt Paving also operates a pit on the south side of the highway.

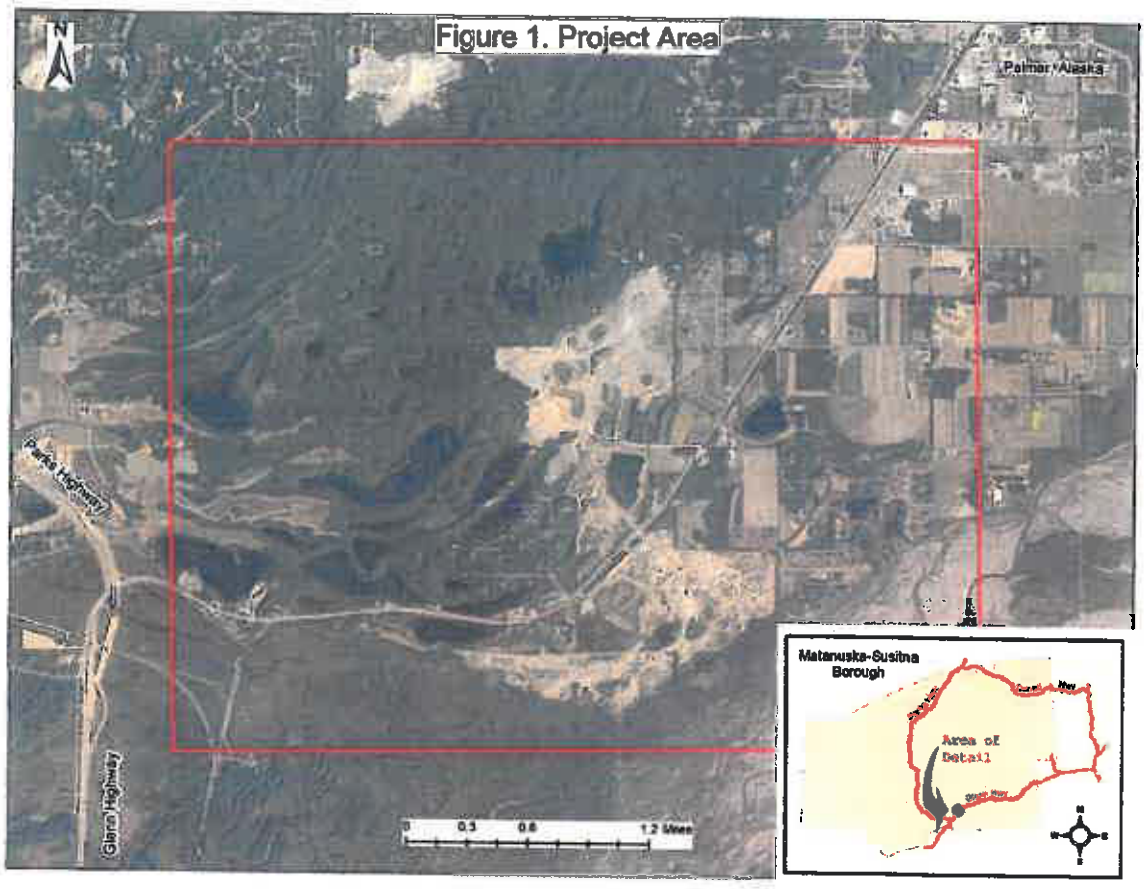


Figure 1. Location of the project area.

This study reviews recent reports and water-well databases and presents a conceptual model of surface water and groundwater flow systems for the project area. Hydrogeologic cross sections based on water-well logs and geologic information are presented and used to illustrate and define groundwater resources.

A composite potential future gravel extraction scenario is constructed from existing conditions and plans and documents provided to the Borough by the operators. This scenario is then superimposed on the cross sections to analyze and illustrate what potential future hydrogeologic conditions may occur. A simple mathematical model is used to estimate the extent of water level changes caused by the scenario. Potential effects of the hydrologic changes are described, and suggestions for future work are presented. This report contains numerous technical terms that are defined in a glossary section at the end of the report.

Geologic Setting

The surface geology of the project area has been largely influenced by the most recent glacial advance through the area, known as the Naptowne advance of the Matanuska Glacier (Reger and Updike, 1993). The retreat of this glacier left behind four predominant geomorphic landforms in the project area.

Palmer Terrace

The Palmer Terrace, along the Glenn Highway south of Palmer, is a gently sloping plain of pitted glacial sand and gravel outwash. The terrace contains several natural kettle lakes or depressions formed by melting blocks of glacial ice that were buried during sediment accumulation. The surface of the terrace is 25 to 50 feet above the current braidplain of the Matanuska River. The largest kettle lake is variably known as McLeod Lake or Meirs Lake (hereafter referred to as Meirs Lake) located near the intersection of Outer Springer Loop Road and the Glenn Highway.

Crevasse-fill-ridge complex

During the late stages of glacial ice cover, open crevasses in the ice were present in what is now known as the Kepler-Bradley Lakes area. These crevasses were filled with accumulations of alluvial sands and gravels that now stand as arcuate ridges adjacent to valleys and lakes where the ice has melted away.

Kame/esker complex

On the north side of the crevasse-fill-ridge complex and in the north-central part of the study area, a region of more irregular hills and valleys known as a kame/esker complex is present. The geologic materials in this area are also predominantly sand and gravel resulting from ice stagnation and waterborne sedimentation processes.

Matanuska River braidplain

The current braidplain of the Matanuska River is incised into the Palmer Terrace. The braidplain predominantly contains sand and gravel deposits associated with the current or recently active migrating channels of the Matanuska River.

Other geologic materials. Glacial drift, including glacial tills, are present in some areas beneath the fluvial and glaciofluvial deposits described above (LaSage, 1992). Sedimentary, metamorphic and perhaps igneous rocks underlie the unconsolidated glaciofluvial and till deposits. Thickness of the unconsolidated deposits ranges from 0 to over 200 feet in the project area. Up to several feet of windblown silty loess mantle the study area.

Hydrology and Hydrogeology

Conceptual model

Moran and Solin (2006), Brailey Hydrologic Consultants (2007), LaSage (1992), and Jokela and others (1990) provide a framework for a conceptual model of surface water

and groundwater flow systems for the area. A dominant hydrologic feature in the project area is the Matanuska River. The river floods seasonally and the main channel is capable of migrating across the braidplain over time. A dike extends southward from the southern extent of the gravel pit workings south of the Glenn Highway. This dike separates the Matanuska River braidplain channels on the east from the Spring Creek bottomland on the west. Except for Spring Creek and other bottomland sloughs and streams, there are no other significant creeks or streams in the project area. Soils throughout the study area are relatively permeable and rainfall and snowmelt tend to infiltrate into the ground to provide recharge to groundwater.

Groundwater in the study area generally flows from north to south from the foothills of the Talkeetna Mountains to discharge areas along the Matanuska River and its contributing sloughs and tributaries.

Numerous closed-basin lakes (meaning that the lake has no surface water outlet) are present in the study area. These include kettle lakes such as Meirs Lake in the pitted outwash of the Palmer Terrace and long, narrow arcuate lakes between the crevasse-fill ridges in the Kepler-Bradley Lakes area. Of the lake types described by Jokela and others (1990) these lakes are most likely groundwater flow-through type lakes, receiving groundwater inflow on the upgradient side of the lake and contributing lake water to the groundwater system on the downgradient side.

Aquifers. LaSage (1992) notes that groundwater in the area is obtained from both water-table (unconfined) and confined aquifers. Brailey Hydrologic Consultants (2007) note that most wells in their study area (including several up to approximately 100 ft deep) appeared to tap the unconfined aquifer. Jokela and others (1990) (including reference to earlier work by Trainer (1960)) note the presence of a confining unit and a confined aquifer east and north of the present study area. Previous studies also note the presence of a low-yield bedrock aquifer throughout the area beneath the other glacial or glaciofluvial deposits.

For the purposes of this study, two aquifers are defined. The alluvial or glacial outwash aquifer is the principal aquifer in the study area and is comprised predominantly of alluvial and glacial outwash sand and gravel. The aquifer occurs under water-table conditions throughout most of the study area, although localized areas where groundwater occurs under confined conditions are likely present. In these areas, the aquifer is confined by glacial till or other silty materials, however within the present study area, confining units or confined aquifers have not been delineated.

The aquifer thickness ranges from approximately 50 to 250 feet thick in most areas, although it may be somewhat thinner or thicker locally. There is one reported area where the bedrock surface is above the water table and the aquifer is absent (Brailey Hydrologic Consultants, 2007). Limited areas of silty glacial deposits are present that can locally limit groundwater flow to wells or produce steep water table gradients (Brailey Hydrologic Consultants, 2007). Yields of wells are adequate in most areas for domestic usage, with high-yield irrigation or public-supply wells constructed in some places. The quality of water is generally suitable for domestic supply or irrigation use

without treatment, and wells are widely used to support residential and agricultural development.

The bedrock aquifer is comprised of sedimentary, metamorphic, or igneous rocks (bedrock) that occur at depth through the study area. Well yields are typically low, although usually adequate for domestic supplies. Only a few wells in or near the present study area are known to have encountered bedrock.

Water-level fluctuations. Groundwater and lake levels in the study area fluctuate with changing precipitation trends, both seasonally and over longer periods. LaSage (1992), showed seasonal fluctuations in the long-term groundwater-level data, but no major long-term trends between 1949 and 1985. Recent data show that lake levels reached a relative peak in 2007 (Granite Construction Company, 2010, and Roy Ireland, ADNR, written communication, 2010). Munter (2008) reported a case of high groundwater levels attributed to abnormally high recharge in 2005 just a few miles north of the study area.

Water use. All household supplies of water within the study area, whether individual water systems or public-supply systems, are reportedly obtained from groundwater. Water is also obtained seasonally from wells and from Meirs Lake for irrigating farmland.

Well data

LaSage (1992) presents a thorough compilation of data from boreholes and wells in the project area available at the time. Since then, additional wells have been drilled, and some of these have been submitted to agencies and entered into the State of Alaska's primary well log database (WELTS). A few have also been added to the U.S. Geological Survey's database (NWIS). Both databases were queried and Figure 2 shows the resulting combined well data source used for this study. Figure 2 also shows locations of public water systems in the project area (Christopher C. Miller, Alaska Department of Environmental Conservation, written communication, 2010)

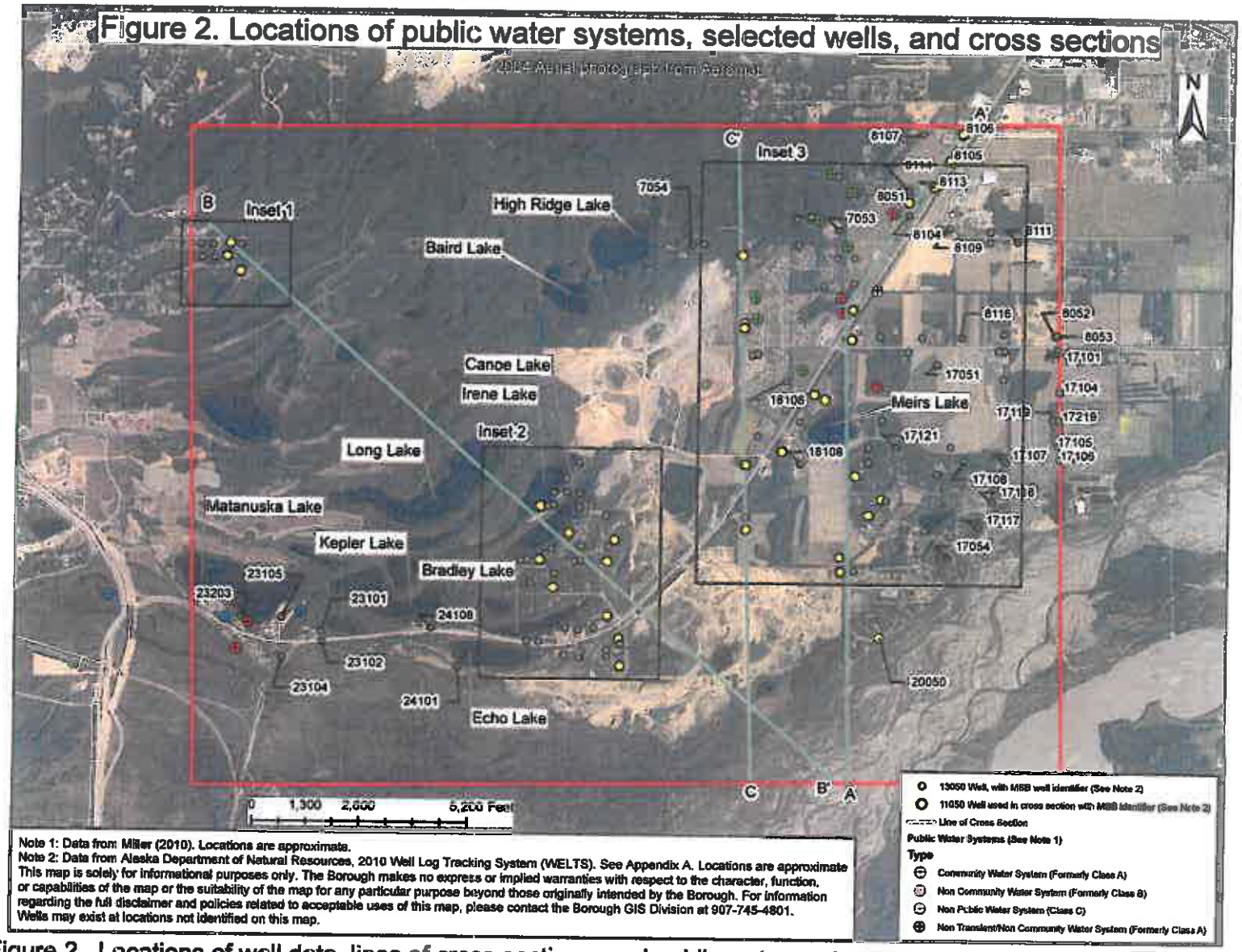
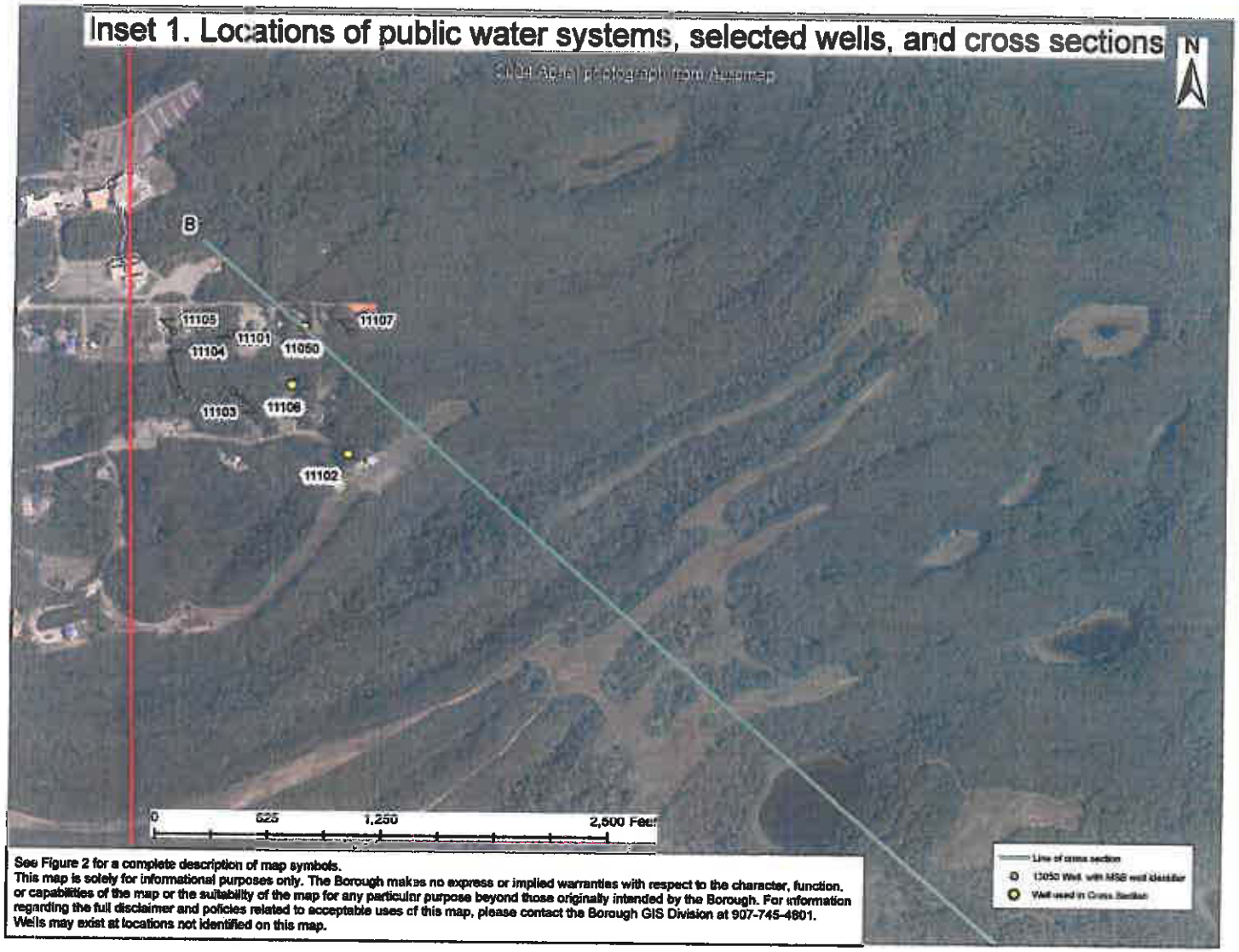
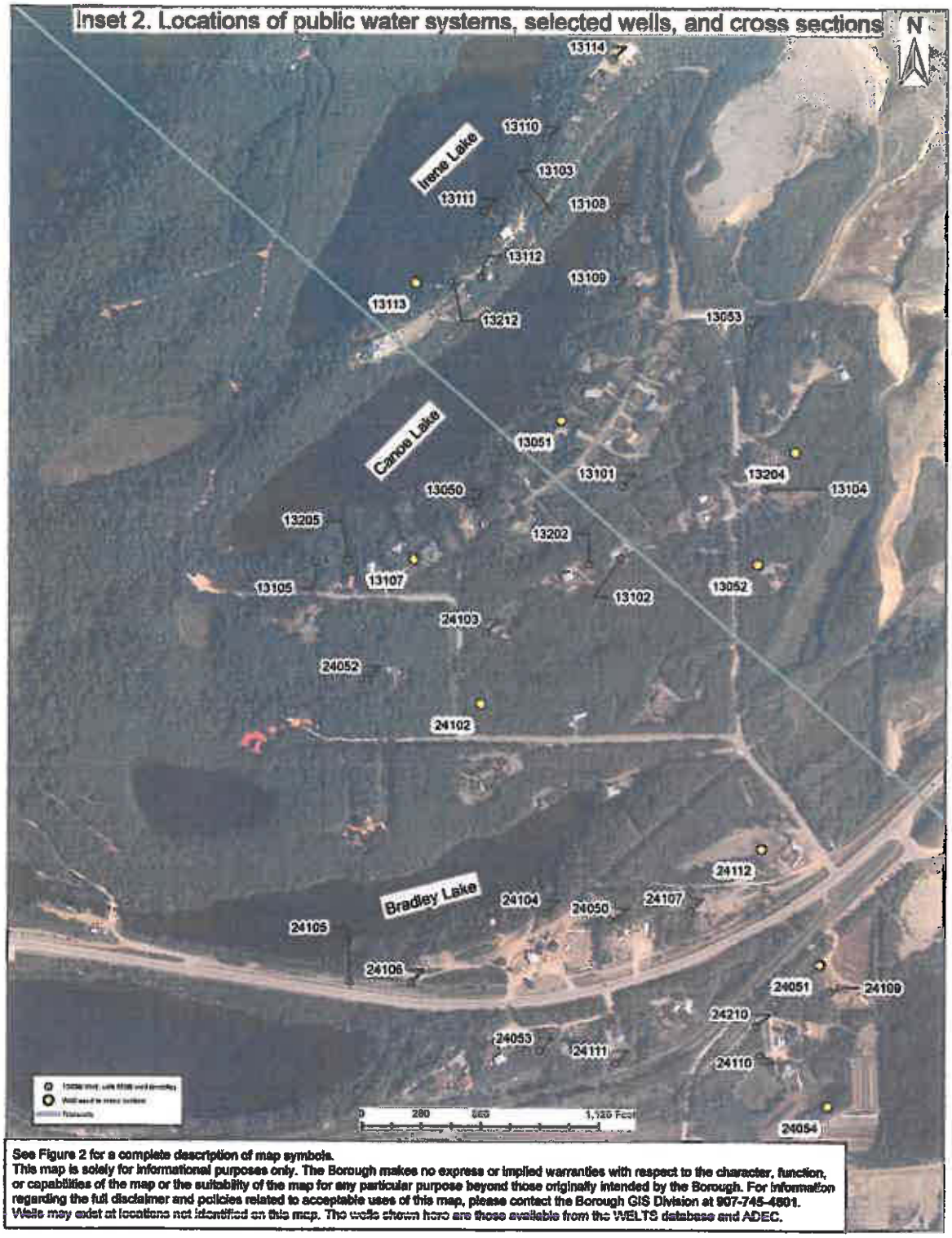


Figure 2. Locations of well data, lines of cross sections, and public water systems

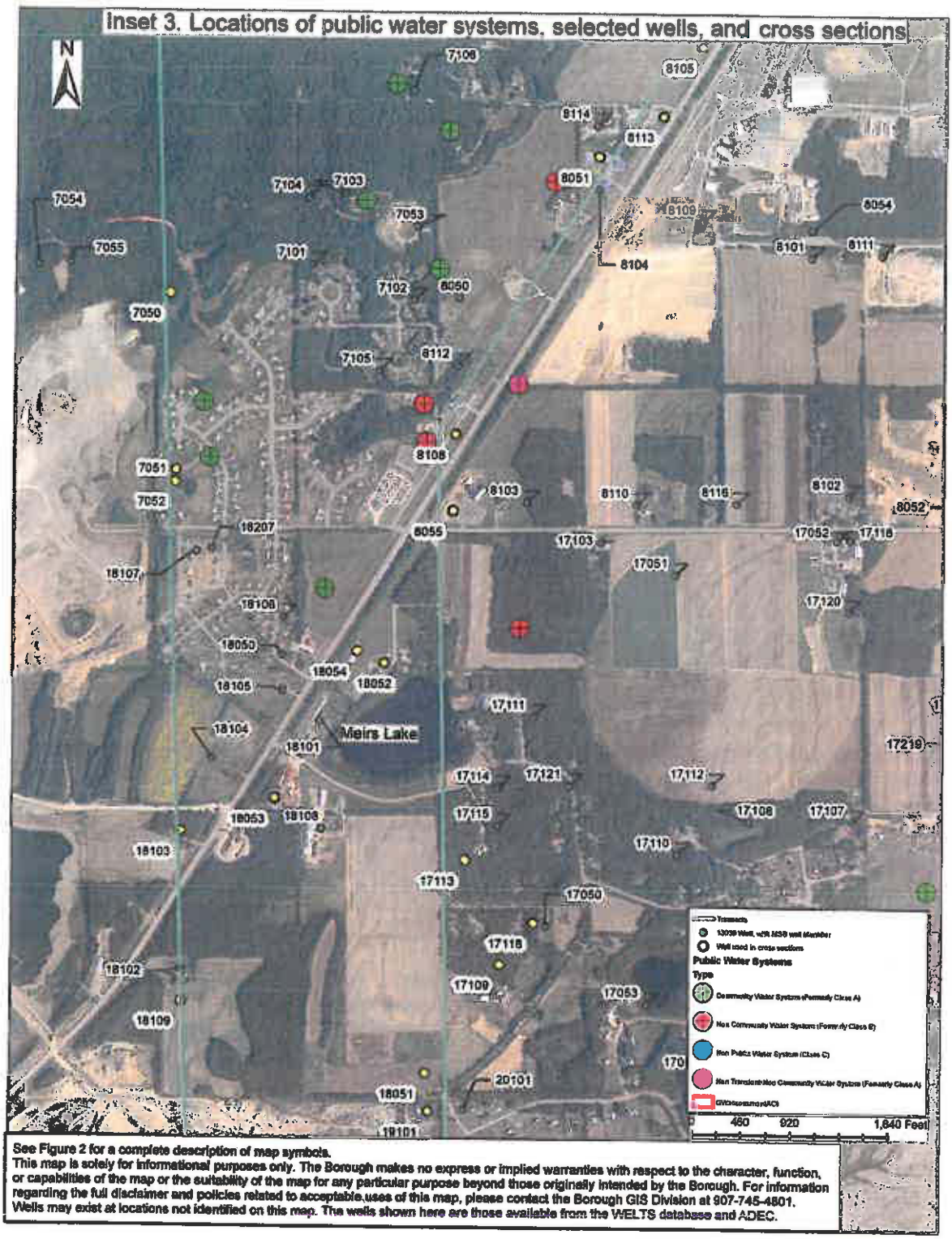


Inset 1. Detail of Figure 2 in the northwestern part of the study area.

PLANNING COMMISSION NOVEMBER 7, 2016 Page 2270



Inset 2. Detail of Figure 2 in the central part of the study area.



Inset 3. Detail of Figure 2 in the eastern part of the study area.

A unique system of well numbering was developed for this project, and well identifiers are shown on Figure 2. A summary table of water-well data used for this report is presented in Appendix A. Electronic copies of individual well logs are generally available at the State of Alaska's WELTS database and physical copies are also available at the offices of the Matanuska-Susitna Borough in Palmer.

Hydrogeologic cross sections

Three cross sections were prepared along the lines shown in Figure 2. The cross sections were prepared using topographic data shown from the 1:25,000 scale U. S. Geological Survey topographic map for the area, which is based on aerial photography taken in 1972 and revised from aerial photography taken in 1986. The cross sections are drawn using actual horizontal and vertical scales (including a vertical exaggeration as noted on the sections) and depict the actual physical relationships of features shown, adjusted for the fact that some features shown are actually located slightly off of the actual line of cross section. The sections should be viewed in conjunction with map views of the same areas to understand the true three-dimensional relationships of the features shown.

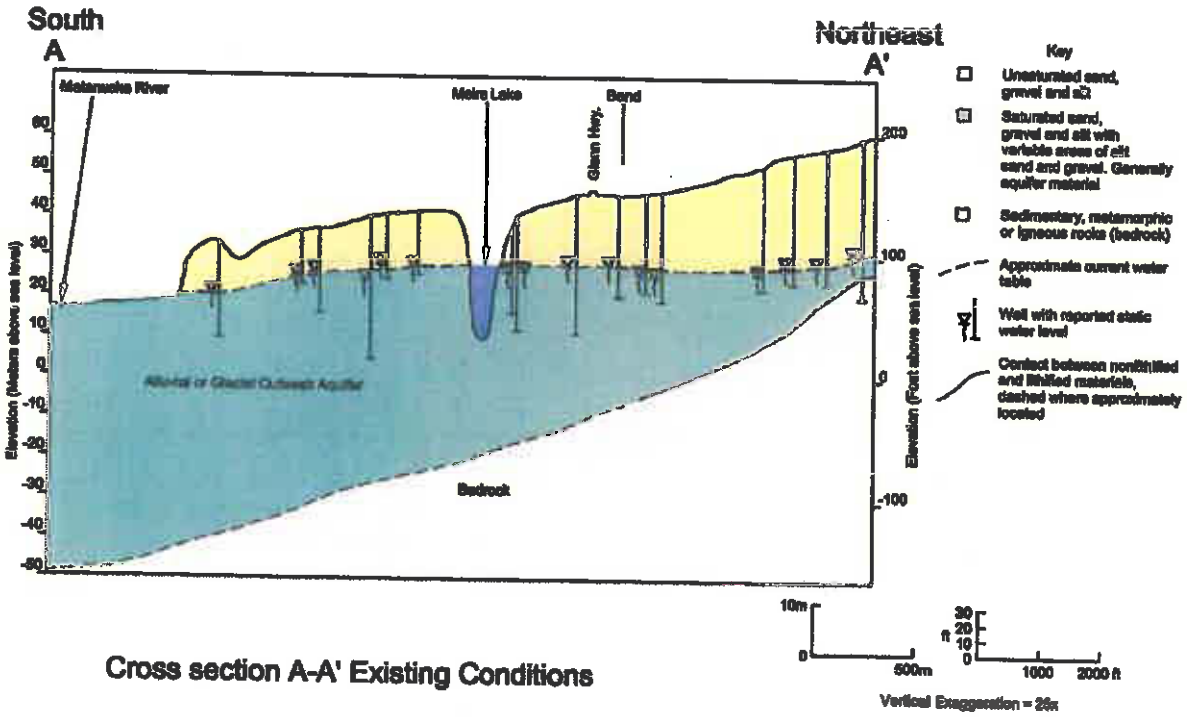
Well locations and elevation determinations. Well locations for all wells shown in the study area were determined from information provided by driller's reports, LaSage (1992), and from plat maps and property records provided by the Matanuska-Susitna Borough. Most wells were plotted in the middle of the fourth-order aliquot part of the section as was done by LaSage (1992). For wells used on the cross sections, land surface elevations were interpolated from the 1:25,000 USGS topographic map, which has 5-meter land surface elevation contour intervals in the study area. In most cases on the Palmer Terrace where the land surface is relatively flat, errors associated with the land surface determinations for the wells are likely in the range of 1-2 meters. Errors in the higher-relief areas of the crevasse-fill-ridge complex or the kame/esker complex could be approximately 5 meters.

These potential inaccuracies are a likely cause of apparent irregularities in the position of the water table in the cross sections. Other potential causes of the irregularities are seasonal or longer-term fluctuation in the water table, inaccuracies in driller's reports of the depth to water under static conditions, and the distance of wells from the line of cross section.

Considering the vertical and horizontal scales of the cross sections, the numerous surface water bodies with water-elevation data, the relatively large number of well logs available, and the areawide trends and large-scale features depicted, these irregularities are considered to be of minor importance. The irregularities are important for potential application of the study results to any specific well or location, which is discussed subsequently in this report.

Cross section A-A' (Figure 3) shows a gently sloping water table rising from the Matanuska River braidplain to Meirs Lake and beyond. The northeasternmost well in

the study area at the line of section reportedly encountered bedrock at a depth of 121 feet. Several wells just north and west of this well, but outside of the study area also reportedly encountered bedrock at similar depths.



Cross section A-A' Existing Conditions

Figure 3. Hydrogeologic cross section A-A'

The cross section shows that all other wells tap the sand and gravel aquifer. A few wells penetrate to depths of 50 or more feet below the water table, but most wells reportedly terminate with approximately 10 to 30 feet of water present in the bottom of the well under non-pumping (static) conditions.

Cross section B-B' (figure 4) illustrates conditions perpendicular to the curvilinear topographic trend of the crevasse-fill-ridge complex. Although this is an area of considerable local relief, the water table shows a relatively smooth profile through the study area. This is consistent with the abundance of sand and gravel noted in the well logs. The three wells located closest to the Matanuska River show lower water-table positions than the approximate water-table position drawn because they are located further off the line of section than most other wells and in a down-gradient direction. They were selected to help fill a data gap in this area.

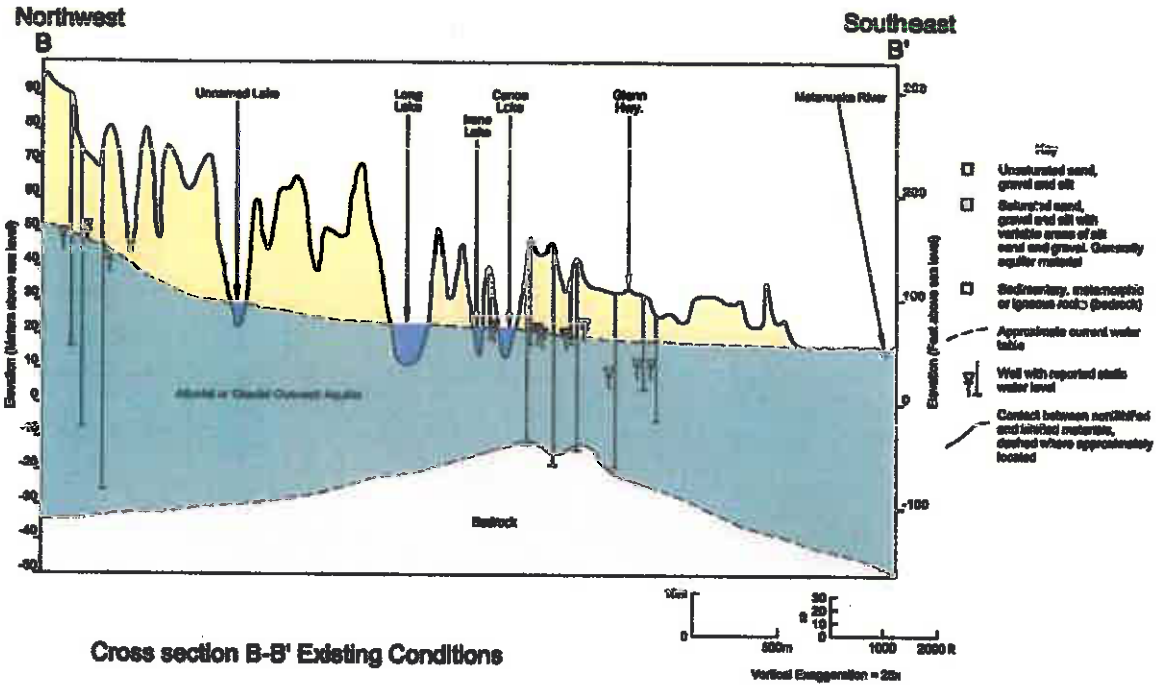


Figure 4. Hydrogeologic cross section B-B'

Three wells in the Canoe Lake area are shown to penetrate bedrock, providing information about the depth of bedrock in this area. These wells were perforated or screened in the unconsolidated materials.

Cross section C-C' (Figure 5) shows hydrogeologic conditions similar to cross section A-A'. The depth to bedrock is defined by several wells penetrating bedrock at depths of less than 100 feet just north of the study area. This line of section also shows the transition to the higher-relief topography of the kame-esker complex adjacent to the Palmer Terrace.

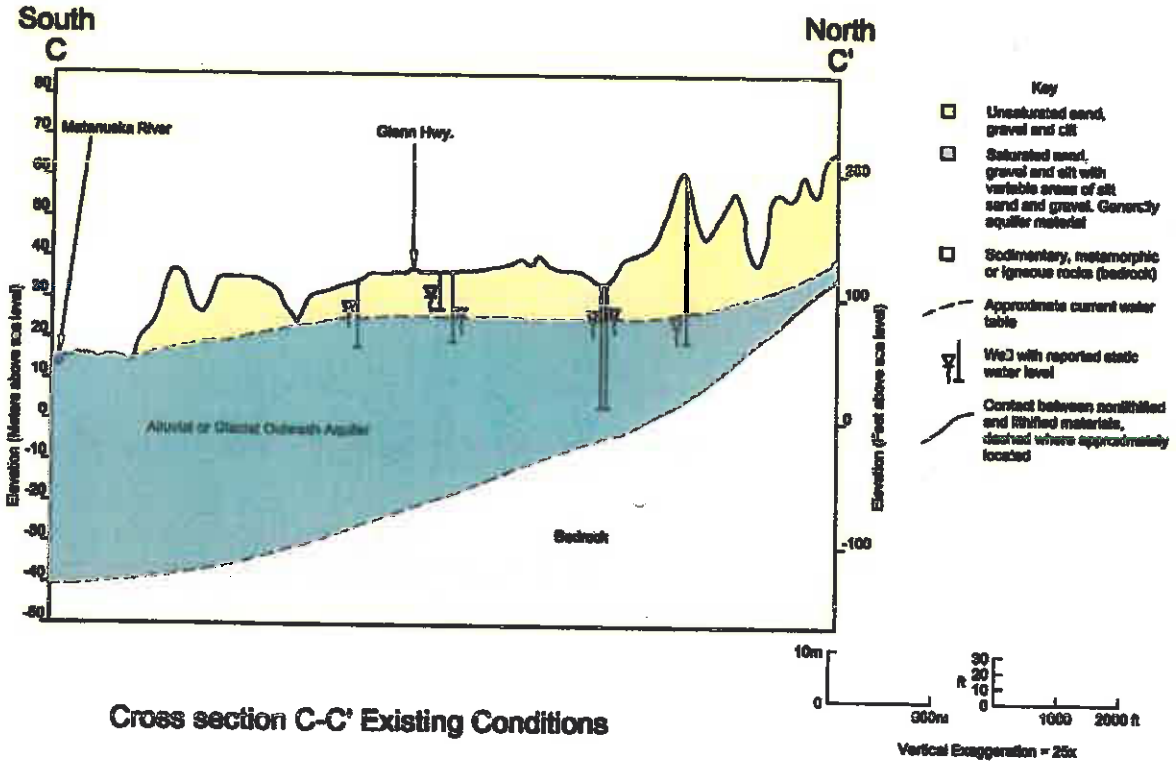


Figure 5. Hydrogeologic cross section C-C'

All hydrogeologic cross sections illustrate a position of the water table that can only be approximately determined for several reasons. First, water-level measurements in wells were collected over a period of many decades and during various seasons of the year and do not represent a single time-synchronous measurement of the water table position at a defined point in time. Also, as previously mentioned, land surface elevations at most well sites are only approximately known, which translates into uncertainty for the calculated water-table elevation at the well sites. Finally, hydrologic conditions in the area may have changed since preparation of the U. S. Geological Survey topographic map of the area (based on 1986 and earlier photography) as a result of gravel removal activities and the creation of existing ponds.

Despite these uncertainties, the abundant water-level data shown in the sections displays a degree of consistency that provides some confidence that the general trends observed are valid. The water-table position was compared to maps and data provided by Moran and Solin (2006), Jokela and others (1990), Ireland (2010), and Brailey Hydrologic Services (2007), and found to be generally concordant. Detailed water-table gradient data provided by Ireland (2010) and Brailey Hydrologic Services (2007) are generally too localized to be distinguishable on the cross sections or the cross sections are not oriented in the optimal direction to show the gradients, or both.

Potential Gravel Extraction Scenario

Several documents have been submitted to the Matanuska-Susitna Borough by gravel mining operations that provide some indication of potential future gravel extraction plans. A report by Brailey Hydrologic Consultants (2007) provides details about the plans at the Anchorage Sand & Gravel, Inc., property, and an assessment of the expected hydrologic effects of the planned work. Granite Construction Company (2010) provides documents describing the location and depths of planned gravel extraction for their operations. Recent aerial photography showing the approximate present (October 2009) extent of gravel extraction and pond development are also available.

Assumptions

In order to conduct this analysis, certain assumptions were made. Major assumptions are:

1. Existing ponds will not be filled in. Unless they are expanded or deepened, they are likely to remain as they are. Figure 6 shows the extent of the ponds based on aerial photography taken during October 2009.

2. Future expansion at Anchorage Sand & Gravel Inc. property will match the scenario described by Brailey Hydrologic Consultants (2007). This includes the excavation of a lake that extends approximately 1 mile long, up to 3000 feet wide, and up to 90 feet deep. This lake will be termed the north lake in this report.

3. Future expansion at the Granite Construction Company property will proceed in accordance with a letter and attachments from Granite Construction Company (2010) to the Matanuska-Susitna Borough. A lake will be excavated at the location shown in Figure 6. Excavation will occur to depths of 50 to 150 feet below existing land surface "depending on geology". This lake will be termed the south lake for this report.

Other assumptions are described in a subsequent section of this report. Figure 6 shows the compilation of existing ponds and potential future mining scenarios described above.

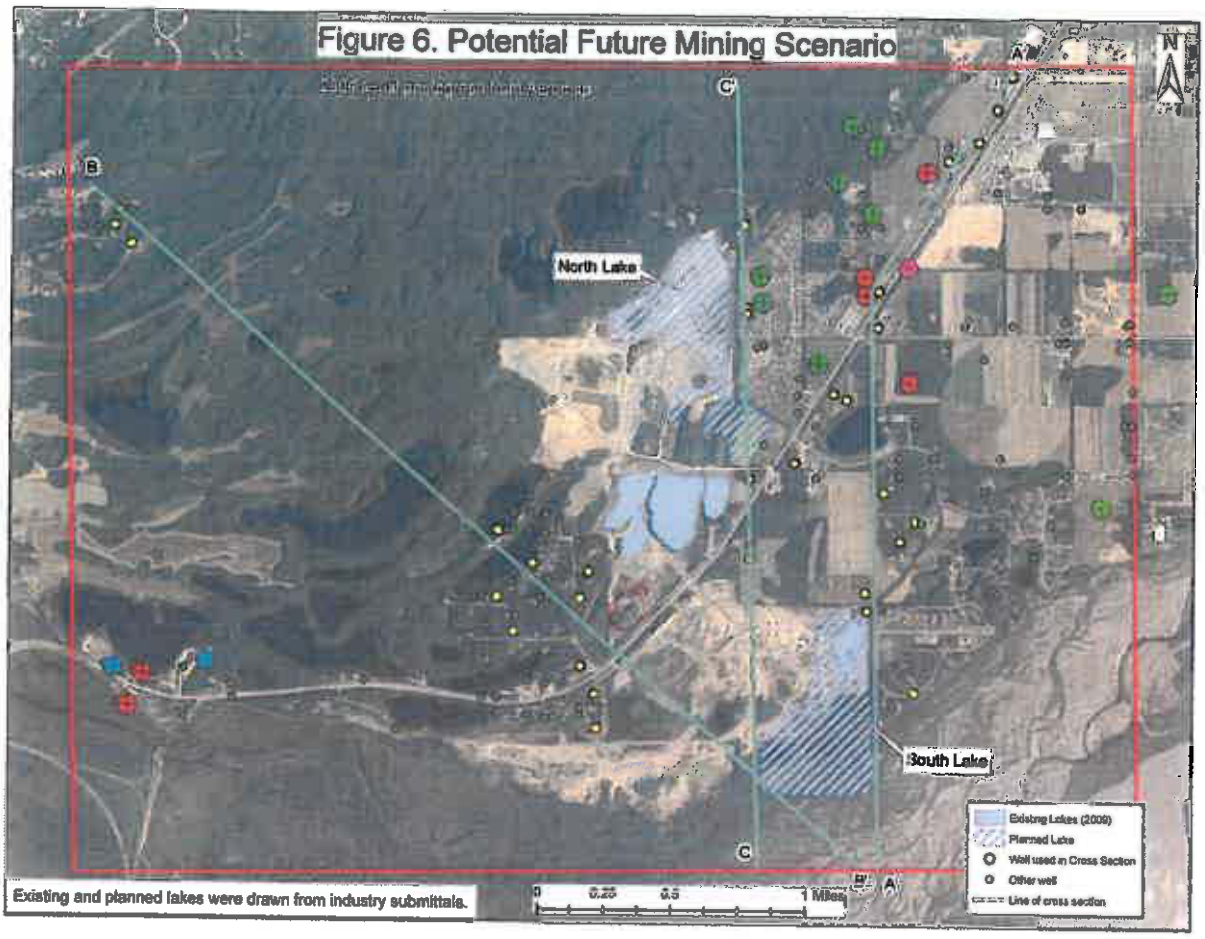


Figure 6. Potential future gravel mining scenario

Analysis

An important feature illustrated in Figure 6 is that gravel mining is planned to extend into the braidplain of the Matanuska River. This has several implications. First, although the current main channel of the river is located some distance away from the proposed lake, future channel migration could cause the main channel to shift back to the west bank of the braidplain (Missal, 2009), which could inundate the south lake.

Also, the U. S. Geological Survey (1992) topographic map of the project area shows a small stream of water flowing through the planned mining area that has an elevation at the southwest corner of the proposed lake of approximately 49 feet above sea level (converted from the map's 15 meter land surface contour interval where it crosses the stream). Streams in this area near the base of the Palmer Terrace are the result of groundwater discharge, meaning that the water-table elevation is very close to 49 feet above sea level there. This elevation is likely to constitute a base level for groundwater flow systems discharging to this area. Equilibration of the lake level to approximately 49 feet above sea level has implications that are described subsequently.

The potential future mining scenario was superimposed onto the three cross sections to provide an assessment of the likely effects of gravel extraction at these locations (Figures 7, 8, and 9). In these figures, the gravel extraction areas are projected onto the lines of section because the lines pass near, but not always directly through, areas to be mined. This is a common technique used for constructing cross sections, and approximations created by this projection are considered minor.

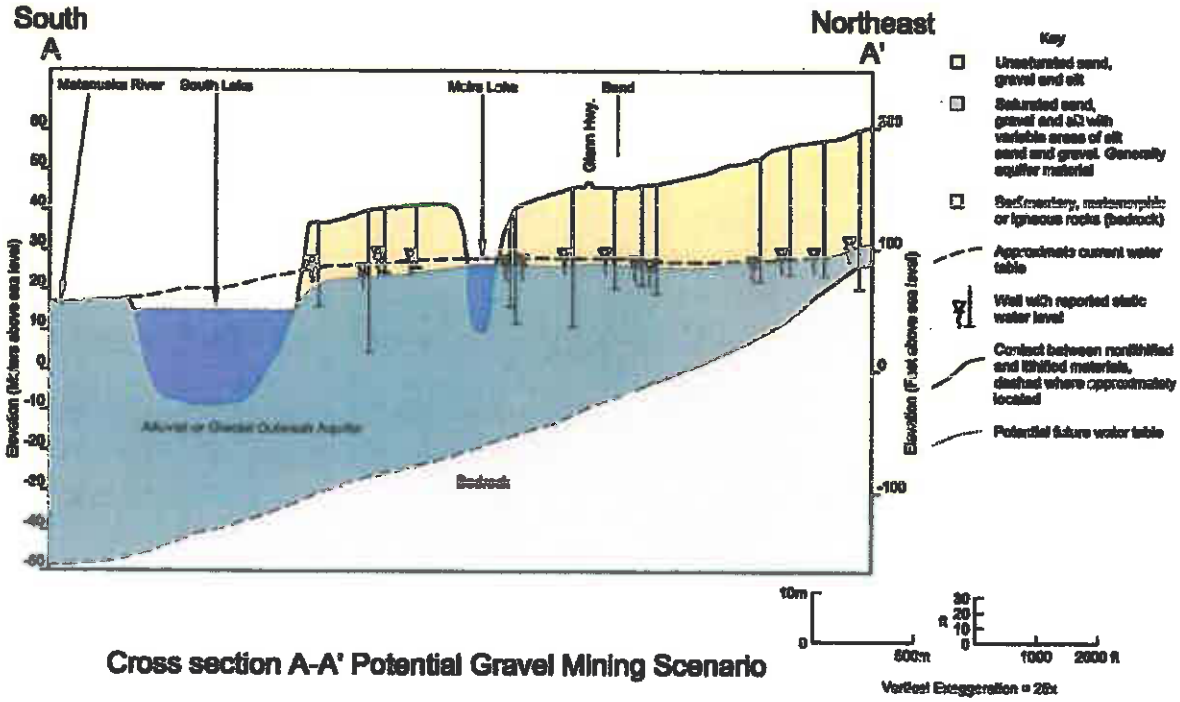


Figure 7. Hydrogeologic cross section A-A'; potential future gravel mining scenario

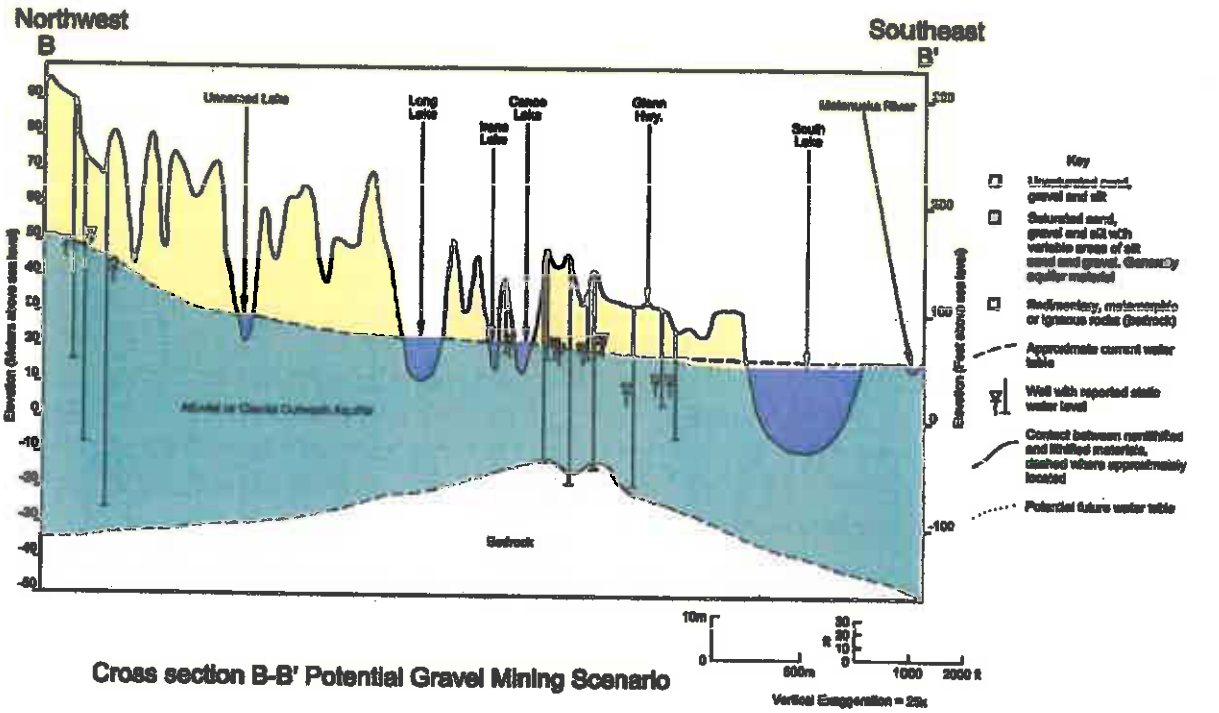


Figure 8. Hydrogeologic cross section B-B'; potential future gravel mining scenario

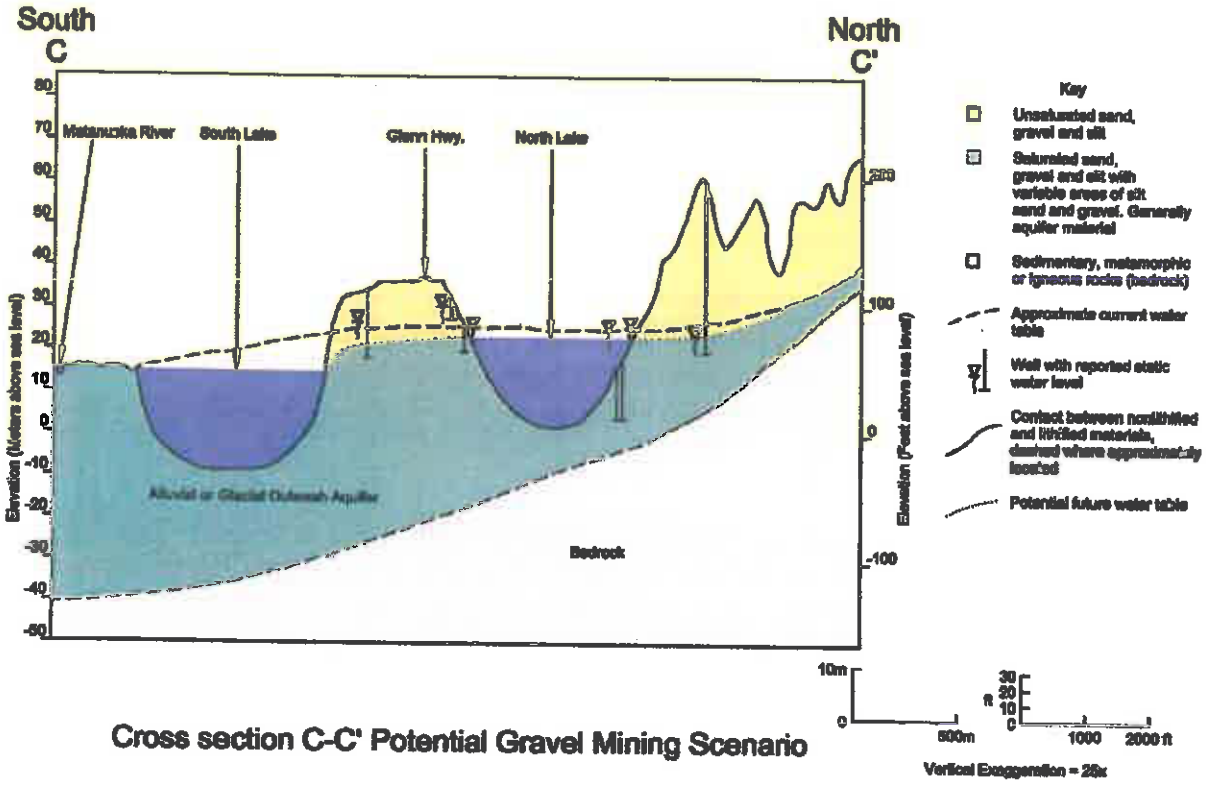


Figure 9. Hydrogeologic cross section C-C'; potential future gravel mining scenario

Potential water-quality effects. A review of Figure 2 and Figure 6 shows that several wells are located close enough to the proposed gravel mining areas that contaminants introduced into the aquifer could potentially reach the wells if the wells are located downgradient of the source of contamination. Also, capture zones of some of the wells could extend out into the gravel mining areas to draw in contaminants. With a general southward direction of flow in the study area, some nearby wells are likely to be located upgradient of the proposed mining area and would not be expected to be at risk of water quality impairments from the proposed operations. Because a detailed and reliable water-table map for entire area is not available, however, either for current conditions or post-mining conditions, it is difficult to evaluate groundwater flow directions in more detail. Therefore, in the absence of more detailed information, gravel extraction activities as proposed are considered to introduce a risk of impaired water quality to some existing and potential public drinking water aquifer sources. Detailed evaluation of groundwater flow direction for the entire area requires an accurate and detailed water-table map, which is not available.

Water-table declines. The cross sections show that construction of the lakes is projected to result in a lowering of the water table in the area. The most important hydrologic factor contributing to this lowering is the south lake because it extends out into the Matanuska River braidplain. The surface of the resulting lake is expected to closely match the water table in the braidplain, at approximately 49 feet elevation above sea level.

Because lakes have essentially flat water surfaces, this lowered elevation is expected to be transmitted to the aquifer on the north side of the lake where the current water table elevation is estimated to be approximately 79 feet above sea level (see Figure 7). This means that the water table will be lowered approximately 30 feet at this location, assuming a good hydraulic connection between the lake and the water table aquifer. The permeable alluvium at the site makes it likely that a good hydraulic connection will be present between the lake and the water-table aquifer.

In order to estimate the propagation of this lowered water table in a northward direction, a simple mathematical model was used. The model assumes that the lake behaves as a large diameter well, withdrawing water from the aquifer and discharging it to the river braidplain or the braidplain aquifer on the south or southwest side of the lake. Because of the amount of water draining from the aquifer into the south lake, a surface water outlet from the lake may form.

The model further assumes that the lake has been in place for one year. This means that transient changes to the flow system are minor and a new quasi-steady state flow system has been established. The model also assumes that the aquifer is isotropic and homogenous, is infinite in all directions, and that there are no significant boundary conditions nearby. This latter condition is not completely representative of field conditions, and will be addressed in a subsequent section of this report.

The mathematical model selected is the Theis (1935) model, which is a widely used and relatively simple method for estimating water-level declines at various locations in an aquifer caused by water extraction from a well. The model was first used to calculate

the discharge that would be required to produce about 30 feet of water level decline at the shoreline on the north side of the south lake. The water-level decline at various distances to the north one year after construction of the lakes can then be calculated using the aquifer discharge and the aquifer parameters transmissivity and storativity.

A value of 0.15 was selected for aquifer storativity, which is generally representative of unconfined sand and gravel aquifers. Since the calculations are made for a near steady-state condition after one year of discharge through the new lakes, the model calculations are not very sensitive to small variations in the value of storativity.

Brailey Hydrologic Consultants (2007) estimated transmissivity in the vicinity of the north lake and concluded that the value was in the range of 100,000 to 150,000 feet^2/day. A value of 100,000 feet^2/day was selected for the model calculations for this report. Under the conditions simulated, the calculated water-table position is also not very sensitive to the value of transmissivity selected, although the quantity of water discharged from the aquifer does vary with transmissivity.

The results of the model calculations were used to estimate the amount of water table decline as shown in the cross sections in Figures 7-9. Estimated lowering of the water-level in the aquifer at the location of Meirs Lake, for example, which is approximately 3000 feet from the south lake, is approximately six feet. Since Meirs Lake is likely in good hydraulic communication with the aquifer, the level of the lake is likely to drop by about that amount under the scenario evaluated.

Previous work suggested that the creation of the north lake, by itself, could result in a "slight (1-2 foot) depression of the water table around the north end of the lake" (Brailey Hydrologic Consultants, 2007). A review of this work suggested that the depression would be closer to four feet (J. A. Munter Consulting, Inc., 2009). The water-level declines caused by the south lake would likely be additive to this north lake depression as a result of the application of the principal of superposition. For example, the water surface of the north lake is expected to be lowered approximately six feet by the influence of the south lake, which would be added to the projected lowering caused by the north lake itself. If the previously estimated four feet of decline were to occur, that could result in up to 10 feet of decline in the aquifer around the north end of the north lake. This is illustrated in Figure 9.

The model calculations (assuming that both the north lake and south lake have been in existence for a year) suggest that water-table declines of several feet attributable to the gravel pits could extend 1.5 miles or more in a generally northward direction from the south lake.

Matanuska River braidplain boundary. The Matanuska River braidplain and Spring Creek lowland likely act as a constant-head boundary on the aquifer, and are expected to cause inaccuracy of the model calculations for areas near the braidplain and creek. At the braidplain or creek, water levels are expected to be relatively stable because of the influence of surface water flowing into the area from upstream and because of the large size of the braidplain aquifer. This effect will likely be present both northeastward and westward from the gravel pits. The effects of this boundary will gradually lessen in

an inland, or northward direction. In a direction nearly perpendicular to the edge of the braidplain, such as where sections A-A' and C-C' are drawn, the effects of the boundary are expected to be minimal. In other words, the model calculations will be most applicable in a direction straight away from the river. Cross section B-B' runs relatively close to the river braidplain (and Spring Creek) and the propagation of water level decline along that line of section is expected to be somewhat less as shown. Cross sections A-A' and C-C' do not run close to the river, and the model calculations are expected to be relatively unaffected by the river boundary in those areas.

Effects on wells. Development of specific and definitive conclusions about the future performance of any particular well or group of wells as a result of a lowered water table is not possible using the findings of this study. Such conclusions would require evaluation of site-specific conditions such as well depth, current water level, presence or absence of local confining units, well yield and efficiency, well location, projected water level decline, and other data that are specific to the well or wells being evaluated. This depth of inquiry is beyond the scope of this report.

The cross sections are useful, however, in providing a generalized assessment of the types and magnitudes of effects that may occur, and also illustrate some possible remedies. This assessment is potentially useful for planning and policy purposes.

The cross sections show that the lowered water table will likely result in some well failures. For example, three wells are shown on Figures 3 and 7 between the south lake and Meirs Lake that are projected have water levels near or below the bottom of the wells. Two of these wells appear to have been drilled in the 1980's for domestic purposes. It is not known if any of these wells are still in use.

Figure 7 also shows that other wells may experience enough of a lowering of the water table that their yield may be reduced, or they may experience sporadic outages. It is important to understand that the database of wells used for this work probably does not include all of the wells in the study area. Without further work estimating how many wells are missing from the WELTS database and obtaining additional well-specific information, it is difficult to estimate the total number or locations of wells that may be adversely affected.

These potential effects on wells are only partially or weakly linked to potential errors discussed earlier regarding the determination of well elevations. For a well drilled to a depth of 15 feet below the water table, for example, a 10- to 15-foot water-level decline at that location would likely be detrimental to the proper functioning of the well, no matter how accurate the determination of the land surface elevation.

Wells are also used for irrigating farms in the area, and the effects of irrigation pumping on water levels are not known.

Effects on lakes, streams, and wetlands. The surface water level of Meirs Lake is expected to be lowered approximately six feet under the potential gravel mining scenario evaluated. Most of the shoreline of the lake is privately owned, and such a decline would be noticeable beyond normal seasonal fluctuations, and may cause

difficulties for such structures as docks and boat launches. The lake is reported to be over 70 feet deep (Alaska Department of Fish and Game, 2010), however, so the changed amount of water in the lake is relatively small. It is not known whether this change would have a material effect on the current practice of withdrawing irrigation water from the lake during the summer.

Wells in the Bradley, Canoe, and Irene Lakes area are thought to be less affected by the lowering of the water table than Meirs Lake because of their closer proximity to the Spring Creek lowlands and Matanuska River braidplain as described above. However, they may exhibit observable water-level declines.

Other lakes, such as Baird and High Ridge Lakes may also experience observable water-level declines as a result of gravel mining.

A stream at the base of the Palmer Terrace would be mined through by excavation at the south lake. This may be an anadromous fish-bearing stream that is rearing habitat for Coho salmon and is regulated by the Alaska Department of Fish and Game (Alaska Department of Fish and Game, 2006). Since the south lake may have a surface water outlet, the lake may also become habitat for fish in the Matanuska River system.

It is not known if there are any wetlands within the vicinity of the gravel pits. If there are, however, and if they are of the type that are associated with the "permanent" water table (versus those based on a "perched" water table), these could also be affected by a lowered water table, potentially causing them to no longer meet criteria to be classified as wetlands.

Duration of effects. The hydrologic changes described in this report are expected to be relatively permanent. The new lakes, if developed as projected and then not changed, will create a new equilibrium condition in the area, although there will continue to be seasonal fluctuations in the water table. Should the lakes materially change or be filled in, the hydrologic system would be expected to change accordingly.

Mitigation Strategies

Most wells in the study area tap into the top of a relatively thick aquifer, making well deepening or redrilling to deeper portions of the aquifer an effective mitigation option for most wells. In some wells, a simple lowering of the pump might be sufficient. Monitoring of groundwater and lake levels would be useful for identifying the amount, location, and timing of any future water-table declines.

Modification of gravel mining plans to maintain separation from surface waters in the Matanuska River braidplain would also tend to reduce water-level declines in the area.

Construction of low-permeability water containment structures or systems around the perimeter of the south pond, either to limit discharge to the braidplain (and raise the lake water level) or to limit groundwater discharge into the lake (and raise groundwater levels in the aquifer surrounding the lake) would be difficult and expensive. Armoring any such structures in the braidplain to provide long-lasting protection from river erosion would

further increase the cost and difficulty. For these reasons, this is not currently suggested as a mitigation option. However, it may be worth considering further.

Summary and Conclusions

If gravel mining proceeds according to current plans, water-level declines are projected to occur in lakes and wells in the area. Some wells may fail as a result of the lowered water levels. Incomplete data about the number, location, and construction of all wells within the area precludes specific prediction of the number and geographic extent of problems related to well failures or reduced yields. Since most wells in the study area only tap into the uppermost portion of the aquifer, the prospects for successfully deepening or redrilling wells are excellent in most cases.

Additional wells may have capture zones that overlap areas subject to gravel mining and the water-supply aquifer may be subject to risks of water quality impairment, however the degree of risk associated with this is not determinable with existing information.

Limitations and Recommendations for Further Work

This work relies on plans and submittals by gravel mining companies to the Matanuska-Susitna Borough that may change in the future. The findings and conclusion of this work would change accordingly. The findings also rely on a widely accepted and commonly used mathematical model of the groundwater flow system. The assumptions made about the aquifer that are required by the model are only partially met. More complex models are available that would more realistically simulate the aquifer, particularly the river boundary, however they would require additional data and would be more complicated to run. The model chosen is considered to provide a realistic first approximation of the potential effects of planned future gravel mining in a generally northerly direction away from the river, where the model is considered to be most accurate.

Future evaluation would benefit from more accurate elevation data for wellheads, more recent and more frequent water-level measurements in wells and lakes, more wells in the database, and better data about changes in water levels caused by irrigation pumping in the area. These factors all potentially contribute to uncertainties in the current and projected future position of the water table depicted in the cross sections.

Site specific work is required to assess what the effects of any potential future lowering of the water table might be on any particular well. The water demand, pump setting and drawdown, well efficiency, seasonal fluctuations, and other factors would all contribute to such an evaluation.

Disclaimer

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purpose beyond those originally intended by the Borough. For information regarding the full disclaimer and policies related to acceptable uses of this map, please contact the Matanuska-Susitna Borough GIS Division at 1 (907) 745-4801.

Glossary

Aliquot part
The standard subdivisions of a section, such as a half section, quarter section, or quarter-quarter section.

Alluvium
A deposit of sediment left by a stream on the stream's channel or floodplain.

Aquifer
A permeable formation that stores and transmits groundwater in sufficient quantity to supply wells or springs.

Boundary conditions
Definition or statement of conditions or phenomena at the boundaries of a model; water levels, flows, and concentrations that are specified at the boundaries of the area being modeled.

Braided stream or river
A network of converging and diverging streams separated from each other by narrow strips of sand and gravel.

Braidplain
A surface exhibiting the converging and diverging stream channels of a braided stream or river, or the deposits contained therein.

Capture zone
The zone around a well contributing water to the well; the area on the ground surface from which a well captures water.

Cone of depression
A depression of the water table around a well during pumping; generally shaped like an inverted cone.

Confined aquifer
An aquifer that lies between two relatively impermeable rock or sedimentary units.

Confining bed or unit
a body of impermeable or distinctly less permeable material stratigraphically adjacent to one or more aquifers.

Crevasse
A deep fissure, as in a glacier; a chasm.

Esker
A glacial deposit in the form of a continuous, winding ridge, formed from the deposits of a stream flowing beneath the ice.

Fluvial
Of, relating to, or inhabiting a river or stream. Produced by the action of a river or stream.

Glacial drift
A load of rock and sedimentary material transported and deposited by a glacier or glacial meltwater. Glacial drift is usually deposited when the glacier begins to melt.

Glacial till or Till
Drift that is deposited directly from glacial ice and therefore not sorted.

Glaciofluvial
Pertaining to streams fed by melting glaciers, or to the deposits and landforms produced.

Groundwater
Water within the earth that supplies wells and springs; water in the zone of saturation where all openings in rocks and soil are filled, the upper surface of which forms the water table.

Homogeneity
A characteristic of a medium in which material properties are identical everywhere.

Hydraulic conductivity
The volume of water that will move through a medium in a unit of time under a unit hydraulic gradient through a unit area measured perpendicular to the direction of flow.

Isotropy
The condition in which the property or properties of interest are the same in all directions.

Kettle
A small hollow or depression formed in glacial deposits when outwash was deposited around a residual block of ice that later melted.

Lithification
The conversion of loose sediment into solid sedimentary rock.

Loess
An unstratified usually buff to yellowish brown loamy deposit found in North America, Europe, and Asia and believed to be chiefly deposited by the wind.

Outwash
A load of sediment, consisting predominantly of sand and gravel, that is deposited by meltwater in front of a glacier.

Perched water table
A saturated area that lies within a zone of aeration.

Permeability
The capability of a given substance to allow the passage of a fluid. Permeability depends on the size of and the degree of connection among a substance's pores.

Pitted Outwash
An outwash plain characterized by numerous depressions such as kettles, shallow pits, and potholes.

Sea level
The value zero (0) according to the North American Vertical Datum of 1929 (NGVD 29) used for this report.

Storativity (or storage coefficient)
The volume of water an aquifer releases from or takes into storage per unit surface area of the aquifer per unit change in head (virtually equal to the specific yield in an unconfined aquifer)

Superposition
The principle that states that drawdown from multiple pumping wells can be added together to determine total drawdown at any given location.

Terrace
A bench-like feature running along a valley side, roughly parallel with the valley walls. Most terraces form when a river's erosional capacity increases so that it cuts down through its floodplain.

Transmissivity
The rate at which water of the prevailing kinematic viscosity is transmitted through a unit width of the aquifer under a unit hydraulic gradient. It is equal to an integration of the hydraulic conductivities across the saturated part of the aquifer perpendicular to the flow paths.

Unconfined aquifer
An aquifer that has a water table.

Water table
The upper surface of the zone of saturation on which the water pressure in the porous medium equals atmospheric pressure.

Water-table gradient
The vertical drop in a water table's elevation over a given horizontal distance, typically expressed as a small decimal ratio of feet per foot.

Well drawdown
Drawdown is the change in water level observed at a well, typically due to pumping a well.

Well efficiency
The drawdown outside of a well divided by the drawdown inside of a well.

Zone of aeration
A region below the Earth's surface that is marked by the presence of both water and air in the pores of rocks and soil.

Zone of saturation
A region that lies below the zone of aeration and is marked by the presence of water and the absence of air in the pores of rocks and soil.

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Appendix A: Well Data

MSB Identifier	WELTS KEY	LAS	OWNER	DOC	DEPTH	MERID	TWNSHP	RANGE	SECTION	SECPRTS	MAPNUM	STATUS	DRILLER	REGION	Date of Entry	PROP. DESC	TAGS	REM1	REM3	REM2	REM4	MODDATE
11101	1056		DAVIS, KEN	11/19/1981	208	SA	17	1	11	CBBA	1/1	S	WHEATON WATER	23A	1/14/1992	CAMPUS BY COTTRELL L10 B2						
11105	10355		RILEY, LEE	7/1/1981	157	SA	17	1	11	CBBB	1/5	S	UNKNOWN	23A	1/14/1992	CAMPUS BY COTTRELL L07 B2	D					11/8/1983
11058	10356		BUILDER	10/5/1977	222	SA	17	1	11	CBAB		U	MCKAY WELL DRILL	23A	1/14/1992	COTTRELL L11 B2						
11107	10357		RILEY, LEE	3/22/1979	226	SA	17	1	11	CBAA	1/7	S	VALLEY DRILLING	23A	1/14/1992	CAMPUS BY COTTRELL L15 B2		SW 140 FT, 2 LOCATE FINISH UNKNC				1/18/2002
11207	10358		KOCKLER, GARY	4/13/1979	230	SA	17	1	11	CBAA	2/7	S	WHEATON WATER	23A	1/14/1992	CAMPUS BY COTTRELL L13 B2						
11104	10359	LAS 10627	DURHAM, F CONNELL	10/1/1984	127	SA	17	1	11	CABC	1/4	S	MOON DRILLING	23A	1/14/1992	CAMPUS BY COTTRELL L29 B2						
11102	10411		GATTO, CARL	6/14/1988	388	SA	17	1	11	CBDA	1/2	S	DURBIN DRILLING	23A	1/14/1992	COTTRELL L17 B2						
11106	10430		ROBINSON, GARY/JERI	4/3/1984	222	SA	17	1	11	CBAC	1/6	S	WHEATON WATER	23A	1/14/1992	CAMPUS BY COTTRELL L19 B2						
11206	10491		TEMPELE, GARY/DEBRA	3/28/1984	222	SA	17	1	11	CBAC	2/6	S	WHEATON WATER	23A	1/14/1992	CAMPUS BY COTTRELL L20 B2						
11103	10432		GSK CONSTRUCTION	8/29/1984	242	SA	17	1	11	CBBD	1/3	S	WHEATON WATER	23A	1/14/1992	CAMPUS BY COTTRELL L21 B2						
11285	13368	7356	MARTIN, CLIFFORD	7/8/1981	168	SA	17	1	11	CBBB	2/5	S	MCKAY WELL DRILL	23A	1/14/1992	CAMPUS BY COTTRELL L06 B2						2/17/1983
11051	22705		THOMPSON, JAMES A	7/7/1994	195	SA	17	1	11	CBAB		U	HOOD & SON'S PU	23A	8/17/1995	CAMPUS BY COTTRELL L12 B2						8/22/1995
13105	78	ADL 20-110	BRIGHTON, EVERETT W	4/3/1980	197	SA	17	1	13	DCCC	1/5	S	SULLIVAN WATER \	23A	1/14/1992	CANOE LAKE L14 B1						
13114	308	LAS 10818	LARSON/KEENER	1/1/1985	120	SA	17	1	13	DABB	1/14	S	UNKNOWN	23A	1/14/1992	TARA DELLS 1 L2 B2	M	SW 97 FT, 15+ GPM (7/17/85), AK DEC ON-SITE APP. ONLY				
13103	6701		FARR, RALPH	8/3/1976	64	SA	17	1	13	DBDA	1/3	S	MCKAY WELL DRILL	23A	1/14/1992	IRENE LAKE L						
13101	6703		P & S BUILDERS	10/24/1974	201	SA	17	1	13	DDCB	1/1	S	M-W DRILLING	23A	1/14/1992	CANOE LAKE L05 B2						
13102	6704		P & S BUILDERS	12/13/1974	204	SA	17	1	13	DDCC	1/2	S	M-W DRILLING	23A	1/14/1992	CANOE LAKE L18 B2						
13104	8907	LAS 11129	DAVIS, JOHNNIE	8/8/1979	99	SA	17	1	13	DDDB	1/4	S	M-W DRILLING	23A	1/14/1992	CANOE LAKE 2 L09						
13107	9860	LAS 2993	PIERCE, SID/LOIS	7/28/1976	198	SA	17	1	13	DCCD	1/7	S	MOFFITT DRILLING	23A	1/14/1992	CANOE LAKE L13 B1						
13204	10421		ADAMS, RM	6/18/1985	90	SA	17	1	13	DDCD	2/4	S	BILL'S WATER WELL	23A	1/14/1992	CANOE LAKE 2 L06						
13110	10434		DANIELSEN, JOHN	3/18/1978	96	SA	17	1	13	DBAD	1/10	S	MCKAY WELL DRILL	23A	1/14/1992	TARA DELLS L1 B2		SW 85 FT BLS, 10 GPM CASED				
13112	10935		SCHOMING, MYRA	1/1/1977	72	SA	17	1	13	DBDC	1/12	S	UNKNOWN	23A	1/14/1992	TARA DELLS L1 B3						
13212	10936		CARTER, DAVID		85	SA	17	1	13	DBDC	2/12	S	MOON DRILLING	23A	1/14/1992	TARA DELLS L2 B3						
13108	10938		STEWART, MIKE	3/20/1983	63	SA	17	1	13	DACB	1/8	S	MOON DRILLING	23A	1/14/1992	TARA DELLS L7 B3						
13109	10939		HELMS, GALE	12/9/1978	98	SA	17	1	13	DACC	1/9	S	VALLEY DRILLING	23A	1/14/1992	TARA DELLS L9 B3						
13202	10985		OLSON, IRU	7/29/1985	103	SA	17	1	13	DDCC	2/2	S	GEE'S WATER WELL	23A	1/14/1992	CANOE LAKE L02 B3						
13205	11362		RAYBURN, LEONARD	5/3/1985	159	SA	17	1	13	DCCC	2/5	S	GEE'S WATER WELL	23A	1/14/1992	CANOE LAKE L15 B1						
13113	12558	LAS 8714	ASHLEY, DESMOND	2/15/1977	69	SA	17	1	13	DBCD	1/13	S	MCKAY WELL DRILL	23A	1/14/1992	TARA DELLS L3 B1						
13111	13835		WINTZ, MARK	7/13/1985	62	SA	17	1	13	DBDB	1/11	S	MOORE DRILLING	23A	1/14/1992	TARA DELLS L4 B3						
13050	14635		POLLOCK FARM	10/7/1980	192	SA	17	1	13	DCBD		U	PENN JERSEY DRILL	23A	1/14/1992	CANOE LAKE L06 B1		SW ? FT, 10 GPM CASED				
13051	23470	LAS 24374	THOMPSON, LINDA	6/30/1993	101	SA	17	1	13	DCAD		U	MOON DRILLING	23A	12/8/1994	CANOE LAKE L03 B1						
13052	24787	LAS 24893	HANBUCK, R	6/11/1999	176	SA	17	1	13	DDDC		U	HOOD & SON'S PU	23A	7/16/1999	CANOE LAKE 2 L11		817I SW 74 FT TO MAY BE CASED' HIGH IRON NOTED.				
13053	25474		DEMENTIEFF, C	10/13/2000	138	SA	17	1	13	DDAB		U	HOOD & SON'S PU	23A	12/8/2000	CANOE LAKE 2 L02		SW 92 FT TOC, 25 GPM FULL CASE, OPEN END				
13052	26139	LAS 24893	HARBUCK, R	6/2/2001	172	SA	17	1	13	DDDC		U	HOOD & SON'S PU	23A	6/5/2002	CANOE LAKE 2 L11 WELL 2		SW 60 FT TO WELL FU CASE TO 162.8 FT, OPEN HOLE, NOW SCREENED				
23209	653	ADL 20926	SCHMIDT, T & L	7/25/1975	125	SA	17	1	23	BBDD	2/9	S	M-W DRILLING	23A	1/14/1992	B001		SW 83 FT BLS, 30 GPM FULL CASE, OF				11/8/1983
23101	6750		KEPLER, J T		21	SA	17	1	23	ACBA	1/1	S	OWNER	23A	1/14/1992	PALMER AREA						11/8/1983
23102	6751		DRYDEN, JOHN	1/1/1954	90	SA	17	1	23	ACBD	1/2	S	MOFFITT DRILLING	23A	1/14/1992	PALMER AREA						11/8/1983
23104	10428		WATSJOLD, DAVID	5/3/1973	124	SA	17	1	23	BDDB	1/4	S	G & G DRILLING	23A	1/14/1992	AA COBB L21						
23105	14806	LAS 9545	STATE OF ALASKA, DIV I	8/11/1986	101	SA	17	1	23	BADC	1/5	S	WHEATON WATER	23A	1/14/1992	A018, MATANUSKA LAKE						11/8/1989
24102	454	ADL 20200	HERMON BROS CONSTRUCTION		198	SA	17	1	24	ABAC	1/2	S	CB DRILLING	23A	1/14/1992	BRADLEY LAKE L030 B3						11/8/1983
24101	8548		KEPLER, D C	5/1/1955	108	SA	17	1	24	BCDD	1/1	S	COTTEN DRILLING	23A	1/14/1992	PALMER AREA (KEPLER ?)						11/8/1983
24104	10383		SILVERS, GARY	4/19/1978	60	SA	17	1	24	ACAA	1/4	S	H & H DRILLING	23A	1/14/1992	BRADLEY LAKE L01 B1						
24112	10384		LOGSDON, CHARLES E	2/4/1972	172	SA	17	1	24	AADC	1/12	S	COTTEN DRILLING	23A	1/14/1992	BRADLEY LAKE Tr 2						
24103	10385	LAS 7804	GARDNER, MICHAEL J	6/2/1979	164	SA	17	1	24	ABAB	1/3	S	MOON DRILLING	23A	1/14/1992	BRADLEY LAKE L08A						
24106	10386	LAS 11165	ANDRES, R	5/21/1977	215	SA	17	1	24	ACBD	1/6	S	DELTA DRILLING	23A	1/14/1992	BRADLEY LAKE L05 B1 FOR USE ON L04 B1		SW ? FT, 10 GPM ESTI CASED, MAY BE PERFED 158 FT TO 178 FT (AT GRAVELS?)				
24105	10387		DJ EXCAVATION	7/5/1984	144	SA	17	1	24	ACBC	1/5	S	DURBIN DRILLING	23A	1/14/1992	BRADLEY LAKE L05 B1						
24107	10388		SPARKS, THOMAS	8/6/1984	141	SA	17	1	24	ADBA	1/7	S	MOON DRILLING	23A	1/14/1992	BRADLEY LAKE L01A B2						
24108	10468		KEPLER INC	1/1/1970	219	SA	17	1	24	BCBA	1/8	S	UNKNOWN	23A	1/14/1992	KEPLER 2 P-A	M	NO WELL LOG				7/22/2002
24210	10813	LAS 8995	ELLIS, PAUL/HARRIETT	6/14/1979	95	SA	17	1	24	ADDB	2/10	S	SWANSON DRILLIN	23A	1/14/1992	GRAND VIEW Tr 4						
24111	11370	LAS 9793	WIMMER, HARRY	7/11/1977	113	SA	17	1	24	ADCB	1/11	S	SWANSON DRILLIN	23A	1/14/1992	GRAND VIEW L02 B1						
24109	14069	LAS 9175	WESTOBY, JOHN		69	SA	17	1	24	ADAD	1/9	S	MOFFITT DRILLING	23A	1/14/1992	BRADLEY LAKE 2 L02 B3						
24110	14941	LAS 7955	LEINER, JOHN	5/1/1991	77	SA	17	1	24	ADDB	1/10	S	SWANSON DRILLIN	23A	1/14/1992	GRAND VIEW Tr 3						4/28/1983
24059	17888		SHERROD, MAX	10/12/1989	79	SA	17	1	24	ADBB		U	M-W DRILLING	23A	1/14/1992	BRADLEY LAKE 2 REV L2 B2		SW 50 FT BLS, 10 GPM FULL CASE, OPEN END				
24051	17884		LICHT, DIANA	10/18/1989	78	SA	17	1	24	A		U	M-W DRILLING	23A	1/14/1992	BRADLEY LAKE 2 REV L1 B3						
24052	21919		RAYMOND, HENRY	10/3/1992	121	SA	17	1	24	ABB		U	JOE BIELAROWSKI I	23A	1/12/1998	BRADLEY LAKE AREA		SW 31 FT BLS (ESTIMA CASED				1/21/1998
24053	30624	LAS 24972	VALEN, H		59	SA	17	1	24	ACDA		U	UNKNOWN	23A	12/28/2004	GRAND VIEW L02 B2, MATSU	M	NO WELL LOG	SFD 500 GPD			
24054	31811	LAS ??	LEINER, J (CE	5/16/2005	101	SA	17	1	24	ADDD		U	WHEATON WATER	23A	8/21/2007	GRAND VIEW Tr8		SW 44 FT, 100+ GPM FULL CASE WITH 5 FT SCREEN ON END				
7102	8215		GREEN VALLEY HOMEO	11/26/1988	119	SA	17	2	7	DAAD	1/2	S	M-W DRILLING	23A	1/14/1992	GREEN VALLEY Tr E	P	SW 68.7 FT, 155 GPM.				1/4/2000
7106	4200	LAS 1898	OTT, DOUG	12/21/1982	200	SA	17	2	7	AADD	1/6	S	WHEATON WATER	23A	1/14/1992	A009						
7101	7116		GREEN VALLEY HOMEO	10/17/1975	148	SA	17	2	7	DABB	1/1	S	M-W DRILLING	23A	1/14/1992	GREEN VALLEY Tr D						11/8/1983
7105	10448		IRIS CIRCLE WATER CO		98	SA	17	2	7	DADC	1/5	S	M-W DRILLING	23A	1/14/1992	GREEN VALLEY Tr G						
7104	10449		BRACO INVESTMENTS	6/27/1985	73	SA	17	2	7	ADCB	1/4	S	DURBIN DRILLING	23A	1/14/1997	GREEN VALLEY L05 B7						
7103	10450		KNIK KABIN CO	4/28/1984	175	SA	17	2	7	ADCA	1/3	S	VALLEY DRILLING	23A	1/14/1992	GREEN VALLEY 1 L02 B7						
7107	14454		SAMPSON, HAROLD		77	SA	17	2	7	DDAB	1/7	S	L & M DRILLING	23A	1/14/1992	D003						11/8/1983
7050	14455		BARBER, SAM		133	SA	17	2	7	DBBC		U	GEE'S WATER WELL	23A	1/14/1992	D007		SW 128 FT, 1 LOCATE FINISH UNKNC				7/12/1999
7051	25604	LAS 23584	PIONEER MEADOWS /+	6/1/1999	100	SA	17	2	7	DCCB		U	WHEATON WATER	23A	9/6/2001	PIONEER MEADOWS WELL 1		SW 30 FT BLS, 70+ GP FULL CASE, SCREEN LAST 10 FT				
7052	25605	LAS 23584	PIONEER MEADOWS /+	6/2/1999	100	SA	17	2	7	DCCB		U	WHEATON WATER	23A	9/6/2001	PIONEER MEADOWS WELL 2		SW 27 FT BLS, 70+ GP FULL CASE, SCREENED LAST 10 FT.				
7053	30705	LAS 24089	SORENSON, K	7/25/2003	129	SA	17	2	7	ADDD		U	PENN JERSEY DRILL	23A	12/9/2004	GREEN VALLEY Tr C		SW 80 FT TOC, 6E+GF FULL CASE INC				7/8/2000

7054	30936		DELLINGER, G	8/19/2004	123	SA	17	2	7	CABB		U	JOHNSON ENTERPF	23A	9/1/2005	DELLINGER ESTATES L01, PLAT 2004-84, PA		SW 103 FT BLS, 8+ GP	FULL CASE, OPEN END	
7055	30962		SIEDEL, M	8/24/2004	140	SA	17	2	7	CABA		U	JOHNSON ENTERPF	23A	9/1/2005	DELLINGER ESTATES L02, PALMER		SW 116 FT BLS, 5+ GP	CASE TO 124 FT, OPEN HOLE IN SAND	
8101	481	ADL 40700	REBARCHEK, RAY	11/2/1995	89	SA	17	2	8	DBAB	1/1	S	ALASKA RAILROAD	23A	1/14/1992	Tr 052, WELL 3			42 ft of 6" cas	11/8/1983
8112	1557		HODSDON, MAY	6/17/1992	80	SA	17	2	8	CBCC	1/12	S	M-W DRILLING	23A	1/14/1992	HODSON L2				5/5/1989
8113	2801	1066	CASTON, R K	8/1/1983	105	SA	17	2	8	BDAB	1/13	S	BILLS WATER WELL	23A	1/14/1992	WILD ROSE ESTATES L10				
8111	6982	ADL 40700	REBARCHEK, RAY	11/2/1995	72	SA	17	2	8	DABB	1/11	S	MOFFITT DRILLING	23A	1/14/1992	Tr 053, WELL 1		70 ft of 5" casing		11/8/1983
8110	6903	ADL 40700	REBARCHEK, RAY	11/2/1995	88	SA	17	2	8	CDCD	1/10	S	MOFFITT DRILLING	23A	1/14/1992	Tr 061, WELL 2			40 ft of 6" cas	11/8/1983
8106	7117		MOFFITT, A R	10/1/1953	129	SA	17	2	8	ABBB	1/6	S	OWNER	23A	1/14/1992	MOFFET L7				11/8/1983
8107	7118		BLUNCK, HENNING		125	SA	17	2	8	BABA	1/7	S	ALASKA RAILROAD	23A	1/14/1992	Tr 048 (8-8 ??)				11/8/1983
8105	7119		JOINER, FRED	9/1/1953	118	SA	17	2	8	BADA	1/5	S	MOFFITT DRILLING	23A	1/14/1992	B005, OLD KOPPERUD PROPERTY (SUBDIVIDED ?)				11/8/1983
8104	7120	ADL 40382	PATTON, CLAIRE	1/1/1986	99	SA	17	2	8	BDCB	1/4	S	ALASKA RAILROAD	23A	1/14/1992	Tr 049				11/8/1983
8109	7121		STATE OF ALASKA, DOT	1/1/1959	14	SA	17	2	8	BDDD	1/9	S	AK DOT	23A	1/14/1992	AKDOT MSR 10 52 TH4				11/8/1983
8108	7122		MASON, WILLIAM B		84	SA	17	2	8	CCBC	1/8	S	G & G DRILLING	23A	1/14/1992	B006				11/8/1983
8102	7123		BOUWENS, W		78	SA	17	2	8	DCDD	1/2	S	ALASKA RAILROAD	23A	1/14/1992	Tr 054				11/8/1983
8114	10827		ROSE, DALE		132	SA	17	2	8	BDBB	1/14	S	UNKNOWN	23A	1/14/1992	WILD ROSE ESTATES L07				7/25/2002
8050	14457	LAS 10764	PALMER CHURCH OF GO	7/1/1972	91	SA	17	2	8	CBCC	1/15	S	G & G DRILLING	23A	1/14/1992	B017		SW 70.5 FT B ACTUAL	FULL CASE, OF	11/8/1983
8116	14526		VARDERWEELE, BERNAI	9/5/1969	87	SA	17	2	8	DCCC	1/16	S	SWANSON DRILLIN	23A	1/14/1992	D002				11/8/1983
9051	22911	LAS 19072	PRICKETT, PHILLIP	7/28/1998	101	SA	17	2	8	BDBC		U	MOON DRILLING	23A	10/24/1995	WILD ROSE ESTATES L02		SW ? FT, 10 GPM		11/21/1995
8052	29157		HALL QUALITY HOMES/	4/25/2003	141	SA	17	2	8	DDDD		U	ACE WATER WELL (	23A	9/19/2008	MAJESTIC HILLS WELL 2 Tr A (D004)	P	SW 72 FT BLS GROUT !	CASE TO 128 FT, SCREENED TO 141 FT	
8053	29184		HALL QUALITY HOMES/	3/4/2003	141	SA	17	2	8	DDDD		U	ACE WATER WELL (	23A	9/19/2003	MAJESTIC HILLS WELL 1 Tr A (D004)	P	SW 72 FT BLS GROUT !	CASE TO 128 FT, SCREEN TO 141 FT	
8056	31448		PALMER SEVENTH DAY	9/16/2005	120	SA	17	2	8	CCCC		U	ACE WATER WELL (	23A	11/2/2005	C007, S INNER SPRINGER LOOP 2238		SW 64 FT TO LOCATE	CASED * DRILLER INCLUDES 2 FT OF STICKUP IN CASING DEPTHS	
17121	620		RAMSEY, MIKE		58	SA	17	2	17	BCDD	1/21	S	OK DRILLING	23A	1/14/1992	SPRINGER 2 Tr 1				10/12/1989
17113	3118		OLSEN, CECIL	7/21/1983	50	SA	17	2	17	CBBC	1/13	S	FRONTIER DRILLIN	23A	1/14/1992	OUTER SPRINGER WOODS L6 B1				10/1/1983
17123	4065		LOYER, CAROL	8/20/1983	72	SA	17	2	17	ACDD	1/23	S	M-W DRILLING	23A	1/14/1992	A003				
17119	5129		KALWIES, MARTIN	9/29/1978	78	SA	17	2	17	ADAD	1/19	S	GEE'S WATER WELI	23A	1/14/1992	KALWIES HOMESITE L1 & L2				11/8/1983
17101	7159		WOODS, G M	1/30/1986	76	SA	17	2	17	AAAA	1/1	S	ALASKA RAILROAD	23A	1/14/1992	Tr 059				11/8/1983
17104	7160		USGS	10/27/1955	114	SA	17	2	17	AADD	1/4	S	UNKNOWN	23A	1/14/1992	A001				7/16/1992
17102	7161		SISCO, B L		85	SA	17	2	17	ABAA	1/2	S	ALASKA RAILROAD	23A	1/14/1992	Tr 057				11/8/1983
17105	7162		LIEBING, CHARLES F		82	SA	17	2	17	ADDD	1/5	S	ALASKA RAILROAD	23A	1/14/1992	Tr 060				11/8/1983
17103	7163		PETTIT, FRANK	1/23/1986	74	SA	17	2	17	BABB	1/3	S	ALASKA RAILROAD	23A	1/14/1992	Tr 056				11/8/1983
17111	7164		LOYER, JOSEPH	12/1/1953	83	SA	17	2	17	BCAC	1/11	S	COTTEN DRILLING	23A	1/14/1992	B001				7/16/1992
17112	7165		LOYER, VIC		77	SA	17	2	17	BDDD	1/12	S	G & G DRILLING	23A	1/14/1992	SPRINGER LOOP ROAD				11/8/1983
17110	7166		DODDS, D S	1/1/1945	187	SA	17	2	17	CAAC	1/10	S	ALASKA RAILROAD	23A	1/14/1992	PALMER AREA				11/8/1983
17109	7167		WEBB, R R	4/15/1986	134	SA	17	2	17	CCBA	1/9	S	ALASKA RAILROAD	23A	1/14/1992	Tr 068				11/8/1983
17106	7168		LOYER, JOSEPH	11/25/1983	64	SA	17	2	17	DAAA	1/6	S	ALASKA RAILROAD	23A	1/14/1992	Tr 062				11/8/1983
17107	7169		LOYER, JOE		61	SA	17	2	17	DBAA	1/7	S	ALASKA RAILROAD	23A	1/14/1992	Tr 061				11/8/1983
17108	7666		UNKNOWN	6/1/1950	60	SA	17	2	17	DBBB	1/8	S	MOFFITT	23A	3/15/2010	MOUNTAIN VIEW ESTATES AREA		SW ? FT, ? GPM	4" JETTED WELL, FINISH UNKNOWN	
17120	9960		PIONEER PROCESSING	10/1/1983	98	SA	17	2	17	ABDA	1/20	S	SWANSON DRILLIN	23A	1/14/1992	SPRINGER LOOP ROAD				
17127	10579	LAS 22369	SOLO DEV INC	7/9/1979	80	SA	17	2	17	DBDD	1/27	S	M-W DRILLING	23A	1/14/1992	MOUNTAIN VIEW ESTATES 2 Tr B				
17117	10580		MURCK, JAY DEE	8/13/1970	139	SA	17	2	17	DCBD	1/17	S	MOON DRILLING	23A	1/14/1992	MOUNTAIN VIEW ESTATES L13 B4				
17116	10581		SOLO DEV INC	9/1/1981	50	SA	17	2	17	DBDC	1/16	S	SWANSON DRILLIN	23A	1/14/1992	MOUNTAIN VIEW ESTATES L08 B2				
17114	10645		WOODS, NOEL	8/4/1976	60	SA	17	2	17	BCCD	1/14	S	MOON DRILLING	23A	1/14/1992	OUTER SPRINGER WOODS L2 B1				
17115	10646		VICKERS, ROBERT/BILL	10/7/1981	61	SA	17	2	17	CBBA	1/15	S	MOON DRILLING	23A	1/14/1992	OUTER SPRINGER WOODS L4 B1				
17118	12056		BURGESS, BRIAN/LISA	4/15/1986	55	SA	17	2	17	CBDC	1/18	S	GEE & SON WATER	23A	1/14/1992	OUTER SPRINGER WOODS L5 B2				2/17/1983
17050	13389		BURGESS, BRIAN	4/15/1986	57	SA	17	2	17	CBDC		U	MARTINS WATER V	23A	1/14/1992	OUTER SPRINGER WOODS L5 B2		SW 12 FT ABOVE LAN	FINISH UNKNC	2/17/1983
	14051		P & J MOBILE HOME SA	11/25/1984	55	SA	17	2	17		?	U	GEE'S WATER WELI	23A	1/14/1992	SPRINGER LOOP ROAD				11/19/2001
17219	15177	LAS 9858	JAYO, JESUS JR	6/10/1979	78	SA	17	2	17	ADAD	2/19	S	GEE'S WATER WELI	23A	1/14/1992	KALWEIS HOMESITE L2 (D008)		SW 58 FT, 10 GPM	CASED	4/28/1989
17051	23239	LAS 19487	VANDERWEELE, BEN	6/1/1993	105	SA	17	2	27	BAAC		U	LAURENCE LARSON	23A	2/26/1996	L???, INNER SPRINGER LOOP ROAD, IRRIGA		SW 66.3 FT, 700 GPM		3/5/1996
17052	27680	LAS 24145	VANDERWEELE, R & J	10/22/2001	119	SA	17	2	17	AAAA		U	JOHNSON ENTERPF	23A	4/29/2002	A00?, INNER SPRINGER LOOP ROAD		SW 65 FT BLS, 60 GPM	CASE TO 106 FT, OPEN END, PERFS BOTTOM 10 FT	
17053	29909		G I BUILDERS	10/23/2003	80	SA	17	2	17	CCBD		U	ACE WATER WELL (	23A	4/1/2004	SKY RANCH L08 B1		SW 36 FT, 90 GPM	FULL C/ LOCATED BY J.A.M.	
8054	31205		REBARCHECK, R	8/25/2004	108	SA	17	2	17	ACDC		U	VALLEY PUMP & W	23A	4/5/2005	L???, INNER SPRINGER LOOP ROAD		SW 69 FT BLS, 30 GPM	FULL C/ LOCATED BY J.A.M.	
17054	34044		HARDING HOMES	6/15/2007	80	SA	17	2	17	CDDD		U	ALPINE DRILLING	23A	9/6/2008	SKY RANCH L06 B2		SW 49 FT, 40 GPM	FULL C/ LOCATED BY J.A.M.	
18107	7170		STATE OF ALASKA, DOT	1/1/1959	34	SA	17	2	18	ABBA	1/7	S	AK DOT	23A	1/14/1992	AK DOT MSR 10 52 TH1				11/8/1983
18207	7171		STATE OF ALASKA, DOT	1/1/1959	32	SA	17	2	18	ABBA	2/7	S	AK DOT	23A	1/14/1992	AK DOT MSR 10 52 TH2				11/8/1983
18106	7172		GROVER, ROLLAND	12/26/1985	42	SA	17	2	18	ABDA	1/6	S	ALASKA RAILROAD	23A	1/14/1992	PALMER AREA (MAY BE NEAR CRIMSON VIEW)				11/8/1983
18105	7173		HOSKINS, W		41	SA	17	2	18	ACAA	1/5	S	ALASKA RAILROAD	23A	1/14/1992	PALMER AREA (MAY BE NEAR CRIMSON VIEW)				11/8/1983
18104	7174		ANDERSON, B A		53	SA	17	2	18	ACCA	1/4	S	ALASKA RAILROAD	23A	1/14/1992	PALMER AREA (MAY BE NEAR CRIMSON VIEW)				11/8/1983
18101	7175		RICE, WARREN		40	SA	17	2	18	ADBC	1/1	S	ALASKA RAILROAD	23A	1/14/1992	Tr 039				11/8/1983
18103	7176		CHURCH, J C JR	1/1/1960	32	SA	17	2	18	DBBB	1/3	S	FREY BROS	23A	1/14/1992	PALMER AREA				11/8/1983
18102	7177		SAWBY		37	SA	17	2	18	DCBB	1/2	S	ALASKA RAILROAD	23A	1/14/1992	PALMER AREA				11/8/1983
18108	12892	ADL 20040	VANDERWEELE, B	8/26/1970	65	SA	17	2	18	DABB	1/8	S	G & G DRILLING	23A	9/15/2010	PALMER AREA		SW 37 FT BLS, 17 GPM	FULL CASE, OPEN END	
18109	16572	LAS 9827	SAWBY, FLORENCE	5/17/1958	54	SA	17	2	18	DCBC	1/9	S	G & G DRILLING	23A	1/14/1992	D009				
18050	20506	LAS 18907	ADAMS, HUGH	7/30/1984	100	SA	17	2	18	ABDD		U	WHEATON WATER	23A	1/14/1992	CRIMSON VIEW Tr A		SW 40 FT, 100 GPM (/	CASED WITH P	6/20/2001
18051	24548	LAS 6265	VANDERWEELE, S	9/25/1989	68	SA	17	2	18	DDDD		U	SWANSON DRILLIN	23A	3/9/1999	D004		SW 37.3 FT TOC, 45 GPM		9/6/2000
18052	29406		HESS BUILDERS	8/26/2003	78	SA	17	2	18	AADC		U	ACE WATER WELL (	23A	10/8/2003	A007		SW 45 FT, 50 GPM	FULL CASE, OF	11/28/2003
18053	29421		FRANTZICH, C	5/14/2003	68	SA	17	2	18	ACDD		U	HOOD & SON'S PU	23A	10/15/2003	A008		SW 42 FT, 20 GPM	FULL CASE, OF	11/28/2003
18054	33364	LAS 26689	KEYES, A	3/15/2007	94	SA	17	2	18	AACD		U	JOHNSON ENTERPF	23A	5/28/2009	SOUTH BURICKSON CIRCLE 1290		SW 47 FT BLS, 50+ GP	CASE TO 79 FT, SCREEN TO 84 FT, WITH 10 FT TAIL & PLATE	
19101	7392		WOODWARD BROS	1/1/1937	45	SA	17	2	19	AAAA	1/1	S	ALASKA RAILROAD	23A	1/14/1992	PALMER AREA				11/8/1983
20101	7393		SMITH, WILLIAM	4/9/1936	56	SA	17	2	20	BBBB	1/1	S	ALASKA RAILROAD	23A	1/14/1992	PALMER AREA				11/8/1983
20050	29955		HESS BUILDERS	5/19/2003	78	SA	17	2	20	BCAC		U	ACE WATER WELL (	23A	10/9/2003	SKY RANCH 5 L06 B5		SW 45 FT, 45 GPM	FULL CASE, OF	11/28/2003

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Groundwater Modeling Report, AS&G Palmer Pit, Brailey Hydrologic Consultants, August 2010

Brailey Hydrologic Consultants

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Anchorage, AK 99502
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Groundwater Modeling Report, AS&G Palmer Pit

Anchorage Sand & Gravel, Inc.
Anchorage, Alaska

AUGUST 2010

EXECUTIVE SUMMARY

A groundwater modeling study was performed to assess the impact of dredging at Anchorage Sand and Gravel, Inc.'s (AS&G's) Palmer gravel pit. The proposed dredging operation would create a 130-acre lake approximately 100 feet deep. The purpose of the modeling effort was to provide an objective determination of the approximate lake elevation, and to assess potential impacts on nearby lakes and wells. For transparency to reviewers, the model is intended to be as simple as possible. This was accomplished by using the minimum number of layers needed to represent the groundwater flow system: one layer for aquifer materials that will be removed by dredging, one layer for aquifer materials that will remain after dredging, and one layer for bedrock. Around the perimeter of the model, a constant head boundary is used to mimic the regional water table slope. Local changes in water table slope are reproduced using the bedrock surface mapped using AS&G drill holes and a single zone of reduced hydraulic conductivity exposed as a silt lens on the adjacent property. The model uses a regional hydraulic conductivity value based on two high-capacity pumping tests that agree both internally and with nearby well yields. A reduced hydraulic conductivity for the silt lens is supported by adjacent pond elevations and by a domestic well test where the silt lens extends onto AS&G's property. Based on these data, the model reproduces the July 8, 2010 water table configuration with an average error within 0.5 feet, and within 0.2 feet through most of the model domain.

Although the model reproduces the July 8, 2010 water table configuration remarkably well, the model's parameter values and boundary conditions do not constitute a "unique" solution to the groundwater flow problem. That is, a slightly different set of parameter values and boundary conditions might produce an equally good fit. However, the selected parameter values and boundary conditions are "transparent", based on solely on pumping test data and measured groundwater elevations. If different water table conditions or hydraulic conductivity values are identified, these conditions can be evaluated either qualitatively or quantitatively by re-running the model.

The model calibration assumed that the July 8, 2010 water table configuration represents a steady-state condition, so that the rate of precipitation and groundwater inflow are exactly balanced by the rate of groundwater outflow. In reality, natural aquifers are always responding to seasonal changes in precipitation and recharge. As a result, the

1.0 INTRODUCTION

This document provides the results of groundwater modeling at Anchorage Sand & Gravel, Inc's. (AS&G's) Palmer Pit. The purpose of the modeling effort is to resolve questions regarding the effects of gravel dredging on the underlying aquifer. As shown on Figure 1-1, the dredging operation would create a 130-acre lake up approximately 100 feet deep. A previous assessment concluded that the lake would cause a slight (1 to 2-foot) depression in the water table around the north end of the lake, and a corresponding water table rise around the south end of the lake (Brailey 2007). However, questions remain concerning the resulting lake levels and effects on nearby wells (Munter 2009). Specifically, these questions include:

- What is the expected lake level, and what effect will this have on the surrounding aquifer?
- How much flow will pass through the lake as compared with the undisturbed aquifer?
- How will the lake affect the capture zones of the Crimson View and Pioneer Meadows public water systems?
- What options are available to minimize changes to the surrounding groundwater flow system?

Figure 1-1. Proposed Lake at AS&G's Palmer Pit

2.0 REGIONAL GEOLOGY AND HYDROLOGY

The Matanuska valley near Palmer is bounded by the Talkeetna Mountains on the north and the Chugach Mountains to the south and east (Figure 2-1). The Matanuska valley was formed by repeated glacial advances along a zone of faulting and deformation between metasedimentary and metaigneous rocks the Chugach Terrane on the south and granitic and sedimentary rocks the Peninsular Terrane on the north. Bedrock is exposed at the surface along the fronts of the Talkeetna and Chugach mountains, and is mantled by alluvium on the valley floor. The thickness of alluvium varies considerably, ranging up to over 200 feet near the center of the "Palmer terrace" (Pewe and Reger 1983; Figure 2-2). Local bedrock highs occur at Bodenburg Butte, a constriction of the Matanuska River near Palmer, and in the western part of the AS&G property (Figures 2-1 and 2-2).

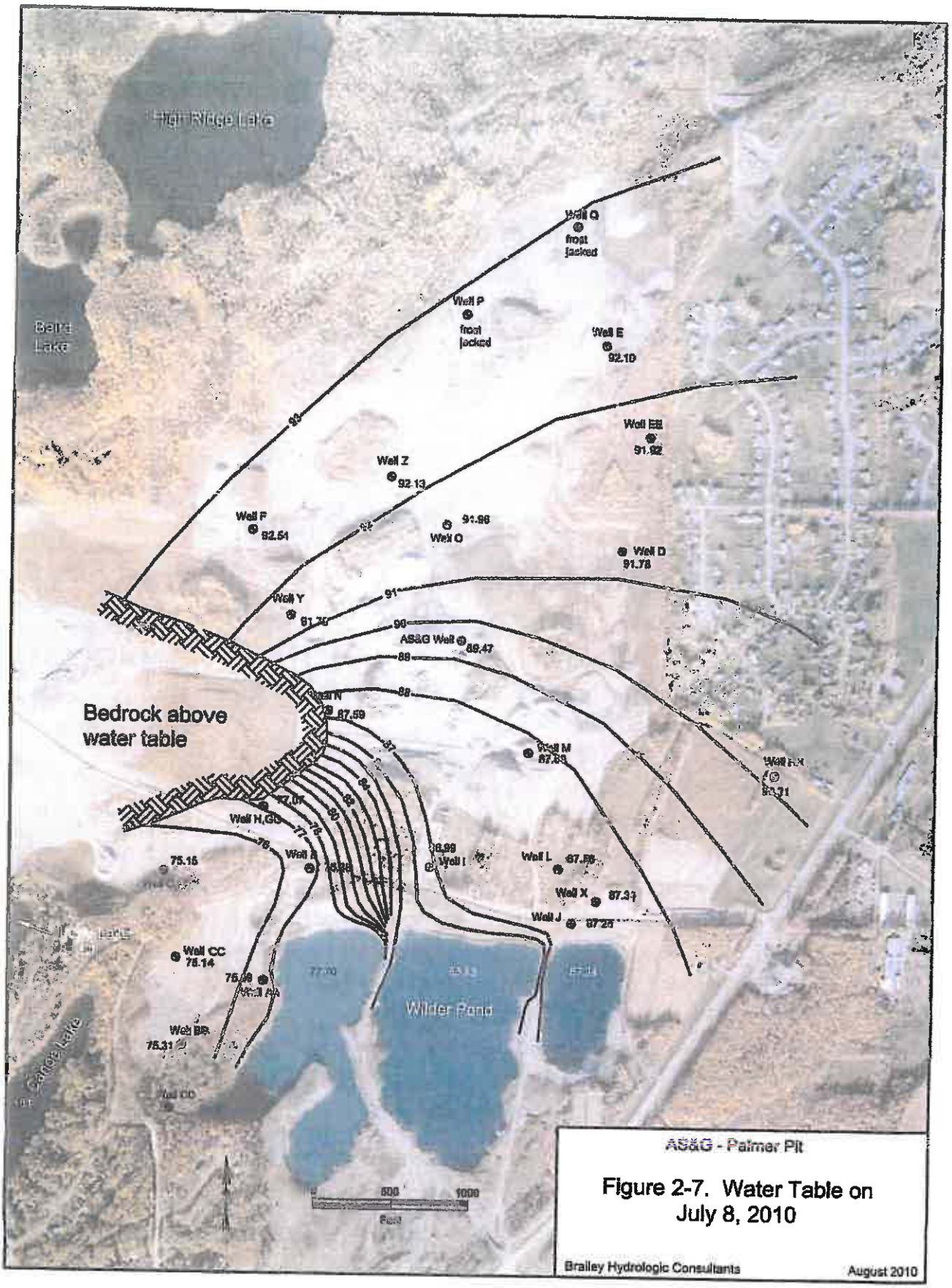
Figure 2-1. Regional Geologic and Hydrologic Setting

separated the dredge pond from a topographically depressed area to the west. The silt lens was breached in July 2004, causing flooding of the depressed area and lowering of the dredge pond by as much as 7.6 feet (Figure 2-4).

Figure 2-4. Wilder Pond in 2003 vs. 2006

The "Palmer terrace" was deposited slightly after the crevasse-fill-ridge deposits, as the Naptowne ice front retreated to the north. These outwash deposits locally overlie the crevasse-fill-ridge sediments in the vicinity of the Palmer Pit (Pewe and Reger 1994).

Based on a regional water table map prepared by the U.S. Geological Survey (Moran and Solin 2006), groundwater flow is generally southward from the Talkeetna Mountain front (Figure 2-1). In the vicinity of the Palmer Pit, groundwater occurs in an unconfined aquifer tapped by numerous domestic and community water supply wells (Figure 2-5). The aquifer is relatively thick (locally over 200 feet) and commonly exhibits high well yields. Comparison of the water table elevation with adjacent floodplain elevations (Figure 2-2) suggests that the unconfined aquifer is recharged by both the Matanuska River and by groundwater inflow from the north. Oxygen isotope studies performed by the U.S. Geological Survey indicate that the water table aquifer

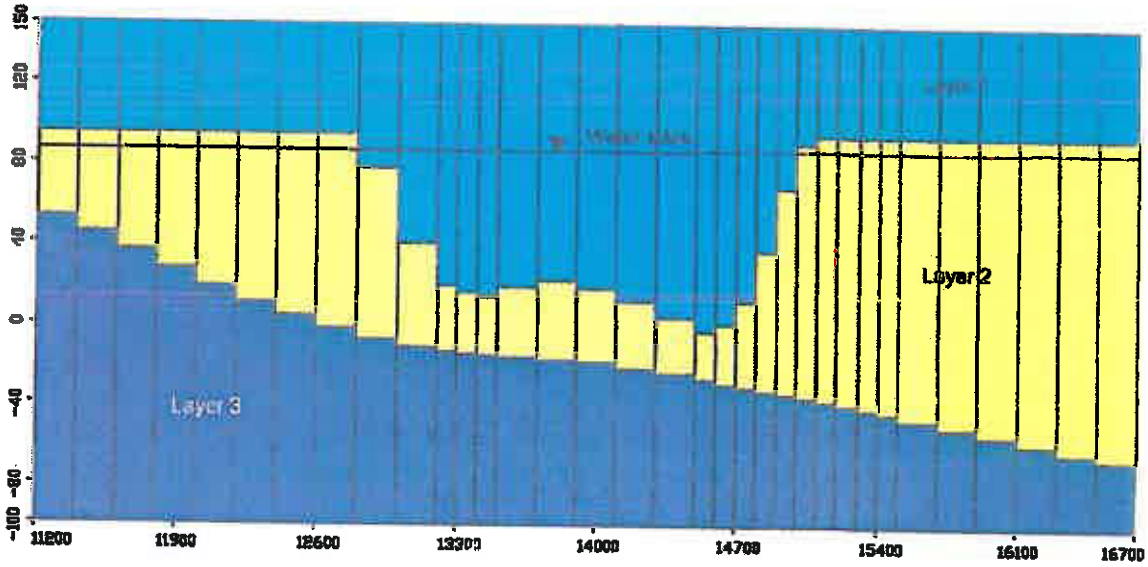

High Ridge Lake
Baird Lake
Well Q
frost jacked
Well P
frost jacked
Well E
92.10
Well EE
91.92
Well Z
92.13
Well F
92.54
91.96
Well O
Well D
91.78
Well Y
AS&G Well
89.47
Bedrock above water table
87.59
Well M
87.89
Well H,GG
Well I
8.99
Well L
87.58
Well X
87.34
Well J
87.25
75.15
Well CC
75.14
Well BB
75.31
Wilder Pond
Cedar Lake
AS&G - Palmer Pit
Figure 2-7. Water Table on July 8, 2010
Brailey Hydrologic Consultants
August 2010

aerial photogrammetric measurements (AeroMetric 2008), the elevation difference between Baird and Irene Lakes is about 25 feet. Although the surface of Canoe and Irene Lakes is about 5 feet above the water table, the slope of the water table is consistent with the elevation difference between the lakes north and south of AS&G's property. The difference between the water table elevation and the surface of Canoe and Irene Lakes suggests that the lakes are perched by fine grained sediments lining the bottoms of the lakes. Perching of lakes and streams has long been recognized in the groundwater literature, and is commonly modeled using a reduced lake or streambed conductance relative to the underlying deposits (e.g. Merritt and Konikow 2000).

Although the unconfined aquifer generally flows southward toward discharge areas along the Matanuska River (Munter 2010), the lowest groundwater elevations occur in the southwest corner of AS&G's property (Figure 2-7). This suggests a zone of increased transmissivity south of Canoe Lake. By analogy with Echo and Kepler Lakes, Canoe and Irene Lakes were once occupied by stagnant ice masses separated by meltwater streams (Reger and Updike 1983). Flow constrictions between the stagnant ice masses could have resulted in high-permeability zones between the lakes. Fine-grained sediments and a former pond at the location of Wilder's central pond (Figure 2-2) suggest that an ice mass was present in this area. If so, meltwater flows could have been constricted between this area and the ice mass in Canoe Lake, resulting in a buried channel of high-permeability deposits.

The middle layer (Layer 2) represents aquifer materials that will not be disturbed by mining, and the top layer (Layer 1) represents materials that will be removed (Figure 3-2). The model was calibrated using the same hydraulic conductivity for Layers 1 and 2, representing hydrologic conditions before mining. The effect of gravel dredging was simulated by increasing the hydraulic conductivity of Layer 1 until all of the "lake" cells exhibited the same head. This provides an unbiased estimate of the lake elevation, dependent only calculated water flows into and out of the lake.

Figure 3-2. Model Cross Section: Row 13

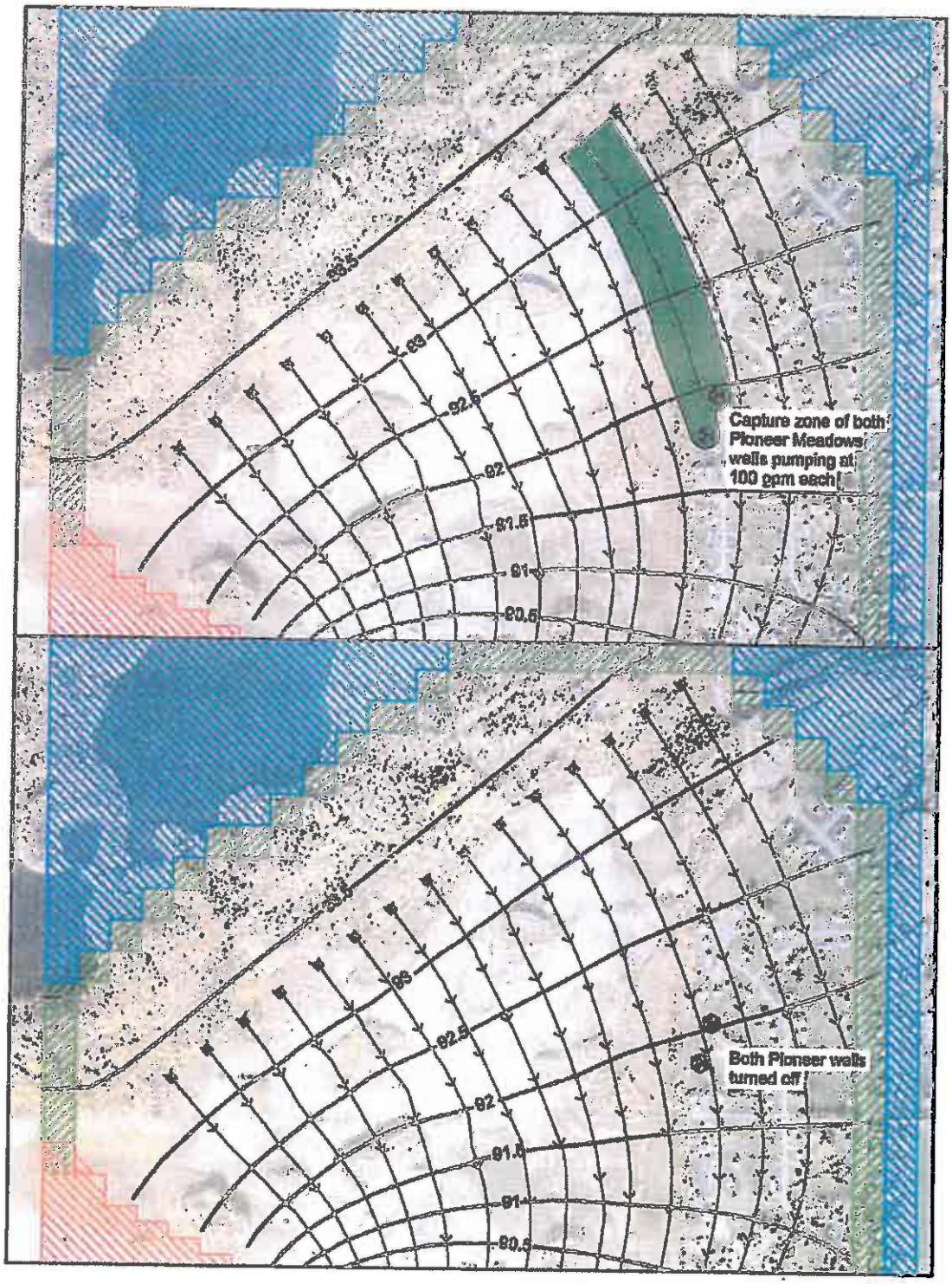


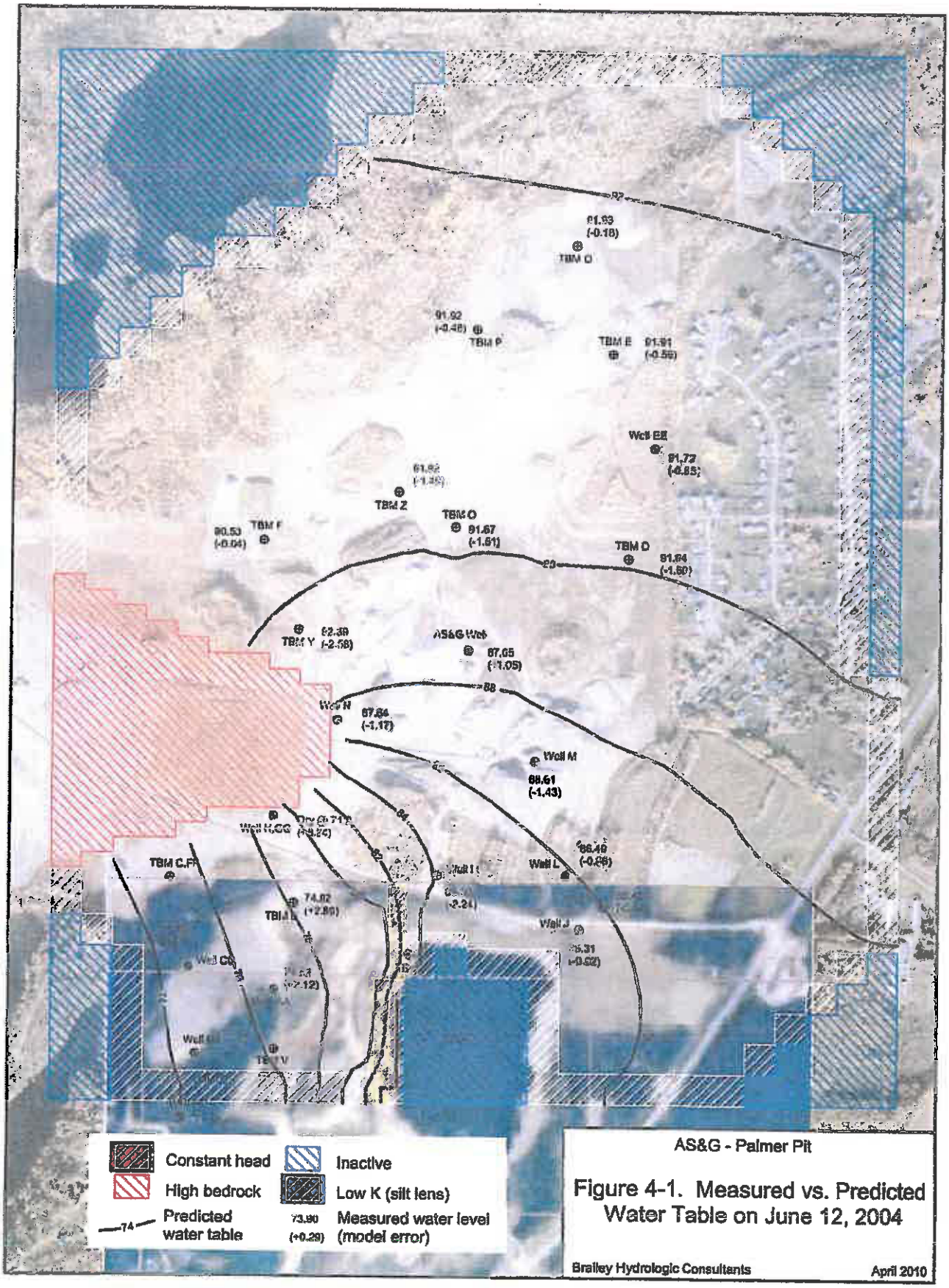
The model's lateral boundary conditions are illustrated on Figure 2-1. Except where bedrock elevations are above the water table, the perimeter of the model is a constant head boundary with head values estimated from water table maps of the monitoring network.

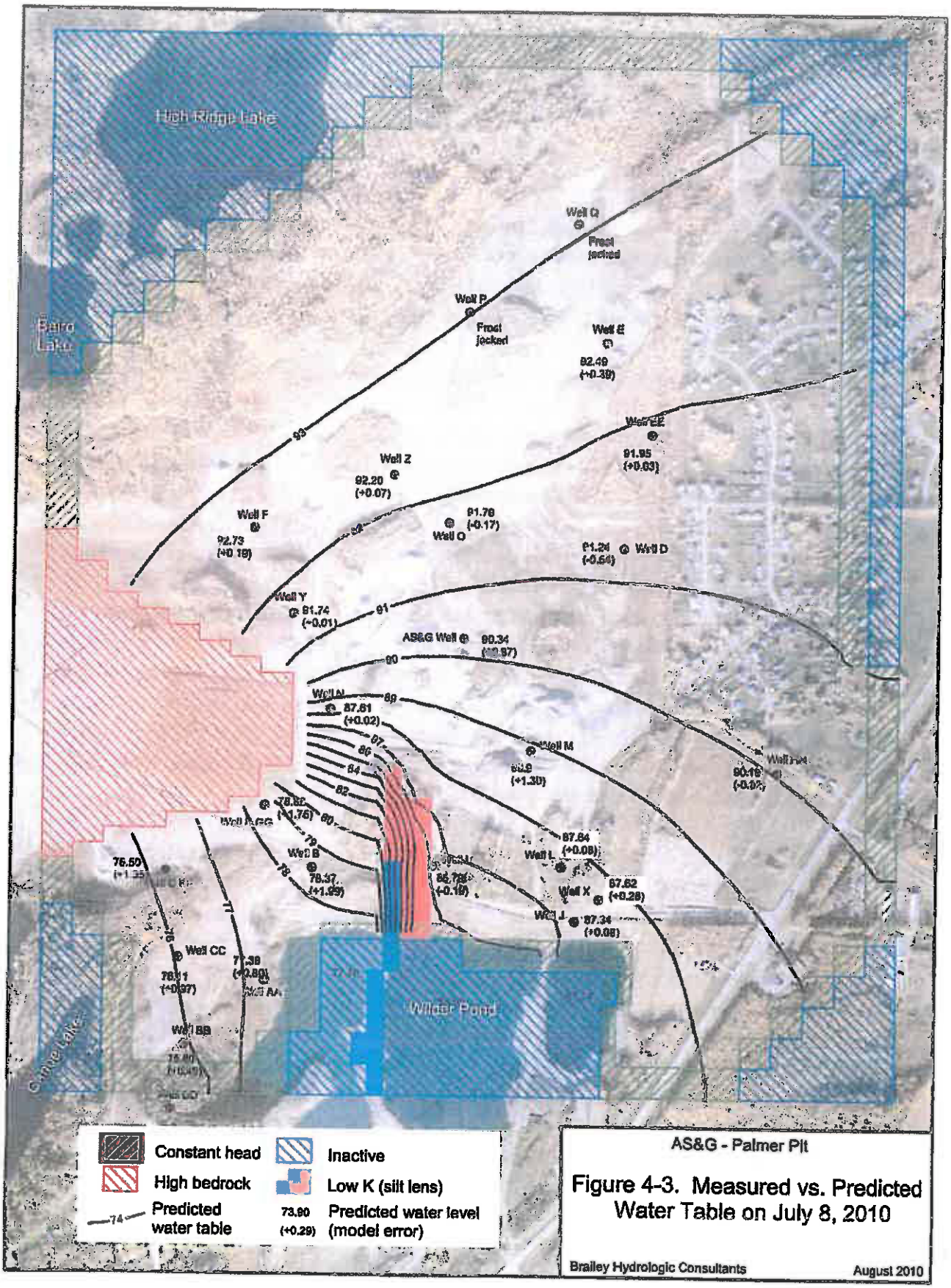
Groundwater recharge from precipitation was included by specifying a recharge rate of four inches per year throughout the model domain. This represents about one-fourth of annual precipitation, and is consistent with recharge values estimated by Patrick and others (1989) for lower elevations in the Anchorage Bowl. Modeling results indicate that recharge from precipitation is a relatively small component of the overall water balance.

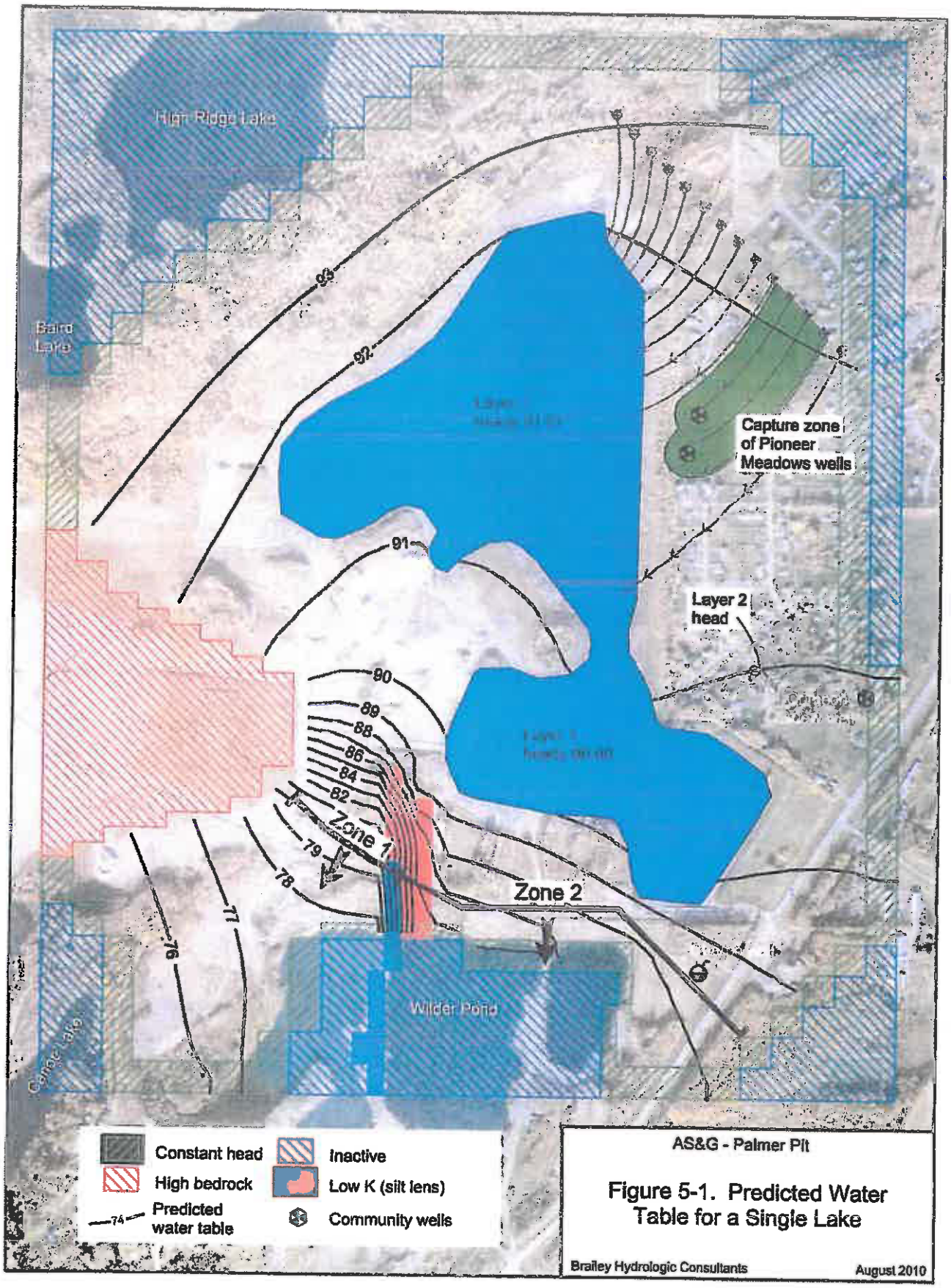
A final boundary condition was included to assess the impact of water supply wells on the local groundwater flow system. There are five domestic wells and two community water supply systems within the model domain. The Pioneer Meadows community

Figure 3-3. Effect of the Pioneer Meadows Wells Pumping at 100 gpm Each




92
91.93
(-0.18)
TBM O
91.92
(-0.48)
TBM P
TBM E
91.91
(-0.56)
Well EE
91.72
(-0.85)
TBM Z
TBM O
91.67
(-1.61)
90.53
(-0.04)
TBM F
TBM D
91.84
(-1.60)
90
TBM Y
(-2.58)
AS&G Well
87.65
(-1.05)
88
Well N
87.84
(-1.17)
Well M
88.61
(-1.43)
TBM C,FF
Well L
86.49
(-0.26)
74.02
(+2.80)
TBM L
Well J
(-0.52)
Well CC
Well V
Constant head
High bedrock
Predicted water table
Inactive
Low K (silt lens)
73.90
(+0.29)
Measured water level (model error)
AS&G - Palmer Pit
Figure 4-1. Measured vs. Predicted Water Table on June 12, 2004
Brailey Hydrologic Consultants
April 2010


High Ridge Lake
Baro Lake
Well Q
Frost jacked
Well P
Frost jacked
Well E
92.49 (+0.39)
Well EE
91.95 (+0.03)
Well Z
92.20 (+0.07)
Well F
92.73 (+0.19)
91.78 (-0.17)
Well O
91.24 (-0.54)
Well D
Well Y
91.74 (-0.01)
AS&G Well
90.34
Well M
90.16
87.61 (+0.02)
78.82 (+1.76)
Well B
78.37 (+1.99)
87.84 (+0.08)
Well L
82.78 (-0.19)
Well X
87.62 (+0.28)
87.34 (+0.08)
76.50 (+1.35)
Well CC
77.38 (+0.80)
Well BB
Wilder Pond
Constant head
High bedrock
Predicted water table
Inactive
Low K (silt lens)
73.90 (+0.29) Predicted water level (model error)
AS&G - Palmer Pit
Figure 4-3. Measured vs. Predicted Water Table on July 8, 2010
Brailey Hydrologic Consultants
August 2010


High Ridge Lake
Baird Lake
Capture zone of Pioneer Meadows wells
Layer 2 head
Zone 1
Zone 2
Wilder Pond
Constant head
High bedrock
Predicted water table
Inactive
Low K (silt lens)
Community wells
AS&G - Palmer Pit
Figure 5-1. Predicted Water Table for a Single Lake
Brailey Hydrologic Consultants
August 2010

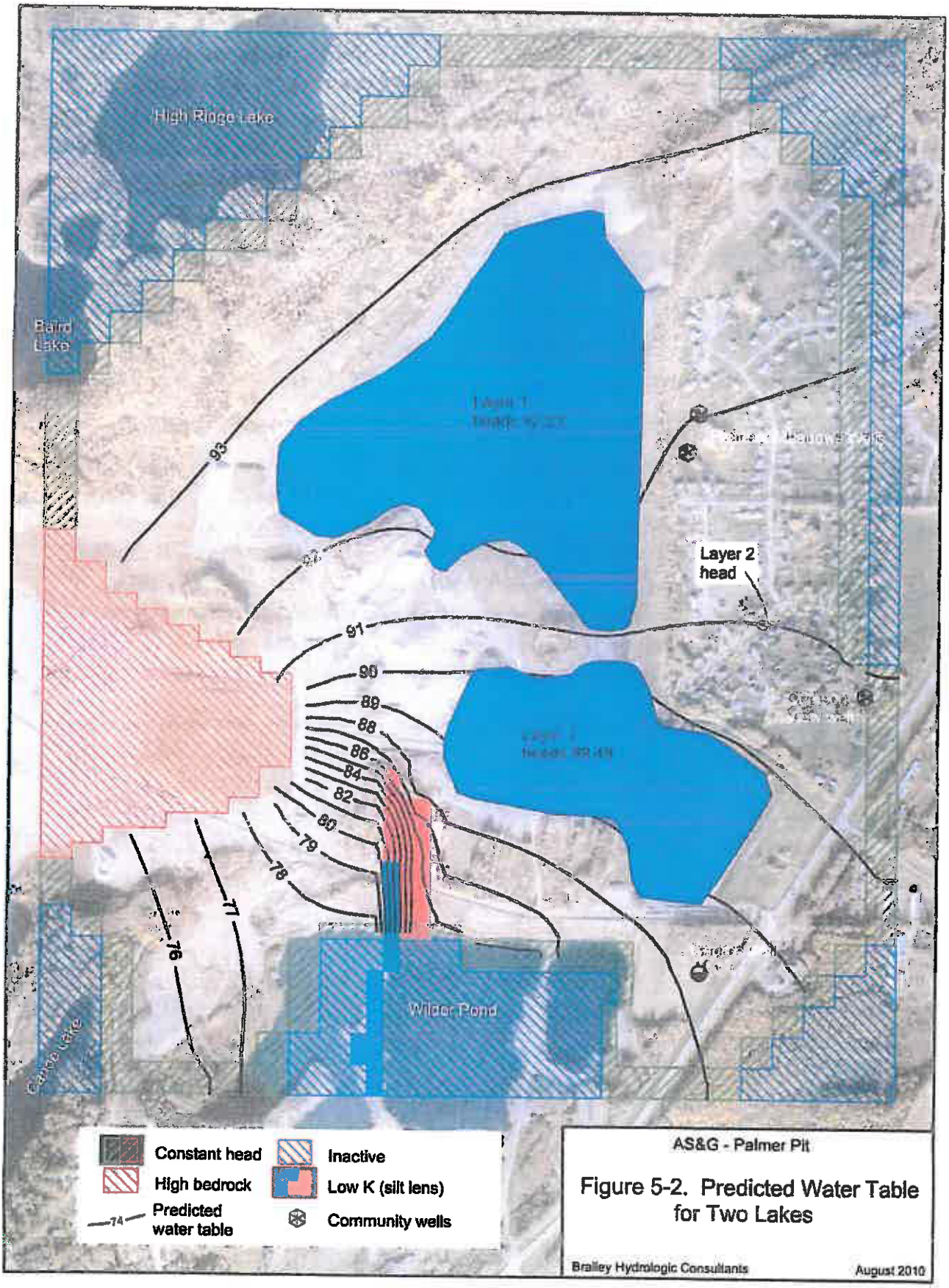
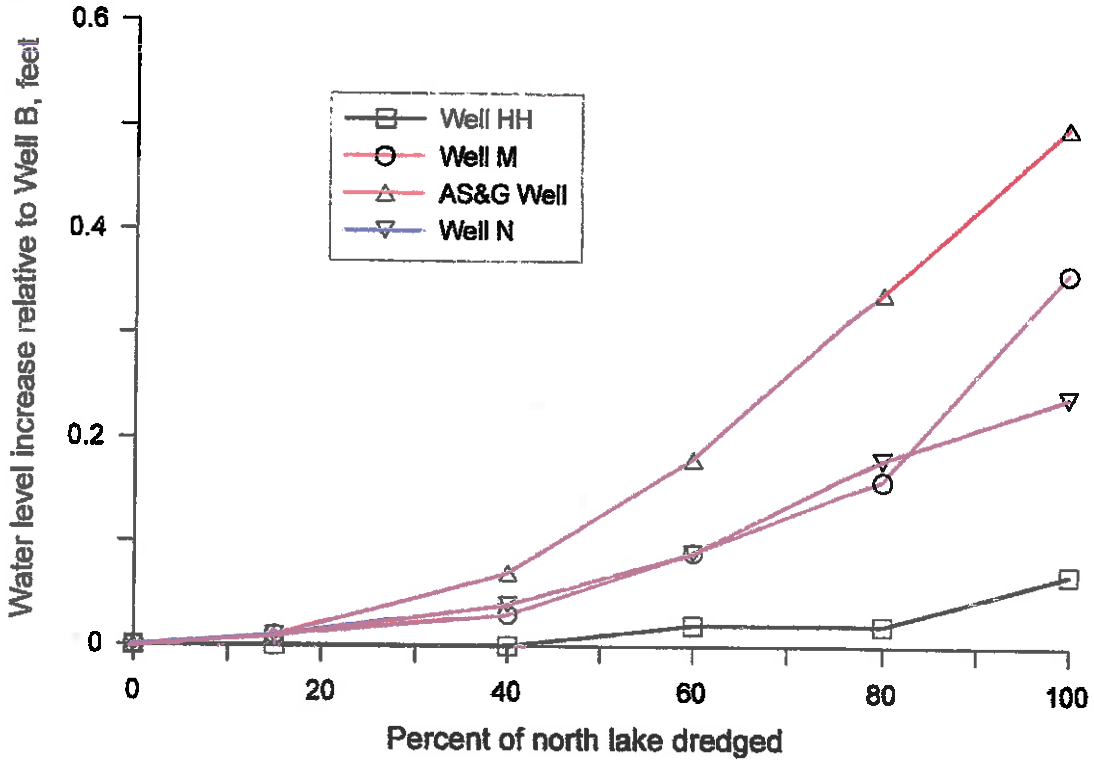

High Ridge Lake
Baird Lake
Layer 2 head
93
91
90
89
88
86
84
82
80
79
78
77
76
Wider Pond
Cable Lake
Constant head
High bedrock
Predicted water table
74
Inactive
Low K (silt lens)
Community wells
AS&G - Palmer Pit
Figure 5-2. Predicted Water Table for Two Lakes
Brailey Hydrologic Consultants
August 2010

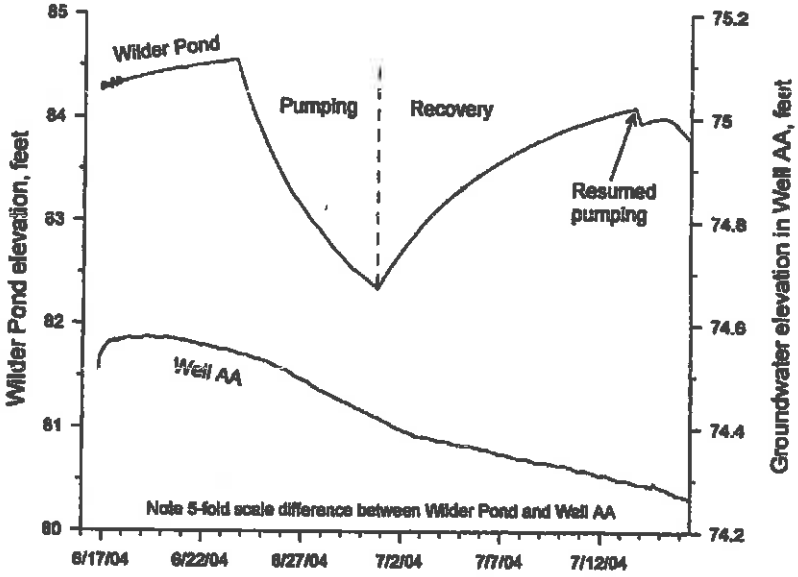
Figure 5-3. Modeled Rate of Water Level Increase during Dreding of the North Lake



Moran, E.H., and Solin, G.L. 2006. Preliminary Water Table Map and Water Quality Data for Part of the Matanuska-Susitna Valley, Alaska, 2005. U.S. Geological Survey Open-File Report No. 2006-1209.

Pewe, T.L. and Reger, R.D. 1983. Guidebook to Permafrost and Quaternary Geology along the Richardson and Glenn Highways between Fairbanks and Anchorage, Alaska. Alaska Division of Geological and Geophysical Surveys Guidebooks 1, 263 p.

Figure A-2. Water Levels in Wilder Pond and Well AA



The pumping test data were analyzed using type curves for flow to a large diameter well developed by Mishra and Chachadi (1985). This approach requires the assumed geometry shown on Figure A-3, where the pond is considered to be cylindrical. The sloping sidewalls of the pond are simulated using the parameter α, defined as $\phi (r_w/r_c)^2$ where ϕ is porosity and r_w and r_c are the radial dimensions shown on Figure A-3. The

Figure A-3. Idealized Geometry for $\alpha = 0.1$

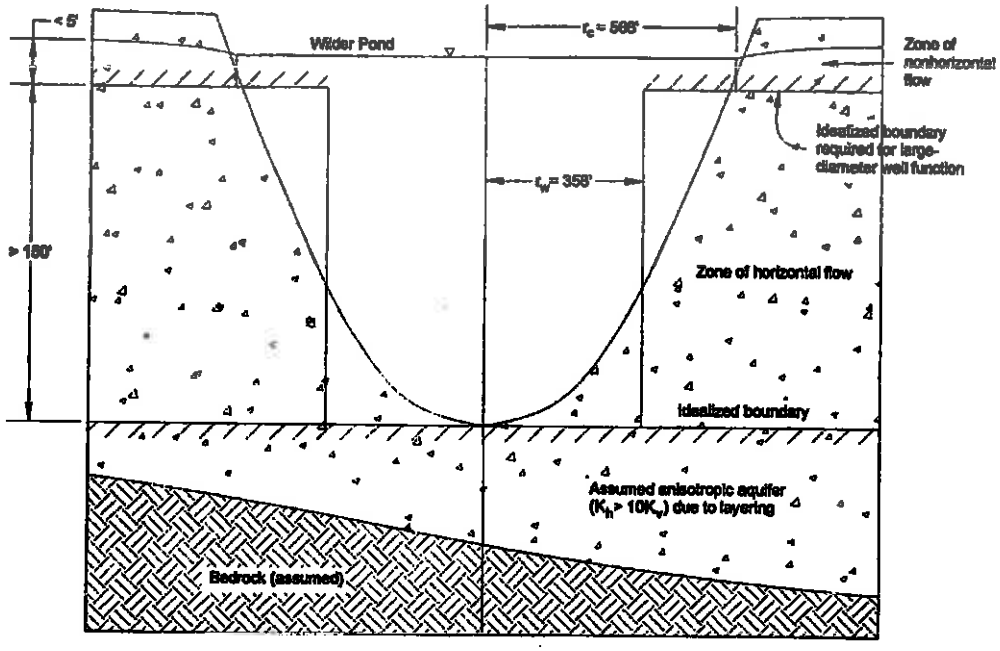


Figure A-5. Curve Fit of Pumping Test Data for $\alpha = 0.01$

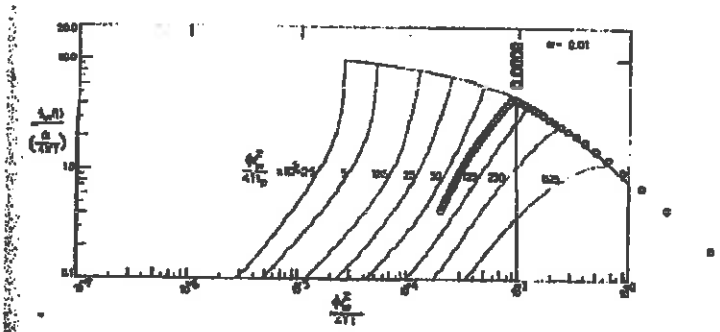


Fig. 2(b). Family of type curves: $S_W(t)/(Q/4\pi T)$ versus $\phi r_w^2/4Tt$ for $\alpha = 10^{-2}$.

Figure A-6. Curve Fit of Pumping Test Data for $\alpha = 0.001$

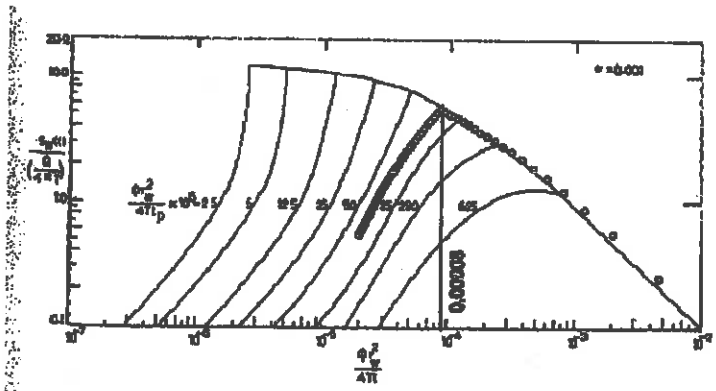


Fig. 2(c). Family of type curves: $S_W(t)/(Q/4\pi T)$ versus $\phi r_w^2/4Tt$ for $\alpha = 10^{-3}$.

Figure A-7. Curve Fit of Pumping Test Data for $\alpha = 0.0001$

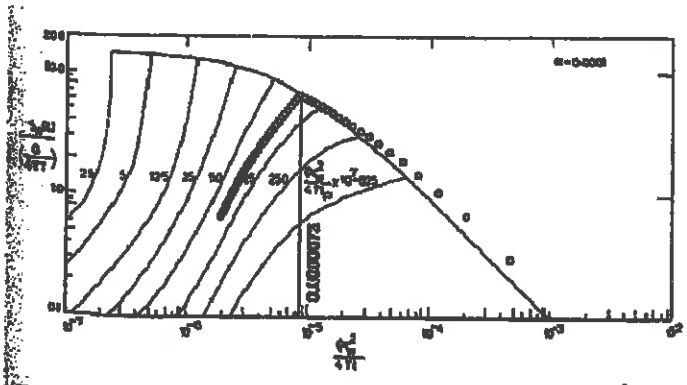


Fig. 2(d). Family of type curves: $S_W(t)/(Q/4\pi T)$ versus $\phi r_w^2/4Tt$ for $\alpha = 10^{-4}$.

but it is 80 feet deep, with a static water level about 30 feet below ground surface. Local knowledge indicates that well has not been used since the mid-1980's, and that it may have been a high-yield well used for gravel washing operations.

The AS&G Well is 8 inches in diameter, but has no pump or power supply. It is not known if the well is screened, perforated, or open-ended. This information is important for analysis of measured drawdowns in the pumping well, which can be exaggerated if flow is restricted as it enters the well. For this reason, additional observation wells were considered for measurement of drawdown outside the pumping well. However, the small drawdowns reported for the adjacent Pioneer Meadows wells (AWPS 2010) raised concern that drawdown might not be measurable outside the pumping well. As a result, a single-well pumping test was planned prior to installation of any observation wells.

During single-well pump tests, drawdowns in the pumping well can be affected by friction losses and by pump turbulence. However, the rise in water level after the cessation of pumping (termed recovery) can also be used to determine hydraulic conductivity. Although early-time recovery data can be affected by friction losses, the pumped well rapidly equilibrates with water levels outside the well casing, so that intermediate- and late-time recovery data reflect water levels in the surrounding aquifer. The longer the well is pumped (and the higher the pumping rate), the larger the cone of depression becomes outside the pumping well. The use of intermediate- and late-time recovery data minimizes the effect of friction losses, and provides a measure of hydraulic conductivity at a larger radial distance from the well.

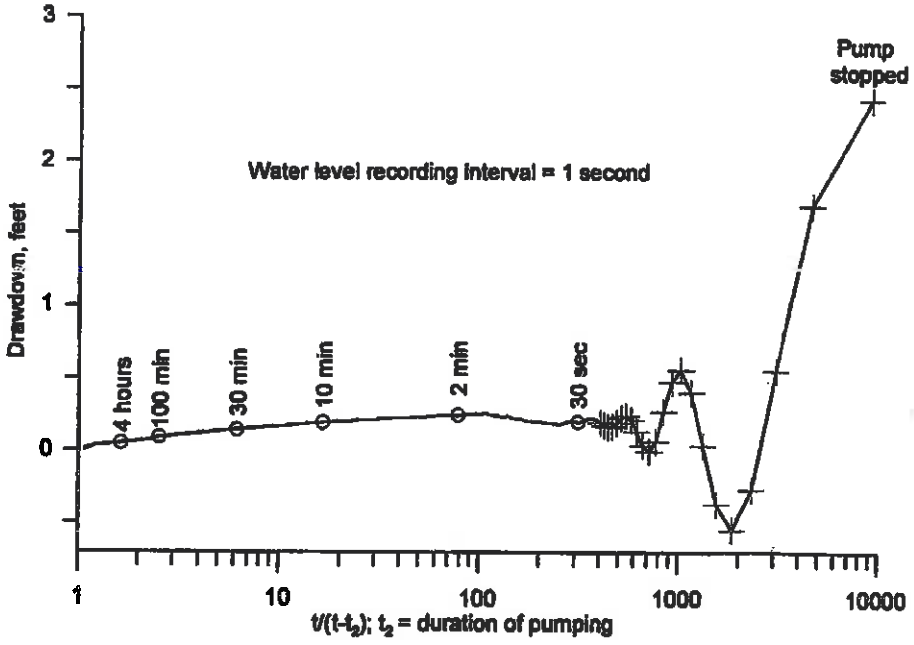
Based on high nearby well yields, Anchorage Well and Pump Service installed a 30-horsepower turbine pump on May 14, 2010. The pump was powered by a 160 kilowatt (kW) generator providing 3-phase, 460-volt power. The pump was connected with four inch-diameter pipe to a totalizing flowmeter and a hose discharging downslope from the pumped well. During the test, the discharge flowed over the ground surface to the pit floor approximately 400 feet northwest.

The water level in the pumped well was measured with a 5-psi pressure transducer suspended about 8 feet below the static water level. Figure A-8 shows a summary of water levels measured during pumping and the first 2 hours of recovery. The pump was first energized at 5:10 pm, but it produced only about one-tenth of its rated discharge (~300 gpm). The pump was turned off and on several times between 5:10 and 6:10 pm, during which it was determined that the pump impellers may have been plugged. Upon re-starting the pump at 6:18 pm, the pump produced a steady flow rate of 270 gpm, but the power was accidentally disconnected at 6:26 pm. The well was allowed to recover, and the pump was re-started for a final time at 6:51 pm.

showed decreasing drawdowns after the first 6 seconds of pumping. One explanation for this behavior is that the pump used during the test may be more powerful than previous pump(s) installed in this well. This would tend to remove fine sediment from the well screen and surrounding formation, thereby increasing the hydraulic conductivity in the vicinity of the well. Because of the decrease in drawdown over time, the drawdown data were not used for to determine hydraulic conductivity.

Water level data during the recovery period following the pump test are shown on Figure A-10. Recovery data are analyzed using a semilogarithmic plot of drawdown versus the quantity $t/(t-t_2)$, where t is the time since pumping started and t_2 is the duration of pumping. The recovery data show a series of oscillations after the pump was shut off, followed by a gradual water level recovery. Oscillating recoveries are commonly observed during slug tests in high-permeability aquifers (van der Kamp 1976), and are attributed to inertial forces within the well casing. In contrast, the aquifer response away from the well casing is best respresented by intermediate- and late-time recovery data, after the oscillations have ceased.

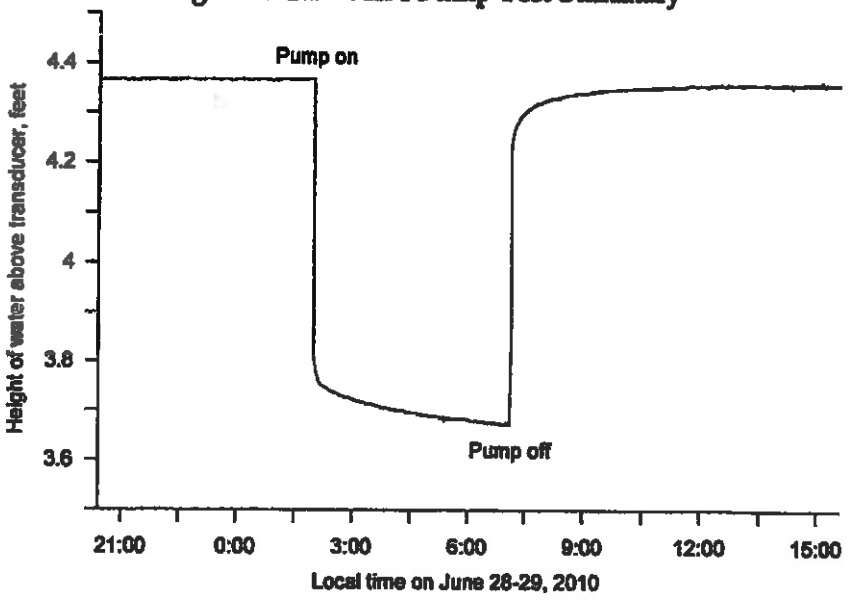
Figure A-10. Summary of AS&G Well Recovery Data



When plotted against $t/(t-t_2)$ on semilogarithmic axes, the recovery data should approximate a straight line at intermediate and late times. As shown on Figure A-11, the largest rate of recovery occurred between 30 and 100 minutes after pumping stopped, indicating an hydraulic conductivity of about 1,400 feet per day. The

To check for natural water level fluctuations, water levels in Well I were recorded for about 8 hours before the test. The well was pumped at 7.2 gpm for 5 hours, and the recovery of water levels was recorded for 9 hours after the test. Unlike the AS&G Well test, drawdown increased throughout the pumping period (Figure A-12), but the resulting hydraulic conductivity values were lower than those obtained during the recovery period. Because hydraulic conductivity values obtained during pumping can be biased by friction losses, the following analysis focuses on data obtained during the recovery period.

Figure A-12. Well I Pump Test Summary



Water level recovery data following the Well I pumping test are shown on Figure A-13. This plot has the same semilogarithmic axes as those discussed for Figure A-10. Due to the lower permeability at this location, initial recovery data does not exhibit the oscillations typical of high-permeability formations (van der Kamp 1976). Rather, the drawdown data shows a rapid decline after the pump was turned off, followed by a linear water level recovery. The slope of the recovery plot between 30 minutes and 8 hours after the cessation of pumping yields an hydraulic conductivity of 53 feet per day, which is significantly lower than the values measured at Wilder Pond and the AS&G Well. This is consistent with the low yield of Well I (7.2 gpm) as compared with the AS&G Well (270 gpm) and Wilder Pond (3,300 gpm).

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Hydrogeologic Evaluation of a Proposed Monofill, Palmer, Alaska, J.A. Munter Consulting, Inc., June 27, 2013

J. A. MUNTER CONSULTING, INC.

June 27, 2013

Matanuska - Susitna Borough
Development Services
JUN 27 2013
RECEIVED

Ms. Susan Lee
Planning Department
Matanuska Susitna Borough
350 E. Dahlia Avenue
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Re: Hydrogeologic evaluation of a proposed monofill, Palmer, Alaska

Dear Ms. Lee:

This letter is to provide the findings of my recent review of data and reports related to a hydrologic evaluation of a proposed monofill consisting primarily of shredded construction and demolition (C & D) waste near Palmer, Alaska.

I have reviewed the on-line packets for the June 3 and June 17 meetings and relevant portions of the audio recording of the June 3 and June 17 public hearings.

You have requested that I provide:

- a summary of the concerns that the proposed monofill will raise regarding the water table;
- potential negative effects to the groundwater and down-gradient drinking water wells, and;
- characterization of the aquifer at risk – in layman's terms.

In addition, you would like me to review a June 14, 2013, letter from Central Monofill Services (CMS) and evaluate their section on "Protection of the Aquifer".

Summary of concerns that the proposed monofill will raise regarding the water table.

This section refers primarily to concerns and processes occurring within the site boundaries and at the water table beneath the waste. There are several features of the proposed monofill that merit examination, including:

- expected water flow through the waste;
- the concept of a natural soil liner at this site;
- the proposed 10-ft separation buffer to the water table;
- the expected time of travel of water or leachate through a 10-ft soil layer; and
- characteristics of waste to be disposed of and potential contaminants that may emerge.

Expected water flow through the waste. Review of the design documents, management plans, and public comments for this site shows that there appeared to be no significant effort to reduce or control infiltration of rainfall and snowmelt through the waste. Thus, expected rates of infiltration are expected to be similar to those that occur elsewhere in the surrounding landscape.

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Infiltration, or groundwater recharge, is difficult to quantify with accuracy, however hydrologists commonly assume that approximately 20 to 30 percent of annual precipitation recharges groundwater in areas such as this. Such a percentage would mean that approximately 3 to 5 inches per year of precipitation would infiltrate and percolate downward through the waste. Using an eventual waste area of 30 acres, for example, this would equate to 300,000 to 500,000 gallons per year. Owing to the principal of conservation of mass, this amount of water or leachate would also need to flow out of the waste pile somewhere.

Low permeability liner. The public hearings contained considerable discussion of an "impermeable" clay/silt liner.

A review of the engineering drawings and specifications for the site show no provision for an engineered native-soil or other liner. This absence of engineering specification raises doubts about the effectiveness of such a liner. For example, there is no information in the record about the planned thickness, continuity, soil laboratory characteristics, tie-in with lateral boundaries, compaction, inspection, permeability, or numerous other aspects that are normally associated with engineered native-soil liners. There is no information in the record about the quantity of fine-grained material on site and whether there is enough to cover the site. Most of the soil borings on the site show that materials other than clay/silt are present at the land surface at the boring sites. The site has considerable topographic relief. In order for a liner to be effective, it must be continuous. There is no information about the applicant's intent to spread the fines over the higher areas as well as the lower areas.

This means that on-site personnel, whether they be equipment operators or supervisors, may be responsible for field decisions about the sources and spreading of low-permeability material. The apparent absence of any engineered, supervised, or inspected earth-moving process at this site along with the presence of abundant sands and gravels that are known to be present at the site substantially reduces the likelihood of successful construction of a low-permeability liner.

Mr. Young of Terrasat, at the June 3 hearing, commented that the clay/silt materials were "impermeable". A commonly-referenced textbook, Freeze and Cherry (1979), for example, notes that the permeability of clay and glacial till (including silt) can range from 10^{-6} to 10 gallons/day/sq. ft, however none of these materials are "impermeable" i.e. meaning completely impenetrable to water. Mr. Young's statement is misleading.

More importantly, however, the concept of placing an "impermeable" liner as described at the hearing at this site is severely flawed. With no impermeable cap, rainfall and snowmelt at this site will readily infiltrate and percolate vertically downward through the waste. Since there is no internal water collection system, this water would encounter the "impermeable" surface and pool up inside the waste. The fluid would then have no place to go except to fill pore spaces within the waste pile and create a perched water table that would rise up into the pile until it found an outlet somewhere around the perimeter. Leachate would then flow out and drain into the surrounding aquifer. The main effect of the impermeable liner would be to prolong the contact time of leachate water with waste material and increase the potential for dissolution of contaminants into the water. After the perched water table becomes established inside the pile,

the rate of outflow would be approximately equal to the rate of inflow from recharge and the net effect to the aquifer would be worse than if there was no liner at all.

As a result of the likely failure to construct an effective liner for the reasons described above and the adverse consequences if a liner were emplaced, this analysis will assume that there will be no effective liner for this site.

10-ft separation barrier and determination of the water-table position. The applicant proposes to keep a 10-ft separation between the bottom of wastes emplaced and the water table. The water table at this site is not well defined. The applicant has proposed to incorporate more recent water table measurements into facility design, however these measurements are currently unavailable for review, and in any event, do not consider several of the factors described below.

Following are problems with the current definition of the water table as provided on a map dated December 20, 2012 by Terrasat:

- Terrasat, in their August 2012 report, note that soil well logs were logged at different times, and locations may not be accurate or have accurate elevation control to establish the water table. It is not clear whether these problems were resolved for preparation of the December 20, 2012 map inasmuch as there is no report describing data and methods associated with that map. If these problems were not resolved, these would be non-standard and inaccurate methods for defining a water table.

- The measurements on which the existing water table map was produced on Dec. 20, 2012 have not been reported in the record so that it is difficult to verify the accuracy of the contouring.

- The contouring exhibits odd and inappropriate gradients of the water table across two of the ponds. Ponds at this site are considered to be an expression of the water table, and the water table should be flat (i.e. no gradient) at the ponds. The contouring is likely erroneous.

- Normal seasonal variations have not been measured and reported. Peak water-table elevations can occur in late September or early October in the Palmer area, so even springtime measurements would be inadequate to define the peak water table.

- Longer-term wet-year water-table fluctuations have not been analyzed or accounted for.

- The potential effects of changes in the water table caused by the reported recent construction of a weir in the dike separating nearby ponds or further breaches of the dike have not been evaluated (a breach apparently caused a 6-ft water-table rise a few years ago).

- Potential changes in the water table caused by future gravel mining in the area as described by Brailey (2007) and Munter (2010) have not been accounted for. Such gravel mining plans could increase water table elevations at this site by a few feet.

Combining all these factors, the water table map and any as-yet-reviewed updates are concluded to be an unreliable basis for designing a 10-foot water table separation at this facility.

Thus, the design of this facility appears to be insufficient to assure a 10-ft separation from the bottom of the waste to the water table.

Time of travel of water through 10 feet of soil. Mr. Young of Terrasat commented at the June 3 hearing that the 10-ft separation distance was not arbitrary – it was based on the length of time that it takes water to flow through it. Since ADEC does not specify that the soil used for the separation distance needs to be of low permeability, this statement has doubtful merit.

For example, using a textbook midrange value for the permeability of clean sand, water under saturated conditions can be expected to flow through a 10-ft layer in approximately 32 minutes. A similar calculation using a typical permeability for silty sand yields a time of travel of about 8 hours. Flow in each scenario would be slower under unsaturated conditions, however it can be readily seen that a 10-ft separation distance in coarse granular materials would yield very little delay-time protection from water migrating vertically downward from waste material into a water table.

An alternate explanation for the separation distance is that studies have shown that landfills that are partially submerged below the water table are generally more prone to leaching and contaminating groundwater as a result of the longer contact times of the waste in contact with water. A 10-ft separation would at least provide some assurance that the wastes will not reside in saturated conditions at most sites. Notably, ADEC allows monofills to be constructed on high-permeability sands and gravels as long as the separation distance is met. Thus, it appears that time of travel is not a significant factor in their evaluation.

C & D Landfill Leachate. C & D landfills are very common in the United States because this type of waste is abundant, is perceived as relatively inert, and because these types of facilities are usually subjected to less stringent environmental protections that normal landfills and thus costs of disposal tend to be lower.

The evaluation of leachate contamination to groundwater from C & D landfills appears to be an evolving science. These facilities have commonly been regarded as minimal threats to groundwater because they have been considered to contain relatively "inert" materials. Far from being chemically inert, however, many materials in C & D landfills, including wood and drywall will rot, decay, and leach constituents into groundwater. At least 27 states now require groundwater monitoring from such landfills, in increasing recognition of their potential to contaminate groundwater.

Studies have shown increased concentration of some contaminants from these types of facilities. A study conducted for the U.S. EPA from 1995, for example, (ICF Incorporated, 1995) found groundwater contaminants that exceeded primary or secondary Maximum Contaminant Levels (MCLs) for drinking water at 11 C & D landfills. Potential contaminants from the proposed

facility include sulfate, iron, manganese, total dissolved solids, arsenic and other metals, and organic compounds.

Many of the wastes proposed for the monofill, including wood, drywall, carpet, and probably even tire bales are not geologically stable in the Palmer area. Waste breakdown will inevitably result in dissolution and entrainment of waste constituents in leachate.

While the proposed monofill proposes to exclude "Hazardous Waste", it is not clear what this means, and in particular, that all waste that may be hazardous to water supplies will be excluded. For example, it appears that treated lumber containing compounds or elements known to be hazardous to human health appear to be allowable in the waste stream.

The term "Hazardous Waste" has numerous technical definitions that stem from the numerous laws and regulations that govern them. In this case, there will be a reliance on pre-demolition "Hazardous Building Material Surveys" and the proper exclusion of items described therein. The existence, thoroughness, and accuracy of these surveys is therefore important to the process, however it is difficult for the Borough to know or be assured that all materials that are potentially hazardous are appropriately excluded.

An important aspect of water contamination is that only a small amount of some compounds or elements are needed to contaminate a large volume of water. Arsenic, for example, has a drinking water primary MCL of 10 micrograms/liter, or approximately 1 part in 100 million. The waste will be shredded, thus making for a relatively large surface area of waste in contact with percolating waters. It is not unreasonable to expect that even small percentages of leachable wastes in the 2 million cubic yards of waste will result in measurable quantities of contamination.

This is a large facility. Considering that the proposed facility has a planned capacity of 2 million cubic yards of material and will have a service life of over 25 years, it would be reasonable to assume that there will be a sufficient amount of waste accumulated to generate leachate that will exceed one or more drinking water Maximum Contaminant Levels.

There are no significant barriers to the migration of this leachate into groundwater and it is highly likely to result in measurable increases in contaminants beneath the facility and for some distance down gradient.

Potential negative effects to the groundwater and down-gradient drinking water wells.

It is prudent to assume that the proposed monofill will be in place for perpetuity. Nearby residential areas are also assumed to be used in perpetuity, and also that they will be served by on-site wells for water supply. Thus, long-term (i.e. hundreds of years) considerations of the effects of the proposed monofill are important.

Some common contaminants are known to migrate thousands of feet downgradient from source areas. In this area, the sand and gravel aquifer has a generally low potential to attenuate contaminants. Without more detailed studies, detailed predictions of the maximum potential

distance that contaminants could flow are difficult to make. Considering all of the uncertainties, however, it would not be unreasonable to consider that all of the wells within a one-mile radius in a down-gradient direction are potentially at risk.

Groundwater is believed to flow towards the southwest and there are numerous wells in that general direction. An important aspect of the proposed monofill is its large size. At approximately 1000 feet wide in a direction perpendicular to the direction of groundwater flow, and considering the normal widening of plumes from their source, it should be expected that if any significant amount of contamination should emanate from this site, it will encompass numerous (i.e probably more than 20) wells within a one-mile radius in a down-gradient direction. Some of these wells are shown on Inset 2, Detail of Figure 2, of Munter (2010). The existing public databases on which these well data are based are generally known to be incomplete and there are likely some wells for which there are no known well records in public databases, and thus there are likely more wells present than are mapped.

As described in more detail below, most of the known wells tap the same aquifer as the aquifer that underlies the proposed monofill site. Thus, there is the potential to contaminate water wells from this facility.

An EPA study documented increases in several constituents downgradient of C & D landfills. Regulatory significance of these increases is based largely on whether specific water quality standards are exceeded, and whether the MCLs are primary or secondary standards. Secondary standards exist primarily for aesthetic, not health-based reasons. Even exceedence of aesthetic standards, however, is expected to adversely affect well owners who may object to any change in their water quality. Such changes can prompt the need for water treatment, additional testing for other health-based contaminants, and create uncertainty over the quality and health-security of their water and potential impacts on themselves, other household residents, and guests who may consume the water.

For some trace contaminants, even the MCL is the subject of evaluation and change, as exemplified by the reduction of the MCL for arsenic in drinking water from 50 micrograms/liter to 10 micrograms/liter since 2001. Thus, when considering long-term water quality concerns, even reliance on current water quality standards as determiners of safety is not necessarily protective.

Characterize the aquifer at risk – in layman's terms.

The aquifer at risk is comprised predominantly of sand and gravel with some silt. Tha aquifer extends from hilly regions northwest of Palmer to the Palmer Hay Flats to the south and practically all of the private and public wells in the vicinity use it for water supply. The sand and gravel generally extends from the land surface to bedrock, which occurs at varying depths up to approximately 200 ft in the area. The water table, which is essentially the top of the zone of saturation, occurs at a varying depth from essentially 0 ft at the edges of ponds and lakes up to approximately 100 ft, depending on the topography. This aquifer is also known as an unconfined aquifer. The direction of groundwater flow in the aquifer is generally towards the south and southwest.

All of the water wells, monitoring wells and surface water bodies in the close vicinity of the proposed monofill tap the same aquifer. The silt deposits above and within the aquifer are small and generally are not laterally continuous or thick enough to constitute significant protective layers on the scale of the analysis of the effects of the proposed monofill.

Review of a June 14, 2013 letter from Central Monofill Services and evaluation of section on "Protection of the Aquifer".

A key point made in the letter from CMS on aquifer protection is their assertion that there are two aquifers. This assertion appears to stem from non-public analysis and public testimony from Mr. Young of Terrasat on June 3. While the analysis is stated to follow many years of study of the area, the testimony is peculiar because Terrasat's own groundwater study report of August 2012, signed by Mr. Young, makes no mention of this condition.

Terrasat constructed a three dimensional groundwater flow model of the area of the proposed monofill. Terrasat describes the sediment to "consist mostly of sand and gravel with varying amounts of silt and silt lenses". There is no mention of any significant confining layer separating two aquifers.

Terrasat states that "Three hydrologic layers were used to represent the unconfined aquifer in the modeling area". There is no mention of a layered aquifer system with two aquifers separated by a confining layer. The use of three layers to model a single aquifer is a common modeling technique for modeling irregular aquifer boundaries in a single aquifer.

Terrasat also presented a detailed bedrock topographic map that was used to define the base of the single unconfined aquifer.

The model results presented by Terrasat demonstrate that the unconfined aquifer responds as a single hydrogeologic unit that responds to hydraulic stresses imposed upon it, such as the breach of the dike between two of the ponds and a six-ft rise in the water table. This aquifer extends at least from Canoe Lake to the ponds northeast of the monofill site and southward to the Glenn Highway and beyond and includes the proposed monofill site.

Interestingly, the on-site boring logs and all of the recent reports on the site by Terrasat, Brailey, and Munter as contained in the on-line packets are consistent in describing the presence of a single unconfined aquifer above bedrock with a thickness up to approximately 200 ft. The analysis upon which Mr. Young based his testimony is absent from the public record and unavailable for examination. Mr. Young's conclusions, therefore, about the presence of two aquifers are unsubstantiated and should not be relied upon.

While silty zones are present within the aquifer, nowhere have they been demonstrated to be of sufficient thickness or lateral continuity to constitute a confining layer that separates two aquifers. For the purposes of contaminant transport on the scale of the proposed facility and its surroundings, the aquifer should be considered as a single unit that will allow contaminants to migrate horizontally and vertically in response to normal groundwater flow system processes.

While increasing distance from a source provides some protection, wells in the area should not be considered "protected" on the basis of tapping into a different aquifer.

Regarding the assertion that CMS's hydrologist has determined that there are two aquifers at the site and testified accordingly, I found no credible evidence in the written record or in my own analysis of the hydrogeology of the area that this is a reasonable conclusion for the aquifer in the area.

The letter also refers to "our clay/silt liner" as a protective element of the project. This topic is covered in detail above, concluding that no effective liner should be assumed for this proposed development.

In summary, the letter's principal hydrogeologic conclusion that contamination of water in water wells will "never happen" should not be relied upon.

The letter also states that they have the ability to "discover and remediate any contamination" of the aquifer, should it occur. This will be difficult or practically impossible to accomplish. Remediating groundwater contamination is, in general, very difficult and expensive, and in many instances, simply impractical. For example, "pump and treat" systems have been found to be generally not cost-effective. Subsurface reaction barriers are very expensive and difficult to design, construct, and operate and work for only some contaminants. Monitored Natural Attenuation, in which contaminants are allowed to naturally disperse and degrade while being monitored works only if there are no nearby receptors such as wells, streams, or lakes. This may not be appropriate for this site.

Because remediation of groundwater is so difficult, the practical solution that public managers develop at many sites is the provision of public water from a safe source and the abandonment of private wells. This does not solve the problem of seepage of contaminated water to lakes and streams, however, or solve other long-term problems related to ownership and management of contaminated sites.

Remediation efforts commonly start with isolating or removing contamination sources. Removing all of the accumulated waste in the monofill might be impractical. However, constructing a permanent impermeable cap might help isolate the source from percolating water. This would effectively stop all operations at the facility.

Without further clarification from the applicant on how they would remediate the aquifer, and more importantly, how it would get paid for, groundwater remediation should not be regarded as a viable management strategy at this site.

The letter also states that a groundwater monitoring program will protect water wells. This conflicts with the applicant's submittal to ADEC that states "N/A" with regard to the presence of a groundwater monitoring program. In the absence of further information about the program, it is impossible to confirm that it is at all protective of the aquifer or nearby water wells.

In summary, the section of the report about "protection of the aquifer" does not appear to provide any substantive assurance that the aquifer is protected or that groundwater contamination can be detected or remediated should it occur.

Should you have any questions about this report, please call me at 345-0165 or 727-6310.

Sincerely,
J. A. Munter Consulting, Inc.

James A. Munter
Principal Hydrogeologist
Certified Ground Water Professional No. 119481
Alaska Licensed Professional Geologist No. 568

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Review of an Application for a Conditional Use Permit for a Proposed Monofill Near Palmer, Alaska, J. A. Munter Consulting, Inc., February 7, 2014

J. A. MUNTER CONSULTING, INC.

February 7, 2014

Matanuska - Susitna Borough
Development Services
FEB 07 2014
RECEIVED

Ms. Susan Lee
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Re: Review of an application for a Conditional Use Permit for a proposed monofill near Palmer, Alaska

Dear Ms. Lee:

This letter is to provide the findings of my recent review of the application by Central Recycling Services and supporting documents related to a proposed monofill consisting primarily of shredded construction and demolition (C & D) waste near Palmer, Alaska.

A key part of the application packet is a report by Maddox and Associates, Inc (M & A) entitled Evaluation of proposed Palmer monofill with respect to potential impact on groundwater" dated December 13, 2013.

Since the application relies heavily on the findings of this report, it is reviewed first, followed by comments on the main application.

I. Review of: Evaluation of Proposed Palmer Monofill with Respect to Potential Effect on Groundwater by Maddox and Associates, Inc., Murrieta CA, December 13, 2013.

Page 1-3 Executive Summary

The executive summary contains information that repeats information found elsewhere in the report, and is not separately reviewed here.

Page 3 Introduction
While Maddox and Associates, Inc. (M &A) reports "working in all regions of the United States and in Canada", there is no specific mention of having worked in Alaska. Subsequent portions of the report seem to indicate a lack of familiarity with Alaska conditions (see p. 6 of this review). The summary of work performed does not contain any mention of a site visit.

Section 2.2 Site Conceptual Model
The site conceptual model in this report does not comply with Alaska guidance and normal use in Alaska of site conceptual models (see, for example, http://dec.alaska.gov/spar/csp/guidance/FINAL%20CSM%20Guidance%20MASTER%20Nov%202010.pdf). In particular, site conceptual models should not be used to quantify or assess health or environmental risk, only to identify pathways and potential receptors and exposures.

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Page 4. Last paragraph
This paragraph provides a reasonable definition of inert waste as it seems to be commonly used in the solid waste disposal industry. The term, "inert", as used in this context, however should not be confused with the more common usage of the term as meaning "not chemically reactive" or, perhaps more importantly, soluble in water. For example, drywall is comprised mainly of the mineral gypsum, which is essentially calcium sulfate. When exposed to water, gypsum dissolves into the ions calcium and sulfate. This is the most likely source of elevated sulfate levels found in monofill leachate. The leachability tests conducted on waste for this project, for example, found sulfate levels of 520 to 673 mg/L, compared to the secondary drinking water standard of 250 mg/L.

Other materials disposed of at "inert" monofills will also eventually rot, decay, and leach constituents into groundwater. At least 27 states now require groundwater monitoring from such landfills, in increasing recognition of their potential to contaminate groundwater.

Studies have shown increased concentrations of some contaminants from C & D landfills. A study conducted for the U.S. EPA in 1995, for example, (ICF Incorporated, 1995) found groundwater contaminants that exceeded primary or secondary Maximum Contaminant Levels (MCLs) for drinking water at 11 C & D landfills. Potential contaminants from the proposed facility include sulfate, iron, manganese, total dissolved solids, arsenic and other metals, and organic compounds.

A more thorough and recent study of leachate from 30 Construction and Demolition Debris (C & DD) landfills in Ohio (Ohio, 2009) found the following conclusions:

> Ohio C&DD leachate contains a wide variety of inorganic parameters including heavy metals, light metals, trace elements, and other ions. It also contains a wide variety of organic parameters including pesticides, chlorinated solvents, non-chlorinated solvents, gasoline, substituted benzenes, phenolics, chlorofluorocarbons, polycyclic aromatic hydrocarbons (PAHs), phthalates, substituted alkanes, and alcohol.
>
> The leachate from all 30 C&DD landfills had from 3 to 29 parameters with concentrations that exceeded health based standards, surface water quality standards, or both. The median was 12.5 parameters exceeding the standards. The leachate from 29 of the 30 C&DD landfills had eight or more parameters that exceeded the standards.
>
> The wide variety of parameters detected in C&DD leachate, the wide variation in the number of parameters that exceeded health based standards and surface water quality standards in C&DD leachate and the magnitude of the exceedances are evidence that C&DD is not harmless or inert.

Many of the wastes proposed for the monofill, including wood, drywall, carpet, and probably even tire bales are not geologically stable in the Palmer area. Waste breakdown will inevitably result in dissolution and entrainment of waste constituents in leachate if water flows through the waste.

While the proposed monofill proposes to exclude "Hazardous Waste", it is not clear what this means, and in particular, that all waste that may be hazardous to water supplies will be excluded. For example, it appears that treated lumber containing compounds or elements known to be hazardous to human health appear to be allowable in the waste stream. The application does not address whether materials from buildings demolished as a result of building fires will be disposed at the facilities. Building fires are known to create compounds adverse to public health.

The term "Hazardous Waste" has numerous technical definitions that stem from the numerous laws and regulations that govern them. In this case, there will be a reliance on pre-demolition "Hazardous Building Material Surveys" and the proper exclusion of items described therein. The existence, thoroughness, and accuracy of these surveys is therefore important to the process, however it is difficult for the Borough to know or be assured that all materials that are potentially hazardous are appropriately excluded.

An important aspect of water contamination is that only a small amount of some compounds or elements are needed to contaminate a large volume of water. Arsenic, for example, has a drinking water primary MCL of 10 µg/L, or approximately 1 part in 100 million. The waste will be shredded, thus making for a relatively large surface area of waste in contact with percolating waters. It is not unreasonable to expect that even small percentages of leachable wastes in the 2 million cubic yards of waste will result in measurable quantities of contamination.

Considering that the proposed facility has a planned capacity of 2 million cubic yards of material and will have a service life of over 25 years, it would be reasonable to assume that there will be a sufficient amount of waste accumulated to generate leachate that will exceed one or more drinking water Maximum Contaminant Levels.

There are no significant barriers to the migration of this leachate into groundwater and it is highly likely to result in measurable increases in contaminants beneath the facility and for some distance downgradient.

Page 5 Paragraph 2

The seasonal high groundwater level has not been determined at this site. Review of the groundwater data and design drawings do not establish where the base of the waste will be in absolute elevation terms. The report fails to show that the bottom of the waste will stay dry during high water events.

Page 5 Paragraph 3

The description of secondary MCLs is somewhat simplified and misleading, at least with regard to sulfate. Sulfate was detected in three leachate samples from CRS at levels ranging from 520 to 673 mg/L. The secondary MCL for sulfate is 250 mg/L, based largely on the fact that elevated sulfate levels have a laxative effect. At levels up to about 600 mg/L, humans generally can adjust to this effect (Rowden, 2008). At levels above 600 mg/L, because of the laxative effect and effects on taste, it is an over-simplification and misleading to characterize such effects as "cosmetic" or "aesthetic". Background levels of sulfate in groundwater in the Palmer area are generally less than 50 mg/L, so local residents would not be expected to be adapted to high sulfate levels. So, if local wells were contaminated at levels between 250 and 600 mg/L,

homeowners could be in the awkward position of advising guests to not drink the water in order to avoid laxative effects, even if the residents themselves had adjusted to the effect. Home treatment systems to reduce sulfate levels would probably require a membrane filter technology such as reverse osmosis, which can be expensive to install, maintain and operate.

Page 5 Paragraph 5
The opinion that "it is not likely that a significant volume of liquids will pass through the monofill bottom into the water table" is not considered reliable as discussed subsequently in this review.

Page 5 Paragraph 6
Modeling analysis and results are reviewed in a subsequent section of this review. There is no evidence that the modeling results have been or will be used to "determine the proper location of guard wells". The monitoring plan included in the packet was written in the spring of 2013, well before the modeling studies were performed. Also, the well locations shown in the plan would not intersect the leachate plumes modeled. See further comments later in this review about monitoring.

Page 6 Paragraph 1
The following paragraph is not adequately supported by the analysis presented:

> The SCM indicates that the construction and operation of the proposed monofill is not likely to have a detrimental impact on the groundwater beneath or down-gradient of the site.

Furthermore, the normal Site Conceptual Model purpose of identifying potential pathways and receptors appears to have been subverted by premature dismissal of a likely pathway – that of contaminant migration to groundwater. The CSM also does not address potential impacts to surface water downgradient of the proposed monofill.

Page 7 Paragraph 2
The ADEC permit is not attached. The ADEC information attached identifies substances that may be prohibited from being disposed in the monofill, but there does not appear to be a list of materials that are allowed.

Page 7 Paragraph 4
This paragraph states that water levels have been measured over four seasons and that the seasonal high groundwater table has been determined. If this information has been collected, it has not been provided. The water-table map was constructed based on water levels measured on July 1, 2013, which is known to not be when peak water levels generally occur in this part of Alaska. Peak water levels typically occur during spring, after snowmelt, or in late fall.

Page 7 Paragraph 9
The following statement is, at a minimum, unclear and is also misleading.

> Where present, such grades will greatly facilitate the flow of precipitation from the monofill surface, thus significantly reducing the amount of infiltration into the refuse.

The grades referred to, of 50% and 33%, are clearly designed only for the sideslopes of the final fill structure which are only approximately one quarter or so of the surface area of fill. Approximately three quarters of the fill area is designed with a relatively flat final cap (with a finished grade of 2% to 3%), which will be very conducive to groundwater recharge and downward percolation through the waste. The nearly flat top surface of the monofill is illustrated graphically in figure 3-2 of the M &A report. It is misleading to suggest that the small area of steep slopes around the perimeter will "greatly facilitate" runoff from the "monofill surface", without noting the larger area of almost flat surface.

Page 10 Paragraph 1
This section does not address changes in water levels caused by gravel mining. Historical information and analyses (Munter (2010) and the water table map all illustrate that the creation of dredge ponds or dewatering activities can have a significant influence on water levels in the unconfined aquifer. In addition to natural seasonal fluctuations, the possibility of water level changes caused by future gravel mining or dewatering should be addressed.

Page 13 Paragraph 5
The direct comparison of pond water to City of Palmer drinking water is not appropriate because public water systems such as at Palmer are required to complete a broader panel of water quality tests prior to use of the system. There are no data to show that the pond water would meet those additional tests. The comparison to Alaska Drinking Water Standards is appropriate only for the parameters tested, not a blanket statement that the pond water "does not exceed Alaska Drinking Water Standards."

Page 14 Paragraph 2
It is not likely that the three samples of shredded material are representative of the entire volume of fill to eventually fill the 35.5 acre site. There is no information on the sampling technique (random, composite, etc.) or the sample size, compared to the individual particle size of the waste. Considering the diversity of materials allowed in the fill that are not reported to be part of the samples (carpet, treated lumber, semi-burned materials, etc.) or that may escape detection and end up in the fill, it is unlikely that the three samples accurately reflect the average composition of the fill. This limits the interpretive value of the data.

Page 14 Paragraph 3
The analytes do not encompass all of the water quality parameters that have been known to exceed water quality standards. Total Dissolved Solids is one example of a missing analyte.

The usefulness of the SPLP leaching test results is limited by the unusually high Limits of Quantitation (LOQs) reported by the lab (see appendix of report). Iron, for example, has a reported LOQ of 50 mg/L, compared to the water quality criteria of 0.3 mg/L. This means that if

iron levels were less than 50 mg/L, they were reported as not detected. So, while the sample results technically did not exceed the LOQs, the results cannot be interpreted as confirming that the samples did not exceed water qualitystandards other than those provided in Table 7.1. A similar situation exists for arsenic, which has an LOQ of 0.250 mg/L, compared to a drinking water standard of 0.010 mg/L. The cause for the high LOQs appears to be unusually high dilution factors used in the laboratory analyses. In summary, the SPLP tests did not produce results that demonstrate that the leachate generally meets primary water quality standards.

Page 15 Paragraph 1
Manganese and sulfate are noted to exceed secondary Drinking Water Standards in the leachate tests, which are described as non-enforceable guidelines, only affecting cosmetic or aesthetic characteristics of water. As previously described, the effects of sulfate may go well beyond cosmetic or aesthetic effects, and the history and reasons of why it is not regulated differently go beyond the scope of this review.

Sulfate is described as being not a "problematic constituent" by USEPA. This may be irrelevant to the Matanuska Susitna Borough because the drinking water standards used by EPA are applicable to public drinking water supplies. Private domestic wells in Alaska are left to local governments to regulate or not. In Anchorage, for example, while all public water supplies are required to meet a standard for nitrates of 10 mg/L, the Municipality of Anchorage will issue a Certificate of On-Site Adequacy (i.e. the well is "approved") for wells with water containing concentrations of nitrates over the 10 mg/L limit applicable to public water systems.

In this situation, if the MSB decides, after an appropriate decision-making process, that sulfate levels are important to local well owners, then it would not seem to make any difference what the USEPA thinks is suitable for public water systems.

Section 7.1.1, Pages 15-17
The ICF Incorporated study reportedly identifies 24 parameters from C & D leachate samples from numerous facilities that exceeded water quality parameters at least one time. The Ohio study notes that C & D leachate is not expected to meet water quality standards for discharge to groundwater. The Wyoming memorandum mainly seems to be saying that C & D leachate is not as bad as that from regular landfills. Take-away messages from these three studies seem to be that C & D leachate should be considered a pollutant, this pollutant should be expected from C & D landfills that generate leachate, and that good management practices can be helpful in reducing the impact of the leachate.

It seems that there could be some parallels between the regulation of C & D landfills and septic systems. Even properly designed and operating septic systems, for example, are known to release effluent that exceeds drinking water standards for one or more constituents. One of the principal successful tools for managing septic systems is through mandatory separation distances to drinking water wells. Septic systems continue to be popular because: 1) they are inexpensive compared to other options; 2) they are effective in treating household waste for long periods of time: and 3) they have been shown generally not to result in groundwater contamination most of the time.

The M & A report essentially makes the case that the leachate from the proposed monofill, while modestly exceeding water quality standards, would be sufficiently diluted prior to reaching offsite water wells or surface water receptors such that it would not be a problem. This brings up the concept of a separation distance to surrounding wells or receptors. The current ADEC permit for Alaska Demolitions C & D landfill, for example requires a 500-foot separation distance to surrounding wells. (ADEC Solid Waste Disposal Permit SWZA004-14).

Section 7.2, Pages 17-20
This section contains numerous deficiencies, as detailed below.

Page 17 Paragraph 6
This paragraph erroneously states that the 15.49 inches of annual precipitation at Palmer occurs as rain. There seems to be an unawareness of local climate conditions. Nowhere in the report have I found the words "snow", "snowpack", or "snowmelt". Furthermore, there is no evidence to support the supposition that there is more surface runoff than infiltration. In contrast, Kikuchi (2013, Appendix C) used a deep percolation model to estimate that recharge is approximately three times the amount of surface runoff in this area.

M & A references a course from the Lund Institute of Technology in Sweden to conclude that "a fully-saturated soil becomes almost an impermeable layer". This may be true in the context of a high-intensity rainfall on a low-permeability soil, however it has practically no relevance to the proposed monofill. The final cap materials for this monofill will be local materials, primarily sand and gravel, overlain by a porous organic soil that will support a vegetative cover. Such well-drained soils should not be characterized as "almost impermeable", even if saturated. Also, most precipitation and snowmelt in the Palmer area does not occur as high intensity rainfall. It is more common to have long-duration, low-intensity rain that contribute significant amounts of water to groundwater recharge. Kikuchi (2013) reports that the "core area" of the Matanuska-Susitna Borough receives approximately 5 inches of annual groundwater recharge, demonstrating the prevalence and importance of groundwater recharge processes in the local area.

M &A suggests that compacting the fill will greatly reduce its capacity for infiltration. Consider the situation when the monofill is completely filled and closed. With a 2 percent slope on the top surface, water will infiltrate into the cover. The issue here is whether the compacted fill materials are permeable enough to transmit water vertically downward through the filled cells. There are no data provided on the permeability of the fill. Suppose 5 inches of rain infiltrates the surface and percolates down to the top layer of fill. Darcy's Law shows that the hydraulic conductivity for the fill needed to transmit 5 inches/yr of water downward at a uniform rate is only 0.001 ft/day. This value is typical of silt (Freeze and Cherry, 1979). Reviewing the results of geotechnical testing performed on the compacted fill (Attachment H of the Application packet), it is highly unlikely that the compacted fill would exhibit a hydraulic conductivity as low as 0.001 ft/day. Thus, it would be prudent to assume that the compacted fill has a sufficiently high hydraulic conductivity to pass all the water that infiltrates into the landfill cover and to allow it to percolate downward through the waste at the site.

M & A also suggests that the steep slopes at the site will promote runoff rather than infiltration. M & A fails to note however, that the vast majority of the completed fill structure will have an almost flat (2-3%) slope, which will be very conducive to promoting groundwater recharge. To illustrate this, for example, the application packet suggests that the completed structure may be suitable for agriculture, park lands, or sports fields.

M & A compares the climate of Palmer to that of Los Angeles, California, and describes both as semiarid and "without significant annual precipitation". This assessment is incorrect. Climate classification schemes also use potential evapotranspiration and temperature regimes to classify climates. Palmer has much lower average annual temperatures and much lower potential evapotranspiration rate than Los Angeles. Kikuchi (2013) classifies the climate at Palmer as transitional between maritime and continental. There is significant annual precipitation in the Palmer area. It is sufficient to support mature deciduous and coniferous forest, hundreds if not thousands of household water-supply wells, numerous municipal and irrigation wells, non-irrigated agriculture, perennial flows in numerous streams and rivers, and many stable lakes. All these water uses are supported by annual precipitation without causing any significant net long-term change in groundwater storage (as noted by M & A).

M &A describes a cyclic infiltration process characterized by short periods of intense rain followed by evapotranspiration and drying out of surficial materials. This model may apply some places, but is not suitable for the proposed monofill.

According to a weather summary for Palmer, rain is usually not intense (http://weatherspark.com/averages/32899/Palmer-Alaska-United-States):

> "Over the entire year, the most common forms of precipitation are light rain and light snow.
>
> *Light rain* is the most severe precipitation observed during 46% of those days with precipitation. It is most likely around August 9, when it is observed during 37% of all days."

Furthermore, recharge processes in the spring and fall occur at times when evapotranspiration is low to very low and the soils and fill at the site are expected to be sufficiently well-drained that they can readily absorb relatively large quantities snowmelt and precipitation. There is no presentation of data to support M & A's infiltration scenario and it should not be relied upon.

M & A summarizes this section with the following major conclusion:

> "…it is likely that none of the precipitation will make its way through the considerable thickness of the proposed monofill. It follows, then, that it is unlikely that any of the monofill constituents will leach into the water table."

This conclusion is not supported by data or sound analysis and I do not concur for the reasons cited above. The thickness of the monofill is largely irrelevant. If water enters the top of the structure, it will percolate down and eventually exit. Water that goes in must come out.

Kikuchi (2013, Appendix C) tabulates modeled values of groundwater recharge in the vicinity of the proposed monofill. While most of the core area of the Borough has around 5 inches of annual recharge, the area around the proposed monofill (the lower Matanuska river area) is shown as receiving an average of 1.4 inches per year. A detailed review of this calculation (Kikuchi, 2014, written communication) shows that the mean annual precipitation at MAES (the Palmer Agriculture Station) during 2002-2010 (the period selected for recharge modeling) was 14.8 inches. However, the mean annual precipitation at Palmer Airport during 2002-2010 was 10.2 inches. The DPM model calculates daily precipitation at the centroid of each Hydrologic Response Unit (MRU) using an inverse distance squared weighting. The relatively low annual precipitation (11.09 in/yr) for Outlet Matanuska River HRU (190204020709) is due to the relatively low annual precipitation at Palmer Airport.

Further analyses has shown that the long-term average precipitation at the Palmer Airport is 11.89 in/yr (http://average-rainfall.weatherdb.com/l/19817/Palmer-Alaska) rather than the 10.2 in/yr modeled by Kikuchi (2013). This means that the likely recharge near the proposed monofill is likely higher than the 1.4 inches/yr modeled.

Considering annual variations and long term averages, therefore, annual groundwater recharge at the location of the proposed monofill is likely to be in the range of 1-5 inches per year. For a 30-acre surface area at the top of the fill structure, this translates to approximately 800,000 – 4 million gallons per year. This is also the amount of water that is expected to flow through the fill material and enter the water table beneath the site as leachate.

Section 7.3, Pages 20-21

This analysis probably overestimates the amount of groundwater passing beneath the site. The value of transmissivity of 100,000 ft^2/d is applicable to areas where the thickness of the aquifer is about 200 ft, which is generally somewhat north and east of the proposed monofill site. The aquifer appears to be somewhat thinner at the proposed site, only about 120 ft. The Darcy's law calculation should have assumed a relatively constant value of hydraulic conductivity similar to that estimated for other areas, of 500 ft/day. This would reflect an assumption that the aquifer materials do not change significantly across the area, only the aquifer thickness varies. Using the lower value of hydraulic conductivity of 500 ft/day, the estimated groundwater flow quantity beneath the site would be approximately 4.0 million gallons per day.

Section 8.0 Groundwater Modeling, Pages 21-25, including figures

The model presents several relatively straightforward hypothetical scenarios of contaminant fate and transport. The results are consistent with what is generally known about this site and with contaminant behavior in these types of flow systems. While the results show that concentrations of all the hypothetical contaminants would be greatly reduced, all of them are shown to persist at values greater than the respective Maximum Contaminant Levels (MCLs) for each constituent (Benzene = 5 µg/L, PCE = 5 µg/L and 1,2-DCE = 70 µg/L). Thus, the modeling shows that domestic drinking water wells could be contaminated even at distances of about a mile from the proposed monofill.

The modeling is also based on a slug input of hypothetical contaminants, which might apply to a spill or leak of a finite amount of contaminant. If there is a persistent source of contaminant such

as sometimes emanates from landfills, the plumes would not detach from the source area and long continuous plumes would tend to form from the source to the leading edge of the plume.

Another limitation of the model is that the flow field is extrapolated from hydrogeologic data collected only from the proposed site of the monofill and does not incorporate any data from downgradient areas. As hydrogeologic conditions commonly change over the distances of a mile or more, the actual conditions and fate and transport results in a downgradient direction may be different than those modeled.

The modeling conclusion that the contaminants "will essentially cease to be present in detectable concentration after only a short transport distance beyond the monofill boundaries" is incorrect and unreliable. The laboratory analyses for the three compounds measured had unusually high detection limits as a result of high dilution factors of up to 200 used in the analyses. Groundwater samples from monitoring wells do not usually have such large dilution factors, and detection limits are much lower. Benzene, for example, had an LOQ (essentially a detection limit) of 80 micrograms/liter for Residual A, however the LOQ for the sample blank used for quality assurance purposes had an LOQ of only 0.400 micrograms/liter. Recall that the MCL for benzene is 5 micrograms/liter. Thus, since groundwater monitoring samples routinely have detection limits much lower than those used in the leachate tests, the modeling fails to demonstrate that contaminant concentrations will be below detection limits or any applicable water quality standards.

Finally, such a modeling exercise may be useful for planning permit conditions for the proposed monofill. As previously noted, separation distances between the monofill and surrounding drinking watr wells may be appropriate conditions for approval of the facility. Unfortunately, there is no information provided as to the locations of surrounding wells, so planning appropriate separation distances is challenging.

The reliability of the model would be improved by obtaining and incorporating data from the groundwater flow field downgradient of the facility.

Guard Wells, Page 26
It is not clear what guard wells are contemplated. The groundwater monitoring plan was prepared prior to the modeling study and recommends only three monitoring wells, two on the west side of the fill and one upgradient. None of the proposed plan wells are located in places that would have detected any of the plumes shown in the groundwater modeling effort. The wells installed in 2013 appear to be located in areas that will be filled, so the long term use of those wells appears doubtful. Thus, it appears that the existing and/or proposed monitoring wells will be ineffective at detecting contaminants leaving the proposed monofill.

Section 9.0 Conclusions Page 26-28
There are 17 bulleted conclusions, followed by a brief concluding paragraph. For convenience, the bullets are numbered according to sequence.

Bullet 1. The site conceptual model does not provide sufficient data and analysis to adequately support this conclusion.

Bullet 2. Substantially agree, except that man-caused changes in water levels related to potential future gravel operations should be considered.

Bullet 3. Disagree. Groundwater occurs at depths of less than 10 ft beneath the current land surface, however design of the facility requires regrading to occur to create a 10-ft buffer prior to depositing waste. Recommend further analysis of seasonal high water table elevations and inspection prior to depositing waste to confirm bottom elevation of the site relative to an updated high-water table map.

Bullet 4. Disagree. Most likely closer to 4,000,000 gallons/day.

Bullet 5. Agree.

Bullet 6. Agree.

Bullet 7. Detection limits (LOQs) were far in excess of Maximum Contaminant Levels, meaning that non-detects cannot be used to rule out the presence of contaminants above MCLs. It is highly questionable that only three samples are representative of the future waste pile.

Bullet 8. It is not clear what the criteria of "properly evaluated' and "properly managed" mean. In the absence of greater clarification, it is not proper to conclude that the site meets these criteria. In particular, there is no information presented about private wells or surface water bodies in actual or potential downgradient directions and no comprehensive groundwater monitoring plan to assure protection of those wells. Lacking these details, "properly managed" could mean almost anything, including prohibition of the use of water wells for up to a mile in a downgradient direction in the absence of a more robust monitoring program and an action-plan to deal with exceedances.

Bullets 9, 10, 11, 12, 13, 14, and 15. Precipitation at the site is probably in the range of 12-15 inches/yr and infiltration is likely lower in the winter than in the summer. The remainder of these bullet points, however, are generally not supported with data and contain inaccuracies. It should be expected that 800,000 to 4 million gallons per year of water from precipitation and snowmelt will infiltrate and percolate through the waste and this fluid will become leachate that will recharge the water table both during operations and during the post-closure period far into the future. The leachate should be expected to exceed multiple water quality standards applicable to drinking water wells.

Bullets 16 and 17. These conclusions fail to note that all three contaminants could travel approximately a mile downgradient and still exceed drinking water standards, even after experiencing the modeled reductions in concentration.

Concluding Paragraph. The conclusion that the proposed facility "will not pose a threat to the underlying aquifer" is not sufficiently supported by data or analysis and should not be relied upon.

II. COMMENTS ON APPLICATION AND OTHER ATTACHMENTS

The cover letter suggests that this packet addresses the concerns expressed regarding the previous application. As detailed above, the hydrogeologic studies, monitoring plans, and inventory of surrounding wells are inadequate. The letter also states that they have obtained ADEC approval of the design. This contrasts with my understanding that a permit for this facility has not yet been granted by ADEC.

In response to the question: Will the granting of the conditional use permit be harmful to the public health, safety, convenience and welfare? (Page 1 of 3 of the MSB CUP application), the applicant answered "yes". It is not clear that this was the intent of the applicant.

The map showing adjoining property types on page 11 does not extend far enough to the south and west to show the existing land uses within the one-mile downgradient groundwater flow field described by the groundwater modeling. Other work (Munter (2010)) indicates that there are residential wells and property in this area.

The application (p. 16) relies on the report by Maddox and Associates to conclude that the "proposed monofill will not present a threat to groundwater…". As detailed above, this opinion is not sufficiently supported to be reliable.

The application (p. 16) also proposes a groundwater monitoring plan to "monitor the groundwater for any concerns long term". The monitoring plan presented does not achieve that objective. Following are samples of some concerns that are not adequately addressed:

1. What is the plan for long-term monitoring well locations, considering that some of the existing wells are in locations that apparently will be buried by fill material?

2. There are an insufficient number of wells to monitor a potential groundwater plume, considering its potential breadth (over 1000 ft wide) and complexity.

3. How will groundwater be monitored in the aquifer up to one mile downgradient of the facility that is vulnerable to contamination?

4. How will the identification of contaminated groundwater affect operations or management of the site? Who will pay for removal of the disposed material, installation of an impermeable cap, or other actions that may be needed to clean up groundwater? Who will pay for treatment systems or alternate water supplies for private well owners who may have their wells contaminated from the facility?

5. At what level, if any, will exceedance of secondary water quality standards be regarded as unacceptable? For example, an ADEC fact sheet indicates that the relevant standard for sulfate in groundwater may be natural background concentrations. (Water Quality Standards for Assessment Monitoring of Groundwater accessed at: http://dec.alaska.gov/eh/docs/sw/Monitoring/Water_Quality_Standards_Groundawter.pdf)

The leachate tests performed on sample waste material almost assure that groundwater contamination will result, if this is the applicable standard.

6. What agency will review and potentially act on groundwater monitoring results?

Comparisons to findings at other landfills in Alaska (p. 15-16) that report minimal or no environmental or public health problems are of limited value to this project. This is because of potentially large differences in geological conditions and down-gradient receptors. For example, there may be no water wells in use downgradient of the other landfills reported. The other landfills may not be situated on top of an extensive, thick, and permeable water-table aquifer.

The monitoring wells (p. 28) were installed between April 22-24, 2013. Reporting that they have been "measured over the last year" is somewhat inaccurate. The only water-table map in the packet is based on water-level measurements made on July 1, 2013, and these measurements should not have been used to determine the seasonal high water table and the base elevation of the fill. Approximately monthly measurements for a period of a full year should be used to define the peak water table, and that should be used to define the 10 feet of separation required to the base of the fill.

Below are the general standards that appear to be applicable to this site from the MSB website:

17.60.100 GENERAL STANDARDS.

(A) A conditional use may be approved only if it meets with the requirements of this section in addition to any other standards required by this chapter.

(B) In granting a conditional use permit, the planning commission must make the following findings:

(1) the conditional use will preserve or not detract from the value, character, and integrity of the surrounding area;

(2) that granting the conditional use permit will not be harmful to the public health, safety, convenience, and welfare;

(3) that sufficient setback, lot area, buffers, or other safeguards are being provided to meet the conditions listed in subsections (B)(1) through (3) of this section; and

(4) the conditional use fulfills all other requirements of this chapter pertaining to the conditional use in this section.

The Maddox and Associates report fails to present sufficient data and sound analysis to support their conclusion that the proposed use of the site does not present a threat to groundwater. Insufficient data and analysis have been provided to accurately evaluate the effects of the proposed monofill.

Should you have any questions about this review, please call me at 345-0165 or 727-6310.

Sincerely,
J. A. Munter Consulting, Inc.

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Alaska Licensed Professional Geologist No. 568

References Cited

Freeze, R. Allan and John A. Cherry, 1979, Groundwater, Prentice-Hall, Inc., Englewood Cliffs, New Jersey.

ICF Incorporated, 1995, Damage Cases: Construction and Demolations Waste Landfills, report for U. S. Environmental Protection Agency, Office of Solid Waste. (draft) found at: http://www.epa.gov/osw/hazard/generation/sqg/damages/dam-pdf/damage.pdf

J. A. Munter Consulting, Inc. 2010, Potential hydrologic effects of gravel extraction south of Palmer, Alaska, report to Matanuska-Susitna Borough, Palmer, Alaska, April 2010.

Kikuchi, Colin P., 2013, Shallow Groundwater in the Matanuska-Susitna Valley, Alaska—Conceptualization and Simulation of Flow, U. S. Geological Survey, Scientific Investigations report 2013-5049.

Ohio, 2009, An Evaluation of Leachate from Ohio's Construction and Demolition Debris Landfills. Ohio Environmental Protection Agency Division of Solid and Infectious Waste Management Draft: June 12, 2009. Found at: http://www.epa.ohio.gov/Portals/34/document/newspdfs/n_cdd_leachate_evaluation.pdf

GLENN HIGHWAY RECONSTRUCTION PROJECT DRAWINGS

Glenn Highway MP 34-42

DOT&PF Project No. 58104/Federal Project NH-0A1-5(24)

The Glenn Highway reconstruction project, Parks Highway to Old Glenn Highway, will reconstruct the Glenn Highway from milepost 34 to 42 to accommodate increasing traffic. It will add lanes, widen shoulders, accommodate turning movements at designated turn pockets, and add other traffic and safety improvements.

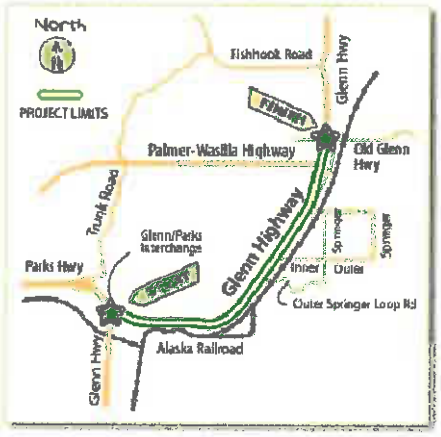
The re-evaluation of the 1993 *Glenn Highway, Parks (MP 35) to MP 109 Environmental Assessment* was completed in August 2011 for this phase of the Glenn Highway. FHWA determined there were no significant changes to the impacts identified in the *1993 Environmental Assessment*. The design phase of the project is underway and drawings are being developed to refine impacts to affected environments, properties and utilities.

The project team is available to work with adjacent property owners on design refinements.

Visit Palmer-Wasilla Highway Eastern Terminus Project

Check back on this web site for updates during project development.

LOCATION MAP



Glenn Highway MP 34-42 Reconstruction

Project Information

- Glenn Highway Home
- Schedule
- Documents
- Public Involvement
- Send Us Comments
- Contacts

www.brooks-alaska.com/glennhighway

Regional Links

- Central Region
- Central Region Projects
- DOT&PF Project Info

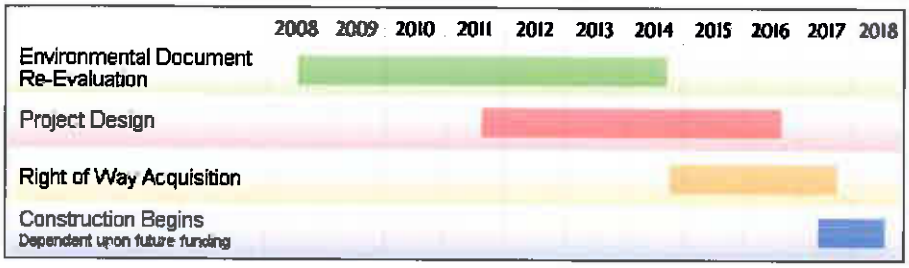
Department of Transportation & Public Facilities
PO Box 112500
3132 Channel Drive
Juneau, Alaska 99811-2500
Phone: 907-465-3900 || 907-586-8365 (FAX)

State of Alaska | © 2011 | Webmaster

Project Schedule

Construction hinges on the results of a re-evaluation of the section from milepost 34 to 42 of the *Glenn Highway Parks MP 35 to MP 109 Environmental Assessment.*

Below is a tentative schedule of key project events.



PROJECT SCHEDULE TEXT ONLY:
Environmental Document Re-Evaluation — July 2008 to November 2014
Project Design — October 2011 to November 2016
Right of Way Acquisition — November 2014 to November 2017
Construction Begins — 2017-2018 (dependent upon completion of acquisition and availability of construction funding)

Glenn Highway MP 34-42 Reconstruction

Project Information
- Glenn Highway Home
- Schedule
- Documents
- Public Involvement
- Send Us Comments
- Contacts

www.brooks-alaska.com/glennhighway

Regional Links
- Central Region
- Central Region Projects
- DOT&PF Project Info

Department of Transportation & Public Facilities
PO Box 112500
3132 Channel Drive
Juneau, Alaska 99811-2500
Phone: 907-465-3900 || 907-586-8365 (FAX)

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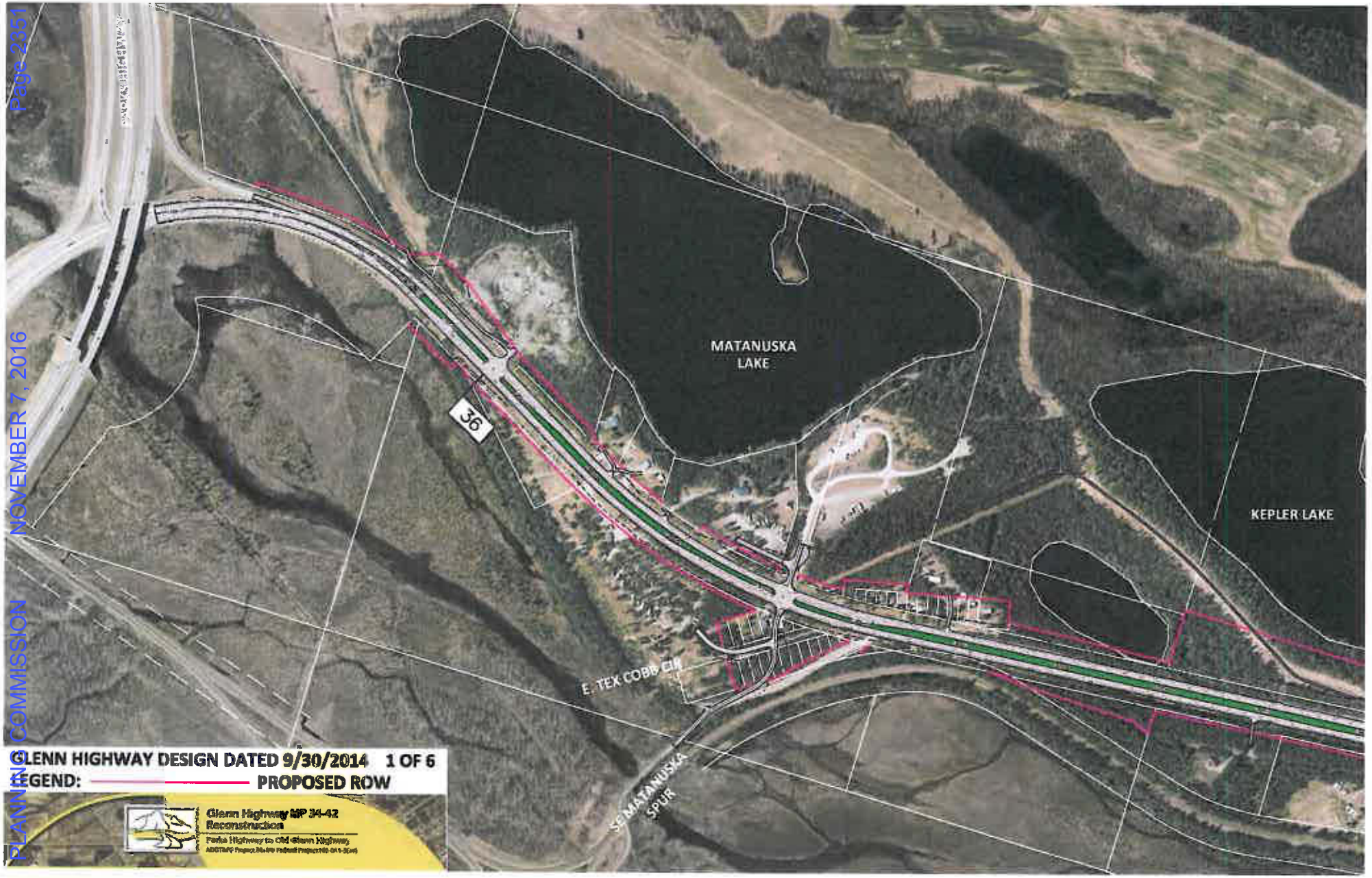
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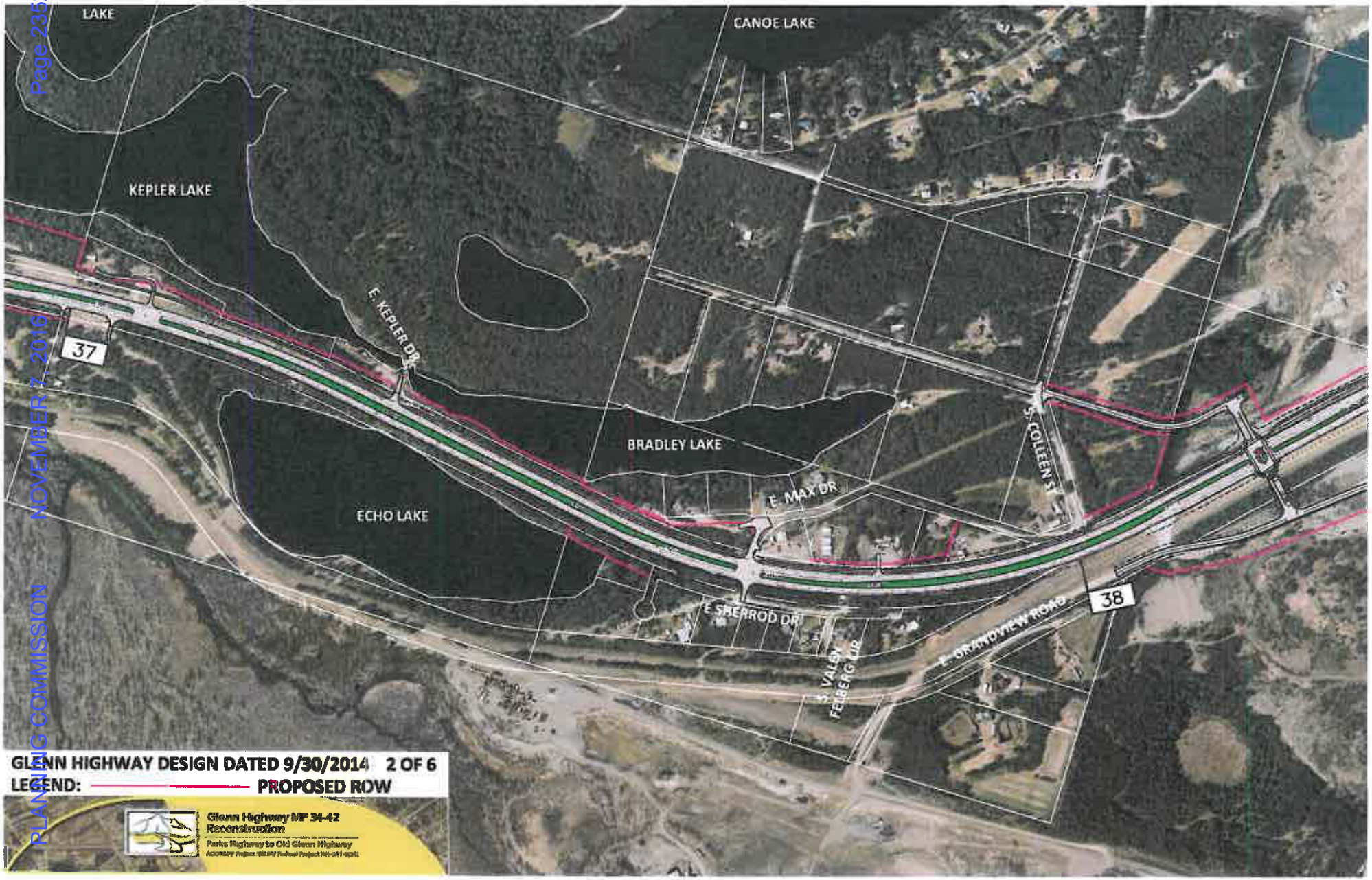
GLENN HIGHWAY DESIGN DATED 9/30/2014 1 OF 6
LEGEND:
PROPOSED ROW
Glenn Highway MP 34-42
Reconstruction
Parks Highway to Old Glenn Highway



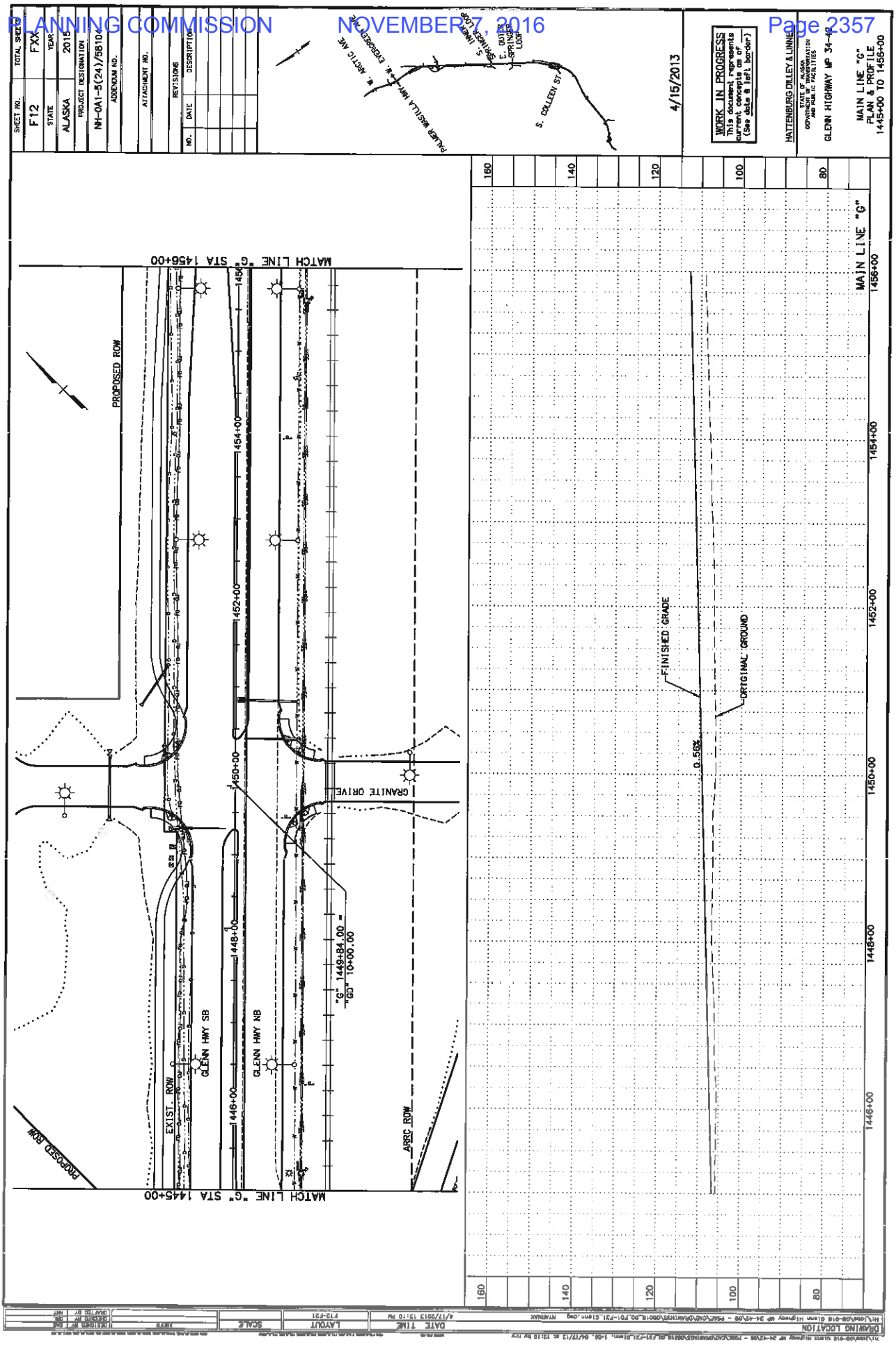
PLANNING COMMISSION NOVEMBER 7, 2016

GLENN HIGHWAY DESIGN DATED 9/30/2014 3 OF 6
LEGEND:
PROPOSED ROW
Glenn Highway MP 34-42
Reconstruction
39
QUARTZ SPRINGER LOOP
CRIMSON VIEW AVE

GLENN HIGHWAY DESIGN DATED 9/30/2014 4 OF 6
LEGEND:
PROPOSED ROW
Glenn Highway MP 34-42
Reconstruction
Parks Highway to Old Glenn Highway
S. INNER SPRINGER LOOP
S. BROOKS ST
40

GLENN HIGHWAY DESIGN DATED 12/24/2013 5 OF 6
LEGEND: PROPOSED ROW
Glenn Highway MP 34-42
Reconstruction
COMMERCIAL DR
GLOO WAY
41

GLENN HIGHWAY DESIGN DATED 9/30/2014 6 OF 6
LEGEND:
PROPOSED ROW
Glenn Highway MP 34-42
Reconstruction
42
SCOUT RD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STATE ALASKA
YEAR 2015
PROJECT DESIGNATION NH-0A1-5(24)/58104
ADDENDUM NO.
ATTACHMENT NO.
REVISIONS
NO. DATE DESCRIPTION
W ARCTIC AVE
EVERGREEN DR
PALMER WASILLA HWY
S. INNER SPRINGER LOOP
E. OUTER SPRINGER LOOP
S. COLLEEN ST
4/15/2013
WORK IN PROGRESS
This document represents current concepts only
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HATTENBURG DILLEY & LINNELL
STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
GLENN HIGHWAY MP 34-42
MAIN LINE "G"
PLAN & PROFILE
1445+00 TO 1456+00
MATCH LINE "G" STA 1456+00
PROPOSED ROW
GRANITE DRIVE
GLENN HWY SB
GLENN HWY NB
EXIST. ROW
ARRC ROW
"G" 1449+84.00 = "GD" 10+00.00
MATCH LINE "G" STA 1445+00
MAIN LINE "G"
FINISHED GRADE
ORIGINAL GROUND
0.56%
1445+00
1446+00
1448+00
1450+00
1452+00
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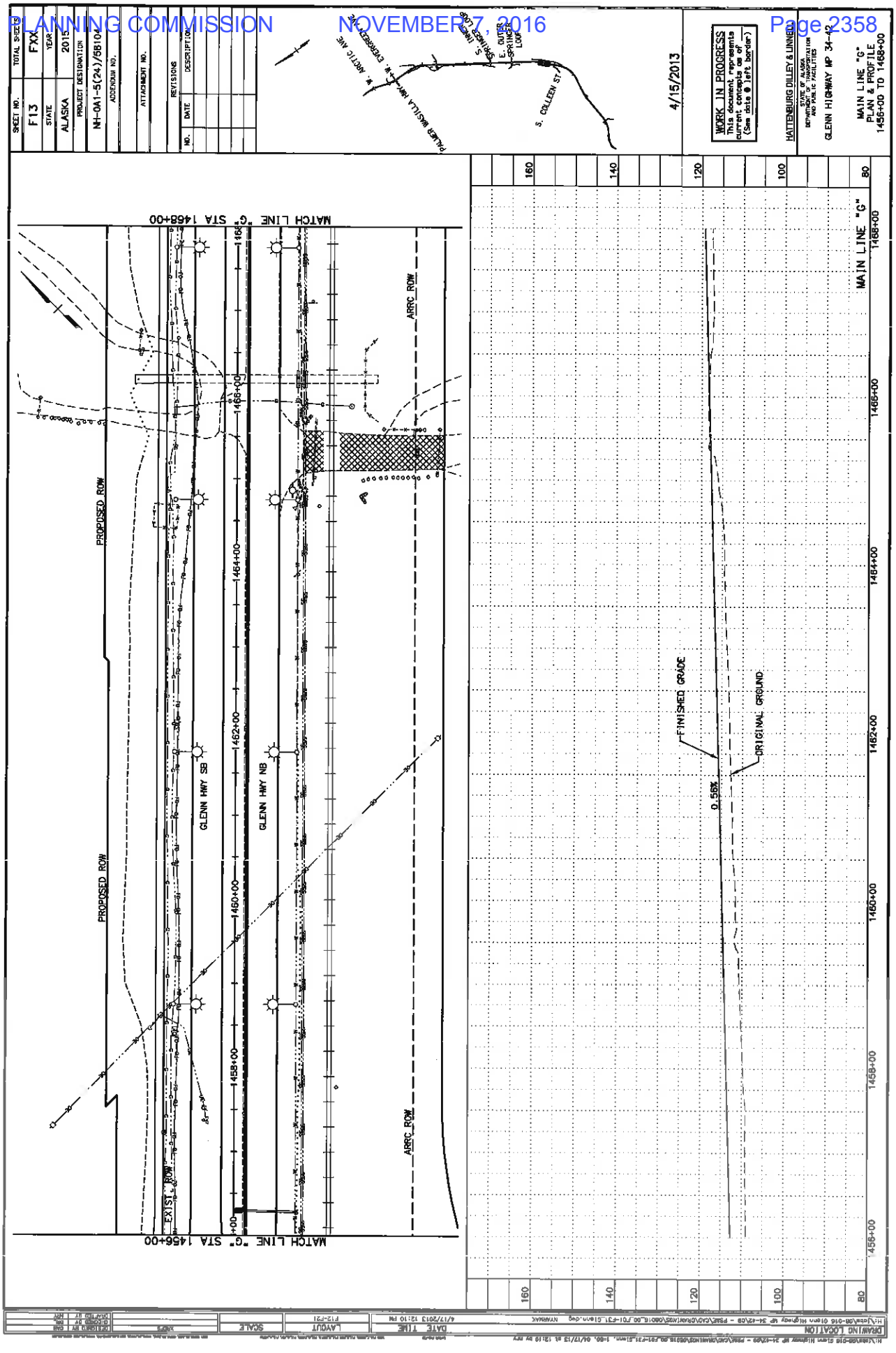
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YEAR 2015
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ADDENDUM NO.
ATTACHMENT NO.
REVISIONS
NO. DATE DESCRIPTION
PALMER WASILLA HWY
W. ARCTIC AVE
W. EVERGREEN AVE
S. SPRINGER LOOP
E. OUTER SPRINGER LOOP
S. COLLEEN ST
4/15/2013
WORK IN PROGRESS
This document represents current concepts as of (Same date @ left border)
HATTENBURG DILLEY & LINNELL
STATE OF ALASKA DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
GLENN HIGHWAY MP 34-42
MAIN LINE "G"
PLAN & PROFILE
1456+00 TO 1468+00
MATCH LINE "G" STA 1468+00
MATCH LINE "G" STA 1456+00
PROPOSED ROW
EXIST. ROW
ARRC ROW
GLENN HWY SB
GLENN HWY NB
1456+00
1458+00
1460+00
1462+00
1464+00
1466+00
1468+00
MAIN LINE "G"
FINISHED GRADE
ORIGINAL GROUND
0.56%
80
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DATE TIME
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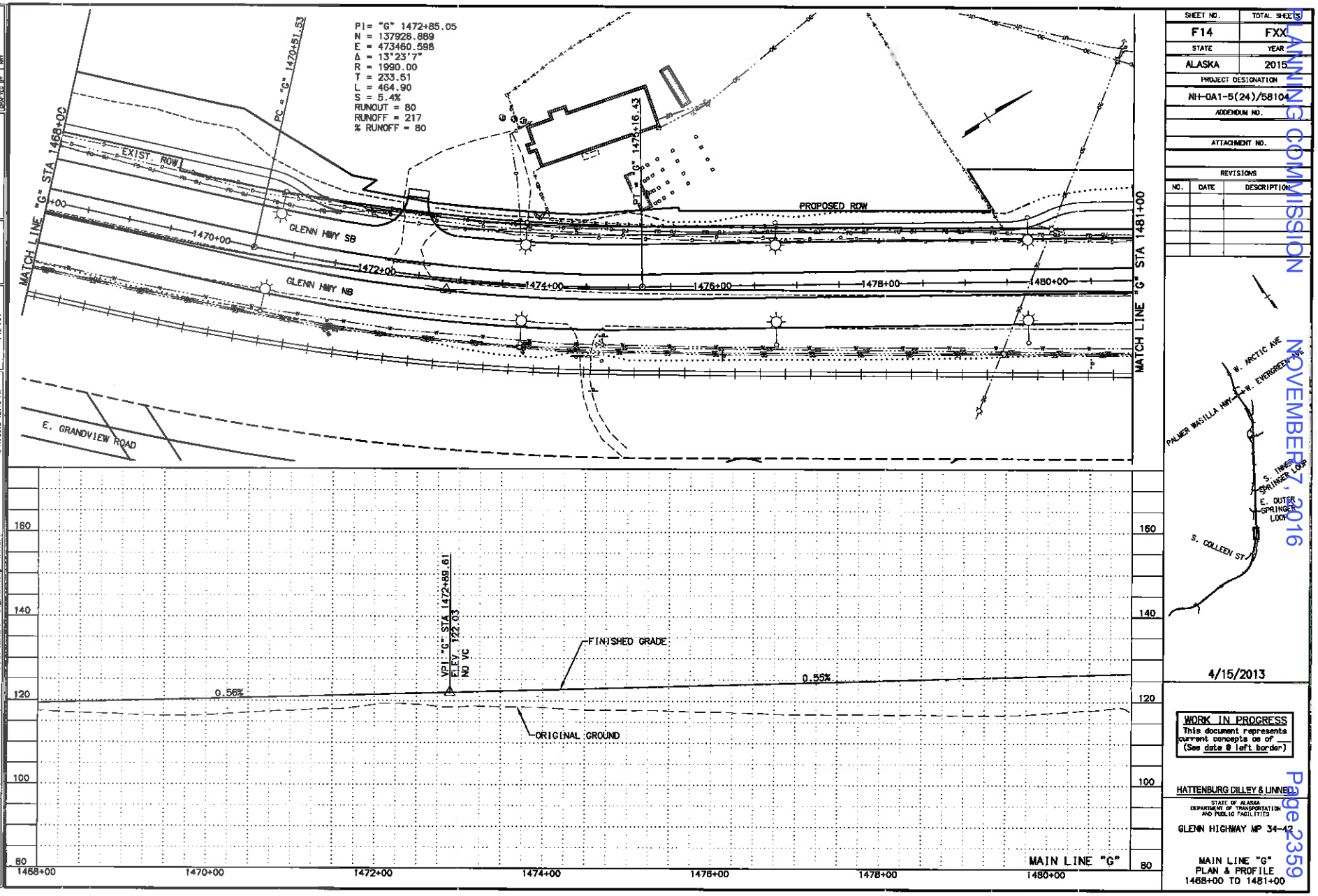

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STATE	YEAR
ALASKA	2015

PROJECT DESIGNATION
NH-0A1-5(24)/58104

ADDENDUM NO.

ATTACHMENT NO.

REVISIONS

NO.	DATE	DESCRIPTION

4/15/2013

WORK IN PROGRESS
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(See date @ left border)

HATTENBURG DILLEY & LINNELL

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES

GLENN HIGHWAY MP 34-42

MAIN LINE "G"
PLAN & PROFILE
1468+00 TO 1481+00

DRAWING LOCATION
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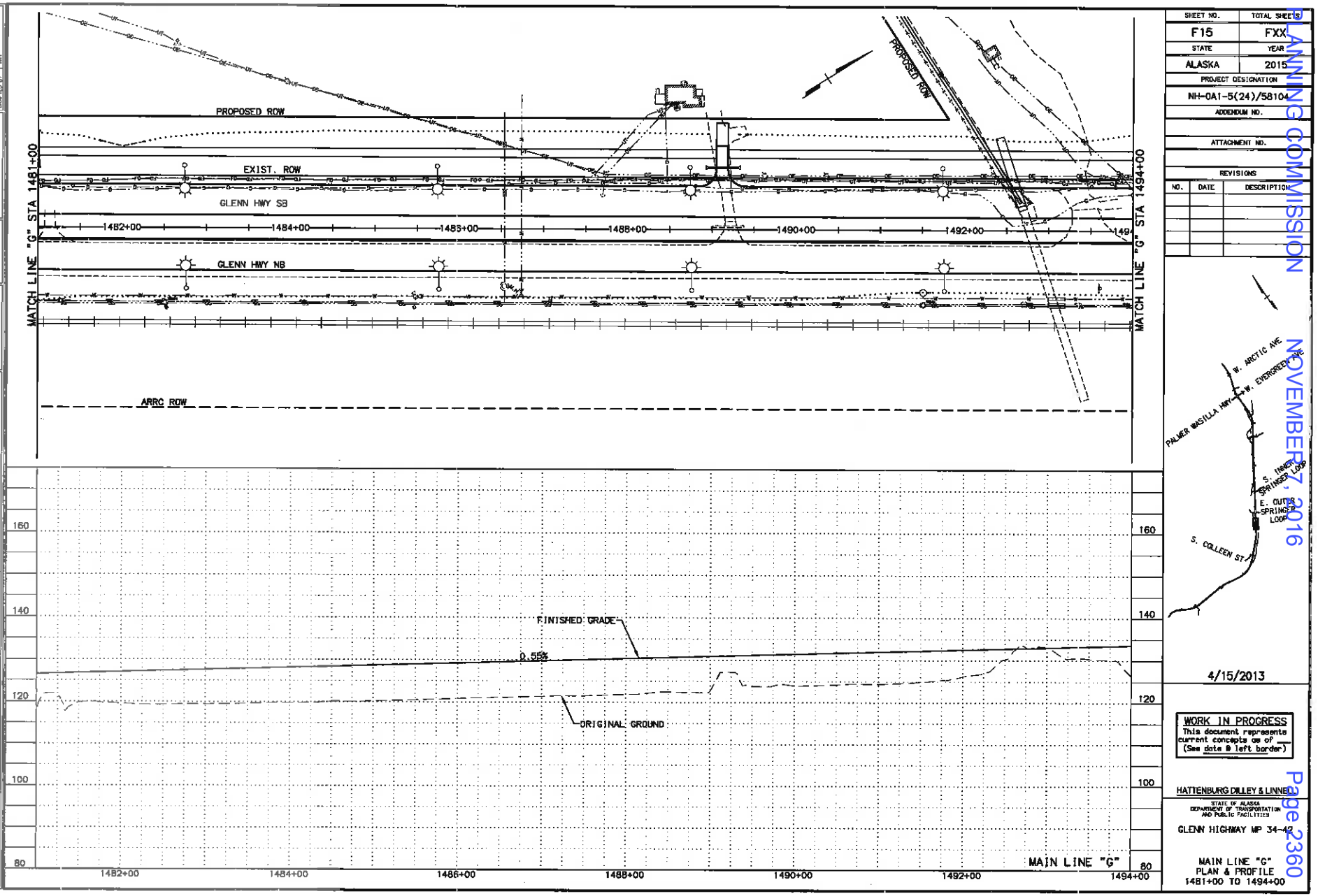
PLANNING COMMISSION NOVEMBER 7, 2016



SHEET NO.	TOTAL SHEETS
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STATE	YEAR
ALASKA	2015

PROJECT DESIGNATION
NH-0A1-5(24)/58104

ADDENDUM NO.

ATTACHMENT NO.

REVISIONS

NO.	DATE	DESCRIPTION

4/15/2013

WORK IN PROGRESS
This document represents current concepts as of ___
(See date @ left border)

HATTENBURG DILLEY & LINNELL

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES

GLENN HIGHWAY MP 34-42

MAIN LINE "G"
PLAN & PROFILE
1481+00 TO 1494+00

DRAWING LOCATION
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SCALE

LAYOUT
F12-F31

DESIGNED BY DM
DRAWN BY KY
CHECKED BY DM
QUALITY BY HWY

PLANNING COMMISSION NOVEMBER 7, 2016 Page 2360

ADEC PERMIT APPLICATION

Notice of Proposal to Issue a Permit to Central Monofill Services for the Construction and Operation of an Inert Waste Monofill, Palmer, Alaska

The Alaska Department of Environmental Conservation (ADEC) has determined that the permit application, submitted by Central Monofill Services, Incorporated (CMS)for construction and operation of an Inert Waste Monofill in Palmer, Alaska, is complete. ADEC is proposing to issue SolidWaste Permit #SWZA065-19 to CMS for disposal of Construction and Demolition Debris.

APPLICANT INFORMATION:
Owner/Operator:Central Monofill Services, Inc., 311 North Sitka Street, Anchorage, AK 99501

PROJECT DESCRIPTION:
Location: The proposed monofill will be located at Mile38.3 of the Glenn Highway, on Tax Lots C10 and B6 of the Palmer Recording Districtwithin Sections 18 and 19, respectively, of Township 17 North, Range 2 East,Seward Meridian in Palmer, Alaska.

The applicant proposes operating an Inert Waste Monofill, which will be used for disposal of construction and demolition debris, either in whole or reduced in a grinder, after reusable or recyclable materials have been removed. A cell for disposal of Asbestos Containing Material will also be operated at the site.

ADDITIONAL INFORMATION:
Fora copy of the permit application, please go to dec.alaska.gov/eh/sw, or for more information regarding the Solid Waste Permit requirements or application, please contact Lori Aldrich at (907) 269-7622 or by email at lori.aldrich@alaska.gov.

OPPORTUNITY FOR PUBLIC PARTICIPATION:

ADEC is seeking comment regarding the proposed project only. Notice is given that any person interestedmay present written comments relevant to the proposed Permit to ADEC. Written comments will be included in the record if received before 5:00 p.m. on December 29, 2014.

Submit written comments regarding the project to:

Lori Aldrich, ADEC Division of Environmental Health, Solid Waste Program

555 Cordova Street, Anchorage Alaska 99501

Fax:(907) 269-7600, email: lori.aldrich@alaska.gov.

The State of Alaska, Department of Environmental Conservation complies with Title II of the Americans with Disabilities Act of 1990. If you are a person with a disability who may need a special accommodation in order to participate in this process, please contact Eric Hotchkiss at (907) 465-6171 or TDD Relay Service 1-800-770-8973/TTYor dial 711 within 30 days of publication of this notice to ensure that any necessary accommodations can be provided.

November10, 2014 dated at Anchorage, Alaska.

Attachments, History, Details

Attachments
None

Revision History
Created 11/10/2014 10:43:32 AM by cfishwick
Modified 11/10/2014 10:46:03 AM by cfishwick

Details

Department:	Environmental Conservation
Category:	Public Notices
Sub-Category:	
Location(s):	Statewide
Project/Regulation #:	

Publish Date:	11/10/2014
Archive Date:	12/30/2014
Events/Deadlines:	Public Comment Period Closes 12/29/2014 5:00pm

Inert Waste Monofill
Solid Waste Permit Application

Alaska Department of
Environmental Conservation
Division of Environmental Health
Solid Waste Program

Instructions

- This packet contains instructions and forms to complete a permit application for an inert waste monofill. This application is valid for new permits or for renewing existing permits.
- Each item must be completed and included in your application in order for the Alaska Department of Environmental Conservation (DEC) to process your permit application. Please address each item. The requested information in this form represents the minimum that is required; additional information should be provided as necessary or applicable.
- If the required information is not applicable, please explain why.
- If the required information is included in a previous application, AND the information has not changed since it was submitted, you must provide a specific reference or citation explaining where the information can be found.
- Check off each item as you complete it. Submit the entire packet, the required information, and the required application fee.
- For new facilities and lateral expansions, please prepare a draft application, develop a list of questions, and then schedule a pre-application meeting with the DEC office that will be reviewing your application materials.
- Please submit the completed application and any questions to your nearest DEC Solid Waste Program office, listed below.

DEC Contact Information
The Alaska Department of Environmental Conservation
Division of Environmental Health
Solid Waste Program
http://www.dec.state.ak.us/eh/sw

Anchorage
555 Cordova Street
Anchorage, AK 99501
(907) 269-7802
FAX (907) 269-7655

Fairbanks
610 University Avenue
Fairbanks, AK 99709
(907) 451-2108
FAX (907) 451-2188

Juneau
410 Willoughby Avenue
Juneau, AK 99801-1795
(907) 465-5318
FAX (907) 465-5362

Inert Waste Monofill
Solid Waste Permit Application

Alaska Department of
Environmental Conservation
Division of Environmental Health
Solid Waste Program

Part One: Fees

A check or money order for the appropriate fees must be submitted with the permit application. If the required fees are not included, the permit application will be returned to the applicant.

✓	#	Requirement	Regulatory Citation
	1	Submit a check or money order to cover the permit application review fee, as listed in 18 AAC 60.700 Table I-3, if required. *The permit application review fee is not required to be submitted with an application for permit renewal.*	18 AAC 60.210(b)(8) 18 AAC 60.700
	2	If applicable, submit a check or money order to cover waiver request fees as listed in 18 AAC 60.700 Table I-3 for any waivers requested under Part Ten of this application form.	

Inert Waste Monofill
Solid Waste Permit Application

Alaska Department of Environmental Conservation
Division of Environmental Health
Solid Waste Program

Part Two: Cover Letter and Certifications

A cover letter must be prepared, as outlined below, and submitted with the permit application.

✓	#	Requirement - letter must include:	Regulatory Citation
x	1	A statement indicating you wish to obtain a permit for an inert waste monofill.	18 AAC 60.210(b)(1)
x	2	Evidence showing that the proposed facility meets the requirements for an inert waste monofill.	
x	3	A brief general description of the site topography, geology, climate, surface hydrology and groundwater hydrology.	
x	4	A statement that you are aware of all applicable local ordinances, zoning requirements, and the ~~Alaska Coastal Zone Management Program requirements of 11 AAC 110~~.	
	5	The applicant must submit a **signed original** of the application cover letter.	18 AAC 15.030 18 AAC 60.210(a) 18 AAC 60.210(b)(2)
	6	The applicant must submit a **signed original** of the following statement, which may be added, exactly as shown in the box below, to the cover letter. As an alternative, the applicant may sign this sheet and submit it as an attachment to the cover letter.	

I, Shane Durand, certify under penalty of perjury, that all of the information and exhibits in this cover letter and application are true, accurate, and complete.

Applicant's Signature — Jan / 8 / 2013 (Month / Day / Year)

Secretary/Treasurer
Applicant's Title

Information about signatures

All permits or applications must be signed as follows, per 18 AAC 15.030:

- **Corporations**: A principal executive officer, an officer that is no lower than the level of vice president, or a duly authorized representative who is responsible for the overall management of the project or operation
- **Partnerships**: A general partner
- **Sole proprietorship**: The proprietor
- **Municipal, state, federal, or other public entity**: A principal executive officer, ranking elected official, or duly authorized employee

Inert Waste Monofill
Solid Waste Permit Application

Alaska Department of
Environmental Conservation
Division of Environmental Health
Solid Waste Program

Part Three: Contact Information

✓	#	Requirement:	Regulatory Citation
	1	Fill out the form completely and submit as part of the application.	18 AAC 60.210(b)(2)

APPLICANT

Name: **Central Monofill Services Incorporated**
Contact name: **Shane Durand**
Mailing address: **311 N. Sitka Street**
City/State/Zip: **Anchorage, AK 99501**
Telephone Number: **907-561-0125**
FAX Number: **907-561-0178**
Email Address: **shane@cei-alaska.com**

Type of entity: Individual [ ] Partnership [ ]
Corporation [x] Other [ ]

State of incorporation or registration: **Alaska**
Alaska business license number: **939473**
IRS tax identification number: **45-4650859**

FACILITY OWNER

Name: **Central Monofill Services Incorporated**
Mailing address: **311 N. Sitka Street**
City/State/Zip: **Anchorage, AK 99501**
Telephone Number: **907-561-0125**
FAX Number: **907-561-0178**
Email Address: **shane@cei-alaska.com**

Inert Waste Monofill
Solid Waste Permit Application

Alaska Department of
Environmental Conservation
Division of Environmental Health
Solid Waste Program

Part Three: Contact Information (continued)

LANDOWNER

Name	Central Monofill Services Incorporated
Mailing address	311 N. Sitka Street
City/State/Zip	Anchorage, AK 99501
Telephone Number	907-561-0125
FAX Number	907-561-0178
Email Address	shane@cei-alaska.com

OPERATOR

Name	Central Recycling Services Incorporated
Mailing address	2400 Railroad Ave
City/State/Zip	Anchorage, AK 99501
Telephone Number	907-748-7400
FAX Number	907-748-5084
Email Address	Kauai@crs-alaska.com

AGENT

Name	Environmental Management Incorporated
Mailing address	206 East Fireweed Lane, Suite 201
City/State/Zip	Anchorage, AK 99503
Telephone Number	907-272-9336
FAX Number	907-272-0319
Email Address	lhelgeson@emi-alaska.com

Inert Waste Monofill Solid Waste Permit Application

Alaska Department of Environmental Conservation
Division of Environmental Health
Solid Waste Program

Part Four: Waste Handling and Processing Information

✓	#	Requirement	Regulatory Citation
	1	Fill out the form completely and submit as part of the application.	18 AAC 60.210(b)(2) 18 AAC 60.210(b)(3)(B) 18 AAC 60.210(b)(4)

1 List the amount of various wastes you expect to receive at the site each year:

(Tons/Year) Quantity	Waste Type
25,000	Inert waste
5,000	Regulated Asbestos Containing Material (RACM)
5,000	Non-Regulated Asbestos Containing Material (non-RACM)

2 Check the type(s) of waste processing done at the landfill before waste is disposed of:

[X] Baling/Compacting [x] Shredding [x] Salvage/Reuse

[X] Separation/Segregation [x] Other (describe below)

Transferring Station

Industrial Composting

Inert Waste Monofill
Solid Waste Permit Application

Alaska Department of
Environmental Conservation
Division of Environmental Health
Solid Waste Program

Part Five – Location Information

Please fill out the form where required, attach the appropriate documentation, and submit as part of the application. You may submit maps that show more than one of the required items. For example, one map can show property boundaries, nearest airport, wetland and surface water locations, etc. Please ensure that all the requested information is included in the completed application.
NOTE: Maps must have notations about sources of information, including a complete citation.

✓	#	Requirement	Regulatory Citation
	1	**Property ownership and location** information must include the following:	18 AAC 60.210(b)(3)(A) 18 AAC 60.210(b)(7)
x	(a)	Fill in a legal description of the property, with meridian, range, township and section, as well as latitude and longitude. **This property is in the Palmer Recording District. It is located on Tax Lot C10 located within Township 17 North, Range 2 East, Section 18 and Lot B6 within Township 17 North, Range 2 East, Section 19 within the Seward Meridian The approximate latitude is 61.558075° N, and longitude 149.170432°W.**	
x	(b)	Fill in an informal location description such as mileposts, landmarks, distance and direction from nearest community. **This site is located at Mile Post 38.3 of the Glenn Highway. It is approximately 3.5 Miles southwest of Palmer, Alaska and 10 miles East of Wasilla.**	
	(c)	Attach a copy of the deed or another legal document that identifies the landowner.	
	(d)	If the applicant is not the landowner, attach a written and notarized statement signed by the landowner showing that the landowner consents to the landfill, or a copy of any lease agreement that is relevant to the proposed activity.	
x	(e)	Attach a map or aerial photo that shows the location of the landfill property boundaries. **See Figure A**	

Part Five – Location Information (continued)

✓	#	Requirement:	Regulatory Citation
x	2	**Surface water** information must include:	18 AAC 60.210(b)(3)(B) 18 AAC 60.210(b)(3)(D) 18 AAC 60.225
x	(a)	Fill in information about any potential for surface water to enter the site from upgradient areas. **The historical gravel mining activities at the site have left the majority of the site lower than the surrounding lands. There are no streams or conveyance channels running onto the project site. There are three existing gravel ponds onsite. Sheet flow will direct 90% of the drainage towards a basin. The other flows will be on vegetated slopes.**	
x	(b)	Attach a map or aerial photo that shows the location of surface water bodies and streams within 200 feet of the landfill boundary. **See Figure A**	
	3	**Permafrost** information must include:	18 AAC 60.210(b)(3)(B) 18 AAC 60.227
x	(a)	If the landfill is located on permafrost, fill in information to explain why there is no practical alternative to the site chosen. **Permafrost has not been encountered at any time on site during historical use.**	
x	(b)	If the landfill is in an area of discontinuous permafrost, attach a map or aerial photo that shows the location of the boundary of any permafrost within 200 feet of the landfill boundary. **This area of Palmer is in a sporadic permafrost zone so the likelihood of permafrost at this site is low. See attachment B, permafrost characteristics map**	

Inert Waste Monofill
Solid Waste Permit Application

Alaska Department of
Environmental Conservation
Division of Environmental Health
Solid Waste Program

Part Five – Location Information (continued)

✓	#	Requirement:	Regulatory Citation
	4	**Other** required information:	18 AAC 60.040 18 AAC 60.210(a) 18 AAC 60.217 18 AAC 60.410 18 AAC 60.820(a)(8) 11 AAC 110.205
x	(a)	Attach information showing the highest measured level of groundwater under the landfill area. TERRASAT, Inc. Palmer Pit Water Table Contour Map (12/20/12). NOTE: Water elevations will be verified with additional wells prior to construction to ensure bottom of cells are 10 feet above groundwater.	
x	(b)	Annual precipitation **15.49 Inches** What source was used to determine annual precipitation? **www.wrcc.dri.edu Palmer AAES Station 506870**	
x	(c)	Attach a completed Coastal Project Questionnaire if the proposed operation is in, or might affect, the Coastal Zone of Alaska. **NA**	
x	(d)	Attach a map and/or aerial photo that shows the location of all nearby drinking water wells; there should be no wells within 500 feet of the waste area. **See Attachment A**	
x	(e)	Attach a map and/or aerial photo that shows the location of the boundary of any 100-year floodplain in the area. **See Attachment C**	

Inert Waste Monofill
Solid Waste Permit Application

Alaska Department of
Environmental Conservation
Division of Environmental Health
Solid Waste Program

Part Six – Facility Design

A complete set of design drawings must be submitted showing all the information in the following table, with drawings included for both the design and closure of the landfill, as appropriate. Landfill drawings should be organized as shown below, with design drawings placed in the first part of the drawing set and closure drawings included at the end of the drawing set. It is understood that landfill closure design drawings will be conceptual only. NOTE: Supporting calculations and data for both the design and closure of the landfill must be attached to the permit application and include the information shown in the following table.

✓	#	Requirement – engineering drawings must include, at a minimum:	Regulatory Citation
LANDFILL DESIGN DRAWINGS:			18 AAC 60.210(b)(3) 18 AAC 60.220 18 AAC 60.233
	1	**Site map(s)** which show site conditions including:	
x	(a)	All previous, existing, and planned disposal areas; the drawing should demonstrate that waste will be at least 50 feet from property boundary.	
x	(b)	Fences, gates, berms, and other access control devices around the facility.	
x	(c)	Access roads to and within the facility.	
	2	**Plan view drawings** with contour lines and cross sections including:	18 AAC 60.210(b)(3) 18 AAC 60.210(b)(4) 18 AAC 60.410(b)(2) 18 AAC 60.410(c)
x	(a)	Any planned excavations before waste cell construction.	
x	(b)	All roads, ditches, trenches, and berms associated with the landfill.	
	3	**Construction detail drawings** and cross sections including:	18 AAC 60.210(b)(3)(B) 18 AAC 60.225 18 AAC 60.410(b)(2) 18 AAC 60.410(c)
x	(a)	Storm water drainage structures, culverts, and other surface water control devices.	
LANDFILL CLOSURE DRAWINGS:			18 AAC 60.210(b)(3)(E)
x	4	**Conceptual drawings** of the facility after closure is completed.	
DESIGN CALCULATIONS, DATA, AND DOCUMENTATION:			18 AAC 60.210(b)(3) 18 AAC 60.210(b)(4) 18 AAC 60.210(c) 18 AAC 60.227(b) 18 AAC 60.410(c)
x	5	**Design calculations, data, and documentation** must include:	
x	(a)	Information and/or calculations showing how the facility will be protected from any reasonably anticipated natural event such as aufeis, floods, earthquakes, thawing of unstable permafrost, and the effects of freezing and thawing.	
	(b)	If located on permafrost, documentation showing that the permafrost will remain frozen to the greatest extent practical.	
x	(c)	Information and calculations that substantiate the size and expected usable life of the facility.	
x	(d)	Printouts of inputs, assumptions, and outputs from any computer model used to support the facility design.	
x	(e)	An estimate (including calculations) of the maximum inventory of inert wastes that will be disposed onsite over the life of the facility.	
x	6	For landfills accepting more than 5 tons per day of waste, all design documents must be stamped and sealed by a registered engineer.	18 AAC 60.210(c)

Inert Waste Monofill
Solid Waste Permit Application

Alaska Department of
Environmental Conservation
Division of Environmental Health
Solid Waste Program

Part Seven – Operations Plan

The operations plan should provide sufficient detail and information that a landfill operator could use to perform all required tasks for day-to-day operation of the landfill. The operations plan is a flexible document that should be reviewed annually and updated/modified, as necessary. The following table represents the minimum requirements to be included in an operations plan. Additional information should be added, as needed, to ensure the facility operates in compliance with the State Solid Waste Regulations. A copy of the operations plan should be kept at the landfill facility.

✓	#	Requirement - operations plan must include:	Regulatory Citation
	1	**Access control** - must include a description of how:	18 AAC 60.210(b)(3)(C) 18 AAC 60.220
	(a)	access to the facility will be controlled, including gates, fences, berms, or other means of preventing access, hours of operation, signage, and other control measures.	
	(b)	prohibited activities such as target practice or off road vehicle use will be prevented.	
	(c)	access and onsite roads will be kept passable and safe for vehicles year round.	
	2	**Waste acceptance and handling policy** must include a description of:	18 AAC 60.210(b)(3)(C) 18 AAC 60.240(a) 18 AAC 60.240(b) 18 AAC 60.420(b)
	(a)	waste screening procedures to ensure no prohibited or unacceptable wastes are disposed in the facility.	
	(b)	any signage placed at the facility entrance.	
	(c)	any waste processing procedures prior to disposal.	
	3	**Waste placement plan** must include a description of:	18 AAC 60.210(b)(3)(B) 18 AAC 60.210(b)(3)(C) 18 AAC 60.225(a)
	(a)	waste placement methods.	
	(b)	planned progression of the working face, including landfill development over the life of the facility (diagrams are acceptable).	
	(c)	how unstable slopes will be avoided.	
	4	**Non-RACM waste placement plan** must include a description of:	18 AAC 60.210(b)(3)(B) 18 AAC 60.210(b)(3)(C) 18 AAC 60.450(a)
	(a)	waste placement methods to ensure non-RACM will not become friable during handling or placement.	
	(b)	Placement and frequency of cover material. NOTE: Non-RACM waste must be covered within 24 hours of placement.	
	5	**Litter, vector, and nuisance control plan** must include:	18 AAC 60.210(b)(3)(C) 18 AAC 60.210(b)(3)(D) 18 AAC 60.230(a) 18 AAC 60.233(2) 18 AAC 60.420(a) AS 46.06.080
	(a)	procedures to ensure wildlife and domestic animals do not endanger the public or landfill staff, are not harmed by contact with the waste, and do not become a nuisance.	
	(b)	procedures to control dust, odor, noise, traffic, litter, disease vectors, and other effects from facility operations so they do not become a nuisance or hazard outside of the facility boundary.	

Part Seven: Operations Plan (continued)

✓	#	Requirement - operations plan must include:	Regulatory Citation
	6	**Corrective action plan** must include procedures for immediately:	18 AAC 60.210(b)(3)(C) 18 AAC 60.210(b)(3)(D) **18 AAC 60.460(d)** 18 AAC 60.815(a)
	(a)	o cleaning up any improper or unauthorized waste disposal; o repairing any damage to the facility or structures; o addressing any violations of regulations or permit conditions; and o responding to combustion or a fire within the inert waste.	
	7	**Operating record** – Please state where the operating record for the facility will be kept. NOTE: The operating record must contain all documentation listed in 18 AAC 60.235, and be retained in a location readily accessible to DEC and facility employees. **Central Monofill Services Incorporated** **311 N. Sitka Street** **Anchorage, AK 99501**	18 AAC 60.235

Inert Waste Monofill
Solid Waste Permit Application

Alaska Department of
Environmental Conservation
Division of Environmental Health
Solid Waste Program

Part Eight – Monitoring Plan

The monitoring plan must include sufficient detail to adequately perform all tasks required for field monitoring and sampling, submit samples to a laboratory with a complete list of parameters to be analyzed, and prepare a monitoring report with all of the information required by DEC.

✓	#	Requirement – monitoring plan must include:	Regulatory Citation
	1	**Visual monitoring plan**. Must include:	18 AAC 60.210(b)(3)(D) 18 AAC 60.800(a)
	(a)	A description of the procedures for visual monitoring of the landfill.	
	(b)	A checklist or visual monitoring form including all items in 18 AAC 60.800(a).	
	2	**Surface water monitoring plan** (if required by DEC) must include: N/A	18 AAC 60.210(b)(3)(D) 18 AAC 60.810 18 AAC 60.840
	(a)	Brief information about topography and surface water flow at the landfill.	
	(b)	A detailed map showing permanent sampling site locations.	
	(c)	Identification and information about background and compliance sampling sites, including documentation showing why the site was chosen.	
	(d)	Specific information about sampling frequency and schedules.	
	(e)	A proposed list of constituents for which samples will be analyzed.	
	(f)	Detailed monitoring procedures outlined in 18 AAC 60.810(e).	
	(g)	A statement that monitoring reports will be submitted to DEC within 60 days of receiving laboratory data or by the date(s) stipulated in the permit.	
	3	**Groundwater monitoring plan** (if applicable) must include: N/A	18 AAC 60.210(b)(3)(D) 18 AAC 60.217 18 AAC 60.460(c) 18 AAC 60.820 18 AAC 60.825 18 AAC 60.830
	(a)	Information about hydrology at the landfill including depth to groundwater, direction and velocity of flow, with supporting documentation.	
	(c)	Information about background groundwater quality.	

Part Nine - Closure Plan and Cost Estimate

It is understood that the closure plan submitted with the permit application is conceptual, and may change throughout the active life of the facility. If the landfill is within 5 years of closure, a detailed closure plan must be submitted and approved by DEC.

✓	#	Requirement - closure plan must include:	Regulatory Citation
	1	**A description of the closure process** for the facility must include:	18 AAC 60.210(b)(3)(E) 18 AAC 60.210(b)(6) 18 AAC 60.245 18 AAC 60.270 18 AAC 60.460(e) 18 AAC 60.490
X	(a)	A description of the final cover and appearance of the facility meeting the standards of 18 AAC 60.460(e).	
X	(b)	A description of the methods and procedures for final cover installation.	
X	(c)	A timeline or schedule for all activities needed to complete closure.	
X	(d)	A description of the anticipated post closure (future) use of the property.	
X	(e)	A description and map of proposed survey monuments or permanent markers.	
X	(f)	A statement of how DEC will be notified that the requirements of 18 AAC 60.270 and 18 AAC 60.490 have been met.	
	2	**Financial information** (if required by DEC) must include:	18 AAC 60.210(b)(5) 18 AAC 60.210(b)(3)(F) 18 AAC 60.265
X	(a)	The total present-day equivalent cost estimates for closing the facility.	
X	(b)	The total present-day equivalent cost estimates for post-closure care of the facility.	
	(c)	Detailed proof of financial responsibility to cover the cost of closing the landfill and post closure care.	

Inert Waste Monofill
Solid Waste Permit Application

Alaska Department of
Environmental Conservation
Division of Environmental Health
Solid Waste Program

Part Ten - Waiver Requests and Justification

NOTE: 18 AAC 60.900 allows DEC to grant an exemption from any regulation not required by federal law.

✓	#	Requirement - waiver requests must include:	Regulatory Citation
	1	A list of each regulation you are requesting a waiver from, and a detailed justification for each, as described in 18 AAC 60.900.	18 AAC 60.210(b)(1)(D) 18 AAC 60.900
	2	Note - Each waiver request increases the permit application fee by the amount listed on Table I-3 of 18 AAC 60.700.	18 AAC 60.700

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January 8th, 2012

Alaska Department of Environmental Conservation
Division of Environmental Health - Solid Waste Program
555 Cordova Street
Anchorage, AK 99501

Mr. Nathaniel Emery;

The purpose of this letter is to inform the Alaska Department of Environmental Conservation that I, Shane Durand, Secretary/Treasurer of Central Monofill Services Inc., wish to obtain a permit to operate an inert waste monofill. The proposed facility for which this permit is being sought is 120 acres located on tax lot C10 located within Township 17 North, Range 2 East, Section 18 in the Seward Meridian and tax lot B6 located within Township 17 North, Range 2 East, Section 19 in the Seward Meridian in Palmer, Alaska 99645. Evidence showing that the proposed facility meets the requirements for an inert waste monofill can be found in the attached permit. Furthermore, I hereby state that I am aware of all applicable local ordinances, and zoning requirements. The following provides a description of the climate, topography and hydrology at the site.

Palmer, Alaska where the proposed monofill is located is characterized by mild summers and cold winters, with summer high temperatures averaging approximately 67°F and winter high temperatures averaging 20°F. Annual precipitation averages 15.49 inches per year.

Lot C10 is in the South West corner of Section 18 and Lot B6 is north of the Glenn Highway in the North West corner of Section 19. The site has historically been used as a Gravel Pit. The site contours vary greatly as different sections of the lot have been mined for gravel. The surrounding slopes are at the natural angle of repose for the material, in some cases as steep as 2:1 (See Attached Planset, Sheet 1, existing conditions). This monofill will occupy 35.5 acres over lots C10 and B6 and maintain a 100' buffer from the existing industrial ponds located on the lot. The depth of groundwater at the site varies as shown on the Palmer Pit Water Table Contour Map. The bottom of the waste will always remain a minimum of 10' above the groundwater.

The site has been traditionally used as a gravel pit, so the soils onsite vary from some well graded, sandy gravel material to areas of unusable for mining materials such as clay and silt. The industrial ponds onsite are as deep as 80 feet. Permafrost has not been encountered at any time on site during historical use and the area of Palmer is in a sporadic permafrost zone so the likelihood of permafrost at this site is low. Due to the composition of soil containing well graded gravel, the percolation rate at the site is moderate to high. The nearest water bodies are the three industrial ponds onsite. They are manmade industrial ponds caused by past industrial gravel dredging. These bodies do not have inflowing or outflowing water and are fed from onsite surface flow and groundwater. The Matanuska River lies approximately 2 miles to the southeast and this river ultimately discharges into the ocean in the Knik Arm approximately 4.5 Miles southwest.

I, SHANE DURAND, certify under penalty of perjury, that all of the information and exhibits in this cover letter and application are true, accurate, and complete.

Applicant's Signature — Jan (Month) / 8 (Day) / 2013 (Year)

Secretary/Treasurer
Applicant's Title

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Permit: *Alaska DEC, Solid Waste Program*
Applicant: *Central Monofill Services, Inc.*
Date Submitted: *January 9, 2013*

INERT WASTE MONOFILL SOLID WASTE PERMIT APPLICATION

PART SEVEN- OPERATIONS PLAN

Central Monofill Services, Inc
Palmer, Alaska

January 2013

Permit: *Alaska DEC, Solid Waste Program*
Applicant: *Central Monofill Services, Inc.*
Date Submitted: *January 9, 2013*

Central Monofill Services Inc.'s Inert Waste Monofill Permit

Part Seven- Operations Plan

Location(s): Milepost 35.3 Glenn Highway, Palmer Alaska 99645
Owner: CMS Inc.
Operator: CRS Inc.
Tax ID(s): 18N02E18C010

The information in this document is an attachment to Central Monofill Services Incorporated's (hereafter known as CMS's) DEC Inert Waste Monofill Permit Application, Part Seven - Operations Plan.

For any questions, comments or clarifications, please do not hesitate to contact myself, Shane Durand.

Should there be any changes or amendments needed for this Inert Waste Monofill Applications, all edits will be made in writing and submitted to the Alaska Department of Environmental Conservation, Division of Environmental Heath, Solid Waste Program in a timely fashion.

Sincerely,

Shane Durand
Secretary/Treasurer

Permit: *Alaska DEC, Solid Waste Program*
Applicant: *Central Monofill Services, Inc.*
Date Submitted: *January 8, 2013*

Contents

Central Monofill Services Inc.'s Inert Waste Monofill Permit 2
Project Description 4
Access Control 4
Seasonal Start and End Dates 5
Hours of Operations / Days of the Week 5
Waste Acceptance and Handling Policy 5
Fire Mitigation Procedures 6
Corrective Action Plan 7
Waste Placement Plan 8
Asbestos Waste Placement Plan (RACM) 9
Non-RACM Waste Placement Plan 10
Litter, Vector and Nuisance Control Plan 10
Monitoring Plan 11
Operating Record 12

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Permit: *Alaska DEC, Solid Waste Program*
Applicant: *Central Monofill Services, Inc.*
Date Submitted: *January 8, 2013*

Project Description

CMS's goal for this Inert Waste Monofill, is to have Central Recycling Service, Inc. (CRS) properly place and cover inert debris on a portion of the property, while maintaining and reclaiming a 120 acre site located on Lot C10, Located in Township 17 North, Range 2 East, Section 18 and Lot B6, Located in Township 17 North, Range 2 East, Section 19 in Palmer, Alaska 99645.

Lot C10 is in the South West corner of Section 18 and B6 Adjacent just South of C10. The site has historically been used as a Gravel Pit. The site contours very greatly as different sections of the lot have been mined for gravel. The surrounding slopes are at the natural angle of repose for the material, in some cases as steep as 2:1 (See Attached Plan set, Sheet 1, Existing Conditions). This monofill will occupy 35.4 acres in the southwest corner of the lot C10 and all of Lot B6 north of the Glenn Highway and maintain a 100' buffer from the existing gravel ponds located on the lot C10. The groundwater at the site varies across the site with water elevations close to 85 feet in the northeast corner and down to 70 feet in the south corner. The depth to ground water at specific locations varies significantly due to the widely varying terrain at the site.

The site has been traditionally used as a gravel pit, so the soils onsite vary from some well graded, sandy gravel material to areas of unusable for mining materials such as clay and silt. The industrial ponds onsite are as deep as 80 feet. Permafrost has not been encountered at any time on site during historical use and the area of Palmer is in a sporadic permafrost zone so the likelihood of permafrost at this site is low. Due to the composition of soil containing well graded gravel, the percolation rate at the site is moderate to high. The nearest water bodies are the three industrial ponds onsite. They are manmade industrial ponds caused by past gravel dredging. These bodies do not have inflowing or outflowing water and are fed from onsite surface flow and groundwater. The Matanuska River lies approximately 2 miles to the southeast and this river ultimately discharges into the ocean in the Knik Arm approximately 4.5 Miles southwest.

Access Control

The driveway for Lot C10 is located off of the Glenn Highway and currently has a two driveway configuration that will be used as an entrance/exit configuration. It is the only access point for the inert debris monofill on the site. Signage will be posted informing the public of the monofill operation, private property, not to trespass and/or not to enter the site unless authorized or accompanied by authorized personnel. This access point will prevent unsolicited visitors to trespass onsite (pedestrians/target practice/off-road vehicle usage) and away from any site activities. There will also be a gate and fence that extends up the natural berm surrounding the entrance.

The driveway is currently permitted through DOT&PF since the driveway extends into the Glenn Highway ROW.

Permit: *Alaska DEC, Solid Waste Program*
Applicant: *Central Monofill Services, Inc.*
Date Submitted: *January 8, 2013*

Seasonal Start and End Dates

This site will be operated year round.

Hours of Operations / Days of the Week

The operational hours will generally be from 7am to 7pm, Monday through Saturday.

Waste Acceptance and Handling Policy

The inert debris brought to this site will be primarily shredded residual, recycling waste, material. Shredded residual material is a variety of non-hazardous, inert material which is shredded to a size of 12 inches or smaller. This material is the by-product of a recycling facility located in Anchorage, Alaska called Central Recycling Services. Central Recycling Services (CRS) specializes in recycling inert construction and demolition waste. The material brought to CRS is both manually and mechanically sorted, screened and processed through to ensure the material is free of hazardous material, putrescible material and/or liquids. The shredded inert material will be placed in a trailer and used as the inert debris for this monofill

Material that will not be accepted at this monofill location will be as follows:

- PCBs or other Hazardous Wastes
- Household Waste
- Putrescible Waste
- Liquids
- Compressed Gas Cylinders
- Batteries
- Appliances with CFC/HCFC
- Chemical Waste
- Animal Carcasses
- Petroleum Contaminated Materials

It is Central Recycling Services' policy to require additional documentation from all material haulers transporting any demolition and/or renovation material to the Central Recycling Services' Facility.

The additional information required is: (1) A copy of all Hazardous Building Material Surveys for each project that will be bringing their demolition and/or renovation material to the Central Recycling Facility. Should the Survey indicate the presence of any hazardous materials, then (2) A letter from the Contractor of each project is also to be submitted to Central Recycling Services stating that all hazardous material have been properly removed from the project, and there is no hazardous material being brought to the Central Recycling Facility. For their operations, CRS defines hazardous material as a material containing any percentage of asbestos.

Any demolition and/or renovation material brought to the CRS Facility is not allowed to be dumped onto the Tipping Floor until both of the above mentioned documents have been provided to and reviewed by the authorized CRS employees. When delivered, any material identified in the survey will be searched for within the waste.

Please note that CRS is not open to the public. All customers/haulers are pre-approved and have signed credit applications including indemnity. By signing this document, they acknowledge that hazardous material is not accepted at the CRS Facility.

These policies in place at CRS will help to reduce the risk of prohibited items or contaminates from reaching the monofill.

Although the CRS residual material is the primary material to be deposited at the monofill some inert material will be hauled directly to the monofill without being processed at the CRS recycle facility. These materials will require the same documentation and have the same scrutiny as those delivered directly to CRS.

Fire Mitigation Procedures

Exothermic reactions have been shown to be problems in landfills that accept organic materials. Exothermic reactions occur when organic materials are confined in a moist environment. Therefore the following procedures will be implemented during construction and operation of the landfill to mitigate the potential for exothermic reactions that could cause a fire.

Control of Organic Material:

- No organic soils will be allowed to be in contact with any of the inert debris or tire bales used in the landfill.
- No organic materials other than dry wood construction debris will be allowed in the landfill.
- Only clean tire bales (no organic debris attached) will be used for construction of berms or subgrade structural fill.

Control of Moisture:

- Only dry or damp debris will be allowed to be buried in the landfill. If wet debris are brought to the landfill, they'll be dried prior to being buried in the cell.
- Up gradient run off will be controlled by interception ditches to prevent any storm water runoff from entering the active cells.

Regular Inspections:

- Each day of operation in the landfill the cells will be inspected for evidence of heat or steam rising out of the cells which may be an indication of an exothermic reaction occurring. If an exothermic reaction is suspected the area will be opened and exposed to the air to be dried out.

Limitation to Sub-Cell (lifts) Depths:

- The depth of each sub-cell (or lift) is limited to 15 feet to allow access to the bottom of the lift with commonly available excavation equipment. Due to the long period of time between cell lift completions (anticipate ~1 year each) all areas of the active cell will be accessible for relatively long period of time for regular monitoring.

Corrective Action Plan

As previously mentioned, the shredded residual material will be sorted through at Central Recycling Services before the inert material is brought to the monofill site. Therefore, it will not likely be necessary to clean up any prohibited or unauthorized waste since there will not be the possibility of hazardous or unauthorized waste being inadvertently brought to the monofill.

The Facility at CRS abides by all regulations and permit conditions regarding inert debris handling, placement and sorting of material, therefore no violations of waste disposal or improper processing will take place at the monofill.

However, if somehow some unauthorized hazardous waste is brought to the landfill that waste will be segregated, reported, and handled like an orphan hazardous waste that shows up on any property. ADEC will be notified and HAZWOPER trained crews will be dispatched to properly control and contain the waste.

Should the unlikely event of a fire occur within the inert waste, there will be fire barriers throughout the monofill. These fire barriers will consist of 12 inch thick soil barriers to act as fire retardants and prevent the fire from spreading from Cell to Cell through the entire monofill. There will also be one foot thick soil barriers between the tire bales retaining structures in each Cell to reduce the possibilities of any fire hazards. For small fires the initial attempts will be to quickly extinguish the fire, using on-site fire extinguishers, before the fire spreads into the waste materials.

If the source of the fire is from an exothermic reaction, then the following actions will occur to control the fire:

- The location of the exothermic reaction will be identified.
- A site specific fire fighting plan will be immediately developed to address the situation which may include the following options:
    - The impacted materials may be dug up and exposed to air to dry out.
    - The cell with the exothermic reaction may be flooded with water to reduce the reaction rate. (use on-site industrial well)
    - Depending on where the fire is located, specific measures will be developed to prevent the spread of the fire to or in the tire bales.

In the unlikely event the fire ignites the tire bales, the local fire department will be notified to monitor and control the fire.

Permit: *Alaska DEC, Solid Waste Program*
Applicant: *Central Monofill Services, Inc.*
Date Submitted: *January 8, 2013*

There currently are no structures near the monfill that need to be protected. In the future a scale and scale house will be located near the entrance to the site. The scale and scale house will be located approximately 150' to 200' away from the toe of the monofill. A warm storage building may be added in the future as shown on Sheet 2. Types of equipment that may be onsite: Excavator, Loader, Compactor, Dozer, End Dumps, Truck and Trailer. There is to be a designated fueling area for all equipment to be maintained and fueled on an as-needed basis. This will be located within the Storage area shown on Sheet 2. This area shall also serve as parking for employee vehicles, parking and staging areas for equipment, and staging/storage area for materials. All material will be properly protected and stored.

Waste Placement Plan

The inert material will be placed to fill the natural and manmade voids of this property and take advantage of all the onsite features like existing material berms and valleys.

Before material is placed in the monofill, the bottom layer of the cells will be established using groundwater information. The bottom of the cell will located a minimum of 10' above the established groundwater levels.

In order to recycle tires, build embankments and prevent unstable slopes, tire bales will be used for the purpose of containing inert debris within the limits of the Monofill on the south ½ of the site. They may also be used as structural berms on the North, East and West sides of the fill. Much of the Southeast and Southwest sides of the fill will be located next to natural berms and will require no structural support. CRS will maintain a six inch to one foot of soil separation between each Cell's tire bales to create multiple fire barriers throughout the monofill in the unlikely case of a fire.

Please Refer to Sheet 5, Operations plan for a visual guide to the description below: Cell A will be the first cell to be filled. As per detail 2 on sheet 5, the bottom of the monofill will be established 10 feet above the measured groundwater table. The cell will be built vertically and natural material from the north edge of Cell A and all of Cell J will be used as lift separation material. Cells A and F will be constructed first along with establishment of Cell C as the ACM cell. As Cells A and F progress to a median target elevation (approximately 105' local), Cells G and B will begin to be constructed. The same process will occur to Cells D and H, and then E and I. Once the target elevation is established, construction will move back to Cells A and J and the previous described process will begin again until another lift is completed.

During the above process the following general practices shall apply: The roadway/working area will be wide enough to allow at least two vehicles to pass by one another. The trucks will drive to the end of the operating Cell, turn around, and backup into the most accessible area, then dump its material. As the trucks dump each load of material,

the heavy equipment will then organize and compact the placed debris within the operating Cell.

After each Cell lift is filled completely, a bulldozer will spread 6-12" of excess soil, strippings and non-organic overburden on top of the Cell's inert debris creating a fire barrier. This material will also be spread over and in between the tire bale wall of the Cells to help create a visibly pleasing surface as well as promote the revegetation and growth of native plants.

As sections of the monofill become completed, 24 inches of native or imported soil will be spread over the top to serve as a cap and to allow the reestablishment of vegetation on the site within a reasonable period of time. If the soil cannot support plant growth, 4 inches of topsoil will be imported to promote healthy growth and revegetation of slopes. See Sheet 3 of the plans for slope grades and locations. The slopes will be 2:1 at their steepest when reinforced with tire bales, and 3:1 or less everywhere else. The monofill will all be stabilized to a condition that will allow sufficient moisture to be retained for natural revegetation to occur on site within the next five years.

The placement of inert material is proposed to be a continuous process over the period of approximately twenty five years.

Asbestos Waste Placement Plan (RACM)

Regulated Asbestos Containing Material (RACM) waste will be accepted at the monofill site. All waste that includes regulated asbestos-containing material (RACM) waste will be managed in a manner that prevents the release of asbestos fibers to the air or to surface water and must be disposed of in an approved cell (such as Cell E). The base of the asbestos will be undisturbed earth or stable fill. The cell is located in a manner that it will not preclude any future closeout or remedial action at the facility.

The CRS operator shall inspect each load of RACM waste to assure that the friable asbestos material is sealed in leak-proof bags or containers, labeled in accordance with 29 CFR 1910.1001(j)(4), revised as of July 1, 1998. The waste will be accompanied by a complete and accurate shipment record meeting the requirements of 18 AAC 60.

At the end of each operating day, or at least once every 24 hours while disposal of RACM waste is occurring, the operator shall cover RACM waste that has been deposited at the landfill during the operating day or previous 24 hours with at least six inches of non-RACM material.

CRS will retain a copy of all records required under 18 AAC 60.450 for at least two years, and shall furnish them to the department upon request.

Permit: *Alaska DEC, Solid Waste Program*
Applicant: *Central Monofill Services, Inc.*
Date Submitted: *January 8, 2013*

CRS will maintain in the operating record of the landfill a map or diagram showing the boundaries of the asbestos waste management area, its depth, and the amount, in cubic yards, of the RACM waste located there. These will documents will be maintained until the landfill closure is complete.

If excavation of the RACM material is needed for any reason, CRS will submit a work plan prepared in accordance with 18 AAC 60 for approval at least 45 days before excavating or otherwise disturbing any asbestos-containing waste material that has been deposited at the landfill and covered. Department approval of the work plan is required before excavation may begin. If the excavation will begin on a date other than the one contained in the approved work plan, notice of the new date must be provided to the department at least 10 working days before excavation begins. Excavation may not begin earlier than the date specified in the approved work plan.

Non-RACM Waste Placement Plan

Non-Regulated Asbestos Containing Material (Non-RACM) waste will also be accepted at the monofill site.

The majority of the Cells within the monofill will be filled with non-hazardous, inert debris; but when the disposal of Non-RACM is needed, a sub-Cell will be created. When a load of Non-RACM is brought to the monofill, the following process will occur.

The monofill Operator will prepare the operating Cell for the Non-RACM load. The Operator will make a separate Cell within the operating Cell, creating a sub-Cell. Each sub-Cell will be surveyed and the location documented for future reference. To ensure the non-RACM will not become friable during the handling or placement, the sub-Cell will be properly covered, as required for Non-RACM disposal, within the first 24 hours of placement in the monofill with one foot of the CRS Daily Cover. If and when necessary, additional cover will be applied to the Non-RACM sub-Cells to provide the minimum of one foot of cover at all times.

Litter, Vector and Nuisance Control Plan

Throughout each Cell, the equipment will spread Daily Cover, when necessary, to ensure the monofill is properly maintained. This Daily Cover is called Alternative Daily Cover, consisting of material (other than earthen material) that is placed on the surface of the operating Cell of the monofill when needed, to control the unlikely event of fires, odors, blowing litter and scavenging. This Daily Cover will be brought from Central Recycling Services.

Due to the debris being inert, there is no concern for wildlife or domestic animals to be attracted to the inert debris landfill and its operations. Neither odors and/or diseases will be issues on or off site as none of the debris will be putrescible.

Permit: *Alaska DEC, Solid Waste Program*
Applicant: *Central Monofill Services, Inc.*
Date Submitted: *January 8, 2013*

CRS plans on preventing any problems or issues that may occur on adjacent properties by using berms, grading plans, dust control and Storm Water Pollution Prevention (SWPPP) techniques throughout the disturbed areas on site. Existing Earth Berms on the South and West sides of the property will not only decrease the visual difference of the property, but to act as a buffer and prevent any material from leaving the site and travel onto any neighboring properties. The North and East sides of the monofill have ~1000' between the toe and a neighboring property. If any issues with blowing debris occur, CMS will implement a plan to combat this including earthen berms and chain link fence.

CRS will provide grading plans and implement the SWPPP for all ground disturbing activities. By applying these SWPPP techniques with the grading plans, this will lessen the amount of water movement on site and will ensure the very limited water discharge off of this property meets water quality criteria. The project is designed to have all water infiltrate the permeable gravel soils or drain into the drainage basin composed of industrial water. Should dust become an issue on site, CRS has access to available water trucks when needed.

The existing surrounding land uses within one mile around or adjacent to Lot C10 include: single family residential homes to the West, industrial mining operations to the Northeast, and Southeast and privately owned farming/agricultural due east. This property has been used for gravel mining operations in the past so CMS's future purpose for these properties and these plans will not interfere with the neighboring lands' uses or activities.

The initial projected average daily truck count is about 12, with truck counts of up to 25 per day for short periods of time. Gravel extraction haul trucks use the existing driveway located on Lot C10 and have historically had much larger volumes of trucks on a daily basis. CMS has Grandfather Rights to the driveway and gravel permit. It is not anticipated that a noticeable increase will occur in the noise or the truck traffic on the Glenn Highway.

Monitoring Plan

Due to the inert material being placed in this landfill and the drainage plan, no surface water or ground water is expected to be impacted. Visual inspections will occur on a regular basis following the attached inspection checklist. While limited daily inspections will be conducted whenever the landfill is in operation, at a minimum monthly inspections will be conducted following the entire checklist by a person familiar with all the permit requirements.

Permit: *Alaska DEC, Solid Waste Program*
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Operating Record

The operating record for this monofill will be kept on-site and a copy of this documentation will be kept at the CRS Facility located at the below address:

2400 Railroad Avenue,
Anchorage, Alaska 99501

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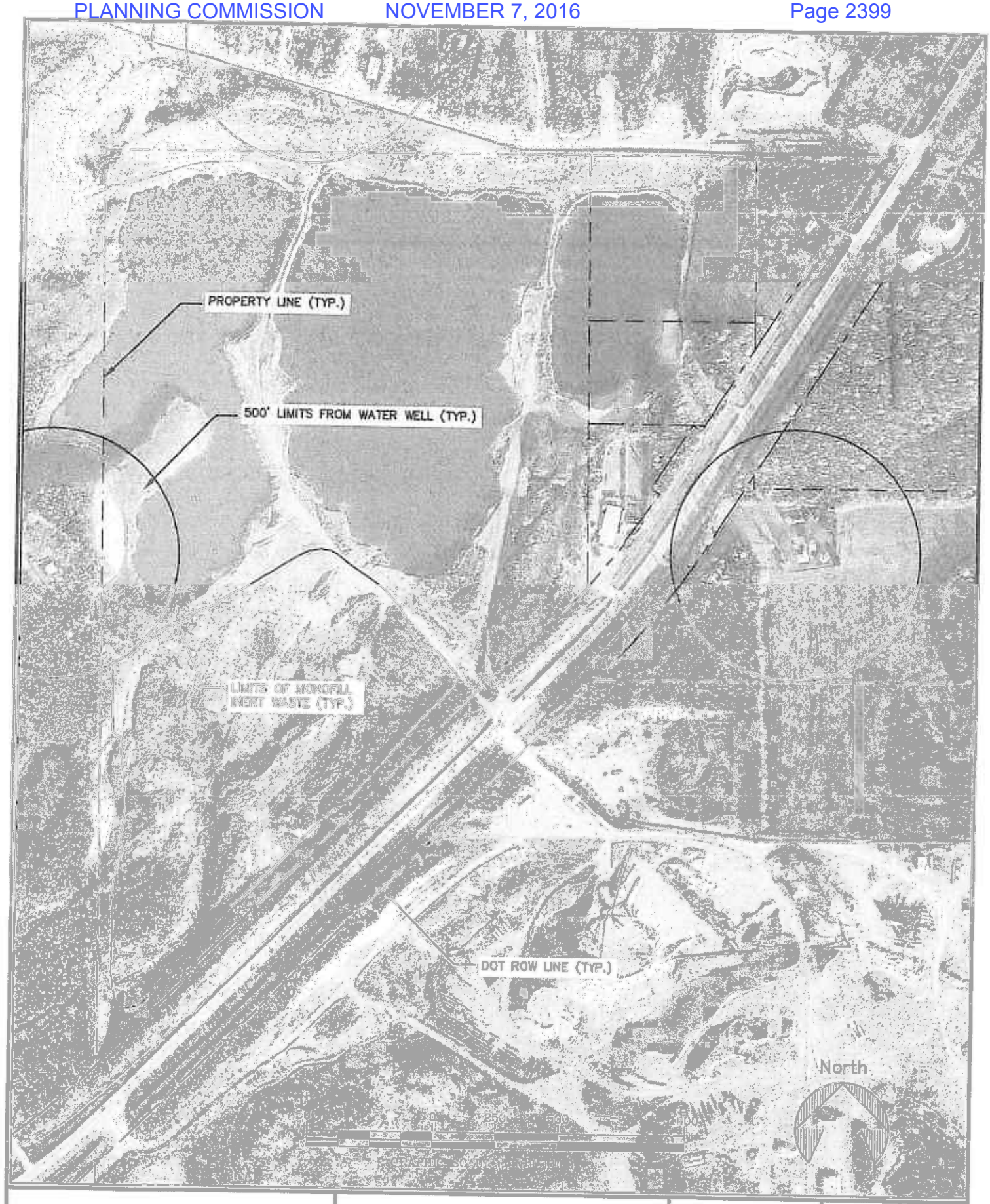
Visual Monitoring Checklist

Facility Name:	**CMS Palmer Monofill, Palmer, Alaska**
Inspector:	
Date:	

Evaluate each item and check whether acceptable (A) or unacceptable (U). Complete any required information, and make notes on the conditions observed, as well as any corrective actions taken. Keep these forms available for use in completing the annual and closure reports for this facility.

A	U	Notes
		Are there any sings of damage or potential damage caused by or may cause settlement, ponding, leakage, thermal instability, frost action, erosion, or otherwise affect operations at the site?
		Is there any damage to any monitoring equipment (may not be applicable)?
		Is there any evidence of waste leachate escaping the site?
		Is there any evidence of unauthorized disposals?
		Is there any evidence of unauthorized types of waste within monofill?
		Is there any evidence of any other permit or regulation violations?
		Is there any evidence of erosion or other damage to the integrity of the containment system (i.e. berms, erosion control devices, diversion structures)?
		Are there any signs of sloughing?
		Is there any evidence of ponding or accumulation of standing water?

		Is there any evidence of steam, excess heat, fire or combustion within the waste?
		Is there any evidence of death or stress to wildlife, or vegetation that might be caused by the facility?
		Is run-on water properly contained or diverted around the waste so that water does not enter the pile or cell?
		Are storm water BMPs properly installed in in good operating condition?
		Did any Storm Water BMPs require maintenance, repair, or replacement? If yes describe below
		Were changes or modifications to storm water BMPs illustrated on the Storm Water Site Map?
		Is there evidence of pollution discharges since the last inspection?
		Are storm water discharge locations free of sediment?
		Are sloped areas properly stabilized?
		Are sufficient spill response supplies on site?
		Is vehicle and equipment fueling area free of leaks, spills and other deleterious materials



AERIAL MAP WITH PROPERTY BOUNDARY & WELL LOCATIONS	CENTRAL MONOFIL PALMER, ALASKA	ENVIRONMENTAL MANAGEMENT INCORPORATED	PREPARED: LMR DRAWN: LMR REVIEWED: LAH DATE: 12/16/12	FIGURE A

Permafrost Characteristics of Alaska

Torre Jorgenson, Kenji Yoshikawa, Mikhail Kanevskiy, and Yuri Shur
University of Alaska Fairbanks, Institute of Northern Engineering, Fairbanks, Alaska, USA

Vladimir Romanovsky, Sergei Marchenko, and Guido Grosse
University of Alaska Fairbanks, Geophysical Institute, Fairbanks, Alaska, USA

Jerry Brown
International Permafrost Association, Woods Hole, Massachusetts, USA

Ben Jones
U.S. Geological Survey, Anchorage, Alaska, USA

A new permafrost map of Alaska, using a terrain-unit approach for mapping permafrost distribution based on climate and surficial geology is presented in conjunction with the Ninth International Conference on Permafrost held at the University of Alaska, June 29 to July 3, 2008. This map represents the third iteration of a permafrost map for Alaska, following the circum-arctic permafrost map (Brown et al. 1997), which made minor modifications to the initial map by Ferrians (1965). To map permafrost, we developed a rule-based model (see color-coded table) that incorporated mean annual air temperatures (MAAT) from the PRISM climate map and the surficial geology map (see back), of Karlstrom et al. (1964). We used terrain-permafrost relationships developed by Kreig and Reger (1982) and our knowledge of permafrost distribution to assign permafrost characteristics to each surficial deposit under varying temperatures. Surficial geology greatly affects permafrost characteristics because of differences in topography, soil texture (which affects moisture and thermal properties) and hydrology (surface-water and groundwater). We modified the surficial geology map to update some areas with new information (e.g., extinct loess and sand, and glaciomarine deposits).

We coded the permafrost map with surficial geology, MAAT, primary soil texture, permafrost extent, ground ice volume, and primary thermokarst landforms. The map focuses on the top 10 m of permafrost, where permafrost can be more readily mapped from surface features, determined by simple field measurements, and where ground ice usually is most abundant. Distribution of permafrost shown on the map is therefore also based on our knowledge about the presence or absence of permafrost within the upper 10 m. Although we used recent MAAT in our rule-based model, we note that permafrost distribution is greatly affected by past climates.

We relied on many sources for the effort but are not able to cite all references here. The main map shows permafrost thickness values based on MacCarthy (1952), Brewer (1958), Ferrians (1965), Péwé (1975), Osterkamp and Payne (1981), Lachenbruch et al. (1987), and Collett et al. (1989). Depths were determined by temperature logging or interpretation of ice-bearing permafrost from geophysical data. Southerly sites are included where the presence of permafrost is evident even if permafrost thicknesses were not determined.

The following characteristics are shown on small thematic maps on the reverse side of the main map.

Ground temperatures (usually measured at depths 20-30 m) were obtained from boreholes by V. Romanovsky, G. Clow, K. Yoshikawa, and T. Osterkamp as part of the Thermal State of Permafrost project for the International Polar Year (Brown and Romanovsky 2008). Only recent data are used.

Ground ice volumes were estimated for the upper 5 m of permafrost using terrain relationships established by Kreig and Reger (1982) and our field data. Ground ice volume near the surface is higher in colder regions due to active ice-wedge formation and ice segregation in fine-grained deposits. Buried glacial ice in old or stagnant young moraines is included, but is irregularly distributed at this map scale.

Pingo distribution was compiled mostly from Holmes et al. (1968), Galloway and Carter (1978), and Walker et al. (1985) and by satellite image interpretation. There are >1500 known pingos in Alaska. In central Alaska and nearby Yukon areas, there are ~700 pingos, mostly open-system. Closed-system pingos predominate in the North Slope, Seward Peninsula, and Nextak regions. Not all pingos have been inventoried.

The distribution of ice wedges was determined from the literature, from polygonal patterns evident on remote sensing imagery, and from our field experiences. Ice wedges actively form mainly in the continuous permafrost zone, and are inactive to weakly active in the discontinuous zone (Péwé 1975). Holocene ice wedges, which are limited to the top 3-5 m of permafrost, are smaller than large, deep (up to 35 m) syngenetic ice wedges formed during the Late Pleistocene. Symbols for abundant ice wedges denote general locations, whereas, symbols for sparse Holocene and Late Pleistocene wedges indicate specific areas, though distribution remains poorly known.

Thermokarst landforms are abundant in all permafrost zones (Jorgenson et al. 2008). They are varied, due to differences in temperature, ground ice volume, soil texture, slope, and hydrologic conditions. Abundance of thermokarst is difficult to map because of the wide range in size of features from small pits to large lakes, and similar landforms may have different origin.

The permafrost zones underlie 80% of Alaska, including continuous (32%), discontinuous (31%), sporadic (8%), and isolated (10%) permafrost. Glaciers and ice sheets occupy 4% of the area.

Many improvements are needed for a better permafrost map, including: a surficial geology map with updated information and better spatial accuracy, more information of terrain/ground ice/temperature/permafrost relationships, more temperature boreholes, and improved spatial models.

References

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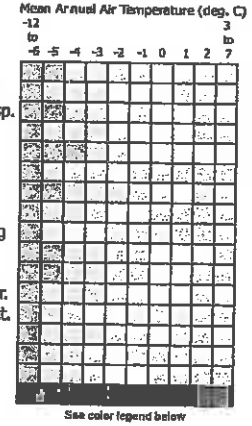
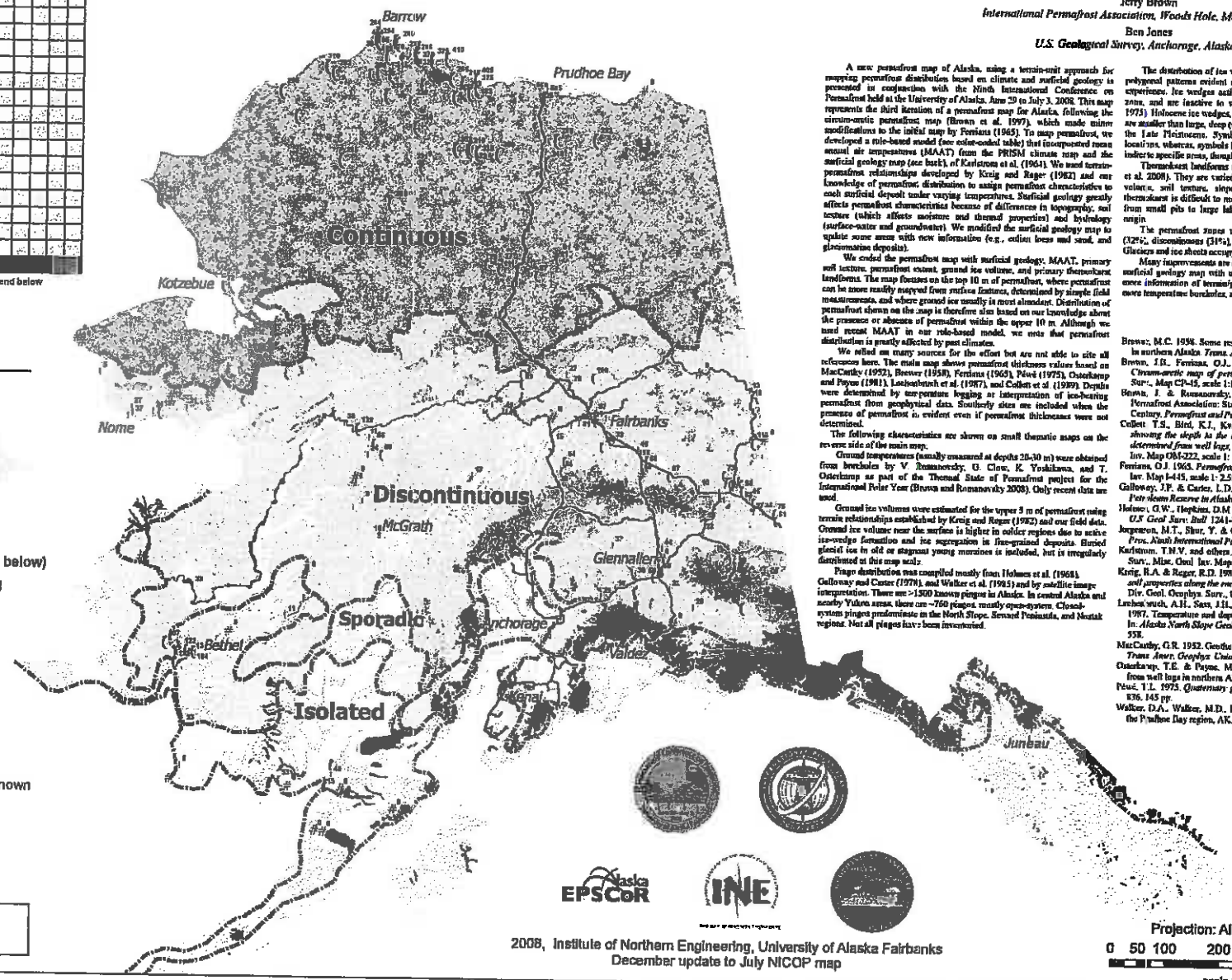
Permafrost Extent by Surficial Deposit





Legend

Permafrost Distribution

- Glacier
- Continuous (>90%)
- Discontinuous (50-90%)
- Sporadic (10-50%)
- Isolated (>0-10%)
- Absent (0%)
- Large Waterbodies (unfrozen below)
- Permafrost_Zones Generalized

Permafrost Depth (m)

- 5 - 50
- 51 - 100
- 101 - 200
- 201 - 300
- 301 - 500
- 501 - 600
- # Permafrost present but depth unknown

Other Features

- Major Roads
- Trans-Alaska Pipeline

ATTACHMENT B

2008, Institute of Northern Engineering, University of Alaska Fairbanks
December update to July NICOP map

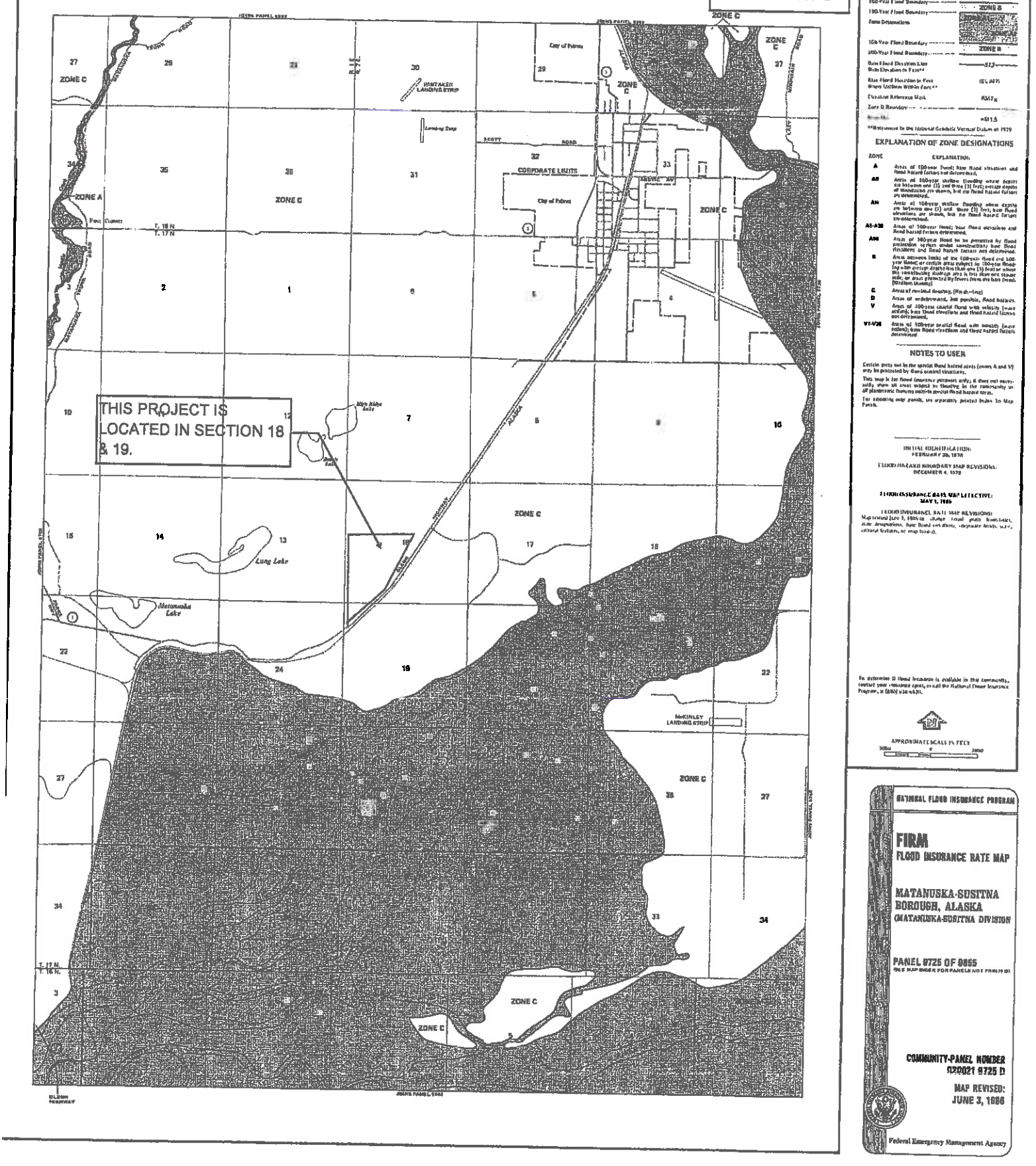
Projection: Albers Alaska, NAD 83

0 50 100 200 300 400 500 km

scale 1: 7,200,000

PLANNING COMMITTEE NOVEMBER 2016 Page 2400

ATTACHMENT C



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Permit: *Alaska DEC, Solid Waste Program*
Applicant: *Central Monofill Services, Inc.*
Date Submitted: *January 8, 2013*

Closure Plan
CMS Palmer Monofill

The purpose of this closure plan is to describe the methods and procedures that will be used during the closure of the CMS Palmer Monofill following its use.

Final Cover and Appearance

Following the closure of the site, the site will be characterized by a gently sloping (1%–2% grade) plateau as shown on Sheet 4 of the plan set. All surfaces will be seeded and covered with grass after germination.

Methods and Procedures

Following completion and filling of all cells within the monofill, native soil from the surrounding area will be brought to the area and used to create the two foot thick cap overtop the monofill. The cap will be compacted and brought to final grade using heavy equipment, such as, bulldozers. The soil berm designed to protect and stabilize the tire berm will be constructed throughout the operation of the monofill by adding additional soils as the height of the tire berm increases. A 4 inch topsoil layer may also be placed overtop the entire monofill if the soil cannot support grass growth; the topsoil will also consist of local material from surrounding areas. With the cap and topsoil in place, the area will be seeded with a seed mixture selected at that time.

Timeline and Schedule

It is anticipated that the final waste will be placed in 2040 and all reclamation operation will be completed by the end of 2041.

Future Property Use

Following the closure of the monofill the property will most likely become recreational use land such as sports fields and/or parks.

Survey Markers and Monuments

At the time of closure, two survey monuments will be placed on eastern corners of the Cell E, the asbestos cell, in the landfill. Additionally, the corners and all other appropriate features of site will be surveyed to document the location of all wastes. All ACM locations will also be recorded. Drawings showing the boundaries of the RACM waste management area must be filed with the department and attached to the property deed, with a written warning about health and safety hazards related to disturbing the site. The limits of the asbestos disposal area will be marked on property survey records, and recorded on the property deed as part of closure of the monofill.

ADEC Notification of Completed Closure Requirements

A more detailed closure plan will be submitted to ADEC for review and approval within 30 days of the placement of the last inert waste in the landfill. The final closure activities will

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Applicant: *Central Monofill Services, Inc.*
Date Submitted: *January 8, 2013*

begin in accordance with the schedule in the closure plan. Once the monofill has been closed and all areas of the monofill have been stabilized a report will be submitted to the ADEC which will address all applicable closure requirements. The monofill will be monitored monthly for 60 months (5 years) after the final cap is installed.

ENVIRONMENTAL MANAGEMENT INCORPORATED

January 8, 2013

State of Alaska
Department of Environmental Conservation
Solid Waste Program
Division of Environmental Health
555 Cordova Street
Anchorage, AK 99501

RE: CMS Palmer Monofill

Subj: Reclamation Quote

This quote is in reference to the final reclamation of the proposed Central Monofill Services Inert Debris Monofill located at Milepost 35.3 Glen Highway. This proposal includes labor, supplies and equipment to cover the 40 acre site with 4 inches of topsoil, properly seed the disturbed 40 acres, and then monitor the site for 60 months.

Item	Quantity	Cost Per Unit	Total Cost
Closure of Monofill			
Topsoil w Labor	167,000 SY	$ 1.00	$ 83,500.00
Seeding w Labor	40 Acres	$ 500.00	$ 20,000.00
Subtotal			$103,500.00
Construction Contingency (15%)			$ 15,525.00
Reclamation Subtotal			$ 119,025.00
Post Closure Care of the Facility (Visual inspections, ½ day for 60 months)			
Monitoring Labor	30 Days	$ 350.00	$ 10,500.00
Equipment Cost	30 Days	$ 55.00	$ 1,650.00
Post Closure Care Subtotal			$ 12,150.00
Total			**$ 131,175.00**

With annual revenue of over $3.5 million per year, CRS has the financial resources to complete the closure of this site. Appropriate bonding or other documents can be provided on request.

Sincerely,
ENVIRONMENTAL MANAGEMENT, INC.

Larry Helgeson, P.E.
V.P., Consulting

206 E. FIREWEED LANE, SUITE 201 • ANCHORAGE, AK 99503-2703
CONSULTING (907) 272-9336 • FAX (907) 272-4159 • TRAINING (907) 272-8852 • FAX (907) 272-0319
www.emi-alaska.com

VOLUMES (GENERATED BY AUTOCAD CIVIL 3D)

BASE SURFACE	COMPARISON SURFACE	CUT (CY)	FILL (CY)
ORIGINAL GROUND	EXCAVATION TO 85'	423,404	53,752
EXCAVATION TO 85'	FINAL SURFACE	252	2,242,222

FILL REQUIRED FOR ROADS	CUT (CY)	FILL (CY)
FILL ACCESS	242	23,626
ENTRANCE RIGHT	211	803
ENTRANCE LEFT	18	1,553

	AREA (SF)	VOL (CF)	VOL (CY)
FILL REQUIRED FOR TOP CAP (2')	1,489,953	2,979,906	110,367
FILL REQUIRED FOR CELL SEPARATION MID (1')	1,292,421	1,292,421	47,867
FILL REQUIRED FOR BOTTOM CELL SEPARATION (1')	1,489,953	1,489,953	55,183

Fill needed:		Fill Available	
FILL BELOW 85'	53,752 CY	EXCAVATION BELOW 85'	423,404 CY
COVER	213,418 CY		
ROADS	25,982 CY		
TOTAL	293,152 CY	NET	130,252 Excess

Anticipated Life of Project

Type of Waste

	Yearly Tons	Vol (CF)	Vol (CY)	
Inert	25,000	1,000,000	37,037 CY/Year	using 50lb/cf
Non RACM	5,000	500,000	18,519 CY/Year	using 20lb/cf
RACM	5,000	500,000	18,519 CY/Year	using 20lb/cf

Total 74,074 Per Year

Total Fill Space Available 2,028,804 CY

(Total Fill Space/Per Year) 27.39 Years of Life

Tire Bale Wall Structural Calculations

Concepts

The following conditions have been evaluated for the Tire Bale Wall Structural Calculations:

- Sliding Failure – See Attachment A
- Overturning Moment Failure – See Attachment B
- Deep Seated Failure – See Below
- Excessive Settlement – See Below
- Bearing Capacity Failure – See below

Methods and Procedures

Some of the calculations above rely on bearing capacity and typical soil coefficients that are readily available from soil resources to be completed. Due to the nature of the C&D debris (typical gradations, types of materials, variability of material per sample) that will be used as lightweight backfill material behind the wall, and in some areas, the bedding material for the walls, a different methodology must be used to obtain the pertinent data.

Laboratory tests will not represent the material as it will be found in the monofill nor are there tests setups to establish the values needed for the calculations. Alaska Test Labs (DOWL) was consulted about this issue and they helped EMI establish a methodology to calculate the bearing capacity and in place density of the materials in the field, in the compacted and in-situ condition that will represent the real world conditions we face.

ASTM D 1194-94 Standard Test Method for Bearing Capacity of Soil for Static Load and Spread Footings (See Attachment C) will be setup in the field after a cell has been filled, compacted and allowed to settle for a small period of time. With this test method, a field condition test will allow EMI to establish a true bearing capacity for the inert waste. An in place density test such as the Sand Cone Method will be used to establish a field density. With this information, final calculations will be given to DEC for review and approval. If the test results prove the material will not work as previously planned, a meeting will be setup between CMS and DEC to discuss site plan changes.

Deep Seated Failure – Due to the general shape of the retaining structure and the existing ground slope it will be seated against (See Detail 5 of Sheet 3), the existing ground will resist forces caused by deep-seated shear failure. The existing soil has a density ranging from 100 lb/ft^3 to 135 lb/ft^3 as compared to the Inert waste at around 45 lb/ft^3. Also, traditional bearing wall calculations are setup with vertical retaining wall resisting soil forces. The shape and orientation of the wall and gentle 2:1 slope provides an even greater factor of safety against deep seated failure.

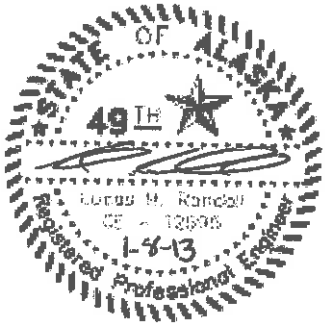
Excessive Settlement – The values needed to calculate settlement are not known at this time. EMI will setup benchmarks onsite and record data over time to keep track of this for

future use. The retaining wall and monofill are designed such that any settlement and/or wall failures that could occur would only impact onsite volumes and shapes. There are no area's where a settlement could cause adverse effects to neighboring lands or cause safety issues for workers onsite. Also, the nature of the tire bales being built with existing soils as a leveling material, allow for settlement to occur without adverse consequences.

Bearing Capacity Failure – Calculations will be submitted after a Bearing capacity for the material is established as described above.

Timeline and Schedule

See the operations plan for more details on cell construction and schedule. Tire Bale's will not be used for retaining walls for at least one or two years into the operating life due to their relative elevation and location in the monofill. This delay in use will allow time to sample and test the material, complete calculations, and obtain approval from DEC for use.



Sliding Failure

Attachment A

Assumptions

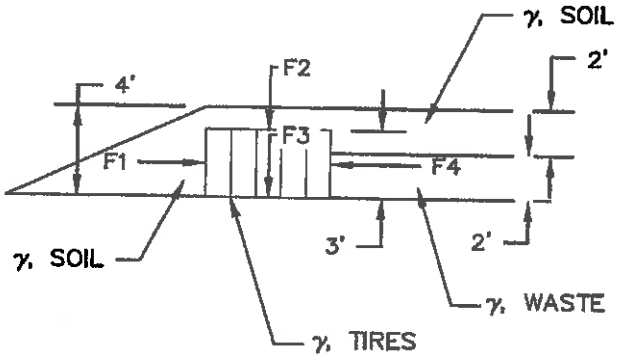
			Comments	
Ka	0.333	(unitless)	(tan^2(45-Φ/2))	Rankine Active Pressure coefficient
Φ=	30	degrees		
c=	0		(Assuming zero is conservative)	
γ, soil=	92	lb/ft^3	(Loose Uniform Sand)	
γ, inert waste=	45	lb/ft^3	(From empirical data)	
γ, tires=	35	lb/ft^3	(Lowest known Value)	

Unit Force 1	245.3333	lb/ft	(1/2)*(Ka)*(γ, soil)*H^2	Eq. 7.23
Force 1	490.6667	LB	(1/2)*Unit Force*H	(Area of the Triangle)
Unit Force 2	92	lb/ft		
Force 2	460	LB		
Unit Force 3	105	lb/ft		
Force 3	525	LB		
Unit Force 4	151.3333	lb/ft		
Force 4	302.6667	LB		

Soil Resisitve Forces

R' = (F2+F3) tan Φ + c (Section 8.8)

R'	442.4803	LB	(F1 + R')
Sum forces Right	933.1469	LB	
Sum forces Left	302.6667	LB	
FS	3.08	> 2 so OK!	Forces Right/ Forces Left



All formulas listed come from Principals of Foundation Engineering 5th Edition, Braja M Das
1. Sand Density found on Page 9, Principals of Foundation Engineering 5th Edition, Braja M Das
2. Inert Waste Density comes from empirical data provided by Central Recycling Services
3.Tire Bale Density comes from Table 3.1, Report No. CDOT-DTD-R-2005-2 Tire Bales in Highway Applications: Feasibility and Properties Evaluation, Zornberg, Christopher and Oosterbaan

OverTurning Moment

Attachment B

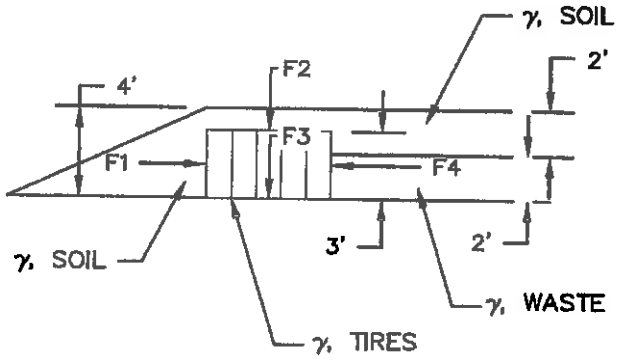
Assumptions

			Comments	
Ka	0.333	(unitless)	(tan^2(45-Φ/2))	Rankine Active Pressure coefficient
Φ=	30	degrees		
c=	0		(Assuming zero is conservative)	
γ, soil=	92	lb/ft^3	(Loose Uniform Sand)	
γ, inert waste=	45	lb/ft^3	(From empirical data)	
γ, tires=	35	lb/ft^3	(Lowest known Value)	

Unit Force 1	245.3333	lb/ft	Eq. 7.31
Force 1	490.6667	LB	Area
M1	654.2222	lb-ft	Eq. 8.3
Unit Force 2	92	lb/ft	Eq. 7.31
Force 2	460	LB	Area
M2	1150	lb-ft	Eq. 8.3
Unit Force 3	105	lb/ft	Eq. 7.31
Force 3	525	LB	Area
M3	1312.5	lb-ft	Eq. 8.3
Unit Force 4	151.3333	lb/ft	Eq. 7.31
Force 4	302.6667	LB	Area
M4	403.5556	lb-ft	Eq. 8.3

Sum Moments Resisting Overturning	3116.722	(M1 +M2 + M3)
Sum Moments Causing Overturning	403.5556	(M4)

FS 7.72 > 2 so OK! M resist/ M over Eq. 8.2



All formulas listed come from Principals of Foundation Engineering 5th Edition, Braja M Das
1. Sand Density found on Page 9, Principals of Foundation Engineering 5th Edition, Braja M Das
2. Inert Waste Density comes from empirical data provided by Central Recycling Services
3.Tire Bale Density comes from Table 3.1, Report No. CDOT-DTD-R-2005-2 Tire Bales in Highway Applications: Feasibility and Properties Evaluation, Zornberg, Christopher and Oosterbaan

Attachment C

Designation: D 1194 – 94

Standard Test Method for Bearing Capacity of Soil for Static Load and Spread Footings[1]

This standard is issued under the fixed designation D 1194; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

This standard has been approved for use by agencies of the Department of Defense.

1. Scope

1.1 This test method covers estimation of the bearing capacity of soil in place by means of field loading tests. This test method can be used as part of a procedure for soil investigation for foundation design. It gives information on the soil only to a depth equal to about two diameters of the bearing plate, and takes into account only part of the effect of time.

1.2 The values stated in inch-pound units are to be regarded as the standard. The SI units given in parentheses are for information only.

1.3 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Significance and Use

2.1 This test method is used to estimate the bearing capacity of a soil under field loading conditions for a specific loading plate and depth of embedment. The bearing capacity of a soil is not simply a soil strength parameter, but it also depends on the magnitude and distribution of the load, dimension, and geometry of the loading plate and depth of embedment (or elevation of testing). This bearing capacity can be used in soil investigations and for the design of foundations.

3. Apparatus

3.1 *Loading Platforms or Bins* of sufficient size and strength to supply the estimated total load required or equivalent means of supplying the total load reaction anticipated.

3.2 *Hydraulic or Mechanical Jack Assembly* of sufficient capacity to provide and maintain the maximum estimated load for the specific soil conditions involved, but not less than 50 tons (440 kN) in any case, and at least one device, such as a pressure gage, electronic load cell, or proving ring, for measuring the force exerted by the jack. The force-measuring devices should be capable of recording the load with an error not exceeding ±2 % of the load increment used.

3.3 *Bearing Plates*—Three circular steel bearing plates, not less than 1 in. (25 mm) in thickness and varying in diameter from 12 to 30 in. (305 to 762 mm), including the minimum and maximum diameter specified or square steel bearing plates of equivalent area. As an alternative, three small concrete footings of the size mentioned or larger can be cast *in-situ*. Such footings must have a depth of not less than two thirds of their width.

3.4 *Settlement-Recording Devices*, such as dial gages, capable of measuring settlement of the test plates to an accuracy of at least 0.01 in. (0.25 mm).

3.5 *Miscellaneous Apparatus*, including loading columns, steel shims, and other construction tools and equipment required for preparation of the test pits and loading apparatus.

NOTE 1—Testing assemblies may vary widely, depending on job conditions, testing requirements, and equipment available. The testing assembly and program should be planned in advance and approved by the supervising engineer, and in general can permit considerable latitude in details within the specific requirements noted above and outlined in the following test procedure. A typical assembly for conducting load tests is illustrated in Fig. 1.

4. Procedure

4.1 *Selection of Test Areas*—Base the selection of representative test areas for bearing tests on the results of exploratory borings and on the design requirements of the structure. Unless otherwise specified, make the load test at the elevation of the proposed footings and under the same conditions to which the proposed footings will be subjected. At the selected elevation place the bearing plates at the same relative depths (depths expressed in plate diameters) as the actual footing.

NOTE 2—For footings placed under permanently excavated basements the depth of the actual footing is construed as the depth from the basement level or depth over which the surcharge is permanently acting, rather than the depth from the ground surface.

NOTE 3—If the mentioned condition of equal relative depth cannot be met for practical reasons, the test results must be interpreted by using an

[1] This test method is under the jurisdiction of ASTM Committee D18 on Soil and Rock and is the direct responsibility of Subcommittee D18.08 on Special and Construction Control Tests.

Current edition approved March 15, 1994. Published May 1994. Originally published as D 1194 – 52 T. Last previous edition D 1194 – 72 (1987)ε[1].

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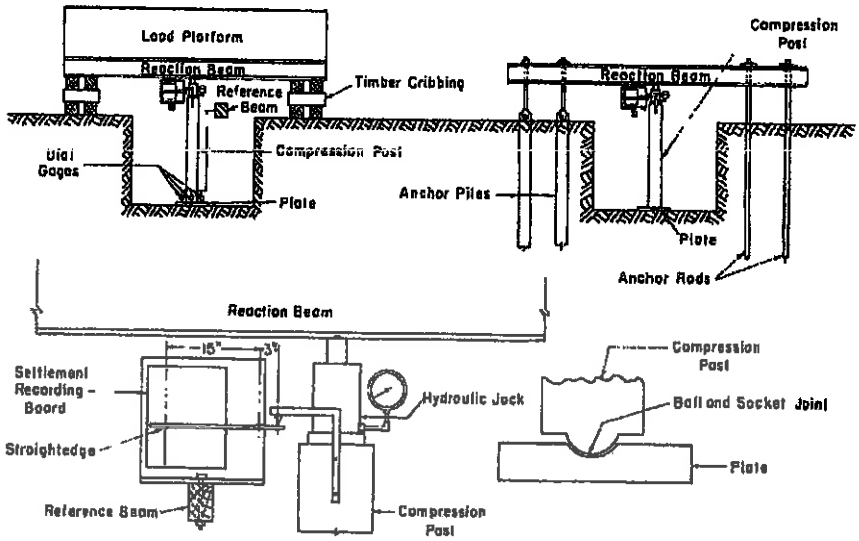

FIG. 1 Typical Setup for Conducting Static Load Tests

appropriate theory of bearing capacity. Also make corrections for the effects of the shape and size of the footing and the effects of the water table as appropriate.

4.2 *Test Pits*—At least three test locations are required, and the distance between test locations shall not be less than five times the diameter of the largest plate used in the tests. Carefully level and clean the areas to be loaded by the test plates or footings so that the loads are transmitted over the entire contact areas on undisturbed soil. Prior to loading, protect test pits and areas against moisture changes in the soil unless it is expected that wetting of the soil will occur at some future time, as in the case of hydraulic structures. In this case, prewet the soil in the area to the desired extent to a depth not less than twice the diameter of the largest bearing plate.

4.3 *Loading Platforms*—Support the loading platforms or bins by cribbing or other suitable means, at points as far removed from the test area as practicable, and preferably not less than 8 ft (2.4 m). The total load required for the test shall be available at the site before the test is started.

4.4 *Dead Load*—Weigh and record as dead weight all equipment used, such as steel plates, loading column and jack, etc., that are to be placed on the test area prior to the application of the load increments.

4.5 *Reference Beam*—Independently support the beam supporting dial gages or other settlement-recording devices as far as practicable, but not less than 8 ft (2.4 m) from the center of the loaded area.

4.6 *Load Increments*—Apply the load to the soil in cumulative equal increments of not more than 1.0 ton/ft^2 (95 kPa), or of not more than one tenth of the estimated bearing capacity of the area being tested. Accurately measure each load, and apply it in such a manner that all of the load reaches the soil as a static load, without impact, fluctuation, or eccentricity.

4.7 *Time Interval of Loading*—After the application of each load increment, maintain the cumulative load for a selected time interval of not less than 15 min.

NOTE 4—Longer time intervals may be determined by maintaining the load until the settlement has ceased or the rate of settlement becomes uniform. However, maintain any type of time interval so selected for each load increment in all tests of any series.

4.8 *Measurement of Settlement*—Keep a continuous record of all settlements. Make settlement measurements as soon as possible before and after the application of each load increment, and at such equal time intervals, while the load is being held constant, as will provide not less than six settlement measurements between load applications.

4.9 *Termination of Tests*—Continue each test until a peak load is reached or until the ratio of load increment to settlement increment reaches a minimum, steady magnitude. If sufficient load is available, continue the test until the total settlement reaches at least 10 % of the plate diameter, unless a well-defined failure load is observed. After completion of observations for the last load increment, release this applied load in three approximately equal decrements. Continue recording rebound deflections until the deformation ceases or for a period not smaller than the time interval of loading.

NOTE 5—The following alternative loading procedure is also permissible: Apply the load to the soil in increments corresponding to settlement increments of approximately 0.5 % of the plate diameter. After the application of each settlement increment, measure the load at some fixed time intervals, for example, 30 s, 1 min, 2 min, 4 min, 8 min, and 15 min, after load application, until the variation of the load ceases or until the rate of variation of the load, on a load *versus* logarithm-of-time scale becomes linear. Continue loading in selected settlement increments. Termination of tests and unloading are made in the same manner as in 4.9.

5. Report

5.1 In addition to the continuous listing of all time, load, and settlement data for each test, as prescribed in Section 3, report all associated conditions and observations pertaining to the test, including the following:

5.1.1 Date,

5.1.2 List of personnel,

5.1.3 Weather conditions,

5.1.4 Air temperature at time of load increments, and

5.1.5 Irregularity in routine procedure.

6. Precision and Bias

6.1 The precision and bias of this test method for determining the bearing capacity of soil in place by means of a field loading test has not been determined. No available methods provide absolute values for the bearing capacity of soil in place against which this method can be compared. The variability of the soil and the resulting disturbance of the soil under the loading plate do not allow for the repetitive duplication of test results required to obtain a meaningful statistical evaluation. The subcommittee is seeking pertinent data from users of this method which may be used to develop meaningful statements of precision and bias.

7. Keywords

7.1 bearing capacity; bearing plate; deflection; settlement

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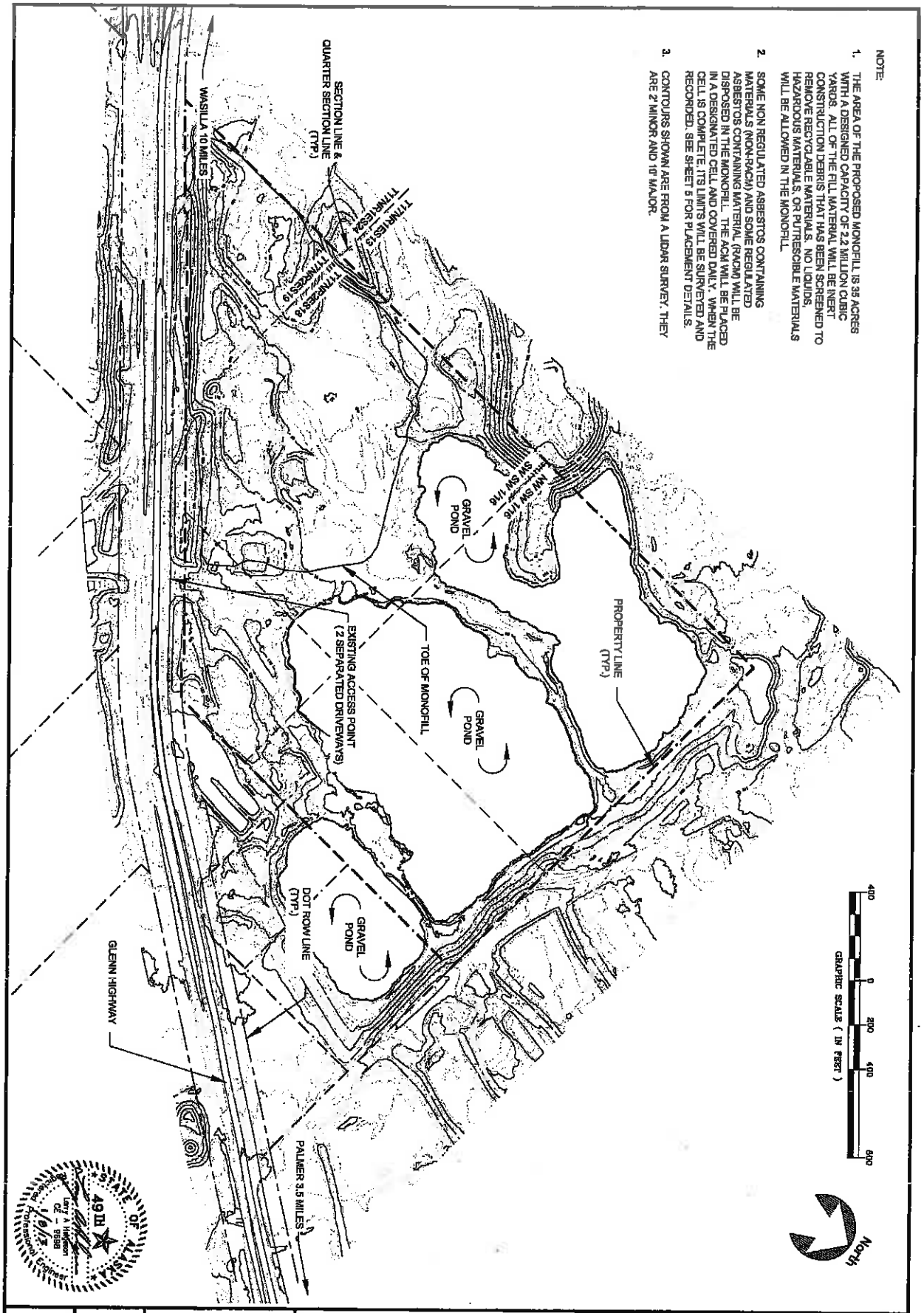
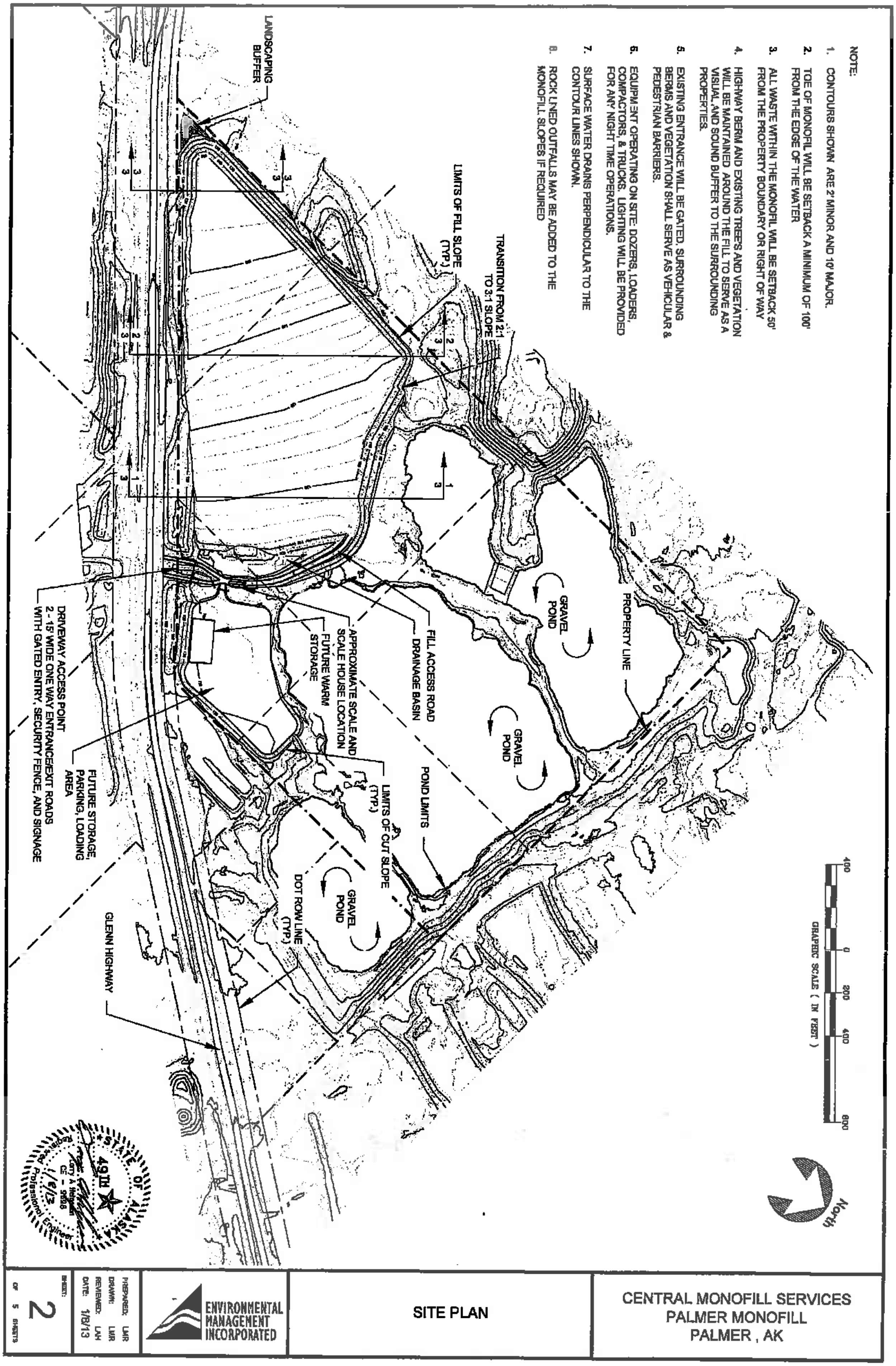
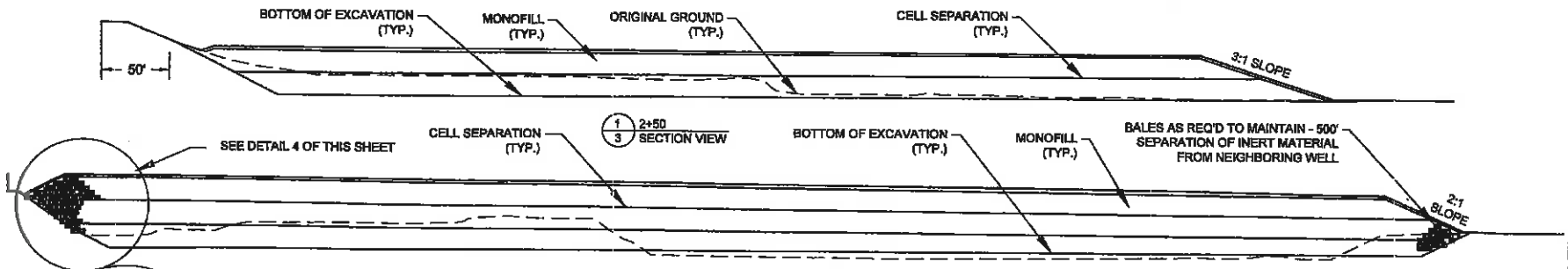
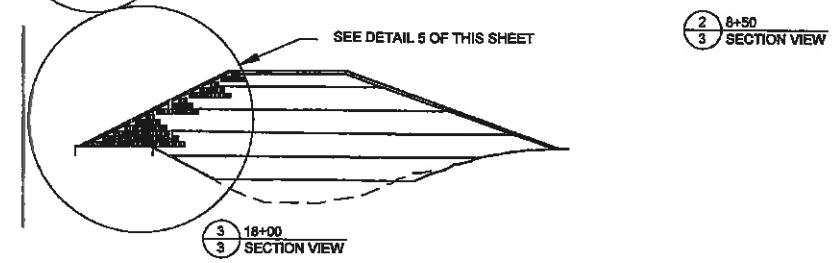
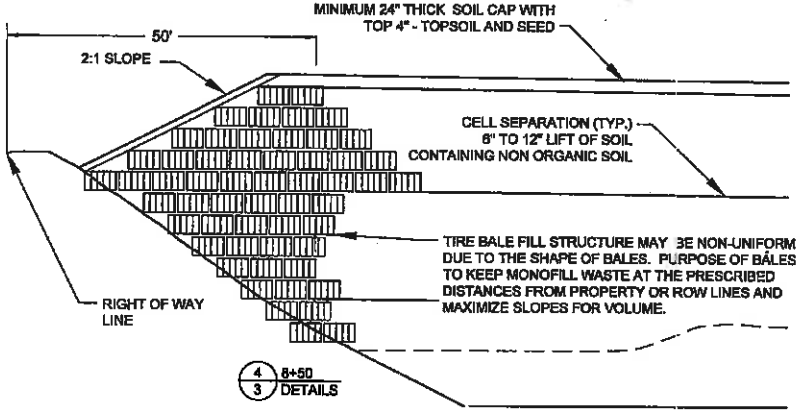
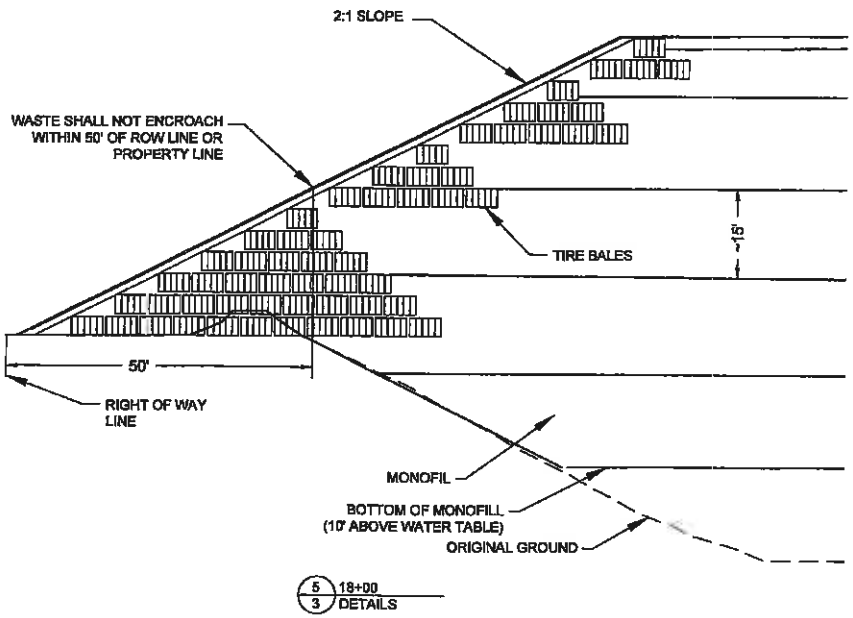

NOTE:
1. THE AREA OF THE PROPOSED MONOFILL IS 35 ACRES WITH A DESIGNED CAPACITY OF 2.2 MILLION CUBIC YARDS. ALL OF THE FILL MATERIAL WILL BE INERT CONSTRUCTION DEBRIS THAT HAS BEEN SCREENED TO REMOVE RECYCLABLE MATERIALS. NO LIQUIDS, HAZARDOUS MATERIALS, OR PUTRESCIBLE MATERIALS WILL BE ALLOWED IN THE MONOFILL.
2. SOME NON REGULATED ASBESTOS CONTAINING MATERIALS (NON-RACM) AND SOME REGULATED ASBESTOS CONTAINING MATERIAL (RACM) WILL BE DISPOSED IN THE MONOFILL. THE ACM WILL BE PLACED IN A DESIGNATED CELL AND COVERED DAILY. WHEN THE CELL IS COMPLETE, ITS LIMITS WILL BE SURVEYED AND RECORDED. SEE SHEET 5 FOR PLACEMENT DETAILS.
3. CONTOURS SHOWN ARE FROM A LIDAR SURVEY. THEY ARE 2' MINOR AND 10' MAJOR.
WASILLA 10 MILES
SECTION LINE & QUARTER SECTION LINE (TYP.)
TTMR-ES18
TTMR-ES19
TTMR-ES20
NW SW 1/16
SW SW 1/16
GRAVEL POND
GRAVEL POND
GRAVEL POND
PROPERTY LINE (TYP.)
TOE OF MONOFILL
EXISTING ACCESS POINT (2 SEPARATED DRIVEWAYS)
DOT ROW LINE (TYP.)
GLENN HIGHWAY
PALMER 3.5 MILES
NORTH
GRAPHIC SCALE (IN FEET)
400
0
200
400
800
STATE OF ALASKA
49TH
PREPARED: LMR
DRAWN: LMR
REVIEWED: LAH
DATE: 1/2/13
SHEET: 1
OF 5 SHEETS
ENVIRONMENTAL MANAGEMENT INCORPORATED
EXISTING CONDITIONS
CENTRAL MONOFILL SERVICES
PALMER MONOFILL
PALMER , AK

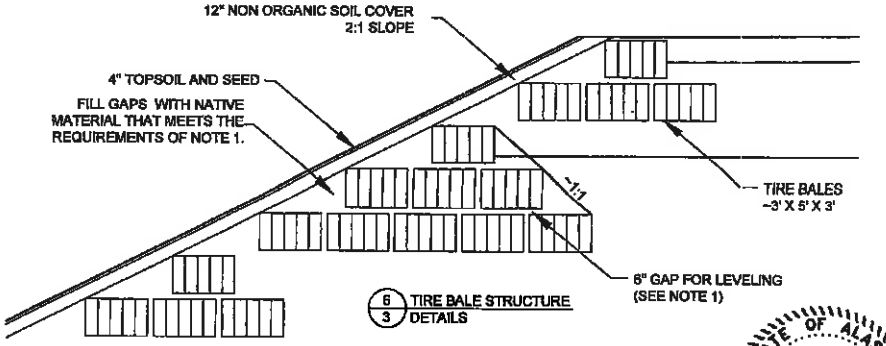

NOTE:
1. CONTOURS SHOWN ARE 2' MINOR AND 10' MAJOR.
2. TOE OF MONOFIL WILL BE SETBACK A MINIMUM OF 100' FROM THE EDGE OF THE WATER
3. ALL WASTE WITHIN THE MONOFIL WILL BE SETBACK 50' FROM THE PROPERTY BOUNDARY OR RIGHT OF WAY
4. HIGHWAY BERM AND EXISTING TREES AND VEGETATION WILL BE MAINTAINED AROUND THE FILL TO SERVE AS A VISUAL AND SOUND BUFFER TO THE SURROUNDING PROPERTIES.
5. EXISTING ENTRANCE WILL BE GATED. SURROUNDING BERMS AND VEGETATION SHALL SERVE AS VEHICULAR & PEDESTRIAN BARRIERS.
6. EQUIPMENT OPERATING ON SITE: DOZERS, LOADERS, COMPACTORS, & TRUCKS. LIGHTING WILL BE PROVIDED FOR ANY NIGHT TIME OPERATIONS.
7. SURFACE WATER DRAINS PERPENDICULAR TO THE CONTOUR LINES SHOWN.
8. ROCK LINED OUTFALLS MAY BE ADDED TO THE MONOFILL SLOPES IF REQUIRED
LANDSCAPING BUFFER
LIMITS OF FILL SLOPE (TYP.)
TRANSITION FROM 2:1 TO 3:1 SLOPE
PROPERTY LINE
GRAVEL POND
GRAVEL POND
GRAVEL POND
FILL ACCESS ROAD
DRAINAGE BASIN
APPROXIMATE SCALE AND SCALE HOUSE LOCATION
FUTURE WARM STORAGE
POND LIMITS
LIMITS OF CUT SLOPE (TYP.)
DOT ROW LINE (TYP.)
DRIVEWAY ACCESS POINT 2 - 15' WIDE ONE WAY ENTRANCE/EXIT ROADS WITH GATED ENTRY, SECURITY FENCE, AND SIGNAGE
FUTURE STORAGE, PARKING, LOADING AREA
GLENN HIGHWAY
GRAPHIC SCALE (IN FEET)
400 0 200 400 800
North
STATE OF ALASKA
49TH
Larry A. Hetzel
CE - 9558
1/8/13
Professional Engineer
ENVIRONMENTAL MANAGEMENT INCORPORATED
PREPARED: LMR
DRAWN: LMR
REVIEWED: LAH
DATE: 1/8/13
SHEET: 2 OF 5 SHEETS
SITE PLAN
CENTRAL MONOFILL SERVICES
PALMER MONOFILL
PALMER , AK











NOTE:

1. VISUAL INSPECTION WILL BE USED TO CONFIRM THE MATERIAL IN CONTACT WITH THE TIRE BALES CONTAINS NO ORGANICS. NO VISIBLE ORGANIC DEBRIS OR CLUMPS OF PEAT WILL BE ALLOWED. SOIL WILL MEET THE INORGANIC CLASSIFICATION PER ASTM 2488.

STATE OF ALASKA 49TH
Larry A Helgeson
CE – 9698
Registered Professional Engineer
12/6/12

CENTRAL MONOFILL SERVICES
PALMER MONOFILL
PALMER , AK

TYPICAL SECTIONS

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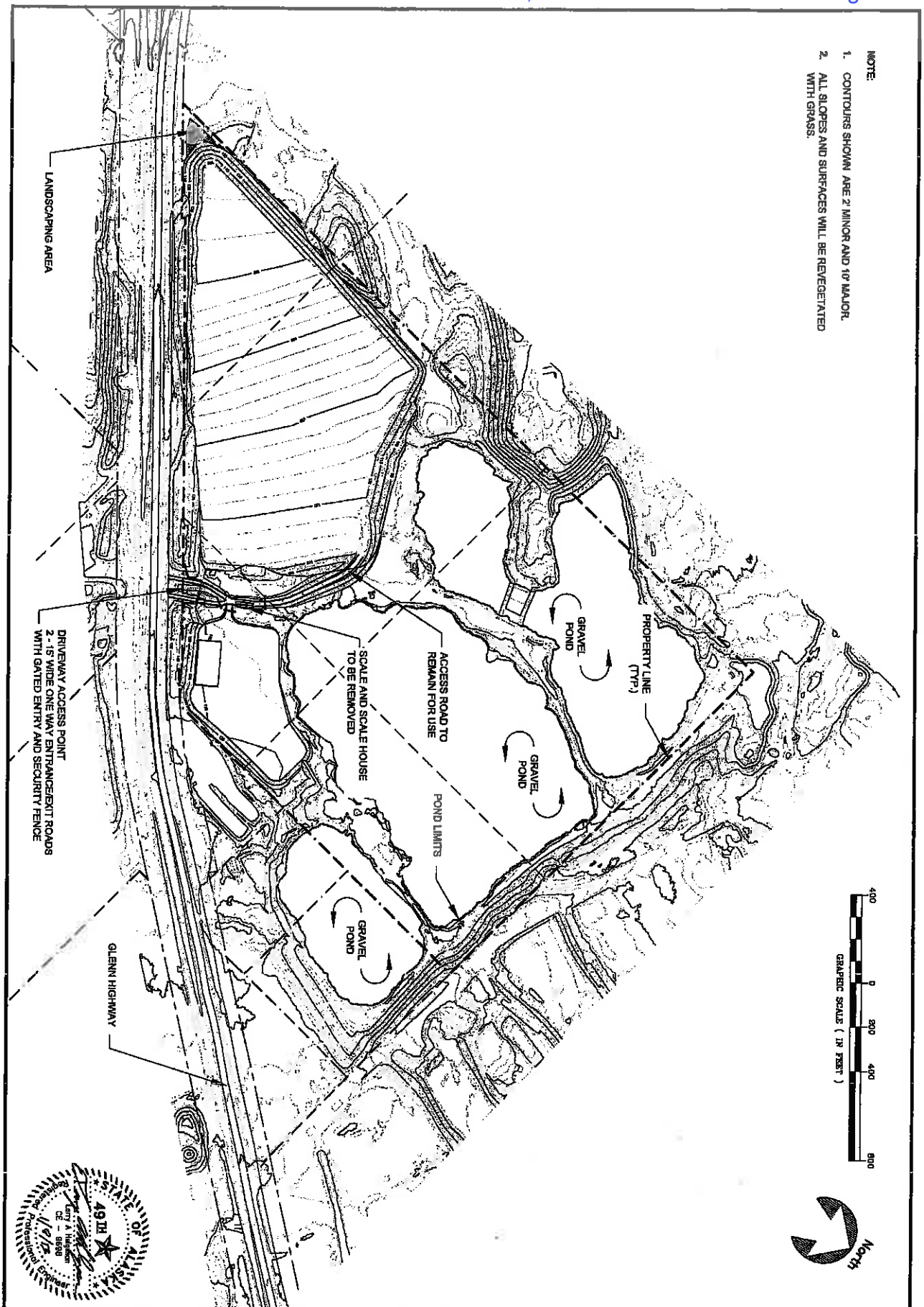
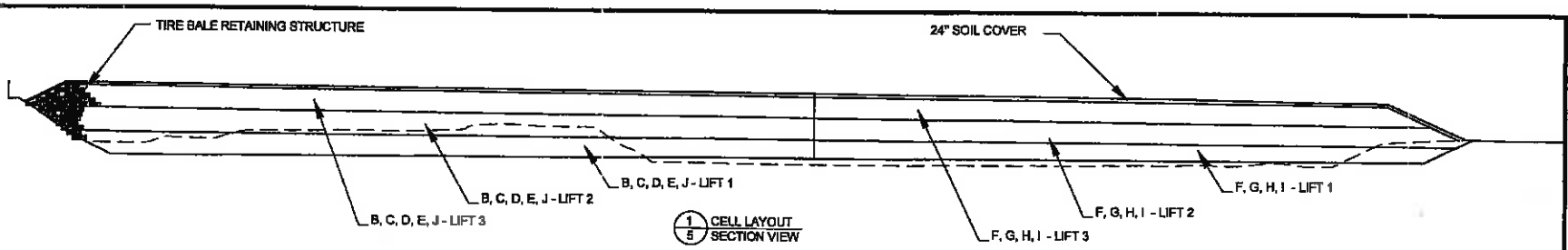
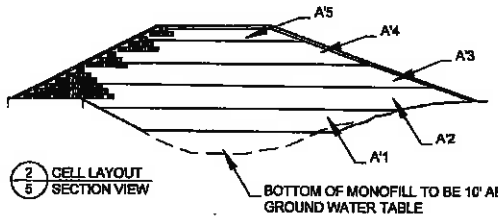
PREPARED: LMR
DRAWN: LMR
REVIEWED: LAH
DATE: 12/6/12

SHEET: 3
OF 5 SHEETS



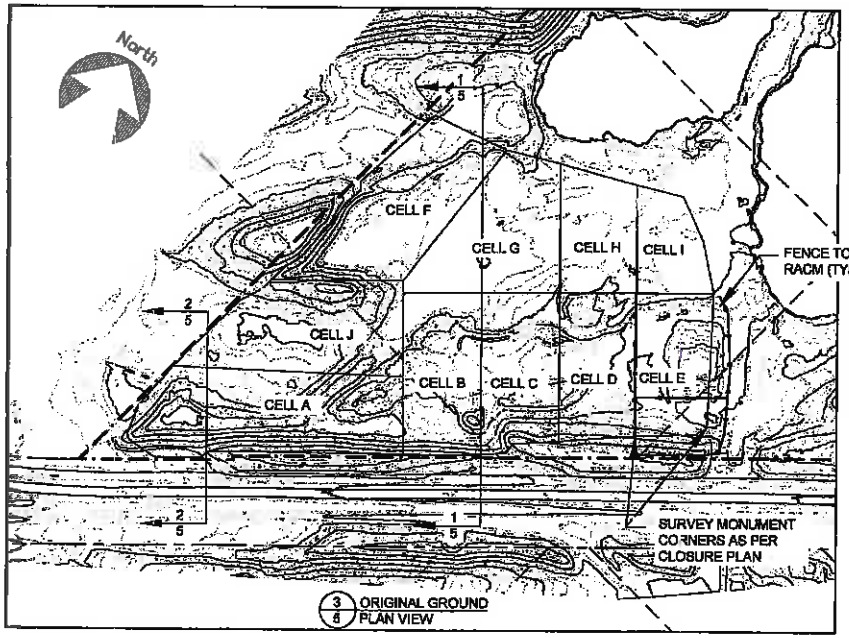
PREPARED: LMR DRAWN: LMR REVIEWED: LAH DATE: 1/8/13 SHEET: 4 OF 5 SHEETS	ENVIRONMENTAL MANAGEMENT INCORPORATED	CLOSURE PLAN	CENTRAL MONOFILL SERVICES PALMER MONOFILL PALMER , AK

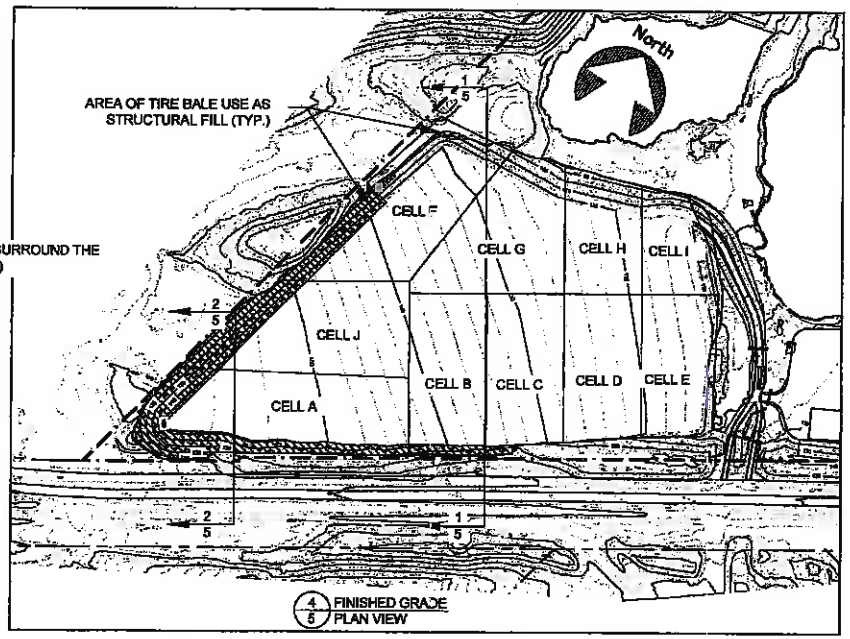




NOTE:

1. CELL E WILL CONTAIN THE RACM. EXACT EXTENTS OF THE ACM WILL BE SURVEYED AND RECORDED. THE CELL WILL HAVE PERMANENT FENCING ON 2 SIDES BUILT AS THE CELL DEVELOPS. THE FENCE ON THE NORTH SIDE AND SOUTHWEST SIDE WILL BE MOVED/BUILT IN PHASES AS THE NEED TO EXPAND ARISES.
2. NON-RACM WILL BE DISPOSED AS PER THE OPERATIONS PLAN.





CENTRAL MONOFILL SERVICES
PALMER MONOFILL
PALMER , AK

OPERATIONS PLAN

ENVIRONMENTAL MANAGEMENT INCORPORATED

PREPARED: LMR
DRAWN: LMR
REVIEWED: LAH
DATE: 12/6/12

SHEET: 5 OF 5 SHEETS

ADEC FACT SHEETS

Handling & Disposal of Construction & Demolition Waste

April 2014

Solid Waste Program

Division of Environmental Health

Department of Environmental Conservation

Anchorage Office:
555 Cordova St
Anchorage, AK 99501
(907)269-7802
Fax (907) 269-7600

Fairbanks Office:
610 University Ave
Fairbanks, AK 99709
(907) 451-2108
Fax (907) 451-2188

Juneau Office:
410 Willoughby Ave, Ste 303
Juneau, AK 99801
(907) 465-5318 or
(907) 465-5353
Fax (907) 465-5362

http://dec.alaska.gov/eh/sw

This guidance document is intended to give building owners, inspectors, and contractors information on how to best handle the materials and wastes resulting from the construction, demolition, and renovation of buildings. Federal regulations require the removal of all asbestos-containing materials and all hazardous or toxic materials before demolition or renovation of a building begins. Contractors will provide a safer environment for their workers and the public by giving proper attention to the wastes generated by a project before demolition or renovation begins.

Topics Covered

- The First Step: The Building Survey
- What if a Building Has Asbestos?
- What about Hazardous Waste?
- What if I Want to Burn the Woody Debris?
- How Do I Dispose of Non-Hazardous Waste?
- What Wastes Can be Disposed Without an ADEC Solid Waste Permit?
- Contact Information

The First Step: The Building Survey

As mentioned above, the federal regulations require the removal of all asbestos-containing materials and hazardous or toxic materials prior to beginning a building demolition or renovation. Identifying the location and approximate amounts of these materials is most readily accomplished by completing a building survey. Once each waste type is identified and located, it can then be removed from the building according to appropriate state and federal regulations and best management practices and recycled or disposed in the most appropriate manner. A building survey does not need to be complicated and there are different methods for doing a survey. You should develop a method that best fits your needs.

Handling & Disposal of Construction & Demolition Waste

April 2014

Solid Waste Program

Removal of asbestos and hazardous wastes **after** demolition is difficult and expensive. By knowing the types and quantities of all wastes that will be generated, you can plan ahead and figure out how to recycle or dispose of those wastes in the most efficient and safest manner. Even though it may be difficult to correctly identify all the material, a thorough investigation can save you many headaches later.

Once you have surveyed your project and know all the types and amounts of materials that will be generated, you can determine which materials can be recycled, burned, or disposed. The most common methods for disposing of different wastes will be discussed in this document. Please contact your local landfill, recycling facility, or sponsoring organization for recycling information. Some common recyclable wastes include piping, conduit, fixtures, timbers, windows, and doors.

Federal law requires that you contact EPA before demolition begins, regardless of the type of waste involved. Contact them after you have identified the types of wastes the project will generate.

What if a Building Has Asbestos?

Regulated Asbestos-Containing Material (RACM) must be removed prior to the demolition of a building and must be disposed at a landfill permitted to accept RACM wastes.

RACM waste is any asbestos-containing material that contains more than 1% asbestos, and that when dry, can be crumbled or reduced to powder by something as minor as hand pressure. If it can be crumbled or reduced to powder relatively easily, it is called "friable".

Non-RACM waste, on the other hand, is asbestos-containing material that is not friable or is not likely to become friable during the demolition or renovation activities. In other words, it is material that when dry cannot be crumbled, pulverized, or reduced to powder by hand pressure or by the demolition or renovation process. Non-RACM waste can be disposed at a permitted construction and demolition waste landfill or at a permitted municipal solid waste landfill provided the operator is willing to accept the waste.

For projects in rural areas without a nearby permitted landfill, the project may qualify for an authorization for the one-time disposal of asbestos waste. Such authorizations are described in greater detail in the section "How Do I Dispose of Demolition Waste?" ADEC Solid Waste Program staff can help you determine if this is an option for your project.

You will typically find asbestos-containing material in anything that was intended to retard fires. Specifically look at door gaskets, duct insulation, and the tape at duct connections of furnaces, boiler, and wood stoves. Hot water pipes inside walls and the tees, valves, elbow, and cross connections should also be checked. Wall board; mastic, acoustical tile or sprayed-on ceilings; roof felt and shingles; window putty; cement asbestos board siding and undersheeting; electrical equipment such as

lamp sockets, outlet and switch boxes, recessed lighting units, and old-fashioned wiring insulation, and older electrical appliances may be additional sources for asbestos-containing material.
It is important in older facilities such as HUD housing, FAA buildings, and military facilities to survey the flooring. Many floors had 1½ to 3 inches of material stacked on top of one another. Asbestos-containing material may be in some or all of the layers.

Asbestos waste may not be burned because it does not burn but just becomes airborne. Therefore, it is important to remove all asbestos-containing materials if your intention is to burn debris after a building is demolished. Note that if non-RACM waste catches fire, it becomes regulated by EPA under the National Emission Standards for Hazardous Air Pollutants (NESHAP) program.

Once you have identified and located any RACM waste, you must arrange for a certified contractor to remove it. The contractor will package and ship it to a landfill that is permitted for RACM waste. The Department of Labor's Occupational Safety and Health Section certifies asbestos abatement workers and maintains a list of certified workers. You can contact them at 907-269-4940 or 907-451-2888.

Remember to notify EPA before any asbestos removal or building demolition begins. The EPA requires notification ten working days in advance so they have an opportunity to inspect the job. They can provide greater detail as to what is or is not considered RACM waste. The regulations can be complex, and EPA welcomes the opportunity to provide clarification and assistance. You can contact EPA at the Alaska office at 907-271-3688 or 800-781-0983, or the Seattle office at 206-553-4226.

What about Hazardous Waste?

Federal regulations define what materials are considered hazardous waste and how these materials must be disposed. Contact EPA at 907-271-6329 or 800-781-0983 for more information.

Hazardous wastes commonly found in a demolition project include:

- Some lead painted materials;
- Some fluorescent tubes and spent incandescent bulbs;
- Lead pipe and solder
- Mercury switches;
- Lead based paint;
- Some liquid paint wastes;
- Unused solvent based paints;
- PCB containing transformers (classified as toxic);
- PCB containing light ballasts (classified as toxic).

Federal and State occupational safety and health regulations may apply if your project involves hazardous materials, such as asbestos- or lead-containing products, and your workers may need to be certified or specifically trained. Please contact Alaska Occupational Safety and Health for more information.

If you are demolishing a building which has an air conditioning system, you must recover the refrigerant, something that may only be done by a certified technician. Simply venting the refrigerant into the air is prohibited.

Burning hazardous wastes or any materials that may emit a toxic gas when burned is prohibited. This includes such things as certain chemicals, tars, linoleum, plastic, foam insulation, rubber, toxic waste, lead pipes, and PVC plastic piping.

When determining the amount of hazardous waste that will be generated, you must include all the hazardous products used for removing building materials.

State law generally prohibits the disposal of hazardous waste in the state. However, small quantity generators of hazardous waste (those that generate less than 220 pounds per month per site) can dispose of their hazardous wastes at a permitted Class I or II landfill. If you are registered with the EPA as a small quantity generator, contact your local landfill to find out if it is a Class I or II landfill with a current permit and is will to accept "conditionally exempt small quantity generator" waste.

If the local landfill does not have a Class I or II permit, you may be able to transport the waste to another Class I or II landfill for disposal, if that landfill accepts hazardous waste from outside its municipal boundary. Contact the landfill and/or ADEC Solid Waste Program for more information.

If your demolition project produces more than 220 pounds of hazardous waste in a month, you will need to ship this waste out of state to an EPA-registered treatment, storage, and disposal facility.

What if I Want to Burn the Woody Debris?

Controlled burning of clean, woody debris from construction, demolition, or land clearing projects is allowed in most areas of Alaska, but it needs to be conducted in a manner that doesn't create a nuisance or become a health hazard to local residents. "Clean woody debris" means wood that has not been treated with a paint containing cadmium or lead, or with a weatherizing preservative (such as pentachlorophenol or creosote).

It is important to note that burning is <u>not</u> considered to be complete disposal for construction and demolition waste because the ash and unburned debris must be disposed at a permitted landfill. You may also be required to test the ash and debris in order to verify that it is non-hazardous (see previous section for hazardous waste management).

Solid Waste Program

Ash from the burning of land clearing waste is not a solid waste and is therefore not required to go to a landfill. However, if you are burning greater than 40 acres of land clearing debris, or if black smoke will be produced, you will need a permit from ADEC's Air Quality Program. Some areas in Alaska require coordination with and permits from the local authorities. For instance, if your project is located in Fairbanks, Anchorage, Ketchikan, Homer, or Juneau, you need to contact local government authorities for approval. In some areas, the Alaska Department of Natural Resources, Division of Forestry may also require a burn permit. It is always wise to contact the local fire department to let them know you will be burning in the area.

To learn more about burning woody debris in your project area, please contact the ADEC Air Quality Program at: Interior 907-451-2114 or South Central and Southeast 907-269-6847. Or visit their website at http://www.dec.state.ak.us/air/ob.htm.

How Do I Dispose of Non-Hazardous Waste?

If the waste you generate is not an EPA-regulated hazardous waste and is not exempt from state permit requirements (see next section), you must dispose of it at a permitted solid waste landfill. This may be an existing facility or a landfill specifically permitted for your project. A solid waste permit ensures that waste is disposed at a suitable location and in a way that will minimize the likelihood of pollution or associated health problems. If you plan to take waste to a permitted facility, you should contact them directly. If you want to permit a project-specific landfill, contact the nearest ADEC Solid Waste Program office regarding whether you will need an inert waste landfill permit or an asbestos landfill permit. Program staff will discuss your situation with you and help you determine which option is best for the project. The permit application review and public notice process will begin after a completed application and the required fee is received.

Another option that may apply to your project is obtaining an authorization for a one-time disposal of either inert or asbestos waste. These authorizations come with strict limitations on the amount of waste allowed in the one-time disposal so not all projects will qualify for these. ADEC provides two types of one-time authorizations for remote construction and demolition projects:

- **Authorization for one-time disposal of asbestos-containing waste.** This authorization allows the disposal of up to 250 cubic yards of RACM and non-RACM waste that is generated on the project site. This authorization pertains only to projects in locations that do not have year-round ground access to a system of connected roads with a total length of 100 miles or more; or where all permitted landfills are more than 100 road miles away or have refused, in writing, to accept the waste. If your situation does not fit these conditions, you will need to apply for an asbestos waste monofill permit. You should also contact EPA to determine if any federal regulations will apply to the project.

Handling & Disposal of Construction & Demolition Waste

April 2014

Solid Waste Program

- **Authorization for one-time disposal of inert waste.** This authorization allows the one-time disposal of up to 1,000 cubic yards of building debris and other inert wastes, but does not include asbestos waste or non-salvageable scrap metal debris. This authorization may only be used for disposal of wastes in locations that do not have year-round ground access to a system of connected roads with a total length of 100 miles or more or; where all permitted landfills are more than 100 road miles away or have refused in writing, to accept the waste. If your situation does not fit these conditions, you will need to apply for an inert waste monofill permit.

What Wastes Can Be Disposed Without an ADEC Solid Waste Permit?

Most building construction and demolition debris is considered "low risk," which means that it has little or no potential to cause pollution problems. Some wastes such as concrete, brick, and mortar are considered "very low risk" and are usually not regulated. This "exempt" waste does not need to go to a permitted landfill, as long as it is not mixed with other wastes. Examples of exempt wastes that you might encounter during demolition, renovation, or construction projects include:

- Land clearing waste, including excavated dirt, rock soil, butt ends, limbs, stumps, or other foliage;
- Portland cement type concrete and associated steel rebar that can't be easily removed;
- Crushed glass except for television tubes, fluorescent light tubes, or computer monitors;
- Crushed asphalt pavement used in:
    - A building pad or parking area as road base or pavement; or
    - As a material to construct a containment berm for a tank farm

Contact the ADEC Solid Waste Program for more about different disposal options and exempt waste.

Contact Information	
Asbestos EPA, Alaska Operations Office 907-271-3688 or 800-781-0983 EPA, Seattle 206-553-4226	Alaska Occupational Safety and Health (AKOSH) Anchorage: 907-269-4940 or 800-770-4940
Hazardous Waste, Recycling EPA, Alaska Operations Office 907-271-6329 or 800-781-0983	Burning, ADEC Air Quality Program Interior: 907-451-2114 South Central & Southeast: 907-269-6847
Lead Paint & Refrigeration EPA, Seattle 206-553-4226	ADEC Solid Waste Program Anchorage: 907-269-7802 Fairbanks: 907-451-2108 Juneau: 907-465-5318

Asbestos Handling & Disposal

July 2014

Solid Waste Program

Division of Environmental Health

Department of Environmental Conservation

Anchorage Office:
555 Cordova St
Anchorage, AK 99501
(907)269-7802
Fax (907) 269-7600

Fairbanks Office:
610 University Ave
Fairbanks, AK 99709
(907) 451-2108
Fax (907) 451-2188

Juneau Office:
410 Willoughby Ave.
Suite 303
Juneau, AK 99801
(907) 465-5318
Fax (907) 465-5362

dec.alaska.gov/eh/sw

Asbestos is a material that has been used in a wide variety of building materials and friction products. Asbestos is inert and non-hazardous if it remains undisturbed. However, if the material is disturbed and the fibers become airborne, they can cause serious lung and health problems. To protect workers and residents, **all demolition and renovation projects should be inspected for asbestos and any asbestos properly removed prior to doing any other work.**

It is impossible to definitively identify asbestos by sight. If a building was constructed prior to 1980, it is likely to contain asbestos in a variety of construction products. After 1980, some asbestos products, including some wall board, flooring materials, roofing materials, mastics, thermal, and cement products, continued to be used in construction materials. For any demolition or renovation, a professional should survey the project and samples must be taken of suspect materials. A laboratory examination of the material using specialized microscopes is necessary to determine if asbestos fibers are present within the material.

Types of Asbestos-Containing Materials
Material that contains 1% or more asbestos fibers is, by definition, Asbestos-Containing Material (ACM). Material that contains less than 1% asbestos is not regulated as ACM.

Friable: Used to describe ACM that, when dry, can be crumbled, pulverized, or reduced to powder by hand pressure.

ACM is further divided into categories:

- *Regulated Asbestos-Containing Material* (**RACM**) includes any ACM that is friable, or is likely to become friable due to the methods used for demolition, renovation, or disposal. Both handling and disposal of this material is stringently regulated as it carries the most risk to the health of residents and workers.

- *Non-Regulated Asbestos-Containing Material* (**non-RACM**) refers to ACM that is non-friable. These materials are segregated into Category I and Category II ACM. The handling and disposal of both Category I and Category II ACM is still regulated, but removal and disposal have less stringent requirements if the material is handled carefully to prevent damage that could release asbestos fibers. Non-RACM becomes RACM and must be managed as such if it is damaged so that asbestos fibers may be released.

Asbestos Handling & Disposal

July 2014

Solid Waste Program

dec.alaska.gov/eh/sw

Removal of RACM and Non-RACM

The removal and transport of ACM is regulated by the Environmental Protection Agency (EPA) and Alaska Occupational Safety and Health Administration (AKOSH). At least 10 days prior to removal of ACM you must contact the EPA and AKOSH to report most demolitions or remodels, regardless of the presence of ACM. Questions regarding the regulations and requirements applicable to a specific project should be addressed to the Anchorage office of the EPA at (907) 271-3688, or to AKOSH at (907) 269-4955.

Due to the potential health risks, the removal and disposal of ACM requires special equipment and detailed training. ACM must be removed properly to prevent damage that would cause it to release fibers to the air. For non-RACM, sanding, grinding, crushing, or other processes that could result in release of fibers must be avoided.

8 AAC 61.600. Certification required
A person performing, directly supervising, or monitoring asbestos abatement work must have a certificate issued under 8 AAC 61.720. The certificate must be in the person's possession when performing work

State regulations require that removal of ACM must be conducted ONLY by certified asbestos abatement professionals. Contact the Alaska Department of Labor, AKOSH Section at (907) 269-4955 for more information about certified contractors and asbestos abatement training.

Disposal of RACM Waste

Disposal of ACM is regulated by the Alaska Department of Environmental Conservation (ADEC). RACM waste may only be disposed in a landfill permitted to accept this waste. However, each landfill determines its own acceptance policy for these materials. The landfill operator may impose restrictions such as special packaging requirements or limited hours for delivery of RACM, or may choose not to accept the waste. Some cities or boroughs will not accept RACM waste generated outside their boundaries. You will need to contact the landfill to determine what specific policies for RACM waste disposal apply.

All RACM, including any non-RACM that has been damaged by sanding, grinding, crushing, or other processes that could result in release of fibers, must be handled and disposed according to regulations. It must be packaged in leak-tight containers or bags, and properly labeled. A waste shipment record must be filled out for each load and signed by both the transporter and the landfill operator.

The landfill operator is required to inspect each load to verify that the RACM waste is properly packaged and labeled and that shipping records match the quantities delivered. Any discrepancies in the records must be reported to the EPA. The landfill operator must also supervise the disposal of each container and must cover the RACM bags or containers with six inches of soil or other material that does not contain ACM by the end of the working day. The landfill operator is also required to keep detailed records of the quantities, and disposal locations and depths of all RACM disposed in the landfill.

Asbestos Handling & Disposal

July 2014

Solid Waste Program

dec.alaska.gov/eh/sw

Disposal of Non-RACM Waste

Non-RACM waste that has not been damaged may be disposed in most permitted Class I and Class II municipal solid waste landfills, inert waste monofills, or asbestos monofills. However, each landfill determines their own acceptance policy for these materials and not all of them will accept non-RACM waste. You will need to contact the landfill prior to delivering non-RACM waste for disposal to confirm that it will be accepted.

Once deposited at the landfill, non-RACM requires special handling to ensure that it does not become friable. The material may not be compacted or driven over by landfill equipment until it is covered by at least six inches of material that is not ACM. For this reason, many landfills choose to dispose of non-RACM waste in separate areas from other waste.

Landfills are not required to track waste shipment records or disposal areas for non-RACM waste.

Summary of Handling Requirements

RACM Requirements	
Generators Must:	**Landfills Must:**
• Notify AKOSH & EPA, as required • Ensure removal is performed by certified asbestos abatement professionals only • Use proper removal and safety techniques as prescribed by AKOSH • Seal in leak-proof containers • Apply all required warning labels • Determine landfill RACM acceptance policy • Fill out all required shipping records • Deliver to a landfill permitted for asbestos disposal • Maintain all required records	• Inspect each load to verify that RACM waste is properly contained and labeled • Ensure that shipping records match the amounts delivered, and report any discrepancies to EPA • Cover all RACM waste with six inches of soil or non-RACM by the end of the working day • Track quantities, depths, and location of all RACM waste

Asbestos Handling & Disposal

July 2014

Solid Waste Program

dec.alaska.gov/eh/sw

Non-RACM Requirements:

Generators Must:

- Notify AKOSH & EPA, as required
- Ensure removal is performed by certified asbestos abatement professionals only
- Use proper removal and safety techniques as prescribed by AKOSH, and ensure that the material is not broken, crushed, sanded, ground, or otherwise damaged so that fibers may be released
- Determine landfill non-RACM acceptance policy
- Deliver to permitted landfill that accepts non-RACM

Landfills Must:

- Ensure that material does not appear to have been handled in a manner that could release fibers, creating RACM
- Handle carefully to prevent damage
- Ensure that non-RACM is not compacted or otherwise damaged prior to covering

Additional Resources:

EPA: www2.epa.gov/asbestos

AKOSH: labor.alaska.gov/lss/oshhome.htm

ADEC: dec.alaska.gov/eh/sw/index.htm

REGULATIONS:

ADEC - Disposal: 18 AAC 60.450
(Title 18, Chapter 60, section 450 of the Alaska Administrative Code)

EPA - Emissions: 40 CFR 61, Subpart M
(Code of Federal Regulations Title 40, Part 61)

EPA - Lab Analysis: 40 CFR 763

OSHA - Safety & Health: 29 CFR 1926.1101

AKOSH - Certification: 8 AAC 61.600 - 790

HANDOUTS

DECEMBER 15, 2014

PLANNING COMMISSION MEETING

Susan Lee

From: Mary Brodigan
Sent: Friday, December 12, 2014 8:03 AM
To: Susan Lee
Subject: FW: Proposed monofill

HANDOUT

From: Tom Healy [mailto:trhealy@gci.net]
Sent: Thursday, December 11, 2014 10:37 PM
To: Mary Brodigan
Subject: Fwd: Proposed monofill

FYI I received this email and, as is my practice, am forwarding it to you in case it's not otherwise in the record.

Begin forwarded message:

From: Rose Williams <kaymaid@hotmail.com>
Date: December 6, 2014 2:55:20 PM AKST
To: "bendle.liberty@gmail.com" <bendle.liberty@gmail.com>, "trhealy@gci.net" <trhealy@gci.net>, "mrjnk@hotmail.com" <mrjnk@hotmail.com>, "brucewaldern1962@yahoo.com" <brucewaldern1962@yahoo.com>, "tomisty@mtaonline.net" <tomisty@mtaonline.net>, "vern@swissalaska.com" <vern@swissalaska.com>
Subject: Proposed monofill

December 6th, 2014

Dear Planning commission members,

You have been urged by the applicant to not listen to any of the community's opinions because they are base on emotions and not fact. I would urge you to consider the very most important things in life are often emotionally based.

When a man has a gun held to his head, do you think he is thinking or he is feeling? We as humans have strong emotions when our lives are threatened, or when our family or tribe is threatened. I would venture to say the all of our wars are actions started by an emotional response. We do respond emotionally to a threat, that does not mean we are not thinking as well. I am responding to this threat to the women and men of our community, but especially the children, they that cannot speak for themselves yet must bear all the consequences of our actions and decisions.

No one has yet answered the question, what if something goes wrong? The MSB has stated that and I quote "It is possible that nothing will go wrong"..."the water table is a moving target." "It is with reservation we approve this permit." That was the most ambiguous and confusing statement.

I am a nurse and have been witness to doctors consenting people for surgery. Do you think a doctor would tell a patient, "it is possible nothing will go wrong, and I recommend this surgery ***with*** reservations as your blood flow is a moving target and we just might get it wrong, but here go ahead and sign this consent."

Would not you as a patient want to know more, to have more assurances than just "Well we hope this works out and even though it is not a necessary surgery, you could die."

This is what the applicant is asking us as the community to do. The applicant stands to reap all the benefits from a decision for the dump, while we the home owners and families stand to reap years of anxiety and pollution and ill health that goes along with that decision. I ask you, is it fair that one person's claim should outweigh a community of people?

I would also ask you all to hold yourselves to the upmost ethical standards and think of the good of entire community, not just a few. It was very disturbing to see one of the commissioners protect the other commissioner who was reluctant to recuse himself though he admittedly did business with the applicant. It reeks of GOBSAT..."good old boys sitting around a table" deciding things regardless of the community desires or needs. I am fervently hoping you are men of honor and integrity.

I am sure all of your are interested in the long term well-being of our beautiful Palmer. What effects one community effects all the communities of this Valley. I will be earnestly praying for you.

Sincerely,
Rose Williams RN, CNM

Susan Lee

From: Mary Brodigan
Sent: Thursday, December 11, 2014 4:03 PM
To: Colleen Guffey
Cc: Susan Lee
Subject: RE: CMS Application for CUP

HANDOUT

Ms. Guffey,

Thank you for the information that you provided regarding the CMS Application. Copies of your letters will be provided to Planning Commissioners and the applicant, and additional copies will be made available at December 15th Planning Commission meeting for members of the public to view.

Mary Brodigan
Planning Commission Clerk

PLANNING & LAND USE DEPARTMENT
Mary Brodigan
Administrative Secretary II
PH 907-861-7851
FX 907-743-8876

"Community of Choice to live and work where every citizen matters"

From: Colleen Guffey [mailto:Colleen@impc-law.com]
Sent: Thursday, December 11, 2014 3:53 PM
To: Mary Brodigan
Cc: stuart@cei-alaska.com; shane@cei-alaska.com; John Aschenbrenner; Eileen Probasco; Lonnie McKechnie; Susan Lee; Alex Strawn; Bill Ingaldson
Subject: CMS Application for CUP

Please find the attached letters regarding the above-referenced matter.

Colleen Guffey
Legal Assistant
Ingaldson Fitzgerald, P.C.
813 West Third Avenue
Anchorage, AK 99501
(907) 258-8750

NOTICE: This message is intended only for the use of person(s) to whom it is addressed, and may not be otherwise distributed, copied or disclosed. The contents may also contain information that is privileged, confidential, and exempt from disclosure under applicable law. These rights are not waived by transmission of the information via email. If you received this communication in error, please notify the sender immediately by telephone at 907-258-8750 (collect if necessary) and delete this correspondence.

Susan Lee

From: Colleen Guffey [Colleen@impc-law.com]
Sent: Thursday, December 11, 2014 3:53 PM
To: Mary Brodigan
Cc: stuart@cei-alaska.com; shane@cei-alaska.com; John Aschenbrenner; Eileen Probasco; Lonnie McKechnie; Susan Lee; Alex Strawn; Bill Ingaldson
Subject: CMS Application for CUP
Attachments: Ltr to Mary Brodigan re Resolution 14-33.pdf; Ltr to Mary Brodigan re CMS's Application for a CUP.pdf

Please find the attached letters regarding the above-referenced matter.

HANDOUT

Colleen Guffey
Legal Assistant
Ingaldson Fitzgerald, P.C.
813 West Third Avenue
Anchorage, AK 99501
(907) 258-8750

NOTICE: This message is intended only for the use of person(s) to whom it is addressed, and may not be otherwise distributed, copied or disclosed. The contents may also contain information that is privileged, confidential, and exempt from disclosure under applicable law. These rights are not waived by transmission of the information via email. If you received this communication in error, please notify the sender immediately by telephone at 907-258-8750 (collect if necessary) and delete this correspondence.

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INGALDSON FITZGERALD, P.C.
Lawyers

813 West Third Avenue
Anchorage, Alaska 99501-2001
Telephone (907) 258-8750 Facsimile (907) 258-8751

William H. Ingaldson
Kevin T. Fitzgerald
Stuart C. Rader
Jim M. Boardman

December 11, 2014

HANDOUT

Mary Brodigan
Planning Commission Clerk
Planning & Land Use Department
Matanuska Susitna Borough

Re: Resolution 14-33, CUP for an Inert Material Monofil-response to Commissioner Adams' question

Dear Ms. Brodigan:

This letter is in response to Commissioner Adams's December 5, 2014 e-mail regarding the status of the enforcement action against CMS. There is no current enforcement action against CMS. In May, 2013, an enforcement order and subsequent citations were issued against CMS concerning materials CMS brought to its Palmer property. CMS timely appealed the enforcement order to the BOAA. CMS also contested the citations, arguing that the materials were not "trash" as defined in the borough code and that it was not operating a "junk yard," as defined in the borough code. The district court ruled against CMS on the violations and CMS was fined a total of $225, which fine has been paid. (Shane Durand was also cited for the same infractions and he was fined the same amount.)

Subsequent to that decision, the BOAA appeal was heard. The BOAA found that the materials were not "trash" as defined in the borough code and that CMS was not operating a "junk yard." It did, however, find that, for CMS to continue operation on the site, a conditional

use permit was required because the property was "being commercially used for the purpose of recycling or repurposing materials." Although the BOAA decision did not specifically require CMS to remove the existing topper material it had taken to the location, CMS did remove all of that material. CMS is currently in compliance with the borough code.

Very truly yours,

William H. Ingaldson

WHI:cg

cc: Lonnie McKechnie
Eileen Probasco
John Aschenbrenner
Alex Strawn
Susan Lee
Stuart Jacques
Shane Durand

INGALDSON FITZGERALD, P.C.
Lawyers

813 West Third Avenue
Anchorage, Alaska 99501-2001
Telephone (907) 258-8750 Facsimile (907) 258-8751

William H. Ingaldson
Kevin T. Fitzgerald
Stuart C. Rader
Jim M. Boardman

December 11, 2014

Mary Brodigan
Planning Commission Clerk
Planning & Land Use Department
Matanuska Susitna Borough

HANDOUT

Re: CMS's Application for a CUP

Dear Ms. Brodigan:

As introduced at the December 1, 2014 planning commission hearing, I am an attorney who has been retained on behalf of CMS. This letter is in response to Lonnie McKechnie's December 3, 2014 letter regarding the recusal action taken at the December 1, 2014 hearing. While we appreciate Ms. McKechnie's efforts to correct the incorrect advice she offered at that hearing, the advice in her December 3, 2014 letter is still incorrect.

Section 4.05.080(A) of the Matanuska Susitna Borough Code provides that "all meetings shall be conducted in accordance with the current edition of *Robert's Rules of Order Newly Revised*." We agree with Ms. McKechnie that the motion at issue was improperly phrased. However, because the motion was improper, it does not have to be recinded, it should simply be declared null and void by the chair. In addition, Ms. McKechnie's advice as to the number of votes required to carry the motion and as to whether Commissioner Kendig could participate in the vote, was also incorrect.

The Recusal of Commissioner Kendig Was Improper and Therefore Is Null and Void.

Ms. McKechnie is correct in that the form of the motion should have been a motion to disallow Commissioner Kendig from participation in this matter. In order to carry such a motion, it requires a vote of two thirds of the votes cast. RONR (11th Ed.), p. 401, ll. 26-27, p. 648, ll. 1-2. At the December 1, 2014 hearing there was only one vote against allowing Commissioner Kendig to participate, out of four votes cast.

Separately, Commissioner Kendig was improperly prohibited from voting on the motion. *Robert's Rules of Order* allows a member to vote on a question affecting himself. RONR (11th Ed.), pp. 407, l. 30-p. 408, l. 7. As pointed out in *Robert's Rules of Order*, if members were not allowed to vote on such questions, a minority of members could override the will of a majority of members simply by bringing a motion to expel or suspend the majority members. If the majority members were not allowed to vote on that motion, because they were the subject of it, the will of the minority would prevail.

Because (a) the question was improperly posed, (b) there were insufficient votes to remove Commissioner Kendig (less than two-thirds of the votes cast) and, (c) Commissioner Kendig was not allowed to vote, the motion was improper and was out of order. As such, it is null and void. RONR (11th Ed.), p. 343, ll. 14-17. Thus, a point of order should be raised and the chair should declare the motion null and void. It is not necessary to rescind a null and void motion.

Number of Votes Required to Rescind a Motion

If the motion was not improper, and therefor null and void, it may be rescinded by motion. A motion to rescind a previously adopted motion requires: (a) a vote of two-thirds of the votes being cast (members who abstain or are absent are not counted) – RONR (11th Ed.), p. 401, ll. 8-17; (b) a majority of the votes cast when notice of the intent to make the motion to rescind was given at the previous meeting, before the present meeting or in the call of the present meeting (since the December 15, 2014 meeting is a continuance of the December 1, 2014 meeting, it should be considered the same meeting and no advance notice is required) or (c) a vote of the majority of the entire membership. RONR (11th Ed.), p. 306, ll. 24-31. Ms. McKechnie is incorrect when she states that a motion to rescind would require five votes if previous notice is not provided. That would never be the case. If prior notice was not provided, a motion to rescind would require either a vote of four commissioners (which is a majority of the entire membership) or two-thirds of the voting members. Thus, if four commissioners voted on the motion to rescind, it would require three affirmative votes to carry the motion. If three commissioners voted on the motion to rescind, it would require two affirmative votes to carry the motion.

Where previous notice has been provided, which is the case in the present matter, a simple majority of the voting members is required to carry the motion. Ms. McKechnie's suggestion that it would require at least four affirmative votes to carry the motion is simply incorrect. The requirement is a majority of the votes cast. RONR (11th Ed.), p. 400, pp. 1-18.

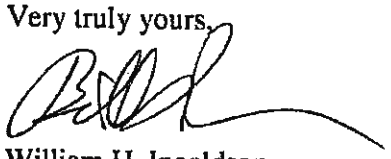
Ms. McKechnie may be basing her advice on MSBC 15.08.075, which provides that all board actions shall be by a vote of the majority of the board's authorized membership. That provision, however, applies to substantive actions such as granting a CUP or approving a zoning

variance, not procedural matters. Pursuant to MSBC 4.05.080(A), procedural matters are governed by the current edition of *Robert's Rules of Order, Newly Revised.*

In conclusion, the motion that effectively excluded Commissioner Kendig from participation in this matter was improper and out of order. Consequently, it is null and void. As a point of order, the chair should declare that motion null and void. If a commissioner wants to bring a proper motion to exclude Commissioner Kendig, such a motion must be seconded and two-thirds of the voting members must vote in favor of the motion, in order for it to carry. Commissioner Kendig should be permitted to vote on any such motion.

If a motion to rescind the previous motion is brought, a simple majority of the votes cast is required to pass the motion to rescind. Again, however, such a motion is not necessary in the present matter because the underlying motion should be declared null and void.

Very truly yours,



William H. Ingaldson

WHI:cg

cc: Lonnie McKechnie
Eileen Probasco
John Aschenbrenner
Alex Strawn
Susan Lee
Stuart Jacques
Shane Durand

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Mary Brodigan

From: Mary Brodigan
Sent: Tuesday, December 09, 2014 4:19 PM
To: 'Tom Adams'
Subject: RE: Motion to Rescind Previous Motion

Commissioner Adams,

I do recall that you and Commissioner Walden were absent from the December 1, 2014, meeting. It is appropriate for you both to vote on the Motion to Rescind as long as you have listened to the audio recording and reviewed the record.

Mary Brodigan
Planning Commission Clerk

PLANNING & LAND USE DEPARTMENT
Mary Brodigan
Administrative Secretary II
PH 907-861-7851
FX 907-745-9876

"Community of Choice to live and work where every citizen matters"

From: Tom Adams [mailto:t.adams@lounsburyinc.com]
Sent: Tuesday, December 09, 2014 4:17 PM
To: Mary Brodigan
Subject: RE: Motion to Rescind Previous Motion

Mary,

I understand that it is appropriate for Mr. Walden & I to vote on the Motion to Rescind as long as we have listened and/or reviewed the record, correct? Recall that we were both absent from the December 1 meeting.

Tom Adams
Planning Commissioner, District 6

From: Mary Brodigan [mailto:Mary.Brodigan@matsugov.us]
Sent: Tuesday, December 09, 2014 3:51 PM
To: Brian Endle; Bruce Walden; John Klapperich; Thomas Healy (trhealy@gci.net); Tom Adams; Vern Rauchenstein (vern@swissalaska.com); William Kendig (billydoc56@hotmail.com)
Cc: Eileen Probasco; Alex Strawn; Lauren Driscoll; Susan Lee; Nicholas Spiropoulos; John Aschenbrenner; stuart@cei-alaska.com; shane@CEI-alaska.com
Subject: FW: Motion to Rescind Previous Motion

Good Afternoon Commissioners,

Commissioner Rauchenstein has provided me with written notice that on December 15th he will be making a motion to rescind the vote to recuse Commissioner Kendig from deliberations on Resolution 14-33, CMS Monofill. It will take four "yes" votes to rescind the previous motion.

If the vote to rescind passes, Chair Klapperich will offer Commissioner Kendig an opportunity to make a statement. Commissioners, staff, and the applicant will have an opportunity to question Commissioner Kendig. Commissioners will then vote on whether Commissioner Kendig has a conflict of interest.

If the vote to rescind does not pass, the original decision will stand.

The remaining commissioners will then again be asked the Conflict of Interest question and the commission will proceed accordingly.

The commission will then move directly to public testimony.

Mary Brodigan
Planning Commission Clerk

PLANNING & LAND USE DEPARTMENT
Mary Brodigan
Administrative Secretary II
PH 907-861-7851
FX 907-745-5876
"Community of Choice to live and work where every citizen matters"

From: Vern [mailto:vern@swissalaska.com]
Sent: Monday, December 08, 2014 5:17 PM
To: Mary Brodigan
Subject: motion

Good evening,

I would like to make a motion to rescind the action of December 1st by the Planning Commission concerning the recusal of Bill Kendig.
Reasons:

1. There was confusion on how to proceed.
2. Mr. Kendig did not do business with the company that applied for the CUP.
3. Mr. Kendig did not feel that he had a conflict of interest.

Thank you,
Commissioner Vern Rauchenstein

Susan Lee

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Sent: Tuesday, December 09, 2014 3:51 PM
To: Brian Endle; Bruce Walden; John Klapperich; Thomas Healy (trhealy@gci.net); Tom Adams; Vern Rauchenstein (vern@swissalaska.com); William Kendig (billydoc56@hotmail.com)
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Mary Brodigan
Administrative Secretary II
PH 907-861-7851
FX 907-743-6876

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Susan Lee

From: Mary Brodigan
Sent: Monday, December 08, 2014 3:28 PM
To: Tom Adams
Cc: stuart@cei-alaska.com; shane@CEI-alaska.com; Susan Lee; Brian Endle; Bruce Walden; John Klapperich; Thomas Healy (trhealy@gci.net); Vern Rauchenstein (vern@swissalaska.com); William Kendig (billydoc56@hotmail.com)
Subject: FW: Resolution 14-33, CUP for an Inert Material Monofil

Commissioner Adams,

Staff will address your questions at the December 15, 2014 public hearing so that all parties will get the same information at the same time. Copies of this email will be provided as handouts to commissioners, the applicant, and the public.

Mary

PLANNING & LAND USE DEPARTMENT
Mary Brodigan
Administrative Secretary II
PH 907-861-7851
FX 907-745-9876

HANDOUT

"Community of Choice to live and work where every citizen matters"

From: Susan Lee
Sent: Monday, December 08, 2014 2:20 PM
To: Mary Brodigan; Alex Strawn
Cc: Eileen Probasco; Lauren Driscoll
Subject: RE: Resolution 14-33, CUP for an Inert Material Monofil

Mary:

These questions will be answered at the December 15, 2014 public hearing.

Please provide all of this information to CMS.

Susan

Susan Lee
Planner II
Matanuska-Susitna Borough
907-861-7862 (Direct Line)
907-861-7876 (FAX)
PLEASE NOTE NEW DIRECT LINE PHONE NUMBER

From: Mary Brodigan
Sent: Saturday, December 06, 2014 4:36 PM
To: Susan Lee; Alex Strawn
Cc: Eileen Probasco; Lauren Driscoll
Subject: FW: Resolution 14-33, CUP for an Inert Material Monofil

Susan and Alex,

Please provide an answer to Commissioner Adams' question. I will forward to all commissioners and make copies for the public.

Mary

PLANNING & LAND USE DEPARTMENT
Mary Brodigan
Administrative Secretary II
PH 907-861-7851
FX 907-745-8876

"Community of Choice to live and work where every citizen matters"

From: Tom Adams [mailto:t.adams@lounsburyinc.com]
Sent: Friday, December 05, 2014 5:15 PM
To: Mary Brodigan
Subject: Resolution 14-33, CUP for an Inert Material Monofil

Mary,

What is the status of the enforcement action against Central Monofil for illegal dumping activities at the subject property? If the case remains active, is it appropriate to accept an application for a CUP until that issue is resolved?

Tom Adams
Planning Commissioner, District 6

Susan Lee

From: Mary Brodigan
Sent: Saturday, December 06, 2014 3:25 PM
To: Susan Lee
Cc: Eileen Probasco; Alex Strawn; Lauren Driscoll
Subject: FW: Proposed monofill

From: Tom Adams [mailto:tomisty@mtaonline.net]
Sent: Saturday, December 06, 2014 3:20 PM
To: Mary Brodigan
Subject: Fwd: Proposed monofill

HANDOUT

Sent from Tom's iPhone

Begin forwarded message:

From: Rose Williams <kaymaid@hotmail.com>
Date: December 6, 2014 at 2:55:20 PM AKST
To: "bendle.liberty@gmail.com" <bendle.liberty@gmail.com>, "trhealy@gci.net" <trhealy@gci.net>, "mrjnk@hotmail.com" <mrjnk@hotmail.com>, "brucewaldern1962@yahoo.com" <brucewaldern1962@yahoo.com>, "tomisty@mtaonline.net" <tomisty@mtaonline.net>, "vern@swissalaska.com" <vern@swissalaska.com>
Subject: Proposed monofill

December 6th, 2014

Dear Planning commission members,

You have been urged by the applicant to not listen to any of the community's opinions because they are base on emotions and not fact. I would urge you to consider the very most important things in life are often emotionally based.

When a man has a gun held to his head, do you think he is thinking or he is feeling? We as humans have strong emotions when our lives are threatened, or when our family or tribe is threatened. I would venture to say the all of our wars are actions started by an emotional response. We do respond emotionally to a threat, that does not mean we are not thinking as well. I am responding to this threat to the women and men of our community, but especially the children, they that cannot speak for themselves yet must bear all the consequences of our actions and decisions.

No one has yet answered the question, what if something goes wrong? The MSB has stated that and I quote "It is possible that nothing will go wrong"..."the water table is a moving target." "It is with reservation we approve this permit." That was the most ambiguous and confusing statement.

I am a nurse and have been witness to doctors consenting people for surgery. Do you think a doctor would tell a patient, "it is possible nothing will go wrong, and I recommend this surgery ***with*** reservations as your blood flow is a moving target and we just might get it wrong, but here go ahead and sign this consent."

Would not you as a patient want to know more, to have more assurances than just "Well we hope this works out and even though it is not a necessary surgery, you could die."

This is what the applicant is asking us as the community to do. The applicant stands to reap all the benefits from a decision for the dump, while we the home owners and families stand to reap years of anxiety and pollution and ill health that goes along with that decision. I ask you, is it fair that one person's claim should outweigh a community of people?

I would also ask you all to hold yourselves to the upmost ethical standards and think of the good of entire community, not just a few. It was very disturbing to see one of the commissioners protect the other commissioner who was reluctant to recuse himself though he admittedly did business with the applicant. It reeks of GOBSAT..."good old boys sitting around a table" deciding things regardless of the community desires or needs. I am fervently hoping you are men of honor and integrity.

I am sure all of your are interested in the long term well-being of our beautiful Palmer. What effects one community effects all the communities of this Valley. I will be earnestly praying for you.

Sincerely,
Rose Williams RN, CNM

Susan Lee

From: Mary Brodigan
Sent: Saturday, December 06, 2014 4:36 PM
To: Susan Lee; Alex Strawn
Cc: Eileen Probasco; Lauren Driscoll
Subject: FW: Resolution 14-33, CUP for an Inert Material Monofil

Susan and Alex,

Please provide an answer to Commissioner Adams' question. I will forward to all commissioners and make copies for the public.

Mary

PLANNING & LAND USE DEPARTMENT
Mary Brodigan
Administrative Secretary II
PH 907-861-7851
FX 907-745-9875

"Community of Choice to live and work where every citizen matters"

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Subject: FW: Resolution 14-33, CUP for an Inert Material Monofil

HANDOUT

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PLANNING & LAND USE DEPARTMENT
MATANUSKA-SUSITNA BOROUGH
Mary Brodigan
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PH 907-861-7851
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Tom Adams
Planning Commissioner, District 6

Susan Lee

From: Mary Brodigan
Sent: Monday, December 01, 2014 3:27 PM
To: Alex Strawn; Susan Lee; Lauren Driscoll; Eileen Probasco
Subject: FW: Landfill leachate

Importance: High

HANDOUT

"Community of Choice to live and work where every citizen matters"

-----Original Message-----
From: Tom Healy [mailto:trhealy@gci.net]
Sent: Monday, December 01, 2014 3:02 PM
To: Mary Brodigan
Subject: Landfill leachate

Is it possible to have information at tonight's Planning Commission meeting that explains how much leachate the Borough must remove from the MSB Central Landfill each year?
I understand they take tanker truck loads to Anchorage for disposal at Anchorage's septic dump site.
Thanks.

Susan Lee

From: Alex Strawn
Sent: Thursday, December 11, 2014 1:54 PM
To: Susan Lee
Subject: FW: Contacting U.S. Army Corps of Engineers

HANDOUT

From: Frankie Barker
Sent: Thursday, December 11, 2014 12:12 PM
To: Patti Kepler
Cc: Alex Strawn
Subject: RE: Contacting U.S. Army Corps of Engineers

Patti,

The Army Corps has the opportunity to comment on this application as do members of the public but has not submitted any comments so far.
Since there are no identified wetlands on the property, this project does not require Army Corps permitting to proceed. I've copied Alex Strawn, Development Services Manager, about your request for the Mat-Su Borough to contact the Army Corps about long-term solutions. Until the application goes through the Planning Commission process and a permit is or is not issued, it is premature for MSB to request assistance from Army Corps or any other agency since we don't know what operations will be permitted.

I've been involved with the Army Corps to update wetlands maps in the Mat-Su but am not involved in the permitting process for the CMS project.
If you have a contact person at the Army Corps who wants to connect with the Borough about the Central Monofill Services application, have them contact Alex Strawn at 861-7854.

Frankie Barker
Environmental Planner
Matanuska-Susitna Borough
350 E. Dahlia Avenue
Palmer, AK 99645
907-746-7439 or 907- 861-8439
frankie.barker@matsugov.us

From: Patti Kepler [mailto:keplerpark@email.com]
Sent: Thursday, December 11, 2014 10:14 AM
To: Frankie Barker
Subject: Contacting U.S. Army Corps of Engineers

Dear Frankie Barker,

The following is a letter I submitted to the Mat-Su Borough Planning Commission and to the Alaska Department of Environmental Conservation for consideration in protest of issueing permits allowing Central Monofill Services to set up operations in the Mat-Su Valley at a site near my place of business.
I recently contacted the U.S. Army Corps of Engineers in an attempt to make them aware of my situation and to seek their advice/assistance in this matter. I was told they could be asked to get invoived to assist with long-term solutions. They were sympathetic but stated that their involvement/assistance would need to be requested by a local agency rather than an individual party. In this case, it would be the Mat-Su Borough needing to make that request. I was given your name as the person to contact regarding this matter and in-turn contact the U.S. Army Corps of Engineers to request their involvement. Please consider helping make this request possible. Thank you for your time and consideration in this matter.

December 8, 2014

To Whom it may concern,

My name is Patricia Kepler Goossen. I own and operate Kepler Park, a campground located at Mile 37.4 Glenn Highway. The property is situated on the shores of Kepler and Bradley Lakes. The nature of our business is to provide scenic camp/picnic sites and boat rentals to the public. I have serious concerns about the condition of our property and future of my business.

I believe operations being conducted at the gravel pit located at MSB Tax Parcel #17N02E18C010 and #17N02E19B006 have had, and will have, a gross negative impact on my property and business. It is my understanding that the placement of dams in man-made industrial ponds at the gravel pit owned by Central Recycling Services/Central Monofill Services are causing increased ground pressure which effects the surrounding aquifer. I also understand there are spillways from those ponds pumping huge amounts of water into the aquifer, resulting in a significant rise in water levels of nearby lakes and streams.
I have observed a drastic rise in water level of these lakes over the past two years and at an especially alarming rate during this past 2014 summer season! The water level has risen approximately one foot just since opening for business in May of this year! This was more than just the annual spring melt-off. The water level increased and continued to rise throughout the summer.

Areas of concern are:

1. Trees along shoreline: The rise in water level has caused flooding of our campsites along the shoreline. Survival of trees along these shorelines are now threatened because of water surrounding them at their base and root systems. Some of these trees are over one hundred years old. Two trees have died and had to be removed as a result of this flooding. Grass and other vegetation which was on dry ground is now under water and has been killed.
2. Camp/Picnic Sites: Also, as a result of this flooding, the shoreline is diminishing which reduces the amount of space required for our camp sites. One of our prime sites has been reduced to one quarter of its original useable space. Two other sites have been reduced to half their original size. Four other sites along the shoreline are also being threatened by rising water levels. **Loss of campsites results in loss of business.**
3. Boat rentals: We provide boat rentals to the public for recreation and sport fishing in Kepler and Bradley Lakes. Customers have always had access to both lakes by way of a channel of water between them. A bridge spans this channel so it is necessary for boaters to pass under it to access both lakes. The high water levels effect this part of our operations because there is no longer enough clearance under the bridge for boaters to pass through. Also, the launch area along the shore for our rental boats has been reduced from a width of approximately 18 feet to now only 6 feet of useable space.
4. Bridge access: The bridge referred to is situated on a Matanuska-Susitna Borough designated roadway (E. Kepler Drive). It serves as access to our campsites and also to the Matanuska Greenbelt Trail System. The increasing water level is threatening the stability of the bridge abutments. **Loss of access would result in loss of business.**

We have been in business as a campground for 62 years. Many pictures have been taken over the years, including this year, so we have a visual comparison of change in water levels and damages being done. Copies of those pictures are available upon request.

It has been suggested that I seek legal counsel in this situation; for the killing of trees on our property and for property damages potentially resulting in loss of business. Hopefully, my protest and those of my neighboring property owners will be heeded, putting a stop to operations by Central Monofill Services at the proposed location. I would also hope steps will be taken to reverse and correct these effects on the surrounding aquifer and to prevent further damage to property.

Another major concern is the potential contamination of ground water in areas surrounding this proposed monofill. There would be many types of highly toxic materials in the waste being processed at such a recycling operation. I have read the report of findings written by J.A. Munter Consulting, Inc., dated February 7, 2014 which was requested by, and submitted to, the Matanuska Susitna Planning and Land Use Department. With such research and knowledgeable conclusions presented as to the damaging effects of such a monofill system it is inconceivable how the issuing of a permit allowing CMS to operate can even be considered.

The aquifer in this area flows South/Southwest. Kepler and Bradley Lakes are located Southwest of the existing gravel pit where the monfill site would be; with the East end of Bradley Lake being closest. The distance can be measured, not in miles, but within just a matter of yards. Since Kepler and Bradley Lakes are connected by a channel of water Kepler Lake would be directly affected. The lakes in this area are fed by underground fresh water springs. It is already known that the materials disposed of in operations of a monofill dump site would inevitably result in the release of toxins into the ground water feeding these lakes. With the directional flow of ground water as it is, toxins from the monofill operation would leach into the nearby lakes and streams, ultimately endangering the fish and wildlife in these areas. These lakes also serve as a nesting area for water fowl. As previously mentioned, one aspect of our business is to provide access for sport fishing. It should be noted that nearly all the lakes in this area are stocked each year by the Alaska Department of Fish & Game and are open to the public for sport fishing. Keep in mind that if fish contaminated by such toxins were caught and used for human consumption it would in turn effect those people.

Another concern is air pollution. This area experiences frequent strong Easterly winds. Storage of waste debris and the recycling process of materials containing toxins; as listed in the Munter Report, would result in contaminants, including asbestos, becoming airborne and spreading to surrounding areas downwind; damaging the environment and posing serious health risks. The amount of debris littered over the surrounding areas, including the lakes, would be atrocious!

Central Monofill Services claims their monofill set-up and processing system would be environmentally "safe". Being a man-made set-up it is impossible to make even the everyday operations 100% safe. No system involving so many variables in management, ground exposure, weather, and unforeseen "acts of nature" can claim to have no risk of damages to the environment. I feel that the bottom line in this whole matter with the proposed monofill site is that there are no guarantees the environment would not be harmed and the damages would be irreversible. Is it truly worth putting the future health and well-being of humans at risk?

As to issuing any permits allowing Central Monofill Services to operate or not, I have a few points to be considered by the parties involved in making that decision. I believe that before making a final decision and taking a vote on an issue that will ultimately affect the lives and well-being of individuals and wildlife habitat in our community, now and for years to come, each one should be asked some questions and be required to give totally honest answers. First of all, they need to imagine themselves living in the area near the gravel pit where Central Monofill Services proposes to set up their monofill operations.

The questions would be:

1. "Knowing the information and warnings that have been submitted to you regarding the risk of ground water pollution, air pollution, and wind-blown litter if the monofill site was in operation...as a resident and/or property owner in the area near this site, would you be totally confident that the ground water is "safe" and be willing to drink the water from your well, be able to enjoy breathing the air out in your yard, and accept the accumulation of litter on your property?"

2. "If operations at CMS were happening, do you believe you would be able to sell your home or property once potential buyers learned of the known conditions and risks attached to purchase of your property?"

3. "If you were not a resident in this area, and were looking for property to purchase, would you consider buying property near the monofill site?"

4. "Considering all the information and warnings given; for the sake of those of us who are residents in this area and for the sake of our children and grandchildren who live here, can you, in all honesty and with a clear conscience, cast a "Yes" vote to approve Central Monofill Services being issued a permit to operate at this site?"

Thank you very much for your time and attention to this matter.

Sincerely,

Patricia Kepler Goossen
Kepler Park
P.O Box 2908
Kodiak, AK 99615
Phone/FAX: (907) 486-3777
Email: keplerpark@email.com

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Susan Lee

From: Alex Strawn
Sent: Thursday, December 11, 2014 11:31 AM
To: Susan Lee
Subject: FW: Contacting U.S. Army Corps of Engineers

HANDOUT

From: Frankie Barker
Sent: Thursday, December 11, 2014 11:28 AM
To: Alex Strawn
Cc: Eileen Probasco
Subject: FW: Contacting U.S. Army Corps of Engineers

Alex,

Has there been a request from us to Army Corps regarding the Central Monofill application? If not, what would be the response to Patti Kepler?

Frankie Barker
Environmental Planner
Matanuska-Susitna Borough
350 E. Dahlia Avenue
Palmer, AK 99645
907-746-7439 or 907- 861-8439
frankie.barker@matsugov.us

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As to issuing any permits allowing Central Monofill Services to operate or not, I have a few points to be considered by the parties involved in making that decision. I believe that before making a final decision and taking a vote on an issue that will ultimately affect the lives and well-being of individuals and wildlife habitat in our community, now and for years to come, each one should be asked some questions and be required to give totally honest answers. First of all, they need to imagine themselves living in the area near the gravel pit where Central Monofill Services proposes to set up their monofill operations.

The questions would be:

1. "Knowing the information and warnings that have been submitted to you regarding the risk of ground water pollution, air pollution, and wind-blown litter if the monofill site was in operation...as a resident and/or property owner in the area near this site, would you be totally confident that the ground water is "safe" and be willing to drink the water from your well, be able to enjoy breathing the air out in your yard, and accept the accumulation of litter on your property?"

2. "If operations at CMS were happening, do you believe you would be able to sell your home or property once potential buyers learned of the known conditions and risks attached to purchase of your property?"

3. "If you were not a resident in this area, and were looking for property to purchase, would you consider buying property near the monofill site?"

4. "Considering all the information and warnings given; for the sake of those of us who are residents in this area and for the sake of our children and grandchildren who live here, can you, in all honesty and with a clear conscience, cast a "Yes" vote to approve Central Monofill Services being issued a permit to operate at this site?"

Thank you very much for your time and attention to this matter.

Sincerely,

Patricia Kepler Goossen
Kepler Park
P.O Box 2908
Kodiak, AK 99615
Phone/FAX: (907) 486-3777
Email: keplerpark@email.com

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Susan Lee

From: Sandra Garley [sgarley@palmerak.org]
Sent: Tuesday, December 09, 2014 4:09 PM
To: Susan Lee
Subject: Monofil Letter

HANDOUT

Hi, Susan.

City Manager was looking for a copy of a letter from monofill applicants responding to City of Palmer resolution in opposition. Do you have a copy you can email to me?

Sandra G

Susan Lee

From: Aldrich, Lori (DEC) [lori.aldrich@alaska.gov]
Sent: Monday, December 01, 2014 3:48 PM
To: Susan Lee
Subject: Inert Waste Monofill requirements

HANDOUT

Susan,

18 AAC 60.460 are the regulations that are specific to Inert Waste Monofills, in addition to all the applicable location and design standards. 460(b) is specific to liners.

I will be there tonight if there are other State regulatory questions.

Lori

18 AAC 60.460. Inert waste. (a) The requirements of this section do not apply to a waste management area where inert waste is disposed of within the boundaries of a MSWLF.
(b) Liners are not required at an inert waste monofill.
(c) If a groundwater monitoring system is required at an inert waste monofill, under 18 AAC 60.820, detection monitoring under 18 AAC 60.840 and 18 AAC 60.850 during the active life of the monofill will be required only if the department
(1) determines that non-inert waste is or has been present at the site;
(2) detects evidence of a spill or groundwater contamination; or
(3) finds unexplained contamination in nearby wells.
(d) The owner or operator of an inert waste monofill who accepts combustible inert waste shall maintain fire control equipment and make it available to extinguish any fires that start.
(e) The owner or operator of an inert waste monofill shall construct a final cover of soil material at least 24 inches thick, graded to promote drainage without erosion, and shall revegetate it. The department will approve an alternate final cover design if the applicant demonstrates that the alternate design will protect public health, safety, and welfare, and the environment. After completion of the final cover on a monofill with a groundwater monitoring system, the owner or operator shall conduct detection monitoring at the frequency required by 18 AAC 60.850(b). (Eff. 1/28/96, Register 137; am 10/29/98, Register 148)

Susan Lee

From: Durand, Shane [shane@cei-alaska.com]
Sent: Friday, December 12, 2014 10:59 AM
To: Susan Lee
Subject: Comment
Attachments: Maddox Dec 14.pdf

HANDOUT

FYI

Shane Durand
Central Recycling Services
2400 Railroad Ave.
Anchorage, AK 99501
(907)748-7400
(907)770-5084 fax
www.centralrecyclingservices.com
www.crssurplusmaterials.com
www.cicequipment.com

MADDOX & ASSOCIATES
Geologists (RG, CEG, CHG)
Engineers
Environmental Services

Property Transaction Screens
• ASTM E 1528
Environmental Site Assessments
• Phase I-ASTM E 1527
Subsurface Site Characterization
• Phase II
Landfill Investigations
• Landfill Gas
• Groundwater
Site Remediation-Soil/Groundwater
• Phase III
UST Management/Removal
Geotechnical & Geophysical Invest.

December 11, 2014

HANDOUT

RESPONSE TO J. A. MUNTER'S LETTER TO THE MSB PLANNINING COMMISSION PERTAINING TO THE CONDITIONAL USE PERMIT FOR A PROPOSED MONOFILL NEAR PALMER, ALASKA-DECEMBER 1, 2014

In this document, Maddox & Associates, Inc. will respond to J.A. Munter's (JAM) first stated concern, that of the potential for large volumes of precipitation to pass through the proposed monofill, resulting in significant volumes of leachate entering the underlying aquifer.

JAM states that Maddox, Terrasat, and the Borough misinterpreted evaporation data to conclude that the site is semi-arid. He supports this statement by referring to a recent U.S. Geological Survey report in which the author, Kikuchi (2013), states (page 2) that the Matanuska-Susitna Valley is in a transition zone between maritime and continental climates, with the average annual precipitation measured at the Matanuska Agricultural Experimental Station near Palmer from 1917 to 2010 as 15.3 inches. Kikuchi further states that hydrologic processes at the land surface are strongly influenced by snow and ice cover which typically last from October until April.

It should be noted that Kikuchi does not name the climatic zone in which the proposed monofill will be located, just that it is neither maritime nor continental. He does, however state that the average annual precipitation available for soil infiltration (this includes rainfall, sleet, and snow) is 15.3 inches. Green, Bertetti, and Hernandez (2012) state that a semi-arid climate is defined as one having an average annual precipitation of less than 19.7 inches. It is apparent that the proposed monofill site is located in a semi-arid climate, and Kikuchi says nothing to contradict this fact.

In Technical Paper No. 27, *The Climate of the Matanuska Valley*, by the U.S. Department of Commerce, Weather bureau, March 1956, the author, Robert F. Dale, states that there is an

39371 San Thomas Court • Murrieta, CA 92562 • Cell: (951) 805-1100 • E-mail: smaddox@ca.rr.com

apparent "dry area" in the central portion of the valley, located near weather station number 14, the Matanuska Agricultural Experiment Station, with an average annual precipitation of 15.76 inches from 1917 to 1952. This is the same weather station referred to by Kikuchi and is located approximately 2.5 miles to the west of the proposed monofill site.

Dale (1956) describes the semi-arid climatic conditions in the Matanuska-Susitna Valley as follows:

"The Valley is bordered by an arm of the Pacific Ocean and lies less than 40 miles northwest of prince William Sound; however, the Chugach Mountains to the south and east, with peaks ranging from 7,000 to 10,000 feet, form an effective coastal barrier to all flow of moist Pacific air except from the southwest over Cook Inlet. therefore, maritime air masses are generally well modified by the time they reach the Valley, and precipitation is only a little greater than that in interior Alaska, averaging 16 to 20 inches a year in the central Valley area. The Alaska Range and Talkeetna Mountains to the north and the Chugach Mountains to the east protect the Valley from the extreme winter cold of the interior areas..."

An additional factor is the presence of two winds specific to the Matanuska-Susitna Valley, the Matanuska Winds and the Knik Winds. The Matanuska Winds blow down the Matanuska River Valley from the northeast in the autumn and winter, while the Knik winds come from the Knik River Valley and blow in from the southeast. Dale (1956) attributes these winds as a significant source of evaporation within the Valley.

The production of leachate in a landfill is governed by two primary factors:

- The annual precipitation;
- The amount of annual evaporation and evapotranspiration.

The net difference between annual precipitation and annual evaporation is the amount of water left over, and available for possible infiltration through the refuse--this water has the potential to become leachate. This general calculation is called the water balance--when the two factors are close in value, the potential for the production of leachate is low.

The average annual precipitation per the Matanuska AES Weather Station is 15.3 inches, while the average annual evaporation is 14.7 inches. The net difference is approximately 0.6 inches, a relatively insignificant amount. Aljaradin and Perrson state that, "for climates where annual precipitation is less than 15.75 inches, virtually all precipitation is evapotranspirated."

Percolation testing of residual materials at the Birchwood Monofill, Chugiak, Alaska indicated an average hydraulic conductivity of approximately 2.0x10-2 cm/sec. These monofill materials are typical of those that will be deposited at the Palmer monofill. Any water that may penetrate through the proposed final cap, will encounter a significant increase in hydraulic conductivity of the monofill materials, resulting in a significant increase in travel velocity by the water. This

increased velocity will allow infiltration without saturation--thus there will be no extended period of time for the water to "stew" within the refuse and possibly leach-out constituents. As a result, the water will pass rapidly down through the inert refuse material and there will be little time for the production of leachate.

It is apparent that JAM's concerns regarding the possible production of excessive leachate at the proposed monofill site near Palmer, Alaska are unfounded.

The remainder of JAM's concerns are thoroughly addressed in the previous documents submitted for review and approval.

If you have any questions, please feel free to call me at 951-805-1100.

Very truly yours,

Steve Maddox

PROFESSIONAL GEOLOGIST
RONALD STEVEN MADDOX
No. CHG 298
CERTIFIED HYDROGEOLOGIST
STATE OF CALIFORNIA

Steve Maddox, CA

CA PG 4814/CHG 298

AZ PG 52982

Susan Lee

HANDOUT

From: Durand, Shane [shane@cei-alaska.com]
Sent: Monday, December 01, 2014 1:31 PM
To: Alex Strawn
Cc: Susan Lee
Subject: water changes and seismic

Please see page 203 of the package for Maddox conclusions. "Thus, no long term fluctuation in groundwater levels beneath the Monofill are likely to occur." This same section identifies the base materials underlain by sands and gravels.

Many of these same conclusions on the aquifer and water levels can be made of the spill way issue. "water level fluctuations about a constant average state." reports indicate seasonal and yearly fluctuations plus or minus a foot around an average. Terrastat references 1' plus or minus as well in his findings.

Page 446 we addressed the seismic Issues and was supported in Attachment 16. We are working to get something else from the engineers confirming these calcs but may be a little late to get it today.

Shane Durand
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2400 Railroad Ave.
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(907)748-7400
(907)770-5084 fax
www.centralrecyclingservices.com
www.crssurplusmaterials.com
www.cicequipment.com

Susan Lee

From: Justine J [pooh1250@hotmail.com]
Sent: Friday, December 12, 2014 11:44 AM
To: Susan Lee
Subject: CMS monofill

HANDOUT

How anyone can think this is a good idea is beyond me. It can only have to do with greed. This location is on an AQUIFER. That alone makes this a terrible location for a monofill. Polluted water is a huge danger. Also – rising 40 feet above the highway? Do we not want tourists to visit Palmer anymore? What an eyesore. The gravel pit may not be the most beautiful part of Palmer, but at least gravel is natural! And the horrible winds we have here! We already have a problem with trash blowing around. Do we want our spring cleanup volunteers to have to pick up construction waste too? Or do we not want to have cleanup volunteers anymore? CMS has already shown a disregard for illegal dumping and we expect that they will suddenly straighten up and obey the law? That they will respect our right to have clean, fresh water and air and land? Or do we expect that they will do whatever is financially best for them? Even the borough's hired hydrologist doesn't want it here. I can't imagine that any resident (who isn't getting money from it) wants it here. Palmer is a beautiful place to live. I moved here from a big city to get away from pollution – air, water etc. This will ruin the beauty and cleanliness and freshness of Palmer and will keep people from wanting to live here. Who wants to live where there is pollution when you can get land elsewhere? Do we not care about the children that are growing up near the proposed site? What kind of effects this site could have on everyone in the area? Leaving it alone will not cause health problems, spoil or ruin anything, but turning it into a monofill most certainly will.

Justine Jarchow
Pioneer Meadows Homeowner

Susan Lee

From: Justine J [pooh1250@hotmail.com]
Sent: Friday, December 12, 2014 12:01 PM
To: Susan Lee
Subject: CMS Monofill

HANDOUT

P.S.

I would rather pay a higher city sales tax, property tax or heaven forbid, permission be given to Wal-Mart to build there than have a monofill there.

Justine Jarchow
Pioneer Meadows Homeowner

Susan Lee

From: Authentic Alaska Tours [authenticalaskatours@yahoo.com]
Sent: Friday, December 12, 2014 11:54 AM
To: Susan Lee
Subject: Palmer Dump. Planning Commission

HANDOUT

Dear Planning Commissioners,

We are writing to urge you to vote as representatives of the community you represent in regards to the CMS landfill permit to create a private dump at Mi. 38.3 Glenn HWY. Most of the community is opposed to this dump with valid reasons and threat to our tourism, quality of life, health and well being, environment etc.
The opposition to this dump far outweighs those in favor of the dump. Most of those favor are either employees, owners, have vested interest, or biased incorrect knowledge, etc.

It is hard to fathom that the Planning Commission would prefer the needs of a few business people in Anchorage who want to save money dumping their trash along our Glenn HWY National Scenic Byway instead of the Anchorage landfill because it is cheaper for them.

As members of the Planning Commission you are to vote for what is best for your local community that you represent. The community spent many hours in the study that Agnew Beck produced for the future of our region. That region has been designated as a National Scenic Byway and that parcel of land was designated to be a park that would compliment the Byway.

Our question to you is what is the basis on your vote. Is it to represent the community or your own opinion. You have a responsibility to vote for what is best for your community members, tourism, health and future of tourism in our valley.
Not for what is best for a few business men's pocket books.

Please vote against CMS Permit. A vote in favor of the permit is a vote against the will of the people in the Mat-Su Valley. A vote against the permit is a vote for the will of the people in the Mat-Su Valley.

Thank you for your service to the community

Kevin & Geri McCann
2280 S. Killarney Dr.
Palmer, AK
907-715-7891

Susan Lee

HANDOUT

From: Stephanie Nowers [sjnowers@mtaonline.net]
Sent: Friday, December 12, 2014 10:23 AM
To: Susan Lee; Alex Strawn
Subject: submission for Dec. 15 public hearing
Attachments: bmp guide 2014.pdf; ATSDRTestimony_Warren,Ohio.docx; Clark, et al..pdf

Hi Susan & Alex,

1)These reports are about hazards and best practices for C&D Landfills nationwide. They were suggested to me by Lynn Wilder, who is with The *Agency for Toxic Substances and Disease Registry* (*ATSDR*), which is s a federal public health agency of the **U.S. Department of Health and Human Services**. Lynn has headed up an initiative for ATSDR for the past several years on C&D Landfills looking at the health impacts and how to mitigate them. These reports have measurements from and statstics on C&D landfills from around the country, as well as case investigations of problematic C&D landfills. *ATSDR serves the public by using the best science, taking responsive public health actions, and providing trusted health information to prevent harmful exposures and diseases related to toxic substances.*

I suggest the borough add at least the following conditions to the proposed site to protect the public health, safety and welfare:

- Ban or put a limit on the amount of gypsum that can go into the site.
- Require a liner for collecting any leachate and a leachate collection system
- Require submittal of a new groundwater monitoring plan because of concerns that the current plan is deficient. Specifically, Munter noted wells are not n the right place to collect leachate.
- Require that water monitoring be independently verified

2012 US EPA Best Management Practices to Prevent and Control Hydrogen Sulfide and Reduced Sulfur Compound Emissions at Landfills That Dispose of Gypsum Drywall

Of the components of C&D waste materials, drywall is of special concern. It is a major component of C&D wastes, and its disposal in C&D landfills can result in the production of hydrogen sulfide. Drywall is composed of a core of gypsum ($CaSO_4 \cdot 2H_2O$), covered on both sides with a paper facing and backing. When the sulfate in the gypsum is exposed to water, it becomes solubilized in the landfill leachate, and hydrogen sulfide gas is produced through an anaerobic conversion process(

Best Practices: See pages 17 & 30, 31

1)Some limit or ban gypsum altogether

If do allow it, keep it segregated or track where bigger loads go. Keep near top of load to minimize contact with water.

2) Keeping water out is key.

17 states now have a minimum requirement for C&D landfills to collect and remove leachate

12 states require daily cover

3)Shredding makes things worse. The reduced size creates an increased specific surface area which can lead to greater rates of H_2S gas production compared

to larger, bulkier pieces of drywall.

ATSDR testimony on an investigation into a C&D site in Warren, OH that was declared an Urgent Public Health Hazard because of H2S

- ATSDR began investigation in August 2002
- More than 150 residents reported similar health effects that they and their families were experiencing, including nausea, headache, vomiting, eye irritation, fatigue, dizziness, and memory loss.
- ATSDR conducted an Exposure Investigation, sampling indoor and outdoor air in seven community locations for five months.
- Concluded the conditions posed an urgent public health hazard to citizens of Warren Township. ATSDR uses the "urgent public health hazard" conclusion for sites at which short-term exposures (less than 1 year) to hazardous substances or conditions could result in harmful health effects that require rapid intervention.

Review of Construction and demolition Debris Regulations in the United States (march 2006)

EPA/600/R-14/039

HANDOUT

Best Management Practices to Prevent and Control Hydrogen Sulfide and Reduced Sulfur Compound Emissions at Landfills That Dispose of Gypsum Drywall

U.S. Environmental Protection Agency Office of Research and Development

U.S. EPA Contract Number EP-W-09-004

Prepared for

U.S. Environmental Protection Agency
Cincinnati, OH

Prepared by

Innovative Waste Consulting Services, LLC
Gainesville, Florida

Under Subcontract to

RTI International
Research Triangle Park, NC

Notice

The U.S. Environmental Protection Agency (U.S. EPA) through the Office of Research and Development funded and managed the research described here under contract order number: EP-W-09-004 to RTI International in Research Triangle Park, North Carolina. It has been subject to the Agency's review and has been approved for publication as a U.S. EPA document. Use of the methods or data presented in this manual does not constitute endorsement or recommendation for use. Mention of trade names or commercial products does not constitute endorsement or recommendation.

Foreword

The U.S. Environmental Protection Agency (U.S. EPA) is charged by Congress with protecting the Nation's land, air, and water resources. Under a mandate of national environmental laws, the Agency strives to formulate and implement actions leading to a compatible balance between human activities and the ability of natural systems to support and nurture life. To meet this mandate, U.S. EPA's research program is providing data and technical support for solving environmental problems today and building a science knowledge base necessary to manage our ecological resources wisely, understand how pollutants affect our health, and prevent or reduce environmental risks in the future.

The National Risk Management Research Laboratory (NRMRL) is the Agency's center for investigation of technological and management approaches for preventing and reducing risks from pollution that threaten human health and the environment. The focus of the Laboratory's research program is on methods and their cost-effectiveness for prevention and control of pollution to air, land, water, and subsurface resources; protection of water quality in public water systems; remediation of contaminated sites, sediments, and ground water; prevention and control of indoor air pollution; and restoration of ecosystems. NRMRL collaborates with both public and private sector partners to foster technologies that reduce the cost of compliance and to anticipate emerging problems. NRMRL's research provides solutions to environmental problems by: developing and promoting technologies that protect and improve the environment; advancing scientific and engineering information to support regulatory and policy decisions; and providing the technical support and information transfer to ensure implementation of environmental regulations and strategies at the national, state, and community levels.

This publication has been produced as part of the Laboratory's strategic long-term research plan. It is published and made available by U.S. EPA's Office of Research and Development to assist the user community and to link researchers with their clients.

Cynthia Sonich-Mullin, Director
National Risk Management Research Laboratory

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Table of Contents

Abbreviations, Acronyms, and Initialisms vi

1. Introduction and Background 1
   - 1.1 Issue Description and Report Objectives 1
   - 1.2 Intended Audience 1
   - 1.3 Report Organization 1
2. Fundamentals 2
   - 2.1 Basics of H_2S 2
   - 2.2 H_2S Regulatory Standards and Health Effects 2
   - 2.3 H_2S Formation in Landfills 4
   - 2.4 Factors Impacting Emission of LFG 6
   - 2.5 Composition of Waste Disposed of in C&D and MSW Landfills 8
   - 2.6 H_2S at C&D Debris Landfills 10
     - 2.6.1 Factors Contributing to H_2S Formation and Emission at C&D Landfills 10
     - 2.6.2 H_2S Concentrations Measured at C&D Landfills 11
   - 2.7 H_2S at MSW Landfills 16
     - 2.7.1 Factors Contributing to H_2S Formation and Emission at MSW Landfills 16
     - 2.7.2 H_2S Concentrations at MSW Landfills 17
   - 2.8 Considerations for Other Reduced Sulfur Compounds 22
3. Methods to Prevent and Control H_2S Emissions 23
   - 3.1 Methods to Prevent H_2S Formation 23
     - 3.1.1 Diversion of Drywall and Limiting SO_4^{2-} Content of RSM 23
     - 3.1.2 Moisture Control 24
     - 3.1.3 Bacterial Inhibition 25
   - 3.2 Methods to Control H_2S Emission 25
     - 3.2.1 Leachate Management 25
     - 3.2.2 Cover Soil and Amendments 26
     - 3.2.3 Capping Systems 27
     - 3.2.4 Odor Neutralizers 28
     - 3.2.5 LFG Collection and Treatment 28
4. Site Investigation and Monitoring Techniques 31
   - 4.1 Site Inspection Procedure Considerations 31
   - 4.2 H_2S Monitoring Techniques 32
5. BMP Framework to Manage H_2S Emissions From Disposal of Gypsum Drywall 35
6. References 37

Appendix A – State and Federal Exposure Limits for H_2S

List of Figures

Figure 2-1. Odor Threshold Ranges Reported by Different Sources 3
Figure 2-2. Illustration Indicating Common Landfill Processes and Examples of Areas Where H_2S May Be Sampled 8
Figure 2-3. Mass-Based Discarded C&D Debris Composition Based on Reported Data From Seven States (adapted from Staley and Barlaz, 2009) 9
Figure 2-4. Discarded MSW Composition by Mass (adapted from Staley and Barlaz, 2009) 10
Figure 2-5. Reported H_2S Concentrations Measured Within Landfilled C&D Waste or in an LFG Well at a C&D Landfill (#1 – 10: Lee et al. (2006), #11: Rizzo and Associates (2002), #12: Degner (2008)) 12
Figure 2-6. Reported H_2S Concentrations Measured at the Surface of 11 C&D Landfill Sites in Florida (#1 – 10: Lee et al. (2006), #11: ATSDR (2007)) 13
Figure 2-7. Compilation of Ambient Air H_2S Measurements Near C&D Landfills (#1: ATSDR (2007), #2: Tetra Tech (2004), and #3: Cooper et al. (2011)) 15
Figure 2-8. H_2S Concentrations Measured in LFG at MSW Landfills (#1: U.S. EPA (1998b), #2: Tennant (2012), #3 – 7: U.S. EPA (2007), #8: Capenter and Bidwell (1996), and #9: Carlton et al. (2005)) 19
Figure 2-9. Ambient, Perimeter, and Offsite Measured or Modeled Concentrations of H_2S at MSW Landfills (#1: OEPA, 2006' #2: ATSDR, 2009; and #3: Heaney et al., 2011) 21
Figure 5-1. Framework for Developing a BMP Guide for Managing H_2S at C&D or MSW Landfills 35

List of Tables

2-1. Health Effects and Approximate Corresponding H_2S Concentration, as Summarized by WHO (2003) 4
2-2. Examples of State and Regional H_2S Gas Standards, Guidelines, and Screening Levels 4
2-3. Summary of Factors that Contribute to the Production of H_2S in Landfills 5
2-4. Transport Mechanisms and the Factors That Impact LFG Emission (U.S. EPA 1997) 6
2-5. Conditions That May Promote H_2S Production at C&D Landfills 11
2-6. Calculated Modeled Minimum Nuisance Odor Buffer Distances Based on H_2S Measurements Collected at a Florida C&D Landfill (adapted from Cooper et al., 2011) 14
2-7. Conditions That May Promote H_2S Production at MSW Landfills 17
2-8. Summary of H_2S Concentration Data in MSW LFG Reported in the Draft Compilation of Air Pollutant Emission Factors for MSW Landfills (U.S. EPA, 2008) 18
2-9. Reported H_2S Measurement Data From Five MSW Landfills (U.S. EPA, 2007) 18
2-10. Summary of Measured RSC Concentrations From MSW LFG (U.S. EPA, 2008) 22
3-1. Summary of and Discussion of Moisture Control and Cover Soil Use Techniques to Minimize the Production and Emissions of H_2S 24
3-2. Summary of Treatment Technologies to Reduce H_2S Concentrations in Collected LFG 30
4-1. Examples of H_2S Monitoring Devices, Applications, and Limitations 33

Abbreviations, Acronyms, and Initialisms

ADC	Alternative Daily Cover
AEGL	Acute Exposure Guideline Level
ATSDR	Agency for Toxic Substances and Disease Registry
BMP	Best Management Practice(s)
°C	Degrees Celsius
C&D	Construction and Demolition
Ca	Calcium
$CaSO_4$	Calcium Sulfate
CDC	Centers for Disease Control and Prevention
CH_2O	Formaldehyde
CH_3SH	Methyl Mercaptan
$(CH_3)_2S$	Dimethyl Sulfur
$(CH_3)_2S_2$	Dimethyl Disulfide
$(CH_3)_2S_3$	Dimethyl Trisulfide
C_3H_8S	Isopropyl Mercaptan
$C_4H_{10}S$	Isobutyl Mercaptan
CH_4	Methane
$CH_4H_{10}S$	Tert-Butyl Mercaptan
CO_2	Carbon Dioxide
COD	Chemical Oxygen Demand
COS	Carbonyl Sulfide
CS_2	Carbon Disulfide
GCCS	Gas Collection and Control System
H_2S	Hydrogen Sulfide
LFG	Landfill Gas
MoO_4^{2-}	Molybdate
MSW	Municipal Solid Waste
mV	Millivolt
µL/L	Microliters per Liter
N_2	Nitrogen
nL/L	Nanoliters per Liter
RSC	Reduced Sulfur Compound
RSM	Recovered Screen Material
S^0	Elemental Sulfur
SO_2	Sulfur Dioxide
SO_4^{2-}	Sulfate
SRB	Sulfate Reducing Bacteria
U.S.	United States
U.S. EPA	United States Environmental Protection Agency
WHO	World Health Organization
WWTP	Wastewater Treatment Plant

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1. Introduction and Background

1.1 Issue Description and Report Objectives

Hydrogen sulfide (H_2S) gas can be emitted from both construction and demolition (C&D) debris and municipal solid waste (MSW) landfills. H_2S emissions may be problematic at a landfill as they can cause odor, impact surrounding communities, cause wear or damage to landfill gas (LFG) collection and energy utilization components, or contribute to the formation of explosive conditions. H_2S emissions at landfills have often been attributed to the disposal of gypsum drywall, though other sources such as sulfur-containing industrial wastes and biosolids from municipal wastewater treatment facilities can also contribute to H_2S production. Addressing problems from H_2S emissions at landfills can be costly and time consuming for landfill owners and operators. Several years of operational experience and research efforts have identified several key pieces of information regarding the conditions that can cause H_2S production, factors that result in H_2S production at landfills, and strategies to prevent these conditions from occurring and to minimize the release of H_2S to the surrounding environment when it is produced.

The U.S Environmental Protection Agency (U.S. EPA) Office of Research and Development, in coordination with U.S. EPA Region 5, commissioned the development of a document designed to provide landfill owners and operators with guidance on pertinent subject matter associated with H_2S production, emissions, prevention, and control at landfill sites. A previous effort (U.S. Environmental Protection Agency [U.S. EPA], 2006b) focused on practices to prevent and control H_2S emissions from C&D landfills that accept pulverized gypsum debris in Ohio. This document expands the scope of this previously developed guidance by consolidating additional landfill operational and research information from a broader knowledge base (both C&D and MSW landfills), including additional information regarding the science of H_2S formation and control, the results of case studies with field and laboratory measurement of H_2S, and updated best management practices (BMPs).

1.2 Intended Audience

This report provides regulatory agencies, landfill owners and operators, and other interested parties with information regarding the science of H_2S production and emissions at landfill sites, and information on BMPs to prevent and control these emissions. Emission levels are discussed in the context of published health and safety standards and health-based or nuisance-based thresholds.

1.3 Report Organization

This report is organized into six sections. Section 1 presents the objectives of this report and describes the report organization. Section 2 provides the fundamentals of H_2S generation, related emission or exposure standards, measured levels at C&D and MSW landfills, and information regarding production and emission of other reduced sulfur compounds (RSCs). Section 3 presents a review of measures to prevent and control the formation and/or emission of H_2S from C&D and MSW landfills. Section 4 describes site investigation and monitoring techniques for H_2S. Section 5 includes a framework that landfill owners and operators can use to develop a BMP guide for their facility. Section 6 provides a list of references cited in the report.

2. Fundamentals

2.1 Basics of H_2S

H_2S (CAS #7783-06-4) is a poisonous, irritating, flammable, and colorless gas, with a characteristic rotten-egg-like odor detectable by humans at low concentrations and a sweet odor at higher concentrations. H_2S (also known as hydrosulfuric acid, sewer gas, sulphuretted hydrogen, hepatic gas, sour gas, and stink damp) is naturally occurring and found in crude petroleum, natural gas, volcanic gases, and hot springs. There are also anthropogenic (man-made) sources of H_2S gas, such as food processing, coke ovens, paper manufacturing mills, tanneries, solid waste disposal facilities, petroleum refineries, and waste water treatment plants (WWTPs). H_2S gas is slightly heavier than air (specific gravity of 1.189) and may accumulate in enclosed, poorly ventilated, and low-lying areas. When released into the environment, H_2S has been observed to persist for approximately 18 hours (Agency for Toxic Substances and Disease Registry [ATSDR], 2006a) and up to 42 days, typically persisting longer in cold weather (Bottenheim and Strausz, 1980). In the atmosphere, H_2S transforms into sulfur dioxide (SO_2) and/or sulfuric acid (H_2SO_4).

The explosive limit of H_2S in air ranges from 4.3 to 46% (43,000 µL/L to 460,000 µL/L) (Centers for Disease Control and Prevention [CDC], 2000). It has an autoignition temperature of 260 °C, a National Fire Protection Association (NFPA) fire and health rating of 4, and a reactivity rating of 0 (scale 0–4) (CDC, 2000). The water solubility limit of H_2S is relatively high, with an equilibrium concentration of 4,132 mg/L at 20 °C (World Health Organization [WHO], 2003).

2.2 H_2S Regulatory Standards and Health Effects

The lowest detectable concentration of H_2S by humans has been examined by several investigators. Amoore (1985) conducted a literature review of 26 H_2S-related odor studies and found a median odor detection threshold of 0.008 µL/L (by volume). ***Figure 2-1*** displays reported odor threshold ranges reported by several different sources; differences in odor detection levels are primarily attributed to differences in individual olfactory systems and sensitivity.

The detectable concentration of H_2S does not necessarily equate to that of a nuisance level, although Amoore (1985) indicated that five of the studies reported a nuisance-level concentration of 0.04 µL/L, approximately five times the detectable odor threshold. Mean atmospheric (i.e., ambient) H_2S concentrations in the United States reportedly range between 0.00071 µL/L and 0.066 µL/L (U.S. EPA, 2010a). Close proximity to a natural or anthropogenic source of H_2S may produce ambient H_2S concentrations greater than the ambient mean.

Humans may not detect H_2S at high concentrations due to olfactory fatigue (which may occur at approximately 100 µL/L with a 2- to 15-minute exposure) and olfactory paralysis (reported at approximately 150 µL/L) (Beauchamp, 1984; U.S. EPA, 2010a). Thus, odor is not always a reliable indicator of the presence of H_2S and may not provide adequate warning of hazardous concentrations.

H_2S affects the body if inhaled or comes in contact with the eyes, skin, nose, and throat (Beauchamp, 1984, ATSDR 2006a, ATSDR 2006b, ATSDR 2006c). Respiratory protection can be used to prevent inhalation if sufficient engineering controls are not available; a self-contained breathing apparatus and supplied airline respirators (both supply a clean source of breathable air rather than purifying ambient air) are considered acceptable protection from H_2S (Kalusche, 2004).

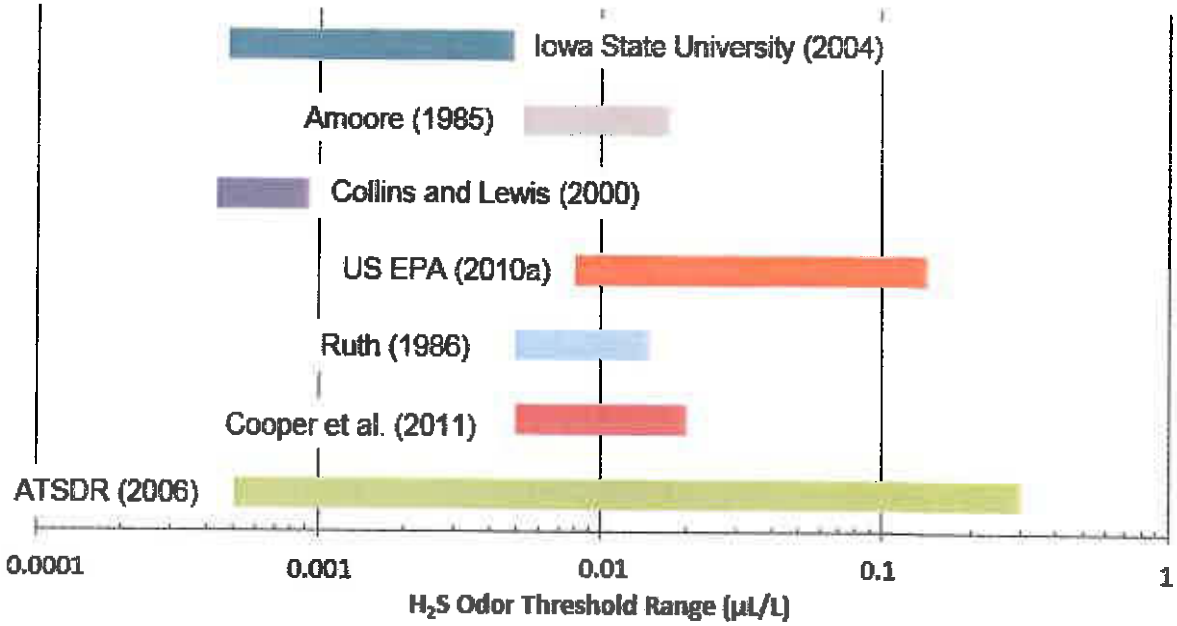


Figure 2-1. Odor Threshold Ranges Reported by Different Sources

Currently, there are no enforceable federal standards for offsite H_2S gas emissions from landfills, or H_2S monitoring requirements specific to landfills. However, health effects due to H_2S exposure have led to the development of H_2S workplace standards, which are typically expressed as a concentration and referenced to an exposure time limit. Nuisance standards and health-based guidelines for human exposure to H_2S in the United States have been developed by numerous agencies and organizations. Individual nuisance or health effects from H_2S exposure vary depending on:

- exposure duration
- exposure concentration
- individual factors (e.g., asthmatics).

H_2S blocks the oxidative process of tissue cells, reduces the oxygen-carrying capacity of blood, depresses the central nervous system, and causes respiratory failure and asphyxiation in high concentrations (Kalusche, 2004). At acute, lower-level concentrations, nausea, fatigue, loss of appetite, headaches, and irritation can occur (WHO 2003). The reported effect of low-level, long-term H_2S exposure in humans has been mixed in the technical literature. For example, Kalusche (2004) reports effects such as eye irritation, headache, photophobia, and blurred vision from long-term, low-level exposure. However, the WHO (2003) stated that "... effects in human populations exposed for long periods to low levels of (H_2S) cannot serve as a basis for setting tolerable concentrations because of either co-exposure to several substances or insufficient exposure characterization." WHO (2003) states that insufficient data on possible carcinogenicity of H_2S exists, and the compound has not been classified as a carcinogen (ATSDR, 2006b). WHO (2003) summarized human health effects at variable H_2S concentration levels based on acute exposure scenarios, shown in ***Table 2-1***.

Table 2-1. Health Effects and Approximate Corresponding H_2S Concentration, as Summarized by WHO (2003)

Health Effect	H_2S Concentration (µL/L)
No Observed Adverse Effect Level	0.0014
Odor threshold	0.007
Bronchial constriction in asthmatic individuals	2
Eye irritation	4 - 21
Fatigue, loss of appetite, headache, irritability, poor memory, dizziness	20
Olfactory paralysis	>100
Respiratory distress	>400
Death (likely a result of respiratory failure/arrest)	>500

Acute Exposure Guideline Levels (AEGLs) (U.S. EPA, 2010a) for H_2S have been developed and are intended to describe the risk to humans that would result from once-in-a-lifetime, or rare, exposure to airborne chemicals. The AEGLs for H_2S were established based on a three-tiered system (level 1, level 2, and level 3) that acknowledges the severity of expected health effects. Additionally, many other agencies have published their own guidelines, screening levels, or health-based levels for H_2S, which are detailed in ***Appendix A*** of this report.

Some U.S. EPA regions and states have developed or adopted H_2S air quality standards. Some examples of these standards are included in ***Table 2-2***. This list is not exhaustive and is not intended to encompass all regional, state, or local H_2S standards, guidelines, and screening levels. Additionally, the standards may not apply to all areas in the region, state, or municipality.

Table 2-2. Examples of State and Regional H_2S Gas Standards, Guidelines, and Screening Levels

Standards, Guidelines and Screening Level Description	Concentration (µL/L)
California Ambient Air Quality Standard	0.03 - 1 hour average
Maine Ambient Air Guidelines	0.03 - 30 minute average 0.001 - 1 year average
Minnesota Ambient Air Quality Standards (7009.0080- applies to property boundary, primary standards)	0.05 - 30 minute average not to be exceeded > 2 times per year 0.03 - 30 minute average not to be exceeded > 2 times in any 5 consecutive days
Montana Ambient Air Quality Standards (17.8.214)	0.05 - 1 hour average not to be exceeded > once per year
New Mexico (20.2.3.110)	0.01 - 1 hour average
New York Ambient Air Quality Standards (257-10.3)	0.01 - 1 hour
Pennsylvania Ambient Air Quality Standards	0.005 - 24 hour 0.1 - 1 hour
U.S. EPA Region 9 Regional Screening Levels (Also used by U.S. EPA Region 3 and 6[1]	0.0015 Residential Air 0.0063 Industrial Air

Note: [1] Regional Screening Levels are risk-based target levels developed by guidance from the U.S. EPA Superfund program that are used for Superfund sites. They are generic screening levels considered by U.S. EPA to be protective for humans (including sensitive groups) over a lifetime.

2.3 H_2S Formation in Landfills

H_2S is generally formed in a landfill environment through the reduction of sulfate (SO_4^{2-}). Sulfate-reducing bacteria (SRB) causing SO_4^{2-} reduction to H_2S are commonly observed in groundwater, wastewater treatment plants, and sewers. Additionally, H_2S production is attributed to hydrolysis of sulfur-containing minerals (e.g., FeS_2) in natural sources such as volcanoes and hot springs (ATSDR, 2006b).

The reduction of SO_4^{2-} represents the primary generation mechanism in landfills; SO_4^{2-} may be present from gypsum or other waste sources in the landfill (e.g., WWTP sludge), though the mass of reducible sulfur minerals in drywall far exceeds that typically present in WWTP sludge. Gypsum is hydrated calcium sulfate ($CaSO_4 \cdot 2H_2O$) and is the major component of gypsum drywall panels, which normally consists of 90% (by weight) gypsum and 10% backing paper. Gypsum drywall is also known as plasterboard, gypsum board, gyproc, gib board, sheetrock, and wallboard, and hereafter referred to in this report as *gypsum drywall*.

Gypsum drywall is a component of C&D waste and can be disposed of in C&D landfills or MSW landfills, where it can arrive in bulk form or in size-reduced (pulverized or fine) form. Gypsum may also be present in landfills (particularly MSW landfills) that accept screened, fine-grained material from C&D recycling operations, which is typically referred to as recovered screen material (RSM). RSM is typically sized from 3/8" to 2" or more and can contain a varying amount of size-reduced gypsum (the degree of gypsum is largely dependent on the practices of the C&D recycler to remove gypsum prior to processing the C&D at its facility). There are several contributing factors that may result in the production of H_2S in landfills. These factors are summarized in ***Table 2-3***.

Table 2-3. Summary of Factors that Contribute to the Production of H_2S in Landfills

H_2S Formation Factor	Discussion
SO_4^{2-} Source	Sources of reducible sulfur in landfills may include gypsum drywall, WWTP sludges, or other residential, commercial, or industrial wastes (e.g., auto shredder fluff impacted by lead-acid batteries). Gypsum may be present in larger pieces of drywall or size-reduced drywall, and may be present in fine particles contained in RSM.
Moisture	Moisture provides a medium for SRB growth and chemical reactions to occur. Infiltration of stormwater into the waste, lack of leachate collection and removal, and moisture inherent to deposed waste can all act to contribute to moisture within landfills.
Organic Matter	Production of H_2S requires organic matter as a substrate for SRB utilization. Several studies (Hardy Associates, 1978; Townsend et al., 2002, New Hampshire Department of Environmental Services 2004) have indicated organic matter presence in C&D landfills is not limiting, and that the paper backing on drywall is sufficient to sustain a viable community of SRB that can produce H_2S. MSW landfills have substantially more organic matter compared to C&D landfills because of the characteristics of wastes that are normally deposited in MSW landfills.
Anaerobic Conditions	Anaerobic conditions (i.e., a lack of oxygen) are required for the reduction of SO_4^{2-} into H_2S. Anaerobic conditions form within C&D and MSW landfills following placement and subsequent compaction of waste material.
pH Conditions	SRB typically thrive in environments with pH ranging from 6 to 9, though SRB have been observed in environments with greater acidity (Koschorreck, 2008). These pH conditions are consistent with those normally found in C&D and MSW landfills.
Temperature Conditions	SRB can thrive over a wide range of temperatures – investigators have observed SRB in the thermophilic range at temperatures up to 80 °C (Elsgaard et al., 1994) and at cryophilic ranges as low as -1.8 °C (Knoblauch and Jorgensen, 1999).

SRB produce H_2S gas from the SO_4^{2-} present in gypsum and organic carbon waste materials, as demonstrated by using formaldehyde (CH_2O) as an example (Townsend et al., 2002; Bogner and Heguy, 2004):

$$SO_4^{2-} + 2CH_2O \rightarrow 2HCO_3^- + H_2S$$

Based on stoichiometry, one hundred tons of SO_4^{2-} have the potential to produce 35 tons of H_2S gas (Bogner and Heguy, 2004).

Laboratory studies have examined H_2S production potential in batch reactors or in simulated landfill columns. Yang et al. (2006) measured H_2S concentrations as high as 65,000 µL/L in a reactor containing only drywall that was flushed with a synthetic precipitation leaching procedure solution, which is a simulated rainfall used in standard laboratory leaching tests. Additionally, Yang et al. (2006) tested a simulated column with mixed C&D debris (wood and drywall) and flushed in a similar fashion as the drywall-only experiment, and the results showed an H_2S concentration of approximately 40,000 µL/L.

2.4 Factors Impacting Emission of LFG

The emission of landfill gas (LFG) from landfills depends on the different transport mechanisms associated with the LFG and the factors that influence the transport mechanisms. The mechanisms and influencing factors are presented in ***Table 2-4***.

Table 2-4. Transport Mechanisms and the Factors That Impact LFG Emission (U.S. EPA 1997)

LFG Transport Mechanism	Factors that Impact Emission
Diffusion Through the Waste or Cover Soils	• Soil porosity • Concentration gradient • Diffusivity of the LFG • Thickness of cover soil
Diffusion Through the Air Boundary Layer	• Wind speed, which is related to atmospheric stability • Concentration gradient • Diffusivity of the LFG
Convection	• Pressure gradient (which is influenced by LFG production rates). A larger pressure gradient between the landfill and the atmosphere results in greater emissions.
Displacement	• Compaction or size reduction of waste • Settlement of waste • Water table fluctuations (unlined sites) • Changes in atmospheric pressure

H_2S migrates with LFG through pore space and soil cover in landfills to escape to the atmosphere. H_2S is heavier than air and thus tends to settle in low-lying areas, including outside of the landfill boundary. Pressure changes (causing convection) in the landfill are influenced by nutrient availability, refuse composition, moisture content, landfill age, temperature, pH, oxygen availability, the presence of a LFG collection system, and wastes that may inhibit biological activity (industrial waste, or waste containing large quantities of metals). Landfill settling and compaction can also cause displacement of LFG and force the gas to migrate out of the landfill. The displacement can occur also through water table fluctuations, which are affected by the presence of a liner, evaporation, precipitation, and variations between horizontal and vertical permeability. If the landfill is unlined, the ground water table and surrounding water bodies may have an impact. Xu et al. (2014) developed a model to predict emitted concentrations of H_2S based on conditions that may be present at a specific site (e.g., cover soil thickness, cover soil compaction, and moisture content of the cover soil).

H_2S has a relatively high solubility, thus the gas tends to dissolve in landfill leachate and serve as an emissions source in leachate collection areas or areas on a landfill where leachate is exposed to the atmosphere (Profumo et al., 1992; Reinhart et al., 2004).

Evaluation of where H_2S concentrations are measured at landfills is an important consideration, as the implications measured inside of the landfill differ from those measured at the property boundary. ***Figure 2-2*** presents an illustration of a landfill and the locations where LFG samples including H_2S may be collected. Additional discussion regarding these potential sampling locations is presented below.

- **LFG Header Pipe, LFG Well, or Soil Vapor Probe.** Concentrations measured at these locations would be expected to be the highest measured H_2S levels at a landfill, as limited dilution with atmospheric air would have occurred. Normally, measurements are conducted by directly connecting the monitoring instrument to the pipe or probe. Monitoring H_2S at these points may help to identify areas of high concentrations in the landfill or allow the operator to evaluate overall collected H_2S concentration, which has importance particularly at sites with energy conversion systems.
- **Landfill Surface.** Measurements conducted at the landfill surface can identify areas of high concentration and assess concentrations to which landfill workers or site visitors may be exposed. Measurements at the surface are typically conducted anywhere from just above the surface to the normal breathing zone, depending on the goals of monitoring and the instrument used.
- **Ambient Air.** Measurements in ambient air are typically conducted to measure the concentration of H_2S that may be present at the landfill's perimeter, property boundary, or even offsite. Measurements can be conducted with fixed instruments (which analyze H_2S levels at a single point) or using a roving instrument to capture a larger area.

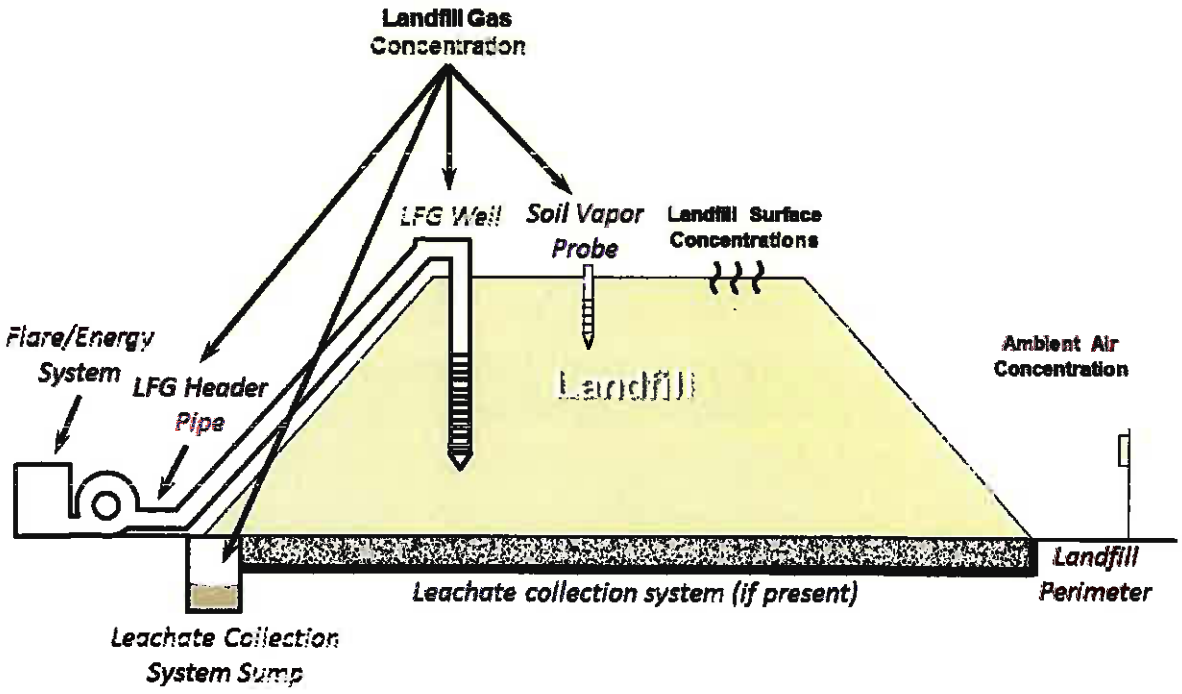


Figure 2-2. Illustration Indicating Common Landfill Processes and Examples of Areas Where H_2S May Be Sampled

Sections 2.6 and 2.7 discuss H_2S production and measured concentrations at C&D landfills and MSW landfills, respectively. Information in each section is grouped to acknowledge measurements of H_2S inside of landfills, on the surface of landfills, and in ambient air on or off of the landfill property. The concentrations measured at each of these points have different implications with respect to operational impacts, environmental impacts, and human health impacts.

It is noted that the monitoring or measurement of H_2S is not necessarily a standard practice at C&D or MSW landfills, and that some data in Section 2.6 and 2.7 were gathered based on published information at sites where an actual or suspected problem with H_2S production or emissions was present. Therefore, the concentrations presented in this report should not necessarily be viewed as "typical" or "average" for C&D landfills or MSW landfills, but simply examples of concentrations that may be encountered. As discussed previously, numerous site-specific factors (waste types and quantities, weather conditions, topographic conditions, distance to receptors) play a role when considering whether a landfill has H_2S production or emissions at problematic levels.

2.5 Composition of Waste Disposed of in C&D and MSW Landfills

Assessing the composition of waste disposed of in C&D debris and MSW landfills is important to understand the potential for the formation of H_2S in these facilities. Gypsum drywall is one of the major components of the C&D debris waste stream. Staley and Barlaz (2009) summarized several statewide studies that estimated the composition of C&D debris discarded at landfills. The mean weight-based composition was calculated and is presented in ***Figure 2-3***. Based on composition data reported by seven states in the United States, the average weight-based composition of discarded gypsum in C&D debris was calculated to be approximately 10%.

U.S. EPA (1998a) and (2009) presented estimates of building-related C&D debris generation in the United States based on an assumed waste weight per unit construction activity area and Census Bureau data on construction industry project activity. These studies estimated a building-related C&D debris generation rate estimate of 136 and 170 million tons for years 1996 and 2003, respectively. The estimated recycling rate of C&D reported by U.S. EPA (1998a) ranged from 20 to 30%; the most commonly recycled components included concrete, asphalt, metal, and wood. Assuming that the drywall recycling rate based on the 1996 data was minimal, the amount of disposed gypsum drywall may be on the order of 10 million tons annually in the United States.

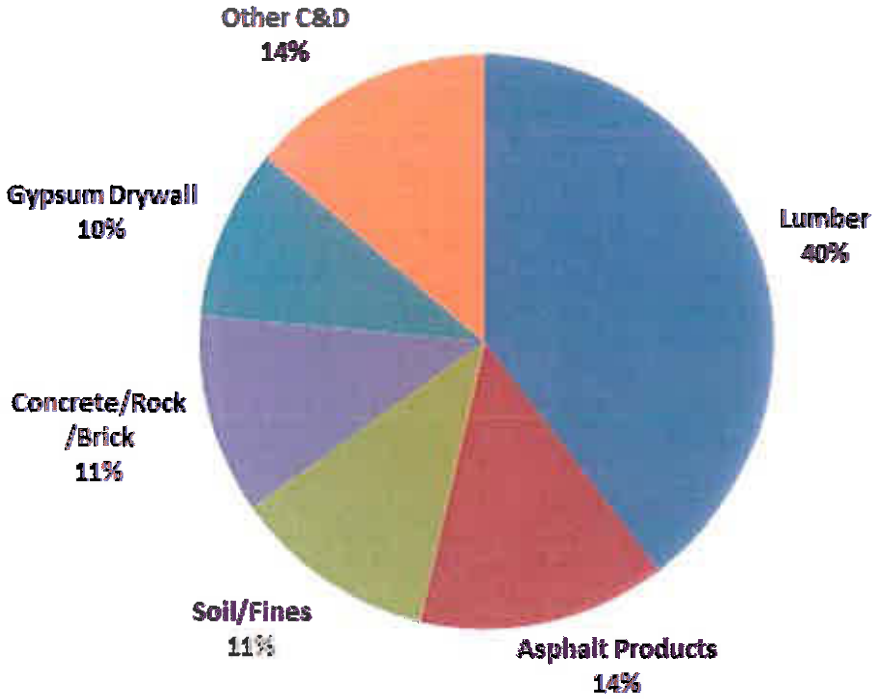


Figure 2-3. Mass-Based Discarded C&D Debris Composition Based on Reported Data From Seven States (adapted from Staley and Barlaz, 2009)

The generation of MSW in the United States is estimated annually by the U.S. EPA. In 2010, total MSW generation was estimated to be 250 million tons, with an approximately 34% recycling rate and 54% discard rate (U.S. EPA, 2011). Staley and Barlaz (2009) summarized reported statewide waste composition data for discarded MSW, as shown in ***Figure 2-4***. It is important to note that many MSW landfills accept waste other than MSW (e.g., C&D debris, industrial wastes, and ash). C&D debris may be disposed of at an MSW landfill for a variety of reasons, including (but not limited to) lack of recycling markets, lack of permitted C&D debris-only facilities, and disposal costs.

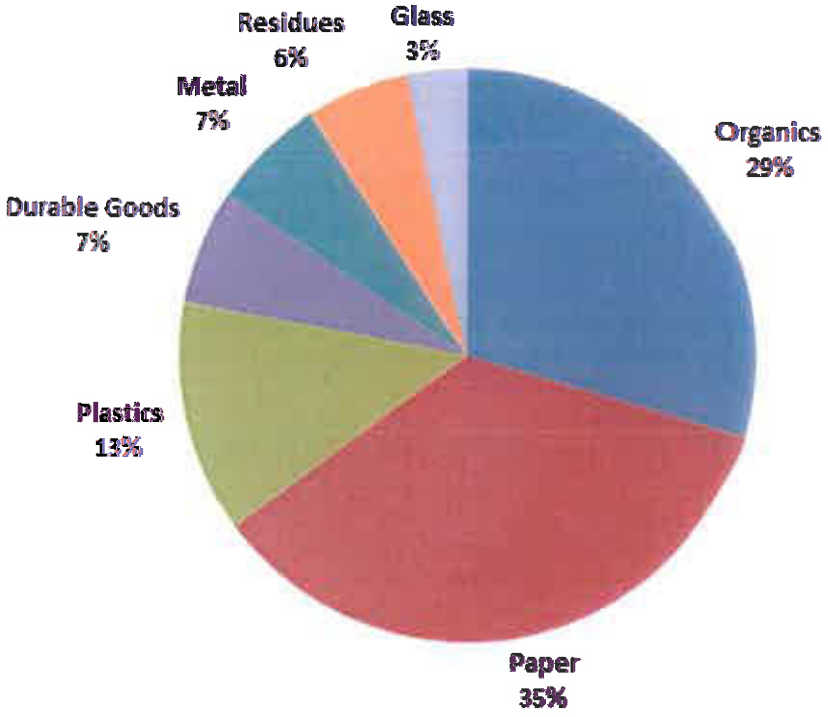


Figure 2-4. Discarded MSW Composition by Mass (adapted from Staley and Barlaz, 2009)

Accurate nationwide estimates of the fraction of waste received at MSW landfills that is composed of C&D debris are not available. However, statewide characterization studies can provide relevant data. For example, a statewide waste characterization study conducted in Delaware that examined the waste composition of six facilities owned by the Delaware Solid Waste Authority found that approximately 23% (weight basis) of materials handled at these facilities was C&D debris (Delaware Solid Waste Authority, 2007). So while accurate nationwide estimates of the fraction of waste disposed of in MSW landfills that consists of C&D debris are not available, the data from Delaware show that the amount of C&D debris disposed of in MSW landfills can be substantial.

2.6 H_2S at C&D Debris Landfills

2.6.1 Factors Contributing to H_2S Formation and Emission at C&D Landfills

The data presented in Section 2.5 show that potentially large quantities of SO_4^{2-} from gypsum drywall disposal are available at C&D landfills. Coupling this with the fact that these landfills harbor the broad conditions that need to exist at landfills for H_2S formation to occur, the potential exists for appreciable quantities of H_2S to form at C&D landfills. Additional conditions that may promote H_2S production at C&D landfills are summarized in ***Table 2-5***.

Table 2-5. Conditions That May Promote H_2S Production at C&D Landfills

Condition or Factor	Discussion
Cover Soil Requirements	Cover soil requirements at C&D landfills (which can reduce the amount of stormwater that infiltrates into the waste and can also serve to reduce quantities of H_2S emitted as described later) are limited in some states. A review of state-mandated cover soil requirements indicated that 12 states require daily cover, 14 require weekly cover at a minimum, and 24 states have no operational cover requirements or a cover placement requirement less frequent than weekly (U.S. EPA, 2012b). The lack of a cover soil requirement may tend to increase the production of H_2S by promoting conditions that cause its formation.
Bulky Nature of C&D Debris	The bulky nature of C&D debris may allow moisture to more readily infiltrate into the waste or percolate through the waste when compared to another waste stream such as MSW.
Liquids management	As of 2012, 17 states in the US have a minimum requirement for C&D landfills to collect and remove leachate (U.S. EPA, 2012b). Depending on local geology (e.g., presence of a low permeability layer underlying the waste or presence of groundwater at or near the waste bottom), conditions may form that allow for the build-up of moisture or the contact of groundwater with the waste mass. This could increase moisture content of waste and result in greater H_2S formation, but could also result in greater leaching of SO_4^{2-} into solution, thus representing a potential source for H_2S off-gassing within or beyond the landfill footprint. Also, recirculation of leachate into the waste and poor surface water management can lead to an increase in waste moisture content.
Placement of Size-Reduced Gypsum Drywall in the Landfill	Some C&D landfills accept or have accepted size-reduced C&D debris, which can include ground-up pieces of gypsum drywall. The reduced size creates an increased specific surface area which can lead to greater rates of H_2S gas production compared to larger, bulkier pieces of drywall. Size-reduced gypsum drywall may be in the form of processed C&D debris or in RSM.

2.6.2 H_2S Concentrations Measured at C&D Landfills

This section summarizes measured H_2S concentrations at C&D landfills, focusing on the three major data types presented in ***Figure 2-2***. This includes data collected in the waste or LFG extracted from the waste, at the landfill surface, and in ambient air at or near C&D landfills. The data indicate levels of H_2S that may be encountered at a C&D landfill based on what has been reported in the technical literature and other sources.

H_2S Measurements in LFG at C&D Landfills

Although most C&D landfills do not have active LFG collection, data from a limited number of sources were examined to assess concentrations of H_2S that have been measured at C&D landfills. Lee et al. (2006) sampled in-situ LFG using soil vapor probes installed 0.3 m below the landfill surface and from existing passive gas collection vent wells at 10 C&D landfills. The results showed highly variable H_2S concentrations, ranging from <0.03 µL/L to 12,000 µL/L. Collected samples from the C&D landfill with the highest observed H_2S concentrations, which showed a mean concentration of 2,110 µL/L and a median of 1,800 µL/L, were collected from passive gas collection vent wells.

Sampling from two leachate cleanout lines at a C&D landfill in Ohio showed H_2S concentrations as high as 1,995 µL/L and 600 µL/L (Rizzo and Associates, 2002). A 74-acre C&D landfill in Kansas experienced H_2S odor problems attributed to the collection and buildup of stormwater within the waste footprint because of a low-permeability shale layer underlying the site and lack of a mechanism to remove the liquid. The landfill contains 25 onsite wells that serve as the LFG collection system. Degner (2008)

reported an average collected LFG H_2S concentration of 54 µL/L, with a range of 4 to 120 µL/L at a facility in Kansas.

H_2S concentrations were measured at a New York landfill with two phases devoted to C&D disposal. Phase 1 consisted of processed C&D debris and Phase 2 consisted of bulk C&D debris (McCarron and DiMaria, 2007). H_2S measurements conducted in 2000 in Phase 1 reached 9,000 µL/L. Investigations conducted between 2001 and 2006 in Phase 1 measured concentrations as high as 12,000 µL/L and Phase 2 concentrations as high as 18,000 µL/L.

Figure 2-5 summarizes the measured concentrations of H_2S within C&D landfills reported in the investigations described above.

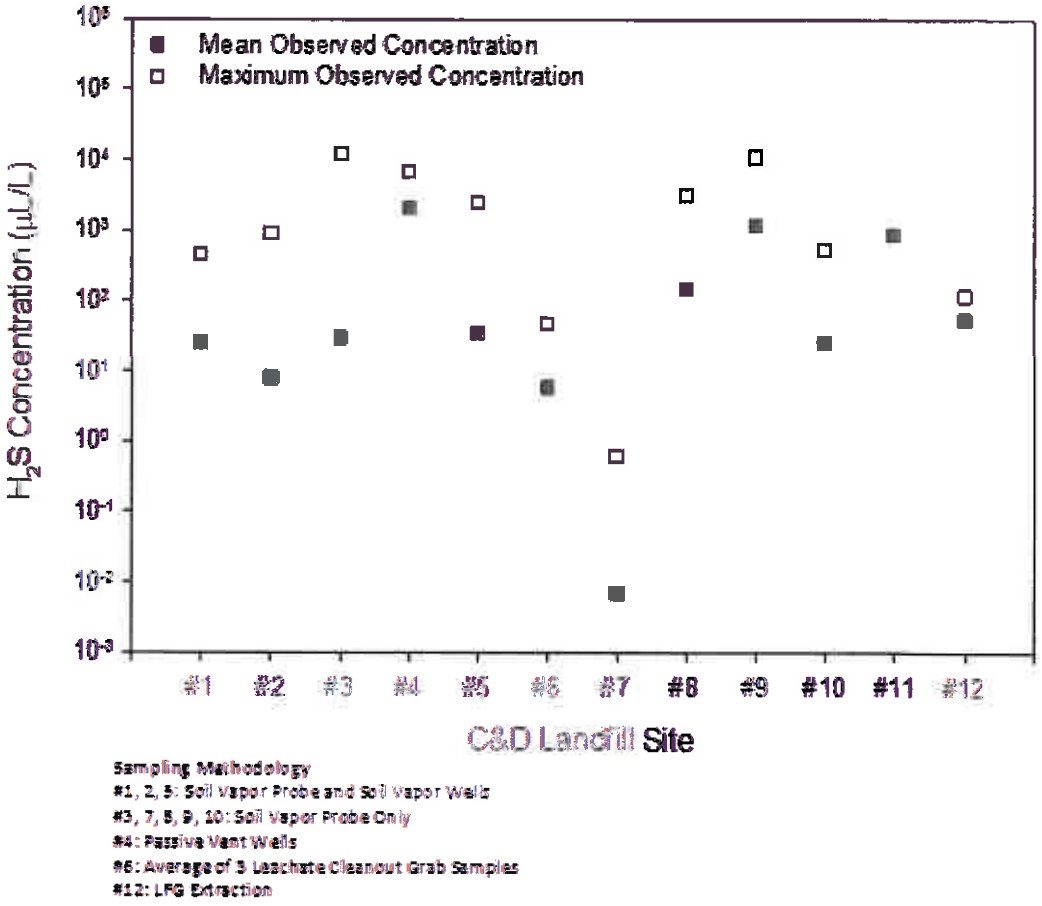


Figure 2-5. Reported H_2S Concentrations Measured Within Landfilled C&D Waste or in an LFG Well at a C&D Landfill (#1 – 10: Lee et al. (2006), #11: Rizzo and Associates (2002), #12: Degner (2008))

H_2S Concentration Measurements at the Landfill Surface of C&D Landfills

Lee et al. (2006) measured H_2S concentrations on the surface of 10 C&D landfill sites in Florida to measure concentrations near soil vapor probes. The results indicated readings between <0.003 µL/L and >50 µL/L; detections of H_2S at the landfill surface occurred in 48% of measurements. The two sites with

the highest observed H_2S concentrations (maximum concentrations of >50 µL/L at the surface) were sites known to accept processed C&D debris.

The ATSDR (2007) reported on H_2S concentrations measured using personal badge monitors affixed to landfill workers during the work day at a C&D site. The maximum observed concentration from this evaluation was 130 µL/L. ***Figure 2-6*** summarizes the reported H_2S surface concentration measurements from these studies. The figure shows that three of the landfills had a maximum H_2S concentration greater than 10 µL/L, which exceeds the AEGL-1 standard presented in ***Appendix A***, and other guideline levels.

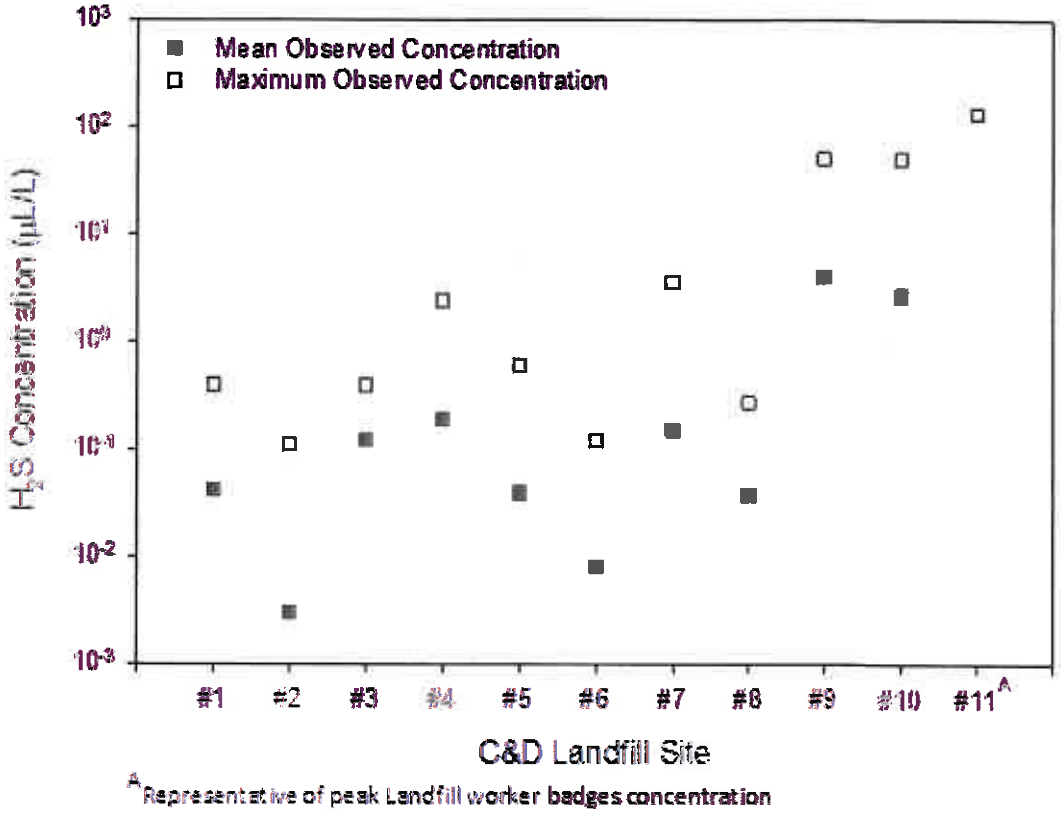


Figure 2-6. Reported H_2S Concentrations Measured at the Surface of 11 C&D Landfill Sites in Florida (#1 – 10: Lee et al. (2006), #11: ATSDR (2007))

Eun et al. (2007) measured the H_2S flux from five C&D landfills (n = 20 measurements per site) in central Florida during the summer using a dynamic flux chamber. Measured flux rates ranged from 0.192 – 1.76 mg/m^2-day. These flux rates are less than those reported for LFG flux rates reported by Amini and Reinhart (2012) at MSW landfills, which was approximately 20 to 120 g/m^2-day. The H_2S measured by Eun et al. (2007) was detected at frequencies ranging from 10% to 55% of measurements, indicating that emissions through the cover of C&D landfills were variable.

Ambient H_2S Concentrations Measured Near C&D Landfills

Residents living near a C&D landfill in Florida with documented odor nuisance problems wore H_2S personal badge monitors for one month. The results showed 15 positive detections of H_2S, ranging from 0.015 to 0.123 µL/L. Additionally, stationary ambient air monitors detected H_2S concentrations up to 0.224 µL/L (ATSDR, 2007).

Cooper et al. (2011) utilized techniques to assess H_2S emission rates from C&D landfills to calculate an odor buffer distance beyond which nuisance odors would not be detected. The study measured H_2S concentrations near a C&D landfill in Florida and subsequently used the measured results in a model that used a problematic odor threshold (0.015 µL/L, which was established based on a literature review of six studies) to delineate the odor buffer distance from the landfill. H_2S readings were measured in the morning, where higher concentrations were more likely because of lower atmospheric turbulence. On the first site visit, H_2S concentrations from 0.2 µL/L to 0.4 µL/L were observed at two corners of the landfill, at a maximum of approximately 40 m from the edge of the landfill. H_2S concentration declined to 0.015 µL/L at approximately 70 to 200 m from the landfill edge. On the second site visit, H_2S measurements surrounding the landfill was >0.8 µL/L.

Table 2-6 shows the modeled buffer distances with their corresponding predicted H_2S concentration ranges. The calculated buffer distance varied substantially between the two visits (which was a reflection of the difference in measured concentrations at the landfill). This demonstrates a couple of important phenomena: 1) that the concentration of H_2S produced from landfills has the potential to be highly variable, even when measured at a similar time of day at the same location; and 2) based on the results of site-specific atmospheric modeling, the impact that the source H_2S concentration has on the area surrounding the landfill that may experience problematic H_2S concentrations is dramatic.

Table 2-6. Calculated Modeled Minimum Nuisance Odor Buffer Distances Based on H_2S Measurements Collected at a Florida C&D Landfill (adapted from Cooper et al., 2011)

Measured H_2S Concentration Near Landfill (µL/L)	Site Visit #1: Buffer Distance (m)	Site Visit #2: Buffer Distance (m)
0.0 – 0.015	600	2,800
0.015 – 0.030	400	2,400
0.03 - 0.10	200	2,000
>0.10	100	1,600

A C&D landfill site with reported odor issues in Ohio reported monitoring data from three ambient monitoring locations (bordering the landfill perimeter) of 60-minute rolling average H_2S concentrations of 0.154 µL/L, 0.043 µL/L, and 0.071 µL/L during September 2004 (Tetra Tech, 2004).

Figure 2-7 displays ambient air H_2S data collected from three different sites as reported by ATSDR (2007), Tetra Tech (2004), and Cooper et al. (2011).

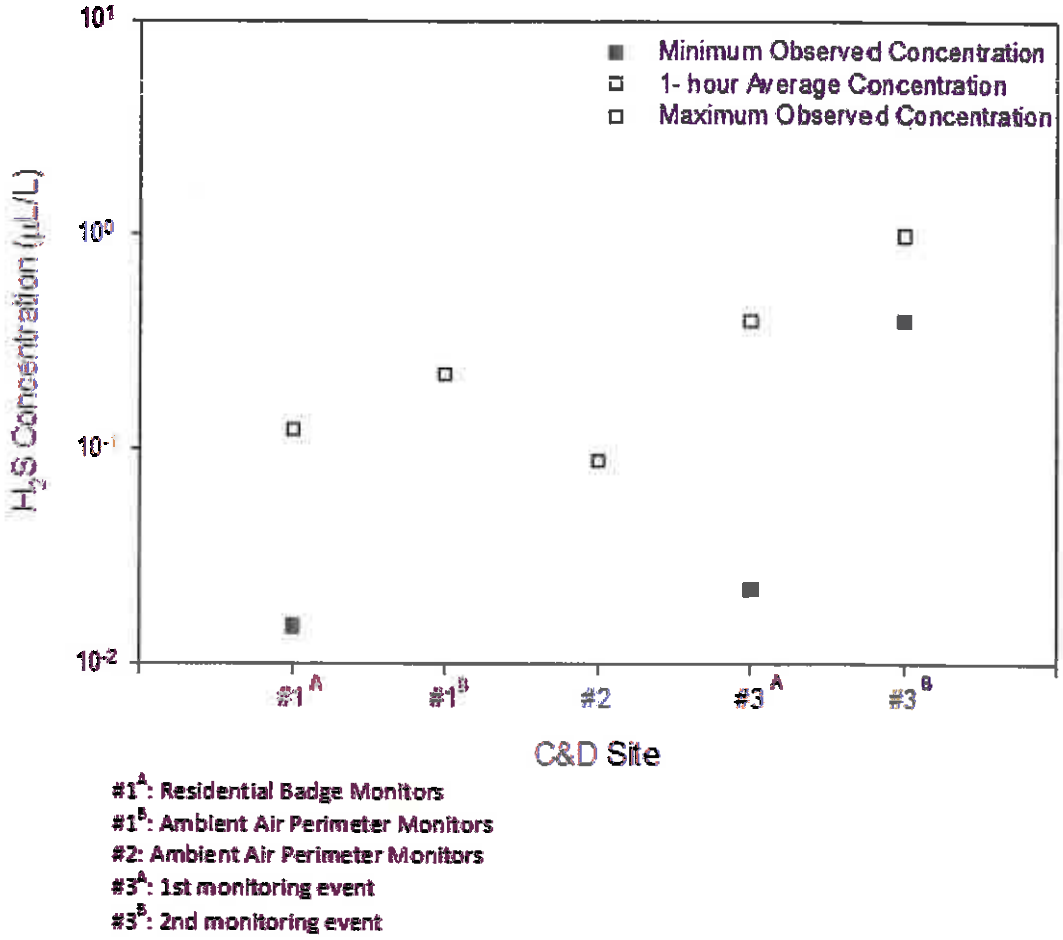


Figure 2-7. Compilation of Ambient Air H_2S Measurements Near C&D Landfills (#1: ATSDR (2007), #2: Tetra Tech (2004), and #3: Cooper et al. (2011))

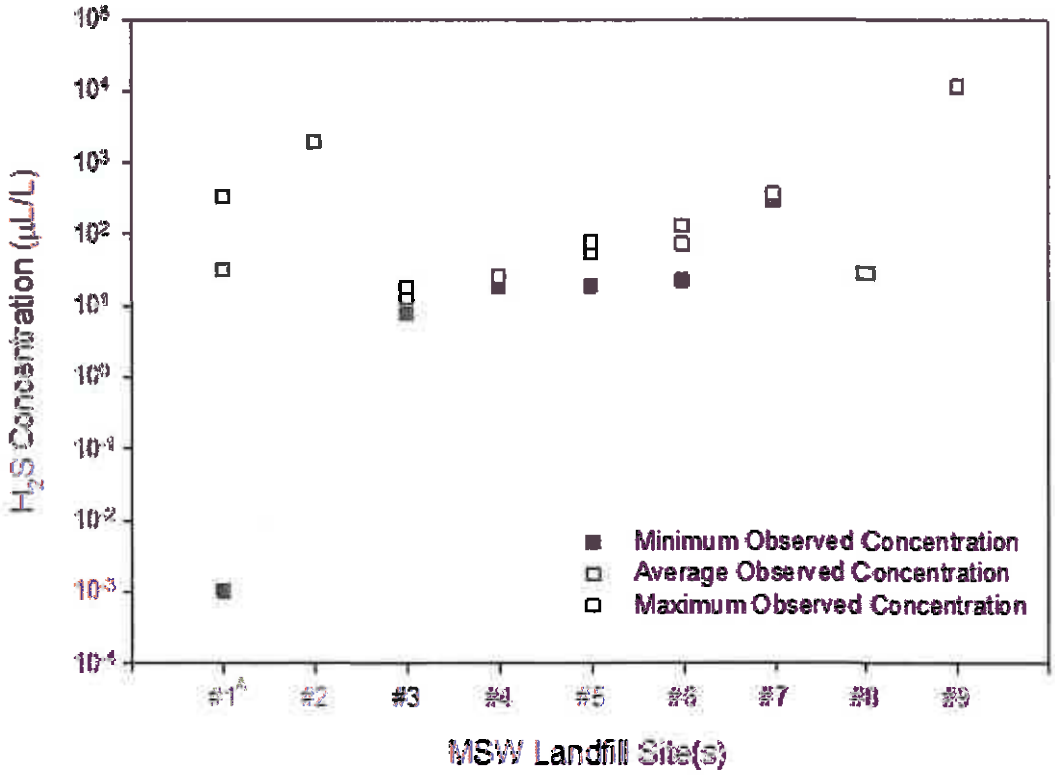
Summary

The results show that measured concentrations within C&D landfills, and in some cases at the landfill surface, are high enough to fall within the range where acute exposure symptoms may occur. Data from the measurements in the waste mass or collected LFG showed H_2S concentrations above the level that could cause death in a short-term exposure scenario. Thus, operators at C&D debris landfills that accept gypsum drywall should be made aware of the potentially high concentrations of H_2S that may be encountered.

The measured landfill surface H_2S concentrations in the studies evaluated were somewhat variable, but several cases indicated concentrations that may be of concern. For example, one site reported an H_2S concentration measured by a personal badge worn by a landfill worker during the work day of greater than 100 µL/L, which exceeds the Occupational Safety and Health Administration's Immediately Dangerous to Life and Health level of 100 µL/L (refer to ***Appendix A*** for details on additional H_2S guidance and standards). In the 10-landfill study conducted by Lee et al. (2006), the mean surface H_2S

concentration was less than 10 µL/L for each site, but two sites had measured concentrations greater than the 10-minute AEGL-1 (which corresponds to nuisance and irritation in a short-term exposure scenario) and five of the sites examined by Lee et al. (2006) had a measured concentration that exceeded the ATSDR's acute maximum risk level.

The H_2S concentrations reported in ambient air near three C&D landfills (two of which were sites that had reported H_2S emission problems) indicate that the potential exists for the detection of H_2S concentrations above nuisance odor thresholds at or beyond the landfill property boundary, but the results varied and demonstrated that the presence of problematic or nuisance-level H_2S concentrations is not necessarily constant. The effect that H_2S source concentration at the landfill on the migration of H_2S off-site can be dramatic, as demonstrated by Cooper et al. (2011), which underscores the importance of mitigating H_2S at the landfill site.



#1[A]: Compilation of data from multiple sites for AP-42 defaults

2.7 H_2S at MSW Landfills

2.7.1 Factors Contributing to H_2S Formation and Emission at MSW Landfills

The conditions that cause H_2S formation in MSW landfills are similar to C&D landfills, in that a SO_4^{2-} source, carbon source, anaerobic conditions, moisture, and appropriate pH and temperature must be present. Gypsum drywall may be disposed of in MSW landfills through bulk C&D disposal, processed C&D disposal, or the use of C&D fines (also referred to as RSM) for initial cover or for grading and shaping of side slopes.

The presence of gypsum drywall in MSW landfills is a large contributor to H_2S formation at these sites. Fairweather and Barlaz (1998) conducted laboratory experiments comparing SO_4^{2-} reduction in reactors containing fresh MSW with and without gypsum drywall. The results indicated that the reduction of SO_4^{2-} to H_2S occurred concurrently with the production of methane (CH_4) from the MSW, and the reactors containing gypsum drywall produced sulfur emissions that were 10 times greater compared to the reactors without added gypsum drywall.

In contrast to C&D landfills, MSW landfills are required per federal regulations (40 CFR Part 258) to apply a soil cover (or equivalent) at least daily to control moisture and reduce odors and disease vectors. Thus, the presence of a daily cover is expected to reduce the infiltration of stormwater relative to a C&D landfill that does not have a soil cover requirement; however, it is expected that the higher moisture content inherent in MSW supplies enough moisture to contribute to H_2S production.

Several factors exist at MSW landfills that may contribute to the production or emission of H_2S beyond the basic conditions that must be met for H_2S to form. These factors are presented in ***Table 2-7***.

Table 2-7. Conditions That May Promote H_2S Production at MSW Landfills

Condition or Factor	Discussion
SO_4^{2-} Source	Larger sources of SO_4^{2-} from gypsum drywall may be present, in addition to other potential sources such as sludges. The amount of the SO_4^{2-} is a function of the amount of SO_4^{2-}-containing wastes accepted by the facility, which can vary widely. For example, a statewide characterization of waste at disposal facilities in Georgia indicated a weighted average of approximately 12% C&D debris (out of the total waste disposed in MSW landfills in the state), with a range of 0 % to 50% (Georgia Department of Community Affairs, 2005).
Waste Moisture Content	The nature of MSW differs from C&D debris in several ways, including the inherent moisture content of the waste as delivered to the disposal facility. Reported weight-based moisture contents range from 15% to 40% (Tchobanoglous et al., 1993), although multiple investigators have shown amounts beyond this range (e.g., 46% [El-Fadel, 1999]).
LFG Production Rate	The content of highly and moderately degradable organic waste normally found in MSW landfills results in the production of large volumes of LFG (particularly relative to C&D landfills), which may lead to greater transport of H_2S into LFG collection systems or through the landfill surface.
RSM Use in Cover Soil	MSW landfills have more stringent cover application requirements compared to C&D landfills, and as a result several MSW landfills have evaluated sources of material to use as cover, including RSM. Several states (e.g., Massachusetts) have C&D recycling mandates, thus the expansion in availability of RSM has led to an increase in the delivery of this material to facilities that beneficially use (as an alternative daily cover [ADC]) or dispose of the RSM. Several states have granted approvals for using RSM as an ADC. The presence of fine gypsum particles in RSM, which can be dramatic (Musson et al. (2008) measured the gypsum content of RSM from several facilities in the U.S. and the results ranged from 1% to 25% by weight gypsum) can lead to the production of H_2S.
Leachate Recirculation	Leachate recirculation is a common practice at MSW landfills. This process attempts to raise the moisture content of MSW in order to promote decomposition of the waste. Subsequently, gas production is increased, thus increasing the production of H_2S.

2.7.2 H_2S Concentrations at MSW Landfills

H_2S Measured in MSW LFG

H_2S in MSW LFG can pose additional issues beyond potential worker health and safety and nuisance conditions—specifically, sites that have active gas collection and control systems (GCCS) may be at risk of triggering emission thresholds for sulfur oxides (SO_x) if mass flow rates of H_2S are high enough (H_2S is converted into SO_x following combustion in typical LFG destruction devices). SO_2 is one of the six priority pollutants that are subject to the National Ambient Air Quality Standards (U.S. EPA, 2012a).

Landfills with Title V air permits and/or stationary source permits typically have an upper allowable limit of SO_2 emissions. Additionally, high H_2S concentrations can be problematic at MSW landfills that collect and beneficially use LFG to produce energy because a performance standard related to H_2S concentrations must usually be met (these performance standards vary depending on the type of energy conversion system, as discussed in Section 3.2.5); the requirement to reduce H_2S concentrations to meet these levels represents a cost that can impact energy project economics.

U.S. EPA (1998b) reported a default H_2S concentration of 35.5 µL/L for MSW LFG in the compilation of air pollutant emission factors (AP-42), which was developed based on the average of 37 test reports analyzed. The AP-42 develops emission factors, which facilitate the estimation of emissions from various sources of air pollution. The emission factors are typically averages of available data of acceptable quality. In recent years, U.S. EPA (2008) began to update the AP-42 default concentrations based on more recent measurements, and a draft background document presented updated H_2S monitoring data collected from active GCCS. ***Table 2-8*** presents summary statistics of the H_2S concentrations reported in U.S. EPA (2008). Note that the majority of data points were collected from MSW landfills in California.

Table 2-8. Summary of H_2S Concentration Data in MSW LFG Reported in the Draft Compilation of Air Pollutant Emission Factors for MSW Landfills (U.S. EPA, 2008)

Metric	Value (µL/L)
Minimum Concentration	0.001
Maximum Concentration	330
Mean Concentration	32.0
Standard Deviation	55.7
95% Upper Confidence Level	18.2

H_2S was measured in the field from active GCCS wells at an MSW landfill in Virginia that had been the subject of odor complaints. The results showed that approximately 15% of wells (approximately 22 out of 129) exhibited an H_2S concentration greater than 2,000 µL/L (Tennant, 2012). Note that these concentrations were measured prior to a destruction device. The U.S. EPA (2007) conducted a study of five MSW landfills (two in the Northeast and three in the Midwest) with active GCCS. LFG samples were collected from the GCCS from a main header pipe (which represents the cumulative volume of LFG collected from each site). The results of the sampling events are presented in ***Table 2-9***.

Table 2-9. Reported H_2S Measurement Data From Five MSW Landfills (U.S. EPA, 2007)

Landfill	Range of H_2S Measured in Raw LFG (µL/L)	Average H_2S Concentration in Raw LFG (µL/L)
A	7.6 – 18.4	13.0
B	18.7 – 25.6	22.9
C	19.0 – 78.0	55.5
D	22.7 – 132	72.7
E	291 – 366[A]	322[A]

[A]: Estimated Value

Capenter and Bidwell (1996) reported an H_2S concentration (determined by a chemiluminescence detector) in MSW LFG of 28.33 µL/L from a 60-acre landfill in Connecticut from a GCCS header pipe.

A regional MSW landfill in New Jersey accepted C&D screenings from 1998 to 2004 for use as an ADC (Carlton et al., 2005). The site began to receive odor complaints in 2002 (and reportedly had not received any odor complaints prior to this time) and an active GCCS was installed in early 2003 and expanded in

early 2004. LFG sampling in 2004 revealed H_2S concentrations up to 11,600 µL/L. Prior to acceptance of C&D screenings, a target SO_4^{2-} level in the screenings was established at 3% (by weight). Monthly testing reportedly indicated the target SO_4^{2-} level was met (Carlton et al., 2005). ***Figure 2-8*** presents a summary of reported H_2S measurements in MSW LFG presented by U.S. EPA (1998b), Tennant (2012), U.S. EPA (2007), Capenter and Bidwell (1996), and Carlton et al. (2005).

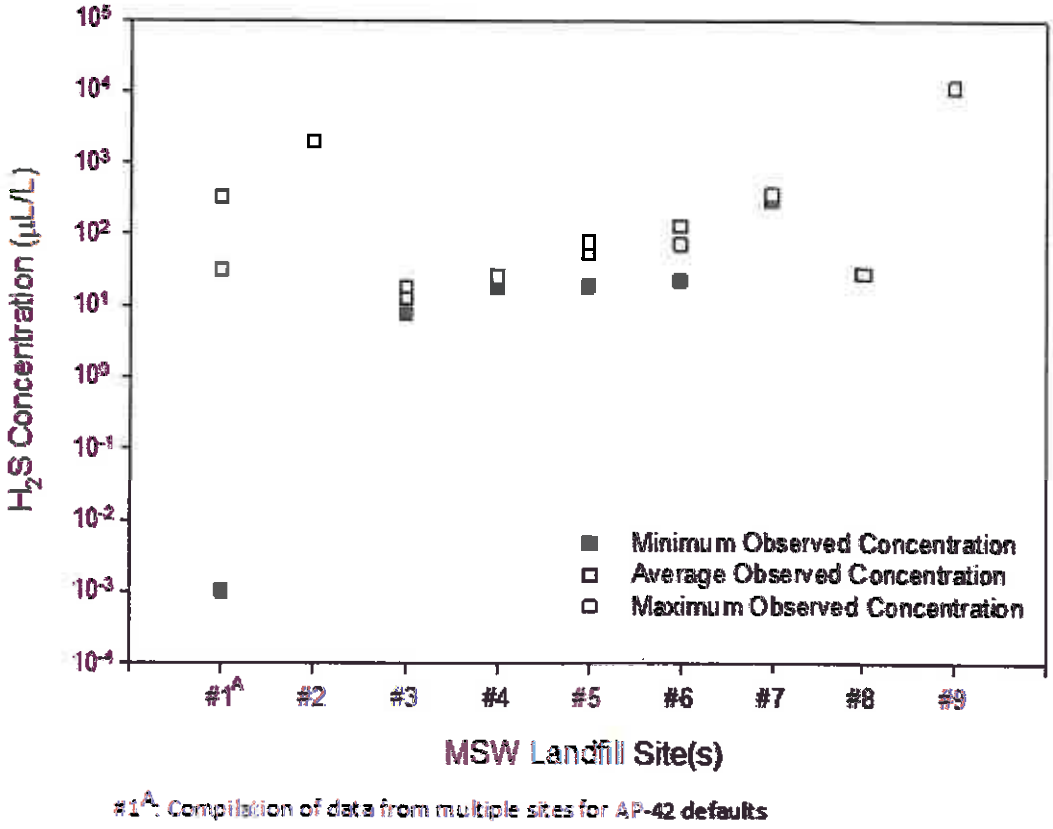


Figure 2-8. H_2S Concentrations Measured in LFG at MSW Landfills (#1: U.S. EPA (1998b), #2: Tennant (2012), #3 – 7: U.S. EPA (2007), #8: Capenter and Bidwell (1996), and #9: Carlton et al. (2005))

Anderson et al. (2010) conducted a study to estimate the H_2S production potential and kinetics based on the acceptance of C&D screenings at MSW landfills using SO_4^{2-} content measurement data from the C&D screenings and field-measured H_2S concentrations. The range of field-measured H_2S concentrations was from approximately 100 µL/L to 14,000 µL/L. Models were developed to predict H_2S production amounts based on data collected from six different landfills. The average production potential was calculated to be 4,310 ft^3 of H_2S per ton of sulfur in C&D fines. Anderson et al. (2010) also suggested that H_2S from the production of C&D screenings in MSW is expected to peak and decline more rapidly compared to CH_4 production.

The data provided in this section indicate that the concentrations of H_2S that can be formed in MSW landfills can be significant and comparable to levels measured in C&D landfills.

H_2S Concentrations Measured on the Surface of MSW Landfills

Gowing (2001) measured the flux of several gases, including H_2S through the landfill surface using a flux chamber at an MSW landfill in Waterloo, Canada. A total of 20 sampling locations that consisted of a 30-cm thick interim cover comprised of clay. The landfill site had an active GCCS in place on the side slopes, and measurements were taken in areas that were and were not under the influence of the GCCS. The results ranged from below the detection limit to approximately 7.7 µL/L. Measurements in the areas of highest H_2S flux ranged from approximately 4.2 µL/L to 7.7 µL/L.

Capenter and Bidwell (1996) measured ambient air samples 10 to 13 cm above the landfill surface, collected in a grid pattern, at a regional MSW landfill in Connecticut that had been subject to offsite odor complaints. At the time of the study, an active GCCS and enclosed flare had been operational for 2 years and intermediate or daily cover soil was in place at the site. Five grids on the landfill surface encompassing 4,650 m^2 were sampled over 9 days in locations considered to be "worst-case scenario" (e.g., odors noted previously, visible leachate or residue). H_2S in ambient surface air was measured to be 0.00095 µL/L. As a point of reference, the measured concentration of H_2S during the study collected from an active GCCS header was approximately 27 µL/L.

Ambient H_2S Concentrations Measured Near MSW Landfills

An ATSDR (2009) public health assessment of an MSW landfill in New York found offsite migration of H_2S resulting from poor operational practices exceeding 1 µL/L (daily maximum levels exceeding 3 µL/L) at the landfill perimeter for a period of 2 months (December 1990 and January 1991) before control measures were put in place and concentrations decreased to approximately 0.5 µL/L in downwind samples.

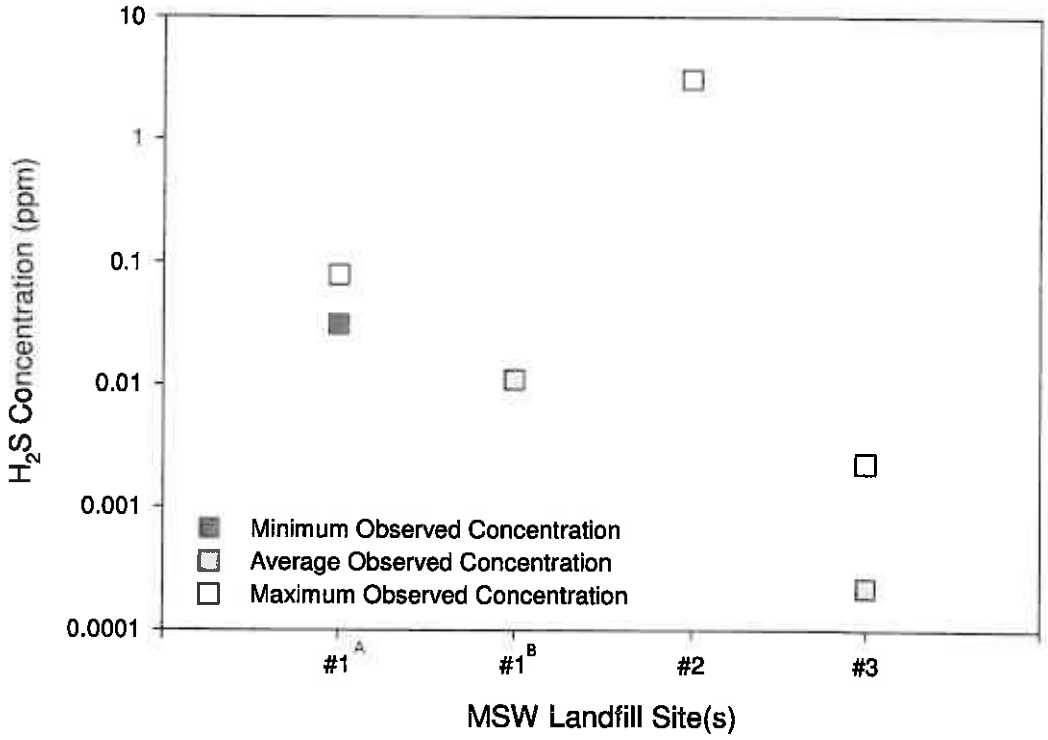
An MSW landfill that also included a C&D landfill in Ohio accepted a large amount of size-reduced C&D debris that resulted in odor problems (Ohio Environmental Protection Agency [OEPA], 2006). Roving monitoring data near the perimeter of the facility in 2005 exhibited 1-hour average H_2S concentrations ranging from 0.031 µL/L to 0.078 µL/L. During the same time frame, a 24-hour average of 0.011 µL/L was measured.

As part of an effort to address H_2S odors emanating from an MSW landfill in Illinois, which was attributed to the acceptance of pulverized C&D debris, a year-long monitoring effort was conducted to establish ambient H_2S concentrations around the site perimeter and define fluctuations in concentration that could be related back to weather data and landfill operations by the Lake County Health Department and Community Health Center (LCHDCHC; 2011a, 2011b). Three high-sensitivity, Honeywell low-level H_2S single-point monitors were installed around the perimeter of the site (one at a location upwind [#1] and two located downwind [#2 and #3]) from April 2010 through March 2011; the monitors had a lower detection limit of 1 nL/L (0.001 µL/L) and an upper detection limit of 90 nL/L (0.09 µL/L).

The monitoring results showed that a measured H_2S concentration greater than 0.005 µL/L was observed at monitor #2 at least once on 82 different days, whereas monitor #1 and #3 had a measured concentration exceeding 0.005 µL/L on 28 and 21 different days, respectively. Measured H_2S concentrations of greater than 0.09 µL/L were observed once at monitor #1 and #3 and on seven different days at monitor #2. The location of monitor #2 was most proximate to an area of the landfill where pulverized C&D was disposed. In general, peaks in H_2S concentration occurred during the late evening and early morning hours, when wind activity was minimal.

Heaney et al. (2011) evaluated H_2S concentrations measured between an MSW landfill and a neighboring community that was located within 0.75 miles of the site. Measurements using two different fixed H_2S monitors were conducted. One monitor conducted measurements at 15-minute intervals for 47 days, and one analyzer conducted measurements at 5-minute intervals for 58 days. The H_2S 1-hour average concentration during the study period was 0.00022 µL/L, with a range of below detection limit to 0.0023 µL/L. The H_2S monitoring results were compared with reports from nearby residents that maintained a

log of observed odor. The results were mixed to some degree in that resident observations of odor did not always correlate with an observed detection of H_2S. For example, 76% of reported "no odor" observations corresponded with H_2S detections less than 1 nL/L, and 72% of reported "no odor" observations corresponded with H_2S detections greater than 1 nL/L. Conversely, 8% of "strong" odor observations by residents corresponded to instances of H_2S less than 1 nL/L, but 6% of "strong" odor observations corresponded to instances of H_2S greater than 1 nL/L. The results of the study underscore some of the challenges associated with correlating a subjective observation (i.e., the presence of odor) with quantitative measurement data. ***Figure 2-9*** presents a summary of ambient concentrations reported by OEPA (2006), ATSDR (2009), and Heaney et al. (2011).



#1[A]: Min and Max 1-hour Average Concentrations (exceed std.)

#1[B]: 24 hour Average (exceed std.)

#2: Prior to control measures

#3: 1-hour average

Figure 2-9. Ambient, Perimeter, and Offsite Measured or Modeled Concentrations of H_2S at MSW Landfills (#1: OEPA, 2006' #2: ATSDR, 2009; and #3: Heaney et al., 2011)

Summary of H_2S Measured at MSW Landfills

The H_2S measurement data from LFG at MSW landfills suggest that high concentrations of H_2S may be produced at levels comparable to that measured within C&D landfills. In many of the cases presented, the measurements were taken from a GCCS (either individual collection wells or header pipes). The results indicate the importance of routine monitoring of H_2S for systems that have active GCCS, particularly larger sites that may accept gypsum drywall or RSM, as potentially high H_2S concentrations may impact LFG to energy systems and in some cases could have implications on SO_x limits in a landfill's Title V permit.

The results of landfill surface concentration sampling of H_2S were somewhat variable, with one case indicating low measured concentrations that were generally less than the nuisance level for H_2S presented by Amoore (1985) and comparable to U.S. EPA (2010a) reported atmospheric concentrations of H_2S. Another case indicated measured concentrations greater than 1 µL/L, exceeding irritation levels summarized by WHO (2003), and some of the exposure guideline levels presented in ***Appendix A***. The results indicate different factors such as operation of a GCCS, cover soil type and quality, and H_2S source concentration can have an impact on measured concentrations at the landfill surface.

Ambient H_2S concentration data, similar to surface concentration measurements, were variable. Data from the sites in Ohio and Illinois both indicated ambient concentrations beyond the landfill footprint greater than the H_2S nuisance level of 0.015 µL/L reported by Cooper et al. (2011), and in the case of Ohio, measured concentrations exceeded the acute minimum risk level of 0.07 µL/L established by ATSDR. Conversely, monitoring data near a landfill in North Carolina indicated H_2S concentrations below nuisance levels and most of the reported human odor detection limits as well. Regardless of the low H_2S levels, the evaluation by Heaney et al. (2011) concluded that observations and log books maintained by nearby residents during the study still indicated effects such as irritation and behavioral changes.

2.8 Considerations for Other Reduced Sulfur Compounds

Although H_2S is the most-studied RSC with respect to landfill emissions, other RSCs have been investigated in LFG; most are malodorous, with low odor thresholds, and considered undesirable contaminants in LFG (Moreau-Le Golvan, 2003). Other RSCs that may be detected in LFG include methyl mercaptan (CH_3SH), isopropyl mercaptan (C_3H_8S), isobutyl mercaptan ($C_4H_{10}S$), dimethyl sulfur ($(CH_3)_2S$), dimethyl disulfide ($(CH_3)_2S_2$), dimethyl trisulfide ($(CH_3)_2S_3$), carbonyl sulfide (COS), carbon disulfide (CS_2), and tert-butyl mercaptan ($CH_4H_{10}S$). These compounds generally are malodorous, and some have odor thresholds at similar concentrations to H_2S. Christensen et al. (1996) reports that RSCs such as mercaptans are formed from highly degradable materials and are usually only found during the initial operational phase of the landfill, whereas H_2S is normally generated in all phases of a landfill's life.

As with H_2S, the odor detection threshold of other RSCs occurs at different concentrations based on the individual. ATSDR (n.d.) reports odor thresholds for CH_3SH of 0.002 µL/L, Cameo Chemicals (1999) reports 0.00025 µL/L as an odor threshold for C_3H_8S, and ATSDR (2011) reports CS_2 can be detected by most humans from 0.02 to 0.1 µL/L. $C_4H_{10}S$ has a reported odor threshold of <0.001 µL/L (Chevron Phillips, n.d.). $(CH_3)_2S$ has an odor threshold of approximately 0.001 µL/L (Bayou Engineering, 2004); $(CH_3)_2S_2$ has an odor threshold of 0.008 µL/L (Bayou Engineering, 2007).

U.S. EPA (2008) reported uncontrolled LFG data on several RSCs, in addition to H_2S. ***Table 2-10*** summarizes the data from U.S. EPA (2008) for several RSCs. Samples of LFG were collected from MSW landfills, and the sample collection point was from the main GCCS header pipe.

Table 2-10. Summary of Measured RSC Concentrations From MSW LFG (U.S. EPA, 2008)

Compound	Minimum (µL/L)	Maximum (µL/L)	Mean (µL/L)	Standard Deviation (µL/L)
CH_3SH	9.8×10^{-4}	4.05	1.37	0.955
C_3H_8S	3.75×10^{-5}	1.22	0.175	0.26
COS	1.04×10^{-4}	0.275	0.122	7.12×10^{-2}
CS_2	2.92×10^{-4}	0.353	0.147	8.74×10^{-2}
$(CH_3)_2S$	7.51×10^{-3}	14.7	5.66	0.383
$(CH_3)_2S_2$	2.29×10^{-4}	0.435	0.137	0.103

Lee et al. (2006) measured RSCs at 10 C&D landfill sites in Florida. Samples were collected above the landfill surface, and from gas collection pipes and subsurface vapor probes. H_2S was typically found in significantly greater concentrations than the other RSCs. However, at one site where samples were drawn from LFG wells, concentrations of COS (22 µL/L) and CH_3SH (85 µL/L) exceeded that of H_2S (average of 5.9 µL/L).

While the presence of all RSCs can create potential odor and operational issues (with respect to gas collection and energy utilization) at landfills, the relative and persistent dominance of H_2S indicates that in most cases the measurement of H_2S will likely provide appropriate information to site operators regarding the presence and magnitude of potential odor or other issues related to RSCs at a landfill.

3. Methods to Prevent and Control H_2S Emissions

Knowledge of the factors that contribute to H_2S formation is essential to preventing its formation, and strategies to actively reduce emitted H_2S concentrations are detailed in this section. Formation of H_2S in landfills may not be avoidable due to varying constraints; thus it is critical to discuss strategies to control H_2S emissions once the gas is formed. There are several strategies to prevent and control H_2S that have been explored at the research level and in practical application. Given the differences in site characteristics and regulatory schemes that landfill sites may be subject to, an integrated approach that employs one or more of the strategies in this section, coupled with effective site-specific BMPs, may yield effective results.

3.1 Methods to Prevent H_2S Formation

3.1.1 Diversion of Drywall and Limiting SO_4^{2-} Content of RSM

The diversion of drywall from disposal has been recommended as a measure to prevent H_2S formation in landfills (CalRecycle, 2007; FDEP, 2011). In some cases, landfills have instituted bans on the disposal of drywall except for small amounts. For example, a landfill in Vancouver, Canada is subject to a bylaw created by the Greater Vancouver Sewerage and Drainage District Act (GVSDDA) of 2012, which states, in part:

> *No person shall dispose of any Gypsum at a Disposal Site: (a) except at a Recycling Area designated for Gypsum; and (b) unless the Load of Gypsum weighs one-half (1/2) tonne or less.*

Metro Vancouver uses two elements in addition to the disposal ban to facilitate compliance and appropriate management of gypsum drywall. First, an economic disincentive for delivering gypsum drywall to the landfill was established. Generators that bring prohibited gypsum drywall to the landfill are assessed a minimum surcharge of $50, plus the cost of removal, cleanup, or remediation. Loads that contain banned materials are assessed a 50% tipping fee surcharge. Second, Metro Vancouver provides generators with information on a drywall recycling facility where scrap drywall can be delivered (provided the material does not contain asbestos) (Metro Vancouver, 2012).

A variety of recycling markets have been developed for gypsum drywall, including for purposes such as agricultural soil amendments and manufacture of new drywall, so the increase in the diversion of drywall for recycling would be expected to reduce the amount of drywall that is deposited into landfills. As with any recycled product, the ability to effectively recycle a waste component depends on market demand, the cost of virgin materials or materials being replaced by the recycled product, disposal costs, transport costs, and other factors.

Another practice that may reduce H_2S emissions at disposal facilities that accept RSM is to limit the SO_4^{2-} content of the RSM delivered to the facility. Musson et al. (2008) developed a method to establish SO_4^{2-} content in RSM, which can be used by C&D recyclers to track performance related to gypsum drywall removal and provides receiving facilities with important data to understand the SO_4^{2-} content (and

therefore potential to produce H_2S) in RSM that is accepted. In some states (e.g., Massachusetts and New Hampshire), the removal of gypsum drywall at the front end of the C&D recycling process is required where feasible. Landfills may also develop specifications for RSM that include sampling procedures and sampling personnel training requirements, and chemical limits of the RSM, which may include SO_4^{2-}.

While the practice of separating drywall and limiting the SO_4^{2-} content of RSM produced by C&D recycling facilities should decrease the amount of reducible sulfur entering a landfill, the specification of maximum SO_4^{2-} limits at a landfill that uses RSM may not necessarily prevent all H_2S emission problems. For example, Carlton et al. (2005) reported that an MSW landfill that accepted C&D fines specified and routinely met a SO_4^{2-} limit of 3%, but odor problems at the facility persisted anyway. Another consideration for operators that specify SO_4^{2-} limits in RSM is that the results can be somewhat variable between C&D recyclers and even at the same recycling facility. For instance, Anderson et al. (2010) summarized SO_4^{2-} content data from eight C&D recyclers in Massachusetts and found the mean SO_4^{2-} content of C&D fines to range from 1.6% to 8.7%. Data presented by Anderson et al. (2010) for one C&D recycling facility over a 2-year sampling period showed a SO_4^{2-} content range from approximately 0% to 15%. Anderson et al. (2010) also noted data from a landfill that monofilled C&D fines and layered the fines with material to reduce odors, which suggested some effectiveness, but further study was needed to more closely evaluate this technique.

3.1.2 Moisture Control

Minimization of moisture contact with gypsum-containing waste is a key to minimizing H_2S generation; thus, practices to reduce the infiltration of moisture into the waste are expected to reduce the production and emissions of H_2S – note that many of these practices can help to reduce the emission of other gases that are not in the form of a reduced sulfur compound. These practices, which are summarized in ***Table 3-1***, are expected to apply to both C&D and MSW landfills. It is noted that some of the practices (such as minimizing the size of the working face) are more commonly required in MSW landfill permits.

Table 3-1. Summary of and Discussion of Moisture Control and Cover Soil Use Techniques to Minimize the Production and Emissions of H_2S

Landfilling Practice	Discussion
Minimizing the Landfill Working Face	Reducing the size of the working face reduces the potential for surface water to contact and percolate through the waste mass. A smaller working face also reduces the amount of cover soil needed, thus the quantity of soil needed would be less, which would be a benefit at sites that use RSM as daily cover. A smaller working face would also reduce the area of waste open to the atmosphere, which would be expected to reduce odorous gas emissions compared to a facility with a larger working face.
Working Face Grading	Grading the active face for drainage helps to avoid ponding of water on the landfill surface and thus encourages runoff.
Landfill Phasing	The use of intermediate cover, particularly on side slopes as a landfill is built up, would be expected to encourage surface water runoff and reduce the amount of moisture that infiltrates into the waste mass.
Using Daily or Weekly Cover	Many states do not have a regulatory minimum requirement to apply cover soil at C&D landfills. The use of cover soil can help reduce the migration of liquid into and through the waste, and can act as a barrier and removal mechanism for H_2S, depending on the cover material used. Soil has the potential to absorb released H_2S that passes through the cover,

(continued)

Table 3-1. Summary of and Discussion of Moisture Control and Cover Soil Use Techniques to Minimize the Production and Emissions of H_2S (continued)

Landfilling Practice	Discussion
Disposal Practices with Drywall	Instituting unique practices at landfills that accept gypsum drywall may help to mitigate issues that can occur when the materials are exposed to moisture. Options may include: • Placing loads of material containing drywall in areas of the active landfill face that are at a higher elevation, which would decrease the potential of moisture contact compared with placement in a low-lying area on the active face. • Immediately placing additional waste or a cover (e.g., temporary tarp or soil cover) on top of newly-placed loads that contain gypsum drywall to reduce the likelihood of contact with stormwater. • Segregating received drywall to distinct areas and perhaps making note in operations records of areas where larger amounts of drywall were placed (similar to how landfills that accept asbestos make note of incoming quantities and disposal location). This practice would be expected to consolidate locations where H_2S may be formed and facilitate future H_2S mitigation, if needed.
Run-On and Run-Off Controls for Stormwater	The use of run-on controls will prevent stormwater from encroaching onto or into the landfill, while run-off controls help to divert stormwater to appropriate stormwater management areas.
Use and Proper Operation of Leachate Removal and Treatment Systems	Leachate build-up on the bottom of landfills can occur if there is naturally-occurring low permeability material beneath the waste, and can occur with an improperly functioning leachate collection system. As an example of the impact that liquid levels can have on H_2S production, Bergersen and Haarstad (2008) observed in the laboratory an approximately 8-fold difference in H_2S off-gassing from effluent from submerged MSW mixtures containing crushed gypsum board compared to MSW mixtures with crushed gypsum board with a low water content.

3.1.3 Bacterial Inhibition

The use of bacterial inhibitors to reduce the proliferation of SRBs has been evaluated at the laboratory scale. Isa and Anderson (2005) evaluated the use of molybdate (MoO_4^{2-}) as an SRB inhibitor in a continuous feed anaerobic digestion process. The findings showed that SRB and CH_4-producing bacteria were inhibited; thus, such a solution may not be appropriate for MSW landfills that are recovering LFG for energy. Xu et al. (2011) evaluated the use of different chemical inhibitors at the laboratory scale, including sodium molybdate on the production of H_2S from gypsum drywall. The results showed that a three orders of magnitude decrease in H_2S concentration was observed when the inhibitor was used, which was attributed to the development of pH conditions unfavorable to biological growth. Overall, the use of bacterial inhibitors has not been examined on a field scale and further evaluation is needed to assess the effectiveness of a bacterial inhibitor on H_2S production and potential environmental impacts (such as resultant leachate concentrations and subsequent potential impact to groundwater).

3.2 Methods to Control H_2S Emission

3.2.1 Leachate Management

Once leachate is generated in a landfill, it is either collected in a leachate drainage system or infiltrates into the groundwater (in the case of unlined landfills). H_2S contained in leachate volatilizes in accordance with Henry's law due to new concentration and pressure gradients outside of the landfill. Profumo et al. (1992) demonstrated that leachate can be a significant source of H_2S. Thus, the identification and control of leachate (e.g., seeps at side slopes, at the landfill surface, or at the toe of the landfill) may help to limit exposure of raw leachate to the atmosphere and thus reduce the potential for H_2S to volatilize into the atmosphere. An additional consideration is acknowledging the potential hazardous atmospheres that can form in areas where leachate may accumulate, including gas wells, leachate sumps and cleanout lines, and tanks, and ensuring that landfill personnel are aware of these areas and the potential for H_2S to be present.

Oxidation of H_2S inside of leachate containment areas such as sumps can prevent the eventual off-gassing of H_2S; an oxidizing agent (e.g., hydrogen peroxide) oxidizes H_2S to elemental sulfur or SO_4^{2-}, depending on pH. Also, aerated leachate ponds (e.g., using floating aerators) are commonly used to lower BOD and COD levels in leachate, which can oxidize RSCs as well.

3.2.2 Cover Soil Amendments

Research regarding various landfill cover amendments to reduce H_2S through precipitation, adsorption, or oxidation has been conducted at the laboratory and field scale. Prior to consideration of a soil amendment, it should be noted that the use of natural soils has shown the ability to decrease the concentration gradient (one of the main driving forces behind H_2S emissions, as described in Section 2) and thus provide time for H_2S to be adsorbed or removed. For example, Xu et al. (2010) observed up to a 60% removal capacity of H_2S by natural soils in a set of field experiments in Florida.

In some cases, the use of natural soils may require supplementation to further enhance the removal or mitigation of H_2S. Below is a summary of cover soil amendments that have been used at the laboratory or field scale and shown to decrease H_2S emissions. Note that the effectiveness (short-term and long-term) depends on the amendment blend that is used and specific site characteristics such as source H_2S concentration, atmospheric characteristics, and landfill characteristics. The materials list provided in this section represents examples of amendments reported in the literature and is not intended to represent guidelines for design. Some of the amendments listed could potentially be used at landfills other than those that accept C&D debris and MSW (such as an industrial waste facility that accepts paper mill sludge); however, factors such as waste mass stability should be considered when applying cover amendments to industrial waste facilities. The selection and use of a cover soil amendment must be made with consideration of numerous factors, including economics, site permit conditions, and other relevant site characteristics.

- ***Ammonium nitrate fertilizer***. Sungthong (2010) and Sungthong and Reinhart (2011) evaluated the removal of H_2S at the lab scale by ammonium nitrate fertilizer, which proceeded under the autotrophic denitrification process. An analysis of an example 10-acre MSW landfill (modeled after an actual operating facility) using measured H_2S concentrations (which had H_2S concentrations in collected LFG ranging from 480 to 2,800 µL/L) suggested that the application of 157,000 kg of 34% nitrogen fertilizer could sufficiently remove the anticipated 15-year emission amount of 80,900 kg of H_2S.
- ***Coal ash***. CMRA (n.d.) reported that a mixture of 30% coal ash and 70% RSM helped to control H_2S emissions by an order of magnitude in a C&D cell. New Hampshire evaluated the use of a 50% coal ash and 50% RSM blend that indicated H_2S reduction (NHDES, 2004). In most cases, the use of coal ash would likely only be allowable at an MSW landfill because of restrictions on using/disposing ash in many C&D landfills based on a review of state regulations (U.S. EPA, 2012b).
- ***Compost/biocover soil***. Xu et al. (2010a) showed that a yard waste-derived compost in a field study at a C&D landfill attenuated H_2S more effectively than sandy soil. Materials similar to composted yard waste such as chipped waste wood or bark may also be effective. Bergersen and Haarstad (2008) used organic filter materials and observed H_2S removal capacities of 215 and 387 mg S/kg for spruce bark and wood chips, respectively.
- ***Concrete fines***. Plaza et al. (2007) showed that concrete fines (those smaller than 2.5 cm) reduced H_2S concentrations by 99% in a laboratory column study. At the field scale, Xu et al. (2010a) covered plots at a C&D debris landfill and observed a 90% reduction in H_2S levels, which was attributed to a pH shift caused by the high-pH concrete fines and adsorption of H_2S onto the fines.

- ***Fuller's earth***. This material is a clay-like substance that has been used as an absorbent in numerous applications (e.g., cat litter). Commercial products and patents have been developed that are Fuller's earth-based. Lab-scale test results presented in USPTO (2005) indicate approximately 0.2 mg of H_2S could be removed (to levels at a normal human odor threshold) per g of a blend comprised mostly of Fuller's earth, or approximately 65 to 75 tons per acre of landfill surface for a 2-cm thick layer.
- ***Lime***. Plaza et al. (2007) showed that lime-amended soil (5% by weight mixture) removed H_2S substantially in a laboratory column study. Xu et al. (2010a) conducted a field study that evaluated a 1% and 3% by weight lime-soil mixture on the surface of a C&D landfill. In both cases, the lime-amended soils were shown to attenuate H_2S, which was attributed to changing of pH conditions and physical removal. Sungthong (2010) calculated that approximately 176,000 kg of hydrated lime would be needed to create a 1% (wt) blend with a 2-ft thick cover soil to attenuate expected H_2S emissions from an example 10-acre landfill (described in the ammonium nitrate fertilizer section above) with a 15-year H_2S emissions amount of 80,900 kg.
- ***Steel tire shreds***. Anunsen (2007) showed that M1 steel from a tire shredder placed near passive LFG vents at an MSW landfill showed the attenuation of H_2S over a range of flow rates. Xu et al. (2010b) showed substantial attenuation of H_2S (from 100 µL/L to 1 µL/L) using tire-derived steel in a simulated landfill cover.
- ***Metallic filter materials***. Metallic filter materials removed H_2S (600–1,200 µL/L) in laboratory experiments where H_2S was generated from submerged waste materials with and without gypsum drywall in column reactors (Bergersen and Haarstad, 2008). Iron oxide, iron-rich sewage sludge compost, and a 3:1 mixture of bottom ash and iron oxide removed 983 mg S/kg, 762 mg S/kg, and 3,345 mg S/kg, respectively.

3.2.3 Capping Systems

Capping a landfill with a low-permeability layer can help to remediate H_2S emission by both curbing production and preventing emissions from entering the atmosphere. Landfill capping systems limit or prevent infiltration of stormwater (and thus the production of leachate) into the waste. Once H_2S has been generated in a landfill, the cap systems provide a barrier to uncontrolled venting of LFG. The use of a capping system in combination with a GCCS minimizes escape of H_2S gas. The deployment of capping systems in combination with an active GCCS has been recommended as a BMP for H_2S control at both MSW and C&D landfills (Waste Management, 2005; Massachusetts DEP, 2007). Capping systems are often part of a final or intermediate cover at landfills, and both will be discussed in this section. Discussion regarding the integration of a capping system with an active GCCS is presented in Section 3.2.5.

Intermediate cover is intended to provide a greater barrier between the waste and the atmosphere than daily cover and in addition provide cover to an area that will not to be filled over for an extended period of time and may need to be driven over in order to fill the landfill sequentially. While daily cover typically consists of a six-inch layer of soil (or approved equivalent), intermediate cover is typically thicker (e.g., 1 ft) and is normally compacted to allow ease of access. Thus, intermediate cover with a greater thickness than a typical daily cover is expected to provide the benefits described in Section 3.2.2 for soil covers, but also potentially facilitate LFG collection as well. Temporary membranes (synthetic materials) can also be utilized as an intermediate cap prior to the installation of a final permitted capping system. In cases where intermediate covers cannot be constructed at a slope to allow for positive drainage, supplemental piping and drainage infrastructure may be needed to prevent ponding of stormwater on the landfill surface.

The components of final cover systems vary depending on the type of landfill and the specific conditions of a disposal facility's permit. Low-permeability final cover normally consists of the following layers (from top to bottom): soil layer capable of supporting vegetation, drainage layer (e.g., geonet overlain by geotextile to prevent clogging), barrier layer, grading layer (this is sometimes overlain by a high-permeability layer, such as coarse sand, to allow the transmission of LFG to collection points). The barrier layer can consist of either synthetic (e.g., HDPE) or natural materials (e.g., low-permeability compacted clay). For facilities that do not require a low-permeability final cover, the final cover configuration typically consists of (from top to bottom) a soil layer capable of supporting vegetation and a soil layer to provide a buffer distance between the top of the final cover and the top of the waste mass (e.g., 2-ft thick).

At facilities where H_2S emissions are problematic, the installation of final cover as soon as final waste filling grades are reached can aid in controlling H_2S when coupled with some form of LFG controls. This practice may or may not be accelerated based on permit requirements, and the decision to deploy a final cap earlier than a facility's permit requires may be necessary for practically handling H_2S emission problems in some cases.

3.2.4 Odor Neutralizers

Odor neutralizers can be utilized to mask or mitigate odors from H_2S. Odor neutralizers are chemicals that react with H_2S to form a nonodorous compound, or may simply act to mask odors. Other odor-neutralizing agents work to encapsulate materials and thus block odors from escaping. Odor neutralizers are often misted in a spray, which is then applied at landfills to the working face, near the working face, or near or at the site perimeter, depending on where odor concerns are present.

Examples of chemicals that act as H_2S odor neutralizers include bleach, sodium bicarbonate, ammonium bicarbonate, magnesium bicarbonate, caustic soda, amines, and other proprietary chemicals. Neutralizers are often sold in concentrated form and are diluted upon deployment; in some cases, dilution ratios can be controlled, depending on the severity of odor issues or the area being managed.

Odor neutralizing chemicals in aqueous form can be applied via conventional agricultural sprayers, vapor diffusion systems that use heat to vaporize chemicals (essential oils) and then blow them through a perforated pipe, water trucks that employ spray bars and hoses for heavy working face product application, and fogging or industrial misting systems. Passive odor neutralizers (such as deodorizing sleeves that can be hung at different areas at a site) may be used as well, where a solid granule or powder neutralizes the odor.

In general, odor neutralizers are considered temporary measures as the products typically do not prevent the production of odorous compounds.

3.2.5 LFG Collection and Treatment

LFG collection involves the installation of collection devices (e.g., wells) into the waste to control the flow of LFG, although LFG controls may also include collectors located beyond the perimeter of the waste. LFG can be passively vented or actively controlled. No federal standards for active LFG control exist for C&D landfills, but federal standards (e.g., those found in the New Source Performance Standards for MSW Landfills, 40 CFR Part 63 Subpart WWW) mandate active gas controls once an MSW landfill reaches a certain size or emission rate of nonmethane organic compounds (NMOC). H_2S generated in landfills is considered a trace component of LFG, and the installation of an active GCCS solely to control H_2S is not very common because of the extensive design, permitting, and construction needs associated with an active GCCS.

Collected LFG can be vented to the atmosphere (and typically routed through treatment media or individual destruction devices), routed to a temporary or permanent flare station to combust the collected LFG, or utilized for energy production. Passive vents within the waste could be embedded within a

treatment medium as well (e.g., wood chips), which could provide an added opportunity to remove odor-causing compounds before the gas is vented to the atmosphere or routed for further treatment. Active GCCS systems use compressors or vacuums to create a pressure gradient to route LFG to a collection point. The number and spacing of collection wells depends on waste density, pressure gradients required, and LFG production expected (which depends on the composition of the waste). The U.S. EPA Landfill Methane Outreach Program reports that more than 500 MSW landfills have an LFG to energy project and more than 500 landfills are candidates for an energy project.

Active LFG control at C&D landfills may be complicated by the fact that substantial quantities of other gases such as CH_4 are not produced, which is a reflection of the types of waste normally deposited in C&D landfills (refer to Section 2.5 for discussion of waste composition at C&D landfills). In cases where active LFG controls are used at C&D landfills, supplemental fuel may be required to provide enough BTU content to combust the gas (e.g., an active GCCS at a landfill in New York used natural gas as a supplemental fuel (McCarron, 2007)). Solar spark flares have been used in cases where lower LFG flow rates or CH_4 concentrations are present (e.g., at C&D landfills, in areas of MSW landfills that do not yet require active control, or at areas of landfills where LFG may build up such as leachate lines).

As mentioned previously, high levels of H_2S in LFG can be problematic in LFG to energy projects—for example, Lopez (2012) indicates that the frequency of maintenance and engine overhauls at energy projects that convert collected LFG to electricity is greater when H_2S concentrations are greater because of wear and corrosion of engine parts. High H_2S concentrations in LFG may also void or limit manufacturer warranty (General Electric, 2009). Rasi et al. (2011) reported that a recommended maximum H_2S concentration for biogas (including LFG) used in boilers and internal combustion engines is 1,000 µL/L. GE Jenbacher recommends H_2S limits of 700 mg/10 kWh and 1,200 mg/10 kWh for LFG engines with and without catalytic converters, which equate to 245 µL/L and 419 µL/L, respectively (General Electric, 2009). In cases where LFG is cleaned up to remove CO_2 and other constituents for use as a vehicle fuel or for delivery to natural gas pipelines, H_2S concentrations of less than 4 µL/L are normally required (Wentworth, 2009).

Collected LFG with a high concentration of H_2S can result in the emission of SO_2 following combustion at a LFG destruction device. SO_2 is a primary pollutant subject to national ambient air quality standards in the United States, and Title V operating air permits at MSW landfills may have limits on the emissions of SO_2. In cases where high LFG collection rates and high concentrations of H_2S are present, the permit-specified SO_2 emission limits could be reached, thus potentially requiring the implementation of a system to reduce H_2S concentrations prior to combustion of the LFG. For example, a study at a large MSW landfill in Virginia estimated that the facility's Title V SO_2 emission limit of 240 tons per year could be exceeded with a LFG collection rate of 8,000 standard cubic feet per minute and an H_2S concentration of 770 µL/L (Tennant, 2012).

A variety of treatment technologies are available to reduce the concentration of H_2S in collected LFG. ***Table 3-2*** presents a summary of LFG treatment technologies specific to H_2S removal or reduction.

Table 3-2. Summary of Treatment Technologies to Reduce H_2S Concentrations in Collected LFG

Treatment Technology	Further Classification	Specific Chemicals, Mechanisms, Results
Liquid Treatment (Scrubbers to treat gas flow)	Alkaline Solutions	Caustic Soda (NaOH) • NaHS or Na_2S solid salts are formed (Siemak, 1985) Other hydroxides (KOH, KI) Carbonate Solutions (Na_2CO_3, $MgCO_3$)
Liquid Treatment (Scrubbers to treat gas flow)	Amine Solutions	Sulfaclear®, Almont 6,6B, 6F® Methyl Di-ethanol Amine (MDEA) (Pandey 2005)
	Nitrite Solutions	$3H_2S + NaNO_2 \rightarrow NH_3 + 3S + NaOH$
	Metal Solutions	Metal SO_4^{2-} Solutions • $CuSO_4$, $ZnSO_4$, $FeSO_4$ examined by ter Maat et al. (2005) in laboratory • Precipitates metal sulfide, metal carbonate, or metal hydroxide (pH dependent) • $CuSO_4$ purified biogas in a pilot scale project (85% removal of influent H_2S at 170 µL/L) SulFerox® • H_2S reacts with aqueous ferric iron, forms S^0
Solid Adsorption Treatment	Activated Carbon	Norit ROZ3® • Steam activated carbon, designed for H_2S and mercaptan removal • Can be diluted with less selective, less costly AC species (Norit RB4W) for similar H_2S removal (up to 70% dilution) (Mescia et al. 2011) • Field scale experiments showed H_2S (245 µL/L) removal to 1 µL/L; removal of 71.99 gH_2S/kg AC (30% ROZ3) (Mescia et al. 2011)
	Ash	MSW bottom ash • Removed H_2S (100 µL/L), CH_3SH (4 µL/L), and $(CH_3)_2S$ (30 µL/L) from field LFG; mass removals of 3 g, 44 mg, and 86 mg per kg ash, respectively. Contact time played a large role (Ducom et al. 2009).
	Metal Oxides/Catalysts	Iron sponges Produces metal sulfides • Pyrite (FeS_2), phalerite (ZnS), Molybdenite (MoS_2) SulfaTreat®
Chemical Process	Oxidizing Agents	Hydrogen Peroxide (H_2O_2) • Can form elemental sulfur or SO_4^{2-} (pH dependent)
Biological Processes	Sulfur Oxidation	ThioPaq® • Biologically mediated HS^- to elemental sulfur (S^0) after alkaline scrubbing • Regenerates caustic soda for reuse (Tennant 2012) Bio-Scrubber®

4. Site Investigation and Monitoring Techniques

4.1 Site Inspection Procedure Considerations

Site investigations may occur as part of routine operations or in response to an odor complaint. If odor complaints are received at a landfill, pertinent information about the complaint (e.g., location of complaint, time of day, weather conditions at the time of complaint, assessment of site conditions at the time of the complaint) should be recorded.

Multiple states have developed BMP or guidance for the evaluation of odor that may be emanating from a landfill and/or require that landfills maintain their own odor management plan to address odor. The practices from several BMP guides were evaluated and the key elements related to site inspection considerations for landfill personnel are summarized below.

- Identify any potential sources of odor from accepted wastes (e.g., dead animals, gypsum drywall (bulk or size-reduced), processing of yard waste, biosolids, other industrial wastes).
- If a GCCS is present, evaluate areas where elevated temperatures are present, as these may be areas of higher decomposition and potential areas of H_2S production and emissions.
- Perform site inspections during early morning or late evening, when odors are most likely to be observed.
- Use monitoring instruments that are properly calibrated to the range of H_2S concentrations expected, and use such equipment consistently with manufacturer specifications.
- Inspect and monitor for H_2S along the site perimeter, particularly paying attention to site topography as H_2S may settle in low-lying areas.
- Monitor for H_2S near and downwind of the working face.
- Record all measured H_2S concentrations and the locations where they were measured.
- Inspect for any leachate seeps or ponded leachate, document and address on- and off-site structures where leachate may migrate and emit H_2S gas, causing exposure to workers and nearby residents.
- Document information regarding weather conditions and area(s) of the site inspection, including (but not limited to):
  - Date and time
  - Weather conditions
    - Temperature
    - Wind speed and direction
    - Cloud cover
    - Ongoing or recent precipitation events
  - Name of person conducting inspection
  - Areas inspected (written description and/or map)
  - Locations or observations from other potential nearby sources of odor or H_2S (e.g., wastewater treatment plant)
- Maintain documented site inspection records on site.

Another important consideration related to site monitoring is awareness of confined spaces. Confined spaces are generally defined as areas with limited entry or exit that are not designed or intended for

continuous human occupancy. Confined spaces have the potential for hazardous atmospheres, including explosive gas concentrations, concentrations of gases that are toxic to humans, and low oxygen. Examples of confined spaces at C&D and/or MSW landfills include vaults, tanks, pipes, storage bins, sumps, and trenches.

Many landfills are required to have confined space entry plans intended to prevent someone from entering a toxic/oxygen-deficient environment with the potential for asphyxiation. These plans emphasize the buddy system, where if one is entering a confined space, another person stands by ready to aid an escape from the confined space; in some cases a harness or other safety equipment may be required (Bolton, 1995). At a minimum, site personnel should be trained to understand how to identify a confined space and know to not enter a confined space unless in accordance with a confined space entry plan.

4.2 H_2S Monitoring Techniques

Because of the low odor threshold associated with H_2S, the detection of odors by site personnel may serve as an initial indication of H_2S emissions at a site. However, as discussed previously, H_2S present at higher concentrations may not be detectable because of the olfactory paralysis that can occur. OSHA (2005) recommends that workers not rely on the sense of smell to indicate the continuing presence of H_2S or to warn of hazardous concentrations. Monitoring of H_2S concentrations can be part of an odor or H_2S evaluation plan. A variety of instruments have been developed that detect H_2S over a range of concentrations for a variety of purposes (e.g., assessing human exposure levels, measuring concentrations in confined spaces or gas collection wells, measuring concentrations in ambient air).

It is important when selecting a device that the purpose of the monitoring is clear and that the appropriate limitations (e.g., detection limits, potential interferences) of a given instrument are understood so that the data gathered meet the H_2S monitoring program's objectives. A presentation and discussion of common types of H_2S monitoring devices is presented in ***Table 4-1***.

Table 4-1. Examples of H_2S Monitoring Devices, Applications, and Limitations

Sampler Type	Applications and Limitations/Interferences
Personal badges	Disposable devices normally used for detecting acute H_2S exposure. Clips on clothing or fits in a pocket near the wearer's breathing zone. Can produce visual, vibratory, or audible alarm upon exceedance of a set standard (10 µL/L is common) or simply produce a color change. H_2S reacts with an indicator layer (e.g., lead acetate). Visual color comparison to exposure dose color (in µL/L*hr) is used to calculate average concentration by dividing this value (in µL/L*hr) by exposure time. Some can detect other gases in addition to H_2S. Temperature limitations may be an issue (one sampler reported in the 16 °C – 36 °C range). They can also be used as stationary monitors over limited periods of time simply by affixing to a pole with the detector facing the emission source. Typical H_2S range: 1–240 µL/L*hr Example products: Industrial Scientific Gas Badge Pro and Gas Badge Plus, Chromair Gas Monitoring Badge, Safeair Gas Monitoring Badge, BW Honeywell Gas Alert Clip Extreme H_2S Monitor
Multi-gas meters	Standard multi-gas samplers typically use an active sample pump to draw gas into the inlet orifice. Used when monitoring of other gases is necessary (e.g., CH_4, CO_2, O_2, CO). Because standards often exist for CH_4 or CO concentrations on site and at the perimeter boundary (i.e., a certain percentage of the LEL) monitoring of H_2S can be conducted in conjunction with these gases. Meters are typically battery-operated and use a microprocessor to display concentrations on a display and can often store data via a data logger; some have alarms that sound at significant concentration levels. Regular calibration is necessary. More elaborate systems are available that operate using an analyzer with a near-infrared laser that quantifies spectral features of molecules in a sample gas passed through an optical measurement cavity. This technology also allows for vehicle mounting and simultaneous gas measurement and mapping of H_2S and CH_4 concentrations. Typical H_2S range: 0–100 µL/L, although other ranges are available Example standard multi-gas samplers: Gas Alert Mac XTII, MSA Altair 4X Multigas Detector, MultiRAE Plus 4 Gas Meter, RKI GX-2003 Multi Gas Monitor, RKI Eagle 2, Example near-infrared laser gas analyzer with mapping capability: Picarro Model G2204
Electrochemical cells/pods	Sensors designed for a specific gas measurement. Operate through diffusion of H_2S (or other gas of interest) into measurement cell where an oxidation (in the case of H_2S) or reduction reaction at the working electrode occurs. Working electrode is typically contained in an acidic solution. A measureable voltage is produced upon oxidation; the measured gas concentration is linearly proportional to the electrical output of the gas sensor. Other gases (NO, H_2, etc.) can cause some interference. Can also utilize a reference electrode that eliminates interference from side reactions. Low temperatures (<freezing) stop chemical reactions and the cell will not function. Oxygen is necessary for reactions; low oxygen environments cannot sustain the current. H_2S is a gas that will oxidize; the presence of a reducible gas may interfere. Typical H_2S range: 1–500 µL/L Example products: CES Landtec GEM 2000/5000 (add-on pod or built-in cell), Delphian Electrochemical Sensor 755, Kimessa AG GSE 627

(continued)

Table 4-1. Examples of H_2S Monitoring Devices, Applications, and Limitations (continued)

Sampler Type	Applications and Limitations/Interferences
Dedicated H_2S meters	Specialty meters that can detect H_2S over a range of low and intermediate concentrations. Technology used includes gold film sensors that work via selective adsorption and desorption. Interference may be caused by some constituents (e.g., chlorine, ammonia, NO_2, and mercaptans) but filters are available to reduce interference. Detection limits on several of the meters were reported as 0.003 µL/L. Meters can be set for either a single sample or survey mode; survey mode provides quicker source detection. Another technology includes the Honeywell Chemcassette system, which uses an optical scanning system to detect a gas via color change. Other technologies include pulsed fluorescence, which converts H_2S to SO_2 and measures the SO_2, thus the measurement of H_2S is indirect. Typical H_2S Range: 0.003–50 µL/L Example products: Arizona Instruments Jerome J605, Jerome 631-X, Jerome 631-XE, Honeywell Single Point Monitor, Thermo Scientific 451i
Remote systems	These systems utilize detectors that can be placed in an area where continuous, remote monitoring is desired (i.e., site perimeter boundary, confined spaces onsite). Remote sensor units are either wired or wirelessly connected to a controller. Detectors can be self-powered (e.g., solar, battery) and selected based on the desired range of H_2S concentrations to be measured. Systems can be changed or expanded to include many monitoring points. Electrochemical sensors are sometimes used for the sensor components. Visual and audible alarms can be produced upon exceedance of a given gas concentration. It is recommended that fixed monitors be placed in low spots due to the H_2S-specific gravity. These dedicated meters are typically expensive as they require infrastructure installation. Example products: Rig Rat III Portable Area Monitoring System, RKI Beacon/Fixed System Sensor Heads
Colorimetric detector tubes	One-time use tubes (with printed H_2S scales on the tube) specific to a certain gas and concentration range is opened (tips broken) and inserted into a pump. Ambient air or gas (e.g., collected in a nonreactive sample container) to measure H_2S is pumped through the tube. Measurements are indicated by the length of the color change in relation to the scale printed on the tube; adjustment factors for sample volume, temperature, and humidity can be applied using manufacturer datasheets. Tubes do not require calibration and may be subject to some interferants, depending on the tube used. Typical H_2S range: Varies depending on product; range-specific tubes are sold (e.g., low, high, ultra-high). Standard range of 25–250 µL/L. Passive colorimetric detection tubes can also be used for longer-term time-weighted average measurements. Example products: Dräger Detector Tubes, RAE Systems H_2S Colorimetric Gas Detection Tubes
Electronic noses	These devices contain an array of sensors that quickly analyze multiple molecules at once; they are utilized in the food, beverage, and perfume industry extensively. They generally consist of a wide array of technologies, including conducting polymer sensors, sintered metal oxide semi-conductors, catalytic metals, organic semi-conductors, surface wave gas sensors, quartz crystal microbalance, electrochemical, smell-seeing, and field effect transistors (Otles 2008).

5. BMP Framework to Manage H_2S Emissions from Disposal of Gypsum Drywall

Most permitted landfills are required to develop and maintain operations plans that cover a wide range of issues and considerations. Normally, odor management is addressed in broad landfill operations plans, but often do not require the background and detail needed to address the potentially severe issues caused by elevated H_2S emissions. Thus, in some cases the development of a site-specific BMP guide may be necessary to allow landfill owners and operators to understand the specific issues and challenges associated with H_2S, provide the landfill operators with valuable documentation that can be used to demonstrate the procedures used to address H_2S emissions, and provide direction to landfill staff so that issues encountered with H_2S emissions can be observed and managed more rapidly. ***Figure 5-1*** presents a simplified flow chart that can be used by landfill owners and operators as a starting point to develop a site-specific BMP guide for H_2S emissions management. Each step presented in Figure 5-1 is described in more detail below.

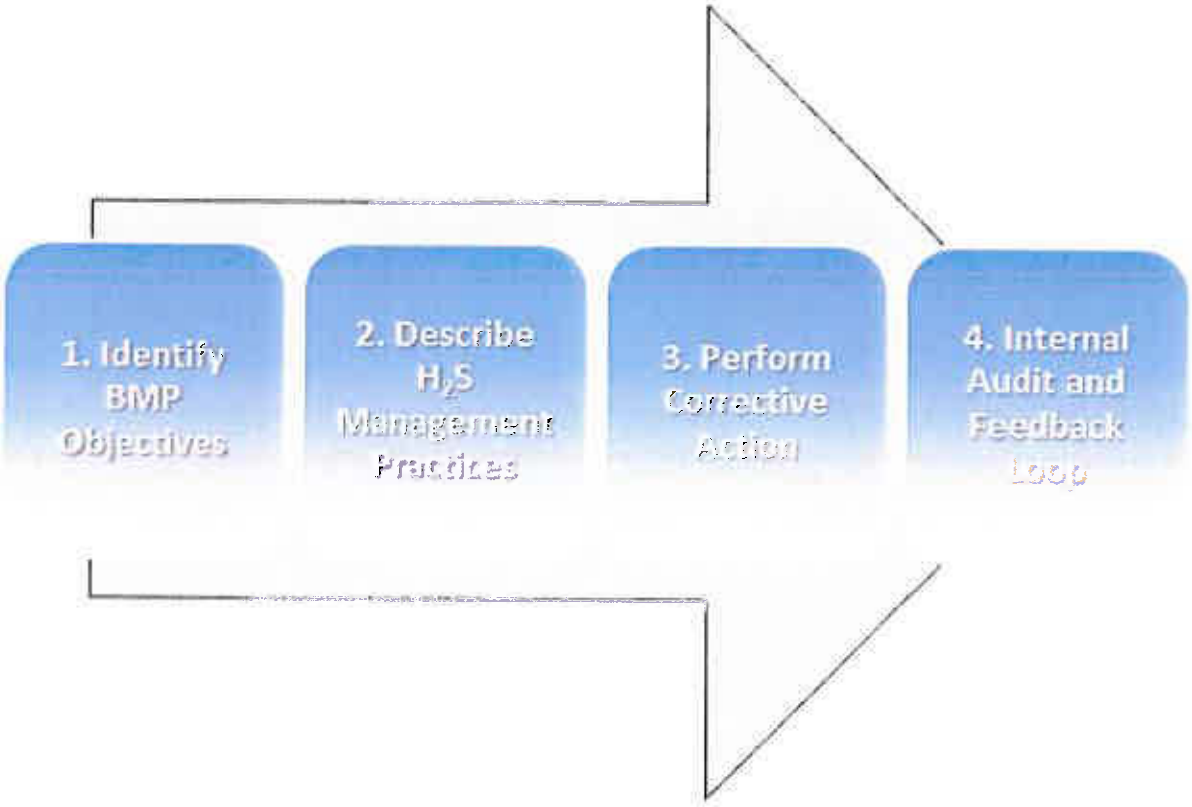


Figure 5-1. Framework for Developing a BMP Guide for Managing H_2S at C&D or MSW Landfills

A discussion of each of the framework elements is provided below.

1. **Identify the BMP guide objectives.** Each landfill's site-specific considerations should be accounted for when the BMP guide is developed. For example, a landfill that accepts large amounts of drywall but has never had odor issues or H_2S emission issues may structure the BMP guide in a way that includes measures to help prevent H_2S emissions. This would be in contrast to the structure of a BMP guide for an MSW landfill that beneficially uses collected LFG and has not had odor issues but has high H_2S levels in the collected LFG. In this case, the guide may be focused on monitoring and maintenance associated with an H_2S treatment system.

2. **Describe the management practices to be employed.** The BMP guide would identify key information, such as responsible parties and lines of communication for maintenance, monitoring, and inspections; types of equipment to use for monitoring; frequency and location(s) of H_2S monitoring (including documentation requirements); and an enumeration of practices that the site adopts based on site-specific conditions to mitigate or otherwise manage H_2S emissions. The conditions and ultimately the management practices employed should consider the variety of sources and conditions that may lead to H_2S production and emission (as described in Section 2) and the procedures that can be used to reduce emissions (as described in Section 3). The description of management practices should also identify action levels that are tailored to the facility's needs, which will be used in conjunction with corrective actions (Step 3 below).
3. **Perform corrective action.** The BMP guide should discuss actions that should be taken if H_2S emissions or concentrations are greater than target levels established for the facility. The corrective action steps may include equipment or monitoring instrument evaluation or calibration, assessment and modification of operating practices, or other activities to mitigate H_2S emissions.
4. **Internal audit and feedback loop.** The efficacy of the BMP guide should be periodically evaluated or audited to ensure that the guide matches up with the needs of the site, as operating needs and conditions at landfills may change frequently. The BMP guide should include a mechanism to provide an effective feedback loop so that gaps or limitations in the procedures for monitoring and addressing H_2S emissions can be quickly identified and remedied.

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Statement by
LT Michelle Colledge
Environmental Health Scientist
Division of Regional Operations
Agency for Toxic Substances and Disease Registry
U.S. Department of Health and Human Services
on
ATSDR's Public Health Activities in Warren Township, Ohio
before
The Economic Development and Environment Committee Ohio State Senate

HANDOUT

May 11, 2005

Introduction
Mr. Chairman and Members of the Committee, thank you for inviting me to testify before your committee. My name is Michelle Colledge, and I am an Environmental Health Scientist in the Division of Regional Operations, at the Agency for Toxic Substances and Disease Registry (ATSDR). ATSDR is a federal agency within the United States Department of Health and Human Services. The mission of ATSDR is to "serve the public by using the best science, taking responsive public health actions, and providing trusted health information to prevent harmful exposures and disease related to toxic substances."

ATSDR testimony is not intended to address the specific provisions or merits of any proposed legislation. Today, I will provide the committee with information about Construction and Demolition debris landfills, an overview of the toxicity of hydrogen sulfide gas, and a summary of ATSDR's public health activities in Warren Township, Ohio. I will include an overview of ATSDR's investigation concerning the Warren Recycling facility, any conclusions drawn and recommendations stemming from our involvement there, and potential health effects from exposures to hydrogen sulfide.

Construction and Demolition (C&D) Debris Landfills
Debris from construction and demolition (referred to as C&D waste) is a substantial waste stream in the United States, with hundreds of millions of tons of C&D waste being generated each year(1). The United States Environmental Protection Agency (USEPA) defines C&D debris as waste material that is produced in the process of construction, renovation, or demolition of structures. It consists of concrete, asphalt, wood, metals, gypsum wallboard, and roofing.

Of the components of C&D waste materials, drywall is of special concern. It is a major component of C&D wastes, and its disposal in C&D landfills can result in the production of hydrogen sulfide. Drywall is composed of a core of gypsum ($CaSO_4 \cdot 2H_2O$), covered on both sides with a paper facing and backing(2). When the sulfate in the gypsum is exposed to water, it becomes solubilized in the landfill leachate, and hydrogen sulfide gas is produced through an anaerobic conversion process(3).

Effects of Hydrogen Sulfide Exposure
Hydrogen sulfide is a colorless, flammable gas under normal conditions. In air, people can smell hydrogen sulfide at levels as low as 0.5 parts per billion (ppb), and the odor is usually characterized as smelling like "rotten eggs" or "sewage." Because hydrogen sulfide is ubiquitous in the natural environment, low-level exposures are not uncommon. Natural sources account for approximately 90% of the amount of hydrogen sulfide in the atmosphere. Background concentrations of hydrogen sulfide in outdoor air are typically less that 1 ppb(4).

Short-term exposures to high levels of hydrogen sulfide may cause adverse health effects, including: airway constriction in individuals who have asthma5; decreased lung function6; inability to smell gas (olfactory fatigue)(7-8); and eye irritation (keratoconjunctivitis, punctate corneal erosion, blepharospasm, lacrimation, and photophobia)(9-15). Severe injury and death have been observed with short-term exposures to hydrogen sulfide levels exceeding 100 ppm4, (16-17). Acute exposures to elevated levels of hydrogen

sulfide can result in pulmonary edema and central nervous system effects including dizziness, nausea, headache, and physical collapse(18-21).

Long-term exposures to hydrogen sulfide may also result in adverse health effects. These include: neurologic effects (fatigue, loss of appetite, nausea, headache, vomiting, irritability, poor memory, depression, motor skills, and dizziness)(9, 22-23) and respiratory effects (nosebleeds, breathing abnormalities)(23-25). Several studies have been conducted which show neurologic effects from chronic low-level exposures. These studies have documented deficits in cognitive function, reduced perceptual motor speed, impaired memory, impaired balance, and abnormal mood status. These effects were still evident months and sometimes years after exposures ceased (22-23, 26). The magnitude of exposure in these studies ranged in low parts per billion to low parts per million. As an attachment to my written testimony, I have included a table that outlines current health-based guidance values for hydrogen sulfide exposures.

Summary of ATSDR Investigation in Warren Township

The Warren Township Administration and LaBrae School District petitioned ATSDR in May 2002 to investigate whether illnesses being reported in their community could result from exposures to hydrogen sulfide emissions from the Warren Recycling, Inc. (WRI) C&D landfill. Some residents of the Warren Township Community report that they have experienced symptoms they believe are related to chronic hydrogen sulfide exposure, beginning in fall of 200124. Of special concern to ATSDR is the fact that approximately 1600 students attend a high school and two elementary schools near the landfill (two of which are less than ½ mile from the landfill).

ATSDR began its investigation in the Warren Township Community in August 2002, when we held a public availability session to gather health concerns. More than 150 residents reported similar health effects that they and their families were experiencing, including nausea, headache, vomiting, eye irritation, fatigue, dizziness, and memory loss. Preliminary, unvalidated air samples collected by the landfill's contractor detected a peak concentration of 13 parts per million (ppm) hydrogen sulfide in residential outdoor air. Exposures to this concentration of hydrogen sulfide have been associated with the kind of health effects reported in the Warren Township community. However, insufficient data were available to adequately characterize the levels of exposures within the community. To more fully evaluate exposures, ATSDR conducted an Exposure Investigation, sampling indoor and outdoor air in seven community locations for five months. Air sampling during the Exposure Investigation detected a maximum concentration of 6.1 ppm in residential outdoor air, a level that has been demonstrated to cause headaches and airways restrictions in experimental studies of people with asthma. Some levels were above those associated with increased asthma-related hospital visits for children and reports of eye irritation in occupational and animal studies. Using the detected concentrations of hydrogen sulfide in residential areas and uncontrolled releases from landfill conditions, ATSDR concluded that these conditions posed an urgent public health hazard to citizens of Warren Township. ATSDR uses the "urgent public health hazard" conclusion for sites at which short-term exposures (less than 1 year) to hazardous substances or conditions could result in harmful health effects that require rapid intervention. ATSDR released a report on the Exposure Investigation on November 21, 2003. I have entered a copy of the report into the record. ATSDR recommended the following actions:

1) Warren Recycling Incorporated should stop community member airborne exposure to hydrogen sulfide from outdoor sources as soon as possible. (***Status:*** *Pending enforcement action*)

2) ATSDR should conduct air sampling for other sulfur gases during "odor events," timies when residents report smelling unusual or strong odors.
(***Status:*** *Completed*)

3) ATSDR and the Ohio Department of Health should conduct a health study of the population.
(***Status:*** *Completed 2004; final report pending*)

4) The Ohio Environmental Protection Agency, the City of Warren and Trumbull County Health Departments should identify the source(s) of hydrogen sulfide. (***Status:*** *Completed*)

5) ATSDR should contact the National Institute for Occupational Safety and Health (NIOSH) to determine if there is a need for a health hazard evaluation of landfill workers. (***Status:*** *NIOSH contacted; the landfill*

owner/operator has not granted access.)

6) Warren Recycling Incorporated should reduce the threat of fire and explosion that exists on the landfill and/or from landfill operations.
(***Status:*** *Not adopted. Fires are still occurring.*)

7) Warren Recycling, Inc. should restrict community access to the landfill.
(***Status:*** *Not adopted*)

As a follow-up to the initial Exposure Investigation, ATSDR conducted additional testing for other sulfur gases. C&D landfills are known to release mercaptan, carbon disulfide, and other organic and inorganic sulfur compounds3. The Exposure Investigation identified elevated levels of methyl mercaptan, dimethyl sulfide, and n-butyl mercaptan in additional to hydrogen sulfide.

Continued community concern and continued odor complaints prompted the Ohio Department of Health's State Epidemiologist to request that ATSDR help conduct a health investigation in late May 2004. ATSDR conducted the field portion of this investigation in June and July of 2004. Participants in this study consisted of 107 community members who live, work, or attend school within a 1-mile radius of the facility. From results of a pre-screening respiratory questionnaire, participants were placed in one of three categories: 1) those with existing respiratory conditions, such as asthma (50 people), wore personal air-monitoring badges, kept a daily diary of odors and symptoms, and tested their lung function twice a day using a peak-flow meter instrument, 2) those without existing respiratory conditions (50 people) wore the personal air monitoring badge and kept the daily diary or 3) those who only kept a daily diary (7 people). Residents of five homes also allowed ATSDR to place hydrogen sulfide outdoor air monitors in their yards for the study period. ATSDR anticipates presenting our findings to the community in late spring or early summer of this year.

During the field data collection phase of this study, ATSDR used a real-time hydrogen sulfide monitor to respond to community odor complaints. During one such response, ATSDR found levels of hydrogen sulfide up to 95 ppm in residential air. This prompted a letter from ATSDR's Assistant Administrator to the Warren City Health Director(27). The letter stressed the urgent nature of these elevated hydrogen sulfide readings and recommended the city 1) develop the capacity to monitor for hydrogen sulfide in response to future odor complaints; and 2) develop contingency plans with city, township, and Trumbull County emergency response personnel to shelter-in-place or evacuate community members, based on hydrogen sulfide readings. The City Health Department committed to working with the City Wastewater Treatment Plant to share hydrogen sulfide monitoring devices, and agreed to pursue contingency planning.

Throughout our involvement with this site, ATSDR has worked with partners at the local, state, and federal level. Because explosive levels of landfill gases have been measured on-site(28), and several underground fires have been detected and addressed on-site, ATSDR worked with the LaBrae School Board, local fire stations, and the Trumbull County HAZMAT manager to create a response and evacuation plan in the case of a substantial odor event. ATSDR has provided health advice and guidance to the Warren City Health Department, the Ohio EPA, and the USEPA

ATSDR has determined that residential exposures to hydrogen sulfide pose a health hazard to residents in the Warren Township community. The siting of the landfill within an existing community, in combination with construction and maintenance inadequacies of the landfill, has allowed these conditions to become a substantial problem for the health and safety of nearby residents and for the state of Ohio. These concerns have led Ohio EPA to request an Emergency Removal Action under the USEPA's Comprehensive Environmental Response, Compensation, and Liability Act authority, which was accepted and is currently in progress. ATSDR has worked very closely with local, state, and federal health and environmental agencies at this site. Since ATSDR became involved at the Warren Recycling Landfill, similar odor problems have been identified at other C&D landfills in Ohio.

Thank you for inviting me here to testify before the committee. I have provided you with information related to C&D debris in landfills, the toxicity of hydrogen sulfide gas, and ATSDR activities in Warren Township, Ohio.

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Guidance values for inhalation exposure to hydrogen sulfide

Concentration, ppb	Exposure Period	Source
1.4	Lifetime	USEPA RfC
20	14-365 days	Intermediate MRL
100	1 hour	AIHA ERPG-1
200	14 days	ATSDR Acute MRL
1.4	Lifetime	USEPA RfC
10,000	10 minutes	NIOSH 10 minute ceiling
30,000	1 hour	AIHA ERPG-2

USEPA: U.S. Environmental Protection Agency

RfC: Reference Concentration–level protective of public health, even sensitive populations

MRL: Minimal Risk Level–level protective of public health, even sensitive populations

AIHA: American Industrial Hygiene Association

ERPG: Emergency Response Planning Guide–1-hour level of exposure that would result in mild, transient health effects (ERPG-1), irreversible health effects (ERPG-2), or serious injury or death (ERPG-3).

NIOSH: National Institute for Occupational Safety and Health, Centers for Disease Control and Prevention

Attachment 2

References for Michelle Colledge Testimony before the Economic Development and Environment Committee of the Ohio State Legislature

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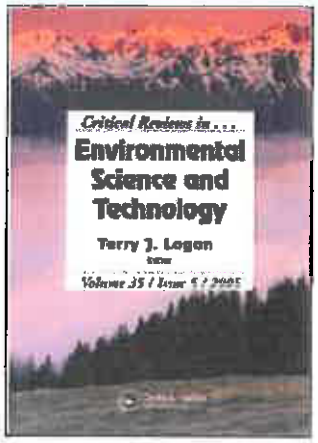

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A Review of Construction and Demolition Debris Regulations in the United States

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A Review of Construction and Demolition Debris Regulations in the United States

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Construction and demolition (C&D) debris comprises a significant portion of the solid waste stream in the United States. Because C&D debris is largely regulated at the state level, the requirements for C&D debris disposal facilities vary from state to state. A review of state regulations was conducted to determine C&D debris disposal facility requirements, including specific requirements for liners, leachate collection, groundwater monitoring, location restrictions, operator training, waste spotters, final cover, financial assurance, and recycling. This review found that little consistency exists in the regulation of C&D debris facilities among states. Twenty-three states require liners, while 27 require groundwater monitoring. Seventeen states reported having regulations pertaining to recycling C&D debris. Several states are currently in the process of reviewing and updating their C&D debris regulations, an indication of the greater recognized importance of this fraction of the solid waste stream.

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KEY WORDS: C&D debris, disposal, landfills, regulations, solid waste

Once dismissed as a small segment of the solid waste stream, construction and demolition (C&D) debris (often referred to as C&D waste or simply as C&D) is a topic of growing interest for the solid waste industry. C&D debris, household and commercial refuse, and yard trash are often lumped together and described as municipal solid waste (MSW). C&D debris differs in both physical form and chemical content from other MSW components, and because of its unique management issues and challenges, it has become more common to distinguish C&D debris as its own separate waste stream. Unlike household and commercial refuse, C&D debris is not heavily regulated under U.S. federal regulations, leaving individual states to develop their own appropriate regulatory strategies. State environmental agencies have adopted a variety of approaches for regulating C&D debris. While C&D debris recycling is becoming more common, landfilling is still the predominant practice, and, as such, most state regulatory programs focus on land disposal of C&D debris. The promulgation of regulations pertaining to C&D debris recycling, however, is a growing trend.

This paper presents the results of a survey of U.S. federal and state regulations pertaining to C&D debris. The objective of this review is to provide useful information to those involved with the generation, management, or regulation of this waste stream. The information summarized was gathered by the authors through a review of the regulations and through contacts with relevant regulatory officials. The rules themselves or the appropriate agency, however, should be consulted as needed, as regulations change and may be subject to interpretation. References for all regulations are cited at the end of this paper.

C&D DEBRIS BASICS

C&D debris results from the construction, renovation, and demolition of buildings, roads, and bridges and often includes material produced during site preparation (e.g., land-clearing debris). Residential, commercial, industrial, and governmental sectors all contribute to this waste stream. A U.S. Environmental Protection Agency (U.S. EPA)-sponsored study estimated that 123 million metric tons of building-related C&D debris, (1.27 kg [2.8 lb] per person per day) were generated in the United States in 1996,[14] compared to 190 million metric tons (1.95 kg [4.3 lb] per person per day) of non-C&D debris MSW produced in the same year.[15] If the amount of debris generated from non-building-related C&D debris sources (e.g., concrete and asphalt from roadwork) were added, the total amount of C&D debris would likely exceed the total amount of other MSW sources.

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While the composition of C&D debris varies as a function of the activity generating the waste, the major components include wood, concrete, metal, roofing material, cardboard, gypsum wallboard, and soil. Other components, such as packaging, electrical wire, and insulation, also occur, as do small amounts of other materials that are not classified as C&D debris (e.g., food wrappers, hazardous waste). The exact amount of landfilled C&D debris is not known, but a large fraction of C&D debris, especially mixed building-related debris, is land disposed.[14] Large, homogeneous sources of debris (e.g., concrete, asphalt pavement) are frequently recycled. Some mixed C&D debris is also recycled, with separation occurring at central processing facilities. Recent efforts to separate and recycle construction debris at the construction site,[24] as well as to deconstruct buildings and reuse building components,[27,59] account for a small but growing management option.

Historically, C&D debris has been considered to be relatively inert and composed of materials that will not pose an undue environmental risk, even when managed in uncontrolled disposal facilities. Various potentially dangerous materials, however, are now recognized to occur in some sources of C&D debris. Heavy metals such as lead (paint, pipe solder, flashing, batteries), mercury (lighting, electrical switches, thermostats), cadmium (batteries, paints), and arsenic (treated wood) are common ingredients of many building components.[54] Polychlorinated biphenyls are still encountered in many older lighting ballasts, transformers, and capacitors, as well as numerous other materials.[7] Asbestos building products include floor tiles, roofing mastic, pipe insulation, and cement siding.[6,17] As a result, the unsafe management of C&D debris can pose a risk to human health and the environment from its generation (e.g., the demolition process) to its final disposition (e.g., disposal in a landfill). Even the primary building components themselves (e.g., drywall, wood) can impact the quality of groundwater underneath an unlined C&D debris disposal facility.[60,65] The growing awareness of the potential risks posed by C&D debris has spurred the development of regulatory programs to limit unsafe management practices.

Federal Regulations Governing C&D Debris

The U.S. EPA does not specifically regulate C&D debris. The Resource Conservation and Recovery Act (RCRA) governs the U.S. federal solid waste management system. Under RCRA, C&D debris is a solid waste and therefore can potentially be a hazardous waste. C&D debris is not included as a listed hazardous waste. Several building materials do, however, have the potential to be characteristic hazardous wastes. Discarded oil-based paints and solvents from a construction project would be ignitability characteristic hazardous wastes. Some batteries and cleaners meet the definition of corrosivity characteristic hazardous wastes. Building materials containing elements

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such as lead, mercury, cadmium, and arsenic may be toxicity characteristic (TC) hazardous wastes.[54] Not only are some discrete components found in buildings hazardous wastes, but the buildings themselves may be hazardous wastes if painted or contaminated with toxic chemicals (e.g., coated with lead-based paint). The relatively small mass of toxic elements compared to the rest of the building materials makes it very unlikely, however, that an entire structure would require management as a hazardous waste.

The RCRA hazardous waste regulations can impact the management of C&D debris in a number of ways, depending on the amount generated. A generator producing more than 100 kg of hazardous waste per month must send the hazardous waste to a permitted hazardous waste management facility. Generators producing less than 100 kg per month of hazardous waste (known as conditionally exempt small quantity generators, CESQGs) can dispose these materials in any state permitted solid waste management facility, including C&D debris landfills. The U.S. EPA does require operators of unlined landfills that accept CESQG hazardous waste to monitor the groundwater at the site (40 CFR 257).[60] Since many states either ban hazardous waste from landfill disposal (including CESQG hazardous waste) or exclude hazardous wastes as part of the definition of C&D debris, the relevance of the 257 regulations for C&D debris is limited. In an effort to streamline the removal of lead paint from residential housing, the U.S. EPA recently clarified that lead-based-paint debris removed from residential structures did qualify for the household waste exclusion under RCRA and thus was not a hazardous waste.[12]

Several other federal statutes and regulations may impact C&D debris management. Contractors renovating or demolishing buildings containing asbestos may be required to comply with the specific removal and disposal requirements found in the National Emission Standards for Hazardous Air Pollutants (NESHAP) regulations in 40 CFR 61. The asbestos NESHAP specifies proper containment for asbestos-containing waste and proper final cover requirements to prevent particulate matter from entering the air.[6] Since states determine the definition of C&D debris, a few states include asbestos waste within the definition of C&D debris. Many, however, forbid the disposal of asbestos-containing waste in C&D debris landfills. PCB ballasts from renovation and demolition debris are regulated under the Toxic Substances Control Act (TSCA) in 40 CFR Part 761.[7] Regulations regarding the disposal of lead-based paint debris were at one time proposed under TSCA,[11] but the rule never progressed beyond a proposal. Under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA), also known as Superfund, C&D debris generators are strictly liable for any hazardous wastes that they dispose. Thus, even if not generating a hazardous waste under RCRA, generators and landfill operators could be held liable for future contamination from the management their C&D debris.

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State Regulations Governing C&D Debris

Since the vast bulk of materials encountered in C&D debris does not contain asbestos and is not hazardous waste, management requirements for the majority of C&D debris produced in the United States are not covered by federal regulations. Most states have promulgated their own C&D debris management rules, including defining what waste materials are considered C&D debris and what components must be excluded. Requirements for groundwater monitoring, liner construction, site restrictions, financial assurance, training requirements, and recycling vary from state to state. These variations are primarily a result of the unique characteristics of each state and include variables such as annual rainfall, annual temperature range, land availability, and geologic stability, as well as perceptions by local policymakers and regulator as to the relative risk that C&D debris poses to human health and the environment. While the states have the freedom to create regulations to fit their unique situations, the lack of federal guidance has lead to inconsistent regulations throughout the nation.

METHODS

State solid waste regulations were reviewed and sections pertinent to C&D debris disposal were summarized into a one-page form submitted electronically to each state regulatory agency. Each appropriate state regulatory program was subsequently contacted via telephone or electronic mail for verification and comment on the program's requirements. These requirements were then interpreted by the authors and again submitted to state regulatory programs for final comment. The interpretations of the rules presented in the following sections are those of the authors, though state agencies were consulted for verification. Questions regarding more recent rule language or the interpretation of a rule should be directed to the appropriate state agency.

RESULTS

This state C&D debris regulation survey revealed a large diversity of requirements and approaches. This is illustrated in Table 1, which summarizes the state rules and requirements. Twenty-three states were found to have specific C&D debris disposal regulations (i.e., requirements for facilities that are separate and apart from MSW landfills). In other states, C&D debris is regulated under requirements for more general inert debris landfills, non-MSW landfills, MSW landfills, or general solid waste facilities. The detailed summaries of each state's C&D debris disposal requirements are provided in subsequent sections.

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TABLE 1. Summary of State Requirements for C&D Debris Facilities

	Definitions					Liners				Permit issues				Other			
State	Construction and demolition debris/ waste	Const. debris/ waste	Demo. debris/ waste	Inert debris	Other definition (e.g. dry waste)	No liner reqmts	Conditional liner reqmts	Liner rqmts; no leachate collection	Liner reqmt with leachate collection	Financial assurance	Reqmt for operator training	Spotter req'd	Spotter training req'd	Regulation specifically for C&D debris landfills	Regulation covering C&D debris recycling facilities	State is updating rules on C&D debris	Groundwater monitoring
AL	X				X		X				X	X	X	X			
AK				X		X				X							
AZ	X	X	X	X		X											X
AR	X		X					X		X	X						
CA	X						X			X	X		X		X	X	X
CO	X			X	X				X	X						X	X
CT	X				X	X				X	X						X
DE					X				X	X							X
FL	X					X				X	X	X	X	X	X		X
GA	X			X		X				X	X			X	X		X
HI	X		X	X				X		X	X			X			X
ID				X		X									X		
IL	X					X			X[b]	X		X					
IN	X	X						X		X	X			X	X		
IA	X				X			X						X			X
KS	X				X	X				X	X			X		X	
KY	X	X							X	X	X	X	X	X			X
LA	X							X		X	X			X			
ME	X	X				X								X			
MD		X	X		X				X	X							X
MA	X								X	X					X	X	X
MI	X								X	X				X			X
MN			X		X	X					X		X			X	
MS					X		X								X		
MO					X				X	X	X[a]						X
MT	X						X					X					X
NE	X				X	X								X	X		
NV					X	X				X							X

PLANNING COMMISSION NOVEMBER 7, 2016 Page 2538

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NH	X					X					X	X	X	X		X	X		X
NJ	X										X	X	X				X		X
NM	X					X	X					X	X[a]			X			
NY	X				X	X					X	X				X	X		X
NC	X			X	X	X	X											X	
ND					X		X												
OH	X					X		X				X		X		X			
OK	X								X			X		X		X	X		X
OR	X							X				X							
PA	X		X								X	X		X		X	X		X
RI	X										MSW[c]	X					X		X
SC	X					X	X					X		X		X		X	
SD	X					X	X										X		
TN	X						X										X		
TX	X					X			X			X	X	X					X
UT	X				X		X					X							
VT	X						X					X					X		X
VA			X	X	X	X				X		X	X			X			X
WA				X	X						X	X	X	X			X	X	X
WV	X						X									X			
WI	X								X			X	X		X	X			X
WY	X						X						X			X			

[a]Certified operator must be present. Operator training is not specifically stated.
[b]Leachate monitoring is required. A liner system is not required.
[c]C&D debris falls under MSW category.

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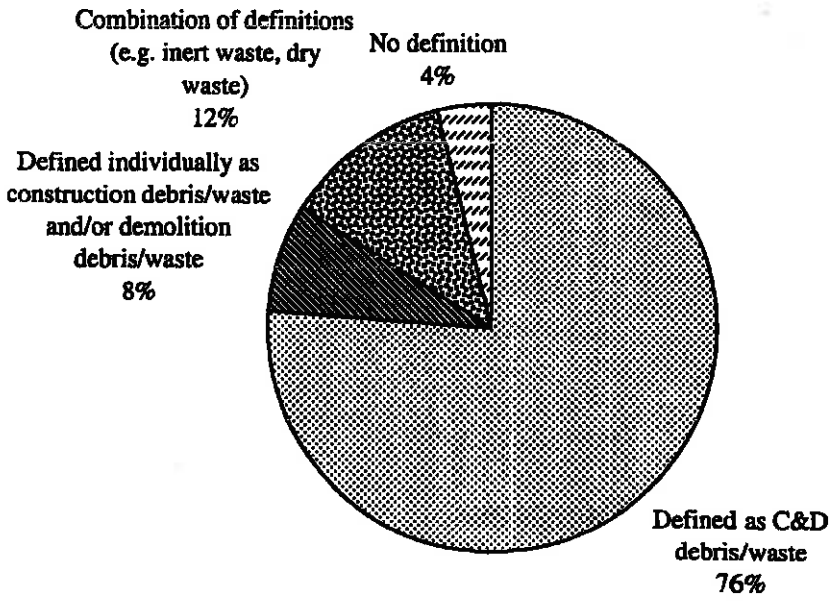

FIGURE 1. Summary of state C&D debris definition categories.

Definitions

The lack of a federal regulatory definition for C&D debris has resulted in each state defining C&D debris somewhat differently. The inclusion or exclusion of specific components within the C&D debris definition affects management of the waste. In addition, definitions are often included for waste streams that are in some way a part of or related to C&D debris, including dry waste, inert waste, land clearing debris, rubble, and rubbish. Figure 1 summarizes the range of definitions encountered. Most states (76%, 38 states) provide a definition for C&D debris or C&D waste. An additional four states instead individually define the terms construction debris/waste and/or demolition debris/waste, making forty-two states that specifically describe this waste stream. Some state definitions contain extreme detail regarding the source of C&D debris, their components, and prohibited materials. For example, Michigan defines *C&D debris* as:

> Waste building materials, packaging, and rubble that results from construction, remodeling, repair, and demolition operations on houses, commercial or industrial buildings, and other structures. Construction and demolition waste includes trees and stumps which are more than 4 ft in length and 2 inches in diam and which are removed from property during construction, maintenance, or repair. Construction and demolition waste does not include any of the following, even if it results from the construction, remodeling, repair, and demolition of structures: (i) Asbestos waste.

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> (ii) Household waste. (iii) Corrugated containerboard. (iv) Appliances. (v) Drums and containers. (vi) Any aboveground or underground tank and associated piping, except septic tanks. (vii) Solid waste that results from any processing technique which renders individual waste components unrecognizable, such as pulverizing or shredding, unless the type and origin of such waste is known not to contain the wastes listed in paragraphs (i) to (vi) of this subdivision.[33]

Other states provide much more general descriptions; Montana defines *C&D debris* as:

> Waste building materials, packaging, and rubble resulting from construction, remodeling, repair, and demolition operations on pavements, houses, commercial buildings, and other structures, once municipal, household, commercial and industrial wastes have been removed.[37]

Outside of the definition of C&D debris/waste, some states choose to define construction and/or demolition waste separately. While six states define construction waste and eight states define demolition waste, only three of these states define both. Virginia, one of the three states that defines both, defines *construction waste* as:

> Solid waste which is produced or generated during construction, remodeling, or repair of pavements, houses, commercial buildings, and other structures. Construction wastes include, but are not limited to lumber, wire, sheetrock, broken brick, shingles, glass, pipes, concrete, paving materials, and metal and plastics if the metal or plastics are a part of the materials of construction or empty containers for such materials. Paints, coatings, solvents, asbestos, any liquid, compressed gases or semi-liquids and garbage are not construction wastes.[63]

while *demolition waste* is defined as:

> Solid waste which is produced by the destruction of structures and their foundations and includes the same materials as construction wastes.[63]

As C&D debris is often included in other waste categories, the lack of a specific definition for construction or demolition waste does not exclude the waste from another definition. Sixteen states include C&D debris in their definition of inert waste. Land-clearing debris can include C&D debris in six states. C&D debris is included within eight state definitions of rubbish and three state definitions of rubble. Some states such as Alaska define inert waste only and not C&D debris. Alaska defines *inert waste* as:

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> Solid waste that has a low potential to pollute air or water, and that does not normally attract wildlife; includes coal power plant ash, scrap metal, auto fluff, construction and demolition waste, and pavement rubble; does not include asphalt material that contains asbestos.[2]

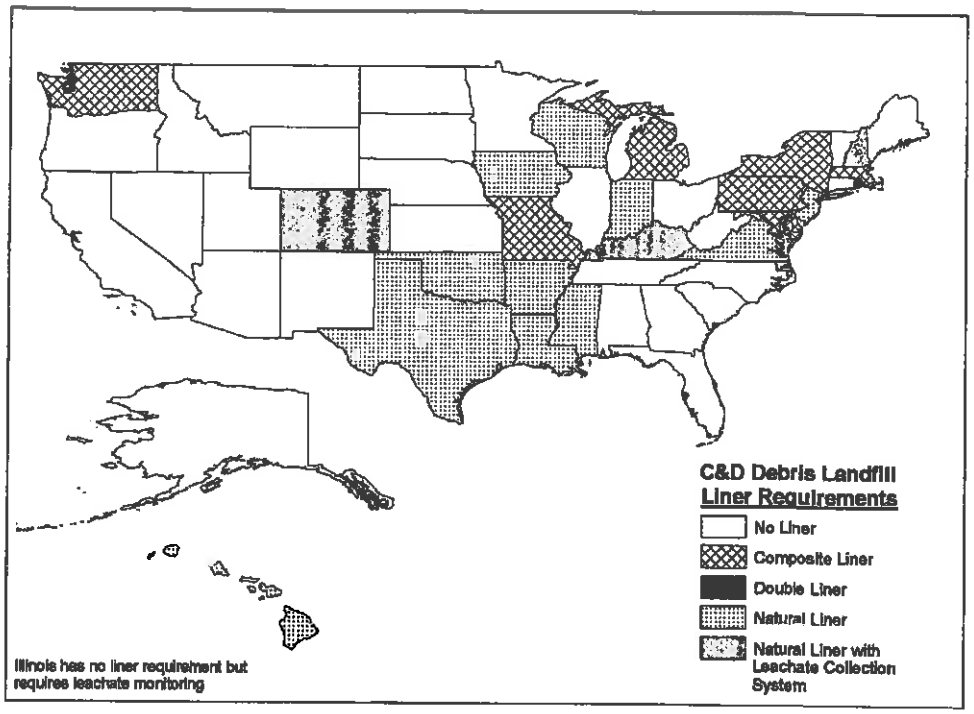
Other states define both C&D debris and inert waste. California, for example, defines *inert waste* as:

> Subset of solid waste that does not contain hazardous waste or soluble pollutants at concentrations in excess of applicable water quality objectives, and does not contain significant quantities of decomposable waste.[5]

As suggested by Alaska's and California's definitions, inert waste could potentially include most of the C&D debris stream, as well as other types of non-C&D debris materials. Land-clearing debris, on the other hand, is typically more narrowly defined.

Landfill Liner Requirements

Figure 2 summarizes state liner requirements by five categories: (1) those with no liner requirement, (2) those requiring natural soil liners but with



Note: Location or site-specific issues may result in more stringent requirements.

FIGURE 2. Minimum acceptable landfill liner requirements for C&D debris landfills.

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no leachate collection system, (3) those requiring natural soil liners with leachate collection system, (4) those requiring composite liners, and (5) those requiring double liners. By limiting the materials that are defined as C&D debris, landfills that accept C&D debris in certain states including Connecticut and Idaho are not required to have liners. Of the states that require liners, the most common liner is a natural clay or soil liner of a specified thickness and permeability. States such as Louisiana, Arkansas, Iowa, and Oklahoma require natural liners. Additional requirements to the natural liner system may include a leachate collection system, as C&D debris landfills in Colorado must have. Some states requiring composite liners have regulations specifically for landfills handling C&D debris (e.g., Maryland), while some require composite liners because C&D debris falls under MSW regulations (e.g., Hawaii). The one state with a double liner requirement, Rhode Island, also manages C&D debris in MSW landfills.

These categories reflect the minimum technology that a landfill accepting C&D debris must have in these states. In several states (e.g., Alabama, Oregon, New Jersey), more stringent requirements may be necessary depending on site-specific conditions (e.g., location, rainfall). If a landfill restricts the type of C&D debris accepted, some states may consider less stringent requirements (e.g., Kentucky). Twenty-seven states permit disposal of C&D debris into unlined landfills (excluding any prohibited materials mentioned within the regulations). The remaining 23 states have varying degrees of liners systems presented in Figure 2.

Monitoring

Figure 3 summarizes the state groundwater monitoring requirements. Twenty-seven states require groundwater monitoring. More detailed information regarding landfill requirements can be determined by comparing Figure 2 to Figure 3. Eight of the unlined landfill states require groundwater monitoring. The other 19 states do not require groundwater monitoring. Nineteen of the states that require liners also require groundwater monitoring while four states that require liners do not require groundwater monitoring.

Other Permit Issues

Financial assurance requirements are included for some states in the C&D debris section of the state regulations, while in other states they may be outlined in the general solid waste section, which covers C&D debris landfills (unless they are not specifically excluded). Those states with specific sections for C&D debris landfills may require financial assurance within the C&D debris landfill section, while specific details concerning procedures and assurance options are contained in a separate financial assurance section within

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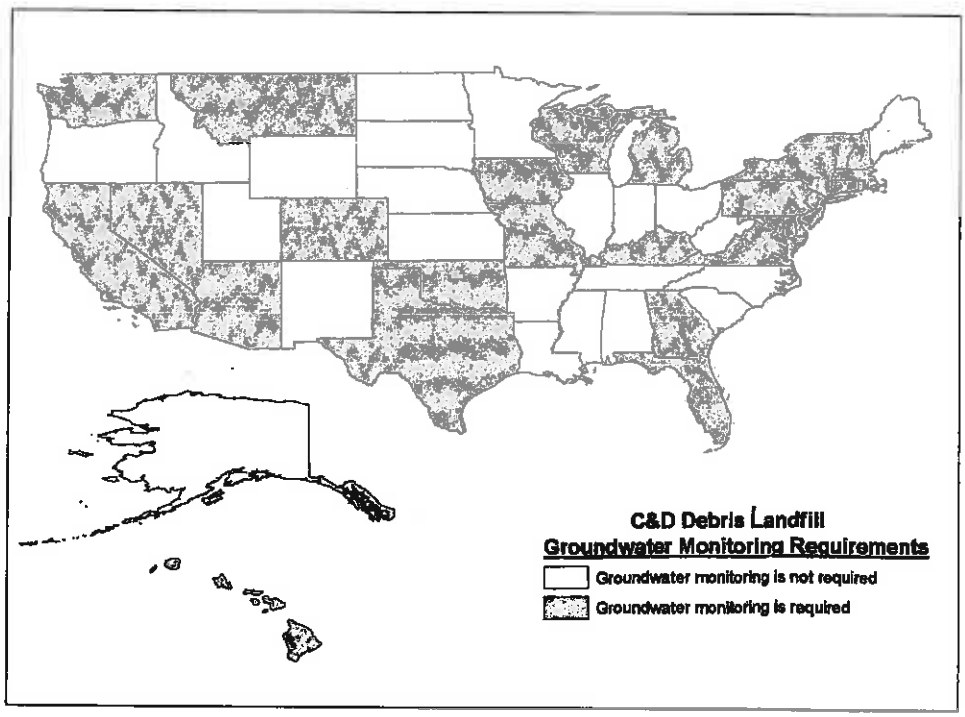

FIGURE 3. Minimum groundwater monitoring requirements for C&D debris landfills.

the greater solid waste management rules. Financial assurance requirements vary from requiring a specific amount per acre of the landfill to a minimum of operation and maintenance costs for a period after closure (e.g., 30 years).

Twenty-six states include specific personnel requirements. Twenty-one states require operator training. Most states require a plan to prevent hazardous wastes from being disposed at the facility, implying some type of waste screening should take place; only eleven states specifically require a spotter to identify unauthorized wastes. Six of the states requiring spotters include waste screening programs within their operator training.

C&D Debris Recycling

Because of the growing awareness that C&D debris is not as inert as once thought,[28,60,65] some states are revising their C&D debris regulations. States that provided current regulatory information but are in the process of developing new regulations include California, Kansas, North Carolina, Ohio, South Carolina, Washington, Colorado, and Massachusetts. The new rules will further regulate C&D debris landfills and C&D debris recycling practices and facilities. Increased regulation of C&D debris landfills can cause tipping fees to rise, thereby encouraging recycling. In other states (e.g., Florida),

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recycling of C&D debris is encouraged by the nature of the local area. C&D landfills are scarce in South Florida because of lack of proper land to construct them, so recycling of C&D debris is a thriving industry. However, land is plentiful in North Florida, so C&D debris is mostly disposed in landfills there. Other states with small or limited land masses are trying to encourage C&D debris recycling with guidance and education (e.g., Hawaii) or with regulations (e.g., Massachusetts).

The primary alternative to landfill disposal of C&D debris is management at a recycling facility. C&D debris recycling facilities are large processing operations designed to separate materials from one another and to process the materials for subsequent reuse. In some cases, individual components are recovered for a variety of recycling markets. In other cases, combined materials are size-reduced for use as cover or fill materials at landfills. C&D debris processing facilities are much less uniformly regulated as compared to landfills. Seventeen states reported having processing facility requirements. This number may be larger because processing facilities may be covered under broader programs for such facilities. Some states, however, do have specific C&D debris processing or recycling facility regulatory requirements (e.g., Florida). These facilities have many of the same regulations as landfills, such as operator training and groundwater monitoring. It should be noted that even in those states where recycling facility regulations are in place, they usually only apply to facilities that accept mixed C&D debris as opposed to a single-stream debris (e.g., concrete or asphalt). Facilities that recycle only concrete or asphalt may not be regulated under solid waste regulations.

Several states have impending regulations that will impact C&D debris recycling. Massachusetts will ban concrete, asphalt, brick, wood and metal from landfill disposal in July 2006. California developed tiered regulations for recycling facilities requiring a mixed C&D debris recycling facility that accepts more than 160 metric tons (175 tons) per day (recycling at least 60% of that) to obtain a solid waste permit.

Detailed State C&D Debris Regulation Summaries

The information presented to this point summarizes the survey results and provides an overview of state C&D debris regulations. However, to fully understand the scope and variability of state C&D debris regulations, it is important to note the specific details of each state's C&D debris regulatory program. These details are presented as follows.

ALABAMA

Alabama defines *construction/demolition waste* and *rubbish*. Liner systems or groundwater monitoring are not required. Facilities are prohibited from

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restricting water flow in floodplains, impacting endangered species, locating in geologically unstable areas, and impacting water quality in or near wetlands, beaches, or dunes. Training is required for the operator and spotter. Spotters are required to inspect all suspicious loads into the facility. Final cover consists of at least 15 cm (6 in) of earthen material capable of sustaining native vegetation (defined as the erosion layer), with a layer at least 46 cm (18 in) of compacted earthen material (that is not sand) underneath (defined as the infiltration layer).[1]

ALASKA

Alaska defines *inert waste* to include C&D debris. A liner system is not required for an inert waste landfill. Groundwater monitoring is not required at a landfill with a total volume less than 765 m^3 (1000 cubic yards) that only accepts inert waste and receives no more than 63.5 cm (25 in) in annual rainfall. If noninert waste is present or has been present at the site or evidence exists of a spill or groundwater contamination, then groundwater monitoring is required during the active life of the landfill. All other C&D debris facilities require groundwater monitoring. If groundwater monitoring is required during the active life of the landfill, it will also be required for postclosure. Even if it had not been required during the active life of the landfill, postclosure monitoring still may be required to ensure protection of the health and safety of the environment. If postclosure groundwater monitoring is required, then financial assurance must include the cost of postclosure monitoring. Otherwise, only the financial responsibility for closure is required. Any unlined landfill must be at least 3 m (10 ft) above the highest measured aquifer level or constructed 60 cm (2 ft) above the natural ground surface. Typically, landfills cannot be placed on permafrost unless no practical alternative exists. Operator training and spotters are not required for an inert waste landfill. Landfill operators must post a sign at the entrance stating that disposal of hazardous waste and PCB waste (polychlorinated biphenyls) is not permitted and notify regulators if improper waste is found at the facility. When closing the facility, a final soil cover at least 60 cm (24 in) thick is required.[2]

ARIZONA

Arizona has not yet established rules for C&D debris landfills. C&D debris is included within the definition for *Non-MSW*, but the state does not have guidelines for Non-MSW landfills. However, stringent state aquifer protection requirements require groundwater monitoring at all C&D debris landfills.[3]

ARKANSAS

Arkansas defines *construction and demolition debris* and *demolition debris*, both of which are typically disposed in Class 4 landfills (C&D landfills). A natural liner consisting of 46 cm (18 in) of compacted clay with a hydraulic

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conductivity no greater 1×10^{-5} cm/sec is required. Leachate collection and groundwater monitoring are not required. Class 4 landfills may not be located in floodplains (if the landfill restricts flow or cannot prevent wash out of solid waste), wetlands, or geologically unstable areas. Landfills must have buffers from wells or water intakes used for drinking water, existing dwellings, and highways. Operator training is required. Although spotters are not required, a plan to exclude hazardous waste must be developed. The final cover must consist of 15 cm (6 in) of earthen material capable of sustaining plant growth (defined the erosion layer) and 46 cm (18 in) of clay soil barrier layer with hydraulic conductivity equal to the liner (defined as the infiltration layer). Financial assurance is required.[4]

CALIFORNIA

California defines *construction and demolition wastes*. C&D wastes are disposed in Class III landfills. A liner system is required when current site characteristics cannot ensure the protection of the quality of ground or surface water. In this case, Class III landfills must have a single clay liner with hydraulic conductivity of 1×10^{-6} cm/s or less. The clay liner should be a minimum of 30 cm (1 ft) thick and be installed with a relative compaction of at least 90%. Leachate collection is required at those facilities with a liner. Groundwater monitoring is required at all facilities. Facilities are prohibited from locating on a Holocene fault and must maintain a 1.5 m (5 ft) barrier between the lowest part of the waste disposal area and the highest ground water elevation. Operator training is required and includes identification and screening of hazardous materials. The final cover system consists of a foundation layer, a low-hydraulic-conductivity layer, and an erosion-resistance layer. The foundation layer should be at least 60 cm (2 ft) of soil or a similar material. The second layer should have a hydraulic conductivity of 1×10^{-6} cm/sec and consist of soil that is at least 1 ft thick. The erosion-resistant layer should be capable of sustaining plant growth requiring at least 1 ft of soil. Financial assurance is required.[5] California is currently creating regulations for C&D processing facilities.

COLORADO

Currently, C&D debris falls under standard solid waste rules. The Colorado Department of Public Health and Environment has reserved Section Four of the rules for C&D debris and inert debris disposal, but presently these wastes are disposed according to standard solid waste rules. Hence, either a natural liner or a composite liner is required. Two natural liner systems are allowed: (1) a barrier layer composed of soil or bedrock with a minimum thickness of 6.1 m (20 ft) with in situ hydraulic conductivity demonstrated to be less than or equal to 1×10^{-6} cm/sec and an upper layer of 30.5 cm (12 in) thick recompacted soil with a hydraulic conductivity no greater than 1×10^{-7} cm/sec, or (2) a soil liner at least 91 cm (3 ft) thick of compacted soil

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with a hydraulic conductivity less than or equal to 1×10^{-7} cm/sec. Composite liner systems must have a lower natural component of at least 60 cm (2 ft) of compacted soil with a hydraulic conductivity less than or equal to 1×10^{-7} cm/sec and an upper flexible membrane liner (FML) at least 0.76 mm (30 mil) thick (1.5 mm [60 mil] if HDPE). A leachate collection system and groundwater monitoring are required. Landfills may not be located in wetlands, near a fault, in geologically unstable areas, in floodplains, or below or in surface water or groundwater. Operator training and spotters are not required.

Colorado requires either a soil final cover or a composite final cover. The soil final cover must have at least 46 cm (18 in) of earthen material with a permeability no more than the bottom liner system or 1×10^{-5} cm/sec, whichever is less (defined as the infiltration layer) and then a layer with a minimum 15 cm (6 in) of earthen material capable of sustaining native plant growth (defined as the erosion layer). The composite final cover has a foundation layer of at least 15 cm (6 in) of soil, which is immediately above the refuse. This forms a suitable foundation for the geomembrane barrier layer, which is no less than 0.76 mm (30 mil) thick and displays properties adequate for its intended purpose.

Financial assurance is required. Typically, financial assurance for C&D debris and inert debris landfills follow the 30-year maximum assurance required for MSW landfills, but the agency can shorten this requirement. Although Colorado has no specific rules for C&D debris landfills, the agency is currently working on recycling requirements for solid waste in general, which may affect the processing of C&D debris.[8]

CONNECTICUT

Connecticut defines *C&D waste* but has no liner requirements; however, according to the Connecticut Department of Environmental Protection (CDEP), the lack of regulatory requirements for a liner system allows regulatory flexibility. Currently, CDEP requires any new or horizontally expanded C&D debris landfill to have a liner system, and a groundwater discharge permit is required. Final cover at a C&D debris landfill consists of a minimum of 60 cm (2 ft) of low-permeability soil, and a few situations required a membrane cap. Connecticut requires operator training but does not require a spotter. Location requirements are not specified but are subject to regulatory siting criteria. Financial assurance is required for closure and post-closure maintenance costs. For new landfills, the state's solid waste management plan "recommends" that recycling opportunities should be considered and incorporated into the design and operation of a C&D landfill.[9]

DELAWARE

Delaware does not define C&D debris; however, according to Delaware's Regulations Governing Solid Waste (DRGSW), C&D debris is covered under

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two categories, dry waste and industrial waste. The definition for *dry waste* includes the following:

> Plastics, rubber, lumber, trees, stumps, vegetative matter, asphalt pavement, asphaltic products incidental to construction/demolition debris, or other materials which have reduced potential for environmental degradation and leachate production.

The definition for *industrial waste* includes:

> Any water-borne liquid, gaseous, solid or other waste substance or a combination thereof resulting from any process of industry, manufacturing, trade or business, or from the development of any agricultural or natural resource.

Although C&D debris is not specifically defined, typical C&D debris components are included in the dry waste definition; and construction and demolition are considered a business in which industrial waste is produced; therefore, C&D debris would be disposed of in an industrial waste landfill.

A composite liner system is required for the landfills. The lower liner must be 60 cm (2 ft) thick compacted clay with a hydraulic conductivity of 1×10^{-7} cm/sec or less. The upper synthetic liner material should be at least 1.14 mm (45 mil) and made of materials that will not fail due to physical contact with leachate, weather conditions, or stresses from installation and use. Natural material liners may be constructed only in areas where the groundwater is not and will not be used for water supplies and where the subbase is subject to compaction and settlement such that a synthetic membrane would not be feasible. Leachate collection, treatment, disposal, and monitoring are required regardless of the type of liner system. Groundwater monitoring is required. Operator training and spotter training are not required by this regulation, but individual permits address the training requirements for employees.

Regulations prevent location within a 100-year floodplain; wetlands; 1 mile of state or federal wildlife refuge, wildlife area, or park; wellhead protection areas where valuable aquifers would be threatened; 200 ft of a facility boundary; or areas that are environmentally unique or valuable. Each landfill must observe any locally adopted land use plan or zoning requirements. The capping system must be constructed of a final grade layer of soil at least 6 inches thick, an impermeable layer of either a 0.76-mm (30-mil) geomembrane over a geotextile or 61 cm (24 in) of clay with a hydraulic conductivity less than 1×10^{-7} cm/sec, and a final cover of 46 cm (18 in) of soil and 15 cm (6 in) of topsoil or other approved alternative. Financial assurance is required.[10]

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FLORIDA

Florida defines *construction and demolition debris*, which is typically disposed in C&D debris landfills. Liners and leachate collection systems are not required; however, based on the types of waste received, methods for controlling the types of waste disposed, the proximity of groundwater and surface water, and the results of the hydrogeological and geotechnical investigations indicating that operation of the facility is reasonably expected to result in violations of groundwater standards and criteria, the Florida Department of Environmental Protection (DEP) can require a liner before a permit is granted. Groundwater monitoring is required on a semiannual basis. If the facility is within 60 m (200 ft) of a water body, surface water sampling may be required.

An operation and a closure plan are required. Spotters are required at the working face to inspect incoming waste at all times. Operators and spotters must be properly trained, and a training plan must be included in the permit application. Operators must have 20 hours of training in the first year and 15 hours continuing training in each subsequent three-year period. Spotters require training at the same frequency, but only 8 hours initially and 8 hours continuing.

Final cover must be placed within 180 days of reaching final grade. The final cover must consist of a 60 cm (24 in) thick soil layer, the upper 15 cm (6 in) of which shall be capable of supporting vegetation and graded and compacted as necessary to eliminate ponding, promote drainage, and minimize erosion. Florida has C&D debris material recover facility (MRF) regulations; the requirements are similar to the landfill regulations, including groundwater monitoring, spotter requirements, training requirements, and financial insurance. To encourage recycling of C&D debris, Florida requires segregated disposal of C&D debris at MSW landfills (usually by employing two working faces). Residuals from C&D debris processing facilities can be directly landfilled.[13]

GEORGIA

Georgia defines *construction and demolition waste* and *inert waste*. Inert waste may be disposed in a C&D landfill, but C&D debris may not be disposed in an inert landfill. *Inert* is defined as stumps, brush, limbs, leaves, broken concrete, broken asphalt, dirt, rocks, and dirt-like products. A liner is not required for C&D landfills; however, groundwater and methane gas monitoring is required. Rules specify operator training but do not require a spotter. Minimum distances are required from fault areas, unstable areas unless the facility is designed to withstand dangers, significant groundwater recharge areas, private water supply wells, and surface water. Facilities located in a floodplain should not restrict water flow. Facilities should not be located in wetlands or over seismic impact zones. Percolation into final

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cover should be minimized. Vegetation should be in place within two weeks after final cover placement. Financial assurance is required. Facilities that shred, bale, or recover materials or engage in other processing operations must have a properly trained operator on duty at all times during operation. These facilities must also have a designated C&D debris unloading (tipping) area, and adhere to any air quality requirements.[16]

HAWAII

Because of Hawaii's small land mass and population, typically no more than one landfill (an MSW landfill) exists per island. Two C&D debris landfills exist in Hawaii: one is on Oahu, and the other on Maui.[16] The majority of the C&D debris waste generated on Hawaii, Kauai, Molokai, and Lanai goes to MSW landfills, with a smaller portion being recycled. The solid waste rules define *construction and demolition waste, demolition waste,* and *inert waste.* Both C&D landfills and MSW landfills are regulated by the Hawaii Department of Health (DOH), and most C&D debris in Hawaii is disposed in C&D landfills.

MSW landfills must meet federal Subtitle D landfill requirements (40 CFR 258). C&D debris landfills are required to obtain a solid waste management permit and meet requirements specified in the permit. C&D debris landfills must include a leachate management plan that requires a soil liner at least 60 cm (2 ft) thick with a maximum permeability of 1×10^{-5} cm/sec or an alternative dependent on the hydrogeological condition of the area.

Groundwater monitoring is required at both disposal facilities unless otherwise stated by the DOH. Location restrictions include prohibition from areas susceptible to flooding; in wetlands (except under certain conditions); near potable water supplies; near airports; near fault areas, seismic impact zones, or in any other unstable locations; and near tidal wave zones.

Neither MSW landfills nor C&D debris landfills may accept hazardous wastes or PCB wastes. Personnel should be trained to recognize hazardous wastes and PCB wastes. C&D debris landfills must adhere to operation procedures specified in the operation plan included in the permit application. Spotters are not required by the regulations but are required in the facility's operations manual, which, upon approval by the state, becomes part of the landfill's permit.

Final cover systems should be designed to minimize erosion and infiltration. The system for an MSW landfill should have a permeability less than or equal to the permeability of the bottom liner system or natural subsoils or no greater that 1×10^{-5} cm/sec. The layer to minimize infiltration should be made of earthen material and be at least 46 cm (18 in) thick. The layer to minimize erosion should be a minimum of 15 cm (6 in) thick of soil capable of sustaining native plant growth. The Department may approve an alternative final cover design. Financial assurance is required to cover closure, postclosure, and corrective action at both MSW and C&D debris landfill facilities.[18] Because of Hawaii's unique situation (islands and landmass) and the fact that

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C&D debris is generally sent to landfills in Hawaii, a newly written guide, entitled *Minimizing Construction and Demolition Waste 3rd Edition*, assists in the development of recycling operations in the state.[19]

IDAHO

Idaho does not define C&D debris. Instead, waste is disposed in a facility according to its characterization. C&D debris composed of blocks, bricks, cement, and concrete is classified as *inert waste* and is exempt from solid waste regulation. This debris is often sent to rock quarries to be reclaimed, depending on individual county requirements. Other C&D debris composed of wood waste and gypsum drywall is regulated under solid waste rules. This waste is generally sent to a landfill (Tier II facility) for disposal. Large quantities of gypsum drywall might be sent to a Tier III facility, which follows MSW landfill rules with requirements similar to MSW landfill requirements. The types of waste generated at a C&D site determines the regulations that must be applied. For this paper, Tier II facility requirements will be reviewed, as the majority of C&D debris is disposed at such a facility.

Tier II facilities are not required to have liners or groundwater monitoring systems. Facilities are prohibited from contributing to the destruction of the critical habitat of endangered or threatened species; contaminating surface waters unless such waters are an integral part of the facility's operation for stormwater or leachate management; contaminating drinking water or groundwater, and locating in a 100-year floodplain, within 305 m (1000 ft) of any state or national park, wetlands, and geologically unstable areas. The active portion of facility may not be within 30.5 m (100 ft) of the property line. Operating training is not required. A spotter is not required, although the facility must have an approved method for identifying and handling unauthorized waste. Final cover consists of 46 cm (18 in) of compacted soil to minimize infiltration and a soil layer of 15 cm (6 in) to minimize erosion and sustain plant growth.[20]

ILLINOIS

Illinois defines *construction or demolition debris*, which is typically disposed at an inert waste landfill facility. Liners are not required, but leachate collection and monitoring are. All inert waste landfills shall be designed to include monitoring systems capable of collecting representative samples of leachate generated by the waste, using methods such as but not limited to a pressure-vacuum lysimeter, trench lysimeter, or a well point. Sampling locations shall be properly located to collect the least diluted leachate samples. Samples must be collected every 6 months and characterized for a suite of chemical parameters that provide indicators of contamination (organic chemical need to be analyzed every 2 years). If an inert waste landfill causes contamination or organics are detected in the leachate, the following will occur: (1) The facility will no longer be subject to inert waste landfill requirements of

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Subpart B, and (2) the facility will be subject to requirements for Putrescible and Chemical Waste Landfills of Subpart C, including closure and remedial action.

Operators accept wastes for disposal only when accompanied by documentation that the wastes are inert based on testing of the leaching properties of the waste. Operators must conduct random load checking. Facility location should meet requirements under the Wild and Scenic Rivers Act and Clean Water Act. Location should not restrict flow in 100-year floodplain, adversely affect endangered species or critical habitat for such species, or violate requirements for area wide or statewide water quality management plan for nonpoint source pollution. Financial assurance is required.[21]

INDIANA

Indiana defines *construction/demolition waste* and *construction waste*. For C&D landfills, a soil barrier at least 60 cm (3 ft) thick with a hydraulic conductivity no greater than 1×10^{-6} cm/sec must separate the waste from a locally useful aquifer. If not, a synthetic liner may be required. Groundwater monitoring is not required because CESQG hazardous waste is not allowed to be disposed in the C&D landfill. Location restrictions include prohibitions from wetlands, critical habitats, floodways, karst, and over mines. Minimum distance requirements for waste disposal include 183 m (600 ft) from potable well or dwelling, 30.5 m (100 ft) from normal waterline within a floodplain, and 15.3 m (50 ft) from the property boundary. Operator certification is required. Final cover must be 60 cm (2 ft) thick within 180 days of closing. Financial assurance is required. Waste sent to recycling facilities is considered segregated waste unless 10% or more of the waste eventually goes to disposal; then the facility is classified as a transfer station.[22]

IOWA

Iowa defines *C&D debris, rubble*, and *rubbish*. A natural liner is required for non-MSW landfills. The liner must consist of at least four ft of recompacted soil with in-place permeability no greater than 1×10^{-7} cm/sec once in place. Groundwater monitoring is required. Location requirements are based on local siting and zoning specifications as well as general geologic and hydrogeologic criteria. Operator training is not required; however, spotters are recommended. The upper layer of final cover for the nonmunicipal landfill must consist of at least 60 cm (2 ft) of uncompacted soil with enough organic matter to support vegetation. The depth of this soil layer must be sufficient to prevent root penetration by planned vegetative cover into underlying soil layers. The lower layer of the cover must be at least 60 cm (2 ft) of compacted soil with permeability of 1×10^{-7} cm/sec or less. Compacted soil, incinerator ash, or similar material permitted by the Iowa Department of Natural Resources may be used to prepare the site for placement of this compacted soil layer, however, such material will not replace the compacted soil

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layer. Financial assurance is not required. Although recycling is not required, a plan for waste reduction goals must be in place.[23]

KANSAS

Kansas defines *C&D debris* and *rubble* to include C&D debris. No liner system or groundwater monitoring is required for C&D landfills. Kansas is currently drafting new C&D regulations with new requirements, but not for a liner system or groundwater monitoring. An operating plan and operator training are required. Spotters are not required, but waste must be screened to ensure that only C&D waste is received. The final cover must be a minimum of 46 cm (18 in), including 30.5 cm (12 in) of compacted soil and 15 cm (6 in) of a vegetative layer. The current rules require a C&D landfill to be at least 0.8 km (0.5 mi) from a navigable stream. The new rules will have more comprehensive location restrictions. Financial assurance is required for closure and postclosure care.[25]

KENTUCKY

Kentucky defines *construction/demolition waste, construction materials*, and *construction/demolition debris landfill*. In addition to accepting C&D debris, a C&D debris landfill can accept other uncontaminated solid waste materials including metals, furniture, and paper. A C&D debris landfill is required to have a natural liner and leachate collection system. The natural liner must be at least 15 cm (12 in) thick soil with an additional soil component at least 15 cm (12 in) thick with permeability no greater than 1×10^{-7} cm/sec. This must be overlain by a 15 cm (12 in) drainage layer with a minimum permeability of 1×10^{-3} cm/sec. For C&D debris landfill facilities that exclude waste materials other than C&D debris, nonputrescible wastes, and wastes that do not leach or exceed environmental performance standards, the liner requirements are reduced to a minimum of 60 cm (2 ft) of recompacted soil without a permeability requirement, a drainage layer, or a leachate collection system.

Groundwater monitoring is required. Operator training is required and includes training for spotters. Facilities must maintain a minimum distance between waste disposal site and perennial streams; collapse zones of deep-mines or critical angles of draws; karst terrain features; property lines; residences; utility lines including gas, sewer, and water lines; unplugged wells except monitoring wells; airports; and fault areas. The liner bottom should maintain 1.23 m (4 ft) buffer above the seasonal high groundwater table. Facilities are prohibited in floodplains and unstable areas.

Final cover requirements for C&D debris landfills include grading to achieve a final slope between 5 and 25%, cover layer 15 cm (12 in) thick, and 30.5 cm (12 in) cap over cover layer with a maximum permeability of 1×10^{-7} cm/sec. The cap should be covered by a drainage layer 15 cm (6 in) thick with permeability of 1×10^{-3} cm/sec on slopes less than 15%. A system of drainage tiles should be in place to relieve water collected by the drainage

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layer. An overlying filter fabric or other material shall cover the drainage layer, and a minimum of 91 cm (3 ft) of vegetative soil should cover the filter fabric. If the facility is limited to C&D debris, nonputrescible wastes, and wastes that do not leach or exceed environmental performance standards, the final cover need only be a minimum of 91 cm (3 ft) of vegetative soil. Financial assurance is required.[26]

LOUISIANA

Louisiana defines *C&D debris*, which is disposed in Type III landfills. A base layer of 60 cm (2 ft) of recompacted clay with 1×10^{-7} cm/sec permeability is required for the Type III landfill. Groundwater monitoring is not required. Geology determines location requirements; in addition, no standing water is allowed on site. Operator training is required and includes 10 hours annually with 40 hours every 4 years for recertification. Spotters may be required based upon the size and type of materials accepted at the landfill. Only non-contaminated materials are allowed on site, and landfills are inspected at least four times per year by the Louisiana Department of Environmental Quality (LDEQ). Final cover must consist of 60 cm (2 ft) of recompacted clay with 15 cm (6 in) of topsoil for vegetative cover.[29]

MAINE

Maine defines *construction, demolition*, and *construction and demolition debris*. *Inert fill* and *land clearing debris* (which do not include C&D debris) are defined and may be disposed within a C&D landfill. Neither a liner system nor groundwater monitoring is required; however, if natural in situ soils cannot accommodate all leachate production, then a leachate management system may be required. Operator training is voluntary, but spotters are required. A landfill may not be on undisturbed soil less than 1.5 m (5 ft) thick, undisturbed soil less than 91 cm (3 ft) above the seasonal high water table, 100-year floodplain, an unstable area, a coastal sand dune system, a coastal wetland, or a fragile mountain area. Minimum distances are required from the aquifer, public roads, property boundaries, nearest residence, stratified sand and gravel deposits, classified surface waters, water supply springs, and water supply wells. The landfill may not be located near a significant wildlife habitat or cover more than 2.4 ha (6 acres). The operating life is limited to 20 years, and final cover must consist of 46 cm (18 in) of clay covered by 15 cm (6 in) of soil suitable for vegetative growth. Financial assurance is not required. A waste management plan that minimizes landfilling of wastes and maximizes recycling must be in effect.[30]

MARYLAND

In addition to defining *construction, demolition*, and *land clearing debris*, Maryland defines *processed debris* to include C&D debris. A liner system consisting of both natural and synthetic materials is required. The natural component is composed of at least 30.5 cm (1 ft) of clay or other natural

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material with in-place permeability no greater 1×10^{-7} cm/sec. The natural component can be substituted with (1) one or more unreinforced synthetic membranes with a combined thickness of at least 1.27 mm (50 mil) or (2) a single reinforced synthetic membrane with thickness at least 0.76 mm (30 mil) with a permeability less than or equal to 1×10^{-10} cm/sec. The synthetic liner must be installed over a 60 cm (2 ft) subbase, be free of objects that could damage the liner, and have a permeability no greater than 1×10^{-5} cm/sec. Groundwater monitoring is required at least semiannually. Operator training must be adequate to operate the site in accordance with the permit; spotters are not required.

Proposed landfill locations are evaluated by various state agencies as part of the review process described in the solid waste regulations. Final cover must consist of 60 cm (2 ft) of dirt placed within 30 days of closure, with a final cap constructed within 2 years. Financial assurance is required.[31]

MASSACHUSETTS

Massachusetts defines both construction and demolition waste and solid waste to include C&D debris. The regulations require a double composite liner system beneath landfills constructed with slopes of less than four horizontal to one vertical (<4:1). Other liner requirements are specific to slopes greater than 4:1. The double composite liner is constructed of a primary composite liner consisting of 30.5 cm (12 in) of a low permeability compacted soil layer/admixture (a hydraulic conductivity of 1×10^{-7} cm/sec) or a geosynthetic clay liner (GCL) overlain by a flexible membrane liner (FML), a leak detection and secondary collection system located between the primary and secondary liner, a secondary composite liner consisting of 60 cm (2 ft) of a low permeability compacted soil layer/admixture (a hydraulic conductivity of 1×10^{-7} cm/sec) or 30.5 cm (12 in) of a low permeability compacted soil layer overlain by a geosynthetic clay liner (GCL) and a flexible membrane liner (FML). Liner requirements may be less where MSW ash, C&D waste or other single source waste types are being disposed and characteristics of the waste such as permeability, leachate quality or other characteristics of the waste are considered. A leachate collection system and a storage system are required unless the collection system is directly connected to the sewer system. Groundwater monitoring is required. No operator training or spotters are required.

The location requirements include preventing location near public water supply wells or protection areas or where discharge from the facility could pose a danger to drinking water source areas. Waste may not be placed over the recharge area of a sole source aquifer unless no wells or water supplies or proposed wells or water supplies are downgradient of the site. Facilities are not permitted within areas where maximum high groundwater table is within 122 cm (4 ft) of ground surface or where a liner is designed to the satisfaction of the Massachusetts DEP, 122 cm (4 ft) of the bottom of the lowermost liner; wetlands; 100-year floodplains; areas where leachate discharge

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would adversely impact groundwater; agricultural lands; areas where traffic impacts facility operation and constitutes a danger to public health and safety or the environment; areas where waste deposition would negatively impact endangered, threatened, or special concern species; ecologically significant natural community and state wildlife management area; state forests; and state or municipal parklands or conservation lands.

No site will be suitable if the anticipated emissions would not meet required state and federal air quality standards or constitute a danger to public health and safety or the environment. Minimum distance requirements include 30.5 m (100 ft) from waste handling area and property boundary; 305 m (1000 ft) from any occupied residence, health care facility, prison, school, licensed day care center, senior center, or youth center; 122 m (400 ft) from a lake; and 61 m (200 ft) from a riverfront area. Final cover should consist of a subgrade layer, gas venting layer, low permeability layer, drainage layer, filter layer, vegetative support or protection layer, and vegetative cover. Financial assurance is required.

While asphalt pavement, brick, and concrete recycling operations do not require permits if located at the site of C&D debris generation or at a quarry, facilities processing other debris components need a permit. Massachusetts requires a facility to recycle or compost 25% by weight of the average yearly amount of waste the facility may accept for disposal. This requirement may be met by any combination of the following activities: (1) The facility provides recycling or composting, (2) waste destined for recycling or composting is sent to a processor at a different site, (3) waste is diverted by the generator or intermediate handler to a recycling or composting facility prior to the waste being delivered to the landfill, or (4) the operator provides the opportunity to recycle or compost. The 25% may be reduced, deferred, or suspended if the operator cannot feasibly meet the requirement. The DEP may consider the following when deciding whether to adjust the requirement: (1) the effect of the requirement on existing waste disposal contracts, (2) the financial obligations of the operator, (3) the implementation costs at municipally owned facilities, and (4) the availability of nondisposal alternatives. The DEP also may limit the percentage of recyclable material that non-postconsumer recyclables assume.[32]

MICHIGAN

Michigan defines *construction and demolition waste*. A composite liner system is required. The lower component should consist of either compacted soil at least 60 cm (2 ft) thick or a bentonite geocomposite liner. The upper component should consist of at least a 0.76 mm (30 mil) thick FML installed in direct contact with the lower component. If HDPE is used, the minimum thickness required is 1.5 mm (60 mil). Leachate collection and groundwater monitoring are required. If the groundwater cannot be monitored, the landfill must have a leak detection system that is monitored. Operator training is not required.

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Location restrictions include minimum distances from property boundary, environmentally sensitive areas, minimum distance from airports, floodplains, wetlands, fault areas and seismic impact zones, and unstable areas. Final cover should consist of a layer to minimize infiltration underneath a layer to minimize erosion. The layer to minimize infiltration must have 60 cm (2 ft) of soil either compacted or in conjunction with a FML. The minimum thickness for the layer to prevent erosion is 15 cm (6 in) of earthen material capable of supporting native plant growth. Financial assurance is required and is currently $20,000 per acre. Recycling facility requirements are covered under other permitting requirements.[33]

MINNESOTA

Minnesota defines *demolition debris* and *rubbish*. Liner systems are not required for demolition landfills. Although the waste materials approved for disposal in a demolition landfill vary depending upon the specific facility permit conditions, demolition landfills in Minnesota typically accept construction waste that is similar to demolition waste. Groundwater monitoring is conditional. The Minnesota Pollution Control Agency (MPCA) can require monitoring because of various criteria, including the type of waste accepted, site location and hydrogeology, length of operating life, size of facility, and potential for harm to human health or the environment. Operator training and certification are required. Although spotters are not required, a significant component of the operator training and certification involves identifying and spotting prohibited waste.

Minnesota has general landfill location standards and specific location standards for demolition landfills. General restrictions for new landfills prohibit location within floodplains, shoreland, river land if wild and scenic, wetlands, or areas where emissions of air pollutants would violate air quality standards. Specific location restrictions for demolition landfills prohibit location at a karst site or where the topography, geology, or soil cannot adequately protect ground or surface water. Final cover should prevent erosion of surface and side slopes, minimize particulate matter, and maintain vegetative growth. Financial assurance is not required unless the MPCA determines that financial assurance is necessary for the proper operation, closure, postclosure care, and corrective action because of size, site hydrogeology, operating life, or types of waste accepted.[34]

MISSISSIPPI

C&D debris is not specifically defined in the regulations. *Rubbish* and *industrial process debris* both include C&D debris, which is typically sent to a Class I Rubbish Site. A natural liner is required and may consist of naturally occurring low-permeability soil at least 1.53 m (5 ft) thick below the waste and 91 cm (3 ft) laterally from the waste. A buffer between the liner and the uppermost aquifer must be 1.53 m (5 ft) thick. Where a site cannot meet the natural liner requirements, an alternative constructed liner system may

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be proposed. Groundwater monitoring is required under some site conditions. Operator training is not required. Although a spotter is not required, unauthorized waste must be identified and removed from waste loads.

Minimum distances are required from airports; public wells and public water supply surface water intakes; surface water bodies such as river, lake, or coastal water; parks and recreational areas; forests and wilderness area; wildlife management and natural areas; schools, hospitals, and other similar structures; and residences, roads, and highways. A buffer of 152 m (500 ft) from property boundary line or 76.2 m (250 ft) with adequate screening is required. Landfills are prohibited from locations where water flow in floodplains and from wetlands, locations above hydrocarbon wells and water wells water, locations that will affect endangered or threatened species, and historical and archaeological areas may be affected. Final cover should be 60 cm (2 ft) of earthen material in place within thirty days of completion of site activities. For sites that propose to collect and recycle C&D debris, a solid waste permit may not be required if only recyclable, inert rubbish wastes are collected. If collected wastes containing both recyclable and nonrecyclable materials are processed at a recycling facility, then a permit is required.[35]

MISSOURI

Missouri regulations define *demolition* landfills. A liner system composed of natural and synthetic components is required. The lower layer must be at least 60 cm (2 ft) thick compacted soil with a hydraulic conductivity of no more than 1×10^{-7} cm/sec. The upper component should be at least a 0.76 mm (30 mil) thick geomembrane (1.5 mm (60 mil) thick if HDPE). The upper component must be in direct and uniform contact with the compacted soil to minimize migration of leachate should a leak occur. Leachate collection and groundwater monitoring are required. The landfill must have a certified solid waste technician overseeing operations, but a spotter is not required. A landfill may not be located in a 100-year floodplain, seismically unstable locations, or wetland areas without demonstrating that the facility would not impact these areas. A final cover consisting of 15 cm (1 ft) of compacted clay, a geomembrane with permeability less than or equal to the liner membrane, and 60 cm (2 ft) of soil for a vegetative layer are required. Financial assurance is required.[36]

MONTANA

Montana defines *construction waste*, which is typically disposed in a Class IV landfill. A liner is not required for Class IV landfill if located within the groundwater monitoring network of a Class II (MSW) landfill. Liner requirements for Class IV landfills are dependent on site location and characteristics; however, groundwater monitoring is required. No restrictions other than the location determine the need for a liner. Spotters are required, but not operator training. Final cover consists of a layer to minimize infiltration, a layer to minimize erosion, and native plant vegetation. The layer to minimize infiltration

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must contain a minimum of 46 cm (18 in) of earthen material with permeability no greater than 1×10^{-5} cm/sec. The layer to minimize erosion should be at least 15 cm (6 in) of earthen material capable of sustaining native plant growth. Financial assurance is not required.[37]

NEBRASKA

Nebraska defines *construction and demolition waste*. Nebraska has no requirements for a liner. Groundwater monitoring is conditional and can be required under certain site conditions. Operator training is not required, however unauthorized waste must be identified and removed. A 3 m (10 ft) vertical barrier must be maintained between the lowest point of the lowest waste cell and the maximum predicted water table elevation. The facility may not be located in a 100-year floodplain, wetlands, or unstable areas. Final cover for the landfill includes 91 cm (3 ft) of earthen material capable of sustaining vegetation. Final grades and side slopes of the closed area shall prevent erosion of the final cover. Operation, closure, and postclosure plans are required. Financial assurance is required for closure activities and for post-closure maintenance.[38]

NEVADA

Nevada defines *rubbish* and *industrial solid waste* to include C&D waste. A liner is not required if only these wastes are accepted, but the design of the landfill must sufficiently protect waters. Groundwater monitoring is required, although with a demonstration of no migration the requirement can be waived. Operator training and spotters are not required; however, a facility must have an approved waste-screening program. Both final cover and financial assurance are required for closure.[39]

NEW HAMPSHIRE

New Hampshire defines *construction and demolition debris* and *inert construction and demolition debris*. Materials that do not degrade or generate leachate are classified as inert and may be disposed in an unlined landfill. Unlined landfills must have groundwater monitoring, stormwater management, and a final cover system that is less stringent than those at lined facilities. All other C&D debris is sent to a C&D debris landfill, which requires a single liner system if the characteristics of the wastes are determined to not pose a threat to groundwater quality; otherwise a double liner system must be in place.

The single liner system is composed of the following components: a liner, a leachate collection and removal system, and a leak detection/location system. The liner may consist of either natural of synthetic materials. Natural liners should be at least 91 cm (3 ft) of recompacted natural soil with a hydraulic conductivity no greater than 1×10^{-7} cm/sec. Geomembrane liners should be at least 1.5 mm (60 mil) thick. Groundwater monitoring is required regardless of the liner system. Other requirements include operator training and spotters to inspect incoming waste.

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Facilities may only be located where groundwater can be monitored prior to a release that may adversely impact the water supply. Minimum distances are required from perennial surface water bodies, wetlands, surface water reservoirs, roads and highways, airports, and faults. Facilities may not be located near shorelands or designated rivers. The bottom liner must be at least 1.83 m (6 ft) above the seasonal high groundwater table, and the waste must be deposited at least 30.5 m (100 ft) from the property line.

The final capping system for the landfill involves several layers. Fifteen cm (6 in) of unspecified soil that resists raveling or sifting should immediately overlay the waste. Above this layer is a protective layer of 30.5 cm (12 in) of sand. If a facility has an active gas extraction system, this layer need only be 15 cm (6 in) thick. A methane gas management system consisting of an impermeable barrier of either a geomembrane 1.02 mm (40 mil) thick or impermeable soils to minimize the infiltration of water into underlying wastes. The next layer should divert water that infiltrates the topsoil layer, be at least 46 cm (18 in) of free-draining sand with a saturated hydraulic conductivity no less than 1×10^{-3} cm/sec, and protect the middle layer from protrusion. The final layer should stabilize the capping system against erosion, promote evapotranspiration, and plant transpiration. This top layer should be at least 10.2 cm (4 in) thick, composed of topsoil, and fertilized and vegetated. Closure requirements include financial assurance.

New Hampshire also includes requirements for recycling facilities, including areas for waste receiving and inspection, waste sorting (if the facility sorts waste), hot load segregation and control, and waste storage. Stored waste managed as a recyclable material should be contained in a manner that preserves its market value. Recycling facilities should (1) provide access to all waste piles for fire control purposes, (2) limit stockpiles to heights compatible with local fire fighting equipment, and (3) provide a water supply that meets distance and quantity requirements of local fire fighting needs. All processed recyclable materials must be removed to an authorized facility prior to facility closure.[40]

NEW JERSEY

Most New Jersey landfills have double composite liner systems, but a Class III landfill has fewer requirements. Class III landfills accept inert, bulky, and vegetative wastes. New Jersey has a high rate of recycling C&D debris, but those wastes that are not recycled are generally disposed in a Class III landfill. For a landfill located in stable, low-permeability soil with a hydraulic conductivity of less than 1×10^{-6} cm/sec, the liner system must include at least 91 cm (3 ft) of clay or soil admixture with a hydraulic conductivity equal to or less than 1×10^{-7} cm/sec and a leachate collection system consisting of 30 cm (1 ft) of sand drainage layer with a hydraulic conductivity equal to or greater than 1×10^{-2} cm/sec.

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If the location does not meet the low permeability soil requirement, a composite liner system must be constructed at a minimum consisting of a geomembrane liner over a 60 cm (2 ft) layer of compacted clay or admixture liner with a hydraulic conductivity of no more than 1×10^{-7} cm/sec. A landfill located in a geologic area with bedrock at or near the surface and serving as a direct source for a public community water system must have a double composite liner system. The primary and secondary geomembrane liners in the double composite liner system must be above a clay or admixture liner. A leak detection/secondary collection system must be located between the primary composite liner and the secondary composite liner. Groundwater monitoring and financial assurance are required.

Location requirements include protecting environmentally sensitive areas like flood fringe areas; wetland buffer areas; lands dedicated to agriculture or in farmland preservation programs; watershed areas for high-quality streams; lands near any lake, pond, river, or stream; and the designated pinelands protection area. Landfills must be designed to protect areas above cavernous limestone, dolomite, or marble or over subsurface mining activities; within 4.83 km (3 miles) from nearest runway; encroaching upon objects included in the Register of Historic Places; within buffer zone area of specimen trees as determined by the Division of Parks and Forestry, and with slopes exceeding 15%.

Each operator should receive initial training within 6 months of beginning work and annual training. The training program is described in detail in the regulations and should be directed by a person thoroughly familiar with the facility technology and permit conditions.

Final cover for the Class III sanitary landfill must consist of 60 cm (2 ft) of natural material with a permeability less than or equal to the bottom liner system or natural subsoils present, or 1×10^{-5} cm/sec, whichever is less. The cover depth must be at least 18 inches and overlain by at least 15.3 cm (6 in) of soil as a layer to minimize erosion. If a synthetic membrane is used in the bottom liner system, then the final cover must also include a synthetic membrane. Upon approval from the New Jersey Department of Environmental Protection (NJ DEP), an alternative cover scheme may be used. Financial assurance is required.[41]

At Class B recycling facilities (may be C&D debris), a 7.6 m (25 ft) buffer zone is required around the facility property. The recycling facility is also required to provide (to the NJ DEP) end market information for types and volumes of material recycled.[42]

NEW MEXICO

The New Mexico Environment Department defines *construction and demolition debris*. C&D debris includes *land clearing debris*; *clean fill* is composed of material from C&D activities. A liner system and groundwater monitoring

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are not required if a landfill receives less than 22.7 metric tons (25 tons) per day. If the landfill receives more than that, it is classified as a municipal landfill and is regulated as such. A certified operator must be present during operations, but a spotter is not required. C&D landfills are prohibited in certain areas as specified in 20:9.1:303 of the New Mexico Administrative code and include location restrictions in natural, potable, historical, and archaeologically significant areas. Final cover must consist of a minimum of 60 cm (2 ft) of compacted soil, including 6 inches of topsoil. Financial assurance is required.[43]

NEW YORK

New York defines *construction and demolition waste, landclearing debris*, and *inert waste*. Long Island is located in a sensitive groundwater recharge zone, and therefore, landfills on Long Island are regulated somewhat differently than the rest of the state. Minimum requirements for C&D debris disposal facilities located outside Long Island are described here. A single composite liner with a leachate collection system is required. The composite liner must be a geomembrane with a minimum thickness of 1.5 mm (60 mil) that directly overlays an 45 cm (18 inch) soil layer (the top 15 cm [6 inch] having a maximum permeability of 1×10^{-7} cm/s). Groundwater monitoring is required. Location restrictions include prohibition from unstable areas, unmonitorable or unremediable areas, floodplains, primary water supplies, mines or caves, and bedrock with rapid or unpredictable groundwater flow. Minimum distances are required from airports. Operator training and waste spotters are required for all landfill facilities. The final cover must be composed of a gas-venting layer, a barrier layer or geomembrane, a barrier protection layer, and a topsoil layer. Financial assurance is required. C&D debris processing facilities have operator training, waste spotter requirements, and waste reuse and storage requirements.[44]

NORTH CAROLINA

North Carolina is currently developing new C&D debris rules. North Carolina does not currently require a liner system. The new rules will assess the attenuation properties of the underlying soils and evaluate the suitability of the soils for attenuation purposes. Although groundwater monitoring is not specified in the C&D landfill regulations, requirements are located in the solid waste rules. The Department of Environment and Natural Resources (DENR) may require groundwater monitoring depending on factors including the design of the facility, the type of waste a facility will handle, the geology of the area, and the proximity and usage of groundwater that may be affected by the facility. The DENR currently uses the regulatory monitoring requirements as a template for structuring the groundwater monitoring requirements for C&D landfills. Landfills are restricted from floodplains; areas where the facility may negatively impact the habitat of endangered or threatened species; sites

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where archaeological or historical sites are at risk; locations that may impact a state park or recreation or scenic area; or land included in a state preserve. Operator training is not required. Although spotters are not required, a waste screening system must be in place to notify DENR within 24 hours if a nonauthorized waste is brought to the facility for disposal. Final cover must stabilize the site with native grasses within 6 months of final disposal. The proposed rules require financial assistance at closure.[45]

NORTH DAKOTA

North Dakota regulates *inert waste* landfills, which include wastes generated from C&D activities. *Inert waste* is broadly defined to include C&D debris, although C&D debris is not formally defined by the regulations. As natural clay-rich soils are readily available in most parts of the state, no formal liner system for inert waste landfills is required, although compacted clay may be necessary if the native soil is not adequate. Inert waste landfills are typically limited to those locations with clay-rich soils. Landfills are prohibited from areas that may be negatively impacted by the facility or affect human health or environmental resources, and from other locations that are unsuitable due to topography, geology, hydrology, or soils. Groundwater monitoring is not required. Operator training is voluntary, and guidelines for those programs are available from the North Dakota Department of Health (DOH). Spotters are not required. Final cover must be at least 60 cm (2 ft) thick with the lower portion consisting of 30.5 cm (12 in) of compacted clay. If compacted clay is not used, then the final cover must be at least 1.22 m (4 ft) thick and consist of clay-rich soil. Financial assurance is not required.[46]

OHIO

Ohio defines *construction and demolition* and *clean hard fill*. Although the following wastes do not fall under the definition for C&D debris, incidental packaging, tree limbs and trunks greater than 10.2 cm (4 in) in diameter, and NESHAP asbestos with a facility air permit can be accepted at a C&D debris landfill. If in situ soils meet the minimum thickness requirement of 1.53 m (5 ft) with permeability 1×10^{-5} cm/sec or have a maximum permeability equal to 60 cm (2 ft) of soil with permeability of 1×10^{-6} cm/sec, then no liner is required. Otherwise, a natural liner must be constructed of recompacted soil at least 61 cm (24 in) thick with a maximum permeability of 1×10^{-6} cm/sec. Groundwater monitoring is not required unless minimum distances from aquifer system, public water supply well, wellhead protection area, source water protection areas, and developed springs to the waste boundary at a facility are not met. At that point, monitoring is required to determine if the groundwater quality has changed.

Landfills are prohibited from placement above a sole source aquifer or in a floodplain. Operator training is not required. Although a spotter is not required, a daily log of material brought into the landfill must be maintained,

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and each load must be taken to an unloading zone for screening prior to delivery to the work face. Final cover must include 46 cm (18 in) of a barrier layer, 15 cm (6 in) of fertile soil, dense vegetation, and a slope between 3 and 25%. If the site is to be developed into a parking lot or other purpose, other final cover requirements may apply. Financial assurance consists of $13,000 per acre and $2175 per monitoring well if present.[47]

OKLAHOMA

Oklahoma recently adopted the following definition for construction/demolition waste:

> (A) asbestos-free waste from construction and/or demolition projects that may include such materials as metal, concrete, brick, asphalt, glass, roofing materials, limited amounts of packing materials, sheetrock, or lumber;
> (B) wood waste that may include such materials as yard waste, lumber, wood chips, wood shavings, sawdust, plywood, tree limbs, or tree stumps;
> (C) yard waste that may include such materials as grass clippings, tree limbs, tree stumps, shrubbery, flowers, or other vegetative matter resulting from land clearing or landscaping operations; or
> (D) residential lead-based paint waste.[53]

A liner is required for C&D debris landfills. The liner may be a reconstructed clay liner with a minimum thickness of 91 cm (3 ft) and a hydraulic conductivity no greater than 1×10^{-5} cm/sec, or the liner may consist of in situ soils being a minimum of 1.5 m (5 ft) thick with a hydrulic conductivity no greater than 1×10^{-5} cm/sec. Groundwater monitoring is required. Location restrictions set limitations according to proximity to floodplains, airports, wetlands, endangered species, scenic rivers, recreation areas, terrace deposits, surface public water supplies, and public water supply wells. The Department of Environmental Quality (DEQ) must be notified the next day if any wastes are rejected as prohibited waste at C&D landfills or processing facilities. This requirement inherently requires spotting of the waste at any C&D facility. Final cover is a minimum 91 cm (3 ft) thick soil layer with a maximum top slope of 25:1 and a maximum side slope of 4:1. Vegetation must be grown on top of the soil layer. Financial assurance is required.[48]

OREGON

Oregon defines *construction and demolition wast. Clean fill, industrial waste, inert waste*, and *domestic solid waste* explicitly exclude C&D waste from their definitions. Depending on the location and the type of waste accepted, a liner system may be required. For instance, a small C&D landfill in western

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Oregon, where the annual rainfall is high, is more likely to be required by the Oregon Department of Environmental Quality (DEQ) to install a liner system than an equivalently sized landfill in eastern Oregon, which is an extremely dry region. Groundwater monitoring is a conditional requirement. If the DEQ is not sure the groundwater will be safe from contamination, liner systems, leachate collection, and groundwater monitoring can be required. Operator training and spotters are not required, but facilities must screen the waste to comply with any permit prohibitions of certain wastes.

Nonmunicipal landfills are forbidden from locations that will cause harm to endangered or threatened species including plants, fish, and wildlife. Further limitations include floodplains and locations near sensitive hydrogeological environments. Final cover must include at least 91 cm (3 ft) of compacted soil graded to a minimum 2% and maximum 30% slope unless the department authorizes an alternative final cover design. Nonmunicipal land disposal sites must maintain financial assurance for the costs of closure, post-closure, and any required corrective action. C&D waste sites may be exempted from these costs if the site can be demonstrated to pose no threat to groundwater or public health and not require any operation or maintenance to control discharges into the environment.[49]

PENNSYLVANIA

Pennsylvania defines *construction and demolition waste* and *construction waste*. A liner system is required for C&D debris landfills. Each liner system must be composed of a subbase, a leachate detection zone, a liner, and a protective cover, which consists of another leachate detection zone, that are approved under the minimum liner design standards. The subbase should be a solid or other earthen material 6 inches thick with permeability no greater than 1×10^{-5} cm/sec. The leachate detection zone is placed on top of the subbase to collect and transmit any leachate entering the zone to a leachate treatment system. This zone should be at least 30.5 cm (12 in) thick and create a flow zone between the subbase and liner with permeability greater than 1×10^{-2} cm/sec.

Several options for the liner layer are allowed. The liner may consist of a continuous layer of remolded clay, geosynthetic material, or sodium bentonite placed on the leachate detection zone and be no more permeable than 1×10^{-7} cm/sec. The thickness of the layer is determined by the type of material; 60 cm (2 ft) for the clay liner, 0.76 mm (30 mil) for the geosynthetic liner, and 1 ft for the sodium bentonite liner. If the liner is a composite liner, then the upper geosynthetic component should meet the requirements independently of the natural component and vice versa. The final layer of the liner system, the protective cover and leachate collection zone, must be composed of at least 46 cm (18 in) of clean, earth material with a permeability of at least 1×10^{-2} cm/sec, allowing for the free flow of leachate. Groundwater monitoring is required. Spotters are required to monitor waste

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brought to the facility, and a person trained in the weighing of waste must be present.

Facilities are prohibited from floodplains, wetlands, coal-existing areas unless operator owns mineral rights, valley, ravine, head of hollow, limestone, or carbonate formation. Facilities must adhere to minimum distance requirements from occupied dwellings, perennial streams, water sources, schools, and playgrounds, and waste must be 30.5 m (100 ft) from the property line. Facilities are prohibited from being an obstruction to air navigation.

Final cover includes a cap, a drainage layer, and compacted soil. The permeability should be less than or equal to the permeability of the primary liner or no greater than 1×10^{-7} cm/sec, whichever is less. The compacted soil layer should be at least 60 cm (2 ft) thick and placed on top of the drainage layer.

Financial assurance is required. The facility application should contain a plan for the salvaging and recycling waste materials for which recycling is cost effective. The plan should include proposed salvage areas, methods for salvaging, and anticipated markets for salvaged materials. The salvaging and recycling of materials may not be conducted unless the operator oversees salvaging and recycling operations to prevent interference with disposal operations and to ensure that all operations are conducted in a manner that prevents a health hazard or nuisance. In addition to these restrictions, all salvaged material should be moved promptly from the unloading area and either stored in an approved area or immediately transported off site.[50]

RHODE ISLAND

Rhode Island no longer has operating C&D landfills. By the end of 2000, only three operating landfills were in the state.[52] Although some C&D debris is disposed within the MSW landfills, most C&D debris is sent to processing facilities. These facilities are regulated under Rhode Island Code. The requirements for processing facilities are defined within state solid waste regulations and are similar to landfill requirements (e.g., monitoring requirements, location requirements, and operator requirements).

The Rhode Island Department of Environmental Management (DEM), depending on certain site characteristics, may require groundwater monitoring. Groundwater monitoring requirements depend upon the size, type, location, and length of storage of on-site waste stockpiles, as well as the proximity to public or private drinking wells, surface water, and wetlands.

Operator training is not required. Although spotters are not required, the facility must have an operating plan that includes methods for screening, handling, and removing of unauthorized waste. A buffer zone between the waste and the property line should be established to minimize dust, odor, and litter problems. Other location restrictions apply to waste being used as alternative daily cover or reused. Waste screenings from processed waste may not be used within certain proximity to surface water or wetlands or within

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public drinking water supply, and a plan is required for monitoring maximum contaminant limits. Wood chips from land clearing debris may be used for landscaping mulch, soil amendment, sewer sludge amendment for composting, and erosion control material. Wood chips that contain segregated building or demolition wastes may only be used as fuel or erosion control projects at landfills upon DEM approval. Processing facilities are required to have financial assurance.[51]

SOUTH CAROLINA

South Carolina expects to revise its C&D rules within two years. No liner is currently required, but a landfill must have a minimum 60 cm (2 ft) soil barrier above the seasonal high groundwater level (i.e., the base of the landfill must be at least 60 cm (2 ft) above the seasonal high water table). Groundwater monitoring is not required. No certification for operators is necessary, although spotters must be present for waste screening purposes. Facilities may not be located in areas that would restrict the flow in a 100-year floodplain and in wetlands. Waste must not be disposed within 30.5 m (100 ft) of the property line. Minimum distances are required from schools, hospitals, publicly owned parks, drinking water wells, and utility equipment such as water, sewer, and power lines. The final cover must be composed of 60 cm (2 ft) of earth, have a 1 to 4% surface slope, and be graded to promote drainage. The side slopes of the cover should be no greater than 3:1. Financial assurance is required.[55]

SOUTH DAKOTA

State defines *construction and demolition waste*. No liner or groundwater monitoring is required. Operator certification is not required. Operators are required to maintain access control at disposal sites and conduct weekly site inspections. C&D debris disposal facilities may dispose of authorized waste (no asbestos or asphalt) in gravel pits or quarries. Location is restricted and should minimize significant adverse impacts to the public, surface water, ground water, wildlife, recreation, or aesthetic value of an area. Facilities are prohibited from a 100-year floodplain, unstable areas, or wetlands. The facility may maintain a buffer between itself and occupied dwelling, school, hospital, interstate or highway right-of-way, public park or recreation area, streams, creeks, lakes, reservoirs, or other bodies of water classified for fish life propagation. Final cover requires 60 cm (2 ft) of soil, an incorporation of contours into contours of surrounding area, and vegetation in accordance with Natural Resources Conservation Service (NRCS) recommendations.[56]

TENNESSEE

Tennessee defines *construction and demolition debris*, which is typically disposed in a class IV landfill. A liner system is not required, but a minimum 1.5 m (5 ft) layer of geologic buffer between the base of the fill and the

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seasonal high water table of the aquifer directly under the waste must have saturated hydraulic conductivity of no more than 1.0×10^{-5} cm/sec. Location restrictions include minimum distances from streams and other water bodies. Groundwater monitoring is not required, although the Tennessee Department of Environment and Conservation (DEC) may require monitoring depending on the location of the facility. Operator training and spotters are not required, but permits generally require a storage container at the unloading area for removal and storage of any unauthorized waste. Final cover includes at least 76.2 cm (30 in) of compacted soil. The bottom 46 cm (18 in) must consist of a low-permeability layer covered by a 30.5 cm (12 in) vegetative layer. Financial assurance includes the cost of operating the facility for a 30-day period plus the estimated closure and postclosure care costs included in the approved care plan for two years after facility closure.

Recycling facilities must apply for a solid waste-processing permit. Facilities are permitted by rule, which means that they must notify the department of compliance with general operating criteria. Processing facilities for C&D debris are increasing in popularity, with 8 to 10 facilities currently operating. However, landfills remain the most viable option, with 50 to 60 active class IV landfills in the state.[57]

TEXAS

Construction and demolition waste contains waste resulting from construction or demolition projects; includes all materials that are directly or indirectly the by-products of construction work or that result from demolition of buildings, and other structures, including, but not limited to, paper, cartons, gypsum board, wood, excelsior, rubber, and plastics. Texas sends nonhazardous solid waste to several types of MSW landfills. Type IV MSW landfills may be authorized for the disposal of brush, construction-demolition waste, and/or rubbish that are free of putrescible, household waste, and special wastes. A liner system is required for Type IV MSW landfills. The liner may be composed of (1) at least 1.22 m (4 ft) of in situ soil with permeability no greater than 1×10^{-7} cm/sec between the deposited waste and groundwater or (2) at least 91 cm (3 ft) of compacted clay between the deposited waste and groundwater. The compacted clay liner must have at least 30 cm (1 ft) of protective cover after quality control testing and thickness determinations are complete. Groundwater monitoring is required except at arid exempt facilities.

Current location restrictions limit facilities from locating within 274 m (300 yards) of a public road unless the Texas Commission on Environmental Quality approves the proposed location. A new permit or permit modifications require compliance with the minimum distance restrictions or prohibitions from airports, floodplains, wetlands, fault areas, seismic impact zones, and unstable areas. As of January 1, 2004, operator training is mandatory. Spotters are required to direct unloading of solid waste. Final cover consists

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of a layer to minimize infiltration and a layer to minimize erosion. The layer to minimize infiltration must be at least 46 cm (18 in) of clayey soil, classification SC or CL as defined in the "United Soils Classification System" developed by the U.S. Army Corps of Engineers, compacted in layers of no more than six inches to minimize the potential for water infiltration. A CH soil may be used; however, this soil may experience excessive cracking and must be covered by a minimum of 12 inches of topsoil to retain moisture. Other types of soil may be used with prior written approval. The layer to minimize erosion must be a minimum of 15 cm (6 in) of suitable topsoil capable of sustaining native plant growth and must be seeded or sodded immediately following the application of the final cover. Financial assurance is required.[58]

UTAH

Utah has no liner or groundwater monitoring requirements. However, if a C&D landfill accepts CESQG waste, groundwater monitoring is required and all location standards in the regulations must be met. If no CESQG waste is accepted, the location of the facility need only meet floodplain and wetland requirements and be at least 1.5 m (5 ft) above the groundwater table. With different requirements based upon the type of waste accepted, each landfill must ensure that the waste received is acceptable for disposal at that facility. Although not specifically required, a spotter completes this task. Final cover at a facility should have a minimum of 60 cm (2 ft) of soil contoured to allow runoff and seeded to prevent erosion. Financial assurance is required for closure and postclosure.[61]

VERMONT

C&D debris disposal falls under discrete waste disposal in Vermont. Under this classification, Vermont requires a double liner system composed of natural and synthetic material. However, the Vermont Agency of Natural Resources has the authority to waive liner requirements if a facility can demonstrate through a detailed site-specific hydrogeologic study and contaminant transport modeling that the waste components received on-site do not generate leachate that may cause harm to public health or the environment or create nuisance conditions. Groundwater monitoring is required. Facilities must detect any discharge of contaminants to surface water or air.

C&D landfills are prohibited from the Green Mountain National Forest, Class I and Class II groundwater area, Class I and II wetlands and buffer zones, Class III wetlands unless waved, national wildlife refuge, wildlife management area, threatened or endangered species habitat area, watershed for Class A waters, floodway, or 100-year floodplain, or near outstanding natural resource waters. Facilities should be located to not unduly harm the public health and to have the least possible reasonable impact on the environment if an emission or discharge occurs. Operators need to be experienced and knowledgeable, but no specific training is required. Requirements for final

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cover vary depending on whether a facility has a liner. One C&D debris landfill in Vermont is constructed without a liner; as a minimum, its final cover is composed of at least 60 cm (2 ft) of earthen material with a permeability of less than 1×10^{-5} cm/sec or the facility base soils (whichever is less permeable), and at least 15 cm (6 in) of earthen material to sustain native vegetation. Financial assurance is required. Recycling is required and must include metal, cardboard, and other materials specific to the facility.[62]

VIRGINIA

Virginia defines *construction waste, demolition waste, debris waste, inert waste*, and *rubbish*. The type of landfill that accepts C&D debris is defined as a *Construction/Demolition/Debris landfill (CDD landfill)*. A CDD landfill accepts construction waste, demolition waste, debris waste, or combinations of the solid wastes just listed.

Either a compacted clay liner or a geomembrane liner must underlie the CDD landfill. The compacted clay liner must be at least 30.5 cm (12 in) in thickness, and must have a hydraulic conductivity less than or equal to 1×10^{-7} cm/sec. The geomembrane liner must be at at least 0.76 mm (30 mil) thick (1.5 mm (60 mil) if HDPE). In either case, a minimum slope of 2% must be maintained for leachate drainage, and the liner must be covered with a minimum 30.5 cm (12 in) thick drainage layer having a permeability not less than 1×10^{-3} cm/sec, and minimum 15.3 cm (6 in) thick protective layer.

Groundwater monitoring is required. The groundwater monitoring system must have at least one upgradient well, and three down-gradient wells. However, a double liner system can be used in lieu of groundwater monitoring. In this case, the lower, or secondary liner, must meet the same requirements as the primary liner. The double liner must include a 30.5 cm (12 in) thick drainage layer between the primary and secondary liner to serve as a "witness zone." The witness zone drainage layer must have a permeability not exceeding 1×10^{-3} cm/sec. While a double liner system can be used, it should be noted that no CDD landfill has been built with that design.

Operator training, which includes the implementation of an unauthorized waste control program, is required. Location restrictions for CDD landfills include prohibitions from areas susceptible to flooding, geologically unstable areas, and minimum distance requirements from any residence, school, hospital, groundwater source of drinking water, and wetlands.

Final cover must consist of an 45.7 cm (18 in) thick layer of earthen material with hydraulic conductivity less than or equal to the hydraulic conductivity of any bottom liner system, or natural subsoils present, but in no case no greater than 1×10^{-5} cm/sec to minimize infiltration. A minimum 5.3 cm (6 in) thick layer of earthen material capable of sustaining native plant growth is required on top to minimize erosion. Financial assurance is required.[63]

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WASHINGTON

The regulations define *demolition waste* and *inert waste*. C&D debris is typically disposed in a limited purpose landfill, which, unless exempt, requires a composite liner system. A 3 m (10 ft) barrier must exist between the lowest component of the liner and the highest seasonal level of groundwater. The lower component of the liner should consist of a minimum 60 cm (2 ft) layer of compacted soil with hydraulic conductivity of no more than 1×10^{-7} cm/sec. The upper component must be a geomembrane made of HDPE with minimum of thickness of 1.5 mm (60 mil). The facility must have a leachate collection and monitoring system capable of maintaining less than a 1 ft head of leachate over the liner system. A limited purpose landfill may be designed and constructed without a liner system if it can be demonstrated that (1) contaminant levels in waste and leachate are unlikely to adversely impact the environment, (2) in situ soils provide a sufficient barrier or are capable of reducing the concentration of contaminants sufficiently to meet performance standards, and (3) explosive gases are not generated in concentrations above state limits by the facility.

Groundwater monitoring is required. Operator training is required and includes identification of unauthorized waste. Spotters must ensure that no liquids or liquid waste are disposed at the facility and must follow an established random inspection program. The facilities may not be located on Holocene fault. The facility must adhere to minimum distance requirements from structures and natural areas including water supplies; channel migration zones such as streams, lakes, ponds, rivers, or saltwater bodies; wetlands or public lands; and airports.

Final cover should consist of a geomembrane overlain by an anti-erosion layer. The geomembrane should be at least 0.76 mm (30 mil) thick. The anti-erosion layer should be earthen material at least 60 cm (2 ft) thick with the upper 30 cm (12 inches) capable of sustaining native plant growth. Financial assurance is required. Recycling facilities may accept source-separated C&D debris. Other recycling restrictions are specified within the permits.[64]

WEST VIRGINIA

West Virginia defines *construction and demolition debris*. No liner, groundwater monitoring, operator training, waste spotters, or financial assurance at C&D landfills is required; however, facilities are prohibited from locating in areas where the facility could adversely impact the environment. A facility is limited to 0.81 ha (2 acres) and may only be as high as an existing, adjacent contour. Facilities are restricted from locating near wetlands, areas harboring endangered or threatened species, areas where facility may significantly affect surface or groundwater, floodplains, highways, public parks, dwellings, airports, fault areas, mines, and other unstable areas. Final cover

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should include 61 cm (24 in) of clean earthen material over the fill area capable of sustaining plant growth.[66]

WISCONSIN

Wisconsin defines *construction* and *demolition debris*. Wisconsin places C&D landfills into two categories: small-sized C&D landfills and intermediate-sized C&D landfills. The minimum requirements, which apply to the small-sized C&D landfills, are discussed unless otherwise noted. A clay liner at least 91 cm (3 ft) thick is required with a hydraulic conductivity of 1×10^{-7} cm/sec or less when compacted. A 3 m (10 ft) barrier should exist between the seasonal high groundwater table and/or bedrock and the bottom of the liner. Groundwater monitoring and operator training are required. A waste-screening plan must be in place and for intermediate-sized landfills must include training personnel in the identification of unauthorized wastes. Minimum distance requirements must be maintained from any public or private water supply well; any navigable lake, pond or flowage; any highway, interstate, or public park unless the landfill is screened; and any navigable river or stream. A landfill is not permitted in a floodplain. Final cover should include 60 cm (2 ft) of compacted earth with an adequate slope for water runoff covered by 15 cm (6 in) of topsoil. Financial assurance is required.[67]

WYOMING

Wyoming defines *construction/demolition waste*. A liner system and groundwater monitoring are generally not required; however, groundwater monitoring may be required on a case-by-case basis depending on site characteristics. Operator training is required, although a spotter for identifying unauthorized waste is not.

Location restrictions include minimum distance requirements for facilities greater than 0.41 ha (1 acre) in size, including distances of 1 mile from a public school, occupied dwelling house, and boundaries of an incorporated city or town, and 0.8 km (0.5 mile) from the centerline of the right-of-way of a state or federal highway (unless screened) and from water wells. Minimum distance are required for any size facility from an occupied dwelling house, school, hospital, interstate, primary highway, public park, or recreation area unless screened; water source; buildings unless protected from methane gas accumulation; perennial river or stream unless the facility will not affect it; and perennial lake or pond unless the facility will not affect it. Facilities are prohibited within a 100-year floodplain, wetlands, areas where facility may diminish the scenic, recreational, and fish and wildlife values for any section of river designated for protection, areas where a threat may be posed to an irreplaceable historic or archeological site, critical habitats of endangered or threatened species or winter ranges for big game or breeding grounds for grouse, areas where facility may negatively affect surface water

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or groundwater quality, and areas determined to present a dust, odor, or public nuisance potential. Final cover consists of a compacted layer of soil 60 cm (2 ft) thick covered with at least 15 cm (6 in) of topsoil. Financial assurance is required for commercial or private landfill facilities but not municipal facilities.[68]

CONCLUSIONS

Issues involving C&D debris have recently become more of a concern than they traditionally were in the past. Since no federal definition or management requirement for C&D debris exists, this waste stream is handled individually by each state. The survey results presented here found that the definitions and regulations that states apply to C&D debris are not consistent. Almost half of the states have some sort of liner requirement for C&D landfills, indicating that these states do think C&D disposal could have an impact on the environment. However, the lack of consistent liner and groundwater requirements among states suggests that states may be unclear about the environmental risk of C&D debris disposal in landfills. Federal regulation or guidance could standardize the level of environmental protection for these landfills. As more information is learned on the fate of compounds found within C&D debris, the need for federal guidance on this waste stream may arise. At the least, a federal definition of C&D debris would be beneficial to facilitate research efforts and to address this issue in a more uniform manner.

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Downloaded By: [University of Illinois at Chicago] At: 13:40 16 October 2007

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Susan Lee

From: Heather Maidl [heather@akhomesale.com]
Sent: Thursday, December 11, 2014 10:54 AM
To: Susan Lee
Subject: Proposed CES Permit in Palmer

HANDOUT

To Whom It May Concern,

I am writing to strongly suggest the denial of the proposed permit by Central Environmental Services for an unlined dumpsite in the Kepler/Bradley Lakes Recreation area. There is too much risk not only for the recreational areas but also for the surrounding residential areas that have wells as their primary source of water. We need to make sure that we are doing what we can to keep the water supply in the area clean.

Sincerely,
Heather Maidl
907-433-9898

Susan Lee

From: Peter Schadee [pschadee@me.com]
Sent: Wednesday, December 10, 2014 5:34 PM
To: Susan Lee
Subject: Request to the Borough Assembly to deny dump permit for toxic waste

Hello Susan,

Please accept this as a request to the Borough Assembly to deny the dump permit for the monofill dump proposed by CMS.

This site is a terrible location for a monofil in the whole Matanuska-Susitna Valley because it sits on top of a massive aquifer that feeds our lakes and provides drinking water. People with wells that are connected to the aquifer will not have confidence in drinking the water that once had no threat of pollution. The Kepler/Bradley Lake Systems and and Matanuska Lake Recreation area will be under threat of irreversible contamination. Local residents and tourists alike enjoy fishing in the pristine unpolluted waters in the rivers and lakes in the close surrounding area. When the lakes are contaminated it could pollute the fragile eco system and kill fish, waterfowl, birds of prey and wild life that live around and in the lakes. We have nesting eagles and osprey hunting in this region.

Munter's hydrology report predicts potential for well contamination in a 1 mile down-gradient direction from the source. This report cannot be ignored and implies serious consequences for home owners, real estate prices and the health of the population.

Please make sure this message gets presented to the assembly, thank you.

Sincerely,

Peter & Evelyne Schadee
(907) 203 0005

HANDOUT

Susan Lee

From: Stephanie Nowers [sjnowers@mtaonline.net]
Sent: Thursday, December 11, 2014 9:19 AM
To: Susan Lee; Alex Strawn; Eileen Probasco
Subject: Request for Jim Munter to be present at Dec. 15 Planning Commission hearing

Hi Folks,

I'd like to request that the borough ask J.A. Munter to be present at the planning commission hearing this coming Monday, Dec. 15 for the discussion of the Conditional Use Permit request from Central Monofill Services for a dump site at Mile 38.3 of the Glenn Highway. Specifically so that there is a clear record on his reports and to be available to answer any questions that may come up related to his hydrology reports prepared for the Mat-Su Borough. The hydrology of the site is a key factor for the commission to consider in determining whether this site has the potential to harm public health, safety, and welfare. Having Mr. Munter available to answer questions is in the interest of having as accurate and complete a record as possible. Mr. Munter was able to present his latest findings at the last meeting, but two commissioners were absent from that meeting and were not able to ask questions of him.

- Stephanie

HANDOUT

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Susan Lee

From: eric b [klcm54a@gmail.com]
Sent: Wednesday, December 10, 2014 3:52 PM
To: Susan Lee
Subject: Fwd: Proposed Monofill in Palmer, AK

---------- Forwarded message ----------
From: eric b <klcm54a@gmail.com>
Date: Wed, Dec 10, 2014 at 3:41 PM
Subject: Fwd: Proposed Monofill in Palmer, AK
To: "slee@matsugov.us" <slee@matsugov.us>

HANDOUT

Hello,

Please include this email in public statements regarding the CMS permit request for a Monofill.

I live at 2650 S Skyranch Loop in Palmer. I am against granting any permit for the proposed CMS dump.

-The borough hydrological report was unfavorable. I have young children in my home and we do not have confidence in the science of the other three reports. Adverse environmental conditions of the area, a water table that is a moving target and past breeches of the aquifer are a few of the reasons I request the borough and DEC be very careful with the water that my family drinks (we have well water). We cannot be sure the quality of the water would not decrease and it certainly wont improve according to the scientists that conducted the borough's hydrological report, therefore, I ask for a conservative approach to granting a permit next to residential and recreation areas as stipulated in the Resource Conservation and Recovery Act.

-Beaufort Scale can be found at the attachment. Although the presentation is a cartoon depiction of the effects of wind, the scientific standards are known and widely accepted. Please ensure the planning commission and AK DEC both review this prior to making any decisions on dumping and allowable wind speeds. Also note that This cartoon and analysis indicate 20mph is a no-go and also that planners should locate and zone for this type of development to the NW side of the valley rather than the southern inhabited portion of the valley because of the Matanuska and Knik winds. Notice at 20 mph winds are much different than 10 mph. http://www.howtoons.com/?page_id=150

-Please review the wind research on the Matanuska Valley at this link:
http://www.nws.noaa.gov/oh/hdsc/Technical_papers/TP27.pdf

Beginning on page 17 in the scientific research of Robert Dale (The Climate of the Matanuska Valley), the Matanuska and Knik winds are discussed at length. One can note that the proposed site of the dump is almost dead center in the worst wind-driven area of the valley. The reader will also note that the winds are sometimes greater than 60 mph and, referring back to

the Beaufort Scale, the devastation is significant... no way a fence keeps blowing debris from our neighborhoods and recreation areas in these environmental conditions. Suggest the better place for this type of business is away from the watershed, neighborhoods and recreation area. We can be certain that dust, metals, acid gases and other volatile compounds would become airborne in the Matanuska and Knik winds of significance despite claims that a fence will prevent dust from escaping the land owner's turf.

-Please also consider the ambient air quality standards that we currently value and the potentiality for the air quality to be adversely impacted. Odor pollution is likely to occur in the dump and, yet another, reason to deny the permit in this fragile ecological zone. Although we cannot measure odor pollution until there are odors and the air quality decreases significantly, we can be sure the wet materials will decay. Again, a better location is the NW of the Valley where the winds are not as significant and the monofill can be isolated from residential and recreational areas.

-There is not enough evidence to prove the dump will not leach into the seasonally moving water table. My family and I depend on the water underlying the proposed dump and accepting any potential decrease in our water quality is unacceptable. There is enough scientific evidence to support denying the permit because of the risk of water contamination.

In summary, I oppose the dump because of the location in a watershed used in residential area; the proximity to our recreation areas; the hydrological survey indicates significant risk to the watershed; winds in the area make the location unsuitable and air quality effects that will, likely, occur.

<http://www.howtoons.com/?page_id=150>

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Respectfully,

Eric Bleakney
C: 907-707-5666
klcm54a@gmail.com

Susan Lee

From: Richard Harbuck [superglide@mtaonline.net]
Sent: Tuesday, December 09, 2014 4:16 PM
To: Susan Lee
Subject: additional info for Planning Commission part 1 of 2
Attachments: 1st_half_CMS_Case_Summary_4-24-13_lowerres.pdf

HANDOUT

Susan, I would like to submit for the record the following case summary in two parts from the Borough, it seems to contradict the testimony of some of the CMS employees and clearly shows household trash included in CMS's "product" illegally dumped at the proposed site. It also shows CMS's disregard for water bodies on site that they chose to fill with garbage.

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Matanuska-Susitna Borough

350 E. Dahlia Ave, Palmer, Alaska 99645

Code Compliance

Case Summary

G20130022

General Information:

Parcel #: 117N02E18C010

Owner: CENTRAL MONOFILL SRVCS INC
311 N SITKA ST
ANCHORAGE AK 99501-1841

Request Date: 4/24/2013 12:00:00AM
Start Date:
Expiration Date:
Closed Date:
Reporting By:

Site Address: 2480 S GLENN HWY

Linked Names:

Code Comp Officer	MARK WHISENHUNT
Applicant	CENTRAL MONOFILL SRVCS INC
Owner	CENTRAL MONOFILL SRVCS INC

Linked Parcels:

117N02E18C010
117N02E19B006

Notes and Responses:

Dumping material at poposed monofill site.
tt03995 - 4/25/2013 9:57:24 AM
tt03995 - 5/9/2013 9:23:34 AM

Forms Tab Information:

TRS: Tax ID: MSB Code: 17.60
Complaintant Name: Craig Stevens Complaintant Address:

Inspections Link:

Inspection ID: **20573**

Inspection Date: **4/26/2013** Status: **c**

Inspector: ***MARK WHISENHUNT*** Check Out:

Notes:

On 4-25-13 Our office began receiving complaints from Craig Stevens, Kelly Ballard, and Matt Chambers about the proposed Monofill site located on parcels 17N02E18C010 & 17N02E19B006. Planner Susan Lee also received a phone call from Central Monofill Services (CMS) representative, Shane Durand. Per Susan's memo, Shane informed her they have drill 3 of 7 monitor wells, brought wood to chip and mix with their daily cover material (shredded C&D material smaller than 2 inches in size). Also per the memo, Shane noted they have not brought on any "fill" material yet.
4-26-13 @ approximately 1428 hours, I arrived at the proposed monofill site. I observed a large amount of tires for industrial equipment. They were stacked 3 to 4 high in a line. There appeared to me close to 100 tire. Near the wall of tire a bulldozer was being operated due to the terrain and tires I could not see what it was doing. I also observed other equipment and a commercial CEI semi-truck vehicle with hauling trailer/container attached. There was a second trailer/container adjacent to the semi & trailer. There was also what appeared to be a fuel storage tank and two commercial vehicles. CCO Mark Whisenhunt
mw03583 - 5/8/2013 12:39:30 PM

Inspection ID: **20574**

Inspection Date: **4/29/2013** Status: **c**

Inspector: ***MARK WHISENHUNT*** Check Out:

Contact Date: 04/29/2013

Notes:

4-29-13 Richard Harbuck contacted our office in reference to trash being blown around his neighborhood from the trash material CMS brought to the proposed monofill site . He informed me that the he has photos of CMS employees burying the material, and that a lot of trash and Styrofoam was blown from the property during a small wind event.

At approximately 1145 hours, I called private property owner Bernard "Ben" Vanderweele. There was not answer so I left a message asking to be contacted back. I also asked for permission to access his property to investigate the un-permitted work done by CMS.

At approximately 1230 hours, I called CMS point of contact Shane Durand @ 350-6062. There was no answer so I left a message asking to be contacted back in reference to the work being done without a permit. At approximately 1300 hours, I found a voicemail from Mr. Durand noting he was traveling back from Florida and that he was boarding a plane momentarily. I tried Mr. Durand's number again and it went straight to voicemail.

At approximately 1345 hours, I drove past the gate and saw that it was closed. I then arrived at 3251 S. Colleen Street, the Hall residence. I was not able to contact anyone at the residence so I left me card at the front door. I then proceeded to 2301 S. Colleen Street the Davis residence. I made contact with Donna and Joshua Davis. I asked if they had been affected by the activities at the proposed monofill site. They noted the large amount of trash blowing around and well as the noise and vibration from the equipment. Donna expressed concerns about the monofill activity and how they did not received any public notice for the activity.

I explained that we were in receipt of an application and that the public notice mailing would be going out soon. I also noted that CMS was not permitted to bring the junk and trash items onto the property and that I would be taken further actions to have CMS abate the violation. Josh then walked me to the end of their property that abuts the proposed monofill site. I took photos of the site from the private property. I observed a bull dozer working. I also observed about appeared to be a gray processed material but I could not make out what it was made of. Josh noted that the gray material is what contained a large amount of Styrofoam and trash, which is where the trash blown about came from. I also observed the wall of tires previously mentioned and a large pile of scrap wood next to a barrel-chipper. There was also a large pile of wood chips too. From Colleen Street, I observed what appeared to be a large amount of litter throughout the utility easement. This utility easement leads to the area of concerns.

At approximately 1435 hours, I arrived at the proposed monofill site. The from gate was still closed so I did not proceed onto the property.

Upon return to the office I found a voicemail from complainant Sarah Hall in reference to the proposed monofill site. She noted that she and her husband were filing a complaint. I then found a complaint for from Adam Hall in reference to the unpermitted work being done at the permit monofill site. Planner Susan Lee received a complaint from Mr. Harbuck as well.

At approximately 1505 hours, I made contact with Stuart Jacques, CMS/CEI President/Director via phone. Stuart noted that they have hauled some "daily cover" (AKA screened fines and/or topper) material. I noted that we were receiving complaints of trash blowing from the property and he stated that he was aware some stuff had blown from the property but noted most of it was not, and was there previously. Stuart stated that he was sending a crew out to clean up the trash on 4-30-13. I mentioned my site visit, and that it appeared the screened fines were being buried. Stuart was adamant that they were not burying the material but that they were mixing. I noted that all activities related to the proposed monofill must stop. Stuart seem argumentative, saying they could store the tire on site and process the wood. Noting the wood would be used for multiple things including bio-fuel, and the tires will be used for the retaining walls. I informed Stuart that our office would be issuing an enforcement order addressing our concerns and the violations on site.

4-30-13 Investigation revealed CMS does not have a Matanuska-Susitna Borough Business License. I also talked with Adam Hall via phone. I informed him of my actions to date and that the investigation is continuing. I also noted that it was our intension to issue an Enforcement Order to stop the violation's of MSB Code. Adam expressed additional concerns about work done to the dam between the Westside dredge lake and the center lake. He stated that portions of the dam was removed and large armor rock was put in, allowing water to flow through the armor rock. I gave him contact information for SOA Dam Safety employee Charlie Cobb.

I then contacted Charlie Cobb (748-2942). Charlie noted that he and the CMS came to an agreement to deregulate the dam. Charlie issue a "certificate of approval" for CMS to place the armor rock, and let the waters pass through. I expressed concerns for possible negative affect to canoe lake

and asked if they were monitoring the lake. Charlie noted they were not required by law to do so. I then relayed my conversation to Mr. Hall.

5-1-13 I called Nathaniel Emery of ADEC (269-7590). I left a message asking to be contacted back in reference to CMS. I noted that we were issuing an Enforcement Order (EO) to stop work on site and abate the violations.

5-1-13 @ approximately 1425 hours, I made contact with Shane Durand (Authorized agent on CUP application/Secretary, Treasurer) of CMS. I informed him of the complaints and asked about activities on site. He noted that monitor wells were put in about 10 days earlier. He also stated that there was a verbal altercation between some neighbors and some of his employees about access. Shane stated that he was told it was a heated altercation.

Shane went on to say that the wood processing did need a permit and that the tires were not waste because they were be used as retaining walls, being sold, and would block the trails. Shane said if they used the tires as barriers at the utility easement that they would sold the litter problem, because the tires would catch and stop the flying debris.

I asked Shane what materials the daily cover contained. He confirmed that it had small plastics such as vapor-barrier items. He also noted that it is called "screened fines" because it consists of items less than two inches in size, and that the fill material for the site will be greater than 2 inches in size. Shane said uses for the screened fines are a daily cover, site reclamation cover, mixing into road bed material. He noted that the screened fines were to be mixed with earth material and tested for compact-ability.

Shane has concerns for taking steel to the site that will be used to built their shop. I noted that as long as it was not scrap material, it would be no different than staging a site. To build.

Shane also noted that the wood/wood chips will be used for compost, and to heat the shop. He said he called and got a verbal "ok" from either Pamela Ness or Susan Lee (Pam Noted she didn't speak with him about it. Susan and Alex stated the informed him not to bring the wood out for processing without getting the CUP first).

I informed Shane that we had issued an EO and that I would like to meet with him to discuss it. I noted the requirements. We agreed to meet at CEI on 5-2-13 @ 1300 hours. MWhisenhunt
mw03583 - 5/9/2013 11:11:06 AM

Inspection ID: **20575**
Inspection Date: **5/2/2013** Status: **c**
Inspector: ***MARK WHISENHUNT*** Check Out:
Contact Date: **05/02/2013**
Notes:

5-2-13 I found a voicemail from 5-1-13 by Stephanie Nowers in reference to her concerns of "dumped material trash tires etc.. at the "Gravel pit". I called back and left a message asking to be contacted.

5-2-13 at approximately 1014 hours, I called Shane @ 350-6062. There was no answer so I left a message noting I would be conducting a site visit prior to our meeting. I later found a message from Shane noting the site visit would not be a problem and that the gate was open.

At approximately 1048 hours, I arrived at the Hall residence. I was not able to make contact with anyone, so I left a thumb drive for them to load their photos onto.

I then stopped on Colleen Street and the utility easement. I observed what appeared to me a large pile of full trash bags. At approximately 1055 hours, at arrived at the proposed monofill site. I observed the large about of wood and tires mentioned previously.

I proceeded to the area of the screened fines located at the southern portion of the proposed monofill site. There were a tracks on what appeared to be a constructed road thru the site. This constructed road was littered with debris such as Styrofoam, carpet, and various types of plastics. I proceeded to the utility easement area and found a large pile of trash bags, some white some black. The white ones appeared to be filled with trash and leaf debris. I did not go into the wooded area to check to see if the private property was cleaned but, the immediate area was clean.

I then proceeded back to the dump site area. Upon looking closer at the material I notice house-hold garbage items riddled throughout the screened fines material. I took photos of a few of the house-hold garbage items such as: nestle chocolate chip bag, conditioner bottle, 5 hour energy drink bottler, Q-doba restaurant bag, animal crackers box and more.

The screened fines were pushed into an adjacent water body. I not sure if this is a temporary (run-off) water body or otherwise. When I stepped near the edge of the trash and water, the trash under my feet began to sink, so I immediately stepped back away from the edge area. I was able to observe the screened fines under the surface of the water.

There was a clearly defined layer of screened fines material and then a clearly defined layer of earth material over the screened fines. There were smoothed areas on the earth material that made it appear to be "back-bladed". This is a process setting the bucket or blade of heavy equipment down and pulling it backwards to smooth and compact an area. This leads me to believe the screen fines are being buried.

The west/southwest shore of the water body was covered in trash and litter. It appeared to be Styrofoam and other litter from the screened fines material. I also observed a male and female mallard ducks. They were in shrubs of the western shoreline until I approached the eastern (screened fines side) of the water body. They flew over to the wood pile and then flew in the area of the dredge ponds.

I then observed large water pump on the north side of the tires. It was not currently running but it still had its suction hose in the water body with the screen fines. Its output hose lead to an area just south of the most western dredge pond. The area at the end of the output hose was drying up but it appeared to have been draining into the western dredge pond.

At approximately 1315 hours, I made contact with Shane Durand in person. I served EO2013-002, and explained the requires of the EO and his right to appeal within 21 calendar days. Shane noted he didn't have a problem with complying, but was concerned with the having to remove all of the screen fines from the property be cause is was covered with gravel.

I asked Shane why the decided to bring material to the site prior to obtaining the permit. He stated that he just got back from training and he found that the screened fines can be used for mixing into road beds and used as cover for reclamation of land. His said his intent was to mix the material with gravel at different ratios and have them tested for compact-ability and leaching properties. He planned to take the test data to the public hearing. Shane also noted that they didn't have the room in anchorage and that the proposed monofill site seemed the logical choice. Shane also mentioned that to mix the material the layer two feet of screened fines, then cover it with two feet of gravel. Finally they use the multi (or single) shank ripper on the back of the bulldozer to mix. Shane did not know how many tons or cubic yards of screened fines were taken to the proposed monofill site.

Shane also confirm they were pumping the previously mention water body in the dredge pond. While speaking of the dredge ponds he mentions some people were confused about their proposed operation, because they think CMS will dump haz-mat into the dredge ponds. He continued talking about the pond and they were sure what to do with them yet. He later noted that if there was any type of pollution, it would be a big issued because there was a large of amount of water flow sub-surface. He then said "I hate to say this but, the solution to pollution is dilution."

I asked Shane if CMS was the same company as CEI. He said no that they are two stand alone

companies, but were under the same ownership. I then let him know that CMS did not have a MSB Business license. He had the MSB business license application complete prior to me leaving his office. CCO Mark Whisenhunt
5-3-13 I found a voicemail from Ben Vanderweele. He gave me permission to access his properties to investigate the case. I also received a call from Mr. Harbuck. He noted he was concerned with CMS pumping water in the water table.
5-6-13 I made contact with ADEC employee Nate Emery. I educated him on the enforcement order. He noted that they were not issuing the permit until the CUP process was complete.

@ approximately 1217 Brent Andrews of SOA Div. of Water contacted me via phone. He asked if I could issue an order to stop CMS from pumping the trash water in to the dredge pond. I informed him that I would not enforce state code, and that I did not have enough evidence to show a public health hazard. Brent expressed concern for potential negative affect to Canoe Lake. I gave him contact information of SOA Dam Safety Charlie Cobb. I noted I thought it may be important to talk with Mr. Cobb since Mr. Cobb issue a Cert to change the dam on the property. Brent also noted that CMS were not authorized to dewater the site and should let it evaporate/dissipate. I later received an email from Mr. Andrews saying he found a permit for the site from 2009 issued to the prior owner.

At approximately 1426 hours, I sent an email to Mr. Emery, Mr. Andrews, and Mr. Cobb. I attached the Hydrologic reports of Brailey and Munter as well as a copy of my EO. I also noted that I it may be valuable to for Mr. Cobb and Mr. Andrews to talk further about the Concerns for Canoe Lake. Mr. Emery emailed me back noted he used a hydrologic report from TERRASAT Inc. which was completed in August 2012, and establish the depth of the groundwater in January 2010. He also noted "Engineered plans for the site do show a little bit of fill to bring the bottom of the cell to the appropriate grade. This fill was never requested nor approved to be constructed with any waste materials."
5-7-13 I found that six more complaints were filed by: Vincent and Tricia Volpe, Joshua Davis, Kyla Davis, Alia Davis, and Jeffrey Davis.
5-8-13 Our office received a complaint from Peter Rowe. It noted concerns of polluted water, and dumping and burying industrial waste. I also received notice from finance that CMS now has a business license. Planner Susan Lee forwarded an email from Shane to me. It noted that they were holding an informal public meeting on 5-14-13.

P&LU Department Director, Eileen Probasco informed me she was contacted by Mr. Durand. She stated he informed her that they were almost done cleaning and removing the screened fines and that a truck broke down so they are running behind, but should be done in a couple of days. She also stated that they were hauling the material to the borough land fill.
5-9-13 Mr. Harbuck came into the office and noted that the screened fines are being buried. He also submitted a Public records request. I also spoke with Adam Hall via phone. . He noted that he has pictures of CMS burying the screened fines. He also stated that he got a visit from the Troopers because somebody reported him trespassing and showing a firearm. CCO Mark Whisenhunt
mw03583 - 5/9/2013 11:12:28 AM

5-2-2013 10-55-15 AM

5-2-2013 10-53-03 AM

5-2-2013 10-55-28 AM

5-2-2013 10-53-12 AM

5-2-2013 10-56-23 AM

5-2-2013 10-56-00 AM

5-2-2013 10-56-27 AM

5-2-2013 10-56-10 AM

5-2-2013 10-56-46 AM

5-2-2013 10-56-31 AM

5-2-2013 10-57-10 AM

5-2-2013 10-55-41 AM

5-2-2013 10-58-21 AM

5-2-2013 10-57-14 AM

5-2-2013 10-58-36 AM

5-2-2013 10-57-31 AM

5-2-2013 11-01-25 AM

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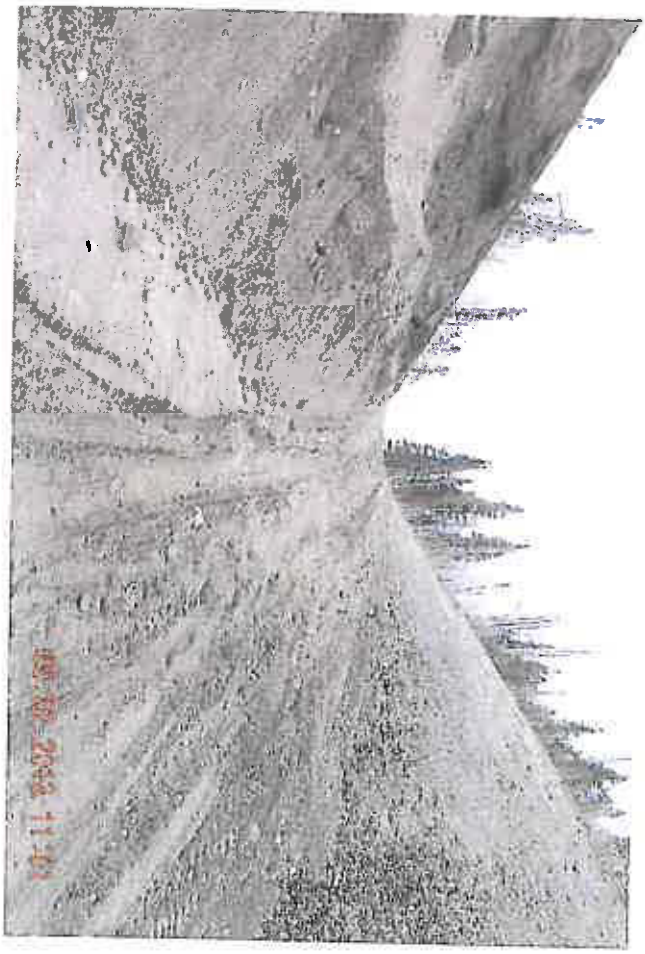

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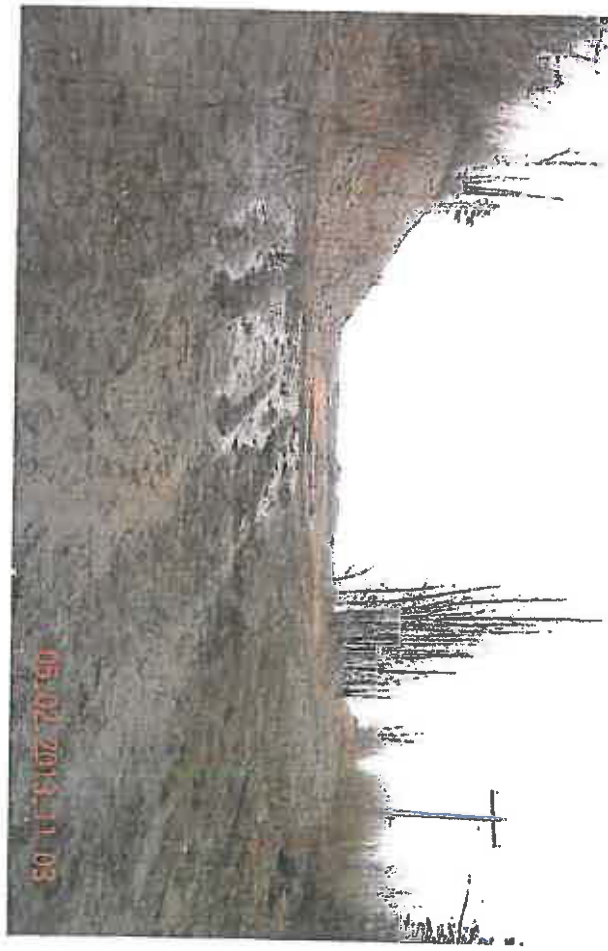

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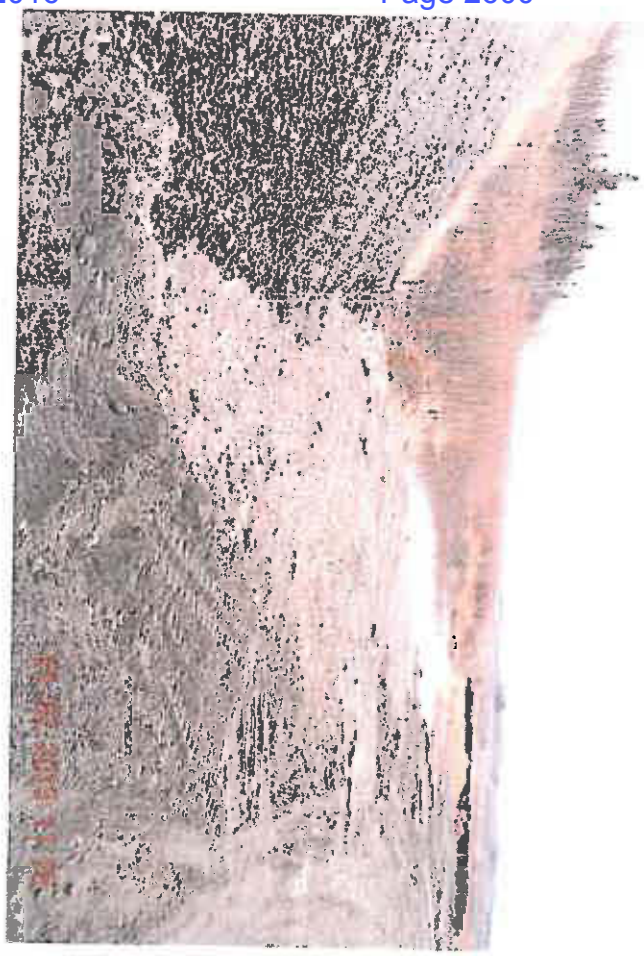

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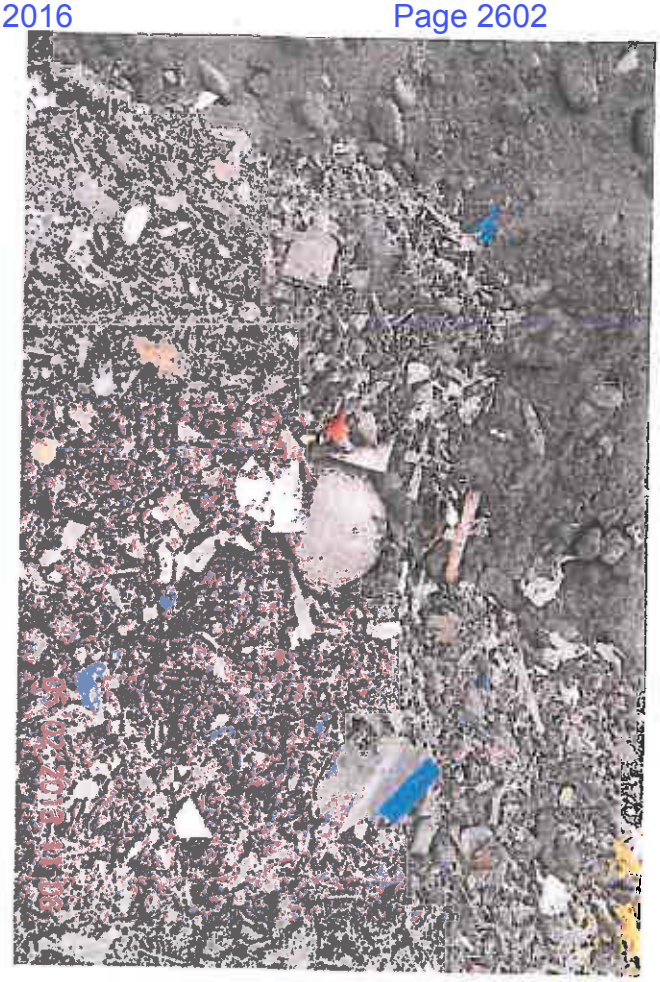

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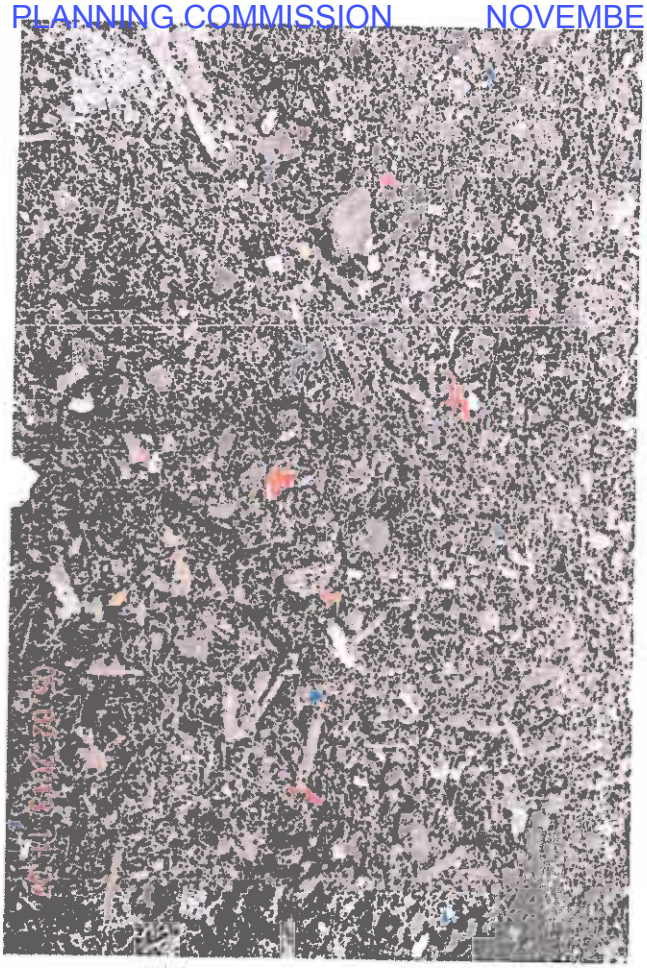

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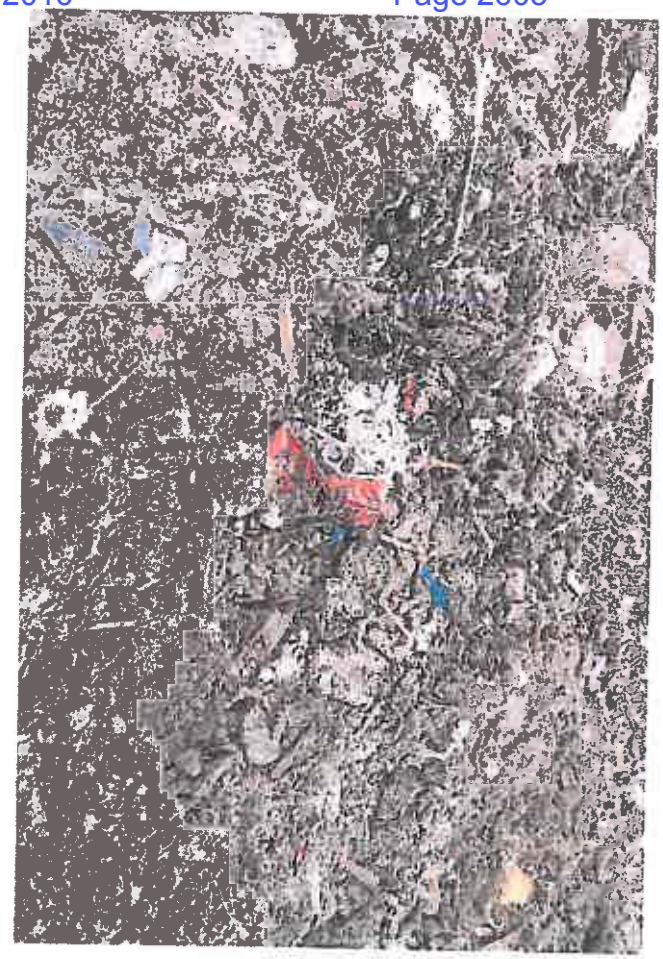

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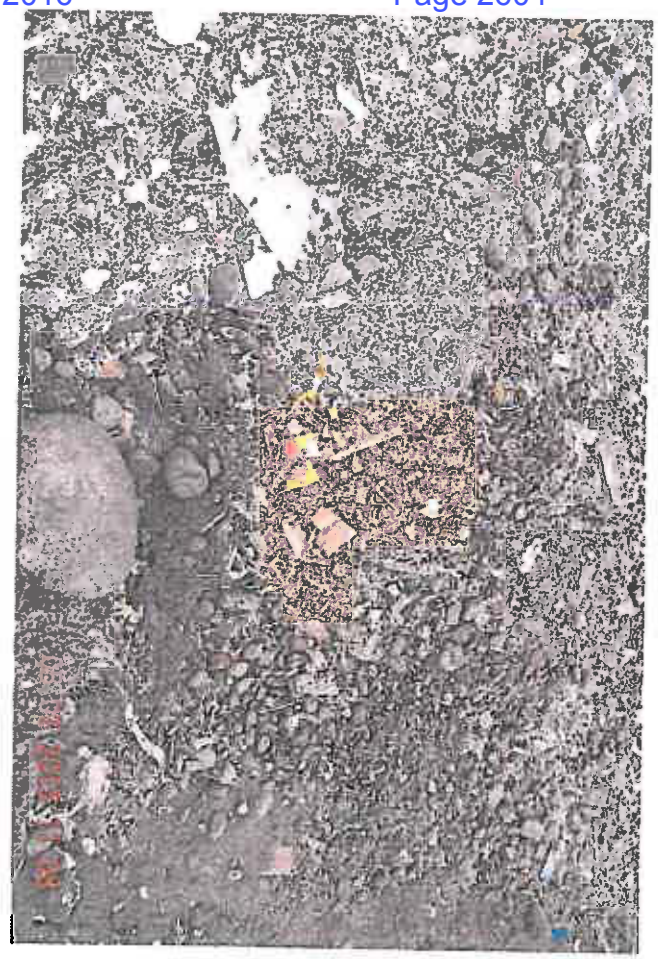
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Susan Lee

From: Richard Harbuck [superglide@mtaonline.net]
Sent: Tuesday, December 09, 2014 4:19 PM
To: Susan Lee
Subject: additional info for the planning commission part 2 of 2
Attachments: 2nd half_CMS_Case_Summary_4-24-13_lowerres-2.pdf

HANDOUT

Part 2 of 2.

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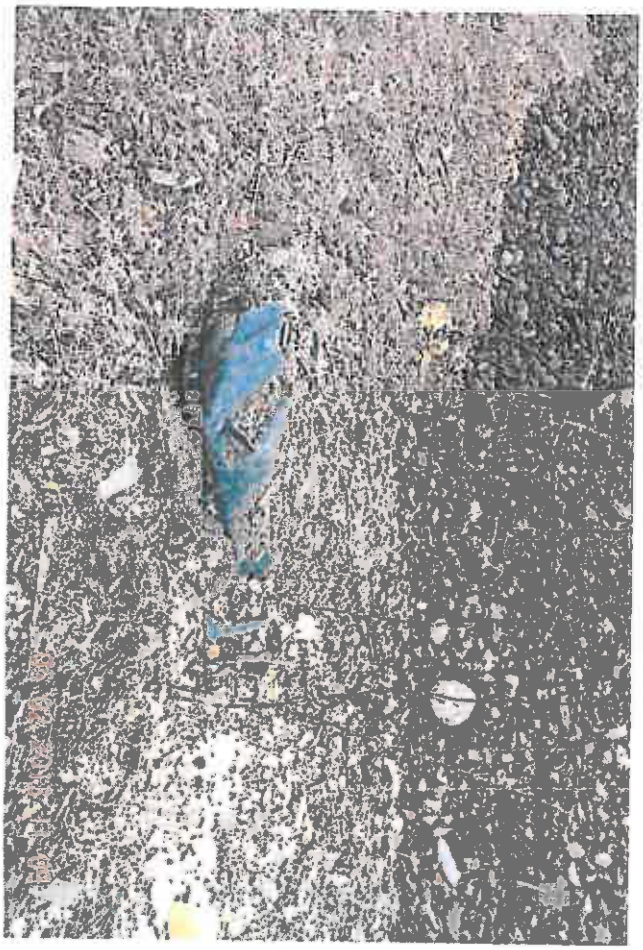

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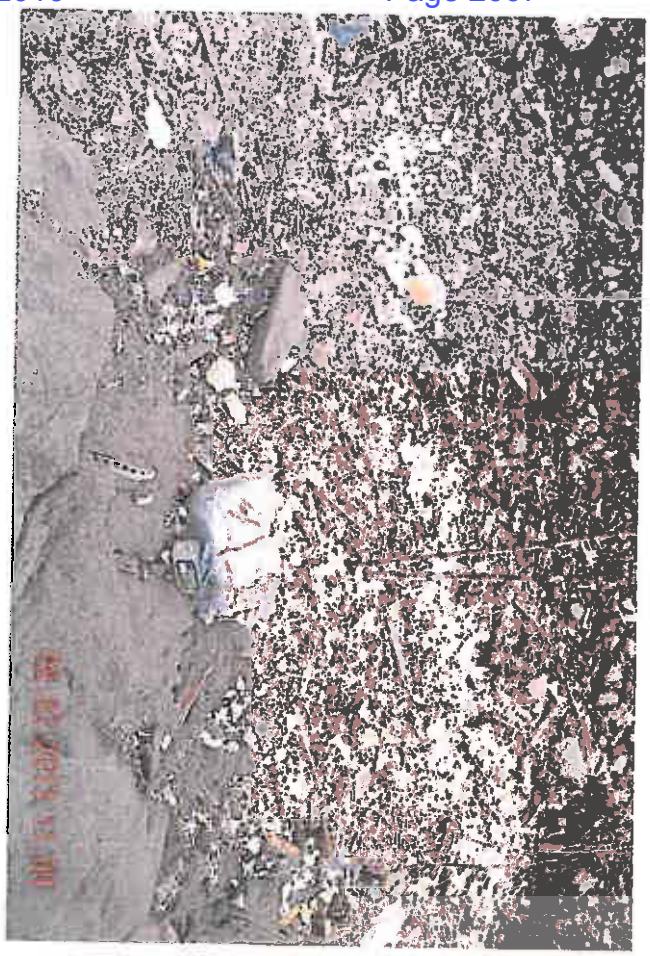

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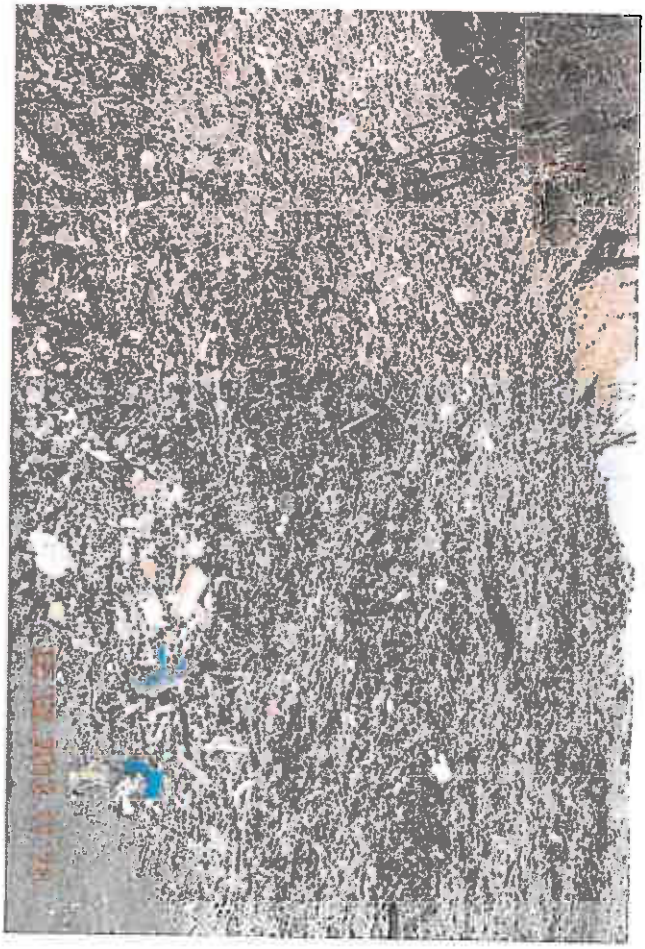

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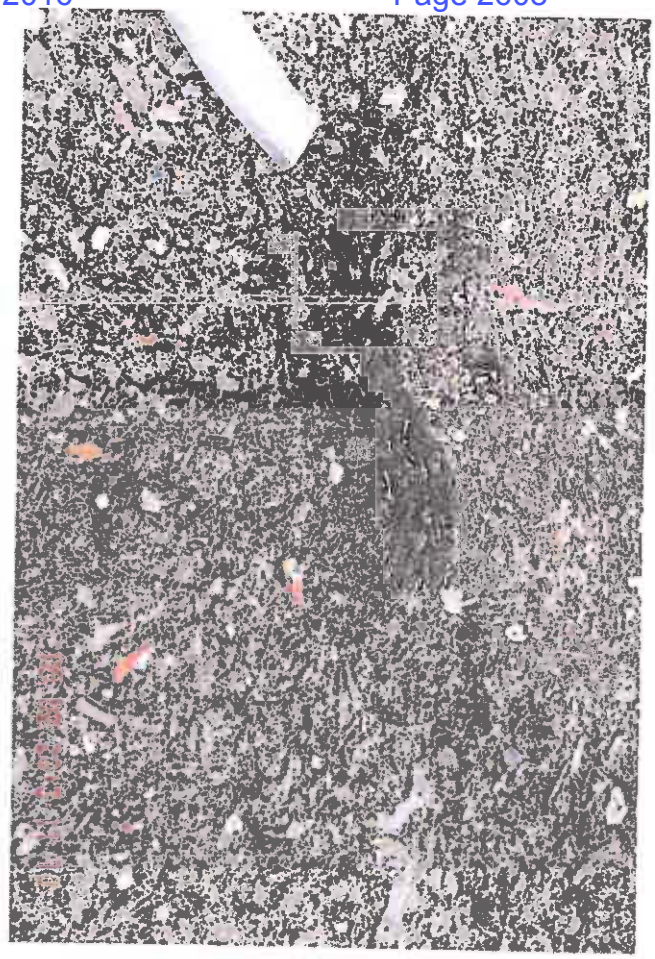

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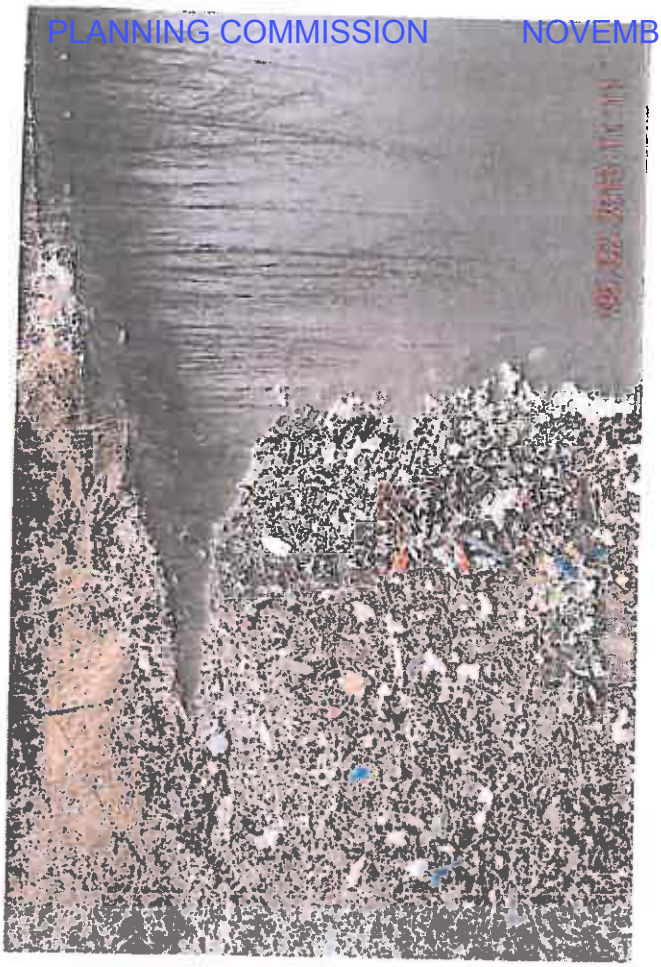

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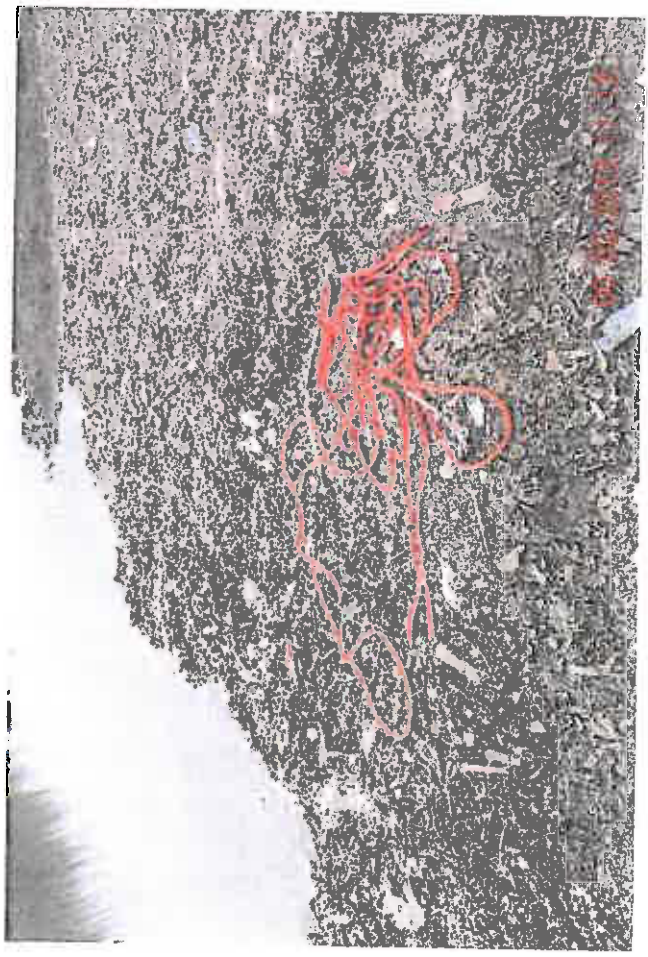

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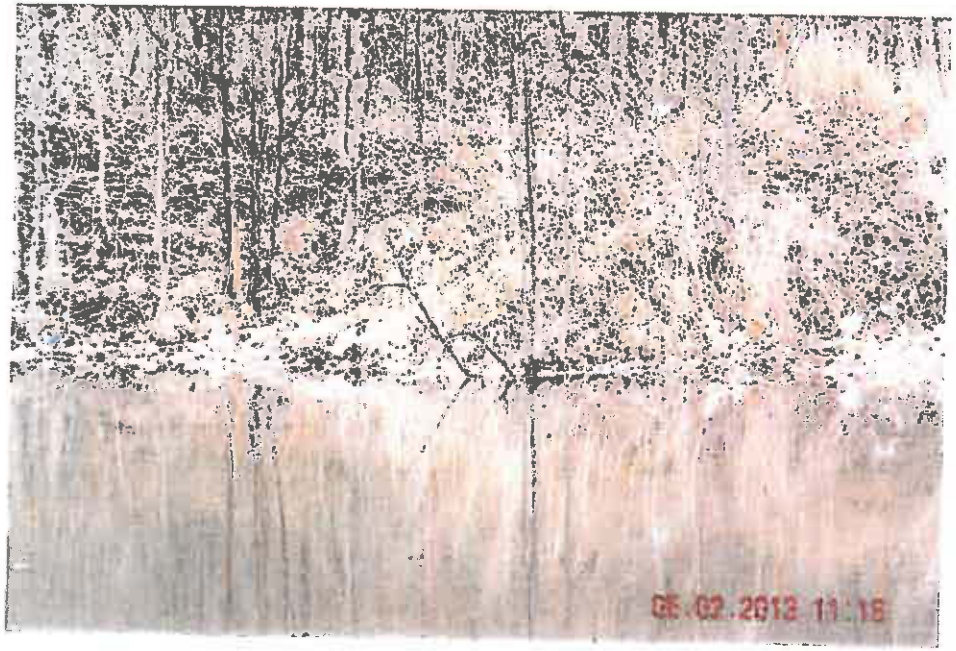

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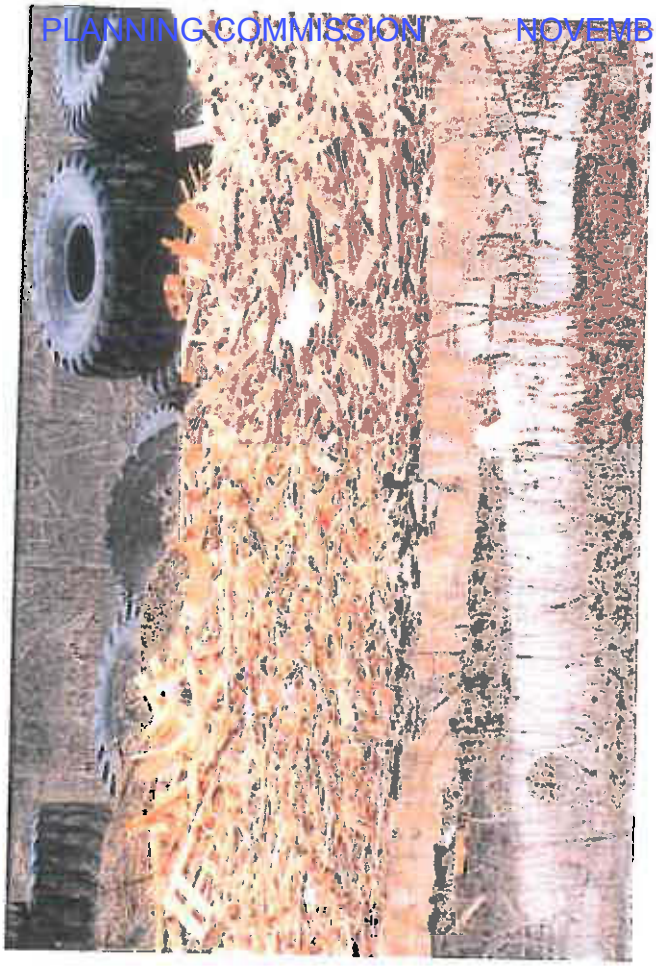

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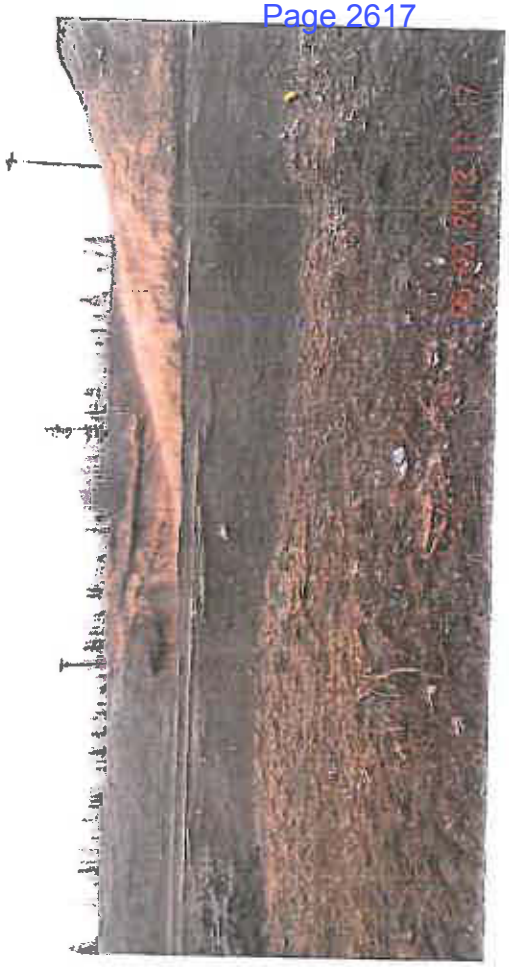

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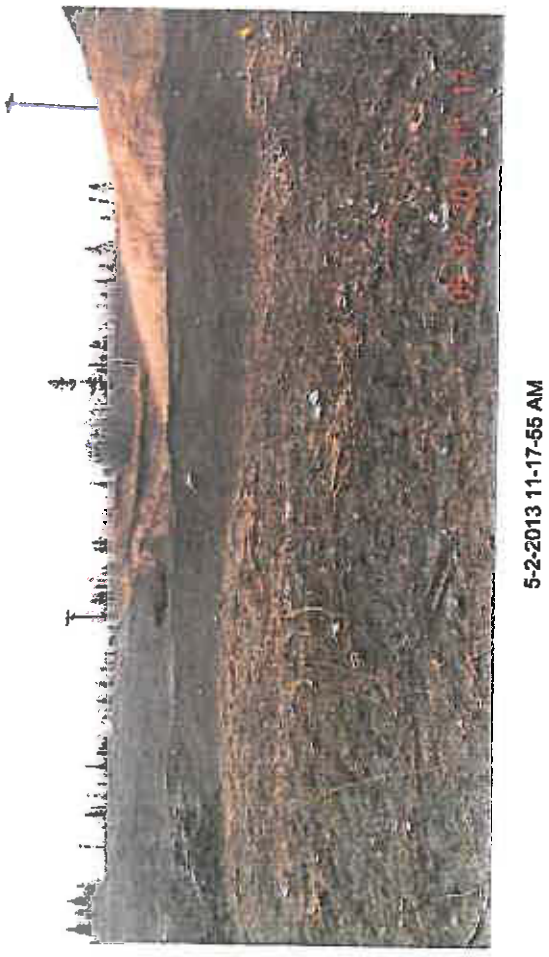
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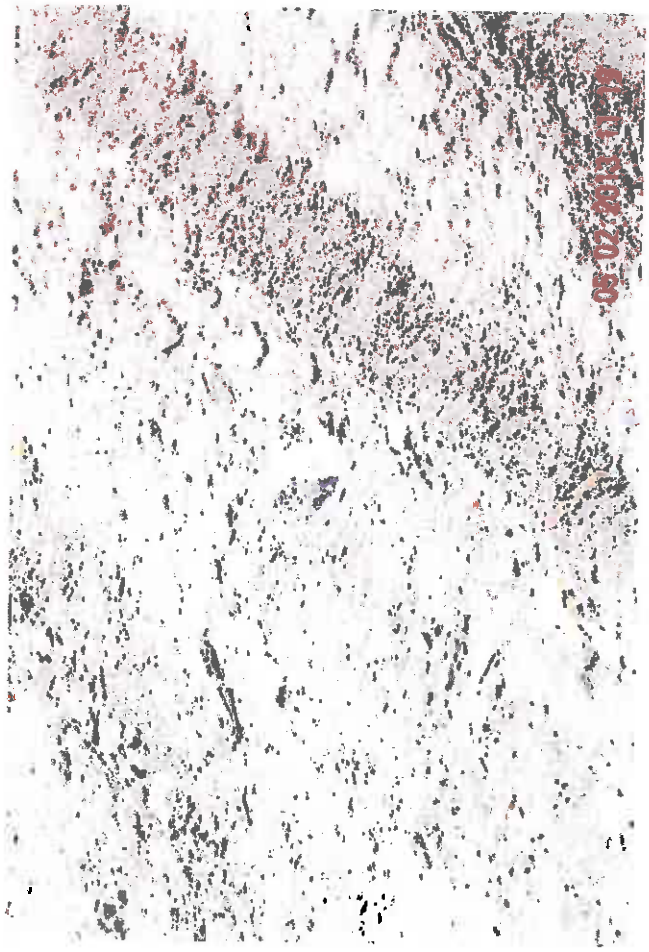

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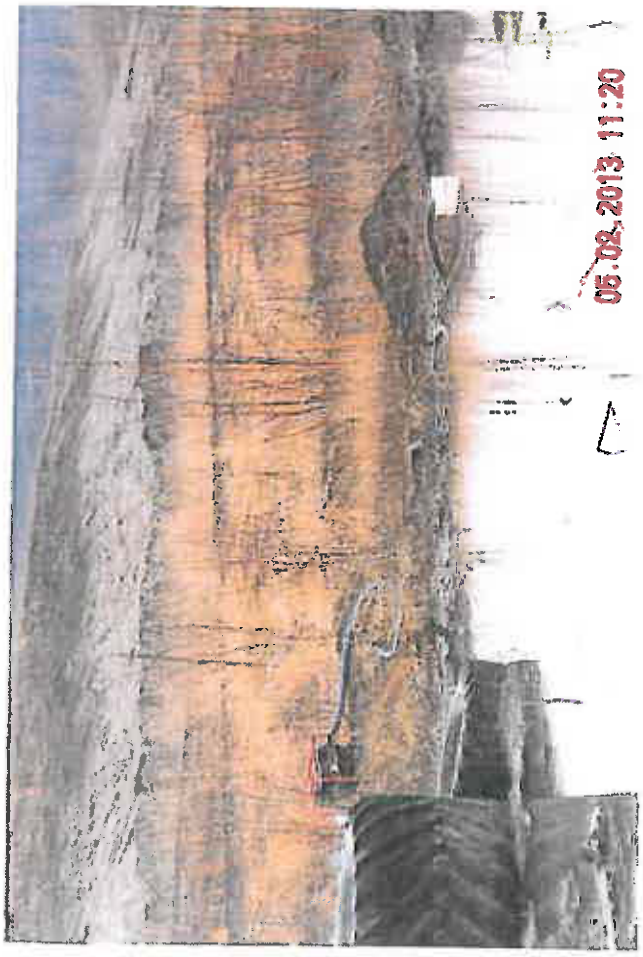

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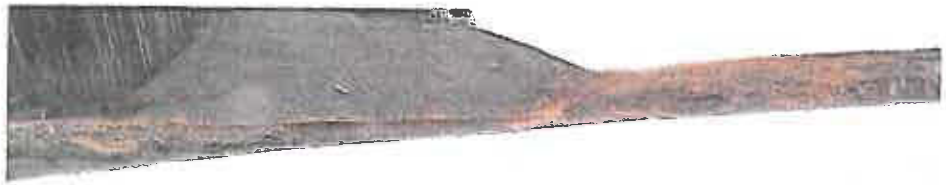

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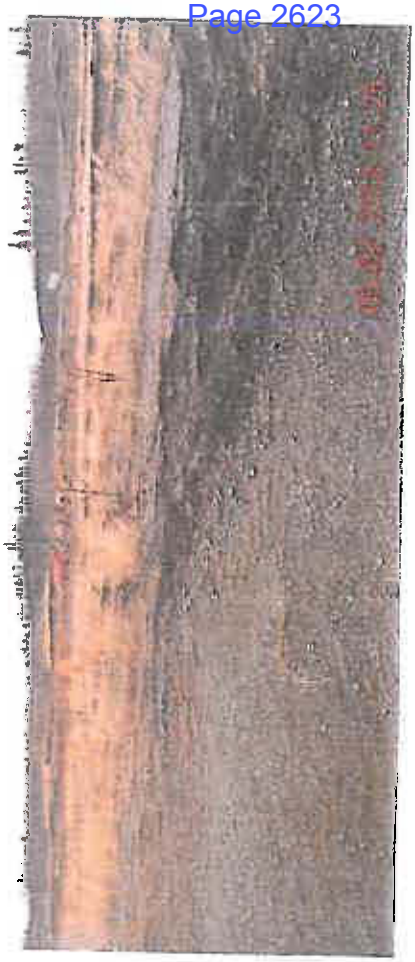

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NEWSPAPER ARTICLES

'Valley Trash' is a joke, not a business model

By Stephanie Nowers | Posted: Thursday, December 11, 2014 7:22 pm

The proposal by an Anchorage company, Central Monofill Services, to dump hundreds of thousands of tons of shredded construction debris and asbestos in an unlined, privately operated dump next to the Kepler-Bradley Lakes area near Palmer raises serious concerns. The proposed dump — which is up for consideration by the Mat-Su Borough Planning Commission on Dec. 15 — threatens to pollute the surrounding lakes and the aquifer that feeds area wells. It poses a threat to air quality from asbestos and from hydrogen sulfide gas created by rotting drywall, a problem well documented at similar facilities in other states. It also threatens to create a financial liability for the borough as taxpayers will be on the hook for funding any clean up. According to applications filed with the borough and state, Central Monofill has offered to put up a total of $5.5 million in insurance and bonding — literally a drop in the bucket when it comes to cleaning up a polluted water supply.

As proposed, Central Monofill proposes to dump up to 25,000 tons a year of construction debris and up to 10,000 tons a year of asbestos. The site would cover up to 35 acres over a 25-year period with construction debris and asbestos piled up in cells up to 75 feet high that would use baled tires for the cell walls. The company has proposed do this on a site that has a documented history of problems with water. In addition, they propose to dump shredded construction debris — a practice not allowed in other states including Ohio because it makes it difficult to near impossible for regulators to identify what the original material was before it was shredded.

The materials dumped at the site would include insulation, treated lumber, carpet, metals, plastic, sheetrock, and others. While legal to dump under state and federal laws, these supposedly "inert" materials have been found in other states to leach toxins such as arsenic, benzene, manganese, and lead in levels above health and water standards. For example, a 2009 Ohio EPA study found that 30 of 30 Construction & Demolition Debris (C&DD) landfills tested had at least three parameters that exceeded health or water quality standards. Twenty-nine of the 30 landfills had eight or more parameters that exceeded health or water quality standards. The conclusion was that "Leachate from Ohio C&DD landfills poses a threat to public health and the environment if released to ground water or surface water."

The majority of the material, by-and-large, would come from Anchorage. The same owners of Central Monofill own two separate businesses — Central Environmental Inc., which demolishes buildings, and Central Recycling Services, which operates a recycling facility at an industrial site on Ship Creek in Anchorage where they sort materials from the demolished buildings and recycle

and sell what they can. The leftover material is what they propose to grind up and dump at the Palmer-area site.

The reason Central Monofill wants to dump this material at the Palmer site and a site in Chugiak is because they don't want to pay to dump this trash at the Anchorage landfill. (In fact, they have a lawsuit pending against the city of Anchorage over the landfill rates). And what do you do when you have a bunch of trash you want to dump cheap? Apparently if you're from Anchorage, you come to the Valley!

A close reading of the company's applications to the state and borough show scant protection for the environment, and little accountability from the company if pollution does occur. For example, the proposal does not include a liner to prevent toxic leachate from getting into the water supply. It does not include independent oversight of what is dumped at the facility beyond the company's own employees. Additionally, despite documentation about the uncertain hydrology of this site, their proposal to the state does not include a groundwater monitoring plan. Hydrologists hired by the company reported the site is so arid and receives so little precipitation that they don't need these protections because so little water would get into the dumped material. However, an independent hydrologist hired by the Mat-Su Borough to review the proposal, stated a significant amount of water — up to 1.4 million gallons a year — could filter through the site. Of note, he pointed out the hydrologists hired by CMS used an annual precipitation and evaporation rate, ignoring the fact that precipitation at the site is not evenly spread throughout the year. Contrary to being dry, he noted the US Geological Survey has classified the site as "transitional between maritime and continental climates."

Central Monofill's record so far shows a lack of operational controls and willingness to thumb their nose at local regulators. In 2013, Central Monofill illegally dumped trash on the proposed dump site in violation of borough code and refused to clean it up for months even after being cited for illegal dumping. They forced the Borough to take them to court and even after the court upheld the citations, they refused to clean up. It took the threat of an enforcement order from the Alaska Department of Environmental Conservation to get the material finally removed from the site.

As mentioned, the company's total financial liability if something should go wrong is $5.5 million. That's not much to pay for a company that stands to make millions by not paying to dump at the Anchorage landfill. To add insult to injury, in their application a consultant hired by the company states that should the water get polluted, they could simply hook up the 200-plus surrounding homes to the city of Palmer's water supply. There is no figure attached to how much that would cost and who would pay for it.

According to the company's application, the facility will bring three full-time jobs to the borough, and offer less in property taxes than most pay on their single family homes.

Businesses should be evaluated on their merits, not their potential value to the borough, but it is worth looking at in this case compared to the potential risk to residents.

There are many more serious questions about the suitability of this site, particularly about the hydrology, which includes a history of complaints about water problems dating back to 2005 to both the state Department of Natural Resources and borough. There is also the troubling question of what makes this property, in a prime location for views and commuters, not suitable for residential development as stated by Central Monofill in their original application.

Central Monofill is searching for a way to make its business economical. That's understandable. But the company cannot ask the borough to subsidize its business by forcing residents to shoulder the risks and possible costs of their operation.

Residents have reached out to CMS officials, to let them know about the particular history on this site, the concerns about water quality and to offer assistance for either finding a different site or potentially a way to help with costs of dumping it at the municipal landfill. CMS should take residents up on this offer. If not, the borough should not approve this site without conditions that would protect the public health, safety, and welfare. Those at the least should include a liner, a leachate collection system, independent water monitoring and independent random testing of materials brought to the site.

Stephanie Nowers is a Palmer-area resident and member of PalmerToxicDumping.org, a community based group opposed to the dump.

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Monofill proposal puts profits ahead of people

By Sarah Wolcoff | Posted: Thursday, December 11, 2014 7:21 pm

I'd like to help clarify a few things in regard to CMS seeking a monofill permit for a location near homes just south of Palmer. Over and over the few loud voices supporting the permit say of the neighbors that oppose it, "they're just NIMBYs, anti development, too emotional, not fact-based."

It seems they've classified us as snobs and completely dismissed the valid concerns and research of several hundred affected families and industry experts alike. The public needs to know that there is much more going on than the small sound bites they have heard, which mostly originate from CMS employees or people who reside way outside the proposed monofill area.

I have not met any individuals opposing the dump that are anti-development or anti-recycling, or whose main concern is losing their pleasant view, or who are solely concerned about their property values — although they have every reason and right to include those concerns in the long list.

The overriding greatest concern is for the health and lives of our families, followed only second by protection of our livelihoods and property.

The land under the proposed dump was excavated too deeply by the previous gravel company, on the borough's watch. It has never been, and it appears not able to be, successfully repaired. The underlying aquifer was pierced, and it feeds the wells of hundreds of homes and drains into the surrounding lakes and wetlands.

The protective top layer of silt on the land was removed, leaving somewhere between 2 and 10 feet of very porous gravel between the surface of the land and the aquifer, and the water table is a "moving target." Expert hydrology assessments were sought by both the borough and CMS.

CMS hydrologists based their findings on CMS-supplied samples and incorrect and incomplete climate and local plant/water characteristic information. For example, they consider Palmer "semi arid" and assumed steady precipitation rates.

The borough's hydrologist conducted a more thorough and accurate assessment, correctly identifying the climate as "transitional between maritime and continental" and considered specific plant/water information to this area, including the varying precipitation and evaporation rates.

These are not small differences; they are crucial.

Based on faulty information, CMS-hired hydrologists claim that there is low risk for contamination, other than high levels of sulfate and manganese that will yellow teeth and skin and cause a foul odor and taste to our water.

The borough-hired hydrologist, using more thorough and accurate data, has concluded that there is a high risk for water contamination from the variety of toxins that will be dumped and leached through the gravel and from the instability of the land.

And who does the borough base its recommendation upon? The CMS hydrologists only. The borough seems to have ignored the two extensive reports provided by their own hydrologist. When their own hydrologist came to speak before the planning commission at the last hearing, the commission chairman appeared confused and did not recognize the hydrologist's name and even asked him who had hired him and where his reports could be found. The reports were in the chairman's comprehensive information packet and are publicly available as well.

There are numerous other concerns:

•CMS wants to accept regulated asbestos at the dump, with no regular third party oversight, being dependent upon customers to identify and properly contain and haul their debris, and in an area known for its extremely high winds.

•CMS has an established record of disregard for this area and resident health when it was previously caught and fined for illegal dumping on the site.

•CMS has already begun to argue for more lax requirements then those presented by the borough as part of the recommended conditions for approval.

•CMS refuses to acknowledge its dump products as either "toxic" or "hazardous", even though ground construction and demolition debris is known to contain such chemicals as arsenic, lead, formaldehyde, benzene, and more.

The bottom line is that CMS is disregarding our health and well-being and putting their profits above our lives, and this is an extremely poor choice of a location for an unlined monofill. I ask the public to please attend the planning commission meeting at 6 p.m., Dec. 15 in borough chambers to help us give a rallied voice of reason to the borough.

Sarah Wolcoff lives in Palmer.

Monofill presents threats, hazards

Posted: Monday, December 8, 2014 7:43 pm

To the editor:

We are against the Central Monofill (CMS) permit for a private dump at Mile 38.3, Glenn Highway. It presents threats and hazards to the local surrounding area's drinking water, lakes, fish, environment, natural habitat, wild life and air quality. It poses devastating results in the event of an earthquake or fire. It will be an eye sore, reduce property values in the region, and detriment to the National Scenic Byway. The site sits on top of the massive aquifer that feeds our lakes and provides drinking water and connects to the surrounding lakes. The Kepler/Bradley Lakes Recreation, Palmer Hay Flats, and surrounding area will be under threat of irreversible contamination to fragile habitat harming fish, waterfowl, birds of prey and wildlife. This permit would allow tanks and potentially leaky equipment to be parked next to the ponds open to the aquifer. The aquifer is only 2 feet below the surface. Even if they line the dumping cells, they will have to pump them out and who will regulate this procedure to protect any spillage into the ponds or grounds. Where will they dump this toxic fluid? Asbestos, health concerns? Cancer from asbestos is life-threatening. Who will monitor the owners to make sure they dump the asbestos safely? Those who live close by are asked to take a drastic health risk and trust our lives and in the professional credibility of the CMS owners and staff who have already been sited for not complying with contracts and codes. How can they be trusted? It will be cost prohibitive to pay borough staff to monitor their dumping practices, so they will be dumping without adequate accountability and monitoring. Accidents happen and the local residents and habitat will suffer irreversible health issues as a result. The site is in a wind tunnel with winds up to 80 mph and blow trash that has not been covered adequately, along with pollutants causing health hazards. The dumpsite cannot be developed into a subdivision for lakefront homes because the soil in this earthquake zone is too unstable for building. The sand will liquefy in an earthquake like in the 1964 earthquake. How can we risk putting this type of dump there? Planning Commission will vote at public hearing is at 6 p.m., Dec. 15 in the Borough Building — come speak.

Kevin and Geri McCann

Palmer

From bread basket to wastebasket

Posted: Monday, December 8, 2014 7:42 pm

To the editor:

How does it happen in a democracy that a handful of men on the "planning commission," who are appointed to that commission by one man, the mayor of the Mat-Su Borough, can make a decision that impacts the health and safety of hundreds of families and acres of rich, productive farmland in south Palmer?

These seven men have made it known that they are very much in favor of the plan submitted by the applicant, that is, the private monofill dump entity.

No matter that south Palmer already has a polluting monofill dump.

No matter that the proposed site is ever-so-close to residential homes, Kepler-Bradley Lakes recreation area, and directly across the highway from the enormous gravel pit where heavy equipment and trains rattle the ground every day.

No matter that the aquifer that feeds water to hundreds of families and many acres of farmland lies just beneath the proposed dumpsite.

No matter that that those same families and farmers are steadfast in their opposition to this private dump.

These seven guys, and the mayor who appointed them, still want to approve this awful private dump.

It's going to accept asbestos, cut into pieces. It's going to welcome all manner of other building and industrial trash from Anchorage and Southcentral Alaska. It will effectively turn south Palmer into the wastebasket of Alaska.

We can't figure why they want this, or why they would do this to the good people who live here. Will it create jobs? Sure, three of them. Money? Somebody must be in line to get some. I used to like the mayor. Now, not so much.

Barbara Landi

Palmer

Planning commission postpones landfill decision

Posted: Saturday, December 6, 2014 7:35 pm

PALMER — About 100 people turned out to comment on a proposed landfill before the borough planning commission Dec. 1.

Central Monofill Services Inc. (CMS) has filed a second round of permit applications after failing to obtain a permit in 2013 over concerns about the company's application for a permit to turn a former gravel pit into a monofill — essentially a special kind of landfill for surplus construction debris — along the Parks Highway.

Planning Commission

About 100 people showed up to a Dec. 1 meeting of the Mat-Su Borough Planning Commission to comment on a proposed Palmer landfill. A final decision on the permit could be made as early as Dec. 15.

The landfill item was postponed because spoken testimony ran until 11:30 p.m., and because only four members of the planning commission were present, down from the full compliment of seven members, according to development services manager Alex Strawn.

Borough staff — the final yes-or-no recommendation is usually conducted by planning officer Eileen Probasco — have recommended the site for approval based on the documentation submitted by the company showing the impact to surrounding ground water will be minimal based on the means by which the monofill is constructed.

The company has faced organized opposition from residents in the surrounding area, who say the presence of the material could damage their quality of life, and some who are suspicious about the company's motives after the company appealed six borough citations issued in 2013 through the state court system. Their opposition received a shot in the arm Nov. 25, when the Palmer city council unanimously approved a resolution asking the commission to reject the application.

Company officials say the Palmer location would allow trucks full of materials destined for an Anchorage processing site to return with material for long term storage, and that the site could potentially benefit the community by providing a retail source for secondhand construction materials, as well as jobs.

Opponents generally say the risk to their aquifer, already punctured by previous gravel pit activity at the site, outweighs potential economic benefits to the site.

Some of the latest round of criticism centers around reams of technical data supplied by CMS as part of its second round of applications.

Jim Munter, an Anchorage-based hydrogeologist, submitted a two-page fax pointing out three areas where the company's assessment of the site was potentially flawed. First, consultants for the company listed the site as "semi-arid," a finding that conflicted with previous US Geological Survey findings in the area, which classify the climate as "transitional between maritime and continental climates," according to Munter's written testimony.

"The record still contains significant technical deficiencies that preclude supporting the statement found in the borough findings," Munter wrote.

The classification is important because of the amount of rainfall on the site, Munter wrote. Semi-arid climates experience little rainfall and groundwater reserves aren't recharged, where transitional climates can receive instances of a lot of rainfall, and groundwater reserves are recharged.

USGS figures show 1.4 inches of water annually will recharge the site's ground water, meaning about a million gallons of water will flow through the site annually.

"This is a significant volume of water to percolate through the waste material and enter the groundwater system," Munter wrote.

Models run by Terrasat, the consultant hired to perform the analysis, also underestimate potential groundwater contamination, and a silt cap over the site should be different than the one provided by the consultant. In addition, the consultant assumes compacted and buried waste will be stable, which may not be the case, Munter wrote.

Not all the commentary is so obscure.

Bill Quantick owns a $400,000 house in the Canoe Lake subdivision. He's more worried about potential damage to his pocket book.

"I have an investment here," he said. "My investment is my home, and that's worth $400,000."

In addition, the borough stands to lose money by the presence of another private landfill in the area, which puts competitive pressure on the borough landfill, meaning the borough has to raise scale rates to keep up, Quantick said.

"That's why our costs are going up," he said.

He is also not reassured by a $5-million insurance policy for the site, which won't cover the costs of numerous expensive houses in the area, Quantick said. The policy also won't transfer in the event that the property is sold, Quantick continued. He believes the monofill should go somewhere else.

"They don't have a contingency plan in case something goes wrong," he said. "If they sell it, their liability is gone."

The next meeting of the planning commission will be 6 p.m. Dec. 15.

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Palmer Waste Dump Plan Draws Opposition

By Ellen Lockyer, KSKA - Anchorage | December 4, 2014

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About one hundred people turned out to speak at a Matanuska Susitna Borough planning commission meeting on Monday. At issue – a plan to construct an inert construction debris dump on private land near Palmer.

Central Monofil Services wants to dump construction debris — some of it containing asbestos– on land near Palmer. The Anchorage based company has applied, twice now, to the Matanuska Susitna Borough for a conditional use permit to use a five acres of a 118 acre gravel pit the company owns as a site for a so called monofil, but the Borough planning commission turned down the company's first request in 2013.

Now, Alex Strawn, development services manager for the Borough, says the planning department is looking at the new application with a "fresh perspective."

"Our official recommendation is approval with forty different protective conditions, and on Monday I urged the planning commission to take our suggestion, but also use caution."

Strawn says he's recommending approval, because Central Monofil has checked off a long laundry list of studies and tests and hired a battery of environmental services to meet the conditions of the monofil application, although Strawn admits he has reservations about the dump's possible effect on the water table.

"So there is some concern that the height of the water table is a moving target. There are other influences that could potentially change the height of the water table. There's a unresolved issue with the industrial ponds just to the North of the pit, that could potentially affect the height of the water table, and there is also a gravel pit operation North of the proposed development that is intending on doing some dredging operation that could also potentially cause the water table to rise."

Strawn says current Borough code is not geared to Central Monofils type of development, and he strongly suggests that a liner be put underneath the dump site. He is also recommending that Central Monofil create a 15 foot buffer between the dump and the water table. 'AK Dept. of Environmental Conservation requires a 10 foot high buffer."

Borough planning commission approval is necessary for the operation to begin. But proceedings at Monday night's planning commission meeting were cramped by the absence of two commissioners. A third commissioner was recused from voting, because of a hint of conflict. Stuart Jacques, representing Central Monofil Services, defended the proposal before the commissioners.

"The design and operations plan for the inert waste monofils are reviewed and permitted by ADEC. This proposed monofil is designed in strict accordance with the ADEC requirements. The only waste allowed to be disposed in this monofil is classified as inert material by ADEC. No municipal, toxic or hazardous waste will be accepted at the facility."

Laurie Aldrich, AK DEC regional program manager for solid waste, said at the meeting that a number of the Borough conditions placed on the monofil are already covered in the state regulations. Aldrich also said that the state permit application is complete, but is pending on the close of a public notice period which ends on December 29.

Most of those who came to offer public comment were against the plan, like farmer Ben VanderWeele and homeowners Rose Williams and Craig Kelly.

"The whole scenario tells me they are sneaky operators. They tried to get away with illegal practices and got caught. I do not want them as my neighbor. The risks to health and quality of life are just too great."

"Would you risk the trust and the health of a community because of one company's financial gain? If our waters become polluted, who will explain that to the mothers and fathers of children who develop illnesses long term."

"These people here, they're coming out of Anchorage and dumping all their crap in our yards. We don't want it.. WE DON'T WANT IT!"

In the end, no vote was taken, and the meeting was continued until December 15.

Alex Strawn says if the planning commission approves the plan, there is a fifteen day period afterward for appeal by any interested party.

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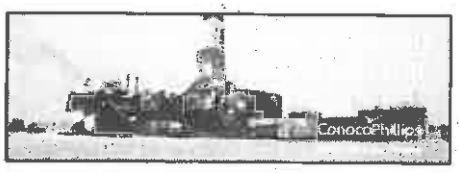

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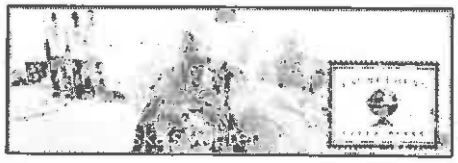

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Alaska Dispatch News

Published on *Alaska Dispatch* (http://www.adn.com)

Decision delayed on proposed Palmer dump

Zaz Hollander [1]
December 2, 2014

PALMER -- Matanuska-Susitna Borough planning commissioners continued a public hearing Monday on a proposed construction waste dump near Palmer after more than 100 people turned out to testify at a marathon meeting that lasted until nearly midnight.

The commission is deciding whether to approve a conditional-use permit for the Central Monofill Services construction and demolition debris fill [2] proposed for an old gravel pit along the Glenn Highway. The commission last year rejected a similar bid over the threat of blowing litter and risks to the shallow water table in the area. This year, however, borough planners are recommending approval.

Along with the large crowd, the commission on Monday was also short two members, as well as a third who recused himself because he had prior business dealings with the company, a borough planner said. It would have taken all four remaining commissioners voting in favor to approve the permit Monday.

The hearing will resume at the commission's next meeting Dec. 15. It's possible the body could make a decision at that time.

The company says it needs the site to safely dispose of shredded debris from its lucrative Anchorage recycling business because of high municipal landfill rates.

Critics say the fill will only bring three full-time jobs at too great a risk to drinking water from the unlined pit, pointing to contaminated leachate coming off similar sites in other states.

The borough cited Central last year for illegal dumping. The company contested the borough's citation in court but ultimately removed the illegal fill at the order of the Alaska Department of Environmental Conservation.

Opponents of the so-called monofill -- so called because it houses only one type of waste -- outnumbered supporters at Monday's hearing, borough officials say.

The next planning commission [3] meeting is at 6 p.m. on Dec. 15 at the borough building in Palmer.

Source URL: http://www.adn.com/article/20141202/decision-delayed-proposed-palmer-dump

Links:
[1] http://www.adn.com/author/zaz-hollander
[2] http://www.adn.com/article/20141029/war-words-over-proposed-debris-recycling-landfill-near-palmer
[3] http://www.matsugov.us/boards/planningcommission

Who is 'borough staff'?

Posted: Monday, December 1, 2014 7:55 pm

To the editor:

I see that the "borough staff" is recommending approval for the Central Monofill Services dump application. So, does that mean borough employees? Am I the only one who sees this as grossly unethical? Who is the "staff"? Is it the secretaries, receptionists and janitors? Since when do government employees advertise their opinion on whatever the elected group is about to vote for? Or is the borough "staff" voting to approve this abomination for the health, safety and welfare of residents of south Palmer?

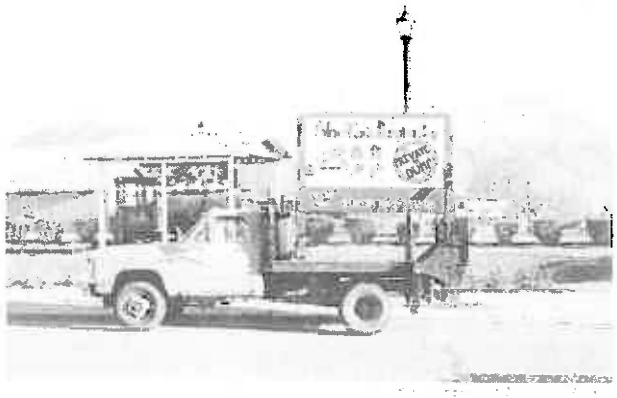
Barbara Landi

Palmer

Public comment ends today

Posted: Friday, October 31, 2014 11:36 am

PALMER — Public comment closes today on a second round of permitting for a monofill site now in its second year.



Public comment ends today

A truck parked in downtown Palmer carries a sign asking people to weigh in on the proposed monofill.

Central Monofill Services Inc. had filed new permit application after originally being denied a permit in late 2013 over concerns its permit application lacked sufficient supporting materials. The company was cited twice in May 2013 for minor offense violations of the trash and junk section of borough code. They resubmitted an application in February 2014 for the recycling site, and the planning commission is set to consider those applications at a public hearing Dec. 1.

In the meantime, the second round of applications has drawn 1,031 pages filed in support of the newest application, and elicited more than 100 comments — some in favor, some opposed — from the public, according to borough planner Susan Lee.

Should the company obtain the permit, company officials say they envision it as a threefold business. First, the area would serve as a stopping ground for material destined for the company's Anchorage recycling facility for processing. It would also serve as the final storage destination for materials processed in Anchorage, meaning trucks would not be returning to the site empty. Finally, it could potentially serve as a resale point for used construction materials for Valley builders, according to Shane Durand, a partner of Central Recycling Services.

"We do a lot of things, a lot of trees and wood and stuff like that," he said. "We've donated items to Boy Scouts who were building things."

The Valley's population has grown considerably, and with that comes construction and demolition debris, which could potentially overflow the Mat-Su Borough community landfill, Durand said.

"On a monthly basis, we probably process and recycle more material than the Valley Recycle Center does in a year," he said.

Opponents of the plan, which include the nearby Gateway Community Council, say the environmental risks — about 6 million gallons of groundwater flow under the site each day,

according to the company's own hydrological analysis of the site, the aquifer has been punctured in the past, and several nearby ponds refill from that water — far outweigh any potential economic benefits.

"We realize there are things that happen in the community, that advancement needs to be made," said community council president Stanley Gillespie. "We just want it to happen in a responsible fashion. I am concerned about the water table and things like that."

The company's attempt to fight citations issued to it in court for past dumping have spoiled the neighborhood's view of the project, said council member Stephanie Nowers. (The company cleaned up past dumping, but only after the Department of Environmental Conservation became involved.) Nowers said she is sympathetic to the economic need for the project, and the company's desire for expansion, but said she's not sold on the location.

"Basically, it's the wrong location for this facility because of the risk it would pose to the water and the air," she said. "There's a history of trouble controlling the water on this property."

The amount of water under and near the property, combined with the company's reticence in addressing past issues, as well as concern about the types of materials present in similar sites in other states, mean the company's new permit application does little to allay neighbors' fears, Nowers said.

"There also needs to be a lot of care taken about what material gets into a dump like this," she said.

Environmental concerns shouldn't factor into the decision, Durand said. The material in the landfill will be screened from view, he said. Potentially hazardous material would have to be removed well before being stored at the site, in accordance with Occupational Health and Safety Administration and federal EPA guidelines. The company also plans to drill monitoring wells, he said.

"This concept that there's this 100-some foot pile of trash, that's completely false," he said.

Contact Brian O'Connor at 352-2269 or brian.oconnor@frontiersman.com.

Alaska Dispatch News

Published on *Alaska Dispatch* (http://www.adn.com)

Zaz Hollander [1]
October 29, 2014

WASILLA -- An Anchorage company is making another run at a building debris recycling and disposal site near Palmer, the same site rejected last year by the Mat-Su Borough planning commission.

Central Environmental Services operates Central Recycling Services [2] and Central Monofill Services, the company behind the proposal to landfill shredded debris including asbestos at a 120-acre former gravel pit at Mile 38 Glenn Highway near the Matanuska Lakes State Recreation Area.

Central Recycling in 2012 made more than $3.5 million selling steel, crushed asphalt, concrete and glass from demolition and construction sites to Seattle and Alaska markets. It also generates roughly 8,000 tons of waste a year and wants a break from Anchorage municipal landfill fees.

Mat-Su planning commissioners in a 4-3 vote last year rejected Central's original monofill proposal, citing concerns about groundwater protection and blowing litter [3] in the windy pit. Residents of nearby subdivisions – a 2010 study showed nearly 50 wells in the area -- waged a noisy opposition campaign.

Also last year, the borough issued six citations charging Central with illegal dumping after the company deposited some shredded material at the site before any permit was approved. The borough Assembly changed the trash code to make sure Central's operations were covered. The illegally dumped material wasn't trucked out until September, after the Alaska Department of Environmental Conservation got involved.

A public comment period for the company's second conditional-use permit application [4] closes Friday. The planning commission will review the application in December.

The company's proposal is essentially the same as the first one, officials say.

Central co-owner Shane Durand said the problem last year wasn't the proposal itself but a lack of "clarity" on five or six points that troubled planning staff. This year's 1,031-page application packet has more hydrological studies and water quality information but basically, Durand said, the proposal is the same.

"Really, the design and the whole function of the facility, the operation, that hasn't changed," he said. "We've just provided more substantiating information and more clarity."

Monofills are less regulated than traditional waste landfills. Federal studies have linked some in Ohio to suspected carcinogens and those in multiple states to hydrogen sulfide gases.They're generally considered by regulators to be one kind of waste -- that's why they're called monofills -- with a low potential to pollute air or water.

But critics of Central's proposed Palmer monofill say it does threaten to pollute area wells and lakes given the unpredictable water table left by gravel operations that punched through the underground aquifer and the potential for contaminants to travel off the property.

Richard Harbuck, a member of the Palmer Toxic Dumping [5] monofill opposition group as well as the local Gateway Community Council, said the concern is that Central will get a permit this time around despite the lack of substantive changes in the application.

"They're basically just doing round two," Harbuck said."Unfortunately, out here in the Valley, they're allowed to reapply for a permit over and over until finally they bust the door down."

The community council last year submitted a letter saying the site was the wrong place for a monofill, and it plans to submit another letter this week, he said.

"We don't feel this is the proper place for this type of activity given the nature of the gravel pit, the hydrology, and the wind problems associated with it, and the basic proximity to an established community," he said.

Opponents also question the company's ability to self-regulate, given Central's compliance record last year. Central, however, says opponents are making too big an issue of the company's brief history in the Mat-Su.

"A lot of people are skewing what happened to the negative, making it seem a lot worse than it really is," Durand said.

The company last week sent out mailers to 5,000 to 6,000 Valley residents in a wide circle around the fill site urging them to "Support Recycling in Alaska" and go to the company website for more information. The flier includes a link to the permit application and the admonition, "Don't let misinformation and stereotypes form your opinion … Get the facts!" above the company's phone number in Anchorage.

Durand said Central's mailer came in response to a flier circulated more locally by Palmer Toxic Dumping warning of poisoned wells, contaminated fish and windblown trash. That flier shows photos of trash and an aerial view of the proposed monofill location amid the numerous lakes of the Kepler-Bradley system. "Can there even be a worse location for a dump?" the brochure reads. "Homes, Wells, Fishing, Scenic Byway & Gateway to Palmer."

The material Central hopes to dispose of at Palmer includes everything from carpet and drywall to asbestos. Some of the asbestos will fall under state regulations that require special precautions like heavy bags, cover to make sure the toxic dust doesn't reach the air and a special cell to hold it.

The company plans to erect portable "catch" fences to snag windblown debris, according to the application. Monofill cells will be contained by soil or tire bales.

In Alaska, the state doesn't require liners to protect groundwater or monitoring wells to check for contamination. Central says it plans to make use of wells but not liners.

The state Department of Environmental Conservation requires the company to demonstrate that the base of the monofill is 10 feet above groundwater, according to an email from Lori Aldrich, DEC's solid-waste program coordinator in Anchorage.

Central says "more than 70 percent" of the actual monofill site meets that requirement and the company will use "onsite earthen materials" to create a buffer for the rest.

DEC has not made a permitting decision on the monofill, Aldrich said.

Along with the Palmer site, Central also hopes to start disposing of recycling waste at a Chugiak property owned by Eklutna Inc. but the discovery of historic contamination at that site has delayed an Anchorage Assembly decision until at least next May.

Central is in the midst of a lawsuit filed in Anchorage Superior Court [6] against the municipality for more than $100,000 in discounted landfill fees the company says it's owed. Central says it's entitled to a 50 percent discount for recycled waste but Anchorage officials say the material in question doesn't qualify for a discounted rate.

Durand said a win in the court case won't change Central's need for a Palmer facility.

"We already went down the course of permitting and designing," he said. "With the municipal landfill, you still don't have any control of how [dump] fees will increase over time."

Source URL: http://www.adn.com/article/20141029/war-words-over-proposed-debris-recycling-landfill-near-palmer

Links:
[1] http://www.adn.com/author/zaz-hollander
[2] http://www.centralrecyclingservices.com
[3] http://palmertoxicdumping.org/wp-content/uploads/2013/08/W-Mat-Su-Borough-Denies-Permit_June2013.pdf
[4] http://www.matsugov.us/publicnotices/2618-central-monofill-services-conditional-use-permit
[5] http://palmertoxicdumping.org/
[6] http://www.adn.com/article/20140228/recycling-company-sues-city-over-disposal-discount

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Borough clears up definition of 'trash'

Posted: Tuesday, April 22, 2014 2:17 pm

PALMER — If you grind, shred or pulverize trash, it is still trash.

That's the latest ruling from the Matanuska-Susitna Borough, which voted Tuesday to make this distinction clear. And if the need for such a rule is not immediately apparent to you, you're not alone.

"We have a definition of trash, and trash is trash based on this definition here," borough assemblyman Ron Arvin. "But when you shred it, pulverize or cause it to be broken, that renders it somehow different. I don't understand why that is."

Why the borough assembly felt compelled to make this change is a long story that relates to a company that wishes to open a monofill — a landfill that only takes in discarded building material — on a plot of land off the Glenn Highway south of Palmer.

When the borough found the operators of that would-be monofill had started moving material to the site without a permit, it cited the company, Central Monofill Services.

When the company appealed, one of its claims was that the stuff it had moved to the site wasn't trash. The material had been shredded into something that could be used as landfill cover. Most landfills cover trash with dirt every day to keep it from blowing around, but company officials have expressed a hope that shredded building material could serve the same purpose.

So, the company argued, it was a product they hoped to sell, not trash. Therefore the ordinances relating to dumping trash and junk do not apply.

A district court agreed with the borough that indeed the stuff was trash, not a product. But the borough's own Board of Adjustments and Appeals ruled that it was not trash, although the company still needed to get a permit.

"That's not a consistent ruling," borough attorney Nick Spriopoulos told the assembly at Tuesday's meeting.

Since the ruling wasn't consistent, he said, the borough needed to fix its codes to make clear what they apply to.

"The question is, do you need a permit to do it?" Spriopoulos said. "Their argument is, 'we don't need a permit, we can do this wherever whenever however we want.'"

Arvin argued that the ordinance seemed aimed directly at one operator, CMS.

Spriopoulos disagreed, saying that the rule was for future operators and meant to apply to anyone who wanted to open an operation similar to what CMS was proposing.

The issue first came to the assembly during its meeting April 1. During that meeting, numerous neighbors of the proposed monofill testified.

"You can't just be dumping ground-up material wherever you want and calling it cover," said Bill Quantick.

Zennon McNeill, president of the Gateway Community Council also favored the change.

"We know what trash is. If you grind it to a finer material it doesn't change the fact that it's still trash," he said.

A 4-3 majority of the assembly eventually sided with the community.

Contact Andrew at 352-2270 or andrew.wellner@frontiersman.com.

Borough has the power to make the right choice

Posted: Sunday, March 9, 2014 12:00 am

To the editor:

I am writing (Larry DeVilbiss) with great respect and the position you hold as Mayor of the Mat-Su Borough, and I do believe in the same principals as you do.

The Mat-Su Borough needs a strong and sustainable economy, which is obtainable through common-sense leadership. That statement brings up some of the mistakes the borough has made in the past that has caused excess spending, such as the ferry. Planning is a very import part of the economic growth. Building the ferry before a deal to secure dockage put the taxpayers' money at risk and now we are suffering the consequence.

"Open for business" is your statement, and we all understand the only way to grow is to develop. But in developing we need to attract the right kind of business that will employee more than a handful of people. We need public safety and health and business that require industrial locations to be placed in industrial zoned areas.

I would like to bring to your attention to the CMS Monofill that is becoming a major issue for a lot of people. It's not to say we don't want businesses to be developing in the Mat-Su or Palmer, but the right kind of businesses. I am sure you are well aware of the all the problems that are occurring (because of this) and the hardship on the people who choose to live in Palmer.

CMS is not a partner who I would say is on the "win-win" side of things. Just look at the problems it has started. Anchorage Daily News headline March 1 reads, "Recycler sues city over disposal discount for $100,000."

In Palmer court, CMS was found guilty in six citations for illegal dumping. I've been in business and my rule of thumb is strong business ethics, trust and a win-win partnership. No matter what CMS promises and how they think they will take care of problems that arise, the records show it all.

Mr. Mayor I took the liberty to do some research to show you that this is a bad deal all based on how much the borough will lose in taxable income. Taxable income is a vital need to keep the Mat -Su growing, but if you start losing it, where will you find it to make it up? Raising taxes? Not good for someone in your position who wants to lower them.

I went to the online Mat-Su Borough Parcel Viewer to first see how many properties are located with in a one-mile area of CMS property boundaries. From my calculation, there are about 415 private property owners, some with million-dollar homes on them.

In my process, I took five random properties assessments from each subdivision (Canoe Lake, Crimson View and Sky Ranch). I worked out the loss of income that will generate if this dump goes through. Based on the assessment tax for these 15 properties, the loss will be from $270,126 to $675,315. That's not good — not to mention the other loss of income to the borough's own landfill. CMS will be dumping tonnage on its on property to avoid paying its fair share.

You have the power to make the right choice to protect the gateway of Palmer from the smell of leaking decomposing gas (same smell at Highland facility), unsightly trash, contaminating drinking water and to protect the 415 property owners of Palmer whose hard-earned investments are at stake.

None of this would have come to a head if the borough enforced the reclamation clause in the gravel pit agreements.

William Quantick

Palmer

Neighbors have their fill

Posted: Tuesday, March 4, 2014 12:00 pm

PALMER — Having seen a renewed permit application filed earlier this year, neighbors wary of a proposed dump for construction debris say they're still not convinced their concerns have been addressed.

"They're taking advantage of the junkyard/refuse ordinance," said Zennon McNeill, president of the Gateway Community Council, which represents the area containing a decommissioned gravel pit that Central Monofill Services hopes to get permitted to operate as a dump for construction waste.

He said the Mat-Su Borough's regulations would let the company operate a dump with much fewer regulations than its own central landfill.

Central Monofill sees itself as a recycling company, selling whatever building materials it can and crushing up and disposing of the rest. Company officials say they kept 50,000 tons of trash out of landfills last year.

The fight is over what to do with the remainder — mostly ground up wood and Sheetrock, but also asbestos — and CMS says that putting it in a landfill is just not cost effective. Nor is trucking it to some far-off dumpsite. The company says it needs a site close to where buildings are being torn down. In addition to the Palmer site, it is working on permitting one in Chugiak, which neighbors also have opposed.

Neighbors of the Palmer site off the Glenn Highway east of the highway's interchange with the Parks Highway say that the area CMS wants to use is much too sensitive. There's a punctured aquifer there and trash would be too near to the water table. McNeill said he's seen CMS's latest permit and the hydrology report saying it won't seep into groundwater but he doesn't believe it.

Nor is McNeill convinced he said that the monitoring wells CMS has installed will be any help. His neighbors point out that by the time the wells detect anything, the water table would already be polluted.

The site has already landed in court where a district court judge found CMS and one of its owners, Shane Durand, guilty of dumping without a borough permit. At the time, CMS said it wasn't dumping, that it had moved out a building the company intended to reassemble onsite. It was mulching up wood and mixing ground-up debris with dirt to see if that would be a good disposal method.

"We were doing things that we feel are not part of the disposal landfill, but people see us out there doing things and automatically jump to the conclusion that we're dumping stuff," Durand said at the time.

But the Mat-Su Borough said it found illegally dumped trash in multiple test holes drilled on site. Whatever CMS's explanation was in court, it didn't convince Judge John Wolfe, who ordered the site cleaned up. The company has since filed and appeal.

McNeill said his neighbors counted 10 to 15 trucks running material out of there after the cleanup order. He said the that effort took four days, which, given that each truck can hold 20 tons, would mean that thousands of tons of debris was removed.

Durand said on a tour of the site that allegations he'd been dumping were unfounded. He said neighbors had accused him of all sorts of things, including running trucks in the middle of the night.

McNeill and his neighbors provided the Frontiersman with about 300 photos, mostly aerial shots of the site. None of them contain a smoking gun with evidence of tons of debris going into the site, though many do show the wood chipping operation underway and heavy equipment moving what could have been debris, but could just as likely have been dirt. Durand has said he did do some work smoothing out a spot that had been collecting water.

The company has long held that what it intends to dump is not harmful. It has pointed out that people live inside homes built from this stuff.

"These are all the same products in your house you're exposed to," Durand said during that tour earlier this year. "And now once I put them in the ground they're toxic?"

McNeill and his neighbors would ask a different question. What if you ground up a house and put the result in a sifter and poured water through it. Would you drink what came out the bottom?

Contact Andrew Wellner at 352-2270 or andrew.wellner@frontiersman.com.

Borough needs to be clear on monofill flap

Posted: Saturday, March 1, 2014 11:59 pm

We had a sit-down last week with a quartet of neighbors concerned about the idea of filling in a decommissioned gravel pit with construction waste.

Line by line, they went through a story we recently published and responded to the claims Central Monofill Services made about its project. We're digesting the material they gave us now. Look for a story in the coming days.

This issue has consumed a lot of our time over the last year, and it seems to be a quintessentially Mat-Su story. On one hand is a company wanting to do what people have done for years in the Valley — operate an industrial business in a spot that had previously been home to industrial operations. On the other hand is a group of neighbors in what has become a fairly well developed part of the Mat-Su Borough.

Gateway, as the community is called, sits right off the Glenn Highway at its interchange with the Parks Highway. There is a network of lakes back there, some of which include the popular Kepler-Bradley Lakes.

While that now-defunct gravel operation existed for decades, a neighborhood has now grownup nearby. Those homes and land have value, too.

Given its proximity to this lake system and well-established community of neighbors, is a monofill a compatible use of this land?

There was a time when nobody would have blinked an eye. Indeed, there's a very similar facility close by in the neighborhoods near the Alaska State Fairgrounds.

This is far from the only industrial plot where a neighborhood has grown up around it; this situation is a familiar scenario for us in the Mat-Su.

That is why we have been paying so much attention to the Central Monofill story. It's crucial that our borough leaders get this one right.

The Valley has seen its share of these growth-fueled conflicts, and we will continue to see them as our population expands. Perhaps population density is a way to help us map appropriate land uses "growing" forward.

CMS views itself as a recycling company. It diverts construction waste from landfills by selling the steel and concrete and other products. What it wants to dump in Palmer is the stuff it can't sell — ground up Sheetrock and lumber.

We need places to take that kind of material. The Mat-Su Borough Central Landfill takes it. But CMS would like to save on dump fees, which might not be a bad thing if it allows an expansion of recycling construction materials.

But we also understand why neighbors might worry. When operated as a gravel pit, the area had water issues with lakes changing levels and water pouring out of punctured aquifers.

We're not sure what the right call is here. Nor do we envy the Mat-Su Borough Planning Commission and the assembly when it comes to making this decision.

Whatever the outcome, this is an opportunity to develop clear, sustainable policy that can be used the next time industrial uses encroach on now-developed areas.

Because there will be a next time.

RECYCLER SUES CITY OVER DISPOSAL DISCOUNT

By NATHANIEL HERZ
nherz@adn.com

An Anchorage recycling company is suing the city for more than $100,000 over a discount in landfill disposal fees it says it's entitled to but never received.

Central Recycling Services says that Solid Waste Services, the municipal garbage utility, has refused to give a 50 percent discount for the disposal of waste the company had generated as part of its recycling operation, according to a complaint filed in state civil court last month.

City code contains a number of provisions that must be fulfilled before the discount is granted, and Solid Waste Services' position is that the recycling company did not meet them.

"The material they did bring in that qualified, we gave them their discounted rates," said Paul Alcantar, the director of Solid Waste Services. "But this material they were trying to bring us didn't qualify for it."

Alcantar said that the substance in question consisted of ground-up sheetrock and other building materials.

Shane Durand, Central Recycling Services' co-owner, was on vacation and unavailable Thursday, according to a woman who answered the phone at the company's office. She said no one else could speak about the suit.

The company's complaint says it developed a business plan in 2008 after consultations with Solid Waste Services, but that the utility later gave a differing interpretation of the city's recycling code in 2012 that is "contrary to law."

Reach Nathaniel Herz at nherz@adn.com or 257-4311.

Anchorage Daily News
March 1, 2014

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Monofill company re-applies for borough permit

Posted: Saturday, February 15, 2014 11:59 pm

PALMER — A company hoping to dispose of construction debris in a decommissioned gravel pit off the Glenn Highway has resubmitted its application for a Mat-Su Borough permit.

Central Monofill Services was at the center of a series of contentious hearings last year that culminated in a June 2013 ruling from the borough's planning commission denying the company's permit application. CMS has also been cited by the borough for dumping without a permit. The company disputes those citations and has appealed them in court, saying it didn't dump anything. CMS claims it manufactured mulch, brought out recycled building materials to put together an on-site warehouse and experimented with mixing crushed up construction debris with dirt as a means of disposing of it.

The permit denial said the company's plans didn't adequately protect the surrounding neighborhoods from blowing trash — neighbors said trash had already blown onto their properties — nor did it adequately protect groundwater.

Shane Durand with Central Monofill Services said the new application attempts to address those concerns.

For groundwater concerns, he has hired a new hydrologist and commissioned a new report. He said a hydrologist who previously looked at CMS' plans and deemed them incapable of protecting groundwater had viewed the proposal as one to create one massive pile of debris covered in a layer of dirt.

"Everyone was all keyed up that it was this big pile of trash," he said. "The engineer in me doesn't always make it as basic as it needs to be to convey the message."

What the plan actually calls for is a series of small piles stacked next to and on top of one another, each one covered in a layer of dirt. Durand said he took that outside hydrologist's report to heart, but the new consultant has him confident the project will not endanger the water table.

The area has had problems with groundwater in the past. A gravel pit in the area punctured an aquifer, changing water levels in a nearby lake.

On a tour of the pit, he pointed to test wells the company installed to monitor the ground water. He said some concerns about the water — that CMS would dump in manmade ponds on the property — were unfounded from the start. There would be no way he could get a permit to dump in the ponds and he would never want to.

The borough's planning commission, in denying a permit to the monofill, also mentioned those ponds, saying they are attractive to migratory birds and that material the company wants to dispose of could harm those birds if ingested.

Another concern the planning commission dealt with is blowing debris. Durand says in the new application he has outlined a plan to use catch fences around the fill spots. In addition, he said, the plan describes the use of anemometers.

"At certain wind speeds we won't dump any materials," he said.

Yet another concern neighbors had was that the monofill would contain hazardous materials. Durand said his company employs people to find those materials. There is no incentive to hide them, Durand said, because a contractor that brings them in has to pay to clean them up and is required to also pay CMS a fee.

But, he said, the new plan also includes a dump spot where contractors will put their loads down. That spot will move across the site as the pit is filled, but it will always have a liner separating the material and the ground.

He said he has included in the application letters from neighbors at the company's current facility along Anchorage's Ship Creek and another facility in Salcha.

"We don't have any issues with this stuff blowing around," he said about those operations. "The neighbors here aren't going to notice it's going on."

He said a lot of people have asked why the company chose this pit. Durand said it's hard to find a location that works this well. He said the former gravel pit needs to be back filled to be reclaimed as parkland or a subdivision. Now, aside from a handful of homes on the other side of a treed buffer zone, the majority of his neighbors are other gravel pits.

"Try to find a site that's at least 20 acres, doesn't have a stream running through it, doesn't have residences all around it," Durand said.

Also, a monofill site that both take construction debris from Anchorage and the Valley doesn't yet exist. A site farther out would make the prospect not cost-effective. In addition to the jobs CMS is offering, the company diverts tons of waste from the local landfill. He said his operation in Anchorage diverted 50,000 tons of waste from landfills there last year. For comparison, Durand said Valley Center for Recycling Solutions informed him it diverted 1,500 tons in that same period.

"It's a huge number that we're trying to do," he said.

Contact Andrew Wellner at 352-2270 or andrew.wellner@frontiersman.com.

UNFINISHED BUSINESS

Resolution No. 15-01

Findings of Fact and Conclusions of Law supporting the PC's failure to approve Resolution 14-33, CMS Monofill

(Page)

UNFINISHED BUSINESS

MATANUSKA-SUSITNA BOROUGH
Planning and Land Use Department
Development Services Division
350 East Dahlia Avenue • Palmer, AK 99645
Phone (907) 861-7822 • Fax (907) 861-7876
Email: PermitCenter@matsugov.us

MEMORANDUM

DATE: December 22, 2014

TO: Matanuska-Susitna Borough Planning Commission

FROM: Alex Strawn, Development Services Manager

SUBJECT: Resolution 15-01 - Proposed findings and conclusions to support denial of Planning Commission Resolution 14-33

Based on testimony at the December 1st and 15th public hearing, recent evidence submitted to the record, Planning Commission comments, and the record as a whole, staff believes the commission's decision to deny the conditional use permit for a construction and demolition monofill is supportable. In order to assist the commission with producing a resolution to support denial of PC Resolution 14-33, staff has prepared a draft resolution for consideration by the commission.

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By: Alex Strawn
Action:

MATANUSKA-SUSITNA BOROUGH
PLANNING COMMISSION RESOLUTION NO. 15-01

A RESOLUTION OF THE MATANUSKA-SUSITNA BOROUGH PLANNING COMMISSION ADOPTING FINDINGS OF FACT AND CONCLUSIONS OF LAW TO SUPPORT THEIR FAILURE TO APPROVE PLANNING COMMISSION RESOLUTION 14-33.

WHEREAS, Planning Commission Resolution 14-33 recommended approval of a conditional use permit, subject to conditions, for the operation of an inert material monofill on parcels 17N02E18C010 and 17N02E19B006, within Township 17 North, Range 2 East, Sections 18 and 19, Seward Meridian; and

WHEREAS, on December 1st and 15th, 2014, the Planning Commission held a public hearing on Resolution 14-33; and

WHEREAS, the Planning Commission's vote on the motion failed to garner a majority vote on December 15, 2014 which constitutes denial of the conditional use permit; and

WHEREAS, comments received regarding the proposed monofill raised the following concerns:

- Material has been dumped without MSB or ADEC permits
- Hazardous waste could end up in the landfill
- Trash was dumped in the water
- Water pollution
- Health problems
- Pollution of surrounding lakes
- Protection of watershed and aquifer

- Windblown unhealthy dust and particulates from the monofill, including asbestos
- Contamination of water wells
- Windblown materials/debris onto surrounding properties
- Previous problems with gravel extraction on this property and rising water table
- Breach of berm between two of the manmade lakes and impact on surrounding water levels
- Lack of oversight and planning
- Applicant's disregard for regulations
- Lack of CMS's ability to manage and provide oversight of the facility
- Failure to reclaim the property
- Contamination of soil
- Lowering of property values
- Visual impacts to the Glenn Highway, a Scenic Byway
- Threat to migratory and breeding birds
- How the redesign of the Glenn Highway will affect this site
- Rising water levels of nearby lakes
- Improper handling and disposal of asbestos
- Depositing of lead based paint, mercury and heavy metals in the monofill
- Close proximity to residential area
- Contamination of fish in Canoe, Kepler-Bradley Lake system
- Inconsistent with comprehensive plans
- Highway safety and access issues; and

WHEREAS, the proposed monofill is inconsistent with the goals and policies of the Borough-Wide Comprehensive Plan (2005 Update) and the Core Area Comprehensive Plan (2007 Update) because the monofill is an industrial use that is incompatible with the neighboring residential areas; and

WHEREAS, Goal LU-1 of the Borough-Wide Comprehensive Plan (2005 Update) is to *Protect and enhance the public safety, health, and welfare of Borough residents*; and

WHEREAS, Policy LU1-1 Borough-Wide Comprehensive Plan (2005 Update)is to *Provide for consistent, compatible, effective, and efficient development within the Borough*; and

WHEREAS, Goal LU-2 of the Borough-Wide Comprehensive Plan (2005 Update) is to *Protect residential neighborhoods and associated property values*; and

WHEREAS, Policy LU2-1 of the Borough-Wide Comprehensive Plan (2005 Update) is to *Develop and implement regulations that protect residential development by separating incompatible uses, while encouraging uses that support such residential uses including office, commercial and other mixed-use developments that are shown to have positive cumulative impacts to the neighborhood*; and

WHEREAS, Goal LU-3 of the Borough-Wide Comprehensive Plan (2005 Update) is to *Encourage commercial and industrial development that is compatible with residential development and local community desires*; and

WHEREAS, Policy LU3-1 of the Borough-Wide Comprehensive Plan (2005 Update) is to *Develop and implement regulations that provide for non-residential development; and*

WHEREAS, Goal LU-5 of the Borough-Wide Comprehensive Plan (2005 Update) is to *Protect and enhance the Borough's natural resources including watersheds, groundwater supplies and air quality; and*

WHEREAS, Policy LU4-1 of the Borough-Wide Comprehensive Plan (2005 Update) is to *Identify, monitor, protect, and enhance the quantity and quality of the Borough's watersheds, groundwater aquifers, and clean air resources; and*

WHEREAS, Goal CQ-1 of the Borough-Wide Comprehensive Plan (2005 Update) is to *Protect natural systems and features from the potentially negative impacts of human activities, but not limited to, land development;* and

WHEREAS, Policy CQ1-2 of the Borough-Wide Comprehensive Plan (2005 Update) is to *Manage activities affecting air, vegetation, water, and the land to maintain or improve environmental quality, to preserve fish and wildlife habitat, to prevent degradation or loss of natural features and functions, and to minimize risks to life and property; and*

WHEREAS, this site is located within the boundary of the Core Area Comprehensive Plan (2007 Update) boundary; and

WHEREAS, Policy 1-B of the Land Use Goal within the Core Area Comprehensive Plan (2007 Update) is to *Promote an orderly land use pattern suited to the demand for attractive settings in*

which to live, work, shop, learn, play, and carry on other daily activities; and

WHEREAS, Policy Discussion related to policy 1-B within the Core Area Comprehensive Plan (2007 Update) states *As the Core Area's population grows – it is forecast to double by 2025 and absorb most of the remaining vacant land in the Core Area – the limited vacant land supply must provide a balanced supply of well-located sites for homes, businesses, private and public institutions, industry, parks and recreation, public improvements, and other purposes. The plan needs to provide a place for every permitted land use, but not all land uses go well side-by-side. Some uses such as residences and open space or retail trade and service business are usually compatible and enhance each other. Others, like heavy industrial activities and residential subdivisions, make poor neighbors and are best separated by distance or buffers;* and

WHEREAS, Goal 7 of the Core Area Comprehensive Plan (2007 Update) is to *Protect and conserve the natural resources that support the well-being of residents and the region's tourism and recreation economy;* and

WHEREAS, Policy 7-A of the Core Area Comprehensive Plan (2007 Update) is to *Protect groundwater supplies and quality;* and

WHEREAS, Policy Discussion related to policy 7-A of the Core Area Comprehensive Plan (2007 Update) states *Many existing and future residences and businesses will depend on on-site groundwater resources for their water supply. Protection of the supply and quality of groundwater is vital to sustain this arrangement*; and

WHEREAS, Policy 7-B of the Core Area Comprehensive Plan (2007 Update) is to *Protect surface water quality*; and

WHEREAS, Policy Discussion related to policy 7-B of the Core Area Comprehensive Plan (2007 Update) states *The Core Area's many lakes are valuable natural and economic assets. They provide an attractive setting for residential development, enhance property values, support a variety of public and private recreational activities, and provide natural habitat, absorb runoff. These lakes are linked to streams and wetlands with similar positive values. The borough's existing program of lake management plans already provides some protection for surface water quality*; and

WHEREAS, the Alaska Department of Environmental Conservation has not approved a permit for this development, as proposed; and

WHEREAS, the previous use of this site was for earth materials extraction. There are pre-existing legal nonconforming

use rights for earth materials extraction for this property, which means that the industrial use was not approved under the current regulatory structure or evaluated for compatibility with surrounding land uses; and

WHEREAS, The proposed monofill is an industrial use and is an incompatible use with the surrounding residential areas as there is the possibility of contamination of drinking water wells and surrounding lakes within the area; and

WHEREAS, the underlying water table level is subject to significant fluctuations resulting from adjacent land use activities including the spill way located on the property and the dredging operation immediately to the north; and

WHEREAS, the Middle Pond on the site is unable to reach its predevelopment equilibrium when surface water is diverted out of the Middle Pond, as is currently occurring through the spillway; as testified by Charlie Cobb, State Dam Safety Engineer for the Water Resources Section of the Department of Natural Resources; and

WHEREAS, water levels in the three gravel pit ponds on site tend to sit at three different elevations and are acutely related to surface connections, but also related to groundwater levels in the vicinity or vice versa; as testified by Charlie Cobb, Dam Safety Engineer; and

WHEREAS, the embankments between the three surface ponds of the gravel pits, and possibly the surrounding shoreline, may not be dynamically stable due to the liquefaction potential of silt and sand soils in the vicinity; as testified by Charlie Cobb, Dam Safety Engineer; and

WHEREAS, as conveyed by the Department of Natural Resources Water Resources Section, the continued diversion of surface water and the integrity of the dam at the site are unresolved; and

WHEREAS, the applicant has not addressed how they will monitor or manage the seasonal high water table fluctuations to ensure that the bottom of the monofill is not annually saturated by groundwater; and

WHEREAS, a hydrologic report submitted to the Borough early in 2014 predicts a potential 2-foot water table rise resulting from dredging operations adjacent to the proposed monofill site to the north; and

WHEREAS, contaminants from the monofill will likely travel to surrounding drinking water wells and lakes; and

WHEREAS, a hydrology report within the record conveys that there is a high risk of water table contamination due to leachate; and

WHEREAS, the CMS hydrologists (Maddox & Associates) used annual precipitation and evaporation rates, which ignores the fact that precipitation at the site is not evenly spread throughout the year; and

WHEREAS, JA Munter Consulting Inc. cited a recent USGS study which characterizes the site as transitional between maritime and continental climates and the USGS estimates that 1.4 inches of water per year will recharge groundwater at this site, which equates to more than one million gallons of water, which is a significant volume of water to percolate through the waste material and enter the groundwater system; and

WHEREAS, as proposed, the monofill will be unlined with no system to capture, treat, or monitor polluting leachate which is likely to leave the site; and

WHEREAS, soils in the area of the monofill site are very porous loose gravels and glacial loess, and offer little or no filtering capacity for fluids being emitted or drained from the fill. Without a liner, a ten foot separation is not sufficient to prevent leachate from reaching the water table, thus increasing the risk of contamination of the water resources in the area; and

WHEREAS, the monofill is designed to have water flow through the construction debris with an average hydro

conductivity of approximately 2.0 x 10-2 cm/second, as determined by an engineering report submitted by the applicant; and

WHEREAS, contaminants typically found in groundwater surrounding construction and demolition landfills include cadmium, lead, iron, manganese, several chlorinated volatile organic compounds, sulfate, hydrogen sulfide, and TDS (Total Dissolved Solids). In addition, chromium and arsenic are found if chrominated copper arsenate-treated wood is disposed in the landfill; and

WHEREAS, there is the potential for the construction and demolition monofill to undergo spontaneous combustion or to catch fire by other outside sources. In the event that the material catches fire, a common method for fire suppression is application of copious amounts of water and foam, which could leach into the water table and cause dramatic and sudden increase of polluting leachate; and

WHEREAS, the applicant did not propose a water quality monitoring program as part of the application; and

WHEREAS, the applicant has not provided a plan for remediation should the water table be polluted beyond safe drinking water levels; and

WHEREAS, as proposed, it is not possible to set conditions

to adequately protect the groundwater and aquifer from anticipated negative effects of the monofill; and

WHEREAS, the commission cannot find that this conditional use permit will preserve or not detract from the value, character, and integrity of the surrounding area as required by 17.60.100(B)(1) based on the above findings of fact and conclusions of law; and

WHEREAS, based on the above findings of fact, the commission concludes that it cannot find that this conditional use permit will not be harmful to the public health, safety, convenience, and welfare as required by 17.60.100(B)(2).

NOW, THEREFORE, BE IT RESOLVED, that the Matanuska-Susitna Borough Planning Commission hereby adopts the aforementioned findings of fact and conclusions of law supporting denial of Planning Commission Resolution 14-33.

BE IT FUTHER RESOLVED that this is a final determination which may be appealed in accordance with MSB 15.39.140 by filing a written notice of appeal with the Borough Clerk within 21 days from the date this determination was issued. If an appeal is not filed as described in the preceding sentence, the right to appeal is forfeited.

/

/

ADOPTED by the Matanuska-Susitna Borough Planning Commission this ___ day of ___, 2015.

_____
JOHN KLAPPERICH, Chair

ATTEST:

_____
MARY BRODIGAN, Planning Clerk

(SEAL)

DRAFT

YES:

NO:

Proposed Findings Submitted By Commissioners

Endle, Adams, Rauchenstein, and Adams

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Brian Endle Proposed DRAFT Findings of Fact
Supporting Denial of Resolution 14-33
Central Monofill Services, Inc.

Amendment E1

WHEREAS, Resolution 13-22 recommended approval of a conditional use permit for the operation of an inert material monofill on parcels 17N02E18C010 and 17N02E19B006, within Township 17 North, Range 2 East, Sections 18 and 19, Seward Meridian; and

Amendment E2

WHEREAS, Resolution 13-30 contains findings of fact and conclusions of law which support denial of the conditional use permit; and

Amendment E3

WHEREAS, on June 3, 2013, the Planning Commission held a public hearing on Resolution 13-22; and

Amendment E4

WHEREAS, the Planning Commission's vote on the motion failed to garner a majority vote on June 3, 2013; and

Amendment E5

NOW, THEREFORE, BE IT RESOLVED, that the Matanuska-Susitna Borough Planning Commission denied the conditional use permit based on the following findings of fact and conclusions of law:

1. Borough staff has documented trash and the Daily Cover (screened fines) that has blown from the monofill onto adjacent properties.
2. Borough staff has documented trash and/or the Daily Cover blown over the 40 foot hill on the west side of the property.
3. ADEC regulations (18 AAC 60.420(2)) states a monofill must be operated so that litter is controlled by fencing or another approved means, and is removed from access roadways and other areas in the facility.
4. This region experiences frequent multiple-day high-wind events each year since it is at the confluence of the Matanuska and Knik River valleys. Loose debris and dust from the fill has and is expected to continue to scatter beyond the boundaries of the site.

5. Fencing is not expected to contain the trash and/or the Daily Cover/screened fines on the site. The trash and/or Daily Cover/screened fines will get blown into the trees and surrounding properties.
6. CMS has not provided adequate mitigation plans for preventing trash and debris from leaving the site.
7. The Daily Cover/screened fines consist of shredded materials that are less than two inches in size. Material this size is easily distributed by the wind.
8. The inert debris that will be deposited on the site will be shredded into pieces 12 inches or smaller. Material this size can also become windblown.
9. The previous use of this site was for earth materials extraction. There are pre-existing legal nonconforming use rights for earth materials extraction for this property, which means that the industrial use was not approved under the current regulatory structure or evaluated for compatibility with surrounding land uses.
10. The proposed monofill is an industrial use and is an incompatible use with the surrounding residential areas as it cannot be completely screened from the surrounding residences to the west, debris from the monofill will blow onto the surrounding residences and roadways, and there is the possibility of contamination of drinking water wells in the area.
11. The final height of the monofill is proposed to be at 150 feet above sea level (ASL). The proposed monofill will have 2700 feet of frontage along the Glenn Highway. The proposed completed height of the monofill will be 35 to 40 feet above the adjacent berms on the southwest perimeter of the site.
12. The monofill will be unsightly from the Glenn Highway, and from the surrounding properties, including the residential subdivision directly to the west. It is not possible to completely screen the monofill because of topography and because the project is proposed to be 150 feet (ASL) high at completion.
13. The proposed monofill is inconsistent with some of the land use goals and policies of the Borough-Wide Comprehensive Plan (2005 Update) and the monofill is an industrial use and incompatible with the neighboring residential areas.
14. The proposed monofill is inconsistent with some of the goals and policies of the Borough-Wide Comprehensive Plan (2005 Update) and the Core Area Comprehensive Plan (2007) as there is the potential for groundwater

contamination that could have negative effects on drinking waste and surface water quality.

15. The proposed monofill is inconsistent with the goals and policies of the Borough-Wide Comprehensive Plan (2005 Update) and the Core Area Comprehensive Plan (2007 Update)
16. The proposed monofill will not preserve and will detract from the value, character, and integrity of the surrounding area as the monofill will be unsightly from the Glenn Highway and from the surrounding properties including the residential subdivision directly to the west. It is not possible to completely screen the monofill because of topography and because the project is proposed to be 150 feet (ASL) high at completion. Conditions may be set to address trash and debris containment on the site (17.60.100(B)(1)).
17. Comments received regarding the proposed monofill raised the following concerns:
    - Dumping of material without MSB or ADEC permits.
    - Dumping of hazardous waste
    - Trash in the water
    - Water pollution
    - Health problems
    - Pollution of surrounding lakes
    - Protection of watershed and aquifer
    - Compromising the aquifer
    - Windblown unhealthy dust and particulates from the monofill
    - Pollution of drinking water
    - Windblown materials/debris onto surrounding properties
    - Impact on downstream waterways
    - Long term safety of water quality
    - Contamination of water table
    - Use the existing landfill for disposal of material
    - Previous problems with gravel extraction on this property and rising water table
    - Trash in the trees is an eyesore
    - Breaching of berm between two of the manmade lakes and impact on surrounding water levels
    - Long term impact of contamination of drinking water
    - Disregard for lakes, streams, and drinking water

- Lack of oversight and planning
- Lack of CMS's ability to manage and provide oversight of the facility
- Concerns about reclamation of the property
- Dumping of garbage/monofill near standing water
- High wind area will cover surrounding area with dust and debris from monofill
- Contamination of soil
- Residents are entitled to clean air, land and water
- Lowering of property values
- The Glenn Highway is a Scenic Byway
- Threat to migratory and breeding birds
- How the redesign of the Glenn Highway will affect this site
- Rising water level of Canoe Lake due to dam breach
- Concerns about asbestos being dumped at this site
- Concerns about lead based paint, mercury and heavy metals deposited in the monofill
- Too close to residential area

18. The monofill will be unlined.
19. Materials brought to the site will not be deposited on an impermeable surface that will contain any prohibited and/or contaminated materials.
20. No system is proposed to capture, treat, or monitor leachate leaving the site.
21. Alaska Department of Environmental Conservation ADEC regulations state that an unlined landfill may not be located closer than 10 feet above the highest measured level of an aquifer of resource value unless the landfill is constructed two feet or more above the natural ground surface (18 AAC 60.217).
22. The applicant has not addressed how they will monitor or manage the seasonal high water table fluctuations to ensure that the bottom of the monofill is not annually saturated by groundwater.
23. Soils in the area of the monofill site are very porous, loose gravels and glacial loess, and offer little or no filtering capacity for fluids being emitted or drained from the fill. Without a liner, a ten foot separation is not sufficient to prevent leachate from reaching the water table increasing the risk of potential contamination of the water resources in the area.

24. Contaminants typically found in groundwater surrounding construction and demolition landfills include cadmium, lead, iron, manganese, several chlorinated volatile organic compounds, sulfate, hydrogen sulfide, and TDS (Total Dissolved Solids). Chromium and arsenic are found if chrominated copper arsenate-treated wood is disposed in the landfill.
25. The site appears to be up gradient of the groundwater flow direction from private drinking water wells. Without a Fate and Transport Model for compounds of concern to evaluate the risk posed by the proposed monofill to down gradient wells, there is no way to evaluate if these compounds will reach the drinking water wells at concentrations posing risk to health.
26. Baseline data for water quality has not been provided.
27. Seasonal water table elevation fluctuations have not been established.
28. The top of the completed monofill drops 40 feet from one end to the other. The run-off from this slope could pose problems with the dredge ponds at the base of the monofill causing problems with the aquifer.
29. Migratory birds, especially waterfowl, are attracted to the ponds already on the site. Material used as daily cover includes material potentially hazardous to birds if ingested.
30. This site is less than one mile from the Palmer Hay Flats Refuge, which is the major migratory bird refuge in Southcentral Alaska.
31. It is not possible to set conditions to adequately protect the groundwater and aquifer from anticipated negative effects of the monofill. The stormwater management proposed by the applicant will maximize the volume of water infiltrating the monofill. This infiltrating meltwater and rainfall will percolate through the placed materials, enter the groundwater and a large unconfined aquifer. The leachate from the construction and debris monofill may contain compounds at concentrations above drinking water standards. That water will impact private and public water wells used by homes, neighborhoods and farms, and could also enter nearby lakes that are heavily used. Adequate baseline water quality data monitoring to establish the quality of the existing water, the level of the groundwater throughout the monofill site, and the porosity of the materials under the monofill, has not been provided.
32. The proposed monofill will be harmful to the public

health, safety, convenience, and welfare (17.60.100(B)(2)).

33. The site plan depicts the proposed structures in compliance with setback requirements.
34. The application minimally addresses the impacts of the climate, geology, hydrology and geography of the site and the impacts to surrounding land uses.
35. According to documentation and studies the proposed monofill site is located where the topography, geology, hydrology and soil are inadequate for protection of ground and surface water quality.
36. The conditional use does not fulfill all other requirements of this chapter (17.60.100(B)(4)).
37. The berm adjacent to the Glenn Highway will have to extend in height in order to obscure the view of the monofill from the highway.

Amendment E6

WHEREAS, Resolutions 14-33 recommended approval of a conditional use permit for the operation by Central Monofill Services (CMS) of an inert material monofill on parcels 17N02E18C010 and 17N02E19B006, within Township 17 North, Range 2 East, Sections 18 and 19, Seward Meridian; and

Amendment E7

WHEREAS, Resolution 14-XX contains findings of fact and conclusions of law which support denial of the conditional use permit; and

Amendment E8

WHEREAS, on December 1, 2014 and December 15, 2014, the Planning Commission held public hearings on Resolution 14-33; and

Amendment E9

WHEREAS the Planning Commission's vote on the motion failed to garner a majority vote on December 15, 2014.

Amendment E10

BE IT FUTHER RESOLVED that this is a final determination which may be appealed in accordance with MSB 15.39.140 by filing a written notice of appeal with the Borough Clerk within 21 days from the date this determination was issued. If an appeal is not filed as described in the preceding sentence, the right to appeal is forfeited.

Tomas Adams Proposed DRAFT Findings of Fact and Conclusions Supporting Denial of Resolution 14-33 Central Monofill Services, Inc.

Findings of Fact

Amendment A1
Applicant proposes operation of a monofill for the disposal of inert waste material and asbestos-containing materials.

Amendment A2
Past use of the property has included extraction of earth materials.

Amendment A3
Gravel extraction activities in the area have created concerns about potential effects on nearby drinking water wells serving individual residences and public water systems and potential hydrologic effects on other resources.

Amendment A4
Soils beneath the site are highly permeable.

Amendment A5
In the vicinity of the proposed monofill, groundwater occurs in an unconfined aquifer tapped by numerous domestic and community water supply wells.

Amendment A6
The inert waste monofill design does not include an engineered native-soil or other liner.

Amendment A7
No system is proposed to capture, treat, or dispose leachate from the inert waste monofill.

Amendment A8
Documentation regarding potential for groundwater contamination is conflicting.

Amendment A9
Applicant has not obtained a permit from the Alaska Department of Environmental Conservation (ADEC) for an inert waste monofill.

Amendment A10
This region experiences frequent multiple-day high-wind events each year since it is at the confluence of the Matanuska and Knik River valleys. Loose debris and dust from the fill has and is expected to continue to scatter beyond the boundaries of the site.

Amendment A11
Fencing is not expected to contain the trash and/or the daily cover/screened fines on the site. The trash and/or the daily cover/screened fines will get blown into the trees and surrounding properties.

Amendment A12
The inert debris that will be deposited on the site will be shredded into pieces 12 inches or smaller. Material this size can also become windblown.

Conclusions

Amendment A13
Based upon the above findings, the Planning Commission makes the following conclusions:

1. The conditional use will detract from the value, character, and integrity of the surrounding area; and
2. the proposed inert waste monofill may be harmful to the public health, safety, convenience and welfare.

Vern Rauchenstein Proposed DRAFT Findings of Fact
Supporting Denial of Resolution 14-33
Central Monofill Services, Inc.

Amendment R1

WHEREAS, the MSB needs a more centrally and a more suitable location for a monofill that can accept RACM and Non-RACM materials. (Between 2002 and 2012 close to 2400 homes were built each year in the MSB); and

Amendment R2

WHEREAS, Title-Transfer between extraction companies is understandable; but title-transfer to a Monofill Company puts the whole C.U.P. in question; and

Amendment R3

WHEREAS, fighting a fire or underground fire in a monofill presents difficulties:

1. How is aquifer protected?
2. Compositions of materials changes.

Amendment R4

WHEREAS, the applicant assumed the masterplan of the C.U.P. when they purchased the property. With RACM and Non-RACM in the monofill, the difficulties that this presents were not addressed; and

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Thomas Healy Proposed DRAFT Findings of Fact
Supporting Denial of Resolution 14-33
Central Monofill Services, Inc.

Amendment H1

WHEREAS, except for a limited number of land uses, Mat-Su Borough code does not have zoning regulations or districts regulating the location of specific land uses. Without comprehensive zoning regulations, the Planning Commission must analyze land use and permit applications against the standards established by Borough comprehensive plans to determine if the proposed use complies with these plans; and

Amendment H2

WHEREAS, the Borough Comprehensive Plan contains Goal LU-1, which states, "Protect and enhance the public safety, health and welfare of Borough residents," and Policy LU-1-1, which states, "Provide for consistent, compatible, effective and efficient development within the Borough;" and

Amendment H3

WHEREAS, substantial evidence provided in written and spoken testimony expressed concern that the proposed monofill will negatively impact ground water quality, property values and the general welfare of the area, and the monofill will not be compatible with adjacent residential properties; and

Amendment H4

WHEREAS, the Borough Comprehensive Plan contains Goal LU-2, which states, "Protect residential neighborhoods and associated property values," and Policy LU2-1, which states, "Develop and implement regulations that protect residential development by separating incompatible uses, while encouraging uses that support such residential uses including office, commercial and other mixed-use developments that are shown to have positive cumulative impacts to the neighborhood;" and

Amendment H5

WHEREAS, the proposed monofill does not protect residential neighborhoods and associated property values, as shown by evidence provided that leachate from the proposed use has the potential to contaminate the aquifer that is the source of drinking water for adjacent residential uses and evidence that debris processed by the applicant from the proposed monofill site has been blown onto adjacent residential properties; and

Amendment H6

WHEREAS, the proximity of the monofill to established residential areas does not provide adequate separation between incompatible uses and granting the permit for this industrial use may discourage the types of development in this area listed in Policy LU2-1 that are compatible with and support residential uses; and

Amendment H7

WHEREAS, substantial evidence in the record indicates there are serious questions whether the proposed use is compatible with surrounding uses and that it will have "positive cumulative impacts to the neighborhood," including photographs documenting debris and litter blown from this site onto adjacent properties; hydrologic concerns raised by J.A. Munter Consulting, Inc. regarding possible contamination of the aquifer by leachate from the monofill; and extensive testimony by residents and property owners in the area identifying what they believe will be negative effects of the proposed use; and

Amendment H8

WHEREAS, the Borough Comprehensive Plan contains Goal LU-3, which states, "Encourage commercial and industrial development that is compatible with residential development and local community desires;" and

Amendment H9

WHEREAS, the proposed monofill is a long-term industrial use that will occupy property used previously for earth materials extraction. This property has pre-existing legal nonconforming use rights for earth materials extraction. According to the Borough staff report, this means "the industrial use was in existence prior to the current regulatory structure and was not evaluated for compatibility with surrounding land uses." The proposed industrial use must be evaluated for compatibility with surrounding land uses under the current regulatory structure; and

Amendment H10

WHEREAS, the record contains extensive written and spoken testimony from the community opposing this conditional use permit which outweighs testimony in favor by wide margins: more than four to one in spoken testimony and more than two to one in written testimony. The record also contains testimony opposing the permit by the Gateway Community Council, homeowner associations, the City of Palmer, and dozens of residents and property owners of the area; and

Amendment H11

WHEREAS, the overwhelming testimony in opposition to the proposed monofill indicates strongly that the proposed activity is not "compatible with residential development and local community desires;" and

Amendment H12

WHEREAS, the Borough Comprehensive Plan contains Goal LU-4, which states, "Protect and enhance the Borough's natural resources including watersheds, groundwater supplies and air quality," and Policy LU4-1, which states, "Identify, monitor, protect and enhance the quantity and quality of the Borough's watersheds, groundwater aquifers and clean air resources;" and

Amendment H13

WHEREAS, the record contains extensive information on the aquifer beneath the proposed monofill site and surrounding area. This aquifer is the source of drinking water for several wells serving residential uses adjacent to and in the area of the proposed monofill site; and

Amendment H14

WHEREAS, hydrologists hired by the applicant in their reports challenged conclusions by hydrologist J.A. Munter Consulting regarding the production of leachate and the hydrologic dynamics between the monofill and the aquifer. Munter responded by letter of December 1, 2014, stating, "Although a few sections of my prior reviews would benefit from some minor revisions, I have found no compelling technical case to substantially revise or retract any of my prior comments. The record still contains significant technical deficiencies that preclude supporting the statement found in the Borough findings, that this facility does not have the potential for groundwater contamination that could have negative effects on drinking water;" and

Amendment H15

WHEREAS, this fundamental disagreement in the conclusions of professional hydrologists regarding the proposed monofill provides no clear assurance that the monofill will "protect and enhance the Borough's natural resources including watersheds, groundwater supplies and air quality," leading to a likelihood that the monofill could contaminate the groundwater that is the source of drinking water for dozens of residences in the area; and

Amendment H16

WHEREAS, the proposed monofill project is not consistent with the Borough Comprehensive Plan; and

Amendment H17

WHEREAS, the Borough Core Area Comprehensive Plan (2007 Update) contains Policy 1-B, which states, "Promote an orderly land use pattern suited to the demand for attractive settings in which to live, work, shop, learn, play and carry on other daily activities," and, in the Policy Discussion, states, "The plan needs to provide a place for every permitted land use, but not all land uses go well side-by-side. Some uses such as residences and open space or retail trade and service business are usually compatible and enhance each other. Others, like heavy industrial activities and residential subdivisions, make poor neighbors and are best separated by distance or buffers;" and

Amendment H18

WHEREAS, the proposed monofill is not compatible with this policy as testimony showed it abuts residential areas and has the potential to adversely affect those uses and values; and

Amendment H19

WHEREAS, the previous use on this property had pre-existing legal nonconforming use rights for earth materials extraction, an industrial use. However, according to the Borough staff report, "the industrial use was not approved under the current regulatory structure or evaluated for compatibility with surrounding land uses." Evaluating the proposed industrial monofill use under current land use plans and policies indicates, from testimony provided to the Commission, that the monofill use is not compatible with surrounding land uses, specifically residential areas; and

Amendment H20

WHEREAS, the Borough Core Area Comprehensive Plan contains Policy 1-J, which states, "Encourage light industrial parks," and, in the Policy Discussion, states, "Restored earth materials extraction sites with good highway access can be prime candidates for light industrial uses;" and

Amendment H21

WHEREAS, the proposed industrial monofill use is not consistent with this policy; and

Amendment H22

WHEREAS, the Borough Core Area Comprehensive Plan contains Policy 1-M, which states, "Collaborate with operators of large earth materials extraction sites to plan for site reclamation and re-use after earth materials extraction activities are finished," and, in the Policy Discussion, states, "Redevelopment of these sites makes good use of the borough's land base and enhances the value and economic potential of nearby properties;" and

Amendment H23

WHEREAS, extensive testimony in this matter expressed concern over negative impacts on residential uses and groundwater and air quality in this area; and

Amendment H24

WHEREAS, development of the property as a monofill industrial site will not "enhance the value and economic potential of nearby properties," and is not consistent with Policy 1-M; and

Amendment H25

WHEREAS, the Borough Core Area Comprehensive Plan contains Policy 7-A, which states, "Protect groundwater supplies and quality," and the Policy Discussion states, in part, ""Many existing and future residences and businesses will depend on on-site groundwater resources for their water supply. Protection of the supply and quality of groundwater is vital to sustain this arrangement;" and

Amendment H26

WHEREAS, the record shows there is significant disagreement between hydrological reports of groundwater resources on this property and the potential of the proposed monofill to produce leachate that may enter the groundwater; and

Amendment H27

WHEREAS, this difference of professional opinions indicates there is not adequate assurance that the proposed monofill will protect groundwater supplies and quality; and

Amendment H28

WHEREAS, the Borough Core Area Comprehensive Plan contains Policy 7-B, which states, "Protect surface water quality," and, in the Policy Discussion, states, "The Core Area's many lakes are valuable natural and economic assets. These lakes are linked to streams and wetlands with similar positive values;" and

Amendment H29

WHEREAS, extensive testimony and hydrologic reports in the record confirm a direct link between gravel dredge ponds on the applicant's property and the natural lakes in the nearby Crevasse-Morraine State Park lake system. Testimony expressed concern over the effects of previous gravel mining activities and possible effects of the proposed monofill on the aquifer and lake surface water in this area; and

Amendment H30

WHEREAS, evidence supports a finding that the proposed construction and operation of an industrial monofill at the proposed location is inconsistent with the Borough Comprehensive Plan and the Borough Core Area Comprehensive Plan; and

Amendment H31

WHEREAS, evidence supports a finding that the proposed project has the potential to impose significant negative impacts on properties and natural resources in the area; and

Amendment H32

WHEREAS, the extent of the potential negative impacts associated with this proposed use, including contamination of the aquifer, excessive windblown debris, lack of adequate visual screening, the potential for fire, as well as possible negative impacts on property values and future investment in the area supports a finding that it is not possible to attach conditions to the permit that would adequately mitigate or prevent these risks; and

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Planning Commission Correspondence

Mary Brodigan

From: Brian Endle [brian.endle@gmail.com]
Sent: Tuesday, December 16, 2014 10:18 PM
To: Mary Brodigan
Subject: CMS Findings/Conclusions

RECEIVED
DEC 16 2014
Matanuska - Susitna Borough
Planning Dept Administration

Mary,

I would like to submit for the commission the 37 findings of fact and conclusions of law contained in Resolution 13-30(AM) on page 2173 of the December 1, 2014 packet as findings of fact and conclusions of law to support the denial of Resolution 14-33:

I would like to include the WHEREAS clauses contained in Resolution 13-30(AM).

I would also like to add the following WHEREAS clauses.

1. A whereas stated as follows:
WHEREAS, Resolutions 14-33 recommended approval of a conditional use permit for the operation by Central Monofill Services (CMS) of an inert material monofill on parcels 17N02E18C010 and 17N02E19B006, within Township 17 North, Range 2 East, Sections 18 and 19, Seward Meridian; and 2. a whereas stated as follows:
WHEREAS Resolution 14-XX contains findings of fact and conclusions of law which support denial of the conditional use permit; and 3. a whereas stated as follows:
WHEREAS on December 1, 2014 and December 15, 2014, the Planning Commission held public hearings on Resolution 14-33; and 4. a whereas stated as follows:
WHEREAS the Planning Commission's vote on the motion failed to garner a majority vote on December 15, 2014; and

I would like to move this at the January 5th meeting.

Thanks,

Brian Endle

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MATANUSKA-SUSITNA BOROUGH
PLANNING COMMISSION RESOLUTION NO. 13-30 (Am)

A RESOLUTION OF THE MATANUSKA-SUSITNA BOROUGH PLANNING COMMISSION ADOPTING FINDINGS OF FACT AND CONCLUSIONS TO SUPPORT THEIR FAILURE TO APPROVE RESOLUTION 13-22.

WHEREAS, Resolution 13-22 recommended approval of a conditional use permit for the operation by Central Monofill Services (CMS) of an inert material monofill on parcels 17N02E18C010 and 17N02E19B006, within Township 17 North, Range 2 East, Sections 18 and 19, Seward Meridian; and

WHEREAS, Resolution 13-30 contains findings of fact and conclusions of law which support denial of the conditional use permit; and

WHEREAS, on June 3, 2013, the Planning Commission held a public hearing on Resolution 13-22; and

WHEREAS, the Planning Commission's vote on the motion failed to garner a majority vote on June 3, 2013; and

NOW, THEREFORE, BE IT RESOLVED, that the Matanuska-Susitna Borough Planning Commission denied the conditional use permit based on the following findings of fact and conclusions of law:

1. Borough staff has documented trash and the Daily Cover (screened fines) that have blown from the monofill onto adjacent properties.

2. Borough staff has documented trash and/or the Daily Cover blown over the 40 foot hill on the west side of the property.

3. ADEC regulations (18 AAC 60.420(2)) states a monofill must be operated so that litter is controlled by fencing or another approved means, and is removed from access roadways and other areas in the facility.

4. This region experiences frequent multiple-day high-wind events each year since it is at the confluence of the Matanuska and Knik River valleys. Loose debris and dust from the fill has and is expected to continue to scatter beyond the boundaries of the site.

5. Fencing is not expected to contain the trash and/or the Daily Cover/screened fines on the site. The trash and/or Daily Cover/screened fines will get blown into the trees and surrounding properties.

6. CMS has not provided adequate mitigation plans for preventing trash and debris from leaving the site.

7. The Daily Cover/screened fines consist of shredded materials that are less than two inches in size. Material this size is easily distributed by the wind.

8. The inert debris that will be deposited on the site will be shredded into pieces 12 inches or smaller. Material this size can also become windblown.

9. The previous use of this site was for earth materials extraction. There are pre-existing legal nonconforming use rights for earth materials extraction for this property, which means that the industrial use was not approved under the current regulatory structure or evaluated for compatibility with surrounding land uses.

10. The proposed monofill is an industrial use and is an incompatible use with the surrounding residential areas as it cannot be completely screened from the surrounding residences to the west, debris from the monofill will blow onto the surrounding residences and roadways, and there is the possibility of contamination of drinking water wells in the area.

11. The final height of the monofill is proposed to be at 150 feet above sea level (ASL). The proposed monofill will have 2700 feet of frontage along the Glenn Highway. The proposed completed height of the monofill will be 35 to 40 feet above the adjacent berms on the southwest perimeter of the site.

12. The monofill will be unsightly from the Glenn Highway, and from the surrounding properties, including the residential subdivision directly to the west. It is not possible to completely screen the monofill because of topography and because the project is proposed to be 150 feet (ASL) high at completion.

13. The proposed monofill is inconsistent with some of the land use goals and policies of the Borough-Wide Comprehensive Plan (2005 Update) and the monofill is an industrial use and incompatible with the neighboring residential areas.

14. The proposed monofill is inconsistent with some of the goals and policies of the Borough-Wide Comprehensive Plan (2005 Update) and the Core Area Comprehensive Plan (2007) as there is the potential for groundwater contamination that could have negative effects on drinking water and surface water quality.

15. The proposed monofill is inconsistent with the goals and policies of the Borough-Wide Comprehensive Plan (2005 Update) and the Core Area Comprehensive Plan (2007 Update)

16. The proposed monofill will not preserve and will detract from the value, character, and integrity of the surrounding area as the monofill will be unsightly from the Glenn Highway and from the surrounding properties including the residential subdivision directly to the west. It is not possible to completely screen the monofill because of topography and because the project is proposed to be 150 feet (ASL) high at completion. Conditions may be set to address trash and debris containment on the site (17.60.100(B)(1)).

17. Comments received regarding the proposed monofill raised the following concerns:
    - Dumping of material without MSB or ADEC permits.

- Dumping of hazardous waste
- Trash in the water
- Water pollution
- Health problems
- Pollution of surrounding lakes
- Protection of watershed and aquifer
- Compromising the aquifer
- Windblown unhealthy dust and particulates from the monofill
- Pollution of drinking water
- Windblown materials/debris onto surrounding properties
- Impact on downstream waterways
- Long term safety of water quality
- Contamination of water table
- Use the existing landfill for disposal of material
- Previous problems with gravel extraction on this property and rising water table
- Trash in the trees is an eyesore
- Breaching of berm between two of the manmade lakes and impact on surrounding water levels
- Long term impact of contamination of drinking water
- Disregard for lakes, streams, and drinking water
- Lack of oversight and planning
- Lack of CMS's ability to manage and provide oversight of the facility
- Concerns about reclamation of the property
- Dumping of garbage/monofill near standing water
- High wind area will cover surrounding area with dust and debris from monofill
- Contamination of soil
- Residents are entitled to clean air, land and water
- Lowering of property values
- The Glenn Highway is a Scenic Byway
- Threat to migratory and breeding birds
- How the redesign of the Glenn Highway will affect this site

- Rising water level of Canoe Lake due to dam breach
- Concerns about asbestos being dumped at this site
- Concerns about lead based paint, mercury and heavy metals deposited in the monofill
- Too close to residential area

18. The monofill will be unlined.

19. Materials brought to the site will not be deposited on an impermeable surface that will contain any prohibited and/or contaminated materials.

20. No system is proposed to capture, treat, or monitor leachate leaving the site.

21. Alaska Department of Environmental Conservation (ADEC) regulations state that an unlined landfill may not be located closer than 10 feet above the highest measured level of an aquifer of resource value unless the landfill is constructed two feet or more above the natural ground surface (18 AAC 60.217).

22. The applicant has not addressed how they will monitor or manage the seasonal high water table fluctuations to ensure that the bottom of the monofill is not annually saturated by groundwater.

23. Soils in the area of the monofill site are very porous, loose gravels and glacial loess, and offer little or no filtering capacity for fluids being emitted or drained from the fill. Without a liner, a ten foot separation is not sufficient to prevent leachate from reaching the water table increasing the risk of potential contamination of the water resources in the area.

24. Contaminants typically found in groundwater surrounding construction and demolition landfills include cadmium, lead, iron, manganese, several chlorinated volatile organic compounds, sulfate, hydrogen sulfide, and TDS (Total Dissolved Solids). Chromium and arsenic are found if chrominated copper arsenate-treated wood is disposed in the landfill.

25. The site appears to be up gradient of the groundwater flow direction from private drinking water wells. Without a Fate and Transport Model for compounds of concern to evaluate the risk posed by the proposed monofill to down gradient wells, there is no way to evaluate if these compounds will reach the drinking water wells at concentrations posing risk to health.

26. Baseline data for water quality has not been provided.

27. Seasonal water table elevation fluctuations have not been established.

28. The top of the completed monofill drops 40 feet from one end to the other. The run-off from this slope could pose problems with the dredge ponds at the base of the monofill causing problems with the aquifer.

29. Migratory birds, especially waterfowl, are attracted to the ponds already on the site. Material used as daily cover includes material potentially hazardous to birds if ingested.

30. This site is less than one mile from the Palmer Hay Flats Refuge, which is the major migratory bird refuge in Southcentral Alaska.

31. It is not possible to set conditions to adequately protect the groundwater and aquifer from anticipated negative effects of the monofill. The stormwater management proposed by the applicant will maximize the volume of water infiltrating the monofill. This infiltrating meltwater and rainfall will percolate through the placed materials, enter the groundwater and a large unconfined aquifer. The leachate from the construction and debris monofill may contain compounds at concentrations above drinking water standards. That water will impact private and public water wells used by homes, neighborhoods and farms, and could also enter nearby lakes that are heavily used. Adequate baseline water quality data monitoring to establish the quality of the existing water, the level of the groundwater throughout the monofill site, and the porosity of the materials under the monofill, has not been provided.

32. The proposed monofill will be harmful to the public health, safety, convenience, and welfare (17.60.100(B)(2)).

33. The site plan depicts the proposed structures in compliance with setback requirements.

34. The application minimally addresses the impacts of the climate, geology, hydrology and geography of the site and the impacts to surrounding land uses.

35. According to documentation and studies the proposed monofill site is located where the topography, geology, hydrology and soil are inadequate for protection of ground and surface water quality.

36. The conditional use does not fulfill all other requirements of this chapter (17.60.100(B)(4)).

37. The berm adjacent to the Glenn Highway will have to extend in height in order to obscure the view of the monofill from the highway.

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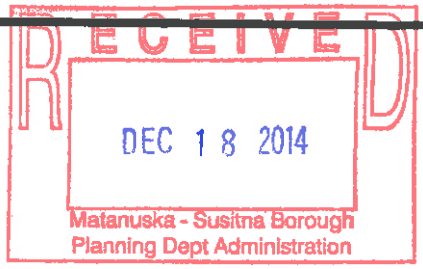
Mary Brodigan



From: Tom Adams [t.adams@lounsburyinc.com]
Sent: Thursday, December 18, 2014 5:38 PM
To: Mary Brodigan
Subject: PC Reso 14-33
Attachments: Reso 14-33_Findings of Fact_Adams.pdf

Mary,

Attached are a list of findings that formed the basis of my decision not to support Resolution 14-33.

I'll be out of the office Friday (12/19), but returning Monday.

Tom Adams, P.E.
Vice-President

Lounsbury & Associates, Inc.
Surveyors-Engineers-Planners
3050 E. Cottle Loop
Wasilla, Alaska 99654
T: (907) 357-9132
F: (907) 357-9140
www.lounsburyinc.com

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Planning Commission
Resolution 14-33
December 18, 2014

Findings of Fact

1. Applicant proposes operation of a monofill for the disposal of inert waste material and asbestos-containing materials.
2. Past use of the property has included extraction of earth materials.
3. Gravel extraction activities in the area have created concerns about potential effects on nearby drinking water wells serving individual residences and public water systems and potential hydrologic effects on other resources.
4. Soils beneath the site are highly permeable.
5. In the vicinity of the proposed monofill, groundwater occurs in an unconfined aquifer tapped by numerous domestic and community water supply wells.
6. The inert waste monofill design does not include an engineered native-soil or other liner.
7. No system is proposed to capture, treat, or dispose leachate from the inert waste monofill.
8. Documentation regarding potential for groundwater contamination is conflicting.
9. Applicant has not obtained a permit from the Alaska Department of Environmental Conservation (ADEC) for an inert waste monofill.
10. This region experiences frequent multiple-day high-wind events each year since it is at the confluence of the Matanuska and Knik River valleys. Loose debris and dust from the fill has and is expected to continue to scatter beyond the boundaries of the site.
11. Fencing is not expected to contain the trash and/or the daily cover/screened fines on the site. The trash and/or daily cover/screened fines will get blown into the trees and surrounding properties.
12. The inert debris that will be deposited on the site will be shredded into pieces 12 inches or smaller. Material this size can also become windblown.

Conclusions

Based upon the above findings, the Planning Commission makes the following conclusions:

1) The conditional use will detract from the value, character, and integrity of the surrounding area; and
2) the proposed inert waste monofill may be harmful to the public health, safety, convenience and welfare.

Tom Adams
Commissioner, District 6

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Mary Brodigan

From: Vern [vern@swissalaska.com]
Sent: Friday, December 19, 2014 5:13 PM
To: Mary Brodigan
Subject: Resolution 14-33

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DEC 19 2014
Matanuska - Susitna Borough
Planning Dept Administration

Disapproval by the MSB Planning Commission of Resolution 14-33 on Dec. 15, 2014.

Reasons for disapproval:

1. The MSB needs a more centrally and a more suitable location for a monofill that can accept RACM and Non-RACM materials. (Between 2002 and 2012 close to 2400 homes were built each year in the MSB)
2. Title-Transfer between extraction companies is understandable; but Title-Transfer to a Monofill Company puts the whole C.U.P. in question.
3. Fighting a fire or underground fire in a monofill presents difficulties.
   a) How is aquafier protected?
   b) Compositions of materials changes.
4. The applicant assumed the masterplan of the C.U.P. when they purchased the property. With RACM and Non-RACM in the monofill, the difficulties that this presents were not addressed.

12/19/2014

Vern Rauchenstein/PC

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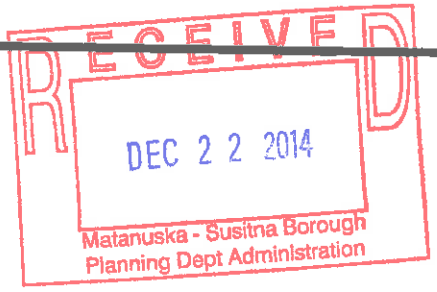
Mary Brodigan



From: Tom Healy [trhealy@gci.net]
Sent: Monday, December 22, 2014 4:48 PM
To: Mary Brodigan
Subject: Draft findings...
Attachments: MSB Monofill CUP Findings 122214 Draft.docx

See attached draft findings.
I wasn't sure what format to use, so opted for the old Whereases... Let me know if you have any questions. Thanks.

Tom

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RECEIVED
DEC 22 2014
Matanuska - Susitna Borough
Planning Dept Administration

DRAFT Findings of Fact Regarding Central Monofill Services, Inc. Application for a Conditional User Permit To Operate a Monofill at 2560 South Glenn Highway

By Thomas Healy, Planning Commissioner
December 22, 2014

WHEREAS, except for a limited number of land uses, Mat-Su Borough code does not have zoning regulations or districts regulating the location of specific land uses. Without comprehensive zoning regulations, the Planning Commission must analyze land use and permit applications against the standards established by Borough comprehensive plans to determine if the proposed use complies with these plans, and

WHEREAS, the Borough Comprehensive Plan contains Goal LU-1, which states, "Protect and enhance the public safety, health and welfare of Borough residents," and Policy LU-1-1, which states, "Provide for consistent, compatible, effective and efficient development within the Borough," and

WHEREAS, substantial evidence provided in written and spoken testimony expressed concern that the proposed monofill will negatively impact ground water quality, property values and the general welfare of the area, and the monofill will not be compatible with adjacent residential properties, and

WHEREAS, the Borough Comprehensive Plan contains Goal LU-2, which states, "Protect residential neighborhoods and associated property values," and Policy LU2-1, which states, "Develop and implement regulations that protect residential development by separating incompatible uses, while encouraging uses that support such residential uses including office, commercial and other mixed-use developments that are shown to have positive cumulative impacts to the neighborhood," and

WHEREAS, the proposed monofill does not protect residential neighborhoods and associated property values, as shown by evidence provided that leachate from the proposed use has the potential to contaminate the aquifer that is the source of drinking water for adjacent residential uses and evidence that debris processed by the applicant from the proposed monofill site has been blown onto adjacent residential properties, and

WHEREAS, the proximity of the monofill to established residential areas does not provide adequate separation between incompatible uses and granting the permit for this industrial use may discourage the types of development in this area listed in Policy LU2-1 that are compatible with and support residential uses, and

WHEREAS, substantial evidence in the record indicates there are serious questions whether the proposed use is compatible with surrounding uses and that it will have "positive cumulative impacts to the neighborhood," including photographs documenting debris and litter blown from this site onto adjacent properties; hydrologic concerns raised by J.A. Munter Consulting, Inc. regarding possible contamination of the aquifer by leachate from the monofill; and extensive testimony by residents and property owners in the area identifying what they believe will be negative effects of the proposed use, and

WHEREAS, the Borough Comprehensive Plan contains Goal LU-3, which states, "Encourage commercial and industrial development that is compatible with residential development and local community desires," and

WHEREAS, the proposed monofill is a long-term industrial use that will occupy property used previously for earth materials extraction. This property has pre-existing legal nonconforming use rights for earth materials extraction. According to the Borough staff report, this means "the industrial use was in existence prior to the current regulatory structure and was not evaluated for compatibility with surrounding land uses." The proposed industrial use must be evaluated for compatibility with surrounding land uses under the current regulatory structure, and

WHEREAS, the record contains extensive written and spoken testimony from the community opposing this conditional use permit which outweighs testimony in favor by wide margins: more than four to one in spoken testimony and more than two to one in written testimony. The record also contains testimony opposing the permit by the Gateway Community Council, homeowner associations, the City of Palmer, and dozens of residents and property owners of the area, and

WHEREAS, the overwhelming testimony in opposition to the proposed monofill indicates strongly that the proposed activity is not "compatible with residential development and local community desires," and

WHEREAS, the Borough Comprehensive Plan contains Goal LU-4, which states, "Protect and enhance the Borough's natural resources including watersheds, groundwater supplies and air quality," and Policy LU4-1, which states, "Identify, monitor, protect and enhance the quantity and quality of the Borough's watersheds, groundwater aquifers and clean air resources," and

WHEREAS, the record contains extensive information on the aquifer beneath the proposed monofill site and surrounding area. This aquifer is the source of drinking water for several wells serving residential uses adjacent to and in the area of the proposed monofill site, and

WHEREAS, hydrologists hired by the applicant in their reports challenged conclusions by hydrologist J.A. Munter Consulting regarding the production of

leachate and the hydrologic dynamics between the monofill and the aquifer. Munter responded by letter of December 1, 2014, stating, "Although a few sections of my prior reviews would benefit from some minor revisions, I have found no compelling technical case to substantially revise or retract any of my prior comments. The record still contains significant technical deficiencies that preclude supporting the statement found in the Borough findings, that this facility does not have the potential for groundwater contamination that could have negative effects on drinking water," and

WHEREAS, this fundamental disagreement in the conclusions of professional hydrologists regarding the proposed monofill provides no clear assurance that the monofill will "protect and enhance the Borough's natural resources including watersheds, groundwater supplies and air quality," leading to a likelihood that the monofill could contaminate the groundwater that is the source of drinking water for dozens of residences in the area, and

WHEREAS, the proposed monofill project is not consistent with the Borough Comprehensive Plan, and

WHEREAS, the Borough Core Area Comprehensive Plan (2007 Update) contains Policy 1-B, which states, "Promote an orderly land use pattern suited to the demand for attractive settings in which to live, work, shop, learn, play and carry on other daily activities," and, in the Policy Discussion, states, "The plan needs to provide a place for every permitted land use, but not all land uses go well side-by-side. Some uses such as residences and open space or retail trade and service business are usually compatible and enhance each other. Others, like heavy industrial activities and residential subdivisions, make poor neighbors and are best separated by distance or buffers," and

WHEREAS, the proposed monofill is not compatible with this policy as testimony showed it abuts residential areas and has the potential to adversely affect those uses and values, and

WHEREAS, the previous use on this property had pre-existing legal nonconforming use rights for earth materials extraction, an industrial use. However, according to the Borough staff report, "the industrial use was not approved under the current regulatory structure or evaluated for compatibility with surrounding land uses." Evaluating the proposed industrial monofill use under current land use plans and policies indicates, from testimony provided to the Commission, that the monofill use is not compatible with surrounding land uses, specifically residential areas, and

WHEREAS, the Borough Core Area Comprehensive Plan contains Policy 1-J, which states, "Encourage light industrial parks," and, in the Policy Discussion, states, "Restored earth materials extraction sites with good highway access can be prime candidates for light industrial uses," and

WHEREAS, the proposed industrial monofill use is not consistent with this policy, and

WHEREAS, the Borough Core Area Comprehensive Plan contains Policy 1-M, which states, "Collaborate with operators of large earth materials extraction sites to plan for site reclamation and re-use after earth materials extraction activities are finished," and, in the Policy Discussion, states, "Redevelopment of these sites makes good use of the borough's land base and enhances the value and economic potential of nearby properties," and

WHEREAS, extensive testimony in this matter expressed concern over negative impacts on residential uses and groundwater and air quality in this area, and

WHEREAS, development of the property as a monofill industrial site will not "enhance the value and economic potential of nearby properties," and is not consistent with Policy 1-M, and

WHEREAS, the Borough Core Area Comprehensive Plan contains Policy 7-A, which states, "Protect groundwater supplies and quality," and the Policy Discussion states, in part, ""Many existing and future residences and businesses will depend on on-site groundwater resources for their water supply. Protection of the supply and quality of groundwater is vital to sustain this arrangement," and

WHEREAS, the record shows there is significant disagreement between hydrological reports of groundwater resources on this property and the potential of the proposed monofill to produce leachate that may enter the groundwater, and

WHEREAS, this difference of professional opinions indicates there is not adequate assurance that the proposed monofill will protect groundwater supplies and quality, and

WHEREAS, the Borough Core Area Comprehensive Plan contains Policy 7-B, which states, "Protect surface water quality," and, in the Policy Discussion, states, "The Core Area's many lakes are valuable natural and economic assets. ...These lakes are linked to streams and wetlands with similar positive values," and

WHEREAS, extensive testimony and hydrologic reports in the record confirm a direct link between gravel dredge ponds on the applicant's property and the natural lakes in the nearby Crevasse-Morraine State Park lake system. Testimony expressed concern over the effects of previous gravel mining activities and possible effects of the proposed monofill on the aquifer and lake surface water in this area, and

WHEREAS, evidence supports a finding that the proposed construction and operation of an industrial monofill at the proposed location is inconsistent with the Borough Comprehensive Plan and the Borough Core Area Comprehensive Plan, and

WHEREAS, evidence supports a finding that the proposed project has the potential to impose significant negative impacts on properties and natural resources in the area, and

WHEREAS, the extent of the potential negative impacts associated with this proposed use, including contamination of the aquifer, excessive windblown debris, lack of adequate visual screening, the potential for fire, as well as possible negative impacts on property values and future investment in the area supports a finding that it is not possible to attach conditions to the permit that would adequately mitigate or prevent these risks.

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PC Resolution 14-33

CMS Monofill

By: Susan Lee
Introduced: November 3, 2014
Public Hearing: December 1, 2014
Action: Failed

MATANUSKA-SUSITNA BOROUGH
PLANNING COMMISSION RESOLUTION NO. 14-33

A RESOLUTION OF THE MATANUSKA-SUSITNA BOROUGH PLANNING COMMISSION APPROVING A CONDITIONAL USE PERMIT UNDER MSB CODE 17.60 FOR THE OPERATION OF A MONOFILL FOR THE DISPOSAL OF INERT CONSTRUCTION AND DEMOLITION DEBRIS, INCLUDING REGULATED ASBESTOS-CONTAINING MATERIAL (RACM) AND NON-REGULATED ASBESTOS-CONTAINING MATERIAL (NON-RACM) AND AN OUTDOOR STORAGE YARD FOR THE SALE OF SALVAGEABLE/RECYCLABLE MATERIALS, LOCATED AT 2840 S. GLENN HIGHWAY (TAX ID: 17N02E18C010) AND 2560 S. GLENN HIGHWAY (TAX ID: 17N02E19B006); WITHIN TOWNSHIP 17 NORTH, RANGE 2 EAST, SECTIONS 18 AND 19, SEWARD MERIDIAN

WHEREAS, an application for a conditional use permit under MSB 17.60 has been received for the operation of a monofill for the disposal of inert construction and demolition debris and an outdoor storage yard for the sale of salvageable/recyclable materials at 2840 S. Glenn Highway (Tax ID: 17N02E18C010) and 2560 S. Glenn Highway (Tax ID: 17N02E19B006); and

WHEREAS, the planning commission reviewed this application, associated materials, and the staff report, with respect to standards set forth in MSB 17.60.100 and 1760.110; and

WHEREAS, findings of fact and conclusions of law have been listed in the staff report dated December 1, 2014; and

WHEREAS, the planning commission conducted a public hearing on December 1, 2014 on this matter; and

WHEREAS, in 2013 Borough staff documented trash and daily cover (screened fines) that had blown from the monofill site onto adjacent properties; and

WHEREAS, ADEC regulations (18 AAC 60.420(2)) state a monofill must be operated so that litter is controlled by fencing or other approved means, and is removed from access roadways and other areas in the facility; and

WHEREAS, this region experiences frequent multiple-day high-wind events each year since it is at the confluence of the Matanuska and Knik River valleys. Loose debris and dust from the fill has, and is, expected to continue to scatter beyond the boundaries of the site; and

WHEREAS, the 15' tall cell berms will be constructed prior to waste placement; and

WEHREAS, as the cells increase in height the sides will be built up with tire bales that will be covered with topsoil and seeded for revegetation; and

WHEREAS, the use of a large sheep's foot landfill compactor to place and immediately compact the waste in the cell is the next method to prevent loose and blowing debris; and

WHEREAS, regularly covering the waste with soil further prevents blowing debris; and

WHEREAS, the daily cover/screened fines consist of shredded materials that are less than three inches in size. Material this size is easily distributed by the wind; and

WHEREAS, the inert debris that will be deposited on the site will be shredded into pieces 12 inches or smaller. Material this size can also become windblown; and

WHEREAS, after the residual material is deposited and compacted it will be covered with the daily cover/screened fines, which will also be compacted. The monofill material will be covered with soil weekly; and

WHEREAS, the applicant has stated that a remote weather station will be placed on the site to monitor wind and when sustained wind conditions on the site exceed 20 mph, waste will not be unloaded without secondary containment in place; and

WHEREAS, secondary containment proposed by the applicant involves the use of portable catch fences up to 15' tall and of variable lengths. The catch fences are used to slow the wind down and catch blown debris downwind; and

WHEREAS, normal size opening on the catch fences is 2" x 2"; and

WHEREAS, the openings on the catch fences are still large enough that smaller pieces of material could still blow through them; and

WHEREAS, the previous use of this site was for earth materials extraction. There are pre-existing legal nonconforming use rights for earth materials extraction for this property, which means that the industrial use was not approved under the current regulatory structure or evaluated for compatibility with surrounding land uses; and

WHEREAS, the surrounding land uses include earth material extraction sites to the north and on the south side of the Glenn Highway; residential subdivisions to the west and northeast; and agricultural uses to the east of the site; and

WHEREAS, the site is required to be visually screened on a year round basis from the view of any traveled or public right-of-way. The site must be screened from the Glenn Highway and from the section line easement on the west side of the property and the east-west section line running through the middle of the property. Staff is recommending the site also be screened from the residential properties on the west side; and

WHEREAS, the proposed monofill is an industrial use. The monofill can be screened with existing berms and by building up the berms and constructing site obscuring fencing. Screening from the western properties will have to be developed as the site is built up; and

WHEREAS, salvageable/recyclable materials that are stored outside must also be screened from the Glenn Highway and section line easements on the property; and

WHEREAS, the maximum finished elevation of the monofill will be 162 feet Above Sea Level. The adjacent Glenn Highway has an average finished elevation of 117 feet Above Sea Level, so the maximum height will be a little more than 40 feet above the Glenn Highway. The existing tree covered berm along the highway has an average elevation of 130 feet Above Sea Level. The finished revegetated height of the monofill will be above the berm on the south side, adjacent to the Glenn Highway. The maximum depth of the monofill will be 75 feet with an average depth of 50 feet; and

WHEREAS, should the site be modified as a result of the Glenn Highway Reconstruction Project, an updated site plan and plan of operations will need to be submitted to the Borough; and

WHEREAS, conditions can be set to prevent material from blowing off-site; and

WHEREAS, documentation has been provided demonstrating that the monofill operation does not have the potential for groundwater contamination that could have negative effects on drinking water and surface water quality; and

WHEREAS, the monofill can be developed with proper engineering and operational controls to protect the natural resources and public health and safety; and

WHEREAS, with conditions, the proposed conditional use is consistent tithe goals and policies of the Borough-Wide Comprehensive Plan (2005 Update) and the Core Area Comprehensive Plan (2007 Update); and

WHEREAS, the proposed monofill will preserve and will not detract from the value, character and integrity of the surrounding area as the monofill will be screened from the Glenn Highway, section line easements, and residential properties. Conditions will be set to address trash and debris containment on the site. Documentation has been provided showing that the proposed monofill will not contaminate the groundwater or have negative effects on drinking water or surface water quality; and

WHEREAS, comments received regarding the proposed monofill raised the following concerns: dumping of material without MSB or ADEC permits; dumping of hazardous waste; trash in the water; waster pollution; health problems; pollution of surrounding lakes; protection of watershed and aquifer; compromising the aquifer; windblown unhealthy dust and particulates from the monofill; contamination of water wells; windblown materials/debris onto surrounding properties; previous problems with gravel extraction on this property and rising water table;

breaching of berm between two of the manmade lakes and impact on surrounding water levels; lack of oversight and planning; applicants disregard for regulations; lack of CMS's ability to manage and provide oversight of the facility; concerns about reclamation of the property; contamination of soil; lowering of property values; the Glenn Highway is a Scenic Byway; threat to migratory and breeding birds; how the redesign of the Glenn Highway will affect this site; rising water levels of nearby lakes; improper handling and disposal of asbestos; concerns about lead based paint, mercury and heavy metals deposited in the monofill; too close to residential area; contamination of fish in Canoe, Kepler-Bradley Lake system; inconsistent with comprehensive plans, and highway safety and access issues; and

WHEREAS, there have been many concerns and comments regarding the potential for groundwater contamination that could have negative effects on drinking water and surface water quality. The applicant has provided documentation from four consultants that this will not be the case: Groundwater data has been collected. Based on the groundwater data the monofill will be designed to be at least 10 feet above groundwater. Water level data is continually being collected. The water table generally fluctuates less than one foot. The water that supplies the unconfined aquifer that underlies the proposed monofill is primarily through infiltration from the Matanuska

River. The bottom of the monofill cells will be established based on all of the water data that is collected up to the time of construction of that cell. On-site groundwater monitoring wells were installed. Three wells lie under the footprint of the proposed monofill, which can be utilized to indicate the depth of water beneath the refuse. Historical groundwater levels will be used to determine the historical high groundwater levels beneath the proposed monofill site. If there is any leachate at all, the monofill is designed to minimize the moisture levels in the material, so that the rate of decay and rot will not significantly impact any leachate that leaves the monofill. The monofill is designed so that waste will not stay in a saturated condition. CMS submitted a groundwater monitoring plan with their application. Subsequently CMS withdrew the plan after their consultant EMI found that the probability of creating a leachate that would impact the groundwater is so low. The proposed monofill is located in a semi-arid climate where the balance between the annual precipitation and the annual evaporation precludes the formation of any significant volume of leachate. The average annual precipitation rate in the area of the proposed monofill is approximately 15 inches. Under these climatic conditions, particularly when the precipitation is less than 15.75 inches per year, leachate is not formed in a landfill. Material brought to the facility is sorted, screened

and processed to ensure that the material is free of hazardous waste and putrescible material and/or liquids. CRS removes large quantities of drywall from the waste stream for recycling. No significant water will be available to percolate through the inert waste, nor to "pond" at any level within the refuse mass. ADEC requirements are met for an inert landfill with respect to the 10' minimum separation distance between the bottom of the refuse and the recorded historic high water table and no liner is required. Testing for potential contamination from the waste has occurred. EMI tested the residual material using the Synthetic Precipitation Leaching Procedures (SPLP) to check for potential contaminants of concern from the waste. This method is not used to test water for drinking water standards. It is designed to identify contaminants that may be of potential concern in waste water. Modeling results have indicated that there will be no contaminant plume extending down gradient from the landfill mass. Leachate modeling identified two potential contaminants of concern: sulfate and manganese. The results predict that the analytes will likely comply with ADEC's drinking water standards. The development of a vegetative cover will result in increased evaporation (evapotranspiration) and the minimal infiltration will be reduced as the landfill evolves, cell by cell. Establishment of the native ground cover

on the final cap of each cell will result in increased evapotranspiration and reduced potential for infiltration; and

WHEREAS, a total of ten cells will be constructed over the life of the monofill. The working face receiving the inert materials will comprise, at any one time, an area measuring 120' x 50'. Therefore, the surface of the monofill most vulnerable to infiltration by precipitation at any one time will be kept to a minimum; and

WHEREAS, the monofill is designed to minimize the moisture levels in the material so that the rate of decay and rot will be very slow and will not significantly impact any leachate, if there is any leachate at all that leaves the monofill; and

WHEREAS, ADEC regulations state that an unlined landfill may not be located closer than 10 feet above the highest measured level of an aquifer of resource value unless the landfill is constructed two feet or more above the natural ground surface (18 AAC 60.217); and

WHEREAS, under Alaskan administrative regulations, this proposed monofill is exempt from providing groundwater monitoring and corrective action to state agencies, as it is located in an area with 25 inches or less in total precipitation each year, per ADEC regulations (18 AAC 60.820(a)(8); and

WHERAS, CMS withdrew their groundwater monitoring plan from the application material. Staff is recommending that a

groundwater monitoring plan be required by the Borough Planning Commission and implemented in the conditional use permit; and

WHEREAS, the monofill is being designed so that a significant amount of leachate will not be produced; the groundwater level has been determined; no contaminant plume will extend down gradient from the monofill; and there will be minimal infiltration. A condition will be set to implement a groundwater monitoring plan at this site; and

WHEREAS, materials brought to the facility that have not been previously inspected will be deposited onto an impermeable pad for inspection, recyclable materials removed and the remaining non-recyclable material placed in the active monofill cell; and

WHEREAS, the applicant states that the following material will not be accepted at this monofill: PCBs or other hazardous wastes, household waste, putrescible waste, liquids, compressed gas cylinders, batteries, appliances with CFC/HCFC, animal carcasses, and petroleum contaminated materials; and

WHEREAS, Alaska Statutes 46.03.900(1) – defines "hazardous waste" as "A waste or combination of waste that because of quantity, concentration, or physical, chemical, or infectious characteristics may: cause or significantly contribute to, an increase in mortality or an increase in serious irreversible or incapacitating reversible illness; or pose a substantial present

or potential hazard to human health or the environment when improperly managed, treated, stored, transported, or disposed of"; and

WHEREAS, material haulers transporting any demolition and/or renovation material to a CRS facility or this monofill must provide the following documentation: (1) A copy of all Hazardous Building Material Surveys for each project that will be bringing their demolition and/or renovation material to the facility. Should the Survey indicate the presence of any hazard materials, then (2) a letter from the Contractor of each project is also submitted to CRS stating that all hazardous material has been properly removed from the project and there is no hazardous material being brought to the CRS facility. For their operations, CRS defines hazardous material as a material containing any percentage of asbestos; and

WHEREAS, Regulated Asbestos Containing Material (RACM) and Non-RACM will be accepted for disposal at the monofill in accordance with all applicable federal and state regulations for packaging, labeling, transport handling and disposal; and

WHERAS, materials that can be accepted at this monofill are described in the State of Alaska's Solid Waste Regulations, 18 AAC 60; and

WHEREAS, the Plan of Operations submitted to ADEC will prevent hazardous waste, as defined by the Federal government (40 CFR 261.3) from being placed in the monofill; and

WHEREAS, testing for potential contaminants from the waste has occurred; and

WHEREAS, leachate modeling identified two potential contaminants of concern: sulfate and manganese. The results predict that the analytes will likely comply with the ADEC's drinking water standards; and

WHEREAS, baseline data for water quality has been provided; and

WHEREAS, the site is less than one mile from the Palmer Hay Flats Refuge, which is a major migratory bird refuge in Southcentral Alaska; and

WHEREAS, with conditions, the proposed monofill should not be harmful to the public health, safety, convenience, and welfare; and

WHEREAS, ADEC regulations require that monofill waste be set back a minimum of 50 feet from all property lines; and

WHEREAS, no material will be placed or stockpiled within 25 feet of the industrial ponds on the site; and

WHEREAS, no waste will be placed within 100 feet of the industrial ponds on the site; and

WHEREAS, in addition to the monofill, two storage or shop buildings, a scale house, and field office are proposed for the site; and

WHEREAS, the site plan depicts the proposed structures in compliance with setback requirements; and

WHEREAS, the operation will be required to comply with the maximum permissible sound level limits in MSB Code, per the requirements of MSB 17.61.080 – Noise Standards and MSB 8.52 – Noise, Amplified Sounds, and Vibration; and

WHEREAS, the driveway to the site will be secured with a locked gate; and

WHEREAS, the site is monitored with camera security systems; and

WHEREAS, only approved contractors will be allowed to bring material to the facility. This is controlled by gates and on-site personnel that will inspect all loads delivered to the facility; and

WHEREAS, the public will not be allowed to drop off or dispose of material at the monofill; and

WHEREAS, the sale yard will be open to the public with controlled access; and

WHEREAS, with conditions, there will be adequate safeguards in place to prevent blowing debris and incidental trash onto adjacent properties and roadways. Additional conditions will be

set regarding the handling and storage of materials during wind events; and

WHEREAS, the application material adequately addresses the impacts of the climate, geology, hydrology and geography of the site and the impacts to surrounding land uses; and

WHEREAS, the conditional use does fulfill all other requirements of this chapter; and

WHEREAS, screening of the site will be accomplished by using the existing topography and berms, building up berms and installing site obscuring fencing.

NOW, THEREFORE, BE IT RESOLVED, that the Matanuska-Susitna Borough Planning Commission hereby finds this application does meet the standards of MSB 17.60.100 and 17.60.110 and hereby approves the conditional use permit for the operation of a monofill for the disposal of inert construction and demolition debris, including Regulated Asbestos-Containing Material (RACM) and Non-Regulated Asbestos-Containing Material (Non-RACM) and an outdoor storage yard for the sale of salvageable/recyclable materials on parcels 17N02E18C010 and 17N02E19B006 with the following conditions:

1. It is the responsibility of the property owner and operator to identify and comply with all applicable local, state, and federal regulations applicable to

this development and obtain all necessary authorizations and permits and update as appropriate.

2. Upon issuance of a permit under MSB Chapter 17.60, the permittee shall provide and maintain all necessary documentation to demonstrate continued compliance with permit conditions.

3. The property owner and the permittee shall be responsible for maintaining all aspects of the operation, improvements, and development, and the site in compliance with the terms and conditions of the permit and all applicable local, state, and federal requirements.

4. Authorized representative of the borough shall be allowed to inspect the site at reasonable times for the purpose of monitoring compliance with all permit conditions. Upon reasonable notice from the Borough, the permittee shall provide necessary assistance to facilitate authorized inspections.

5. Except as otherwise specified by code, the privileges and requirements of a conditional use permit shall run with the land, subject to the following requirements: Within 90 days of recording the transfer of ownership of the subject land, the new owner shall provide written notification and a signed acknowledgement that

the new owner assumes responsibility for compliance with the requirements of the permit.

6. If the operation expands or alters, an amendment to the conditional use permit shall be required.
7. The operation shall be limited to what is described in the development plan submitted to the Matanuska-Susitna Borough and the Plan of Operations submitted to the Alaska Department of Environmental Conservation.
8. An area no larger than 120' x 50' shall remain uncompacted at any one time.
9. The maximum square footage that shall be exposed and not covered at any one time during the monofill operation shall be 25,000 square feet.
10. At a minimum, the monofill material shall be covered with soil weekly.
11. Immediately after the tire bales used for the side walls are installed they shall be covered with topsoil and seeded for revegetation.
12. A remote weather station shall be installed at the site to monitor wind speed. The weather station shall be set up where the wind flows freely and is not influenced by nearby objects or topography.

13. When sustained wind conditions on the site exceed 10 mph, waste material shall not be deposited at the site.

14. When sustained wind speeds exceed 15 mph, all open areas shall be covered with soil, secured with tarps, or other appropriate measures until sustained winds decrease to less than 10 mph.

15. The applicant shall install catch fences downwind of active monofill cells at all times. The fencing mesh shall be a maximum of one inch (1") in size.

16. At the end of each day the stockpiled daily cover shall either be contained within a covered trailer or completely covered with tarps that are secured to ensure that material does not become airborne.

17. The site shall be monitored daily for windblown material. If materials are found to have blown off-site a corrective measures plan shall be submitted to the Borough for approval.

18. If material is windblown onto adjacent properties, reasonable attempts shall be made to obtain permission to gain access to these properties for debris removal

19. The site shall be visually screened on a year round basis from all traveled or public rights-of-way and

from the residential properties on the west side of the property.

20. The maximum finished elevation of the monofill shall not exceed 162 feet Above Sea Level.
21. Upon completion, the monofill shall be covered with two feet of topsoil, seeded, and sloped as described in the development plan.
22. Should the operation be modified as a result of the Glenn Highway Reconstruction Project, an updated site plan and plan of operations shall be submitted to the Borough.
23. The bottom of the monofill shall not be located closer than 12 feet above the seasonal high water table.
24. If it is found that groundwater has been contaminated, a corrective measures plan shall be submitted to the Borough for approval.
25. The Groundwater Monitoring Plan prepared for this site by TERRASAT, Inc., dated May 17, 2013, shall be implemented and maintained, except that a final laboratory report resulting from a release investigation shall be submitted to the Borough within 48 hours of receiving the report.

26. Materials that can be accepted at this monofill are described in the State of Alaska Solid Waste Regulations, 18 AAC 60.

27. The following materials shall not be accepted at this monofill: PCBs or other hazardous wastes, household waste, putrescible waste, liquids, compressed gas cylinders, batteries, appliances with CFC/HCFC, animal carcasses, and petroleum contaminated materials.

28. Materials brought to the facility that have not been previously inspected by qualified personnel shall be deposited onto an impermeable pad for inspection prior to being deposited in the active monofill cell.

29. If prohibited materials are found, they shall be properly handled and disposed of in accordance with all state and federal laws.

30. Regulated Asbestos Containing Material (RACM) and Non-RACM shall be handled and disposed of at the site in accordance with state and federal regulations for packaging, labeling, transport handling and disposal.

31. Monofill waste shall be set back a minimum of 50 feet from all property lines.

32. No waste shall be placed or stockpiled within 100 feet of the industrial ponds on the site.

33. Only previously approved haulers shall be allowed to bring material to the facility.

34. The operation shall comply with the maximum permissible sound level limits allowed in MSB Code, per the requirements of MSB 17.61.080 – Noise Standards and MSB 8.52 – Noise, Amplified Sounds, and Vibration.

35. The site shall be gated and locked when not in operation. All visitors to the site must check in with personnel.

36. Hours of operation shall be limited to 7 a.m. to 7 p.m., Monday through Saturday, May through September and 8 a.m. to 5 p.m., Monday through Saturday, October through April.

37. Environmental and Pollution Insurance shall be maintained in the amount of $1 million single with a minimum $5 million aggregate.

38. This conditional use permit shall expire December 31, 2020.

39. The owner shall provide copies of all permits issued by state and federal agencies to the Matanuska-Susitna Borough prior to commencement of the permitted use. The owner shall also provide to the borough a copy of

every application for an amendment to any such permit at the time the application is filed with the permitting agency, and a copy of any amendment approved by the permitting agency shall be provided to the borough within five days of issuance.

40. This permit has been approved by the Matanuska-Susitna Borough Planning Commission. The decision may be appealed within 21 days of the date of approval by the Planning Commission in accordance with MSB 15.39 – Board of Adjustment and Appeals.

ADOPTED by the Matanuska-Susitna Borough Planning Commission this ___ day of ___, 2014.

JOHN KLAPPERICH, Chair

ATTEST

MARY BRODIGAN, Planning Clerk

(SEAL)

YES: Klapperich, Walden, and Rauchenstein.

NO: Endle, Healy, and Adams.

The regular meeting of the Matanuska-Susitna Borough Planning Commission was held on December 1, 2014, at the Matanuska-Susitna Borough Assembly Chambers, 350 E. Dahlia Avenue, Palmer, Alaska. The meeting was called to order at 6:00 p.m. by Chair John Klapperich.

I. CALL TO ORDER, ROLL CALL, AND DETERMINATION OF QUORUM

Planning Commission members present and establishing a quorum:

Mr. Brian Endle, Assembly District #1
Mr. Thomas Healy, District #2
Mr. John Klapperich, Assembly District #3 *Chair*
Mr. William Kendig, Assembly District #5
Mr. Vern Rauchenstein, District #7

Planning Commission members absent were:

Mr. Bruce Walden, Assembly District #4
Mr. Tomas Adams, Assembly District #6

Staff in attendance:

Mr. Alex Strawn, Development Services Manager
Ms. Lauren Driscoll, Planning Services Chief
Mr. John Aschenbrenner, Deputy Attorney
Ms. Laura Newton, Assistant Borough Attorney
Ms. Lonnie McKechnie, Borough Clerk
Ms. Susan Lee, Planner II
Ms. Pamela Graham, Grants & Project Coordinator
Ms. Mary Brodigan, Planning Commission Clerk

II. APPROVAL OF AGENDA

Chair Klapperich inquired if there were any changes to the agenda.

GENERAL CONSENT: The agenda was approved without objection.

III. PLEDGE OF ALLEGIANCE

The pledge of allegiance was led by Assemblymember Matthew Beck.

IV. CONSENT AGENDA

A. Minutes

(There were no minutes available.)

A. INTRODUCTION FOR PUBLIC HEARING: QUASI-JUDICIAL MATTERS

(There were introductions for quasi-judicial matters.)

B. INTRODUCTION FOR PUBLIC HEARING: LEGISLATIVE MATTERS

1. **Resolution 14-35**, a resolution recommending modifications to the proposed Tall Structures Ordinance to be consistent with recent changes in Federal Regulations. Public Hearing: December 15, 2014. *(Staff: Alex Strawn)*

Chair Klapperich read the consent agenda into the record.

Chair Klapperich inquired if there were any changes to the consent agenda.

GENERAL CONSENT: The consent agenda was approved without objection.

V. COMMITTEE REPORTS

(There were no committee reports.)

VI. AGENCY/STAFF REPORTS

(There were no agency or staff reports.)

VII. LAND USE CLASSIFICATIONS

(There were no land use classifications.)

VIII. AUDIENCE PARTICIPATION (Three minutes per person.)

The following person spoke regarding public process: Mr. Eugene Haberman.

IX. PUBLIC HEARING: QUASI-JUDICIAL MATTERS *(Public Hearing not to begin before 6:15 P.M.)*

Commission members may not receive or engage in ex-parte contact with the applicant, other parties interested in the application, or members of the public concerning the application or issues presented in the application.

A. **Resolution 14-33**, a resolution approving a Conditional Use Permit, in accordance with 17.60.030 Permit Required, for the operation of an Inert Material Monofill on MSB Parcels 17N02E18C010 and 17N02E19B006. *(Applicant: CMS)*

Chair Klapperich read the resolution title into the record.

Chair Klapperich:

- read the standard memorandum into the record regarding quasi-judicial actions;
- queried commissioners to determine if any of them have a financial interest in the proposed Conditional Use Permit (CUP);
- have had any ex parte contact with the applicant, members of the public, or interested parties in the proposed CUP; and

- if all commissioners are able to be impartial in a decision.

Commissioner Kendig:
- stated that he has not done business with the applicant, but has done business with a sister corporation of theirs;
- he sold recyclables to them; and
- stated that he doesn't feel that he has a conflict in hearing this application.

Mr. John Aschenbrenner, Deputy Borough Attorney, asked Commissioner Kendig to explain the nature of his relationship with the sister corporation.

Commissioner Kendig:
- stated that they are not his main buyer, but he has done business with them in the past when they offered a higher price for his scrap metal;
- opined that it was a similar situation as with the CUP for the 49th Street recycling business; and
- the last time he did business with them was late summer or early fall of this year.

Mr. Aschenbrenner:
- referred to MSB 2.71.080 which states that a municipal official shall recuse himself from acting on a matter or proceeding if they have done business with the applicant within a twelve month period;
- opined that based on the bright line rule set by the MSB Assembly, it appears that Mr. Kendig has a conflict since he did business with an arm of the applicants business within the last few months; and
- urged the commission to allow the applicant to question Commissioner Kendig.

Mr. Bill Ingaldson;
- stated that he is the attorney representing CMS;
- based on the business dealing as described by Commissioner Kendig, opined that they are not an ongoing client of Commissioner Kendig;
- it is no different than if someone were to purchase tires from Target;
- opined that borough code is intended to address an issue of an ongoing regular relationship.

Chair Klapperich asked Commissioner Kendig if he can be impartial in this decision.

Commissioner Kendig stated that he spent hours and hours reviewing the material, and that he feels that he can be impartial.

Mr. Aschenbrenner:
- stated that code does not have a provision for trying to surmise the scope of the client relationship;
- the Assembly has set a bright line rule that no official is supposed to sit when they have interacted with an applicant within the proceeding twelve months;
- acknowledged the applicant's argument with regards to this matter, but stated that it's not code; and

- urged the commission to follow code and lodge an objection so as not to build an error into the record.

Chair Klapperich suggested that the business transaction was small and insignificant, and questioned if there is a level on the amount of substantial financial interest.

Mr. Aschenbrenner:
- stated that there is a separate ethics provision that deals with substantial financial interest;
- opined that the provision that the Chair is referring to would also disqualify a commission member from sitting; and
- Commissioner Kendig clearly stated that the applicant was his client just three months ago.

Commissioner Kendig:
- stated that he did not do business with CMS, but with Central Recycling Services (CRS) which is a separate corporation; and
- acknowledged that some of the same people may be involved in the different corporations.

Mr. Stuart Jacques, President of Central Monofill Services:
- stated that the important issue is the term client;
- client implies a fiduciary relationship between the parties; and
- opined that this is not the case in this matter.

Mr. Aschenbrenner:
- referred to an email from Mr. Shane Durand on page 2138 of the packet which clarifies the relationship between the corporations;
- it states that CRS owns and operates the recycling facilities and holds the contract with CMS to run the monofills;
- the last line of the email states "separate companies, same owners"; and
- cautioned the commission once again that they may be building an error into the record.

Discussion ensued as to whether Commissioner Kendig should be recused.

Chair Klapperich asked the commission if there is any objection to allowing Commissioner Kendig participate in the vote to remain sitting.

Commissioner Endle objected.

Mr. Aschenbrenner stated that once Commissioner Kendig made a decision not to recuse himself, it would not be appropriate for him to vote on whether he should be recused.

Discussion ensued regarding the commission voting on whether or not Commissioner Kendig should be recused.

Chair Klapperich called for a five minute recess to confer with the Borough Clerk and the Planning Commission Clerk.

(*The meeting recessed at 7:10 p.m., and reconvened at 7:20 p.m.*)

MOTION: Commissioner Healy made a motion to ask the commission if Commissioner Kendig should remain sitting for Resolution 14-33. The motion was seconded.

VOTE: The motion failed by a vote of three to one with Commissioner Endle in opposition. (Four affirmative votes are required to pass)

(Commissioner Kendig exited the meeting at 7:30 p.m.)

Chair Klapperich:
- stated that he will open the public hearing this evening so that everyone in attendance that would like to speak can speak;
- recommended that the public hearing be continued to the next meeting so that Commissioners Adams and Walden can participate; and
- will ask them to listen to the audio of the meeting so that they will be up to speed.

Mr. Ingaldson:
- opined that the commission made a mistake with the way that they handled Commissioner Kendig; and
- requested that the full public meeting be postponed until the next meeting so that the two commissioners that are absent can participate.

Mr. Aschenbrenner stated that the commissioners that are absent can participate in the discussion at the next meeting if they review the record and listen to the audio recording.

Chair Klapperich asked if there was any objection to continuing the public hearing.

There was no objection noted.

Mr. Jacques requested that they give their presentation at the next meeting.

Mr. Aschenbrenner stated that it is not normal for the public to comment prior to the applicant providing their overview.

Mr. Alex Strawn, Development Services Manager, stated that it is a normal part of the procedure for the applicant to give a presentation before the public hearing and then to respond to comments after the public hearing is closed.

Ms. Susan Lee and Mr. Strawn provided a staff report:
- staff recommended approval of the resolution with conditions.

Commissioner Healy referred to page 66 of the packet and questioned whether ADEC has approved the application.

Ms. Lori Aldridge, Alaska Department of Environmental Conservation (ADEC), Solid Waste Program:

- ADEC has declared that the application is complete and sent it out for public notice;
- there was an error in the first public notice and it was sent out for a second public notice which will remain open until December 29th; and
- at that time ADEC will review and analyze the information collected and will produce a decision document which will respond to all of the comments.

Commissioners questioned staff regarding the proposed Glenn Highway expansion and whether it will result in the applicant being subject to another public hearing and review.

Mr. Stuart Jacques, President of CMS, provided an overview of their application.

Commissioners questioned the applicant regarding:

- where the cover material will come from;
- what are the standards for long term monitoring of sites and who is responsible for monitoring;
- requested that Mr. Jacques present his recommendations for conditions;
- what is the perfect score that the applicant referred to; and
- clarification of the applicants statement that there will be little or no water that will leach.

Chair Klapperich opened the public hearing.

The following people spoke in favor of Resolution 14-33: Mr. Charles Homan, Mr. Landen Lovell, Mr. Paul Weir, Mr. Brian Goodman, Mr. Fred Thompson, Mr. Wes Walling, and Mr. Caleb Moffitt.

The following people spoke in opposition of Resolution 14-33: Ms. Rose Williams, Mr. Craig Kelly, Ms. Sarah Mayfield, Ms. Bonnie Kelly, Mr. Richard Harbuck, Vice President Gateway Community Council, Ms. Robin Bumgardner, Mr. Charles Young, Ms. Samantha Oslund, Mr. Bill Quantick, Mr. Ben VanderWeele, Mr. John Stuart, Ms. DeLena Johnson, City of Palmer Mayor, Ms. Diane Warta, Mr. Arthur Keyes, Mr. Kent Johnson for Rosanne Leiner, Ms. Vicky Ramage for Rachel Garnett, Ms. Lisa Kallander, Mr. Jesse Saxton, Mr. Joe Moore, Mr. Dennis Wetherell, Mr. Don Berberich, Mr. Kent Johnson, Mr. Gabe Jenkins, Mr. Johnnie Davis, Ms. Sarah Walcott, Ms. Judy Crosby, and Ms. Linea Crosby for Mr. Norman Crosby.

The following person spoke regarding Resolution 14-33: Ms. Lori Aldrich, Regional Program Manager for the Solid Waste Program of ADEC.

The following person spoke regarding the public process for Resolution 14-33: Mr. Eugene Haberman.

(*The meeting recessed at 10:26 p.m., and reconvened at 10:33 p.m.*)

The following people spoke in opposition of Resolution 14-33: Ms. Stephanie Nowers, Mr. Chris Kepler, Assemblymember Matthew Beck, Mr. Paul Johnson, Mr. James Munter, Hydrogeologist for J.A. Munter Consulting, Inc., Ms. Kathy Jo Johnson, Mr. Scott Wells.

The following person spoke in favor of Resolution 14-33: Mr. Nate Kruk.

Chair Klapperich invited the applicant to respond to comments and statements made by the public.

Mr. Stuart Jacques responded to comments and statements made by the public.

Mr. Alex Strawn responded to a statement made by Mr. Jacques regarding a staff site visit to the Birchwood site.

MOTION: Commissioner Healy moved to continue the public hearing until December 15, 2014. The motion was seconded.

Discussion ensued regarding not accepting new information that is received after noon the Friday before the Planning Commission meeting.

Chair Klapperich stated that no new material should be accepted and provided to the commission if it is received after 12:00 noon the Friday before the meeting.

VOTE: The motion to continue the public hearing for Resolution 14-33 passed without objection.

X. PUBLIC HEARING LEGISLATIVE MATTERS

(There were no legislative public hearings.)

XI. CORRESPONDENCE AND INFORMATION

(There was no correspondence and information.)

XII. UNFINISHED BUSINESS

(There was no unfinished business.)

XIII. NEW BUSINESS

(There was no new business.)

XIV. COMMISSION BUSINESS

A. Upcoming Planning Commission Agenda Items

Mr. Strawn provided a brief update on projects that will be coming before the Planning Commission.

XV. DIRECTOR AND COMMISSIONER COMMENTS

Commissioner Rauchenstein:

- thanked all the people for showing up;
- acknowledged that we have all built our homes and created waste;
- questioned where everyone puts their waste;
- stated that he puts his waste in the dump;
- CMS is trying to make use of the waste; and
- opined that this is a difficult decision.

Chair Klapperich:

- stated that he is encouraged by the participation in this process;
- we have to figure out ways to take care of our communities and our water and our air;
- we have to work together to find the best solution;
- stated that he is committed to doing this; and
- he appreciates the applicants patience and the boroughs patience.

XVI. ADJOURNMENT

The regular meeting adjourned at 11:22 p.m.

JOHN KLAPPERICH, Planning Commission Chair

ATTEST:

MARY BRODIGAN, Planning Commission Clerk

Minutes approved: March 2, 2015

The regular meeting of the Matanuska-Susitna Borough Planning Commission was held on December 15, 2014, at the Matanuska-Susitna Borough Assembly Chambers, 350 E. Dahlia Avenue, Palmer, Alaska. The meeting was called to order at 6:00 p.m. by Chair John Klapperich.

I. CALL TO ORDER, ROLL CALL, AND DETERMINATION OF QUORUM

Planning Commission members present and establishing a quorum:

Mr. Brian Endle, Assembly District #1
Mr. Thomas Healy, District #2
Mr. John Klapperich, Assembly District #3 *Chair*
Mr. Bruce Walden, Assembly District #4 (*attended the meeting telephonically until his arrival at 6:25 p.m.*)
Mr. William Kendig, Assembly District #5
Mr. Tomas Adams, Assembly District #6 (*arrived at 6:57 p.m.*)
Mr. Vern Rauchenstein, District #7

Staff in attendance:

Ms. Eileen Probasco, Planning & Land Use Director
Mr. Alex Strawn, Development Services Manager
Ms. Lauren Driscoll, Planning Services Chief
Mr. John Aschenbrenner, Deputy Attorney
Ms. Laura Newton, Assistant Borough Attorney
Ms. Susan Lee, Planner II
Ms. Pamela Graham, Grants & Project Coordinator
Ms. Mary Brodigan, Planning Commission Clerk

II. APPROVAL OF AGENDA

Chair Klapperich inquired if there were any changes to the agenda.

GENERAL CONSENT: The agenda was approved without objection.

III. PLEDGE OF ALLEGIANCE

The pledge of allegiance was led by Assemblymember Matthew Beck.

IV. CONSENT AGENDA

A. Minutes

(*There were no minutes available.*)

B. 2015 Planning Commission Meeting Schedule

C. INTRODUCTION FOR PUBLIC HEARING: QUASI-JUDICIAL MATTERS

(*There were no introductions for quasi-judicial matters.*)

D. INTRODUCTION FOR PUBLIC HEARING: LEGISLATIVE MATTERS

(*There were no introductions for legislative matters.*)

GENERAL CONSENT: The consent agenda was approved without objection.

V. COMMITTEE REPORTS

(*There were no committee reports.*)

VI. AGENCY/STAFF REPORTS

(There were no agency or staff reports.)

VII. LAND USE CLASSIFICATIONS

(There were no land use classifications.)

VIII. AUDIENCE PARTICIPATION (Three minutes per person.)

The following person spoke regarding Meadow Lakes Community SpUD: Mr. Phil Bindon.

The following person spoke regarding public meeting process: Mr. Eugene Haberman.

IX. PUBLIC HEARING: QUASI-JUDICIAL MATTERS *(Public Hearing not to begin before 6:15 P.M.)*

Commission members may not receive or engage in ex-parte contact with the applicant, other parties interested in the application, or members of the public concerning the application or issues presented in the application.

A. **Resolution 14-33**, a resolution approving a Conditional Use Permit, in accordance with 17.60.030 Permit Required, for the operation of an Inert Material Monofill on MSB Parcels 17N02E18C010 and 17N02E19B006. (*Continued from the December 1, 2014 Meeting. Applicant: CMS)*

Chair Klapperich asked Commissioner Kendig if he has any new information to add that was not previously disclosed.

Commissioner Kendig stated that he has nothing additional to add.

(*Commissioner Kendig exited the meeting at 6:15 p.m.*)

Chair Klapperich read the resolution title into the record.

Chair Klapperich:
- read the standard memorandum into the record regarding quasi-judicial actions;
- queried commissioners to determine if any of them have a financial interest in the proposed Conditional Use Permit (CUP);
- have had any ex parte contact with the applicant, members of the public, or interested parties in the proposed CUP; and
- if all commissioners are able to be impartial in a decision.

Chair Klapperich:
- reminded everyone that this is a continuation of the public hearing opened on December 1, 2015;
- stated that those that have not testified will be allowed to speak first;
- those that have already testified may have an opportunity to speak again if time permits; and
- the applicant will have an opportunity to respond after the conclusion of the public hearing.

(*Commissioner Walden arrived at 6:25 p.m.*)

Chair Klapperich asked Commissioner Walden if he had listened to the audio recording from the December 1, 2014, Planning Commission meeting.

Commissioner Walden responded that he listened to the recording and reviewed the record.

Chair Klapperich read the standard memorandum regarding quasi-judicial actions, and asked Commissioner Walden if he could be impartial in this decision.

Commissioner Walden responded "yes".

Mr. Ingaldson, Attorney for CMS:
- stated that he has concerns regarding the recusal of Commissioner Kendig;
- noted that Commissioner Rauchenstein had filed a written motion to reconsider the motion to recuse Commissioner Kendig;
- acknowledged that Commissioner Rauchenstein may have decided not to bring the motion forward; and
- stated that he would like it on the record.

Commissioner Rauchenstein:
- stated that he had intended to rethink the recusal of Commissioner Kendig; and
- he changed his mind after reading the letter from the borough attorney which said that there had been ex parte contact between Commission Kendig and the applicant.

Chair Klapperich continued the public hearing.

The following people spoke in opposition of Resolution 14-33: Mr. Ken Smith, Mr. Stan Gillespie of the Gateway Community Council, Mr. Aaron Kallas, and Mr. Mark Drake.

The following people spoke regarding the history of the site and the involvement of the Alaska Department of Natural Resources (ADNR): Mr. Charlie Cobb, State Dam Safety Engineer in the Water Resources Section, and Mr. David Schade, Water Resources Section Chief in the Division of Mining, Oil, and Water.

(*Commissioner Adams entered the meeting at 6:57 p.m.*)

Chair Klapperich asked Commissioner Adams if he had listened to the audio recording and reviewed the record from the December 1, 2014, Planning Commission meeting.

Commissioner Adams responded that he had listened to the recording and reviewed the record.

Chair Klapperich read the standard memorandum regarding quasi-judicial actions, and asked Commissioner Adams if he could be impartial in this decision.

Commissioner Adams responded "yes".

The following people spoke in opposition of Resolution 14-33:, Mr. David Gilley, Ms. Michelle Roundtree, Mr. Norman Crosby for Ms. Linea Crosby, Mr. Chris Sahlstrom, Mr. John Rozzi, Ms. Evelyn Bunch, Ms. Barbara Landi, Mr. David Palmer, Mr. Eric Quam, Ms. Marie Payne, Ms. Helen Hoffman, Mr. Samuel Raynovic, Ms. Stephanie Nowers for her husband, Stephen Nowers, Mr. Tony Bluma, Mr. Tony Sellen, Ms. Kellie Ballard-Chambers, Mr. Jeffrey Vincent, Mr. Jim Cassidy, Mr. Barry Orzalli, and Ms. Heather Orzalli.

The following person spoke in favor of Resolution 14-33: Mr. Larry Helgeson, Design Engineer for the monofill.

(*The meeting recessed at 8:00 p.m., and reconvened at 8:10 p.m.*)

The following people spoke in opposition of Resolution 14-33:, Mr. Jesse Hronkin, Ms. Melodie Wright, Mr. Emmitt Leffel, Ms. Gerry Keeling, Mr. Ray Jeffers, Mr. Joe Hannan, City Manager of Palmer, Mr. Ben VanderWeele for Mr. Roger VanderWeele, Mr. Romie Deschamps, Mr. Rick Fleming, Mr. Cheyenne Guard, Ms. Stephanie Figon, Ms. Melanie Glatt, Ms. Emily Longbrake of the Alaska Community Action on Toxics, Ms. Peggy Egelus, Mr. Bill Longbrake, Mr. Murph O'Brien, Ms. Rachel Gernat, Ms. Judy Crosby, Ms. Bonnie Kelly, Mr. Joe Moore, Mr. Sarah Wolcoff, Mr. Dave Jenkins, Ms. Diane Warta, Mr. Kent Johnson, Mr. Bill Quantick, Ms. Stephanie Nowers, Mr. Joe Figon, and Ms. Kristen Lewis.

The following people spoke in favor of Resolution 14-33: Ms. Donna Mears, Mr. Grant Goulet, Mr. Glen Price, and Mr. Bill Ingaldson.

The following person spoke regarding public process: Mr. Eugene Haberman.

Chair Klapperich invited the applicant to respond to questions and statements made by members of the public.

Mr. Stuart Jacques, President of CMS:

- introduced Mr. Dan Young of TERRASAT, Inc. and Mr. Larry Helgeson of Environmental Management, Inc.;
- responded to questions and statements from public testimony and ADNR; and
- suggested changes that he would like to see to the proposed conditions.

Chair Klapperich invited staff to respond to questions and statements from public testimony.

Mr. Alex Strawn suggested changes to proposed conditions in response to comments made by the public.

There being no one else to be heard, Chair Klapperich closed the public hearing and discussion moved to the Planning Commission.

Commissioners questioned the applicant regarding:

- status of the ADEC permit;
- what happens after the monofill is filled up and closes, and who is the responsible party;
- who has the obligation if the property is sold;
- how will the Glenn Highway expansion affect the monofill plan specifically with a proposed intersection;
- clarification of reclamation requirements with regards to pre-existing legal nonconforming rights;
- how much of Cell A and G will be available if the proposed highway intersection goes in;
- clarification of the discrepancy of how long the groundwater will be monitored after the monofill closes;
- clarification of how much top soil and silt will be provided as coverage;
- what changed in the design plans requiring the maximum finished elevation in the monofill to go from a maximum of 150 feet in elevation to 162 feet;
- will the cells be filled in the order of how they are named (A, B,C, etc.); and
- how will the site be screened from the highway if the berm is removed.

(*The meeting recessed at 10:42 p.m., and reconvened at 10:48 p.m.*)

MOTION: Commissioner Walden moved to approve Resolution 14-33. The motion was seconded.

Commissioner Healy:

- stated that he has serious concerns about this application, the location, and its compliance with the comprehensive plan;
- opined that this is a health and safety issue;
- the commission has heard overwhelming testimony from the public, the city of Palmer, community councils, and Home Owner Associations (HOAs);
- referred to the Core Area Plan and reuse of gravel pits going towards light industrial;
- has a major concern that there are lots of gravel sites in the area and allowing this type of use in this area will set a precedent;
- concerned about the AKDOT plans for the Glenn Highway Expansion and opined that this needs to be taken into consideration; and

- noted that any changes to the monofill plan will be an administrative decision.

Commissioner Endle:

- stated that he was not in favor of the initial application;
- he is looking for something from the applicant showing that they have resolved issues with the water table, ponds, and the wind;
- does not see that in the application;
- acknowledged that the applicant does not have to be a good neighbor, but does have to fulfill the requirements;
- there wasn't enough data to show that the water table will rise or fall, but opined that it is unstable;
- acknowledged the amount of testimony stating that the water levels have risen;
- the applicant has not proven that they meet the qualifications for the permit;
- does not buy that this is considered an arid climate;
- questioned the lack of a liner and that the applicant does not want to modify the design; and
- stated that he is not in favor of granting the permit.

Commissioner Walden:

- acknowledged the concerns of his fellow commissioners and the concerns of the people in attendance;
- Alaska has been in an economic bubble due to oil;
- opined that the bubble just burst due to the Saudis flooding the market with cheap oil;
- income for Alaskans will start to drop;
- stated that he is in favor of 10, 15 or 30 jobs; and
- suggested that the commission consider that there are hard times coming.

Commissioner Rauchenstein requested that the applicant be required to increase the amount of insurance that they purchase to adequately cover any problem that may occur.

Commissioner Adams:

- acknowledged that no matter what decision the commission makes, there will be someone that is unhappy;
- he is an engineer and understands some of the science, but opined that there is a lot of information that requires additional expertise;
- the applicants hydrologist said there is no risk and the borough's hydrologist says that there is risk;
- ADEC has the scientists and engineers with the background to pick this application apart;
- opined that it's unfortunate that they have not issued their permit which would contain certain stipulations;
- noted that code states that granting a permit will not be harmful to the public; and
- stated that he doesn't know if he has the expertise to vote on this permit.

Commissioner Rauchenstein:

- opined that many of the standards of ADEC and the EPA (Environmental Protection Agency) are arbitrary;
- stated that he lives in Talkeetna and the water was just fine;
- the EPA changed their standards requiring Talkeetna to upgrade their water system; and
- they recently relaxed their standards after the people of Talkeetna spent about a million dollars to upgrade their water system.

Chair Klapperich:

- highly agrees with Commissioner Adams;
- the more he read, the more that he realized what he didn't know;
- states that due to the fact that this is a quasi-judicial action, he was not able to talk to the engineer, or the applicant, to borough staff, visit Chugiak or Anchorage sites, or research what worked in the Lower 48; and
- if borough staff recommends approval with 40 conditions, opined that it is not his place to overrule them.

Commissioner Healy:

- referred to the lengthy whereas statement regarding the leachate issue that begins on page 2,153 of the packet and goes to page 2,154;
- opined that the whereas statement is almost word for word information provided by the applicants engineers;
- is concerned with the amount of disagreement between experts regarding hydrology;
- the borough hauls about 1.6 million gallons of leachate out of the central landfill which is the same climate as the monofill; and
- acknowledged that this is like comparing apples to apples, but considering the risk to groundwater, stated that he cannot support this resolution.

Commissioner Adams:

- referred to emails from DEC and questioned where they will go when they review the application;
- DEC has pointed out questions in the application;
- they noted that there was nothing in the application referring to adding fill to obtain the proper groundwater separation;
- the DEC permit requires that the owner provide adequate bonding and financial assurances, and commented that CMS has not done this;
- they also stated that they will not demand this until the permit is either issued or denied;
- stated that the email from DEC was what caused him to be concerned over the actual design of the landfill;
- the commission does not have the expertise to say if the landfill should or should not be lined;
- Mr. Helgeson made a statement that the lining may cause more harm than good;
- DEC has the scientists and engineers that have the expertise to determine if the monofill should be lined;
- would like the commission to be able to review the DEC permit to see what their conditions are and to fully understand DECs concerns regarding the design of the landfill

and if there is appropriate bonding and insurance should something go wrong and a body of water is polluted;
- stated that he is having a hard time supporting this application and suggested that the applicant pull it until they have the permit from DEC; and
- suggested changing the 30-year expiration date to five years which is in line with the limits suggested by DEC.

MOTION: Commissioner Adams moved a primary amendment to Condition of Approval number 38 for the Conditional Use Permit to expire on December 31, 2020. The motion was seconded.

VOTE: The primary amendment passed with Commissioners Endle and Healy in opposition.

Commissioner Adams:
- stated that there are a number of conditions of approval that he would amend if he had the expertise;
- went back to his original statement that DEC has the expertise; and
- will not be attempting to modify additional conditions because he doesn't know if he will be making them better or not.

MOTION: Commissioner Rauchenstein moved a primary amendment to Condition number 21 by changing 2 feet of topsoil to 18 inches of silt and 6 inches of topsoil.

VOTE: The primary amendment died due to lack of a second.

MOTION: Commissioner Rauchenstein moved a primary amendment to change Condition number 23 to state not closer than 12 feet instead of 10 feet.

VOTE: The primary amendment died due to lack of a second.

MOTION: Commissioner Endle moved to close debate and to vote on the main motion. The motion was seconded.

VOTE: The motion passed without objection.

VOTE: The main motion to approve Resolution 14-33 failed with Commissioners Endle, Adams, and Healy in opposition.

Mr. Aschenbrenner:
- stated that he is here on behalf of staff;
- even though the motion did not garner a majority vote, the commission's decision must include findings of fact and conclusions of law;
- the commission has in the past used the 30-day time frame allowed under MSB 17.60.040 to come forward with findings and conclusions; and
- acknowledged the late hour, but encouraged the commission to adopt finding.

Discussion ensued regarding:

- all commissioners, whether they voted in favor or against the permit, should come up with findings of facts and conclusions of law supporting the denial of Resolution 14-33; and
- the findings will be submitted via email to the clerk by 5:00 p.m. on December 22nd for inclusion in the January 5th meeting packet.

MOTION: Commissioner Adams moved to continue the adoption of findings of fact and conclusions of law to the regular meeting on January 5, 2015, and submitting draft findings of fact and conclusions of law to the clerk by 5:00 p.m. on December 22, 2014. The motion was seconded.

VOTE: The motion to continue the adoption of findings of fact and conclusions of law to the January 5, 2015, regular meeting passed without objection.

MOTION: Commissioner Healy moved to postpone all remaining business to the January 5, 2015, regular meeting. The motion was seconded.

VOTE: The motion to postpone all remaining business to the January 5, 2015, regular meeting passed without objection.

X. PUBLIC HEARING LEGISLATIVE MATTERS

A. **Resolution 14-35**, a resolution recommending modifications to the proposed Tall Structures Ordinance to be consistent with recent changes in Federal Regulations.

XI. CORRESPONDENCE AND INFORMATION

A. BOAA Case 14-01, Notice of Right to Appeal and Final Order (*Pertaining to PC Resolution 14-21, Sky Ranch Setback Variance*)

XII. UNFINISHED BUSINESS

XIII. NEW BUSINESS

XIV. COMMISSION BUSINESS

A. School Site Selection Committee - PC Representative 2 - Commissioner Kendig Term 12/31/14

B. Upcoming Planning Commission Agenda Items

XV. DIRECTOR AND COMMISSIONER COMMENTS

XVI. ADJOURNMENT

The regular meeting adjourned at 11:57 p.m.

JOHN KLAPPERICH, Planning Commission Chair

ATTEST:

MARY BRODIGAN, Planning Commission Clerk

Minutes approved: March 2, 2015

The regular meeting of Matanuska-Susitna Borough Planning Commission was held on January 5, 2015, at the Matanuska-Susitna Borough Assembly Chambers, 350 E. Dahlia Avenue, Palmer, Alaska. The meeting was called to order at 6:00 p.m. by Chair John Klapperich.

I. CALL TO ORDER, ROLL CALL, AND DETERMINATION OF QUORUM

Planning Commission members present and establishing a quorum:

Mr. Brian Endle, Assembly District #1
Mr. Thomas Healy, District #2
Mr. John Klapperich, Assembly District #3 *Chair*
Mr. Bruce Walden, Assembly District #4 (*arrived at 6:16 p.m.*)
Mr. William Kendig, Assembly District #5
Mr. Tomas Adams, Assembly District #6
Mr. Vern Rauchenstein, District #7

Staff in attendance:

Mr. Alex Strawn, Development Services Manager
Ms. Lauren Driscoll, Planning Services Chief
Mr. John Aschenbrenner, Deputy Attorney
Ms. Laura Newton, Assistant Borough Attorney
Ms. Shannon Bodolay, Assistant Borough Attorney
Ms. Mary Brodigan, Planning Commission Clerk

II. APPROVAL OF AGENDA

Chair Klapperich inquired if there were any changes to the agenda.

GENERAL CONSENT: The agenda was approved without objection.

III. PLEDGE OF ALLEGIANCE

The pledge of allegiance was led by Mr. Mike Koskovich, a member of the audience.

IV. CONSENT AGENDA

A. Minutes

(There were no minutes available.)

A. INTRODUCTION FOR PUBLIC HEARING: QUASI-JUDICIAL MATTERS

1. **Resolution 15-03**, a Conditional Use Permit in accordance with MSB 17.27 - Sutton Special Land Use District, for the construction and operation of a private outdoor shooting range, located within Township 19 North, Range 3 East, Section 32, Parcel B006; Tax ID# 19N03E32B006, Seward Meridian. Public Hearing: February 2, 2014. (*Applicant: J-TAC, LLC, Staff: Mark Whisenhunt*)

2. **Resolution 15-04**, a Conditional Use Permit in accordance with MSB 17.70 - Regulation of Alcoholic Beverage Uses, for the operation of an alcoholic dispensary (bar) at the 907 Club, located within Township 17 North, Range 3 West, Section 21; Tax ID# 54280000T00A, Seward Meridian. Public Hearing: February 2, 2014. (*Applicant: Nine Oh Seven, Inc., Staff: Mark Whisenhunt)*

B. INTRODUCTION FOR PUBLIC HEARING: LEGISLATIVE MATTERS

1. **Resolution 15-02**, a resolution recommending Assembly approval of a route selection for the Seldon Road Extension, Phase II. Public Hearing: February 2, 2015. (*Staff: Michael Campfield*)

Chair Klapperich read the consent agenda into the record.

Chair Klapperich inquired if there were any changes to the consent agenda.

GENERAL CONSENT: The consent agenda was approved without objection.

V. COMMITTEE REPORTS

(There were no committee reports.)

VI. AGENCY/STAFF REPORTS

(There were no agency/staff reports.)

VII. LAND USE CLASSIFICATIONS

(There were no land use classifications.)

VIII. AUDIENCE PARTICIPATION (Three minutes per person.)

The following people spoke regarding the Meadow Lakes Community Draft SpUD: Mr. Mike Koskovich, Ms. Linda Conover, Mr. Charles Center, Mr. Mike Sweeley, and Mr. Jon Spiegel.

Commissioner Walden arrived at 6:16 p.m.

The following person spoke about a commissioner possibly having a conflict of interest the CMS Inert Material Monofill CUP application: Mr. Glen Price.

The following person spoke regarding thanking the commissioners for their hard work on the CMS Inert Material Monofill CUP application: Ms. Stephanie Nowers.

IX. PUBLIC HEARING: QUASI-JUDICIAL MATTERS *(Public Hearing not to begin before 6:15 P.M.)*

Commission members may not receive or engage in ex-parte contact with the applicant, other parties interested in the application, or members of the public concerning the application or issues presented in the application.

(There were no quasi-judicial public hearings.)

X. PUBLIC HEARING LEGISLATIVE MATTERS

A. **Resolution 14-35**, a resolution recommending modifications to the proposed Tall Structures Ordinance to be consistent with recent changes in Federal Regulations. *Continued from the December 15, 2014, meeting. (Staff: Alex Strawn)*

Commissioner Endle stated that he works for MTA and asked that he be recused from the public hearing for Resolution 14-35, modifications to the Tall Structures Ordinance.

There was no objection noted.

(*Commissioner Endle left the room at 6:33 p.m.*)

Chair Klapperich read the resolution title into the record.

Mr. Alex Strawn provided a staff report:
- staff recommended approval of the resolution.

Commissioners questioned staff regarding:
- if the purpose of the modifications are just to meet federal changes or if there are substantial modifications;
- the number of legally constructed towers in the borough that are 200 feet or more;
- whether requiring the applicant demonstrate a need for requesting additional height on a tower [MSB 17.67.110(d)(2)] conflicts with federal code; and
- referred to 17.67.110(C) and questioned whether a replacement tower would be considered a new structure [17.67.90(A).

Chair Klapperich opened the public hearing.

The following people spoke in favor of Resolution 14-35: Mr. Murph O'Brien and Ms. Stephanie Nowers.

There being no one else to be heard, Chair Klapperich closed the public hearing and discussion moved to the Planning Commission.

MOTION: Commissioner Kendig moved to approve Resolution 14-35. The motion was seconded.

Commissioner Adams stated that he is in favor of Resolution 14-35, but would like to tighten up the language of 17.67.110(D)(2).

MOTION: Commissioner Adams moved a primary amendment to Resolution 14-35 by inserting the words "not to exceed 20 feet" to 17.67.110(D)(2) to read: "within a special use district, height increase under this section is limited to a cumulative increase of 10% of the existing facility unless the applicant demonstrates that the additional height, not to exceed 20 feet, is necessary for installation of one additional antenna array." The motion was seconded.

VOTE: The primary amendment passed without objection.

VOTE: The main motion passed without objection.

(*Commissioner Endle returned to the meeting at 7:04 p.m.*)

XI. CORRESPONDENCE AND INFORMATION

A. BOAA Case 14-01, Notice of Right to Appeal and Final Order (*Pertaining to PC Resolution 14-21, Sky Ranch Setback Variance, Staff: Alex Strawn - Continued from the December 15, 2014, meeting*)

Chair Klapperich read the agenda item into the record.

Mr. John Aschenbrenner, Deputy Borough Attorney:
- stated that this item is on the agenda for informational purposes only; and
- advised that this matter could potentially come back before the board.

Commissioner Adams:
- noted that there are two dates in the order that conflict;
- the opening paragraph references the Board of Adjustments and Appeals (BOAA) rendering an order on November 24, 2014;
- the last page above the signature references September 24, 2014;
- noted that regardless of which date was correct, the appeal period appears to have expired; and
- queried if an appeal has been filed.

Mr. Aschenbrenner:
- stated that he believes an amended order went out after this order;
- will get a copy for the commission and opined that it may answer Commissioner Adams' question; and
- because the appellant is not present, recommended that the commission take this information as it is currently presented.

XII. UNFINISHED BUSINESS

A. **Resolution 15-01**, a resolution adopting findings of fact and conclusions of law to support the Planning Commissions failure to approve Resolution 14-33. (*From the decision rendered at the December 15, 2014 meeting. Applicant: CMS, Staff: Susan Lee and Alex Strawn)*

(*Commissioner Kendig exited the meeting at 7:13 p.m.*)

Chair Klapperich:

- read the memorandum regarding quasi-judicial actions into the record;
- queried commissioners to determine if any of them have a financial interest in the proposed Conditional Use Permit (CUP);
- have had any ex parte contact with the applicant, members of the public, or interested parties in the proposed CUP; and
- if all commissioners are able to be impartial in a decision.

Commissioner Adams objected to the reading of the memo noting that the public hearing was closed on December 15, 2014.

Discussion ensued whether it is necessary to read the memorandum regarding quasi-judicial actions after the public hearing has been closed even if the decision is continued to another meeting date.

Mr. John Aschenbrenner:

- acknowledged that he is an advocate for staff in these matters;
- agreed that it is not necessary to read the memo regarding quasi-judicial actions after the public hearing has closed;
- referred to the letter that Mr. Glen Price sent to the Borough Clerk dated January 15, 2015; and
- stated that the applicant lodged an objection to a commissioner sitting, but only after the commission had made a decision in the matter.

[Clerk's note: the commission decided to disregard the questions presented in the memorandum regarding quasi-judicial actions since the public hearing had been closed on December 15, 2014.]

Discussion ensued whether the commission would accept information that is presented as handouts if it is provided after 12:00 noon on the Friday prior to a Planning Commission meeting.

[Clerk's note: the commission decided to disregard information that was received after 12:00 noon on the Friday prior to the Planning Commission meeting.]

Commissioner Healy:

- acknowledged that even if the commission disregards the questions presented in the memorandum regarding quasi-judicial actions at this time, they are not disregarding the rules that they represent;

- the questions were read at the onset of the public hearing and the commissioners sitting declared "no conflict";
- does not want anyone to get the impression that the commission is disregarding the issue of the conflict of interest rules; and
- stated that the commission respects the conflict of interest rules.

MOTION: Commissioner Endle moved to approve Resolution 15-01. The motion was seconded.

Commissioner Endle:

- stated that he didn't see everything that he wanted in Resolution 15-01, but opined that it presented a good starting template;
- noted that there was nothing in Resolution 15-01 that referenced back to Resolution 13-30 which denied the original application for a conditional use permit; and
- opined that there should be something in the resolution noting that there was a previous application that was denied.

MOTION: Commissioner Endle moved a primary amendment to Resolution 15-01 by adding Amendment E2 as presented on page 355 of the packet, and adding "previous application for the same" as the second whereas statement to read: "whereas, Resolution 13-30 contains findings of fact and conclusions of law which support denial of the pervious application for the same conditional use permit". The motion was seconded.

Commissioner Healy opined that the original conditional use permit was denied by the commission and, therefore, the current application is an entirely new application for a conditional use permit.

WITHDRAWN: Commissioner Endle moved to withdraw his primary amendment.

There was no objection noted.

Discussion ensued regarding the amendments proposed by Commissioners Endle, Adams, Rauchenstein, and Healy.

(The meeting recessed at 8:06 p.m., and reconvened at 8:14 p.m.)

MOTION: Commissioner Healy moved a primary amendment to Resolution 15-01, by:

- moving the "now therefore" statement before the first "whereas" statement on page 11 of 12 of the resolution;
- adding "makes the following conclusions" after " findings of fact and" and before "of law supporting denial";
- deleting "whereas" from the first and second "whereas" statements on page 11 of 12 of the resolution, and numbering them conclusions "1" and "2" respectfully;
- deleting "based on the above findings of fact and conclusions of law" from the new condition number "1";

- deleting "based on the above findings of fact" from the new condition number "2"; and
- moving the "whereas" statement from the bottom of page 2 to page 11, and renaming it as condition number "3".

The motion was seconded.

VOTE: The primary amendment passed with Commissioners Klapperich and Rauchenstein in opposition.

VOTE: The main motion passed with Commissioner Klapperich and Rauchenstein opposition.

(*Commissioner Kendig re-entered the meeting at 8:30 p.m.*)

XIII. NEW BUSINESS

(There was no new business.)

XIV. COMMISSION BUSINESS

A. Planning Commission Elections

1. Planning Commission Chair and Vice Chair

MOTION: Commissioner Kendig moved to nominate Commissioner Klapperich to be the Planning Commission Chair for 2015. The motion was seconded.

VOTE: The motion passed without objection.

MOTION: Commissioner Adams moved to nominate Commissioner Walden to be the Planning Commission Vice-Chair for 2015. The motion was seconded.

VOTE: The motion passed without objection.

2. School Site Selection Committee Representative 2

MOTION: Commissioner Adams moved to nominate Commissioner Kendig to be the Planning Commission Representative 2 on the School Site Selection Committee. The motion was seconded.

VOTE: The motion passed without objection.

B. Upcoming Planning Commission Agenda Items

Ms. Driscoll provided a brief update on projects that will be coming before the Planning Commission.

XV. DIRECTOR AND COMMISSIONER COMMENTS

Ms. Driscoll:

- spoke to comments made during audience participation regarding the proposed Meadow Lakes Special Use District (SpUD);
- the community requested the initiation of the SpUD process, and noted that staff merely facilitates the community driven process;
- stated that the next step after a community council adopts something is for it to go before the Planning Commission;
- SpUDs are based on the comprehensive plan;
- a 60-day public review period is wrapping up today;
- the Meadow Lakes community has been working on this process for eight years, but is free to request additional time to review;
- the community council has requested that the plan go back to them for discussion at their January 15, 2015, meeting; and
- the community will decide how they wish to proceed.

Commissioner Healy:

- congratulated Commissioner Klapperich for being elected chair once again;
- stated that he will be out of the country and absent from the January 19th and February 2nd meetings; and
- thanked staff and particularly Ms. Brodigan for all of the work put in over the last few meetings.

Commissioner Walden:

- thanked commissioners for the vote of confidence in once again electing him vice-chair; and
- stated that he may have to miss some meetings in the future and will keep Chair Klapperich and Ms. Brodigan informed.

Commissioner Kendig stated that this has been a very enlightening year and that he would not have missed it for the world.

Commissioner Adams:

- noted that there is nothing on the schedule for January 19th; and
- requested that all commissioners be sent a copy of the PC Policies and Procedures.

Ms. Brodigan acknowledged that there is nothing currently on the schedule for the January 19, 2015 meeting, and asked the commission if they would like to cancel.

Chair Klapperich:

- noted that the February 2nd meeting will be busy with two quasi-judicial public hearings and one legislative public hearing;
- acknowledged that the commission spends a lot of time attending meetings and reviewing packets;

- thanked the commissioners for their time, and for being courageous and not being afraid to take a stand; and
- suggested that the commission cancel the January 19, 2015, meeting.

There was no objection noted.

XVI. ADJOURNMENT

The regular meeting adjourned at 9:00 p.m.

JOHN KLAPPERICH, Planning Commission Chair

ATTEST:

MARY BRODIGAN, Planning Commission Clerk

Minutes approved: March 2, 2015

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MATANUSKA SUSITNA BOROUGH

PLANNING COMMISSION REGULAR MEETING (EXCERPT)

(RE CONDITIONAL USE PERMIT; RES. No. 14-33)

DECEMBER 1, 2014

CHAIR: Seeing and hearing none, one last call for any other audience participation. I close audience participation for the December 1st, 2014 planning commission meeting. Brings us up to Item No. 9, public hearing, quasi-judici -- excuse me, quasi-judicial matter. Commission members may not receive or engage -- excuse me, let me read the resolution title into the record first. Resolution 14-33, a resolution approving a conditional use permit in accordance with 17.60.030, permit required for the operation of an inert material monofill on Mat-Su Borough Parcels 17N02E18C010 and, final number, 17N02E19B006, applicant, CMS, and at this time, I'm going to read the conflict of interest *ex parte* question into the record.

A memorandum from Ms. Eileen Probasco, planning director, subject, planning commission quasi-judicial actions. In response to recent inquiries and in order to insure a fair decision on planning commission decisions, the following shall read -- be read by the chair after the resolution title. Before each quasi-judicial case is heard, based on Mat-Su Borough 15.08.150, conflict of interest, *ex parte* contact, three items. No. 1, I'm addressing this to the planning commissioners. Do you or any member of your immediate family have a substantial financial interest in any property affected by this decision or will you recognize a foreseeable profit as a result of this decision? Item 2, have you received or

otherwise engaged in *ex parte* contact with the applicant, other parties interested in the application or members of the public concerning the application or issues presented in this application either before the application or during any period of time the matter is submitted for decision outside of the public process provided by the Borough?

No. 3, are you able to be impartial in this decision? If anyone answers yes to Questions 1 or 2 or no to Question 3, both the borough staff and the applicant will be given the opportunity to ask further questions. Following this, the planning commission will render the decision as to whether or not the commissioner has a conflict of interest or can make an impartial decision. Commissioners? Mr. Bill Kendig -- that would be Mr. William Kendig from District 5.

COMM. KENDIG: The applicant -- the corporation, make the applicant, for the conditional use permit, I haven't done any business with them but they do have a sister corporation, if you will, that's -- buys recyclables that I have sold them in the past, similar to the same people that we gave the CUP to at 49th Street, the recycling. They're not -- never have been my main buyer but, on occasion, I have sold to them and I don't feel like I have a conflict or anything with it but I want to make sure that I put that out to everybody. I don't feel like I need to let them know.

CHAIR: For the record, that was Mr. William Kendig,

District 5. I would at this time like to ask the Borough if they have any questions for Mr. Kendig and then I will ask the applicant. Please state your name for the record.

MR. ASCHENBRENNER: John Aschenbrenner, deputy borough attorney. Excuse me, when Commissioner Kendig --

CHAIR: If you could speak a little louder, please, sir?

MR. ASCHENBRENNER: John Aschenbrenner, deputy borough attorney. Commissioner Kendig, could you please elaborate on the relationship between yourself and the -- what you described as the sister corporation to the applicant, what exactly the relationship was? I didn't quite understand that.

COMM. KENDIG: I in the past have sold scrap metal and my main buyer -- and they weren't my main buyer but, on occasion, they offered a higher price. I just wanted the higher price. Haven't done any business lately and, like I say, it was an occasional thing, similar to the CUP that was asked for at 49th Street, the recycling.

MR. ASCHENBRENNER: Can you tell me when the last time a transaction occurred?

COMM. KENDIG: Oh, early fall, late summer and, prior to that, probably hadn't been for four or five years.

MR. ASCHENBRENNER: Early fall of which year?

COMM. KENDIG: This year.

MR. ASCHENBRENNER: If you'll bear with me just one second? And this sister corporation, it's the corporation

that is involved with the recycling for the applicant?

COMM. KENDIG: Yes.

MR. ASCHENBRENNER: If I might bring to the attention of the board members, commissioners, under Mat-Su Borough Code 2.71.080, the recusal, it provides that a municipal official shall recuse himself from acting on a matter or proceeding coming before a borough elected body, board, commission or committee of which the official is a member when the matter or proceeding involves any person who is or has been a client of the official or the official's firm or partnership within the 12-month period immediately preceding the date of the action. I think this is -- I leave it to Mr. Kendig's and the Commission's decision but I think a fairly straightforward reading, the bright line rule that the Mat-Su Borough assembly has said is that if the applicant -- and in this case, basically, Mr. Kendig is saying it's an arm of the applicant, the recycling portion of this applicant, has been his client just within the last few months. So it looks -- it appears to me that there is a conflict so I -- and I urge the chair to allow the applicant the same opportunity that the Borough's had -- has had to inquire about --

COMM. KENDIG: And could I ask a question?

CHAIR: I thank you, Mr. Aschenbrenner. Mr. Bill -- William Kendig?

COMM. KENDIG: I -- and I have a question for Mr.

Aschenbrenner.

CHAIR: Please proceed.

COMM. KENDIG: Well, sir, this is very similar to the conditional use permit for the recycling on 49th Street, it just was never brought up at that. I'm just confused as to why it's being brought up now.

MR. ASCHENBRENNER: Through the chair to Commissioner Kendig, I can't speak to some past action and whether or not there was a conflict that perhaps wasn't brought forward. All's I can speak to is the facts that are brought before this commission this evening. It appears to me that you've laid out that the applicant's recycling arm for this conditional use permit has been your client just a couple months ago and so I'm reading Mat-Su Borough Code 2.71.080 which provides for recusing if you're an official where somebody coming before you is your client within 12 months is the bright line rule that the Mat-Su Borough Assembly has set.

CHAIR: Thank you, Mr. Aschenbrenner. Before I weigh in on this, I would like the applicant to have a -- an opportunity to address Mr. Kendig's disclosure. Please state your name for the record as loud and clearly as you can, sir.

MR. INGALDSON: Is that better? Bill Ingaldson. I'm an attorney on behalf of CMS. If I could just ask Mr. Kendig one question? If I understood it correctly, you sold some material to them?

COMM. KENDIG: Nate is who I dealt with.

MR. INGALDSON: But I mean you sold some recyclable material? They paid you some money for some recyclable material?

COMM. KENDIG: Yes.

MR. INGALDSON: And -- all right. Are these people that are -- you talked about this being a client but it sounds to me like this was maybe no different than if you went and sold tires from -- say to someone else or if someone goes to Target and buys things from there. This -- these aren't people that you're dealing with every day or that you're doing social affairs with or that it's a -- when they talk about being a client, is it just they paid more money? Right?

COMM. KENDIG: Yeah.

MR. INGALDSON: Okay.

COMM. KENDIG: Yeah, it's not -- like I said, the last time I'd done any business with them was probably four years prior.

MR. INGALDSON: Thank you. And, Mr. Chairman, I guess my point on this is just that if you -- the fact that someone happens to sell something in an arm's length transaction which it sounds like this is and doesn't have an ongoing regular business doesn't make that person a client and I don't think that the borough code was intended to be -- to address that issue. I think the borough code is intended to address an

issue where you have an ongoing regular relationship. That's what a client is.

CHAIR: Thank you, Mr. Ingaldson. The most important question to me is are you able to be impartial in this decision? And I ask you, Mr. Kendig.

COMM. KENDIG: I feel I could be impartial to it. I've spent hours on hours going through our material and I think I feel confident in saying that I can be impartial.

CHAIR: Before I ask the question to my fellow commissioners, I feel the weight should be on the amount of business and it seems like it's an insignificant, one-time transaction out of the last five years that doesn't portray a -- an engaged relationship as of tonight or in the future so I ask my fellow commissioners. Yes, Mr. Aschenbrenner?

MR. ASCHENBRENNER: For the record, if I might just address the Board one more time, John Aschenbrenner, deputy borough attorney. The code doesn't have a provision in it for trying to surmise the scope of the client relationship. It just isn't there. So the Mat-Su Borough Assembly has set a bright light rule that no commissioner is supposed to sit when a client of that official, they have interacted with them within the preceding 12 months. So while I understand the applicant's argument with regard to this, that's just not the code. You could get into those other kinds of questions which would be the backdrop of whether or not due process and a fair

hearing is afforded and whether or not the commissioner can afford the applicant a fair and unbiased decision maker but before you even get there, you have a Mat-Su Borough code provision that provides a bright line rule. So, again, I urge the Commission to follow the borough code and lodge an objection for the reason that it's pretty clear that Mat-Su Borough Code 2.71.080 applies in this case so that there's not an error built into the record on this appeal.

CHAIR: I thank you for that clarity and my question would be on the first question do you or any member of your immediately family have a substantial financial interest, recognize a foreseeable profit in past, there has been insignificant small transactions that were waived because of this -- because of the miniscule relationship. Isn't there a level of -- like I say, why did -- why does the -- we talk about substantial financial or recognize a foreseeable profit. It seems to put a level on what type of and how much business. If it's very small and insignificant, I would like to have experts enjoined in this decision process we're doing.

MR. ASCHENBRENNER: Just respond one more time. John Aschenbrenner, deputy borough attorney. There's a separate ethics provision that deals with substantial financial interest that -- the provision I'm pointing to is totally separate. So you're absolutely right and the provision that you're relying upon also would disqualify a commission member

from sitting if they had a substantial financial interest in the matter and then the Mat-Su Borough Assembly has gone on to define that in monetary terms as over a thousand dollars, I believe, but we're not dealing with that provision. That's a separate provision. The -- and rather than having the planning commission chair go through at the beginning of these types of hearings every potential conflict of interest or recusal requirement of the ethics code, the program that's been provided for the chair tries to hit the bright line rule of a substantial financial interest but that's not the provision that applies here. The most specific provision would apply -- and in this case, it's pretty clear to me that that provision would be -- that Mr. Kendig has said and laid out that the applicant has been his client just three months ago. So, again, I urge the Board to not build an error into the record on this conditional use permit application.

CHAIR: Thank you, Mr. Aschenbrenner. Before I go to the planning commissioners, I will go back to the applicant to address what we've heard.

COMMISSIONER: Okay. We're talking a bright line interpretation? I believe the code says the applicant, if he did business with the applicant. He did not do business with the applicant, he did business with a separate, independent corporation. They are not wholly owned, they are not subsidiaries. So if we're going to state the bright line

rule, you have to take the bright line rule the whole way and Mr. Kendig did not say he sold anything to Central Monofill Services. It was the applicant.

MR. ASCHENBRENNER: I don't know if that was directed at me. I'm the deputy borough attorney.

COMMISSIONER: Well, you're the one --

MR. ASCHENBRENNER: The commission's up here so --

MR. JACQUES: Oh, I understand. Okay.

COMMISSIONER: I'm sorry, sir.

CHAIR: Thank you. Would you read -- did you state your name for the record?

MR. JACQUES: I'm sorry, I'm Stuart Jacques. I'm the president of Central Monofill Services.

CHAIR: Stuart Jacques.

MR. JACQUES: That's correct.

CHAIR: Thank you, Mr. Stuart. Would -- Mr. Jacques. Would you please remain that and get -- I wanted to ask for clarity from Mr. Kendig. Then did you do business with the applicant?

MR. JACQUES: No.

CHAIR: Mr. Aschenbrener, were you under the interpretation he did business directly with the applicant?

MR. ASCHENBRENNER: It's my understanding that this is an application for a C&D monofill and recycling center and that the entity that he was going to -- referring to would be doing

business at this site. If I'm in error, you know, I leave it to the Commission to sort that out.

COMM. KENDIG: No, two separate but I just want it to be perfectly clear because it is a separate corporation but some of the same people may be involve in these different corporations but I have not done any business at all with Central Monofill.

CHAIR: Thank you. Would either the Borough or the applicant have further questions for this commission before I ask the Commission? Seeing and hearing none, all right.

MR. ASCHENBRENNER: Do we have discussion? Oh.

CHAIR: Mr. Aschenbrenner?

MR. ASCHENBRENNER: If we could just have a moment, I believe in the record, there's an e-mail that explains the relationship between the corporations. So if we could just have a moment?

CHAIR: Approved.

MR. INGALDSON: Mr. Chairman, while we're waiting, if I could make one brief comment? Bill Ingaldson again and I think the important issue here too that seems to be overlooked is the term client. We're talking about this being a bright line but a client is different than someone that just happens to make an occasional sale. A client implies a fiduciary relationship between the parties which is not this -- the case here. So if you happen to sell something, if you sell someone

your car, they don't become a client and so I think that that's where Mr. Aschenbrenner, I respectfully disagree with his interpretation.

CHAIR: Thank you, sir. I just want to remind my commissioners to make certain we turn off our red buttons when we're not speaking and we'll see where that little bit of that feedback is coming from so that not only is it not annoying, it's pleasant to the audience that you hear every word and don't hear what you don't want to hear but you hear what is needed to be said.

MR. ASCHENBRENNER: Mr. Chair?

CHAIR: Yes.

MR. ASCHENBRENNER: John Aschenbrenner. Looking at page 2138 of the record, it provides a clarification from the applicant that Central Recycling Services owns and operates the recycling facilities and holds the operations contract with CMS to run the monofills. So -- and, again, getting back to this question of -- that the applicant has raised with regard to whether or not selling to the rec -- CRS makes them a client. Mr. Kendig, can you further elaborate on what business are you in?

COMM. KENDIG: Recycling.

MR. ASCHENBRENNER: And then you sell to CRS?

COMM. KENDIG: Yes.

MR. ASCHENBRENNER: Oh, so I just want to note for the

record it's clear from the record --

COMM. KENDIG: Central Metal Environ -- Central Environmental I sold to.

MR. ASCHENBRENNER: Okay. So I guess the question is is that -- it sounded earlier like that was CRS. Is that different than CRS?

COMM. KENDIG: I believe so. Central Environmental, Incorporated, is different than CRS, yes.

MR. ASCHENBRENNER: Oh, this is this demolition and abatement company and it's a customer of CRS is what the record provides. Perhaps the chair would like to inquire of the applicant --

COMM. KENDIG: So I -- if I could, I am looking at the e-mail and the bottom line says Central Environmental, Inc. -- that's who I sold to -- is the demolition and abatement company and is a customer of CRS. So I sold to a customer of CRS.

MR. ASCHENBRENNER: Right, and then the final line says separate companies, same owners.

COMM. KENDIG: Yeah, I understand that but corporations aren't individuals.

MR. ASCHENBRENNER: I leave it to the Commission. I am concerned that it may be building error into the record and I leave it to the Commission.

CHAIR: For those that are still arriving, I'm not going

to repeat what business has been done but I know that there's been several that have just arrived after I'm reading the *ex parte* communication and Mr. Kendig revealed that he'd done one piece of business in the last five years with some association with the applicant so we're just trying to sort that out whether Mr. Kendig is able to have an impartial decision and he said yes.

We've heard from the Borough last. Do we need any other information from the applicant? Any additional information from the Borough? I believe that brings the decision to the planning commission. We've heard attorney Aschenbrenner, we've heard Mr. Kendig and we've heard from the applicant. As chair, the more prepared people hearing all the information usually renders a better decision so I would like to have as many planning commissioners as eligible hearing all this information but we have one, two, three, four, five commissioners here. Mr. Bruce Walden is District 4 en route from Anchorage. Mr. Adams has been recused so it does take four commissioners to pass legislation and it would take four -- am I right, Ms. Brodigan, if I were to take a vote on allowing Mr. Kendig, would it be four or would it be a majority? Would it be three?

MS. BRODIGAN: The planning commission requires four affirmative votes to take action. You do have four individuals here that can vote so you can continue.

CHAIR: But I -- I'm going to ask the commissioner since we've heard Mr. Kendig that would like to participate and feels he can be impartial if I was to vote without Mr. Kendig, I want to make certain I'm on the record how many votes would it take to allow Mr. Kendig to participate, three or four, and would Mr. Kendig be allowed to vote?

MS. BRODIGAN: It would take three votes from the other commissioners to agree to allow Mr. Kendig to remain.

CHAIR: Commissioners, you've heard attorney Aschenbrenner clearly advising that this would be a cautious area. Mr. Endle?

MR. ENDLE: Just for clarification, is it the Commission's responsibility to approve this or is it the individual's responsibility to -- yeah, who has the authority here?

CHAIR: Well, I had to ask the question if he could be impartial in his decision and Mr. Kendig said yes. That satisfies me. You've heard Mr. Aschenbrenner and you've heard the applicant so now I would be asking the rest of the commissioners if you feel that the information that you've been given and is on record on public, do you want to allow Mr. Kendig to participate or ask him to leave?

MR. ENDLE: Well, I can answer that but my question is -- to staff, perhaps to the chair --

MS. BRODIGAN: Mr. Chair, borough staff and the

attorney's office has indicated that they feel that there is a conflict. It -- the final decision is up to the Commission. Mr. Kendig feels that he can be -- that he would not have a conflict but the final decision is up to the Commission.

CHAIR: So I'm very respectful of everybody's time and standing and I just want it to be right. You're telling us it's up to the Commission, it's not up to the borough attorney. He's made recommendations that we should definitely adhere to. The borough attorney is certainly someone that this planning commission should take.

MS. BRODIGAN: Mr. Chair?

CHAIR: Yes.

MS. BRODIGAN: The borough attorney has stated that by allowing Mr. Kendig to remain, there could be -- I have to go back and see what he said. It could build an error into the record.

CHAIR: I appreciate that. That's on the record but I want to make certain that we, as five commissioners, have the right to approve or disapprove. Well, any other further discussion? Mr. Thomas Healy?

COMM. HEALY: Well, I wasn't expecting to adjudicate something like this. I -- it seems to me -- I mean, there is -- the attorney has pointed out a bright line which seem on the surface to indicate that Mr. Kendig should recuse himself. On the other hand, there's information in terms of the -- Mr.

Kendig had some business with the firm that is not the applicant. However, the -- it has been pointed out that Central Environmental which is not the applicant which -- with whom Mr. Kendig had a transaction gets -- it's a separate company. They're not the applicant or, really, the same owners. I -- I'm not a corporate attorney so I can't tell if they're so intertwined that they are, essentially, the applicant. I just can't -- that's beyond me to determine that. I think it would be beneficial to have as many commissioners hear this issue as possible. I don't take lightly the borough attorney's statement that he believes this may build an error into the record so I'm kind of torn here. I think the cautious thing to do in the big picture would be to have Mr. Kendig recuse himself. However, I don't think that serves the broader public interest of having as many commissioners hear this as possible.

CHAIR: Ms. Brodigan?

MS. BRODIGAN: Mr. Chair, just as a reminder, it does take four positive votes to take action including allowing Mr. Kendig to remain so the vote -- the Commission will need to vote to either keep him in the -- in that public hearing or him to recuse himself.

CHAIR: Thank you very much and, ladies and gentlemen -- and I appreciate your patience but, clearly, what's going to be decided tonight or possibly postponed but I'm saying this

is something that will have long-lasting effects after a couple of hours so we just want to make certain that it's done right when it's done and so excuse me if I belabor this a little bit but I do have a question for Ms. Brodigan since Bruce Walden from -- is being delayed from District 4 and since this is quasi-judicial and all commissioners need to have the same information, if we were to prove -- move forward with the public hearing in just a minute, it would not be information he would get here. So if he arrives here in a few minutes and doesn't have all the information, would he have to recuse himself from tonight so it'd be just us five?

MS. BRODIGAN: The information that will be provided tonight is also included in the packet and Mr. Walden did pick up his packet last Tuesday morning. Actually, he had someone pick it up for him.

CHAIR: So if the additional commissioner arrives shortly and we do get through all our public hearing and we get to a vote tonight, he would be able to participate no matter when he arrived?

MR. ASCHENBRENNER: Mr. Chairman?

CHAIR: Yes.

MR. ASCHENBRENNER: John Aschenbrenner. May I address the Commission on behalf --

CHAIR: Please.

MR. ASCHENBRENNER: I'm here on behalf of staff as an

advocate and you could certainly ask the applicant the same question. It'd be my understanding that Mr. Walden or any commission member would be able to participate even if they were absent from a portion of the hearings as long as they review the record and come up to speed on it. So if Mr. Walden missed some of the public testimony, in order for him to participate, we would be urging that the Commission take a recess and allow him to listen to that information. Thank you.

CHAIR: Thank you. Is there any other further discussion? Mr. Healy, I'm going to ask you to turn that little red mike off there. It just seems to help.

COMM. HEALY: Oh, I'm sorry.

CHAIR: That's fine. Is there any other discussion -- your microphone too, please, Mr. Endle?

MR. ENDLE: I'm sorry.

CHAIR: It just seems to help for clarity in the house. Is there any other discussion by the Commission before what I believe is my right and my duty to ask for a vote with all the testimony we've heard from the applicant, the attorney and Commissioner Kendig to vote whether we would allow him to participate in the decision making process tonight? Mr. Healy.

COMM. HEALY: Thank you, Mr. Chair. If I may, could I -- I'm stuck on this issue of three corporations, same owners.

Could -- through the chair, could I ask the deputy borough attorney as well as the applicant's representatives how they would interpret that question; that is, there's Central Monofill Services which is the applicant. There's Central Recycling Services and Central Environmental, Inc. The question would be if Mr. Kendig did business with Central Environmental, does that constitute doing business with the applicant?

CHAIR: Proceed.

MR. ASCHENBRENNER: John Aschenbrenner, deputy borough attorney. It's an interesting question. What we're trying to sort out is whether or not under the borough code a commissioner should recuse themselves. Basically, under 2.71.080, the Mat-Su Borough Assembly has set a bright line rule in the sense of 12 months that a commissioner or other board or commission member should not sit on an action where they've had transactions with the applicant or the entity that's appearing before that body. The question here is okay, so you have several corporations all engaged in recycling which are applying for a C&D monofill cell and recycling center and it's admitted in the record that they are the same owners but there are several different corporations. In my opinion, you know, it's easy to say they're separate corporations but that's a -- that's something you do to create the corporation. What they've essentially admitted in the

record is they're the same owners of all of these entities. They may be creating separate corporations for a variety of reasons but, ultimately, you have to ask the question would the assembly in carrying out 2.71.080 want a commission member to sit who has engaged in transactions with one of the corporations that the applicant is saying is integrally involved with this operation. Now, they're saying well, no, wait a minute, the corporation, CRS, is the operator and Central Monofill Services will hold the permits so Central Environmental shouldn't count. So to me, I think that what the assembly was trying to do was make sure that you have neutral decision makers that haven't had recent within the last 12 months interaction with the folks that are coming before the body. So it looks awful close to me, especially when, you know, it's admitted that they're all the same folks that own these different corporations.

So what I'm saying is if we go forward and Mr. Kendig sits, then you have the potential of -- whether the appellant is a member of the community or the Borough or the applicant, you have built into the record the potential that Mr. Kendig, by sitting, violated 2.71.080 and can build an error into the decision itself. In my opinion, it looks a little too close for comfort. I would feel better if -- and I'm an advocate here on behalf of staff and staff's recommended approval -- if we didn't have built into the record that one of the

commissioner members was transacting business with the applicant just three months -- just a couple months -- you were talking September, I believe you said -- before we were before the Commission. So, you know, I believe it to the Commission but I think what you're doing is just building an error into the record that's unnecessary. You still have a quorum, hopefully, of folks that don't have any conflicts of interest but why we would build into a decision a potential error right at the get-go, I'm at a loss but I'll leave it to the Commission.

CHAIR: Thank you. It's clearly read into the record, sir. Mr. Brian Endle, District 1.

MR. ENDLE: Just want to weigh in a little bit on this. I do believe Mr. Kendig and that he can make a partial decision. However, reflecting on what the attorney said there and my understanding of corporations, et cetera, this -- I'm siding with the attorney on this in respect because if this goes further and it was to be repealed in any way, whether it went down or it went up, it does put a cloud on the decision.

CHAIR: Mr. Thomas Healy.

COMM. HEALY: Mr. Chair, could you recognize the representatives of the applicant? I asked and I get responses to my question from both the Borough and the applicant?

CHAIR: Could you repeat your question clearly and succinctly to the applicant?

COMM. HEALY: My question was -- my question had to do with the three firms all of one owner and whether Mr. Kendig's actions with Central Environmental, I guess, constituted under its corporate structure transactions with the applicant. I guess that's generally my question. Is that -- you understand that? Thank you.

MR. INGALDSON: Bill Ingaldson on behalf of the applicants. Let me start off by saying I have been intimately involved in this exact issue of corporations and their separate identity. I was one of the attorneys in the *Brown v. Knowles* Alaska Supreme Court decision that just came down last year that dealt with piercing the corporate veil. The bottom line is that there hasn't been a corporate veil pierced here and whether it's a parent, subsidiary or it's a -- separate companies, it doesn't matter how they're owned as long as they're operated independently and have not been formed for the purpose of defeating public convenience or fraud. So they are separate entities and they're no more -- it'd be no more than saying well, you all have the same parent and I did business with someone's parent and their three brothers that maybe have business and so if you are, I agree with Mr. Jacques, if you're talking about a bright line test, I think he's correct.

More significantly here is let's now put form over function. What's causing me a little bit of concern here is

that the borough attorney is -- now it's going from being a client to tran -- doing transactions. I don't have the code in front of me but when he read the code, he didn't say have you done any transactions with the party, he said are you a client and that is a huge, huge difference because a client -- a client infers that there's a fiduciary relationship between the parties, not a one-time sale thing because that means that you have something to gain by gaining favor with them or some obligation, ongoing obligation, to them. There is -- what I heard Mr. Kendig say, there's no ongoing obligation to sell things, no ongoing deals that he's going to get some benefit from this. He made a one-time sale. So I respectfully disagree with Mr. Aschenbrenner.

Finally, this issue of are we building error into the record, we're already missing one commissioner, Commissioner Walden and, obviously, from the applicant's standpoint, the more commissioners, the better because it's not a majority. They need four people to prevail. If it turns out that the vote is five in favor and none against, it'll be a moot point. If the vote is down and the Commission decides you're not going to award it, it's a moot point because no one is saying that that transacti -- unless there's some issue that that transaction somehow disposes him against because I guess that could happen too but right now, we're really concerned because we -- we're already down two commissioners.

MR. JACQUES: And I probably shouldn't say anything but it does frustrate me a little bit, sir, that, based on the attorney's -- the borough attorney's interpretation of that code, he keeps again going to this bright line of this sale. If I owned a coffee shop here in town and was coming for a CUP and I sold each of you a cup of coffee, would now all of you have to recuse yourself because there was a transaction?

CHAIR: Again, I appreciate --

MR. JACQUES: It gets to the point of, you know --

CHAIR: I appreciate the comments being held by the audience but I -- it does trigger a question to Mr. Aschenbrenner from me, the chair. Isn't there a threshold of doing business? Is there -- I mean, I applaud Mr. Kendig because I don't think it was even significant. I mean, a wheelbarrow full of too old wheels versus a massive transaction, is there -- isn't there something so insignificant that it doesn't really apply as a -- as an ongoing client relationship?

MR. ASCHENBRENNER: John Aschenbrenner, deputy borough attorney. The applicant is correct, it doesn't refer to transaction in 2.71.080. The strict language is -- or the language of the code is a municipal official shall recuse himself from acting on any matter or proceeding coming before a borough-elected body or commission or committee of which the official is a member when the matter or proceeding involves

any person who is or has been a client of the official or the official's firm or partnership within the 12-month period immediately preceding the date of the action. So the applicant is correct that the analysis is are they a client. What I heard Mr. Kendig say was he's done business with them in the past and he did business a couple months ago. So, again, I'll leave it to the Commission. I think the relationship has been laid out. Commission has the code and, again, I understand the applicant's concern about the number of officials. I -- my -- as an advocate on behalf of staff, I want to ensure that those officials acting on the matter don't have a conflict or in this case a requirement to recuse themselves that is building, potentially, an error into the record that's unnecessary.

CHAIR: Thank you, Mr. Aschenbrenner. I think we have enough information. We've been at this an hour. We don't want to rush it. We want to get it right. As chair, is a one-time transaction that I would assume minimal dollars constitute recusal? We want it right. We want it right for the public most of all. Does five people make a better option than four or six? I think more people hearing more information makes sense. Mr. Rauchenstein, District 7, you've been quiet on this. Do you have any comment?

COMM. RAUCHENSTEIN: I do business with the Mat-Su Borough. If I would -- couldn't -- if I couldn't act

independently, I will have no business being up here. So --

CHAIR: Obviously, we want this right for a duration, for decades, for generations. Do I want to cause a problem? No, I want it right. I think there's a little -- we've all heard the information. We do need to move on. I don't think there's any more information. The Borough spoke last. Any closing comments from the applicant before I ask for a vote from the -- seeing none, the Borough has been asked, the applicant's been asked. I believe it is the authority of this planning commission to exercise its right to vote whether we allow Mr. Kendig with his voluntary disclosure of the transaction he made with a real -- a corporation that knows the corporation. So we certainly want -- we want it right but I guess it would be time for us to call for the vote.

For the record, obviously, Mr. Kendig has stated that he can. Is he allowed to be a member in this voting, Ms. Brodigan?

MS. BRODIGAN: Mr. Chair, that's a very good question.

CHAIR: Well, obviously, he's a commissioner.

MS. BRODIGAN: The question is whether he remain. He has already stated his decision. I believe it would be up to the rest of the Board to decide whether he should remain or not.

CHAIR: Well, let me ask this first, is there any objection to the planning commission to allowing Mr. Kendig to participate in this discussion? We have an objection. So we

have an objection so, clearly, there would be one vote against allowing Mr. Kendig. So I think it's important for us to -- somebody, either the clerk or the attorney, does Mr. Kendig be allowed to vote on this.

MR. ASCHENBRENNER: John Aschenbrenner, deputy borough attorney. No, I don't believe it's appropriate for commission members to vote. Once he's decided not to recuse himself, then I don't believe it would be appropriate for him to vote on -- and I'm here on behalf of staff as an advocate and, certainly, you can ask that question.

CHAIR: It's been clear from the attorney representing the Mat-Su Borough that Mr. Kendig cannot vote. Any further comment from the applicant?

MR. JACQUES: I'm just not familiar with that part of Robert's Rules of Orders to answer that but I -- you know, Mr. Aschenbrenner's saying he does not think it's appropriate but he hasn't cited any rule disallowing it and I'm not sure that if someone moved to have him recuse himself, if he doesn't feel he can vote, I'm not sure that it passes to this.

MS. BRODIGAN: Mr. Chair?

CHAIR: Thank you.

MS. BRODIGAN: Mr. Kendig brought this before the Commission to let them know that there had been contact within three months. He's already stated his facts. Now it's up to the Commission to determine whether or not he can stay. He

has stated that he does not wish to recuse himself so it is up to the remaining commissioners to determine whether or not he can remain. It takes four positive votes.

COMM. KENDIG: So can I ask a question?

CHAIR: Proceed, Mr. Kendig.

COMM. KENDIG: Do you know that for a fact or are you just guessing that?

MS. BRODIGAN: Mr. Kendig, we do have the borough clerk in the office and she has confirmed that that is accurate.

CHAIR: Well, clearly, with Mr. Walden and Mr. Adams out, it's a moot point because we can't have -- we can have a majority if all three -- if the remaining three vote yes. It fails?

MS. BRODIGAN: No, sir, it would fail because the planning commission requires four positive votes to take action.

MR. INGALDSON: May we be heard?

CHAIR: You may be heard.

MR. INGALDSON: This is Bill Ingaldson on behalf of the applicant. The planning commission requires four votes to take action on a conditional use permit or other type of proposal. I don't think that the rules require a vote of four people to make procedural decisions.

MS. BRODIGAN: I'm sorry, sir, but in this case, it does.

MR. INGALDSON: Is there a section in the code that

you're relying on?

MS. BRODIGAN: We are a small commission so we do run by Robert's Rules but in this case, we run -- we also have to follow the rules of the planning commission. It states in policies and procedures that for the planning commission to take action, it requires four votes, four positive votes. I'd be happy to show you that on a -- in a break.

CHAIR: Well, clearly, we want -- we wanted this to go right so that there's no problems going forward and part of me says that we're now instilling an opportunity that Mr. Aschenbrenner wanted to stay away from. Are you totally convinced, Mr. Aschenbrenner, that a majority of these commissioners cannot vote Mr. Kendig in?

MR. ASCHENBRENNER: I believe the clerk is correct that it's four votes for the planning commission to take action but it really boils down to how you frame the question and I believe under Robert's Rules, it should be framed in the positive whereas if you make the motion to have Mr. Kendig recuse himself and it doesn't garner four votes, then if it fails, it's a motion in the positive. If you make a motion to allow him to stay, then if you frame it that way -- and the clerk or the Borough could correct me if I'm wrong -- I think that's a motion in the negative and then you would be left with the quandary of what happened if it didn't garner a majority vote. So I think the way to frame the question -- I

could be wrong from the clerk for the planning commission and the Borough -- would be a motion for Mr. Kendig to recuse himself and if it didn't garner four votes, then he could remain. Does that make sense?

CHAIR: Well, I'm not certain that this is clear and we've taken an hour and 10 minutes on this and I would like to take a five-minute break for the clerk and maybe the borough clerk or maybe us to get total, make us absolutely certain because we want both sides to have the equal opportunity to be right on this and if we make an error on this, the next four hours or the next four weeks could be in jeopardy. So please bear with me and we're going to ask for a five-minute at ease at the clerk's request.

(Off record)

CHAIR: December 1st meeting is back in order. I asked for a five-minute at ease and it was seven minutes. I believe everybody was here when we took the at ease to get clarification. The most important thing for this planning commission is to get it right, to do the public's business. We have the borough bu -- we have a borough and we have an applicant and then we have the public's interest at hand here and if we don't start out with the foundation that makes sense that -- how can we build anything above it or extend into the future for years and generations?

The question has been, obviously, Mr. Kendig's voluntary

reference to a one-time piece of business with a corporation that is related to the corporation of the applicant and we've heard from Aschenbrenner, we've heard from the applicant, we've heard from Mr. Aschenbrenner, we heard from the applicant and we've heard from our clerk and we've heard from the assembly clerk and a couple of things that are important is this planning commission and the historical record and in formality, it takes four affirmative votes yes to vote any action and the historical record is something that I'm going to, as chair, adhere to. So it takes four affirmative votes to allow Mr. Kendig to participate in this op -- in this discussion and we have the challenge of one delayed on the weather and one delayed for another reason so we only have five planning commissioners. It's been ruled by the clerk that Mr. Kendig cannot vote. It takes us to four remaining. So it would take a unanimous yes to allow Mr. Kendig to participate and we've heard both sides and I need to be succinct and give one opportunity to each but we need to move forward. Mr. Aschenbrenner.

MR. ASCHENBRENNER: Mr. Chair, John Aschenbrenner, deputy borough attorney. I concur that it takes four votes but I would ask the clerk if the motion is framed in the positive and to check with the -- if the borough clerk is still here, I would have understood the motion to be a motion to remove Mr. Kendig or ask him -- motion to have him recuse himself. Then

if it failed to garner a majority -- I guess you'd need four votes -- then no action would be taken and he'd still be sitting.

MS. BRODIGAN: Mr. Aschenbrenner, through the chair, the question will be whether the Commission approves Mr. Kendig to remain on the Board for this issue.

CHAIR: The applicant would like to respond.

MR. INGALDSON: Thank you. Bill Ingaldson on behalf of the applicant. Through the chair, Mr. Kendig has a right to participate if he does not recuse himself. If the Commission is going to take action, it's to prevent him from participating. He does not need approval to participate. So there would have to be a motion to recuse him which would then have to pass by the vote because every one of you has the right by your election on the planning commission to participate unless there's a motion to recuse if a commissioner has not recused himself. So it would be wholly improper to frame the question does he have a right -- do we approve him continuing because you could say that about every single member. The question has to be someone has to move for him to be recused. It has to be seconded and then you vote. That is taking the action. Otherwise you don't need to take action and you would not be taking action. He does not need approval.

MS. BRODIGAN: Mr. Chair?

CHAIR: That's on the record. Ms. Brodigan?

MS. BRODIGAN: May I respond, please?

CHAIR: Please.

MS. BRODIGAN: Commissioners are advi -- are directed to bring any potential conflicts before the Commission. They are asked if they think that they have a conflict or not. They have the opportunity to say that yes, they have a conflict and request to be recused or they can say that, no, they do not think that they have a conflict. It is up to the remaining commission to determine if they do -- or if there is an appearance that there is a conflict. Mr. Kendig -- it is up to the Commission to decide if Mr. Kendig will remain.

MR. INGALDSON: And Mr. Aschenbrenner and I are -- concur on this and, just so you, at least from the attorney for the applicant and the attorney for the Borough, our legal law says that it has to be a motion to recuse.

CHAIR: That's on the record. It's been conferred with the assembly clerk and the planning commission clerk that the can be posed. It would take a yes vote, do you approve of Mr. Kendig remaining in the discussion and it would take four yes votes to allow him to remain here. Mr. Healy?

COMM. HEALY: Just to clarify, it seemed to me the Commission was asked this question before the break and there was objection to the question, correct?

CHAIR: Correct.

COMM. HEALY: There was no motion made but there was a question put to the -- okay. So we need to make a motion, as you just stated and as the clerk stated and then we need to vote on that motion, correct? If that's the case, I would make that motion.

CHAIR: State that motion for the record.

COMM. HEALY: Whether to approve of Commissioner Kendig -- whether he will remain on the -- to hear this decision. I mean, that's --

CHAIR: Resolution 14-33.

COMM. HEALY: Yes.

CHAIR: There's a motion been made to allow Mr. Kendig to remain in the discussion Resolution 14-33. Do I have a second? There's a motion been made to allow Mr. Kendig to remain by Mr. Thomas Healy. I would second that motion. Is there an objection? Brian Endle objects. There's been a motion made to allow Mr. Kendig to remain in discussion and it's been seconded and there's an objection so I call for the vote and it takes four affirmative votes to pass any action and Mr. Kendig cannot vote, according to Mr. Aschenbrenner and the clerk.

Are you ready for the vote? A yes vote allows Mr. Kendig to remain. A no requires him to leave for the duration even if this meeting's extended and public audience participation is extended. Again, a yes vote allows Mr. Kendig to remain.

MS. BRODIGAN: The motion to allow Commissioner Kendig to remain in the public hearing failed with Commissioner Endle in opposition.

COMM. KENDIG: Okay. I'd like to say something before I leave this meeting.

CHAIR: May I ask the Commission if there is any objection to allowing Mr. Kendig to have closing comments? Seeing and hearing none, proceed.

COMM. KENDIG: You know, sitting on this planning commission's a voluntary job. There's not a lot involved in it. This was a very complex issue that was spent a lot of time on. While most people sitting in this room were having a Thanksgiving weekend with their family, I was not and I just feel like that's -- I have a solution. When we do a consent agenda, that's when we should say do we have a conflict because if it had done -- been done that way, I wouldn't have -- I would have been spending my Thanksgiving weekend with my family. Right now I just feel like that was taken for granted. Don't appreciate it. Hope it doesn't happen again because you won't have to worry about me being in any decisions and it does.

CHAIR: Thank you, Mr. Kendig. I believe it'd be appropriate to -- you know, there's parliamentary procedures and then there's also common sense and we all would like to somehow get this resolved that makes sense and I believe the

most important thing for the -- tonight is to move into the public hearing as quickly as possible so that we can hear from everyone that's here tonight and I believe it would be in the best interest of the applicant and the Borough and the public to have two additional planning commissioners here before the final decision is rendered because if they can bring themselves up to speed and we will have six planning commissioners that are very experts and very prepared so if we hear as much audience participation as we can and then we may have to extend the audience participation to time certain, bring my other two planning commissioners up to speed and then we would have six planning commissioners to render a decision and, as a rule, if you have six intelligent, experienced, passionate people about learning the facts, chances of rendering a proper decision would be better than just five or four. Yes?

MS. BRODIGAN: Mr. Chair, just for a point of clarification, so are you suggesting that we open the public hearing and allow those people here tonight to speak and then possibly continue that public hearing to another meeting and, as discussed earlier, then two planning commissioners who are not here would still be able to participate in that discussion, that decision making via either listening to audio provided through various means, being able to read testimony and things like that and be able to participate so there would

be a larger body for that decision.

CHAIR: Exactly but, clearly, the public's been here an hour and a half and we know we have weather and we know we have lots of data to go through. Ordinarily at this time, I would ask Susan Lee and Alex Strawn to write a staff report and then the application -- or the represent -- provide an overview of the application and I was going to ask my fellow commissioners to waive the -- you know, the applicant's time frame so that we get all the information out. So, just to make certain that I'm following procedures, if we do have to extend or we choose to extend in the personal interest of the public the public hearing, would we have an additional presentation by the Borough and the applicant at the extended public hearing?

MS. BRODIGAN: Normally you wouldn't because you're just continuing the action that's already been started. So, as part of this issue being opened up at today's meeting, you would have the presentations by the two entities and then the public speaks and, basically, what the planning commission is saying by continuing the public hearing is saying we know that there is more discussion about this, we want to keep the discussion open and you would continue that at the next public hearing but you wouldn't necessarily kind of rehash the whole thing over again. If somebody wanted the information that was part of this meeting, they could either attend or get that

through the minutes or audio, a variety of different means.

Yes, normally there's no new introduction of information but the public hearing, the public participation portion continues.

CHAIR: Well, I appreciate the patience. I have children and moms and dads and lots of things going on in people's lives. How do I move as -- quickly enough to satisfy everyone and yet not rush this? So I believe the proper protocol would be the -- at this time, Susan Lee and Alex Strawn would provide the staff report for their recommendation approving this conditional use permit. If there's no objection, I'd like to ask the Borough to proceed after Mr. Engle. I would -- Ingaldson. Bill Ingaldson representing the applicant. Sorry, sir. Please proceed.

MR. INGALDSON: Mr. Chair, given what's transpired tonight, in order that everyone have a chance at a fair hearing and we don't have people complaining later that there are (indiscernible) commissioners that aren't here, we would request that this hearing be put off. I think the Commission's made -- I -- and, with all due respect, if we could have a little courtesy from people here, we were here waiting too and have been waiting, as everyone has. I think the Borough's already made -- I think the Commission's made a mistake, with all due respect, in how Mr. Kendig was handled. We would have an opportunity to address that --

CHAIR: Yup.

MR. INGALDSON: -- and you could have at least considered legal opinions on that issue but, more important, there are two other commissioners here. I understand that people are against this. It's a -- in their favor to have less people here. If they get rid of one more person, then they don't -- we don't have to have a hearing because no action can take place and I would just request for everyone who's put a lot of time and money into this and a lot of effort that we postpone this to the next hearing so we can have a full, fair hearing with all the commissioners here that couldn't make it because of weather tonight or for other reasons are not here and we would have at least a fair opportunity to address the one commissioner who is -- well, with all due respect, we think improperly recused.

CHAIR: Since I've allowed the applicant to speak, I'm going to ask the Borough, Mr. Aschenbrenner.

MR. ASCHENBRENNER: John Aschenbrenner, deputy borough attorney. I believe that, legally, the commissioners that are absent, if they choose to participate, can review the record and the testimony this evening and come to another meeting up to snuff. I think that's legally permissible. I leave it in the chairman's capable hands. We've had a great number of people including the applicant and staff ready for this evening and people have come here in weather conditions that

are adverse. So I leave it in your capable hands but I think, legally speaking, you've got a quorum, staff's ready to go. With a -- we have no objection to going forward this evening.

CHAIR: Thank you. As chairman, I have always, historical records, ruled by majority. So I would ask the planning commission of four to is there any objection to moving forward with public testimony tonight? Seeing and hearing no objection, I'm going to allow public testimony because there will probably be people that may not make the next one but I can tell you this is going to be extended for additional public testimony to a date certain so that we'll get everybody that wants to testify tonight and for an exception to the rule or just to make certain you understand, there are times if I extend audience participation and you've already participated, could preclude you but I've been told that it's up to me that allows you so if we have another audience participation, you will have another opportunity to speak.

MR. JACQUES: Mr. Chair?

CHAIR: Yes. The applicant.

MR. JACQUES: Stuart Jacques, Central Monofill Services. I would request that I get to reserve my presentation until all the members are present, all the members that are going to be voting are present.

CHAIR: Ms. Driscoll, the applicant want -- would like to

reserve his presentation.

MS. DRISCOLL: To the applicant, would you be willing to give it more than once?

MR. JACQUES: No.

MS. DRISCOLL: Would you be willing to give the presentation at this meeting and the next to better inform the public?

MR. JACQUES: No, I mean, I'm talking to four people here. I mean, half -- almost half of the Board isn't even here so I think I should have the -- this -- you know, the right to be able to provide a presentation to the full board. You don't get the same -- necessarily the same impact from just the written testimony and as far as other comments of -- you know, that people are here to give this, you know, we have significant written record in the planning commission's hands so, I mean, the vast majority of our presentation is already in the public's domain.

CHAIR: I've allowed the applicant to speak to that. Mr. Aschenbrenner, you have any comment?

MR. ASCHENBRENNER: John Aschenbrenner, deputy borough attorney. The staff is ready to proceed. The usual procedure is the staff makes its presentation and then the applicant gives their presentation. I think it out of the ordinary to have public comment on a conditional use permit go before applicant's presentation. I leave it in the planning

commission's capable hands but it seems to be a proposal that seems to defeat the -- having the full opportunity to comment on --

CHAIR: I understand. I believe it's out of the ordinary but, as chair, I don't believe it's -- it's up to our right to allow it and I've already proclaimed that we were going to have extended audience participation, a public hearing. So the final decision will not be rendered tonight and I cannot force the applicant to proc -- to make the presentation as long as I've said it's going to be extended because of the time of the day and rules we have for adjournment.

The borough attorney spoke. You have an opportunity to the applicant.

MR. JACQUES: Okay. If I have the right to do the presentation twice, then I'll go ahead and just do a short presentation this evening if that's acceptable.

CHAIR: Any objection by the Commission?

COMM. HEALY: Mr. Chair?

CHAIR: Yes. Mr. Healy?

COMM. HEALY: This public hearing was posted for tonight and a lot of people have devoted their evening to being here and I believe we need to move along in our process here. Our typical process is to hear a staff report and then hear a report from the applicant and then we have public hearing and I would like to get going on that procedure, frankly. If the

applicant chooses not to give a presentation this evening, then whether or not they give another one at the next meeting is, I guess, up to the Commission, but they will be given the opportunity at this meeting to do that. I think we have procedures in place and we should follow them. Obviously, this is probably going to carry on to another meeting.

CHAIR: I understand, Mr. Healy, and I think we'd all like to proceed as quickly as possible so we're all on the same team there and we just want to make certain that we hear from the Borough, we hear from the applicant, we hear from the audience and then we're going to extend and then if we hear from the applicant a second time, we also get to hear from the Borough. Mr. Strawn.

MR. STRAWN: Thank you, Mr. Chair. Alex Strawn, development services manager for the Matanuska-Susitna Borough. It is also part of the procedure not only to have a presentation at the beginning but the applicant will also have a chance to have a presentation at the end of public testimony. That is a normal part of the procedure so they would have two shots at it.

CHAIR: Thank you. With no further adieu, Susan Lee and Alex Strawn provide a staff report for Resolution 14-33, a resolution of proving a conditional use permit in accordance with 17.60.30, permit required for the operation of inert material monofill on Mat-Su Borough parcels as indicated. The

applicant is CMS. Proceed.

MS. LEE: Good evening. I'm Susan Lee, the planner that processed the conditional use permit for the proposed monofill. Central Monofill Services has submitted a conditional use permit application under the requirements of Borough Code 17.60 for the operation of a monofill for the disposal of inert material. The applicant has stated that the inert debris will be primarily the non-hazardous shredded residual non-recyclable waste material from construction and demolition waste. Regulated asbestos-containing material and non-regulated asbestos-containing material will also be accepted at the site.

In addition to the monofill, there will be salvageable recyclable materials in a storage yard that will be for sale at this site. Materials such as doors, windows, wood, bricks, glass, steel, culvert, pipe and broken concrete that had been removed from the waste stream are those types of items that will be stored in the separate area away from the monofill in the resale area.

The property consists of two pieces of property that are a total of 118 acres in size. There's one single access to the site from the Glenn Highway. The monofill footprint is proposed to be 35.5 acres within -- with a 16.5 acres used for the recycling operations. A conditional use permit is needed for 52 acres of the property. A scale house, maintenance shop

and other support facilities will be needed to support the monofill and recycling operations and will be placed out and the recycling operations will be placed outside the 35-1/2 acre monofill footprint. The placement of materials into the monofill is proposed to be over approximately 30 years.

Waste materials to be deposited in the monofill would be placed to fill the natural and manmade topography of the property. Tire bales will be used as structural berms and act as visual buffers by framing the sides of the cells to contain the debris. The sides of the cells will be constructed prior to building each cell which creates barriers on two or three sides helping to block the wind and contain the material. A total of 10 cells would be constructed over the life of the monofill.

The Alaska Department of Environmental Conservation permit regulations require the bottom of the monofill cells to be located a minimum of 10 feet above the established groundwater levels. Elevation of the bottom of the waste disposal cells will be established using historical groundwater information.

Building the cells will start at the southernmost part of the property and advance to the north. Each cell is proposed to be about 125 feet wide. There will be subcells created within the cells and, as the cells increase in height, the sides will be built up with tire bales that will be covered

with topsoil and seeded for revegetation. These cells will be wide enough to allow equipment to maneuver and place loads in the correct locations and material will be spread into two-foot lifts and compacted and this process will continue until the layers of the cell reach a depth of 15 feet. The working face receiving the inert materials will comprise at any one time an area approximately measuring 120 feet by 50 feet. The working face is the area within a cell where active filling is taking place and heavy equipment is compacting and covering the refuse. The maximum square footage that will be exposed and not covered at any one time during the monofill operation will be 25,000 square feet.

There will be two-way streams entering the facility. One stream if the material haul from a Central Recycling Services operation that has already been inspected and processed and the second way stream is the material hauled from known customers that has not been inspected. The general public will not be allowed to drop off or dispose of material at the monofill. Materials that have not been previously inspected or initially dumped on an impermeable inspection pad where they are inspected, recyclable materials removed and the remaining non-recyclable material placed in the active monofill cell.

The applicant states that if prohibited materials are found, they will be removed for proper disposal and any

contaminants will be cleaned up. After materials have been deposited in the cell, the materials will be spread and compacted and the waste material will be shredded to the size of 12 inches or smaller. The shredded, compacted debris will be covered with daily cover which is screen fines of material three inches or smaller and the debris will be covered with soil weekly.

Once the monofill cell is filled in -- to its final height, native soils, drippings, compost, will be spread over the top and slopes of the cell for a minimum of two feet. The final surface will be graded to drain in order to prevent surface ponding and reduce infiltration. A cap for the monofill will be seeded and will allow the establishment of vegetation over the surface to occur. All drainage will flow away from the working face of the monofill and a minimum of a two percent grade will be required. As the top sections of the monofill are completed to final height, 24 inches of native or imported soil will be spread over the top, serve as a final capped and allow the reestablishment of vegetation on the site.

The regulated asbestos-containing material and the non-regulated asbestos-containing material will also be accepted at the site. The regulated asbestos loads delivered to the monofill are packaged and sealed in leak-proof containers and placed within the designated cells. The materials are not

compacted by equipment to insure the integrity of the packaging. The maximum finished elevation in the monofill will be 162 feet above sea level. The adjacent Glenn Highway has an average finish elevation of 117 feet above sea level so the maximum height will be a little more than 40 feet above the Glenn Highway. The maximum depth of the monofill will be 75 feet with an average depth of 50 feet.

The past use of this property has been for earth materials extraction. There are three manmade dredge ponds on the site which are the result of previous dredge -- gravel dredging. The ponds are fed with surface water -- surface flowing groundwater. In 2004, there was a breach of the confining layer of the aquifer in one of the three dredge ponds that may have claim -- that many have claimed caused problems with the local water table AM waves (ph). In 2010, Brady Hydrologic Consultants prepared a groundwater modeling study to assess the impact of dredging at the Anchorage Sand and Gravel Palmer pit which is directly adjacent to the north side of the monofill site.

In summary, this reports -- so in 2010, J.A. Munter Consulting prepared a report for the Borough on the -- which was prepared regarding the effects of gravel extraction in an area south of the City of Palmer including the area of this proposed monofill and this report addressed the concerns about potential effects on there by water goils (ph) serving

individual residences and public water systems.

Oh, metals -- materials such as metals and sheetrock that have caused concerns for leachate productions are removed from the waste streams and large quantities of sheetrock are also removed from the waste and recycled by Central Recycling.

In 2003, Central Monofill Services submitted a conditional use permit application for the operation of an inert debris monofill at this location. That conditional use permit was denied by the planning commission. After that public hearing, the Borough hired J.A. Munter Consulting to prepare a hydrogeologic evaluation of the site and a very brief summary of that report, Mr. Munter states that there appears to be no significant effort to reduce or control infiltration or rainfall through the waste and no provisions for an engineered native soil or other liner, no impermeable cap. The 10-foot separation between the bottom of the waste and the water table is not insufficient and potential changes to the water table have not been evaluated and that the applicant did not appear to provide any substantive assurance that the aquifer is protected or that the groundwater contamination can be detected or be remediated should it occur.

In January of 2014, Central Monofill submitted a new conditional use permit application for this monofill. The Borough again hired J.A. Munter Consulting to review that

application and material and a very brief summary of Mr. Munter's 2014 report is that he states material disposed of at inert monofill will eventually rot, decay and leach into the groundwater and studies have shown increased concentration of contaminants from C&D Landfills. Only a small amount of some of the components or elements are needed to contaminate a large amount of water and the modeling shows that domestic drinking water wells could be contaminated from the monofill and that insufficient data analysis have been provided to accurately evaluate the effects of the proposed monofill.

In February of 2014, the Borough sent a letter to Central Monofill Services requesting additional information. In May of 2014, Central Monofill submitted response to that request and that supplemental include -- is included with all their application material, reports from four consultants and the following are some brief summaries of those reports.

Environmental Management, Inc., EMI, was responsible for the design of the monofill and they say that CMS did hire an expert in landfill design and assessment to review the design of the monofill and the landfill is designed to minimize the moisture levels of the materials so that the rate of decay and rot will be very slow and will not significantly impact any leaching if there's any leaching at all that leaves the monofill. The landfill's been specifically designed so that the waste will never stay in a saturated condition and they

found that the probability of creating leachate that will impact groundwater is so low that the groundwater monitoring is not necessary and recommend the submitted groundwater monitoring plan be withdrawn and not implemented. However, staff has recommended that this plan that they did submit initially be implemented as a condition.

The bottom of the monofills will be established based on all of the water data that is collected up to the time of construction of the cells. Maddox and Associates was hired by CMS to perform a review of the site hydrology and leachate concerns raised with the proposed monofill. The proposed monofill and a brief summary of their report is that the proposed monofill is located in a semi-arid climate where the balance between the annual precipitation and the annual evaporation precludes the formation of any significant volume of leachate. Any minor volumes of leachate that may be produced in the monofill will not have the ability to cause a significant impact on the underlying aquifer and that large quantities of drywall are removed from the waste stream.

The proposed monofill is taking in post recycling waste which is waste that's been processed to remove metals, appliances, et cetera, and the material that is brought to CRS is sorted, screened and processed to insure that the material is free of hazardous waste and putrescible waste and/or liquids. Every effort is made to insure that no materials

that may produce a harmful leachate will be present in the landfill.

The monofill will be located in a semi-arid environment where the annual precipitation and annual evaporation are essentially equal and the average annual precipitation rate measured at the Matanuska Agriculture Experimental Station is approximately 15 inches. Under these climatic conditions, particularly when the precipitation is less than 15.75 inches per year, leachate is not formed in a landfill. Alaska state requirements are met for a landfill with respect to the minimum separation from the water table of 10 feet and no liner required.

Modeling results have indicated that there will be no contaminant plume extending down and downgrading it from the landfill mass. As the working cells are completed and there is no working face, infiltration will decrease significantly as each cell is completed and the vegetative cover established, the volume of infiltration will be significantly reduced. As vegetation is added, most precipitation will evaporate. A simple top cover with vegetation will reduce infiltration through evaporation. As the landfill expands and more cells are completed with the final vegetative cover, the volume of infiltration building will be reduced and the volume of potential infiltration will be very low to begin with and will be further reduced as the landfill evolves cell by cell.

Excuse me, I need a drink.

CHAIR: You -- you're doing fine. Just so -- I'm going to interrupt you for a second. We're asking a lot of you to encapsulate 2,200 pages in 10 minutes and I think some of this is good and some of it is going over. I just want to make certain is this all on line and on public record that you're telling us?

MS. LEE: Yes, this is all in the staff report and all of the application material has been posted on line and made available.

CHAIR: So, clearly, we've read what you're saying but you're making it available to the public audience that may have not seen it on line or chose to pursue it and I just wanted to make certain that if somebody has to leave and if this is not making sense and we know we're going to extend audience participation, they can research this deeper on line and I guess I would like to know approximately how long you're -- before you finish with your conclusion.

MS. LEE: I'm going as fast as I can. I'm probably more than halfway done.

CHAIR: Well, let me just make certain -- I mean, obviously, you need to tell us although we've read it, you need to tell the audience and everything but, like I say, if somebody has to leave -- I seen somebody leave -- I mean, you're going to conclude with on page 77 recommending approval

of this conditional use permit with the following conditions is where -- if there -- somebody comes in. That's what you're going to end up with and you're stating your reasons. You have findings of fact and conclusion of law. We're not allowed to talk, ask you questions. Then we're going to hear from the applicant prior to the audience participation and I'm asking my commissioners if we get a little uncomfortable up here for a break, you're going to stay get a little uncomfortable because we're going to give the public, the audience, a chance to go out and get fresh air or go to the bathroom but we're going to try to stay here as long as possible but I do think the audience should get a time frame when I could -- when do you feel your participat -- your presentation, then the applicant's participation, what time do you think audience participation could open? I mean, just -- this is just reasonable and I think it's reasonable that you know, correct?

You -- many of you are here signed up to address us and you may not be able to be back and you want the information and what you're hearing is useful but a little of it's complex. This is very complex and complicated and I'm not certain that too much granular from either side is going to speed things up but, with that being said, you're halfway through so you feel you have 10 minutes and, Alex, you have a presentation?

MR. STRAWN: Mine will be short.

CHAIR: And then we have the applicant and then we have questions to the Borough and the applicant so I just think it's worthy to this audience because we do the people's business that they have a little bit of an agenda and a time frame. So if you're 10 more minutes, certainly, the applicants -- I believe the applicant's going to be 10 or 15 more minutes. I'd like the audience to know when they can start coming up and telling us what they have to say and, clearly, 2,200 pages, we could -- this could be an afternoon session. So I don't know how you encapsulate and use the meat but if you can get to what you really feel is pertinent and then we're going to have time because we're not going to be voting on this tonight, we're going to have -- continue audience participation. So how do I be thorough and respectful? This was -- as a chair, I want to be thorough and respectful. You came here and probably not anticipating not to get a chance to speak before 8:30. I would like to say between you and the applicant, if I could ask you to be completed with our questions by at least 8:30, 28 minutes, is that unreasonable?

MS. LEE: I'll speak very fast.

CHAIR: Well, just, you know, give us the information we need to have. Agreed? Okay. Proceed.

MS. LEE: As working cells are completed and there's no

working, base infiltration will decrease significantly. As each cell is completed and the vegetative cover established, the volume of infiltration will be significantly reduced and, as vegetation is added, most precipitation will evaporate. I think I -- a simple top cover of vegetation would reduce infiltration through evaporation.

As the landfill expands and more cells are completed with the final vegetative cover, the volume of infiltration will be reduced. The volume of potential infiltration will be very low to begin with and will be further reduced as the landfill evolves cell by cell. The most vulnerable portion of the monofill at any one time is the working face which is the area within a cell where active filling is taking place and heavy equipment is compacting and covering the refuse. The working face of the proposed monofill would typically cover an area approximately 120 by 50 feet.

The potential for the production of leachate at the monofill site is low based on the following facts. The proposed monofill is located in a semi-arid climate. The annual precipitation is relatively low. The annual evapo-transpiration is approximately equal to the annual precipitation. The ground is frozen during a significant portion of the year. No significant period of residency of liquids within monofill materials and no significant retort (ph) in areas of the monofill.

Another consultant that -- hired by CMS was Terrasat which tested the water quality excedents (ph) and these results from these calculations so that groundwater will not be significantly impacted. Terrasat evaluated infiltration process and potential leachate fate and transport through the potential monofill and two potential contaminants of concern were identified, one being sulfate and the other manganese. The results predicted the likelihood that analytes will comply with the ADEC drinking water standards.

Seven monitoring wells have been previously installed on the site. Three models were evaluated to explain processes of water infiltration into the proposed monofill. Alaska Chem Engineering was also hired in -- to investigate the infiltration, percolation and groundwater recharge near Palmer and that study examined the relationship between the precipitation and groundwater recharge in the area of south and west of Palmer pertinent to the proposed monofill and, based on their investigations, the proposed monofill would not cause recognized adverse health impacts from the contamination of groundwater and there appears to be (indiscernible) groundwater at the site primarily supplied form the Matanuska River and Talkeetna Mountain foothills.

The Borough reviewed all of the information provided by the applicant, by Mr. Munter, the public and we did make a recommendation for approval with conditions to mitigate issues

and so some of the high -- some of the conditions that we talked about regarding infiltration and those conditions are that an area no larger than a 120 by 50 feet remain uncompacted at any one time. The maximum square footage that could be exposed and not covered at any one time during the monofill operation would be 25,000 square feet. At a minimum, the monofill material would be covered with soil weekly and immediately after the tire bales were used for the site, higher bales were installed, they would be covered with topsoil and seeded for revegetation.

Conditions to address -- first of all, staff did go out to the Birchwood landfill where CMS is putting this same type of material out there and did conduct a site visit and in the debris, there are very small pieces of material, plastic material, whatever, that could easily become windborne at the site and we did have concerns about the material being contained on the site. So conditions that we put on there to address containment and windblown material on the site were to install a remote weather station at the site which would be to be set up directly and when sustained wind conditions at the site exceed 10 miles per hour, waste and materials should not be deposited at that site. When the sustained wind speeds exceed 15 miles per hour, all open areas will be covered with soil secured with tarps or other appropriate measures until sustained winds decrease to less than 10 miles per hour.

A -- catch fences will be installed downwind of active monofill cells at all times and the fencing mesh shall be a maximum of one inch in size. At the end of each day, the stockpile daily cover will either be contained within a covered trailer completely covered with tarps and secured to insure that material does not become airborne. The site will be monitored daily for windblown material and reasonable attempts shall be made to obtain permission to gain access to any properties where material may have blown onto the -- conditions to address the screening of the property have been put on there that it is required by code that the site be visually screened on a year-around basis from all travel or public rights-of-way and from the -- and we are also saying from the residential properties on the west side of the property. The maximum finished elevation of the monofill will not exceed 162 feet above sea level and, upon completion, the monofill will be covered with two feet of topsoil, seeded and slipped as described in the development plan.

Also, should the -- this operation be modified as a result of the Glenn Highway reconstruction project and updated site plan and plan of operations would need to be submitted to the Borough.

Conditions for groundwater protection were if it's found that groundwater has been contaminated, a corrected measure plan would have to be submitted to the Borough for approval.

The groundwater monitoring plan prepared for the site by Terrasat would have to be implemented and maintained and then conditions addressing the acceptance and handling and disposal of materials that materials have to be accepted in the monofill are described in the State of Alaska solid waste regulations. Materials not accepted at the monofill are PCB's or other hazardous waste, household waste, putrescible waste, liquids, compressed gas cylinders, batteries, appliances with CFC or HCFC, animal carcasses and petroleum-contaminated materials. Material brought to the facility that's not been previously inspected by qualified personnel will be deposited into a permeable pad for inspection prior to being deposited in the active monofill cell and if prohibited materials are found, they will be properly handled and disposed in accordance with all state and federal regulations and only previously-approved haulers will be allowed to bring material to the facility and that's the end of my presentation and Alex can --

CHAIR: Thank you. Clearly, as I stated previously, for you to encapsulate all this data is -- but on page 77 through 80 in our packet are the conditions that she was referencing so if there's anyone in the public who would like to see the conditions that are -- that she read part, there is 42 specific conditions that go along with their recommendation for approval. Again, no commissioner discussion at this time.

We may ask staff brief questions and then we go to the applicant and we go to audience participation. Mr. Alex Strawn?

MR. STRAWN: Thank you, Mr. Chair. Alex Strawn, Mat-Su Borough development services manager.

CHAIR: Place it loud, please.

MR. STRAWN: Thank you. So a lot of times on things like this when there's a long period for comments, a lot of them very useful and helpful comments come in at the very end and I've -- that certainly is -- we've received a lot of comments for the time and, certainly, some of the great ones have come at the very end.

I want to point out that this Commission is reviewing this development under MSB 17.60 and it's a code that is not necessarily tailored for this type of development but it does incorporate it and, specifically, there's actually six standards by which you're going to be reviewing this for. Last time it was denied primarily based on that the Commission could not find that the conditional use permit would not be harmful to the public health, safety, convenience and welfare. We recommended denial last time. This time we're recommending approval and it's essentially the same development proposal that there was last time. So what has changed? One of the big ones is that they have had multiple hydrologists review this. Before it was kind of in the dark, how is this going to

affect the water table. Did they have hired professionals that have spoken on their behalf or I think given an objective synopsis of what they think is going to happen?

So we're faced with this quandary that we have opposing hydrologists. We hired a hydrologist who thinks it could potentially contaminate drinking water wells and we're looking at three other hydrologists who say it won't and so we're put in a difficult position but, you know, looking at it, looking at the proposal, we submitted a very long list of -- you know, after they -- it got denied last time, CMS came to us and said well, what can we do to possibly get approval and we gave them a very long list of things that we wanted. You know, the code only requires a site plan and the application and here we have, you know, over a thousand pages, a couple thousand pages -- well, a thousand-page application so I certainly think they have done their due diligence as far as gathering as much information as they possibly can to show that they can re -- operate in a manner that does not pollute the water table.

However, I would say that it is with some reservation that we do recommend approval because there is conflicting reports. One of the -- Commissioner Healy had a very thoughtful question just recently, how much water -- how much leachate does the Mat-Su central landfill dispose of each year and the answer we just got today was 1.6 million gallons and that's -- I asked them so do you have -- what is your open

face that you have at any one time and the answer is seven acres and I did a quick calculation and if you do a correlation of seven acres compared to the 25,000 square feet that CMS will have open any one time, if you just do a one-to-one correlation, it'd be hundred and -- around 130,000 gallons of leachate that would occur given the same conditions and they do compact, they slope and everything like that, the same as CMS would.

So I don't think it's without risk if you were to approve it. I think CMS has been very responsive. They've been helpful. They've given us any information they've requested and I believe that there's a possibility that there won't be any problem if done correctly but I certainly would urge caution. We recommended 40 conditions and I think that is the bare minimum that you should require to protect the public health, safety and welfare. There are other conditions that you could adopt. You could require a liner and if you did that, we could help you with that. You could -- well, some of the concerns that have been brought up lately is -- or very recently is, you know, after it's been developed, 30 years have gone by and they've covered it with two feet of topsoil and they've seeded it, at that point, there's a potential that there could be settling, uneven settling, which could create ponding. So it also might be wise to adopt a condition that would require maybe five years of monitoring and regarding to

address that sort of situation and then, you know, I -- it's possible that 30 years from now CMS will not be the owner of this operation. They could sell it, potentially, and the permit would run with the land so keep that in mind. You know, they are a very capable company. They have a lot of resources available to them. They can -- they could, potentially, operate in a manner that's in compliance but some of the things you might want to look at is, you know, the final two feet of covering doesn't specify -- this is an oversight. It doesn't specify the permeability of that final covering. We would want it to be something that's somewhat less permeable than gravel, for instance, so you might want to consider adopting a condition that would have a cap that would be permeable no greater than 10 to the negative four centimeters per second and I'm sure they would probably be amenable to that but -- so, anyway, please look at the conditions, look at our findings and make recommendations -- or make a decision based on all that. Thank you.

CHAIR: Thank you, Mr. Strawn. No commissioner discussion at this time. Any brief questions for staff before I have the applicant present their overview of the application? Mr. Thomas Healy.

COMM. HEALY: Oh, thank you, Mr. Chair. Quick question, there was -- on page 66 right in the middle of the page of the staff's report, it says ADEC has approved the proposed

monofill design pending receipt of the Mat-Su Borough conditional use permit. I found a e-mail on page 1593 from DEC stating that DEC has not approved the permit. So I just need to clarify I guess the statement in the staff report that says that DEC has approved the monofill design and yet DEC seems to say they haven't approved it yet, they've received an application.

MR. STRAWN: I believe that they have not received final approval for -- from the DEC for this operation. I think one of the things that they're waiting on is approval by the Borough. We do have Lori Aldrich with the DEC here so she could certainly answer that question.

CHAIR: Mr. Healy, would you request further information at that -- this time or do you want to direct that to --

COMM. HEALY: If there's a brief explanation the staff or the DEC representative could provide, it might be helpful.

CHAIR: Please state your name for the record, ma'am.

MS. ALDRICH: Hi, I'm Lori Aldrich with the Department of Environmental Conservation solid waste program. The status of their permit application is that we have declared that the permit application is complete and at that point in the process, we go to public notice. Because there was an error in the public notice, we have gone out for a second public notice which is open now until December 29th and at that time, we will review the information collected and analyze it and

make our decision. We will ultimately produce a decision document and a response to all the comments.

CHAIR: Thank you, ma'am. Any other questions from the commissioners for the staff? Mr. Alex Strawn?

MR. STRAWN: I'm sorry, I do have one more point that I was hoping to make that I forgot.

CHAIR: Proceed.

MR. STRAWN: One of the other things that you should consider is that the water table is potentially a moving target. There are other factors that could change the height of the water table. One is there's an unresolved situation with the state regarding the spillway on -- in the separating the ponds just to the north which is on CMS property. That has yet to be resolved and nobody I don't think really knows what the resolution is going to be. However, there is a possibility -- one of the options that could potentially occur is that it would be required that that's spillway be essentially stopped, dammed, and that could change the hydraulic situation on the site. It could potentially raise the water table in that area as well as just in January of this year, we did have a Alaska Sand and Gravel to the north -- it's the immediate partner to the north -- or not partner, immediate landowner to the north is planning on having a very large dredging operation just to the north and they actually did submit a hydraulic report that says that it could raise

the water table up to two feet. That's contrary to a prior hydrology report that we said that could lower the elevation of the water table so there's a lot of uncertainty. One thing that's for certain that I think that the water table, as it is now, is certainly subject to change. So another condition that could be required just to be safe would be to require, potentially, a larger buffer between money operations and the water table potentially 12 feet or 15 feet or so and then another one -- or at least for the first cell or if you wanted to base it on until the spillway is corrected or whatever but it's certainly something so --

CHAIR: I appreciate that, Mr. Strawn, but for my own input, you in your conditions, you have a groundwater monitoring plan plus you have a guaranteed separation. So it'd be the obligation of the applicant to know where the water table is. If it's moving or not, it's up to their to know exactly where it is if they're going to operate under these conditions.

MR. STRAWN: Correct, but they could be put in a position where they place the material at 10 feet in compliance with the permit. The water level changes and then all of a sudden they're out of compliance which would put everybody in a kind of a bad situation.

CHAIR: Any other questions for the Borough? Mr. Thomas Healy?

COMM. HEALY: Thank you, Mr. Chair, just one other question. If the -- there are -- regarding the Glenn Highway expansion, there -- there's some plan views in there of the proposed development as it stands today which would impact a considerable amount of the area of this proposed monofill. You'd mentioned that if there were changes to the site plan as a result of that, those -- they would have to submit an updated site plan. Would that site plan be an amendment -- if the conditional use permit were granted, would that be an amendment to the conditional use permit that would be subject of public hearing and review?

MR. STRAWN: The intent of that condition is not that it would go before the public -- before the planning commission again. Rather, they would still be subject to the same conditions that could not be visible from the public rights-of-way. They'd have to have all the same conditions, they would just have to submit an updated site plan. Essentially, it would decrease the size of the operational data.

CHAIR: Thank you. For the members of the public, I said 8:30. I'm not going to ask the applicant to rush but we're clearly going to immediately after the applicant gives a presentation, we'll go to the public hearing and then you can state your -- address us and if you must leave, this will be continued and then we're going to invite the applicant to respond at the conclusion of this and if we can't get our

business done by adjournment which we -- which I have already said this will be continued. So, with that being said, if there's no questions for the Borough, I would invite the applicant or representative to provide an overview of the application and the commissioners may question the applicant or representative. No commissioner discussion at this time and if there's any particular specific areas that you want us to look at a map, you have the information in front of us, direct us to it. Otherwise proceed with your name, please.

MR. JACQUES: Excuse me. My name is Stuart Jacques. I'm the president of Central Monofill Services.

CHAIR: Proceed. Thank you.

MR. JACQUES: CMS has in front of you tonight a request for a CUP to operate a recycle facility and associated inert waste monofill. CMS is an Alaska corporation. CMS facility will support Central Recycling Services' recycling operation. Started in 2009. CRS addresses a large component of our waste construction and demolition debris. Comprising a quarter to a third of all waste generated, C&D has the largest potential for increasing recycling. As the only full-scale C&D recycling facility in the state, CRS has been making an impact with this project and, with this project, will be able to expand C&D recycling opportunities in the Mat-Su.

We will be able to collect recyclable construction materials at this facility, haul it to our Anchorage plant,

return residual materials to the monofill and provide recycled construction materials for sale. Seventy-five percent of the material collected is turned into recycled products and the other 25 percent of the residual material which has been inspected and sorted will reside in the monofill. CMS owns a similar permitted monofill in Salcha in the Fairbanks North Star Borough operated by CRS. This facility recently received a routine inspection by ADEC and was given a perfect score. The perfect score considered our records as well as a site inspection.

Access to the CRS facility in the CMS monofill is strictly controlled. These are commercial facilities and the monofill is not open to the public. The entrances to the CMS monofill is a fenced, gated and the gates are secured when the facility is closed or unmanned. The design and operations plan for the inert waste monofills are reviewed and permitted by ADEC. This proposed monofill is designed in strict accordance with the ADEC requirements. The only waste allowed to be disposed in this monofill is classified as inert material defined by ADEC. The inert materials that will be placed into this monoflll are the same components that your homes are constructed with. You physically encounter these same materials on a daily basis and whenever you perform any maintenance or remodel on your homes. Let me be clear, in contrast to unfounded allegations from certain members of the

public, no municipal toxic or hazardous waste will be accepted at the facility and no residual waste will be disposed into the ponds located on the property.

There -- the monofill has been designed to avoid contact with groundwater. The key to minimizing leachate is to provide as little opportunity as possible for precipitation or groundwater to contact or percolate through the placed waste. This monofill is designed to provide positive drainage away from the waste. The operations plan is designed to insure that the waste is placed in a limited, controlled area, compacted slope and covered in a timely manner to direct precipitation away from the waste. There are four separate detailed studies in the board's packet that show that, built as designed, little to no water will transmit through this waste.

There will be extensive emotion-based public comment throughout the evening and I understand that but I encourage the board members to ask me questions and make decisions not on emotion but on the facts. I understand where people are coming from on this issue. I've been in the same situation myself before. However, we need to make decisions based on the facts, not on fears and unfounded allegations.

Let me quickly address some of the issues, mis and unfounded allegations you will hear tonight. There's not enough time in this presentation to address each of these

issues in det -- in the detail they deserve.

The ponds. Regarding the ponds on the property, these are industrial ponds, not wetlands or waters of the U.S. The ponds are not included within the area of the CUP request. Comments regarding alleged impacts from the existing pond water levels on neighboring lakes and interactions with DNR -- with our interactions with DNR related to the pond water levels do not have impact on the monofill and are not a part of this permit application and, again, no residual waste will be placed into the ponds.

Mr. Strawn brought up the water levels and things on the spillway. If the spillway were completely dammed, the water level in that pond -- and there's been -- we've had a couple of hydraulic desetters (ph) and this would raise no more than eight inches. And also in regards to that, everybody talks about the failure of the spillway. That is -- no correlation at this point has been made to anything happened on -- with the spillway in those ponds with any neighboring properties. We are working with DNR. We've given access to our property to come in and do all their testing and to determine that. At this point, we can't be asked to continue to make modifications and make modifications and then go well, that didn't work, let's try something else. So we've asked them to give us a plan -- do the science, give us a plan and then we'll work with them on the plan.

Another one you hear is property values. You'll hear that if this CUP is approved, property values will drop dramatically and people will quit moving to Palmer. There's no validity to this allegation. There are currently two other monofills in the Palmer area within two miles of the site that have been in operation for at least 11 years. We have provided documentation in our package that confirms that the values of the properties located adjacent to these landfills have increased at the same rate as all other properties in the Palmer area. Growth in the Palmer area over the past 10 years has kept pace with other areas of the Mat-Su Borough. Residents living within a mile of the gravel pit are already required to mark a box on the real estate property disclosure form.

Windblown debris. You'll hear that trash from the monofill will blow all over the Palmer area. It must be emphasized that a condition of the CUP, several conditions of the CUP, is that the debris will be contained and not allowed to blow out of the monofill. We have a requirement to maintain a limited working face, install berms prior to placement of waste, install catch fences near the working face, cover the shredded topo when not being used for cover material and to cease placement of waste on days of high wind.

Leachate. Mr. Strawn just brought up the issue of leachate which has not been -- at that point, wasn't brought

specifically to us. However, comparing an inert waste monofill to a municipal waste landfill, they're not even the same animals. So when you talk about the amount of leachate that's generated by a municipal waste monofill, it's not even a close correlation to what happens in a -- an inert waste monofill. Approximately and maybe more than 50 percent of the percentage of the waste that goes into a municipal landfill is water. There's going to be a dramatic amount of leachate in a municipal landfill. Not the case in an inert waste. So trying to make the correlation you made of the square footage and think this amount of open face versus this amount of open face is going to create this much leachate, that -- that's not even close to an accurate evaluation.

The other thing I think is important, we don't have to -- there's a lot of public comment about what will happen and all these things that will go on. We don't have to imagine what the impacts of this monofill will be to this area. Alaska General Monofill and the Mat-Su Borough Monofill are opera -- are already operating within two miles of this site and accept the same types of waste with much less screening than CMS will perform. Have the property values around these sites plummeted? No. Have people quit moving to Palmer as a result of them? No. Are the residents located around these mon -- are the residence wells located around these monofills contaminated? No. Are dust clouds blowing around

contaminating the local residents from these monofills? No. Is trash blowing all over Palmer from these -- well, okay. Trash is blowing all over from a variety of sources and I'll mention also, you know, Susan made the comment that you guys visited the landfill at Birchwood that were operating there and, yes, there is that small debris stuff from our material. However, what you failed to mention to them was that you also noticed that none of it has blown off of the site.

As a property owner in the Mat-Su Borough, CMS has the same rights to use our property for our own use as any other property owner in the Mat-Su Borough with limita -- within the limitations of the Mat-Su Borough Code. As presented and agreed by staff, we have met the Mat-Su Borough Code requirements for approval of the CUP in front of the Board. As I understand from the MSB website, part of the planning commission's mission is part quasi-judicial in nature to, I quote, review all aspects for enactment for amendment, platting and land use regulations in conditional use requirements.

We believe -- and I quote from the Board's mission statement -- that we have, quote, met all the established requirements to give them a right to a permit or other entitlement. Again, in Mr. Strawn's wrap-up, he talks about increasing the depths from the -- of the separation. That hasn't been discussed. That's not a requirement of the law.

We're doing the thing in strict requirements with the ADEC regulation. I see nothing in the Mat-Su Borough regulation that requires a specific separation distance that exceeds that of ADEC or, you know -- or any of the other requirements that are in excess of ADEC's requirements. Again, the monofill is designed in accordance with the law and in accordance with the Mat-Su Borough Code.

So we did all we could to address the conditions with staff that they place, the 40 some conditions, but we do have two conditions we'd like to discuss further and I don't know if we do that now with the Board or how that works so --

CHAIR: I think I would like to go to the public hearing and then --

MR. JACQUES: Okay.

CHAIR: -- and then the conditions, we're going to be going over those if we have any changes or recommendations that are going to be part of that process.

MR. JACQUES: Okay. And we can do that at the end?

CHAIR: Absolutely.

MR. JACQUES: Okay. That works. We hope that you approve this CUP request. Thank you for your time and, again, request if you have any questions regarding our proposal, do not hesitate to ask me. There's a lot of complicated issues here. The only way we're going to get through those is if the Board asks questions and we'd be happy to answer those rather

than walk through every part of the package.

CHAIR: Mr. Jacques -- that's how you pronounce your last name?

MR. JACQUES: That's correct.

CHAIR: You've articulated that well and we've asked a lot of you and we've asked a lot of the Borough to try to reiterate 2,000 pages of information. There's been a lot of studies. There's been a year's worth of work by both of you that, clearly, Mr. Kendig and I have related to what we've spent the last week on and some of us the last year. So I do want to get to public hearing but for those that have not heard me, I'm not going to close audience participation -- excuse me, I meant public hearing. I'm not going to close public hearing tonight just because this is too complex of an issue to rush through it. So we've asked both the Borough and the applicant to time certain that we'll decide when we are going to reconvene for public hearing but we have the opportunity now for brief questions to the applicant before I open public hearing. Questions? Mr. Thomas Healy.

COMM. HEALY: Thank you, Mr. Chair. Mr. Jacques, a couple of questions. I didn't see cover material. You're -- there are some areas that are going to be filled as you build the monofill but then there are, you know, one-foot lifts.

MR. JACQUES: Yeah.

COMM. HEALY: All that cover material that you're

proposing using will come from that site?

MR. JACQUES: No. Well, you mean the final dirt -- the dirt lift in between the cells? That will come from the site, yes.

COMM. HEALY: Okay. Then -- but the cap or whatever will be --

MR. JACQUES: Yes. Well, some of that cap we may have to import in, you know, but we need to -- the final cap is the vegetative mater -- so we're going to have to import some topsoil and things like that in.

COMM. HEALY: I know -- I'm trying to be quick here. Another question -- and I just have one other comment. What is the standard for long-term management and monitoring of sites like this? Is there a state standard where -- you know, the permit is good for what is it, 30 or 40 years --

MEMBER: Thirty years.

COMM. HEALY: -- 30 years and after that, assuming the thing is capped and done, what are the -- who's responsible for -- these things are in the ground, it's a long-term issue.

MR. JACQUES: Mm-hmm.

COMM. HEALY: What are the kind of management and monitoring requirements in the years beyond?

MR. JACQUES: I can address part of that question and maybe Ms. Aldrich should address the remainder of it but we're the property owners so we have a vested interest in

monitoring, you know, what goes on our property. I mean, we have a significant financial interest in if there's a problem or any type of thing like that. So our monitoring will continue on from a -- we're obligated to provide a bond and we have insurance throughout this so we've met -- we'll meet the requirements of the regulatory agency in that regard.

COMM. HEALY: Okay.

MR. JACQUES: I'd say Ms. Aldrich could probably answer the rest of that.

COMM. HEALY: That's fine. And one more comment, Mr. Chair, Mr. Jacques --

CHAIR: Proceed.

COMM. HEALY: -- mentioned there were two conditions. You had an issue after you'd like to propose?

MR. JACQUES: Mm-hmm.

COMM. HEALY: I would suggest that we hear those now so the -- those present hear them before the public hearing portion just so they have all the information or as much as they can.

CHAIR: Any objection? If you could encapsulate that with not a lot of detail, please?

MR. JACQUES: Yeah, they're not overly significant so --

CHAIR: Proceed.

MR. JACQUES: -- but the first one is Condition 13, when sustained cond -- wind conditions on the site exceed 10 miles

per hour, waste material should not be deposited at the site. Our proposal, we had proposed 20 miles an hour in a sustained wind and so I don't think that that's necessarily unreasonable and, you know, we -- we're going to have an extensive amount of containment around there, fencing, berms, limited amount of face open. I mean, the -- we're going to have, you know, a significant amount of grow -- and then we're still liable if it blows off of there. If we don't meet those conditions, then we're in violation of the code and then we'll have to deal with it. So -- but, you know, I'm just trying to make it to where it's a workable situation also.

And then the other is Condition 36, hours of operation shall be limited from 7:00 a.m. to 7:00 p.m. Now, I don't have any real problem with that for the monofill portion of the property. We don't intend on operating beyond those hours but the other part, the recycling area of the facility, we may want to be able to bring in materials, you know, in the evenings or -- and on Sundays, you know, for the public. I mean, you know, the public is not necessarily working within these hours and we may have an office facility and all of that type of stuff. There's a -- for that portion of it, I'd like to be able to have standard working hours just like any other business in town but I have no problem with this for the monofill part. That -- that's all I have.

CHAIR: Thank you, Mr. Jacques. Any other questions for

the applicant? Before I open up the public hearing, I just had two. For the record, I just want to make certain I understood what you said. When you mentioned we received a perfect score, would you tell me again a little bit what that perfect score and who gave it to you and what that was about?

MR. JACQUES: Certainly. It's in your package. It's in the package, actually.

CHAIR: Mm-hmm.

MR. JACQUES: It's from ADEC, the Fairbanks division of ADEC. Our mono -- the monofill at Salcha is regulated by -- I don't know what page -- do you know what pages it is in the package, Susan?

CHAIR: I'll find it.

MR. JACQUES: Okay.

CHAIR: I just thought I left it everything (ph).

MR. JACQUES: But, anyway, we provided that in here and so what they do is they go through and they do a -- an inspection checklist and they go through a whole variety of, you know, pages of items and they inspect our records and they inspect the site and they go through everything and in the end, we received a -- 250 points out of 250 points.

CHAIR: Thank you. I will research that a little closer and my final question was --

MR. JACQUES: And for --

CHAIR: Yes?

MR. JACQUES: And their comment on it was this facility is being managed and operated excellently and received a compliance score of a hundred percent during this year's inspection. Great job.

CHAIR: Is there a signature on there?

MR. JACQUES: Yes, Neil Laner (ph), environmental program specialist, solid waste program --

CHAIR: And the date on that document?

MR. JACQUES: October 1st, 2014.

CHAIR: Thank you. I will research that further and my -- I just want to make certain again and clear on the record. Obviously, there's a lot of concern about leaching and water and I think you made reference there will be little or no water will leach. Little or no water will leach, I believe, were your words.

MR. JACQUES: Mm-hmm.

CHAIR: What can we, as the public, or what -- those in the public, how can we -- where did you base that on, little or no water will leach?

MR. JACQUES: Well, there's several hydrology reports in here that confirm that statement. They've run modeling and they've run sampling with our -- with the material that we're placing into the monofill and, you know, that's how it was designed, in such a way that to -- so that we brought it up in certain amount of lifts, we compacted a certain way to avoid

having water come through that. That's why the face is only a certain size, it's not an extremely large open face. Unlike Mr. Strawn said at the borough landfill, our open face is significantly smaller to avoid allowing precipitation to come through there. Everything is sloped to avoid any type of ponding or an -- to allow any of the precipitation to stay for any amount of time. The key to that is keeping precipitation from being able to stay long enough in a spot to be able to go down through and percolate into the waste.

CHAIR: So excuse me if this question's elementary but if it really rains a lot and you get a lot of snow and that water goes on top of what you put in there, where does that water go, just kind of sits and the --

MR. JACQUES: Well, most of it'll sheet off of there just like it would sheet off your lawn or your -- or any other place. I mean, you know, that'd be very similar, I guess, really, to go to your lawn after a hard rain like you do now.

CHAIR: So instead of percolating through, it would go off?

MR. JACQUES: That's correct.

CHAIR: Thank you, sir.

MR. JACQUES: Yeah, because it will be compacting.

CHAIR: Any other questions? I'm going to try to move forward. Thank you. Any other brief comments from the borough staff before I open up public hearing?

MR. JACQUES: No further comment.

CHAIR: Thank you. At this point, it comes to the item on the agenda for a public hearing and, clearly, it's three minutes per person for members of the public and out of respect each and every one of you, you know, you can have up to three minutes. There's brilliance in brevity. If you can get your point across in one minute or two, so be it, but I want to -- I really ask you to prepare mentally that if your most strongest point -- make certain if it's at the end, that it doesn't come after the microphone's turned off and if I allow somebody just to say wrap it up, wrap it up, then the next person's going to take it and then I'll abuse all your privileges. So three minutes unless you happen to be the Palmer mayor or you happen to be the president of a homeowners' association or --

MS. BRODIGAN: Community council.

CHAIR: Community council. I erred, it's not homeowners' association, it's community council. Excuse me and thank you, Ms. Brodigan, and I didn't mean to call out the Palmer mayor, if you're the city mayor, if you're the Wasilla mayor, I believe. So if you're the head of a state agency, a city or borough official, you could use up to five but let's be respectful and, remember, I am not going to close, I'm going to extend public hearing so if your point's been made by someone and you want to say I want to remove myself from the

list or come to the next one, you don't have to mandatory and I've looked through here and everyone's got good handwriting and, ordinarily, I want this on public record exactly who I'm speaking to but I have Joe Moore and Wetherell and Landi and Goodman and everybody wrote in clear, legible handwriting. So I am going to take them as it was signed up and we will get through as many as we can and, again, we don't allow applause or boos. If we'd allow one, I'd have to allow the other and I do have the authority to enforce it and so we're here for the -- all for the right reasons and the same reason and it's to get as much information as we can to make an informed decision. With that, I will take them in rotation and then I'm going to call two names so that if we could find a chair -- how could we do this, Alex? Could we get an extra chair so that there could be one or two person that's ready to go up so that we don't delay minutes in coming up? I appreciate that, Mr. Ingaldson, and the timing will come on. The microphone is red. Just state your name in your own voice and no need to spell it unless I ask for it.

We have Rose Williams and then we have Craig, I believe, Kelly and Sarah Mayfield.

MS. WILLIAMS: So the mike's on? Okay. My name is Rose Williams. I'm here again this evening to address the Mat-Su Planning Commission. I find that very sad. I was here in June, 2013 for the very same purpose. We, the owners of the

-- the owners who live downstream of this proposed dump expressed our valid concerns concerning this permit. The permit was denied and yet here we are again and I'm just kind of puzzled by that.

We spoke that evening of how the company in question had already let asbestos-tainted trash blow into our community, how they illegally dump garbage from Anchorage, how they had already been burying trash illegally and how they were dumping garbage into an open aquifer. All this they had done even before they had a license. This is -- they showed us really how they operate. I don't know that they've changed and these are all facts. I'm not making any of this up.

They want to build a dam between lakes over an aquifer that is the water source for the communities downstream. They're hoping nothing goes wrong. They are counting on Mother Nature to be absolutely perfect. They're not counting on any extra waterfall, they're not counting on any rain. They're not counting on any earthquakes. They have no plans for having a liner for their facility. They are willing to risk our clean water for their financial gains. They are hoping you, the borough planning commission, will allow this to happen and I am asking you to put the health and welfare of the (indiscernible - coughs) and the children of our community above the all mighty dollar. I'm asking you to have a long-sighted view of health and prosperity for everyone, not just

one company.

This is a social justice question. This is a moral issue. This is a moral test for you guys, for you, our planning commission, are -- to -- are you willing to do what's -- you have to ask yourself what is more important, the financial gains of one company or the health and welfare of a community of 500 or more families. Once you pollute a water source, it's polluted forever. This is a bell that you can't unring. Our water is perfect, clean, fresh and without taint or smell. I keep hearing that all the hydrology reports say that there'll be just small changes to our water, nothing significant. Well, my water's perfect and I like it that way.

Many borough and county assemblies down in the Lower 48 have gone through this same process. They have failed their communities. They let people who polluted their environments destroy their communities and I'm asking you not to let this happen here in Alaska. I've always thought our borough of governments were there to protect our welfare of our communities. Is this not true anymore? Would you risk the trust and health of a community for one company's financial gain? If our waters become a -- polluted, who will explain that to the mothers and fathers and -- fathers of children who develop illnesses long term?

How can you allow something so perfect and natural right now to become polluted for a small financial gain of one

company? I'm asking you, as the borough, to protect us and vote no to this permit.

CHAIR: Thank you, Rose, and this is not a question and answer period but it places a clear misunderstanding or if somebody from the -- my planning commissioner really needs something explained, I will allow those questions so I will look for the red light at the end and if I don't see any, we'll keep proceeding but make certain that we understand if there's something significant, we are allowed to ask brief questions and we have Craig Kelly?

MR. KELLY: Yes. Yes, Craig Kelly. My concern is I think we've all seen the movie Jurassic Park and I think we all seen what happens when the experts said nothing bad is going to happen. It didn't end up very good for a lot of the people on that island and I think this is going to go the same way. You cannot control weather and you cannot control water. There's amazing amounts of pressure when you start adding 160 to 200 feet of anything. The pressures at the bottom of that will hydraulic things up through the earth and will -- all of the materials that are in there, the chemicals, will be leached out of that and it will go into the water aquifers and all of the -- our drinking water will suffer from that and you -- it's erring on the side of risk. I don't understand this. I mean, Mr. William Kendig there, you were trying to decide whether he should or shouldn't be on the board. You err on

the side of caution, not on the side of risk. That was a risk. You could have jeopardized this whole thing if he had stayed. Instead, you did the right thing and erred on the side of caution. I ask you to do the same thing with this, err on the side of caution, make sure those hundreds of people's drinking waters, their families, their children, they don't have cancer, they don't have leukemia later on, you know, they can live a good life. That's what we all come to the Valley for. These people here, they're coming out of Anchorage and dumping all their crap in our yards. We don't want it. We don't want it.

CHAIR: Thank you, sir. Sarah Mayfield, Charles Homan, Bonnie Kelly.

MS. MAYFIELD: Sarah Mayfield. First of all, I was appalled that the chair of the commission was blatantly attempting to influence the vote earlier on the whole removing Mr. Kendig from the process. I was horrified that that happened but back to my original comments, there is some dispute over whether groundwater contamination will occur and it's not certain either way and that is certain. We don't know, it's a risk and is it a risk that you're willing to take for the homeowners in the area? My main concern with this application is that the company has not shown good faith in its actions through its dumping of debris before the permit was approved.

In its December 1st rebuttal, the potential operator dismissed legitimate concerns that he did not follow the requirements of the borough. I refused to acknowledge that it did that and it appeared to belittle its responsibility for illegally dumping it and if that's how it's going to act, this lack of respect for due process speaks volumes to how the company is going to be once it gets its permit when it was trying to just listen here.

There is a one million dollar insurance policy but a million dollars is inadequate first because if and when the aquifer or groundwater is contaminated, there is the potential for thousands of people to be affected and a million dollars isn't going to cover the cost. Second, given the history of bad faith shown through unpermitted dumping and refusing to take responsibility, how will we be sure that CMS will continue to maintain its insurance policy? I have a concern that we're going to have a never-ending cycle of litigation. Sure, you'll be in violation of your permit if trash blows but then what's going to happen? We're going to say you're in violation and they'll say well, the semantics mean that we aren't in violation and then it becomes a never-ending cycle that we and taxpayers end up paying for. So my concern basically is they haven't shown good faith effort yet. I'm not sure they're responsible enough to do that for this water and I would respectfully request that you guys deny the

application.

CHAIR: You're on the record, Ms. Mayfield. Thank you. Charles Homan, you're --

MR. HOMAN: That's right, I'm Charles Homan and I appreciate the opportunity to address the body.

CHAIR: You're a tall man. Make certain you talk into that mike. You look good.

MR. HOMAN: I want to support this application because of the very simple reason that it will be good for the economy of the area, it will provide additional jobs and it will also allow for recycling. We're here to try to conserve goods and materials and you have this opportunity to do that by approval of this facility. Without it, you'll continue to see these many parts of the materials not used and I watched that when -- down the road from me when they tore down an old saloon. It just all went in the dump and that's just going to fill up our borough landfill much more quickly. So I think this is an opportunity to demonstrate a sensible solution for the use of building materials.

If we want to look at how we -- the borough passed up on an opportunity to have an ongoing business, they got rid of the MEA and burnt over an Anchorage borough and that is where all the money will go when it could have been here in this borough. I want to thank you for the opportunity to speak.

CHAIR: And also one brief question, where is your

residence?

MR. HOMAN: I live out at Meadow Lakes.

CHAIR: Thank you, sir. You're a valley taxpayer.

MR. HOMAN: You bet I am.

CHAIR: Bonnie Kelly, Richard Harbuck and Robin Bumgardner.

MS. KELLY: Hi, I'm Bonnie Kelly. I live in Pioneer Meadows and I don't know how many times we have to tell the Commission we don't want this in our area. We did -- this is at least the third meeting I've been to and I don't -- I have the impression that nobody's listening to us.

The water issue very -- concerns me a lot. We already had a problem with the aquifer being punctured two or three times in the past year. We've had black water. We haven't been able to drink our water for two or three days. What's going to happen if this -- these contaminants get down into this water and if that is added to our wells?

I have three grandchildren that live in my home who have severe allergies. Some of them are life-threatening. One of my granddaughters, her allergies come and go. She develops new ones all the time. I'm scared to death of what some of these toxins can do to her. It could kill her.

This trash will be blown all over the neighborhoods and the roadways. We've seen it already. Is that what we want people, tourists coming out of Anchorage, the first thing they

see when they come into Palmer, they seen trash all over? I'm concerned about the trucks. I've been -- and I was told last time at a meeting I think there was 10 or 15 trucks a day. Those are big trucks on our roads. We have a lot of traffic now. I know they're widening the highway. Well, that's going to be a lot of fun when we're trying to have the construction with these big trucks.

Anchorage municipality, I understand, has already denied them a permit. Why are we letting them bring their trash out to the Valley? When we bought our home, we knew about the gravel pit. We knew that that was -- there's a construction area there. We were never given any inclination that there could become a dump and I'm very, very upset about that. If I'd known that, I certainly wouldn't have bought my home where I did.

The only people I have heard who are in favor of this are people who have a vested interest, the owners of the company, their employees and their families. You talk to anybody who lives in any of our subdivisions around here, none of us want this here. Put it someplace else. Mr. Homan thinks it's okay? Put it out in Meadow Lakes. There's a lot of vacant land out there. Thank you.

CHAIR: Richard Harbuck, Robin Bumgardner and Lori.

MR. HARBUCK: Hello, my name is Richard Harbuck. I request five minutes. I will be speaking on behalf of the

Gateway Community Council as their vice president.

CHAIR: Thank you.

MR. HARBUCK: Okay. Thank you. The Gateway Community Council has submitted a Resolution 01-14 to the Matanuska Susitna Borough Planning Commission, the Alaska Department of Environmental Conservation and the Palmer City Council. They have also submitted their own resolution. This is in response to a request by Central Monofill Services to operate a landfill for construction debris near Mile 38.3 of the Glenn Highway. 01-14 is a resolution of the Gateway Community Council opposing the approval of a conditional use permit for Central Monofill Services.

The property in question is a former gravel pit previously owned by Granite Construction. Past gravel extraction activity mined into the aquifer feeding the surrounding area and multiple occasions affected the water levels of the surrounding lakes causing concern to property owners. Hydrology reports and testing by the Alaska Department of Natural Resources has -- let's see, I'm sorry, has indicated that a connection between the aquifer and the gravel pit property and surrounding water bodies and -- needs more testing. Central Monofill Services bought the property for the purpose of depositing construction debris and asbestos taken from buildings in the Municipality of Anchorage and other areas. This material poses significant threats to air

and water quality of the surrounding area and contaminants have been found to leachate from other construction and debris landfills at levels exceeding health and water quality standards that include arsenic, cadmium, lead, manganese, carinogens such as benzene, vinyl chloride, sulfate, chromium and arsenic.

Central Monofill Services has already created pollution by illegally dumping trash and ground-up construction debris on said property without proper permits and with a blatant disregard for the surrounding environment, groundwater, surface water and air quality. Central Monofill Services and its manager, Shane Durand, were cited by the Mat-Su Borough and convicted in Palmer District Court on six counts of violating the Borough's junk and trash ordinance, failure to comply with an order to clean up and operating a junkyard without a permit.

Central Monofill Services has demonstrated a disregard for regulations and their impacts -- and the impacts of their activities by refusing to clean up the illegally-dumped trash even after court convictions. They only removed the trash after being threatened with an enforcement order from the Alaska Department of Environmental Conservation.

The residents of the Gateway Community Council and the surrounding areas are concerned with the impact of the proposed monofill and by Central Monofill Services' disregard

to date for local ordinances, state regulations and the impact that their activities will have on surface and groundwater quality, air quality and other environmental impacts. Water is one of the most valuable natural resources in the Matanuska Susit -- that the Matanuska-Susitna Borough has and the quality should not be comprised through short-term and short-sighted economic activity that could reasonably be located elsewhere within the Borough where it would not pose a threat to the water quality.

The Matanuska-Susitna Borough contracted an independent study and review of Central Monofill Services' hydrological study with J.A. Munter, Incorporated, a professional hydrologist. The Munter report found that Central Monofill Services' proposed monofill poses a severe threat to groundwater in down gradient wells.

The Gateway Community Council recognizes the importance of this area and its surrounding public and private recreation areas and is proud that the Glenn Highway is a national scenic byway and serves as the gateway to Palmer. The proposed monofill is inconsistent with some of the goals and policies of the borough-wide comprehensive plan and the core area comprehensive plan.

Now, therefore, let it be resolved that the Gateway Community Council is formally opposed to the location of the Central Monofill Services landfill at this location due to the

threat it poses to the surface and groundwater and other environmental impacts.

Now, therefore, let it be further resolved that the Gateway Community Council strongly believes that the near and long-term risks are too high for this or any monofill development to take place at this location. Thank you.

CHAIR: Brief question, sir, just --

MR. HARBUCK: Yes.

CHAIR: What position did you hold with the community council?

MR. HARBUCK: I am the vice president.

CHAIR: Can you estimate how many participants are at that meeting or approximately how many people were present when they -- that was approved?

MR. HARBUCK: I myself was not present at that meeting. My information is approximately 15 to 20 at that point.

CHAIR: Thank you, sir.

MS. BUMGARDNER: I'm Robin Bumgardner and I want to say Mr. Jacques kept his word last time. At the end of that last meeting when we told him no, he said he owned the land and he'd do what he damned well wanted. Well, I'm going to say he has because I have turned him in twice myself for those trucks that have come in spilling trash all over. When the wind was up, they weren't covered. What makes us think he's going to do it now? He's proven too many times that he says one thing

and does another. I have had several people come to my house to look at it. I have also had the first question asked oh, are we in the si -- line of sight with the dump that's being put in and I have to answer that yes and so they've all three turned us down. So, yes, it's affecting our property values. It's also affecting our life because we have to keep coming back to these meetings. How many times do we have to tell a man no to have it understood that we do not want this? We have asked you and I think it's fair to keep asking you to listen to our words. I don't think the money's worth it. I don't think this time is worth it. I think that we have a right after talking to people in Birchwood and that area who have had to put up with the other one they're not happy either and I know, I've talked to them. I've been out there myself. I didn't go on the property but I went and talked with the people and I can tell you we're doing a bad ju -- injustice to this area and I don't want to see us hurt Palmer. Palmer is a gateway to this place and we have a wonderful thing going here. Thank you.

CHAIR: Thank you, Robin. Lori?

MS. ALDRICH: I'm Lori Aldrich with the Department of Environmental Conservation and I've addressed most of the comments I intended to make. The only other comment I wanted to make to the Borough was that a number of your suggested conditions are covered in state solid waste regulation. So at

the time we issued a decision document, those would all be addressed in the decision document and in the permit requirements for the state.

CHAIR: Lori, can I ask you just to remain there for a second?

MS. ALDRICH: Absolutely.

CHAIR: What's your title with --

MS. ALDRICH: I am a regional program manager for the solid waste program. I manage the Southcentral and Western Alaska and the oil and gas fields.

CHAIR: So have you participated in review and looking and past, present, future of similar monofills?

MS. ALDRICH: Absolutely. We're involved in permitting all of the landfills in the state.

CHAIR: Approximately how many similar monofills are in Southcentral Alaska or do you -- can you just --

MS. ALDRICH: I believe we came up with nine currently operating landfills and then that doesn't include all the ones that -- most of the municipal landfills have an inert way cell in them so they have a separate area where they put their inert waste which would be similar to an inert waste monofill.

CHAIR: I know this isn't question and answer but it's important to us so do you have an enforcement level in addition to these -- the borough level that you monitor these?

MS. ALDRICH: Absolutely. We monitor them first by any

input from the public. We do at least annual and in this case, it would probably more often. We come out and inspect them and, you know, we're in regular discussions with all of our facility owners. They have reporting requirements to us and we respond to their reports if they're missing something or something isn't operating properly.

CHAIR: So my final question would be out of the experience you have, there are some unique set of circumstances, whether it be wind, topography, geographic close to water. Is there something unique that would be extra risky with this application?

MS. ALDRICH: I have not evaluated a lot of the water data at a high level yet. I've simply breezed through it because we aren't to the point that we're making our decision --

CHAIR: Mm-hmm.

MS. ALDRICH: -- but if it comes to -- if it meets all our regulations and this application and the information they've shown shows adequate protection of the water, that would -- you know, if they can't show that, then we would not be able to issue a permit.

CHAIR: Thank you. I have Charles Young, Susan Young and Landen Lovell.

MR. YOUNG: Excuse me, Charles Young.

CHAIR: Thank you.

MR. YOUNG: Well, first of all, I'm not against recycling. I'm pro recycling but I think this is the wrong material in the wrong place. 1967 I was a Seabee in Viet Nam. The government, in its infinite wisdom, sprayed dioxin, Agent Orange, around our camp so they'd get rid of snipers. We were told there's no way it was going to harm us. Well, myself and a lot of my friends, after several cancers and diabetes, I think that the VA attributes it directly to my dioxin exposure. The dioxin got into our wells. They said it couldn't happen but it did. During a heavy rainfall, we had mud and water go down a well. They pumped it out to clean it but we were drinking the water, bathing in the water. Our laundry was done in the water. Our food was prepared with the water.

I have three grandchildren that live very near this site and I hear there's inert building materials. Well, I've been around construction a long time. A lot of inert building materials, sheetrock, tape, sheetrock, PVC pipe, when it gets wet, it leaches two materials that are pretty dangerous. One is chlorine and the other is dioxin. I don't know how you're going to seal this to completely keep it dry. I just don't think it can happen. So we're risking leaching dioxin and chlorine into the aquifer that's already been penetrated and which is very nearby right into the drinking water of my grandchildren. Thank you.

CHAIR: Thank you, sir. Susan Young, Landen Lovell. Samantha -- this one out of the -- okay. Samantha Rosick [sic].

MR. LOVELL: Hi, I'm Landen Lovell. I've been -- I've worked with the company since Day One and, you know, I've been -- I go through everything on a daily basis, make sure, you know, no chemicals, no nothing gets through. We test every load. You know, we pulled what, 40 something loads out in the last couple months that have been inspected and sent them off to where they need to go. I know for a fact none of this stuff is -- no chemicals make it out there. That's all I had.

CHAIR: Thank you, sir. Do we have a Samantha? Bill Quantick? Ben VanderWeele?

MS. OSLUND: I guess I stumped you with the (indiscernible) in my name. Last name is Oslund. I live in the Pioneer Meadows Subdivision and a few things that struck me funny about this project were location, location, location. It seems to be a very strange place to want to put a dump. Essentially, that's what it is.

Another thing that comes to mind is I don't like to invite friends over when I have dishes in my sink. Why would we have the state fair with 50,000 or more people visiting will be driving past look, there's a dump on the left, welcome to the state fair. Why showcase our beautiful little town with something like that? For the record, the neighbors to

the left and to the right who have been there since 2000 -- the year 2000 when we moved in have since relocated due to this project's potential and I believe we're going to do the same due to the threat of the drinking water and the groundwater that could potentially occur.

Another point I want to bring across -- and I'm happy to hear some people talk about it -- is enforcement. I have high, high concerns of enforcement with this project. I have concerns with the Mat-Su Borough's enforcement capabilities. Who's out there monitoring? And, more importantly, when these violations occur from 7:00 to 10:00 p.m. or before or after the dark hours, who's monitoring, who's watching it, who's following through with enforcement, what ramifications? And a company that makes multi-million dollars a year can afford to pay it in a giant fine and go on with business as usual.

Something else I'd like to talk about is data. I come from a scientific background and if you have any questions about the models presented in front of you today, please question the data that goes in. A model should have the disclaimer that says junk in equals junk out. If you're putting information in there that doesn't make any sense, it's going to spit out information that doesn't make any sense. They're trying to predict something that could or could not happen so please keep that in mind if you need any clarification on your data.

And the final point I want to make is this is a big deal for me to come today. I haven't ever done public testimony. I've been part of the process in other realms. When I left, my nine-year-old son said where are you going, mom, and I said I'm going to the meeting, we're going to talk about the potential dump that might be in the back yard. He said what, there's going to be a dump in the back yard? Why would they allow that, there's little kids everywhere in this neighborhood, that could affect us for a long time. So I'll close with that and thank you for the opportunity.

CHAIR: For the record, could I have your first and last name?

MS. OSLUND: Sure, it's Samantha Oslund.

CHAIR: How do you spell your last name?

MS. OSLUND: O-S-L-U-N-D.

CHAIR: I have one other quick question.

MS. OSLUND: Sure.

CHAIR: You said junk in, junk out. Is there a particular reference that you're saying that you dispute?

MS. OSLUND: No, I didn't look at the model's data in itself. I had a very brief time to look through all this information --

CHAIR: Okay.

MS. OSLUND: -- but if you're looking at information going in, you're going to get incorrect information coming

out.

CHAIR: I appreciate that. Thank you. Bill?

MR. QUANTICK: I'm doing (indiscernible).

CHAIR: You got three minutes if you don't get us wet.

MR. QUANTICK: This is my well water. Oh, my name is Bill Quantick. This is my well water and we're talking about all the great things around us like sheetrock. Okay? We got some concrete, we got some dirt, we got some everything else that is pretty bad, nasty stuff, right? Okay? So we put that in there, fresh well water, and it's going to piss, period. It's not going to go through, right? So here we go. It'll be ready in a second so -- oh yeah, and there was an article about plastic bottles too, actually allowing some plastic bottle queues going away. Who wants a drink? Okay? That's all I got to say.

CHAIR: Bill, and everything's brought up to that, if you could gently leave it with the public clerk at the borough desk? That needs to be --

MR. QUANTICK: I will take care of it. I will get rid of it, take it to the bathroom and get --

CHAIR: No, we need it.

MR. QUANTICK: Oh, okay. Oh, really? You want the wet stuff too?

CHAIR: The clerk will require everything that is seen here into the public record so that when we have -- so this is

quasi-judicial. Everyone gets the same information so when I get my whole staff back -- Ben VanderWheele.

MR. VANDERWEELE: I just had some carrots and potatoes earlier today, sir. My name is Ben VanderWeele. I am a full-time potato vegetable farmer in the area south of Palmer. Some of VanderWeele farm's property, about 15 acres, borders the area that we're talking about for about a thousand feet but I am on the south side of them. My wife and I have owned that property since 1967. We are also the recipients of our neighbor to the north, CMSN windblown garbage. The way they started their business is pathetic. After they bought the property, they just started dumping trash on it, no permits, no input to the neighbors, nothing. Then the Matanuska wind blew and all the property south of CMS including ours had windblown trash everywhere. Picture.

The whole scenario tells me they are sneaky operators. They tried to get away with illegal business practices and got caught. I do not want them as my neighbor. The demand for a dumping site such as this proposed site is already being met in the Mat-Su Borough. The risk to our health, safety and quality of life is just too great. There are too many negative reasons to permit this dump site and no good reasons. Pollution, rolling garbage and poor land use are very real problems. The real danger is the potential for irreversible contamination of our water just like the refinery in North

Pole where the water wells in a five-mile area around their refinery are contaminated.

This will harm everyone, not just agriculture. The safety of our land cannot be guaranteed by this proposed project. Please vote it down. Thank you.

CHAIR: And since you showed us that photograph, I'll ask you you need to turn it into the clerk and then she can make a copy for you sometime but everything that you showed us will have to be shown to someone else. Can you leave that with the clerk?

MR. VANDERWEELE: Yes.

CHAIR: Thank you, sir. John Stuart, Paul Weir, Barbara Landi.

MR. STUART: Hi, my name is John Stuart. I've lived about three miles south of the proposed monofill for all my life, basically, and I recently -- my wife and I bought land nearer that, across the tracks about a -- maybe half a mile away. I'm concerned, of course, about the water. I think that's a -- more of a long-term -- that'll prove out long term more than -- more quickly but I think something that's going to show up in the first windstorm is debris blowing. It's been mentioned that there'll be a fence installed. If this fence is able to contain all the little debris and all the dust and everything, perhaps the Borough could put a fence along the Knik River and eliminate our air quality problems

here but I just don't think a fence is going to do it.

It reminds me of the silt fence that they put around road construction. It's kind of like are you kidding me, is that going to do anything, no, but it's a government requirement but pretty much a waste of time. So that's about all I have to say other than the land is already valued pretty low for tax purposes and the only thing lower to benefit the tax coffers is to make it a dump.

In addition, every time I go to the landfill and pay eight bucks for my half a pickup load, I feel these people could contribute to it and just take to the landfill, pay like the rest of us have to do and I can't have my own dump so they shouldn't either. Thank you.

CHAIR: Thank you, sir. I want to thank the participants for being articulate and on time and the professionalism in the audience. We're about over a little -- third of the way through so thank you. Paul Weir, Barbara Landi and Brian Goodman.

MR. WEIR: My name's Paul Weir. I'm a resident of Palmer for 14 years, was born in Anchorage, Alaska. I've heard a lot of people talk about the landfill and what it's going to cause and what it's going to do and I want to say what about the C&D landfill right behind the fairgrounds? Nobody's mentioned it. You know, we got one right there. It's less than 50 feet away, less than 50 feet. How many out-of-staters come to the

Alaska fairgrounds and see that? There's no fencing up. There's no barrier. It's right in the plain open and that site accepts everything. It does no recycling.

So where are we going here? Are we going to do this responsibly or are we going to let people like that do it? It seems these guys are going to do it responsibly. They pull the recyclable materials out. Only the non-recyclable materials are going in there, inert material, same thing that's in your homes, in your office buildings, same stuff that's in your car, you know? So, you know, I'm in favor of this. I'm in favor of doing it responsibly. Thank you.

CHAIR: Thank you, Paul. Barbara Landi, Brian Goodman, Eugene Haberman.

MR. GOODMAN: My name is Brian Goodman. I agree with some of the statements that have been made here, recycling is a great thing. I certainly agree that recycling and putting material such as this into the location that's being looked at is a poor choice. CMS has been issued violations before. They've proven to put that in the litigation and liability but they're not paying the bill. You can put it with a bunch of lawyers, you can run it up the tree and it isn't going to be anything that's usable.

They haven't given the planning commission or this borough very many teeth to be able to justify oversight on a project such as this. The reason there aren't a lot of

regulations, monofill's pretty new. They're federally exempt. There's a lot of neat things that run along with one of these. I have that type of background. I understand that.

The groundwater that was done by the USGS, I think, portrays a fairly accurate assessment of the groundwater in the area. They -- that goes back to UAF. They've done a good thing. Your job, as a board, your own goal -- the state is under ALU-1 -- protect and enhance health, safety and welfare. You're not going to do that if you allow this permit to be issued. I agree with CMS's product and what they do but you can't pull contaminant out of wood. You just can't do it. I love the concept of the house. Well, I can take down my pressure-treated deck and I can throw it in a big old pile in my yard and I can burn it up like some people would but is that the right thing to do? As a borough, as a collaborative, we're not going to see this problem but our children will. So please do the right thing and do not allow this CUP to be issued. Issue it in a better location, one that doesn't involve the aquifer and one that doesn't involve the amount of water that is in that general area.

I'll give them my 42 acres but then I'm right next to a lake too. It isn't going to help. Location. Please do the right thing.

CHAIR: Brief question, sir.

MR. GOODMAN: Yes.

CHAIR: When you said you would take your treated wood and burn it but that's not the right thing to do, what is the right thing to do with that?

MR. GOODMAN: Give it to this company for recycling.

CHAIR: Thank you. Eugene Haberman, DeLena Johnson, Larry Helgeson.

MR. HABERMAN: Eugene Haberman representing myself. I'll make it clear here that follow the public process, I will -- I refrain from addressing whether I'm for or against something unless it's a concern of how we follow the public process. So I'm not here to say I'm for or against something but I might be against how you handle the public process.

Tonight you had a handout from the staff report, the public hearing's happening now. Forty conditions were there. How can the public speak now and the staff is -- report's coming here at this meeting now? That's inappropriate. This is going backwards. You have all this information beforehand.

And I had one more point on this particular -- this public hearing. There's a resolution. It's come to my attention the resolution draft was not there for the introduction for public hearing like the staff report. That's going backwards. You expect here the public to speak and address the concern for or against whatever but they're given information here tonight that's absolutely wrong. This is not happening just today, it's been happening for a long time.

You need to redo what you've done here tonight in that anyone who spoke here, the public hearing, not address it in an audience participation part but they have to have a redo for them to speak again, everyone here tonight, because they had no opportunity here tonight to get this information beforehand so that they could review it and decide whether they're for or against or whatever. This is backwards and a further note is you constantly on the occasion I address you and it's referred to the attorney. Well, that's asking for the fox to guard the henhouse. They're in com -- not in compliance with the Open Meetings Act and they're not in compliance for providing these markets to be heard.

I have not said it before but I'll say it tonight, one key thing that's going to need to be done is for a number members of the Department of Law, Borough attorneys to resign from their position and a number of members in the Borough's clerk's office to resign from their position for the complicity and failing to be in compliance with the law. Thank you.

CHAIR: Thank you, Mr. Haberman, for your vigilance in the public process but I can tell you that there was a lot of information available to a lot of people for a long time. Thank you. Ms. -- please state your name for the record, ma'am.

MS. JOHNSON: If I can find my paper that has that on

them -- on there. Commissioner Klapperich, members of the planning commission, my name is DeLena Johnson and I am the mayor for the City of Palmer.

CHAIR: Excuse me, are you representing the City tonight? Would you like five or are you as an individual?

MS. JOHNSON: I would like five, please, yes. Thank you.

CHAIR: And so you're -- as a mayor I will allow that. Thank you.

MS. JOHNSON: Thank you. Thank you for the opportunity to speak tonight and, as you know, and you have before you, you have a resolution from the City of Palmer that requests the denial of the applicant's conditional use permit for the operation of the inert land monofill on their parcel at the Gateway area to the City of Palmer.

I want to just say that I will -- we have a resolution but then I was also surprised tonight to see as a handout, not in the packet, a letter from the applicant speaking to our resolution and I just haven't had time to really make a -- to respond to -- I won't be able to respond to everything point by point because we just ha -- I just haven't had time to see it but I would like to have -- you know, I didn't have a chance to review it but I will -- would like to have our attorney review this and respond but the credibility of this hearing requires public -- the due process, the appearance of fairness and public notice if you -- as you go forward and I

believe the last-minute handouts makes this process questionable. And you would say why does the City of Palmer want to or should comment on this or pass a resolution. Well, it's in our annexation area. It's on our gateway, on our doorstep. It's in our -- we speak to it in our comp plan. It's in our fire service area. It's our gateway but, most importantly, it's in our water service area. So your clean water and the drinking water here, that's what we, as the City of Palmer, have and are speaking to when we talk about a water service area and we provide water to that area. So that fresh water, whether it's in the ground or provided by us, that will have to be seen too by the City of Palmer. We have a reason to be speaking to this.

So -- and I want to just -- on the cursory plans that I have, I want to say that Alaska Demo Pit, as a comparative point, is like com -- talking about apples and apples and I don't want to get into that. A conditional use permit is just that. The City of Palmer already has ordinances in place to address littering, to address noise. Those things we don't have to address as far as the Borough's process. It's very different and we have that zoning in place to make -- there's just not even a close correlation.

But, lastly, I do have to respond to one point of this letter that I -- you know, just jumped right out at me and that's that last sentence and it says passing this writ --

this is -- and I quote and this is from -- submitted by Shane Durand, last paragraph, second to last paragraph. It says passing this resolution by the City of Palmer is hypocritical, at best, and designed to present -- prohibit competition of the City of Palmer's monofill, at worst. So let me just say it's not the City of Palmer's monofill. Frankly, I don't believe that this is about prohibiting competition. I take exception to that. I'm -- I -- in fact, I'm just not -- I just have to stand up here and say that should to be in there and I can't state that any more strongly. The City of Palmer took this action, unanimous vote, because we are looking toward having this as part of our city and we own property adjoining this proposed landfill site.

So, lastly, I just want to say thank you. It is a thankless job. Sometimes it's long, often, and I'm just asking you to fulfill your public -- your duties as public officials and carefully proceed so the public process is not distorted and there's a complete appearance of fairness that's unquestionable. So thank you very much and appreciate your service.

CHAIR: Thank you, Ms. Johnson. Is Larry Helgeson, Fred Thompson?

MEMBER: I'm Larry Helgeson. I'll defer.

CHAIR: Thank you. Fred Thompson in the house? Wes Walling?

MR. THOMPSON: I'm -- my name is Fred Thompson. We live off of Bogart Road and I'm in support of Resolution 14-33. I believe that we need to rely on our ADEC and other agencies and the studies that have been done as far as the watershed goes. I think we need to rely and make sure that the information is correct in them, make sure that we're not going to pollute our areas but I believe it's a definite asset to the area. At the end of the day, they'll have a nice-looking site that we've all heard they're going to have well graded, covered with grass, be drained. They state they can keep the watershed flowing off of the monofill itself. It's a private-owned company. It's -- will support unsubsidized recycling. We all know recycling's a great thing but it is expensive and in the private sector for a company to go out and recycle, it's hard for them to do that and still make it without having subsidized freight, subsidized something, tax basis, whatever to help support things.

It will keep a small portion of the borough's landfill from having to carry a C&D cell to support it. The facility will not have household garbage, other types of known contaminants in it. They claim they do their due diligence to keep everything out and they're monitored by the different agencies. I have no reason to not believe that that is not happening. I know that past experience that I have had with DEC and other agencies, they're usually pretty hard on you if

you're running amock with the system. You know, they'll -- they're not afraid to come within there and get ahold of you and tell you you're in big trouble if you're not following it. I'm going to reiterate the one, that's the Alaska Demo Pit, it's always surprised me that it hasn't been an issue. It's a -- I remember looking there -- several years ago looking at this big hole watching them dump the demo debris and going oh, okay, that's interesting. I hadn't realized it was actually a controlled monofill just the same and it seems to me that it should have some sort of monitoring around it that should tell you whether you are polluting the watershed or not. Just a few things. I know you're all going to rely on the information from all the experts but, once again, I'm in support of 14-33. Thank you.

CHAIR: Thank you. Can you just -- you seem like a -- what's your career or what's your background?

MR. THOMPSON: Oh, I've been -- oh, I went to high school in Homer, Alaska, lived in Alaska since '76. I was a fishermen, grew up a kid, went to Homer High School, graduated, been in construction for about 40 years since then --

CHAIR: Thank you, sir.

MR. THOMPSON: -- and done several things.

CHAIR: Thank you, sir.

MR. THOMPSON: Right.

CHAIR: Diane Warta? So, Wes, go -- proceed, please.

MR. WALLING: Okay. I am a Palmer resident and am employed -- I've been employed as Central Companies' equipment superintendent since 2009. It has been stated several times that there are no positive or economic benefits of this project to the Borough. Aside from the benefits of increased recycling and salvage materials available, there are many other indirect benefits. For one example, just the two pieces of equipment used for placing fill and the trucks hauling in six loads of material per day will generate $425,000 in annual fuel sales for a local fuel supplier.

As included in the proposal, Central Companies plans to move all its maintenance operations to the Palmer property. Central Company -- or Central Companies employs four to six maintenance personnel to service and maintain roughly 250 pieces of rolling stock and equipment with an annual maintenance budget of approximately $2 million. A major portion of this budget can and will be spent at local Mat-Su businesses. Examples of these businesses are automotive and equipment parts suppliers, automotive repair facilities, tire suppliers, machine shop services, welding suppliers and hydraulic component repair facilities. With the added operation of the landfill, this budget will grow and, presumably, require additional maintenance personnel and yet more full-time jobs to be added.

Along with economic benefits, there is opportunity for several Central employees who reside in the Valley and commute to Anchorage to start work at the Palmer facility. For example, maintenance personnel and truck drivers. Every single family wage full-time job is important to the Mat-Su Borough. Along with saving thousands of personal dollars through you which goes back into the local economy, working ultimately allows residents the opportunity and time to be more involved community members, to be more involved in our children's education and extracurricular activities.

In conclusion, the up front benefits to the community may not seem large but, as with any other activity, the trickle down effects of money spent at Mat-Su businesses becomes significant.

CHAIR: Would you repeat your name for the record?

MR. WALLING: Wes Walling.

CHAIR: And you opened up with the statement that what's your position with the company?

MR. WALLING: Equipment superintendent.

CHAIR: And how long have you been there?

MR. WALLING: Since 2009.

CHAIR: Thank you, sir. Jim Cassin? Please proceed, ma'am.

MS. WARTA: Okay. I am Diane Warta and I greatly value the reclamation of the gravel pits. I think that'd be a

wonderful thing but I don't think to take this water-saturated area and put -- make it a dump is a good idea. One things is there's been a lot of concerns about the water quality and the conc -- and they said well, it's dry waste, it's not going to be a problem but if it is, what if that risk that it is -- and my concern is, you know, just across the highway is a salmon spawning area. And there's been a lot of our -- in our Valley of preserving the salmon and the runs and the places for spawning. Nobody's mentioned that. The -- we take a little bit of contaminants, what's it going to do to our well water. What's it going to do to the salmon spawning area? We've not looked at that and there's a creek that just -- Spring Creek area, I believe, just runs right over there. I think that needs to be looked at and it needs to be addressed.

I don't know much about monofills and they had a pretty thorough explanation of it but I was going on line and was reading about Environmental Waste Solutions. I believe it's down in Tennessee and they were talking about doing these monofills and granite pits where they've done granite mining and -- but they -- they're doing it on a clay soil on bedrock. They have a six-foot liner on the bottom. So six and -- it's like four times on the bottom, three times on the side and it doesn't sound like it's a saturated area. It doesn't sound like they have just 10 feet of gravel between the fill and our water supply. That really concerns me. That's gravel being

so porous and not having that sealer and it seems like it's -- if this company that has done much beyond what's required of them, I mean, and our -- and we're looking at, like I say, the saturated area and not having that, it's a great concern.

And, just again, that they had it -- they were having clay and bedrock. They weren't having gravel that's there.

My other concern is they talk about the -- the precipitation only being 15 inches -- or 15-3/4 inches and evaporation being that much so there's not a concern with the water leaching down but we all know in the spring there's water everywhere. We see it running all over. It fills up our ditches, it saturates our yards, our lawns are saturated and maybe it's been a semi-arid area and we're coming over a long period of time to get it but when it's wet, it's wet. There's water everywhere. And I think that needs to be considered. We can't say it's just semi-arid which just evaporates because we've seen it run all over the place. We see it filling up creeks. Thanks.

CHAIR: Thank you, Diane. Dan Delaney, Jim Cassin, Arthur Keyes, Roseann Leiner.

MEMBER: Can I ask you a question about (indiscernible).

CHAIR: Sure, right after this gentleman.

MR. KEYES: So my name's Arthur Keyes. I'm a full-time farmer here in the Valley very close to where this proposed dump is at. I carry more insurance to sell my tomatoes than

you want to carry to indemnify this pit. It doesn't make any sense to me. I know we've got doctors here. I wonder what -- how much insurance they carry. You're talking about impacting the water and then in this wind, this comments about you guys are going to cover up the wind? Ninety miles an hour, guys. Ninety miles an -- I've never seen a tarp hold together at 90 miles an hour. You don't live here. If you lived here, you'd know that. That's absurd. I don't know, I almost feel ashamed of you guys for approving. Ninety mile an hour winds. I'm not the only one in the room that knows that.

The people that have spoken for this, I'd like to offer them a drink of water. Can we do that, can we offer the gentlemen who've spoken for it a glass of water? I think you've got the glass.

I hear about inert fill and I'm no chemist and no genius there but I'm fairly certain that there's chemicals in concrete that we wouldn't want to drink and I'm fairly certain there's chemicals in lumber that we wouldn't want to drink. How much would it cost to clean this up? I haven't heard that. What would the cost be? I heard a cost about how this won't be a subsidized pit but what I'm hearing, I'm hearing that it is going to be a subsidized pit because there's a fiduciary responsibility that this company has but when it's time to walk away from it, they're going to walk away from it. I think we saw that with the gravel pit. We had a major

gravel company in there that broke through the aquifer and made a mess of our water supply. It's really why we're all here, I think, and that gravel company doesn't own it anymore. They moved on. They let go of it and that's the path that -- that's the logical path that I would see that this goes. When they're done with it, they let it go. We talk about how we're going to cover it over and re-seed it with grass but you know what, I don't know what business model they're talking about because when it's time to let this go, you're going to -- I believe you'll let it go. I think it'd be in your financial best interest to do it.

So when we talk about it being subsidized, we're going to subsidize it. When there's a problem, DEC is going to pay for it. DEC is going to be the ones that's on the hook to clean this up, to take care of our water very similar to what's going on at the North Pole, Alaska right now, five square miles and no one can drink the water. Thank you.

CHAIR: Thank you, sir. We had Roseann Leiner which will be spoken, Vicky Ramage and Lisa Kallender. State your name for the record, please, sir.

MR. JOHNSON: My name is Kent Johnson and --

CHAIR: I'm sorry, did you say Kent Johnson?

MR. JOHNSON: Kent Johnson.

CHAIR: Thank you, sir.

MR. JOHNSON: And I'm signed up to speak later but she

asked if I would do this and I'm speaking for Roseann Leiner who lives in the Canoe Lake Subdivision. Roseann is a widow who opposes any business permit that can affect the water quality of nearby property. Certainly, CMS may lead to contamination when their monifill is placed on land with a high water table, gravel and with an aquifer.

Since 2004, Roseann Leiner has been -- has seen the water level at Canoe Lake change including a rise in the water level that resulted in the death of many large trees near the water's edge. These trees could not live with flooded roots. However, they could not have grown to such a large size if the roots were flooded beyond the dredging -- or before the dredging of the gravel pit company.

Across the highway from Canoe Lake, John and Roseann Leiner own property in Grandview Subdivision. That property was also affected by the change in the water table. At that time, Don March who was employed by the gravel pit company, allowed the company to put in a new irrigation well and a new septic system on the Leiner property at a cost of thousands of dollars paid by the gravel pit company. Though the gravel pit company did not admit that the dredging in the pit had any effect, the gravel pit company asked John and Roseann Leiner to sign a form saying that John and Roseann Leiner would not sue the company for any further perceived damages. It appears as if the company was trying to buy their silence but John and

Roseann Leiner did not sign that form. The land which CMS purchased is grandfathered in for industrial use but the past industrial use has not been benign to nearby homes. Sadly, this is not the end of the story. John Leiner's anger at this injustice and other injustices in his life contributed to his state of despair.

In January of 2011, he died by his own hand. Do you think the lives of Roseann and her children were not personally affected? Water tables and water quality are important to citizens. Do not give permits that allow business profit at the expense of homeowners. Homeowners live -- lives are greatly affected. Consider all the hydrology reports rather than the ones that predict no effect and no need for monitoring groundwater. That's it for me. Thanks for the opportunity to talk for Roseann and I'll wait for my turn up.

CHAIR: Thank you and I think it's just important for everyone to realize that sometimes -- and I know when I'm in the audience I've gotten -- we're seeing this and you take some -- you know, you've taken a lot to prepare your testimony and it's a crucial part of the process and I want you to know that we have minutes being taken. This is all being recorded and often we, as planning commissioners, go back and listen to make certain we didn't miss anything. So if you see me calling somebody up and going through the process, I don't

want you to think wow, I spent a -- days preparing my testimony and then we moved on. You're on permanent record both in audio and in written form so often we re-listen to every one of these testimonies. So, with that, please state your name for the record and proceed.

MS. RAMAGE: Vicky Ramage and I have a prepared statement from Rachel Garnette and I'm not going to read everything she wrote because it's been said but I would like to read one of the last things just to finalize it. The Mat-Su Borough should be concerned about seeing this. Claiming the above concerns that everybody has spoke about are not founded. It's been public knowledge that Central Monofill Services has already been cited for violations relating to their business practices. In fact, the Borough itself cited CMS. I understand that CMS has a number of excuses as to why they are already violating permit borough requirements but, regardless, a company who cannot follow the rules when they are trying to be granted a permit most certainly will not once properly permitted.

How is the Mat-Su Borough intending to defend lawsuits from residents when the Mat-Su Borough is already on notice of the health and safety hazard to its residents? Therefore -- and this is Rachel -- I urge and request the Mat-Su Borough to again decline the request of CMS for a conditional use permit at the location on the Glenn Highway.

I have been taking some notes while -- well, kind of taking a tally and up until me getting up here, there's been about 15 people speaking against the monofill. Five were for the monofill. Two of those people admitted that they worked for the company. One of them was a construction worker and only two of them told where they live and it was not around where this monofill is going to be put in. Please take that into consideration when reviewing all this. Thank you.

CHAIR: Thank you. Again, I congratulate people taking the podium. You're articulate and you're using your time wisely. We're down to about 10 people and then I will open it up but for the benefit of those that are here to testify, I'm not going to take a break, I don't think, until we can get through that and then before we go to discussion, we'll take a break at the conclusion of the audience participation before I move on. So I believe I'm to Lisa, is that correct?

MS. KALLENDAR: Yeah, Lisa Kallendar.

CHAIR: Thank you.

MS. KALLENDAR: It was said that the Titanic was unsinkable. The engineers at --

MEMBER: (Indiscernible)?

MS. KALLENDAR: Oh, sure. The engineers had their models and theories to back their claims but, ultimately, proved untrue. Water safety is at the core of this issue. Central Monofill Services state that there's little to no change for

contamination. In the end, this is pure conjecture. Without truly improving the liners, caps and water collection systems, no one can claim total safety. Clean silt and tire bales are absolutely not impermeable. It is a fact, not hysteria or paranoia, that monofills have leaked, are leaking and will continue to leak toxins into water tables. Over 27 states have drafted regulations regarding monofill design and maintenance because of these hazards. Alaska needs to follow suit and we'll one day have regulations. That is the only way to protect the water.

Complete and accurate understanding of water table fluctuation is also necessary. A few years of precipitation records does not show adequate history. It is another fact that the water table fluctuates more than 10 feet. The puncture of the aquifer by previous owners and the current well functioning spillway between the three ponds have caused nearby lakes and wells to rise. In the new CMS proposal, they maintain that the waste will be kept away from those ponds and yet they plan to route a whole water runoff directly into them.

I trust Munter's conclusions. He has decades of experience with this property. It's difficult, high contamination risks aside, to see the actual benefit to this beautiful area in the dump. A max of three full-time employees is not a lot of jobs created. How can we trust that

there are enough handled to keep -- to handle peaked season traffic and up to several trucks a day and to be able to monitor (indiscernible) debris and the types of waste that come in including asbestos when no property taxes are paid by CMS and they will be diverted from local municipal solid waste dumps. Decreased property values in nearby residential areas have happened at other monofills. Traffic on the Glenn will be impacted and after 30 years in (indiscernible) yards, commercial or residential buildings cannot be built over that area and it'll be visible from the highway.

After contamination of water, cost of remediation and cleanup would exceed EMS -- or CMS insurance policies. All the rewards go to CMS, all the risks fall on us and this decision affects public safety and our resources far beyond the next 30 years. With as large as the Valley is, there are many other areas less compromised than this site. Thank you.

CHAIR: Thank you. You timed that perfect. I have a -- is it Jessica Saxton? Jesse Saxton, Joe Moore, Dennis Wetherell.

MR. SAXTON: I've got an article here from a --

CHAIR: Please state your name for the record.

MR. SAXTON: Excuse me, Jesse Saxton.

CAIR: Thank you.

MR. SAXTON: I live on Duncourt Road right above this thing and one thing that I haven't seen addressed and

anybody's addressed is the possibility of this giant pile of garbage sliding off and I found an article in Waste Management World -- I'm sure Mr. Jacques is familiar with this magazine -- that supports -- it supports landfills. In March, 2003, the eastern slope of the landfill in Athens, Greece cracked down covering a 20-meter deep notch between the slope and the recycling facilities with waste. Approximately 800,000 meters to the third power of waste moved leaving a three to 400-meter wide gap in the slope behind.

Water is very likely to be the case as it is in all cases of landfill failure. The most significant water outlet from the failing slope has been reported by the operator. This point makes the case even more interesting since landfills in arid and semi-arid areas have not been endangered unless you're concerned with water balances massively disturbed.

Since the landfill has been constructed according to current European standards with liner and drainage systems, there was no reason to expect waterborne stability problems. It hasn't been -- become finally clear why the slope failed. It may also be the consequence of a fire which occurred two weeks before in the landfill. Landfill fires are extremely dangerous for stability. Smoldering fires which do not burn with open flame on a surface are especially dangerous. A smoldering fire may feed its way to deeper waste layers leaving plastics and paper burnt and sweeping all

reinforcement effect away.

Fighting smoldering fires with water may even double the problem because the fire is pushed forward while the water level inside the landfill increases. That's from an article that actually supports these facilities. Thank you.

CHAIR: Thank you. Oh, Mr. Saxton? Because you reference a piece of material, it'll need to be turned into the formal records so that everyone can have the same information that I do. Do I have Mr. Joe Moore?

MR. MOORE: Yes, my name is Joe Moore. I'm a resident of the Palmer area. My comments are based on my experience working as a soils scientist around Alaska the last 30 years. I strongly urge the planning commission to thoroughly consider the potential impacts of the existing groundwater supply in the area of the proposed monofill site. The reports of several consultants have been cited. However, the reports appear to be in conflict. I strongly urge you to seriously consider the conclusions presented in the reports by J.A. Munter in 2013 and '14 as they most directly represent conditions in the area of the proposed fill site.

Some items for you to consider, one, in terms of soils, the undisturbed natural soils of the site consist of a two to three-foot layer of silt loam overlying sandy and gravelly glacial outwash. The two layers have considerably different properties in terms of their ability to transmit water and any

possible contaminants to the underlying ground water table. The silt loan surface has a relatively low permeability rate and the gravelly outwash underlying material has a very rapid permeability rate. Given that the proposed site has been lined for gravel, the silt layer had been removed and the base of any proposed fill will be sand and gravel. Thus, it has a high potential for water transmission from the groundwater table and there is no continuous restrictive layer to prevent this.

A 10-foot buffer of soils, the current Alaska standard for separation of fill materials from the groundwater table. This assumes all soils have uniform rates for transmitting water and this is not reality. Soils underlying this proposed fill site has a high rate of water transmission. It is stated that native soil will cover the fill site. This needs to be defined if it's going to be slowly permeable silt loan material or highly permeable sand and gravel. They're both native soil materials. In regards to water and precipitation, despite some of the statements, the climate in the Palmer area is not semi-arid. We have considerably more available moisture due to our low evapotranspiration rates. It has been stated that our evapotranspiration rates exceed our precipitation rates and, therefore, there will be no significant water to infiltrate into the fill materials. However, this assumes that on a year-round basis, our

precipitation rates are plant growth and our daily temperatures are constant throughout the year. Our evaporation and transpiration rates peak with plant growth in June and July. Our annual precipitation increases to a peak in September and our local moisture release from snow melt peaks in late April and early May. Precipitation or snow melt released during those periods definitely exceeds any evapotranspiration and any available water will infiltrate the fill material during those periods. My time's up?

CHAIR: Thank you.

MR. MOORE: All right.

CHAIR: State your name for the record, sir.

MR. WETHERELL: My name is Dennis Wetherell. I'm a homeowner. My residence is on the northeast end of Canoe Lake less than half a mile from the proposed monofill. I'm concerned about the potential effects of the monofill on the groundwater, my drinking water.

One of the conditions that has been stated is that there must be 10 feet of gravel or native soil between the base of the monofill and the water table. I appreciate the comments of Mr. Strawn earlier who called attention to the fact that this is based on the current water table levels and does not take into consideration any historical variation in the water table. I've lived in my residence for 25 years. Over that time, I've seen the water table fluctuate by more than 10

feet. In the past 10 years, the level of Canoe Lake has risen by over six feet. I don't think 10 feet is an adequate amount of separation for an amount of fill where you can guarantee that it will not be impacted by rising water and, therefore, potentially contaminate the water table. I urge you to take that into consideration and respectfully request that you deny the permit. Thank you.

CHAIR: Thank you. Caleb Moffitt, Daniel Cowles, Samantha Oslund and that was my fault. While Caleb makes his way up, I'd just like to compliment that we have the permitting representative -- I believe it's Lori Aldrich from the Alaska Department of Environmental Conservation listening -- listening to the testimony intently and I compliment her living on Cordoba Street in Anchorage that she is staying with us and being part of this process. Thank you. State your name for the record, sir.

MR. MOFFITT: Caleb Moffitt. I've worked for Central Recycling Services as the operations manager. I've worked for this company for a little over five years. I'm proud to work for this company and I'm proud of what we do. We're a recycling company.

The owners of CRS saw a need for recycling in the construction and demolition industry. It took a large risk in starting the one and only construction demolition debris recycling facility in the State of Alaska. We're not

government funded. We're not subsidized. This is a private company that recognized a need and offered a solution.

Recycling is the future. Sustainability is not possible without recycling. Opposing CMS is opposing recycling. We are industry leaders in the state for C&D recycling constantly looking for new avenues for recycled materials. We took on glass and tires to increase recycling in the state. Closing CMS would greatly hinder recycling in the State of Alaska as a whole and it would prevent seeing new recycling in the Valley. You know, that's what needs to happen in order for C&D recycling to happen in the Mat-Su Valley. It is not toxic dumping, it is responsible dumping of inert debris that has no further recyclable value. I've worked in every facet of that company from the guy on the tip floor to who's sorting the loads to the guy on the pick line who's pulling off recyclables down to operations manager. So I've seen every angle of it. I've seen all of it. I know what I'm talking about. I'm not just somebody getting up here spouting off emotions, I know what I'm talking about.

The facts are me and my fellow employees go above and beyond what any other recycling facility or monofill in the State of Alaska does to insure that all materials have -- that are -- been -- they've been sorted, they've been dealt with. There's no hazardous materials left. We screen every single load we take in for recycling. We are the experts in the

field and we work with this material on a daily basis. Why would we, as employees, who are trained to recognize hazardous materials knowingly expose ourselves to them on a daily basis? Does that make any sense? No, it does not. The answer is we wouldn't and we don't. We are just -- we are people just like everybody else in this room. We have a job that we like to do and we do it well. I ask that you would make your decision based on facts, not emotions. Obviously, this is a pretty emotional topic and I wish the mayor of Palmer was here because, you know, I don't understand how this does not correlate to the Alaska (indiscernible) event when we're dealing with the same materials. We're just sorting them, looking for hazardous materials and pulling it out before it gets thrown in where it is going to be affected by the wind. You know, asbestos has to be abated when it's wet, has to be properly packaged. That's what we make sure happens before it goes into a landfill, monofill that could be exposed to wind. So we're doing that now to prevent that whereas other people are not. So I support it strongly. Thank you for your time.

CHAIR: Thank you, Mr. Moffitt. Daniel Cowles?

MEMBER: Hello.

CHAIR: Samantha Oslund? How clumsy of me. John Rozzi? Don Berberich? Kent Johnson.

MR. BERBERICH: My name's Don Berberich. My big question is is this project worth it. It seems to me the risks way

outweigh the gains. If this were strictly a business deal, one wouldn't carry it out. This project requires that someone else pays if and when something goes wrong. This area of the valley already has a history of problems. Let's not add to them with a risky project like this one.

If this project were permitted, make the owner put enough money aside before starting to clean up any disaster that could happen. If this was done, no one in their right mind would put a monofill in this location and I'm glad I'm not the only one that saw red flags when they said semi-arid because, really, that's kind of a lame-brained information that's passed out by someone sitting in their office reading statistics and not going outside. These are nice averages but go outside and you'll arid in June but in August, Noah is out looking for a new -- for a high spot to build another ark. Thank you.

CHAIR: Thank you, sir. I'm allowing Kent Johnson to take the microphone because he was speaking on behalf of --

MR. JOHNSON: Roseann Leiner.

CHAIR: Roseann Lang.

MR. JOHNSON: I don't have much to add, I just want to say a couple things.

CHAIR: Thank you, sir.

MR. JOHNSON: My name's Kent Johnson again and I just wanted to let you guys know I have property on Canoe Lake and

on Irene Lake which are both right adjoining that and I've seen the water rise. I've seen the trees that my children used to use for rope swings. They're all gone now. Those trees were big then but the one thing nobody's really talking about, Alex brought up a little bit, about the water levels. Has anybody around here gone over there and looked at the spillway that used to be a dam and the amount of water that flows through there? I mean, it could be 20 below zero and there's thousands of gallons of water flowing from one lake to another and they got the concept of eight inches rising. If it was a complete dam, it's just totally absurd because it used to be more of a dam and it was about 10 foot higher.

So, I mean, you can believe whoever you want to believe. I would say that the older hydrologist reports are probably the most accurate because they've studied them the longest and my folks came out here in the late sixties, early seventies -- like my wife and I have lived here for over 30 years and when we came, this was known as the bread basket of Alaska and now it's the gateway and it's going to be the gateway to the waste basket of Alaska. I don't want to see it. Thanks.

CHAIR: Thank you, Kent. Then Cheyenne Guard in the house? Cheyenne? And I promised we would proceed and a few more have signed up so we're going to march forward. Dave Jenkins, Johnny Davis, Sarah Wolcoff.

MR. JENKINS: Hi, good evening. I'm Dave Jenkins and I

would like to go on record as being against this project. In listening to the proceedings tonight, a few things struck me. A couple of things that Mr. Strawn said was that this project could not proceed -- and I quote/unquote -- not without risk. He also said the water table is a moving target. I concur with his feelings on those things and I think that it's only common sense. We know that. Also, that water table, as we know, is subject to change. It can go up and it can go down and it can also be changed radically should we have an earthquake here of any significant proportions.

In the 2001 earthquake that registered, I believe, 7.1 on the Richter scale, I -- I live about a mile away. I live over in Mountain View Estates. As the crow flies, that'd be about a mile and I had sediment in my water for months after that.

Now, CMS probably has good intent. I think they've probably studied this matter diligently. They say that the water will run off the top without percolation. I don't understand that because maybe my lawn's different than everybody else's at my place but the water actually makes it green because it goes into the ground. So what they're going to do to create perfect runoff without absorption into the water table, you know, I don't know but I do know one thing and they say that the road to hell is paved with good intentions so regardless of what they may feel on this issue, I think that, over the course of years, we've got to look at

the fact that 30 years from now, the duration of the permit, the current management won't be at CMS if, in fact, that company even still exists. The members of the planning commission are all going to be changed out in probably much less time than that and all the facets of government here in the Borough. So we can incur something tonight that sticks with us for 30 years, maybe long beyond 30 years, and I've got children in the Borough, I've got grandchildren in the Borough. They're growing up here. They -- they're going to stay here and I would like to see something different for our people that -- I've been all over Alaska. I've lived many places, worked many places and all I can say is that this is probably the most beautiful place that I've lived, the most pristine. We've got these beautiful lakes. I mean, it is truly the gateway. People coming from Anchorage see this. It's the first thing they see and they think Palmer is beautiful and one thing that annoys me is they talk about valley trash. Well, let's not prove them right, let's show them to be wrong this time. Thank you for your time.

CHAIR: Thank you, Mr. Jenkins. Johnny Davis, Sarah Wolcoff.

MR. DAVIS: I'm Johnny Davis and I live on Colleen Street adjacent to the property and, actually, I -- I'm just going to sort of pass, I think. Mr. Jenkins said everything that was on my mind about water and of people that express different

concerns.

I guess one thing I will take exception to before I sit down is the analogy that these are materials that we live and work in in our homes and our buildings. They are but they have roofs on them and they have fire departments that put them out and ways to get out of that building when they catch fire because of poisons and chemicals and all that are in those materials should they not be protected and, unfortunately, there's a risk of fire, there's a risk of leaching and water like with an earthquake like the gentleman mentioned that CMS, as good-intentioned as they are, they can't prevent that and can't predict it. So, yes, we do live in homes and buildings with this material but when they get wet and they get mold, you have to leave, when they burn, they poison people so it's the material is being ground up and it's a different kind of material than what's in our homes. Thank you.

CHAIR: Thank you, sir. Sarah, Judy Crosby, Norman Crosby.

MS. WOLCOFF: Hi.

CHAIR: Please proceed, ma'am.

MS. WOLCOFF: I'm Sarah Wolcoff and I'm a resident Pioneer Meadows Subdivision which is across from Inner Springer and the problem I have with this process is that there are already too many unknowns. To begin with, with all

due respect, we had a lot of unknown about the procedure just for the meeting, unknown conflict of interest, unknown water table values, unknown levels of leachate, unknown cause of the malfunctioning spillway, unknown cause of -- or unknown solution to the remediation of the spillway including disagreements between the hydrologist's report and yet most of the Borough's findings seem to fixate on one opinion and then we have the Borough asking the applicant what the requirements are for monitoring the final top cover after this thing would be finished and I find that really perplexing.

Then we have the applicant saying that we have to have good science and that we shouldn't be speaking with emotion and yet his science is that the leachate just sheets off and disappears so poof, it's gone, it doesn't sink into the ground. I want to know where it goes in that case.

He also claims that the materials that they handle are nontoxic and nonhazardous. I think this is kind of insulting to our intelligence, to tell you the truth. My father removed asbestos for a living for several years and during that job, he was required to wear a haz-mat suit from head to toe completely sealed and when he left the locations that they were finished, they had to walk out of several layers of decontamination. If that is nonhazardous, then I'm really confused about his science.

Another -- I'm just going to echo what the previous

speaker said, that the materials used, the building materials, when they are ground, they are not the same as when they are in their whole form. These materials contain all kinds of chemicals that are toxic for human health and I would like to read for you a few of the side effects that I found. This was from the World Health Organization and these are known effects of exposure. For formaldehyde, watering eyes, burning sensation in the eyes, nose and throat, coughing, wheezing, nausea, skin irritation and cancer including nasal, leukemia, lymphoma, brain cancer and nasal pharyngeal cancer.

For arsenic, we have skin lesions, developmental effects, cardiovascular disease, neurotoxicity, diabetes, vomiting, abdominal pain and diarrhea, numbness of extremities, muscle cramping, death and more cancer, bladder and lung. Also, black foot disease which is a type of disease of blood vessels leading to gangrene in the extremities. And then for benzene, we have headaches, dizziness and drowziness, confusion, tremors, loss of consciousness and many other things. So please consider our help.

CHAIR: I have Judy Crosby and Norman Crosby and Melody Wright.

MS. CROSBY: I'm Judy Crosby. I live in the Canoe Lake Subdivision. I welcome small business into our area. However, I do not think that this particular business will benefit the population of the Mat-Su Borough now or into the

future. What CMS is proposing is not light industrial use as they are intending a project of disposal and storage of nonrecyclable material over a period of several decades. They are a company wanting to use the land they purchased in the Mat-Su Borough to dispose of materials they were paid to demolish and remove in an area of the state 40 miles from here. They have been dumping this same material in the legal dump sites already provided for. However, they would rather save money and have a site of their own monitored by themselves so they can do what they want just the way they want.

This totally goes against the most -- most of the goals and policies in our borough-wide comprehensive plan, 2005 updated, and the core area comprehensive plan 2007 updated. Our benefit from having this small business come into our area is none. They pay a very small amount of land tax. They only employ three to five workers -- well, I learned tonight they have maybe a few more but these workers work in their Anchorage location already. The cost to the Borough to monitor, inspect and keep tabs on this ongoing business will escalate and at this time, is not funded.

Property values for the surrounding areas will suffer. I do not see anyone wanting to build in the future on a high amount of plastic, asbestos, tainted wood products, lead paint, old roofing debris, et cetera, all ground up to become

fines and stored. The existing gravel extraction area that now exists can be used to build office buildings, parks, recreational sites, et cetera. If we allow a business like CMS to operate in this area, we seem to be taking several steps back from what has been worked on long and hard in the existing goals and plans.

The plans indicate protect and enhance the public safety, health and welfare of borough residents, protect residential neighborhoods and associated property values, encourage commercial and industrial development that is compatible with residential development and local community desires, protect and enhance the borough's natural resources including watersheds, groundwater, aquifers and clean air resources. Thank you.

CHAIR: Good job, Judy. Norman? Is Norman Crosby or Melody Wright?

MS. LINEA CROSBY: I'm going to speak for Norman. My name's Linea Crosby and he's getting kind of tired back there. He's been here for 4-1/2 hours. So this is what my dad says.

Gentlemen, good evening. I'm again before this planning board to protest against the application for a non-regulated private dump proposed by CMS. Fact: CMS still has plans to store silica minerals such as asbestos on this site in an open pit. Fact: asbestos is microscopic and not visible to the naked eye easily windborne and can travel long distances. The

property in question is upwind of large spread-out neighborhoods. Fact: asbestos should be kept wet, double bagged and placed in sealed, weatherproof containers, then disposed at an EPA-approved storage facility, not in an open pit gravel dump. Fact: CMS may have the certification and training to handle hazardous material but the ability to process and transport such materials is untested and suspect. Also they are not bonded at this time to cover the cost of a hazardous contamination spill for the proposed dump application. They only are offering a windblown materials bond.

Fact: CMS intends to create a 40-acre uncovered pile 50 to 60 feet higher than the current highway level only covered with something they call trash fines. We all know what winds in this area do with Matanuska and Knik River silt on a windy, 90-mile-an-hour day. Now we will have construction fines mixed with asbestos joining the airborne dust every day. Fact: Nowhere on the proposed property is the water table lower than 10 feet from the surface of the pit. Fact: Clean uncontaminated ground and subsurface water is a viable and needed resource by all residents in the southcentral area. This dump and will contaminate the subsurface waters as proposed in this permit requests.

Fact: Trash dumps, do we need more of these eyesores? I don't see any purpose for CMS owners in our neighborhoods.

Maybe the CMS owners should build a home on site and live with their trash. Quote, from the Mat-Su core area comprehensive plan 2007, page 39, paragraph 3, community plans do not take place in a vacuum. They should embody the community's prevailing values and goals, end quote. This land use request does not fit the plans of this area in any shape or form.

In closing, this proposed request is not a viable use of these commercial lands, period. I ask that you make the right decision and deny this permit and any future permits for large private storage of non-recyclable trash in the Mat-Su Borough. Thank you.

CHAIR: Thank you, ma'am. I know you were speaking for Norman Crosby. Your first and last name?

MS. LINEA CROSBY: Linea Crosby.

CHAIR: Linea Crosby? You stated that your father after 4-1/2 hours. I've had my --

MS. LINEA CROSBY: We all have. We're just cross is --

CHAIR: I've had my planning commissioners chained to this chair for 4-1/2 hours so we request four brief quick minutes for a quick at ease for the final four.

(Off record)

CHAIR: I'm going to ask for four minutes. I took five. The December 1st meeting is reconvening at 10:33 continuing wit public hearing. We had Melanie Wright next signed up. Is Melanie with us? I will call from the floor if I -- if you

have not testified, Stephanie Powers [sic], Chris Kepler. Again, we had Melanie Wright signed up, Stephanie Powers. I am so sorry. Well, you have the power now. You were a Nower and now you're a Power.

MS. NOWERS: Okay. Thank you. Very nice to be here. My dais --

CHAIR: Please state your first and last name.

MS. NOWERS: My time's not going, is it? Okay. My name is Stephanie Nowers. Please add 10 seconds on the clock.

CHAIR: We will.

MS. NOWERS: My name is Stephanie Nowers and I live on Canoe Lake with my husband and two children near the proposed site. I have, for the record, read the entire packet CMS submitted. I have -- including the additional documentation that was included in the packet tonight. I've also spoken with the State Department of Natural Resources, State Department of Environmental Conservation, the U.S. Army Corps of Engineers and looked at the relevant borough, state and federal codes. I've also spoken with people in other states, environmental officials, including Ohio about the effect of construction and debris, landfills there and the experience they've had with contamination and the requirements they have for these landfills. I have much I could say but if you have follow-up questions, please do.

I would like to ask for public comments to be allowed at

the next meeting, the decision mailed that people could comment again. There is new information in the packet that was submitted to commissioners that was not included in the public comment period. Specifically, the groundwater monitoring plan which had been pulled originally by CMS but was added back in at staff's discretion and also there appears to be a section line easement that was not marked on the map so the public hasn't had a chance to comment on those.

I want to speak to the differences between this site and the Alaska Demo site that just come up. This was submitted by CMS. It points out the other facilities. Just look at it. Look at where the water is on this.

Stuart mentioned spillway. He mentioned a couple things. I haven't seen a backup in the record. He said there's a model eight-inch rise even if they replace the spillway. Haven't seen that. He also said that they've asked DNR to give us (indiscernible) in the spillway. I also haven't seen that. DNR has asked them to fix the spillway and they are refusing to do so.

Commission a failure of the spillway which is interesting. Nobody has asked why this property isn't suitable for residential development. That's something CMS noted in their original application. Our understanding is that Howdy looked at this site, Howdy out here quite extensively, and found there was a potential failure for that

spillway and also that the groundwater tables were unstable.

DNR has looked at that spillway and said up to 1.4 million gallons were pouring through that at one point. That's a lot. A day, not a year, a day.

Somebody mentioned junk in, junk out. There are tests that were done to determine leachate. There were three samples that they provided. I don't doubt them but in terms of objective evidence, even those samples found manganese and sulfate at levels that could cause yellowing of teeth and skin and change the color, taste and odor of the water. I would say that's an impact. I don't know if that's welfare or health. It's in there.

Somebody mentioned their sterling record in Fairbanks. I would ask how many DEC inspectors are in Fairbanks. Maybe Lori could speak to this and how much experience they have. If you're not looking for the right things, you're not going to find it. Anchorage and Kenai require materials brought to their dumps be produced in Anchorage. Why are we allowing material to come out from Anchorage out there?

I think what you're being asked to do tonight is subsidize a company's economic model. They don't want to dump in Anchorage which is fine but we do not have to subsidize their economic model and take the risk all on us. In return, they're offering three full-time jobs and, as noted, a $5 million insurance policy. I have about 10 other points but --

unless you have any questions --

MEMBER: Ms. Nowers, is that a map that was provided in the packet or is that a new map?

MS. NOWERS: That was a map that was originally in the -- CMS's application but I don't know if they've submitted the second time around so --

MEMBER: Okay. Thank you.

MS. NOWERS: Thank you.

CHAIR: Thank you, Stephanie Nowers. We have Chris Kepler and then Nate Kruk and then I'll ask for anyone else that the spirit has moved that has not spoke and would like to address. Please state your name for the record, sir.

MR. KEPLER: My name is Chris Kepler. My brother and sister and I own most of Echo Lake, a 30 -- 30 percent of Kepler Lake, 40 percent of Raleigh Lake and a hundred percent of Area Lake and there's 12 lakes within three miles of this site that we're talking about.

Anyhow, we've had Kepler Park down there for 63 years and I have some history related to the water activity on -- between Kepler and Bradley, primarily. There's a channel there with a bridge and, anyhow, recently, for that comment period in October, I flew over -- excuse me, I took pictures of Kepler Park showing the change and then I flew over the gravel pit and took pictures there also.

Anyway, back to the park itself, I know the water level

is the highest it's ever been. It's at least two plus or minus feet higher than normal. It's -- oh, wait, I missed one thing. I'm sorry. All these pictures and our -- and with the comments on the back of them are in that 2,500-page report that you guys have so I'm asking you to pay attention to those.

Okay. Back to the -- anyhow, the trees along the channel in there are flooding. There's water all the way around, cottonwood trees that have been there over -- well over a hundred years. They're three or four feet in diameter. The -- three of our 10 campsites along the channel are flooded and under water and they've been there all my life. And then at the bridge itself, that's a real easy thing to use because it doesn't move and we used to be able to row boats under it, sitting in the boat, you know, on the seat like you row a boat and today you can just barely shove a empty boat under the bridge.

The other thing is that that park gets used by thousands and thousands of fishermen. Fish and Game stocks it every year and in 2013, they put 18,000 fish in those lakes in that area and they dump them all the bridge and all -- you know, at different locations around there. Just a second.

Yeah, I think that's primarily it. It's just that our park is -- it's kind of interesting, the park -- okay. Sorry.

CHAIR: Mr. Kepler, we're allowed brief questions.

What's your theory on why the water's as high as it's been in your life?

MR. KEPLER: I don't -- I'm an engineer and everything but I don't ha -- really have a good theory and I'm not speculating although I am interested in the fact that the lake up in the pit -- and it has two dams or spillways and I just heard that the water is eight feet higher than it used to be and, again, I haven't measured it myself.

CHAIR: Thank you. Thank you very much, Chris.

MR. KEPLER: Okay.

CHAIR: We have Nate. Please say your first and last name, please.

MR. KRUK: Nate Kruk, Central Recycling.

CHAIR: Thank you.

MR. KRUK: I was growing up in the recycling and waste industry. I moved to Alaska and I met Donna Maher (ph) from the muni and I said I want to work in the recycling industry in Alaska and she said the people you want to go to and make a difference is Central Environmental. I met Shane Durand. He showed me his facilities. I looked at them. I was very impressed and I went up with Stuart. This is -- he said EHS is our number one priority, environment, health and safety. We don't care about the money when it comes to EHS and he's still a friend to me to this day. I fully support the monofill. I fully support -- I have the con -- I fully have

confidence in CMS and CRS to have a legit monofill. Please support the monofill. Thank you.

CHAIR: Thank you, Nate. That are the four sheets of sign-up. Is there anyone in the audience that would like spirit to be moved that -- is there a blank sheet down there? I'll need you to sign in, state your name for the record and you will -- if you have not spoke on the subject prior, you are -- you will be allowed but only if you have not spoke. Thank you.

MR. BECK: Thank you. Matthew Beck. I serve with the Mat-Su Borough assembly and I'm also a resident that lives very close to this location. First I'd like to thank everybody for being here tonight, for everything that's been said. I'd like to also thank Commissioner Kendig for your service to the Commission but I think when there's a conflict of interest, it does not negate the commitment of your service to this borough nor the contributions that you can make to this so thank you for that.

I called to find out if the packet was on line today and it was not and the agenda was not on line either but it was e-mailed to me after I asked so just the statement earlier that it was readily available to people is -- I think the intention was to have it there but there was a mistake made and it was not on line. Mrs. Brodigan was apologetic and got it out to me so thank you for that.

Emotions are high here and emotions are valid. They're based on valid concern and a lot of people have spoken here tonight and given testimony that might appear emotional but I think that they've been calm about it and I think that they've shared many good facts and information based on science and reasonable observation con -- and reasonable concern. Good neighbors would make amends for their mistakes. Good neighbors if they had trash that blew onto a neighbor's property, they'd reach out to those neighbors and they would say Mr. VanderWeele, what can I do to fix the mistake. That hasn't happened. They haven't cleaned up their mess. That never happened.

A good neighbor would involve people in the political processes as it happens. Other members of the assembly have been communicate with from this company, I have not. This is in my district. Haven't heard from them other than me reaching out to them and asking some questions. Seems like they'd want to involve people and be a good neighbor to demonstrate that they're going to be a good neighbor. Someone sensible would look at this, hear the testimony and say how could I be a good and reasonably move ahead with this. I would gladly let you work in the site that Alaska Demolition currently works in. It is not quite as visible. This company seems like they want to do the right thing. We have had issues with Alaska Demolition and I do want it to be on

record, based upon testimony tonight, that there has been concerns based -- raised about Alaska Demolition. Commissioner Healy will be aware of those from testimony that's happened before and concerns that have been raised there so that that matter of fact is false that there are not concerns raised about that.

So, once again, thanks, everybody, and I thank you for this opportunity to talk. Thank you.

CHAIR: Thank you, Assemblyman Beck. Please take your time.

MR. JOHNSON: My name is Paul Johnson. I live at Lot 2, Block 2, Canoe Lake Subdivision. I think I'm less than a thousand feet from this proposed project. I commend these gentlemen for sitting here like they have and listening to all the bad remarks. I'm all for recycling. I -- I've been the port commission for 10 years and we beg people to build something like this out at Point McKenzie on areas that were good for nothing else. I would like to suggest that possibly we look into that because Kaboda is going to build a bridge here one of these days and it'll be a very short haul across the bay there to Point McKenzie.

I live right next door to this landfill and I'm not in favor of it. I can say that. I -- matter of fact -- excuse me, I got to have a drink of water here.

CHAIR: You go ahead, Mr. Johnson.

MR. JOHNSON: Yeah, I ought to build a well. Hopefully -- oh, three years this permit's going to be up but I -- I'd have to live to 112 to be able to see this thing through to the end. I'm sure a lot of other people are going to have the same problem here so -- anyway, let's use a lot of good common sense. I don't think anyone on this board wants a house next to a landfill. That's my opinion. Maybe I'm wrong. We don't. Thank you.

CHAIR: Thank you very much.

MR. JOHNSON: Want my water? Do you need this?

CHAIR: No, we're doing fine. I got a little of the City of Palmer water here, sir. And I'm looking forward to seeing you at 112. You're doing -- you'll make it. Eighteen years to a hundred. You're -- we go dancing at 82. You're looking good. Thank you, sir.

MR. MUNTER: Hello. My name is James A. Munter. I'm the principle hyrogeologist at J.A. Munter Consulting, Inc. Since my most, excuse me, recent submittal in February, 2014, there have been some responses to my work and the borough staff has prepared their analysis and recommendation in your packet. I was requested last week by the Borough to review all that information and provide additional comments as warranted by the record. I have not been involved in any technical discussions with the Borough or reviewers of my work between my submittal last February until today. The great volume of

complicated technical analysis is before you. Time limits prohibit me from detailed rebuttal or discussion tonight. Although a few sections of my prior reviews would benefit from some minor revisions, I have found no compelling technical case to substantially revise or retract any of my prior comments. The record still contains significant technical deficiencies that preclude supporting the statement found in the borough findings that this facility does not have the potential for groundwater contamination that could have negative effects on drinking water. For example, Maddox, Terrasat and the Borough misinterpret evaporation data to conclude that the site is semi-arid. I do not agree with that interpretation. The U.S. Geological Survey in a recent and fully peer-reviewed report characterized the site as transitional between maritime and continental climates.

Maddox, Terrasat and the Borough further conclude that, as a result of the semi-arid climate, recharge will not occur or be minimal at this site. The U.S.G.S. estimates that 1.4 inches of water per year will recharge groundwater at this site which equates to more than one million gallons of water. This is a significant volume of water through the waste material to enter the groundwater system.

Second, Terrasat's modeling understates potential groundwater contamination because it assumes that when leachate is generated, it mixes instantaneously with the

entire volume of groundwater beneath the site. That is not what typically happens.

Thirdly, the Terrasat analysis makes extensive reference to the final silt cap over the site. There is no requirement for a silt cap. Condition 21 should be revised to require a silt cap with a permeability no greater than 10 to the minus four centimeters per second throughout the entire cap. This is what Terrasat used in their modeling. There should also be a sufficient yield testing and verification program after it's in place to prove that it gets properly installed and maintained.

Fourth, the Borough has proposed using Terrasat's groundwater monitoring plan from 2013. This plan contains major deficiencies that I previously commented on and that have not been fixed. But it is fixable. For example, the section line easement that cleaves the site looks like it might be an excellent location for a few monitoring wells.

Finally, the project -- the facility projects that the final compacted fill structure will be stable. Potential settlement of the pile and ponding of water on the final cap -- I'd be happy to answer any questions.

CHAIR: I missed your first and last name.

MR. MUNTER: My first name is James, middle initial A, last name Munter.

CHAIR: And out of these 2,300 pages, do I see a report

in here?

MR. MUNTER: There are two reports in there. There's one that I wrote in the summer of 2013 and then another one I wrote in February, 2014. These are the reports that were subject to the four expert opinions. They came up with different opinions.

CHAIR: And if I could -- who commissioned you to do those reports?

MR. MUNTER: The Borough hired me to do that.

CHAIR: Thank you. Any other questions for James? Mr. Vern Rauchenstein?

COMM. RAUCHENSTEIN: I would like him to continue.

CHAIR: Do you have a brief summation?

MR. MUNTER: I -- well, I just have a small amount more, additional material I could --

CHAIR: Go ahead.

MR. MUNTER: Yes. Oh, yes. Well --

CHAIR: Thank you.

MR. MUNTER: Yes. Finally, the fills -- the facility projects that the final compacted fill structure will be stable. Potential settlement of the pile and ponding of water on the final cap is a significant potential issue. The technical analysis supporting the stability of the pile is quite limited. I suggest a minimum five-year post-closure monitoring and remediation plan. This is because remediation

of settlement and the prevention of ponding on the cap are critical factors for the long-term prevention of groundwater contamination at this site.

CHAIR: Thank you, sir. I thank you very much. Is there anyone else in the audience? Looks like we have two. We'll do ladies first. After you sign in, your three minutes will start and state your first and last name for the record, please.

MS. JOHNSON: First name Kathy Jo Johnson. I just wanted to speak briefly. Talked a little bit ago about the ponds correlating with the water level changes in the lakes. This is from a Terrasat report August 20th, 2012. Basically, it acknowledges connection between water levels in the ponds and the lakes. I live on Canoe Lake. 2007, there was a breach in the aquifer in the ponds over there in the gravel pit. At that time, our lake level began to rise. When they started to monitor, we informed authorities. They came and they began to monitor. There was a 21-inch rise -- I hate to read but I guess I'll read.

Area breached in May, 2007 narrowing dates of the event to May 1st, May 17th. Central Paving Products began taking Canoe Lake water level measurements on 5/17/2007. Peak water level rise in Canoe Lake was on 6/1/2007 where the water level rose to 21 inches compared to the first measured by 12 inches measured on 5/17/2007. After 49 days from 5/17/2007, it

returned to its first measured height, 12 inches. Actual elevations are not known, only the displacement from the first measured height which was 12 inches.

I've lived there for over 30 years, watched the water raise and lower and we know when this breach happened, it was an incredible volume of water. I mean, you could literally practically stand there and just watch lake levels rise.

I'm assuming that this report is in your packet and I would really urge you to take a look at it. There's a pretty definite correlation between how the ponds and the lakes are connected. Thank you for your time.

CHAIR: Thank you. Is there anyone else? Please sign in and then state your first and last name for the record and that time your three-minute clock will start, sir.

MR. WELLS: My name is Scott Wells and I live about a rock's throw in a good wind just downwind from this proposal. I've also got four other pieces of property within a mile all down water, downwind from it and I've watched for years all the gravel dust, all the things that -- precautionary things. They don't change much. The rising of the waters, that's all been happening. You can go to the Kepler bridge and, yeah, it's raise four or five feet in the last 10 years, 15 years. I've been here for 25 plus. All my neighbors, we have families. I've got three boys. I want to be able to give them pieces of property and live their lives out here. I

don't see that really happening no matter how responsible you are with such a large water table that's -- causes such an impact to such an area.

There -- I'm sure you have responsible practices and stuff and not saying you don't but if you don't have a good foundation, you can't build something solid and that's just what we'll have. It'll eventually turn into something that is a serious issue. My kids will have to deal with it. Thank you kindly.

CHAIR: Thank you, sir. Is there anyone else in the audience that has not addressed the Resolution 14-33 that would like to? As I said earlier, I was not going to close. Ordinarily I would close audience of a public hearing and I just want to check with the clerk. Ms. Brodigan, I'm going to invite the applicant to respond to questions from the public at this time with the applicant understanding that this public hearing will be continued so does -- would the applicant like to address this commission at this time?

MR. JACQUES: So is this my closing or do I get a chance when the other board members are here to --

CHAIR: Oh, you definitely -- there will be the Borough and you and we'll both be invited back because I'm not closing the audience participation. Tell me if I'm correct here, Ms. Brodigan. We're going to -- after this, we will vote on a time and date certain to continue audience participation with

both the applicant and the Borough, correct?

MS. BRODIGAN: That is correct, Mr. Chair.

CHAIR: So you can address us as briefly as you want knowing that the full -- the other two planning commissioners are going to be having to review all the minutes, everything in the packet everything they heard tonight to prepare for the next meeting so we'll decide if they can -- when we can get back on the agenda but this will be extended to that time.

MR. JACQUES: I think one of the points that keeps being brought up by everybody is the water levels and the ponds and the spillway and all of that type of stuff and there's been a lot of speculation as to water levels and things like that and some comments that really are -- you know, have no basis in what we're talking about, an eight-foot rise in the pond. Well, they would be way over -- that's taller than the banks' ponds are at this point. So that -- you know, that can't really be.

The other part on that whole water thing is yeah, there -- I'm sure there are fluctuations. There's lots of data on that. DNR has been coming out to our site for the past year or two taking water measurements as we are also measuring the lake elevations so we've got the actual data. DNR will have the actual data. There doesn't need to be speculation beyond that and what effect it has to other things around there. I don't know, like this other gentleman speaking from the Kepler

Bradley Lake, he's not going to speculate on what the water -- causing the water rising. I really can't do that either. Nobody really has been able to know is that naturally occurring, is that a change somewhere in the tributary in the aquifer? Who knows at this point but it -- the water levels in the pond haven't gone up to the extent that the water levels in the lakes have gone up and I find it somewhat interesting. I have that information here somewhere but I had an e-mail from one resident saying that it's because the -- and she's been contacting DNR and make -- is that the prob -- the cause of the problem in these lakes is that because the spillway is allowing water to go through and that's what's allowing the lakes to rise, the adjacent lakes to rise.

There's another e-mail from Ms. Kepler basically saying it's because the water is dammed that's causing it to rise. So which one is it? I'm kind of in that spot where, all joking aside, I'm kind of damned either way, I guess. But the problem is nobody's really found out -- nobody has really done the research yet and that's what we've asked DNR to do, to go in and let's determine exactly what the cause is. People say well, they haven't shown themselves as a good neighbor because they haven't taken care of this. That's not correct. We've made to modifications to the spillway area at DNR's request. We submitted the plans to DNR, Granite did, and then we did a second one. DNR approved them. We did the work. In both

instances, DNR kind of came back later and said well, that didn't do quite what we wanted it to do, let's do this. Right at this point, we put up our hands and said hold it, we're not going to keep making changes until we have a plan. Let's have the science and then we can sit down and determine do we need to make a change and what is it because we could make a change here that causes more problems than it solves.

So that's where we're at with that whole process. It's not that we've been irresponsible with that. That's not the case at all. So we're in the process right now. The folks here, they're not the ones dealing with DNR, we are.

So that's the issues I guess I hear on water. I hear these comments that we dumped asbestos and trash in the ponds prior to the CUP. That -- that's -- there's no -- that's incorrect. There's no proof of that and we did not do that. Did we place some material on the site prior to having a CUP? Yes, we did. We admit that and there's no question of that but what also happened there was we got a notice of violation. We worked with the Borough on that. In the interim time, we filed a -- an appeal to the Board of Appeals. In that time, the Borough cited us instead of allowing to go through the appeal process. We went to court on the citations. That was not successful. That's currently being reviewed.

Subsequent to that, we went to the Board of Appeals and the Board basically ruled in -- on the three issues that were

before them in our favor on two of those issues. The Board ruled we did not place trash on the property. The Board ruled that we did not place junk on the property and I have a copy of the board ruling right here with me. What the Board did say was we needed to have gotten a CUP because we were doing a commercial transaction. Well, I have the thing right here. Okay. All right. Maybe it doesn't matter other than it's just we're being accused of doing something that we really -- I'm not saying that we didn't place that there but we did that with the intent that -- the material we had that we didn't consider to be trash or junk and, in accordance with the Board, they didn't either.

And then to say we didn't clean it up, we did clean it up. There was none there and the Borough can attest to that. They had their inspector out there and there is -- we cleaned everything up. I mean, there isn't anything there. So we have been a good neighbor in regards to that.

One question -- well, no, I won't follow up on that. I guess this is one question a little bit to the public in this, this whole issue has come up of, you know, Alaska --

CHAIR: Speak a little closer to the mike, sir.

MR. JACQUES: Okay. There's one issue a little bit even to the public on this, this whole issue has come up about the Alaska Demo monofill and, you know, the same -- basically, it's the same as what we're proposing except we're recycling

and stuff with ours and everybody's making all these accusations our monofill is going to have all these dangers and all these different things like this and it's going to affect everything and yet when the renewal for the Alaska Demo permit came up this past summer, one person spoke against it. What's the difference between that one and this one?

So does anybody know what the water table level is there? Because they have none of that information in their documentation.

CHAIR: Thank you. This isn't a question and answer. Thank you.

MR. JACQUES: I understand. I guess that's it for right now. We talk about, I guess, the leachate issues and, you know, we put a lot of effort into the -- you know, in making sure we had good science behind this thing. We can certainly address Mr. Munter's issues and see where we go from there. I guess that's it for now. I'll just wait until we --

CHAIR: Good job. Absolutely. Thank you. Closing comments by the Borough before I ask my commissioners how we proceed?

MR. STRAWN: Yeah, Alex Strawn, Mat-Su Borough development services manager. I wanted to address a comment by Mr. Jacques earlier regarding my site visit out to the Birchwood site. It's a site that's, I think, very similar to what they're proposing here. It had their C&D material with

the shredded fines on top. We got to see all phases where it was being compacted, it was being dumped, it was -- and actually got to walk out onto the material and one thing that -- and I will say that I was -- to me it was bizarre because I could stand on the material and see a whole lot of tiny little plastic pieces that are free but when I walked to woods, it was absolutely pristine and so that was -- it's kind of an interesting observation. We did pull up the wind data. It's about half of what the -- is recorded in the City of Palmer so I think there is some climatic differences there and then so just wanted to clarify that and then, obviously, the water table seems to be the primary issue here that people are concerned with. I just want to reiterate the -- I think it would be within the planning commission's power if they wanted to that would probably resolve 90 percent of the concerns of the public is to require a liner with a low point where leachate can be collected. It's -- if it is true that there is not going to be any leachate from this and there won't be any cost to treating the leachate that comes out of that, there'll just be an initial cost of getting that done in the first place.

CHAIR: Thank you. So, ordinarily, I would close public hearing but I want to make certain that we are involving the public process in how we notify so I'm going to ask for either Lauren Driscoll or Ms. Brodigan how we keep the public hearing

open and how we re-advertise for our next session.

MS. BRODIGAN: Thank you, Mr. Chair. You can just entertain a motion to postpone the public hearing -- to keep the public hearing open and postpone it until the next meeting to -- which would be December 15th. Staff will take care of appropriately advertising the meeting. Once again we'll be on the agenda and I do apologize for the confusion about the packet. We ended up with two different websites. Our IT department is working on the website and the link to the correct website was -- wasn't working so it was on the website, just not in the -- it was in the old place and not the new place.

CHAIR: Excuse me.

MS. BRODIGAN: It was in the new place and not the old place.

CHAIR: So can I have a motion to postpone to date certain to continue the public hearing and this Resolution 14-33 from two weeks from tonight, December 15th? Mr. Thomas Healy?

COMM. HEALY: So moved.

CHAIR: Do I have a second? Vern Rauchenstein, District 7.

COMM. RAUCHENSTEIN: Mr. Chair?

CHAIR: Any objection? Mr. Strawn?

MR. STRAWN: I did want to point out that it must be

17.03 which is notifications under anything within Title 17 requires 15 days public notice of a public hearing and it requires that it be a mailing and so considering that it is 14 days out from now, it might be -- it would be difficult or impossible to meet that notification.

CHAIR: Excuse me, Mrs. Driscoll, yes.

MS. DRISCOLL: Through the Chair, to the borough attorney, I guess my question to you is on something like this, we advertise as the Borough the initial public hearing and the Commission is choosing to extend that public hearing. Why would you re-advertise for something that's part of an extended piece of business?

CHAIR: Mr. Strawn?

MR. STRAWN: Yeah, I guess considering that it's a continuation of public hearing, you might be able to get away with not doing that advertising. I was just pointing out a piece of borough code that does read like that.

CHAIR: Does Mr. Aschenbrenner have an interpretation? Oh, we'll hear from Mr. Haberman otherwise, sir. I will hear from him anyway.

MR. ASCHENBRENNER: John Aschenbrenner, deputy borough attorney. I would urge the chair that -- to -- I'm here as an advocate on behalf of staff so you could certainly ask a question of the applicant. Because it's a continuation, it was already noticed up as a public hearing. I think if it's

put into the agenda and published in the newspaper under the usual process, I think you've met the publication requirements that are intended. I don't -- I think it would sort of subvert the process to postpone it, mail everything out again keeping the process moving and advertising in the ordinary course of putting it in the agenda and the newspaper and the clerk could correct me if I'm wrong, if that's not the -- I think that would be the standard practice in the past.

CHAIR: The clerk concurs?

MS. BRODIGAN: I agree, Mr. Chair.

CHAIR: Does the applicant have a -- any objection to postponing for two weeks from tonight and just not going through the formal public notice and mail-out and keeping the original notice with extension of public hearing two weeks from tonight? Thank you. For clarification, there's a motion that's been made and second to postpone to time certain two weeks from tonight continuation of public hearing with, hopefully, two further planning commissioners. Obviously, Mr. Kendig will not be participating.

Ms. Brodigan, can I -- these handouts that show up tonight, how can we put a time limit on that that the public gets to see these handouts prior to night time arrival?

MS. BRODIGAN: Thank you, Mr. Chair. We had initially decided that in order to give people time to review that we were not going to accept handouts after the Friday before the

meeting. After some discussion, staff decided to allow handouts until noon today and some information came in this afternoon that staff decided that they needed to provide to the Commission. You might speak to Mr. Strawn about that information. I was actually down here setting up when the additional information came in.

CHAIR: How do we get this process more transparent and that the public can see and, obviously, it's been brought up by the Commission that it doesn't give us time to review it? So we really would like to adhere to a time frame when you can get things to the Commission. Nearly all interested parties knows what's going on so I would like -- I feel we need to have adequate time to review things. How can you enforce that?

MR. STRAWN: So we can simply -- you know, we have a comments period that ends and we said -- what we typically tell people is if you submit it before this date, it'll be included in the packet, if you submit after that date, it'll be included as a handout. We can end that last part that says it'll be included as a handout and have a firm deadline. If it comes after this, sorry, it's not going to be in the packet. There's -- I think it's a double-edged sword on that one though because there's going to be, potentially, very valuable information that comes in last minute that you're not going to see but if you're -- if the Board is willing to

accept that, then that certainly can -- what we do.

CHAIR: We have a motion that needed seconded. I said earlier it takes four affirmative votes. Can the Commission feel -- does the Commission feel that we can put a Friday deadline? Could we actually initiate that, Friday noon before every meeting, anything after that so that at least gives us the weekend to review it? Or you could actually scan it, get it on the website? Lauren, help us out.

MS. DRISCOLL: I guess my question I would pose to the body is so does that mean if valuable information comes in after that date, do you not want it and, of course, you know, whatever we provide to you we provide to the public.

CHAIR: It's that's been abused. That's been abused. We have seen in -- valuable information come in at the Eleventh Hour and it doesn't give us -- if we take the time to review this, people -- no, I think if it's that valuable and it's something so complex, we can have 48 hours notice and after that, it's not being included. I think that's very reasonable and I do not want it in the packet if it -- if I don't have it by Friday noon.

MR. STRAWN: I -- we certainly can implement that. Also, you know, we are planning on reviewing our policies and procedures as it pertains to this planning commission. We can also address it in more detail when we do that.

CHAIR: So you just would take this as our modis of

operandi? Do we need a motion on this? You're just going to attempt to implement this and then we will leave it aside? Is the Commission comfortable with that, Mr. Healy? Thank you.

The motion's been made by Mr. Healy, seconded by Mr. Rauchenstein, to postpone a continuation of public hearing for Resolution 14-33, the quasi-judicial matter for the conditional use permit for -- until two weeks from tonight. Proper notice has been schedule although there will be additional print notice because we'll have 14 days but we're going to -- we've agreed that the 15 mandatory requirement is not needed because we're continuing. Any objections? Seeing and hearing none, postponed to date certain passes unanimously by non-objection.

Takes us to Item 10. There's no other discussion on Item 9? Thank you. Public hearing, legislative matters, none.

(End of requested portion)

TRANSCRIBER'S CERTIFICATE

I, Linda S. Foley, hereby certify that the foregoing pages numbered 2 through 177 are a true, accurate, and complete transcript of Matanuska Susitna Borough Planning Commission Regular Meeting (Excerpt) (re Conditional Use Permit, Res. No. 14-33) of December 1, 2014, transcribed by me from a copy of the electronic sound recording to the best of my knowledge and ability.

February 10, 2015

_____
Linda S. Foley, Transcriber

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MATANUSKA SUSITNA BOROUGH

PLANNING COMMISSION REGULAR MEETING (EXCERPT)

(RE CONDITIONAL USE PERMIT; RES. No. 14-33)

DECEMBER 15, 2014

CHAIR: The next item is No. 9. It's a public hearing, a quasi-judicial matter, the public hearing to begin not prior to 6:15 p.m. The reason we do that is often these are items of crucial importance and somebody may have just been delayed for a few minutes or something and we don't want to cut them out so we have approximately two minutes before I'd like to address anything on this so that everyone that arrives at 6:14 hears what everyone has. So I can reiterate for those that just arrived without addressing 14-33 that we had 2,400 pages two weeks ago and about 2,700 pages on a majority of 14-33 and it was either all on line or all the handouts are in back, all the letters, all the testimony that has been written in is copied in those two big binders so I want to make certain that the public has the information that we, as the chairman, have and, again, for those just arriving, we have our sixth planning commissioner participating telephonically, will be arriving shortly. The same with Mr. Tomas Adams.

And I believe it's appropriate, just procedural wise, that you understand quasi-judicial versus legislative. We, as planning commissioners, we're not allowed for any *ex parte* communication. We couldn't talk between us, we couldn't talk to the Borough, we couldn't talk to the attorney, we couldn't talk to the applicant, we did not have the right to individually go to look at sites or to take any other influence to that everything we have, all the information we

have, was brought to us at once. There's no one person here that has information other than what we all have.

Obviously, as a planning commissioner, as chair, find that challenging sometimes. I would like to dig deeper but the process does not allow that. The process it says so that you hear everything we hear so that there's no -- nobody has an advantage of it, the applicant, the Borough, the public or us. So this is the way the process is, as transparent as possible.

I have 6:15 plus so, with that, I need to put on the record that I'm going to ask a participant who was not here last time a question but I need to put on the record that Mr. Kendig, the representative, the commissioner from District 5, has been recused of this matter and unless Mr. Kendig has a brief statement or information since we last met, I would ask you to leave the chambers for the deliberation.

At this point, since it's quasi-judicial and we have a participating member that was not here last week and it should be put on record that this needs to be asked of the commissioners, the subject is planning commission quasi-judicial actions. It's three brief paragraphs. In response to recent inquiries and in order to insure a fair decision on the planning commission decisions, the following shall be read by the chair after the resolution title. So excuse me. Let's read the resolution title officially into the record first.

This is Resolution 14-33, a resolution approving a conditional use permit in accordance with 17.60.030, permit required for the operation of inert material monofill on Mat-Su Borough Parcels. The parcel numbers are on record and this is continued from our December 1st, 2014 meeting. The applicant is CMS. The staff or the Borough is Susan Lee. The resolution has been read into the record. I repeat, in response to recent inquiries and in order to insure a fair decision on the planning commission decision, the following shall be read by the chair after the resolution title which I have just done before each quasi-judicial case is heard based on Mat-Su Borough 15.08.150, conflict of interest, *ex parte* contact.

Question No. 1, do you or any member of your immediate family have a substantial financial interest in any property affected by this decision or will you recognize a foreseeable profit as a result of this decision. No. 2, have you received or otherwise engaged in *ex parte* contact with the applicant, other parties interested in the application or members of the public concerning the application or issues presented in this application either before the application or during any period of time, the matter is submitted for decision or outside of the public process provided by the Borough? Question 3, final, are you able to be impartial in this decision? If you -- if anyone answers yes to Questions 1 or 2 or no to

Question 3, both the borough staff and the applicant will be given the opportunity to ask further questions. Following this, the planning commission will render the decision as to whether or not the commissioner has a conflict of interest or can make an impartial decision.

I first ask Mr. Bruce Walden, District 4, did you hear me? I've asked him to put his phone on mute so we wouldn't hear his car running and I don't want to make him manipulate that phone too much but I do need to hear, Mr. Bruce Walden?

MS. BRODIGAN: Bruce, are you still connected? Bruce, are you still connected?

CHAIR: Okay. I was -- as soon as he arrives, I'm going to have to ask Mr. Bruce Walden this again. Obviously, he's on his way and he doesn't believe he has a conflict of interest but it needs to go on the record as with Mr. Tomas Adams.

Since we have a quorum of four so we can still conduct business, I ask any other one, Mr. Endle, Mr. Rauchenstein or Mr. Healy any *ex parte* communication or conflict of interest, make it known now. Seeing and hearing none, we will proceed.

This is a continuation of the public hearing from December 1st. Obviously, there's a strong interest here so if we're going to err, we're going to err on the side of getting it right and getting it right is making certain the applicant is treated fairly, the Borough is treated fairly and the

audience participation -- excuse me, the public hearing is treated fairly and, as chair, I promised the applicant that he would have an opportunity to address this commission at tonight's meeting even though it was a continuation of two weeks ago and, more importantly, I made an exception as chair that you would have an opportunity to be heard but I've also made the decision that those that have not been heard will be called first and if time runs late and we're getting to the point where we need to adjourn, I'm also making the decision if you've been heard once, I may have to -- I may disallow you to be heard twice. We want to make absolutely certain everyone, since this is a continuation of a public hearing, that everyone has an opportunity to be heard at least once but it was on the record that if you left early or you heard something, that you were going to be able to be heard again.

And ordinarily I would ask for the Mat-Su Borough to put their statement but that's officially on the record and they've addressed it at the original hearing. The applicant will have the opportunity and I'm going to extend the time frame at the conclusion of the public hearing.

So, with that being said, we will take and, as they are assigned, you have three minutes maximum so please time your testimony because the microphone will be turned off at three minutes. There can be brilliance in brevity. You don't have to take the three minutes if you can get your point across in

two but don't try to go 3:15 because we won't hear your -- the punch line. So time your testimony to less than three minutes. Yes. Okay. Well, if Bruce Walden, since it's important that I would like to have all -- as many commissioners hear the testimony -- hello, Bruce. Welcome, Bruce Walden, and he represents District 4 and he serves our country and he serves our community and he serves his family and he's a commuter and he studied his 4,800 pages the last three weeks so, with that, I want it on the record that Bruce Walden, District 4, arrived at 6:25.

I have two questions for you, Mr. Walden. No. 1, have you had the opportunity to review the prior testimony of last meeting, the public testimony and the written minutes and to have the -- you have all the information we have?

COMM. WALDEN: Yes, I do and have.

CHAIR: Thank you. I need to ask you as quickly as I can do you or any member of your immediate family have a substantial financial interest in any property affected by this decision or will you recognize a foreseeable profit as a result of this decision?

COMM. WALDEN: No.

CHAIR: Question 2, have you received or otherwise engaged in *ex parte* contact with the applicant, other parties interested in the application or members of the public concerning the application or issues presented in this

application either before the application or during any period of the time the matter is submitted for decision outside of the public process as provided by the Borough?

COMM. WALDEN: No.

CHAIR: Three and final question, are you able to be impartial in this decision?

COMM. WALDEN: Yes.

CHAIR: Thank you. You are seated. Any objections? Seeing and hearing none, welcome, Bruce. Back to the public hearing for the December 15th Resolution 14-33, Mr. Ken Smith would be first followed by Charlie Cobb, David W. Schade if you could make your way up as we can so we don't -- yes?

MR. INGALDSON: I'm sorry, as a point of order, there is the issue that Ms. Brodigan brought up regarding Commissioner Kendig. There's a motion, I think, by Commissioner Rauchenstein and I think that's as -- we also sent something to the Commission regarding Robert's Rules of Orders and what we think was an improper motion brought last time that I think needs to be addressed.

CHAIR: Thank you. That would be Mr. Bill Ingaldson, the attorney for the applicant, speaking and I ask if there was any comments by Mr. Kendig or the commissioners and I heard none. So Mr. Rauchenstein had an opportunity to present that and, apparently, he did not.

MR. INGALDSON: I -- I'm sorry, I'm just saying as a

point of order which can be brought up at and is appropriate to bring up at any time, we would ask the chair to recognize that the recusal of Mr. Kendig was improper according to Robert's Rules of Order which this committee is bound to follow. Second, I'm not sure that -- you were asking for general comments, not relating to this matter. Now, I don't know that it was brought up and Commissioner Rauchenstein realized that but he did file a written motion, as I -- at least we received a copy of that so maybe he's not --

CHAIR: I appreci --

MR. INGALDSON: -- maybe he's -- doesn't want to bring that now but I'm not sure it's clear on the record.

CHAIR: I appreciate that, Mr. Ingaldson. If you could hang onto your public testimony to make certain?

MEMBER: Well, or the --

CHAIR: Yeah, clearly, Mr. Rauchenstein, did I infringe on anybody's opportunity to bring anything to this body before we take public testimony?

COMM. RAUCHENSTEIN: Yes, through the chair, I intended to rethink the recusal of Mr. Kendig but I got a letter from borough attorney that there was *ex parte* contact between Mr. Kendig and the applicant and so I feel I should not rethink that.

MR. INGALDSON: And if I could just be heard briefly on that -- and I'm very disappointed by the borough attorney, Mr.

Aschenbrenner, by that request because we can see where he is sitting but I spoke to him about that and I've talked to my clients. Mr. Kendig has not had *ex parte* communications with anyone. He didn't speak to anyone here. He may have been seen back here but we didn't even know that and he has not had *ex parte* communication. After -- during the break in the hearing, he walked up towards us and I immediately told him we can't talk to you, no one can have any discussions and nothing happened so there was not any communication. Now, if somebody is saying that differently, I'd like to hear it because I don't think that that is at all true and I'm really disappointed Mr. Aschenbrenner would file something at 4:56 p.m. when the chair said that things had to be filed before noon on Friday when it gave us absolutely no chance to respond.

CHAIR: Thank you. I've --

MR. ASCHENBRENNER: Mr. Chairman, may I address the Board, the commission?

CHAIR: Yes, Mr. Aschenbrenner.

MR. ASCHENBRENNER: John Aschenbrenner, deputy borough attorney. First I'd like to say that the question, if it is brought out, about what communications transpired on the evening of December 1st, I understand that there are members of the public that could speak to what they saw that evening and so if this is revisited, I urge the chair to allow members

of the public to come to the podium and speak to what it is they witnessed on the night of December 1st.

Secondly, with regard to the filing of the Borough's letter at the end of the day, I'm disappointed that the applicant's attorney takes umbrage to that. I didn't see his letter Thursday. I was out for a dental appointment. I could not pass and related to a bad tooth and then when I got in Friday, I worked on it and got it in as best I could and so there was nothing nefarious about my response to the applicant's submittal on Thursday.

With regard to his comments on what transpired in the hallway, I would say let the public comment. If we're going to revisit this, let's hear from the public on what they say the evening of December 1st and then if the applicant wants to speak to it, they can but then there'll be a clear record as to what transpired that evening. Thank you.

CHAIR: For the record, I -- you're right, you said the chair said anything after Friday, 5:00 p.m. not allowed. We had not getting any -- we did not receive anything after Friday at 5:00 or at noon.

MR. INGALDSON: I think he said noon.

CHAIR: We had our packet so I would refer to Mist -- the clerk to explain that.

MS. BRODIGAN: Actually, we compiled the packet and I received it shortly after noon. I was in meetings most of

Friday afternoon so I did get information out to the planning commission earlier than I got it out to everyone else and for that I apologize.

MR. INGALDSON: And that's not my main point. I mean, Mr. Aschenbrenner and I spoke about this on Thursday and what I'm concerned about is in his letter, he states as fact very serious allegations that, to our knowledge, are not true and he is not talking about from personal knowledge. I don't -- he doesn't identify who told him these things but I spoke to Mr. Jacques and I spoke to Mr. Durand when I got that because I know I didn't even know he was here and I was sitting here the whole time. The Borough -- or the city mayor was sitting right behind us too. She clearly wasn't -- I mean, she talked against this proposal. I have no idea -- I mean, we -- I just don't think that that's factual and for him to state that there was a -- that -- in his letter, he misstates Robert's Rules of Order. He improperly advises you as to, clearly, what the law is and I have Robert's Rules of Order right here and I can point you to the pages because what I said in my letter is exactly what the rules are and it wasn't to convince anyone to vote any way, it was just here's what the procedure is and what you have to do, what you're required to do and if you recuse someone, Robert's Rules of Order is very clear, people have a right, they have a right to participate. Otherwise, the minority could say I think X commissioners are

biased, they can't vote on it. Mr. Kendig gets a right to vote. He cannot be prevented from doing that, number one, but, number two, even as I think it was Ms. McKechnie pointed out or might have been Ms. Brodigan, I apologize who, but the -- and even Mr. Aschenbrenner agreed the question was improperly posed and if you recuse someone and they're not recusing themselves, it has to be by a two-thirds vote and so there -- I -- I've pointed those out just for the commission's benefit as to what the procedure is but what concerns me about Mr. Aschenbrenner's letter is that I copied him my letter. He didn't copy that to me or at least I didn't get it until I got it from Ms. Brodigan at 4:56. It -- to make these accusations in light of what -- in spite of what we said because when I talked to him and I asked him do you have personal knowledge, did you hear, did you see them communicating and he told me no. And so if someone's telling him that, let's hear it because someone's not telling the truth about that and I think this is very, very important.

CHAIR: I think it's on the record and as far as this commission is concerned, it was decided two weeks ago that he did a cash transaction with the principals of the applicant and that was clearly in violation in the last 12 months and that's -- was by the -- by Mr. Kendig's own admission. Said yes, I did a cash transaction with the applicant, the principals of it, and I did it within the last year and that

was decided two weeks ago.

MR. INGALDSON: And I understand that and three of the commissioners voted that he should not be recused and one of them didn't and so there was one person that decided that he should not hear this and that, as I pointed out last week, is not -- I mean, Mr. Aschenbrenner again is kind of fast and loose with the rules. The rules don't say if he commit any business, they say if the applicant is your client or has been your client in the last 12 months. That's what it says and he hasn't been. The applicant has not been his client and that's clear and it's not fair to mix up and carelessly throw out words and phrases to say transact business when it means they have to be a client.

CHAIR: You're on the record, Mr. Ingaldson, and, clearly, any of these commissioners could have brought a motion up and there could have been a revote on that but it would have taken one of these commissioners to ask for to rescind the recusal and I had the opportunity to do that and I was ready to do it if anyone would have asked for it.

MR. ASCHENBRENNER: Mr. Chair, may I respond, please?

CHAIR: Yes, proceed.

MR. ASCHENBRENNER: Thank you. First of all, the *ad hominem* attack is acknowledged. Rather than focusing on the question of the merits, Mr. Ingaldson seems to like the practice of intimidation.

With regard to his statement -- misstatement of what transpired on the evening of December 1st where he said that he spent the entire evening sitting next to his client, he came over and spoke to me during one of the breaks for a lengthy period of time. So -- and with regard to who in the member of the public may like to address this, I believe assembly member Beck may want to address the assembly as to what he witnessed on December 1st as well as others. So, again, I leave it to the chair. The Borough has submitted a letter -- by the way, it wasn't sent to you by Ms. Brodigan, it was sent to you by my secretary because I'd seen in the past that the attorney wasn't getting the same correspondence from the planning clerk and, out of courtesy, I had my secretary immediately send it over to Mr. Ingaldson Friday afternoon so I made sure that it wasn't through his client and that it would be delayed. Out of courtesy, I sent it directly to his office and then we received a -- I won't go further -- some interesting e-mails in the wake of that. Thank you.

CHAIR: Thank you and, in the interest of the public, I have the opportunity to move forward. Mr. Kendig voluntarily removed himself by non-objection. If -- I asked if he had anything to say and he said no and I think there's -- whatever happened two weeks ago is on the record and if it needs to be re-debated at some time, it can be. As of now, we will have six commissioners as soon as Mr. Adams arrives and we will not

have Mr. Kendig.

So, with that, I'm moving forward and we're going into Mr. Ken Smith and opening up public hearing.

MR. SMITH: Well, after 10 minutes of lawyer by-play, I finally get up here. You called me 10 minutes ago. All right.

CHAIR: So your three minutes are up, sir. I'm sorry.

MR. SMITH: What I would like to ask, how many of you read the Frontiersman Friday, December 12th? There were two beautifully well-written articles concerning this very issue that we're here tonight about. They had been researched. Information from other states came in to tell the toxicity of this dump. The -- it's a situation that if these -- this toxic waste dump is allowed, the aquifer is shallow there and if they're allowed to poison that aquifer, it will never be recoverable. You cannot reclaim those lakes and that water.

I can't believe that you would take too seriously a scofflaw organization that went against the laws before this occurred and dumped when they weren't allowed to, weren't supposed to. I can't believe that this planning commission would have such a blatant disregard for their fellow man, for the safety of their fellow man and his children. The far-reaching effects of this toxic waste operation will live with you forever and the expense to correct your mistake will be incalculable.

Is the obtaining of a dollar our only God today? It seems sometimes that it is. Let this company which you have all -- which has you all bewitched dump its waste and toxic materials at the Anchorage landfill which is equipped to handle it. Don't force this action on the people of this borough because of lies and misinformation. I urge you to think extremely carefully before you make a terrible, possibly criminal, mistake. I've been to too many hearings where I've felt that the minds of the people that I was talking to, the assembly and all, had been made up before the hearing and the hearing was just dressing on the cake, sort of a joke.

I hope this hearing and I hope your people's -- your decision is not another sick joke because this is a very serious issue, this landfill, and the toxic waste that it produces from these construction materials are poisonous. Keep that in mind, please, and I thank you very much.

CHAIR: Thank you, Mr. Smith. We have Charlie Cobb, David Schade.

MR. COBB: Mr. Chairman, I understand, as a state -- a representative of a state agency, I'd be allowed five minutes or so?

CHAIR: And what state agency is that?

MR. COBB: I'm with the Department of Natural Resources.

CHAIR: Okay. You're allowed five.

MR. COBB: Thank you. Thank you for the opportunity to

speak with you this evening. I am Charlie Cobb, the state dam safety engineer in the water resources section of the Alaska Department of Natural Resources. I would like to take this opportunity to present several facts regarding the subject property and a couple of professional opinions based on my perspective.

I would like to start with a brief review of the history of the site and what DNR's involvement has been. ADNR first received a reclamation plan for gravel extraction from Wilder Construction Company doing business as Central Paving Products in 2006. Another reclamation plan was received from Granite Construction Company in 2009 and the latest was received from Central Monofill Services in 2013. The water resources section of ADNR began to investigate the site in 2006 after complaints of flooded personal real estate both east and -- of the project site on the other side of the Glenn Highway and west of the project site on Canoe Lake. ADNR observed structures on the project site that appeared to divert surface water from the middle pond, also known as the east pond or the louder pond, to a blind gully at the Glenn Highway road embankment.

In addition, DNR installed temporary benchmarks adjacent to Canoe and Irene Lakes and at the gravel pits and began collecting water surface measurements. At some time during 2006, Central Paving Products apparently stopped the diversion

of water to the east and settled some claims of damage to the late Mr. John Leiner's properties to the site. In November of 2006, Central Paving Products provided DNR with water level data correlated between two of the three gravel pit ponds on site and pond levels on Canoe Lake, Irene Lake, Bradley Lake and Echo Lake, leading DNR to conclude these ponds were downgraded from the gravel pits. In early 2007, DNR recommended continued monitoring of pond levels and that Central Paving Products conduct a more thorough investigation into the site hydrogeology.

DNR collected water surface measurements on two of the ponds at the gravel pits and on Canoe, Irene and Bradley Lakes at irregular intervals between 2006 and 2014. However, DNR has been unable to secure funding to conduct its own detailed hydrogeological studies. In 2008, I became aware that Central Paving Products had repaired a breach in the embankment between the middle pond and the west ponds and I met with representatives of Granite Construction Company to discuss regulatory requirements of the dam safety program including opportunities to modify the so-called CPPT dam so that it would not meet the definition of a jurisdictional dam in the statutes.

In 2011, Granite submitted an application for specific approval of a modified dam. The purpose of the dam was indicated on the application as water level control. The

rationale for establishing water levels was described in the application and design water levels were indicated on drawings included in the application. Based on discussions with Granite and their engineers, it was my understanding that the key performance framer of the modified dam was that it would impound water up to the invert of the spillway and only spill in the event that there was an extreme storm event. Based on the design included with the application, DNR issued a certificate of approval to modify a dam and the work was completed by Granite later that year.

In 2013, the middle pond recovered from construction, dewatering and surface water began to spill through the rip-rap line spillway into the west pond at a level below the water level approved in our -- in the design. We again received complaints about how water levels on adjacent lakes and collect -- began to collect water level data. Central Monofill Services agreed to modify the dam again to stop the spilling of water through the spillway. We did not approve that modification because I did not believe that it would be effective. After the modification was complete, a significant amount of surface water continued to be observed flowing out of the middle pond.

In 2013, the dam safety unit and the hydrologic survey reviewed several hydrogeological reports provided to us. A 2010 report documented a breach between the middle pond and

the west pond in '06. A 2012 report used a correlation between a breach in '07 and the adjacent pond levels on Canoe Lake for calibrating groundwater models. All of the reports that DNR has reviewed to date related to groundwater in the vicinity have limitations including our provisional data and we note that groundwater studies conducted by Central on -- for the proposed monofill used the surface water pond elevations in the gravel pits in 2013 in their potential metric maps. So I'd offer three professional opinions and that's, first, that we noted that predevelopment aerial photographs, a pond existed on the site and vicinity of the middle pond prior to gravel extraction operations and so I believe that the middle pond is unable to reach its predevelopment equilibrium and surface water is diverted out of the middle pond as is currently occurring. Water levels in the three gravel pits on site tend to sit at three different elevations and are acutely related to surface connections but also related to groundwater levels in the vicinity or vice versa and the embankments between the three ponds may not be dynamically stable due to the liquefaction potential in silt and sand soils in the vicinity.

So that's about it because I'm out of time.

CHAIR: Charlie, you covered a lot in five minutes there.

MR. COBB: Yeah, and I apologize for the --

CHAIR: Is there a written testimony that you would turn

into the Borough or a copy that -- other than what I've heard now and I will review it later? Is there something that you've included in --

MR. COBB: I could submit this in writing as well and then I would have a -- my conclusion. I got about two more sentences to read if I could conclude.

CHAIR: Very briefly, sir.

MR. COBB: So I would finally note that, to date, the design work associated with the CPB dam was generally based on the observational method meaning that, in other words, it was more expedient for the applicant to do some work on the ground and observe to see if it meets certain performance expectations rather than to conduct detailed geotechnical and hydrogeologic investigations and engineering evaluations because of the expense associated with developing accurate studies.

At this point, DNR concerns about the continued unauthorized diversion of surface water and the integrity of the dam at the site are unresolved. Thank you.

CHAIR: Thank you. You pointed back to an associate of yours but we only get five minutes for one agency. So he will be as a private citizen for three minutes. Thank you.

MR. SCHADE: Thank you, Mr. Chairman. I won't take that long. My name is Dave Schade. I'm the water resources section chief so I just --

CHAIR: Excuse me, would you state that title again?

MR. SCHADE: I am the water resources section chief in the division of mining, oil and water in the Alaska Department of Natural Resources.

CHAIR: Do you have a geographic region you represent?

MR. SCHADE: I am water for the entire state.

CHAIR: Thank you, sir.

MR. SCHADE: Yes. And so, to follow up with what Charlie said, I just wanted to make four points so that we're clear. I had listened to the testimony from the applicant the last meeting. I just want to make sure that we have a clear understanding from my point of view as the water regulator. One --

MEMBER: Could you speak a little louder? The room's full. A little louder, please?

MR. SCHADE: Is that better?

MEMBER: Much better.

MR. SCHADE: All right. I'll speak into the mike. So, first, we continue to have an unauthorized diversion of water over the spillway and that is a matter that is still under review. DNR continues intermittent monitoring of the site. We are trying to work with the applicant to figure out the cause and effect relationships there. As I said, the issues with DNR remain unresolved and the other thing is I have been receiving a lot of requests for us to take certain actions and

I want to point out that while the management of water is under my jurisdiction and the water quality issues and that are under the Alaska Department of Environmental Conservation and their permit so I don't deal with those parts of the issues so we deal with the diversion and use of water and the dam safety. So any questions, I'll be happy to answer.

CHAIR: This is not an official Q&A but commissioners maybe ask members of the public simple questions so I just want to make certain I understand and, for the record, when you said unauthorized use, is there a current violation pending or what do you mean by unauthorized?

MR. SCHADE: Under the Alaska Water Use Act for diversion of water from one structure to another, you have to have either a temporary water use authorization or a water right. To have a water right, you have to have a beneficial use. I have requested the applicant either stop the diversion or flow of water over the -- through the spillway or to request authorization to do so and at this time, I have neither.

CHAIR: So what's an enforcement arm of your division?

MR. SCHADE: The attorney general's office.

CHAIR: Thank you, sir.

MEMBER: For the record, our --

CHAIR: Our borough clerk wanted to make certain that anyone that's standing in the doorways and the hall, that there's a pretty clear view and I think they can be heard.

There's chairs and tables right to the adjacent room to his borough assembly chambers, please. Again, I appreciate everybody's being succinct and we have Stan Gillespie which I believe is from the Gateway Community Council, is that right, sir?

MR. GILLESPIE: That is correct.

CHAIR: So community councils is what we would call -- and a representative of a community council gets up to five minutes so if you need it, you get five but I bet you got a little -- I'll bet you got -- you can get it across for less. Proceed with your name.

MR. GILLESPIE: You are correct. My name is Stan Gillespie. I'm the president of the Gateway Community Council and it is our understanding as a community council that our Resolution 1-14 was not included in one of the packets. We'd like to have that checked out if we could, please.

Also, we found -- you will find in that resolution that we too, as a community council, are concerned about the waters that have just been mentioned. We're concerned about the illegal dumping that his -- he has already mentioned in that resolution. We're concerned that this operator is a convicted person because of what he has done on that site already. We are concerned too of his truthfulness and, as we've heard tonight, maybe some of his legal device.

We also are concerned about the borough's liability in

this situation and so, with that, I will take any questions if you have them. If not, I'll sit down.

CHAIR: I will look for red lights. I see a red light by Brian Endle. Do you have any questions? Thank you, sir. It's on the record. We have Aaron Kallas followed by Mark Drake and a David Gilley. Please re-state your name for the record, sir.

MR. KALLAS: Yeah, my name is Aason Kallas. I'm just a concerned citizen. I am a homeowner in the Crimson View neighborhood and -- just north of the proposed site so this is of importance to me and a lot of young families that are in my neighborhood so, you know, I understand the dilemma that the Commission faces between supporting growth but also the needs and safety of, you know, us, the residents.

If it were me, I had the sole decision, this would just be rejected just out of caution but, you know, I'm glad we have this forum to discuss it but, as a father of two young children -- and I'm also a biologist by trade -- I am concerned about the impacts of this dump site not so much on my generation but the generation I'm raising under my roof. As a father, I'm tasked with providing a safe environment for my children to grow in. The problem comes when I can't control all the variables in their environment. So I feel that those variables of control have not been considered fully with this proposal. I think that's pretty evident from

previous testimony that we can't even control or get a handle on the main solvent that will be running through this material which is the water and on that issue alone, this should be rejected and having lived in that area for a number of years now, I can tell you that the water is the main variable in the area. But also that's where I draw my drinking water from, from community wells. So in these negative impacts to my children won't be realized for years to come. Many of these chemicals are real chemicals or derivative chemicals are carcinogens and mutagens and, more importantly, endocrine disrupting chemicals impede the growth and development of my children. Those are things that you can't realize for years to come so it could be five, 10 years from now before we actually see the impact of your decision which many of us in this room or you could be gone and really, you know, not be held accountable for that.

So what I would say is that let's slow down and, in your words, Mr. Chairman, let's get this right. Let's look at their proposal. Let's make sure that those safeguards are there because we can't go back and redo that, just it's going to be cost prohibitive and we're not going to be able to do that so let's just do it right to begin with. Thank you for your time.

CHAIR: Thank you. Mark Drake, David Gilley.

MR. DRAKE: Oh hi, my name is Mark Drake. I'm a property

owner. I have -- lucky enough to have 4.66 acres off the end of the road in Canoe Lake on --

MEMBER: Hold on, (indiscernible) bright and clear so everybody (indiscernible).

MR. DRAKE: Okay. I'm a property owner. I'm lucky enough to have 4.66 acres at the end of the road, Canoe Lake on one side, Irene, I think, on the other and I have concerns about what he's doing and the hydrology report so I'm glad to hear what DNR said and the plain English is to me, I've lo -- the lakes have raised five feet. I've already lost property due to the -- no fault of the applicant. It's the people before them, the -- they've tapped that aquifer and it's -- it does overflow and our lakes have raised about five feet. I've already been impacted and they haven't hauled any more than a little bit into the -- already. And we've lived there. The -- none of the hydrologists went and asked any of the people that lived there for 35 years about, you know, what they think the water table and stuff's doing.

They must have 25, 30 wells. We used to ride snow machines over in that area and they got wells all over and the -- nobody asked the Fish and Game and we've -- I've lived there for 35 years and I've wanted a Jet Ski so bad I could taste it and now this guy's going to get a dump -- a waste dump and I can't even have a Jet Ski? Maybe -- I haven't heard anything from Fish and Game what they got to say, you

know. I think it's way too early and I -- I'm basically pro development but give them a place just like the prison over in Point McKenzie where there's nobody downstream because every bit of every water from the mountains to the north everywhere ends up out the inlet eventually and they're spring-fed lakes. They're not streams where they have outlets. That's (indiscernible). You can watch them when they freeze and thaw. You can watch the little figure lines. They're spring fed and I don't just -- I -- I've been a general contractor several places since 1979 and I have demoed thousands and thousands of sheets of sheetrock and to have -- say that they can sort through that pile on 23000 Railroad Avenue or whatever where my dad had a construction shop, I mean, there's a huge pile of garbage. Used to be a junk yard that's already where they are. It's already went to environmental cleanup before they moved in or they had to do it to move in or however it works but to try -- say that they could sort through that mountainous pile of garbage and chase all the little sheetrock parts out with hardly anything going into their landfill, I can't believe that, and if the -- the lakes have raised five feet since they tapped that aquifer and it's always -- a dam that's overflowing occasionally.

Our water temps are rising. He's -- there's already a problem. To say that he can make little cells and they're going to be able to contain this and only leave so many square

feet open and then re-seed it, well, you re-seed it in February? They want to --

CHAIR: Thank you, Mr. Drake. You're on the record.

MR. DRAKE: Okay. Thank you. Thank you.

CHAIR: Thank you very much, sir. If I could just have Mr. Gilley --

MR. GILLEY: Yes.

CHAIR: -- give me one minute --

MR. GILLEY: Sure.

CHAIR: -- while I officially put on the record that Tomas Adams, District 6, has arrived at 6:57 and I briefly need to ask Mr. Adams two questions. No. 1, Mr. Adams, have you had the opportunity to review the December 1st meeting minutes and review the packet to believe that you have the same information as the fellow commissioners?

COMM. ADAMS: Yes, Mr. Chair, I have.

CHAIR: Thank you. I need to ask you if you or any member of your immediate family have a substantial financial interest in any property affected by this decision or you will recognize a foreseeable profit as a result of this decision?

COMM. ADAMS: No, I have no -- this is not --

CHAIR: Thank you. I have another question, have you received or otherwise engaged in *ex parte* contact with the applicant, other parties interested in the application or members of the public concerning the application or issues

presented in this application either before the application or during any period of time the matter is submitted for decision outside of the public process provided by the Borough?

COMM. ADAMS: No.

CHAIR: Final question, are you able to be impartial in this decision?

COMM. ADAMS: Yes.

CHAIR: Thank you. You are seated and proceed with your name for the record, sir.

MR. GILLEY: David Gilley, Crimson View Subdivision. Oh, I'm sorry.

MEMBER: (Indiscernible).

MR. GILLEY: Okay.

MEMBER: 256.

CHAIR: Good job.

MR. GILLEY: Okay. Yeah, I'm a resident of Crimson Subdivision and most of you, if you've been around for quite awhile, know the history of the water situation out at Crimson View and we had our lawsuit years ago over our fight to keep our water.

I also just have a few things to say, the Alaska Sand and Gravel has come to every homeowners' meeting in the 19, 20 years I've lived there and explained what their process and what their intent and any time that we had any questions or -- to contact them. In May -- and this relates to why I'm

against the landfill. We were thoroughly convinced with the huge expansion that they're making which is great, that it wouldn't hurt our water or aquifer. Well, apparently, they have pierced it. So what I do know is this, I've worked in the bush in Alaska, in the Aleutian Islands and had the fortune and misfortune of bothering to clean up out in those areas and they're pretty nasty and they're still nasty and here's why I'm deeply against the landfill that's going in place. Love Canal, Libby, Montana, vermiculite, Troy, Montana, arsenic and elements that destroyed the whole area, Anaconda, Montana. Still a town there but 90 percent you cannot go into.

Butte, Montana, the copper mine. So if any of these gentlemen here and you folks believe that there's any way of stopping any of these toxic chemicals for getting into our water system, then I go a bridge I want to sell you and that's about it.

CHAIR: One brief question, you made reference to a homeowners' association where you said Alaska Sand and Gravel participated in. What homeowners' association is that?

MR. GILLEY: Crimson View.

CHAIR: Crimson View Homeowners' Association.

MR. GILLEY: Yeah.

CHAIR: Thank you, sir.

MR. GILLEY: Thank you.

CHAIR: Looks like we may have a doctor coming up next. This is a real interesting signature. It's Mr. Deagazano (ph). You've signed up after Mr. Gilley. Mr. D-U-Y couple of Z's or an S. Really sorry. You signed up before Michelle and before Norman Crosby if you know who you were traveling with. Mr. DUYERSGO. I am sorry but if you identify yourself, I will bring you in as we find out who you are. We have a Michelle R., Michelle Ron-A?

MS. ROUNDTREE: Roundtree.

CHAIR: Roundtree. How clumsy of me, Michelle Roundtree followed by Norman Crosby and Chris Sahlstrom.

MS. ROUNDTREE: Hi, thank you. My name is Michelle Roundtree. I'm a private citizen who lives in Pioneer Meadows which is just north of the proposed site. I have lived in Palmer in that neighborhood for over 10 years. I work professionally in the community as a public health nurse and the reason I'm here tonight is based off of a lack of trust. I don't know why we would want to bring a development like this into our community but if I look closer -- because I know that we need to support our economy -- this organization has not established itself. It hasn't established a convincing plan to operate a dump responsibly, honestly and with respect to our community. Without that trust and a proven plan with legitimate proof that this development will not contaminate our water aquifers, why would we even consider such a

proposition?

Finally, because I don't trust this operation, I can't support personally this development and I hope that you all don't either. Thank you.

CHAIR: Thank you. Normal Crosby? Chris Sahlstrom.

MR. CROSBY: Norman Crosby and I live in Canoe Lake Subdivision. Good evening. I would like -- I'm testifying for my daughter, Linea Crosby. I -- she read my testimony last week or the last time and I'm reading hers this time.

I would first like to thank everyone for coming out and being heard during this public process. I also would like to thank CMS not happily but begrudgingly for binding together my neighbors, friends and family on this issue. Thanks a lot.

To you, the planning commissioners, you need to look long and hard at the facts on this issue. What is the Borough going to gain from this facility? What is the Borough going to lose from this facility? Every person that has testified against this C&D facility has reached the water -- has researched the water and air pollution issues thoroughly. This is not a good fit for this particular site or community. CMS will not be a good neighbor to my family, friends and neighbors nor will they be a good neighbor to the core area of the Borough. I ask you, in fact, I beg you to vote on authorizing a permit for this C&D facility at this particular site. Thank you.

CHAIR: Thank you, sir. Chris Sahlstrom, John Rozzi, Evelyn Bunch.

MR. SAHLSTROM: Hello, commissioners. My name's Chris Sahlstrom. I want to thank each of you for spending your time working on this issue with us. Couple issues I want to go over and they're really issues that have been talked about already to some degree. The central issue here is the water table, I think, on everyone's mind. We already have illegal dumping of the water. We have a malfunctioning spillway that is dumping this excess water into Canoe and Kepler, Bradley Lakes. This issue, as you've heard from the Alaska Department of Natural Resources, has not been resolved. Even in the news, your own borough staff reported that the water table issue is a problem because it's a moving target. How can we -- I would ask you how can we insure that we are legally providing the required separation of the debris and the water table if the water table is a moving target? If that lake is artificially being lowered by the spillway, how can we insure when that dam is fixed that we're not going to have that debris in our aquifer?

I live about 1,500 feet from the proposed landfill but it's not just an issue of me being concerned about my water and the water my children are going to be drinking but I'm also concerned about the others that live even closer. So we need to be not just concerned about what's going on in our

back yard but around everyone's back yard in the Valley.

The other issue is just looking at the future. We all know there's gravel pits all over the Valley. That was one of the biggest things that we were famous for was Sarah Palin was -- all the news folks noticed all of our gravel pits. Well, please, I would like to urge you to look towards the future. This might not be in your back yard but think about the gravel pit that is closest to you because in the future, we may have more landfills from Anchorage filling up all the gravel pits all around the valley as a preferred use for our land. So please carefully consider future use and future development. That's what we're here. After all, it's for planning, is this a development we want to take for us to the land to turn it into gravel mining and, eventually, into a landfill? Is that the direction we want to be going with all our land or do we want to require companies to reclaim their land, allow houses to be built on it and allow the land to be upgraded? So which direction do we want to go?

I'd like to also echo the sentiment that a dump is forever and all of you will -- and all of us will have to be living with this decision that you make tonight into the future. With my last 30 seconds, I want to remind you of -- I don't know if you remember the MOBRO 4000 from 1987. It was a garbage from Islip, New York that many of you know made its way down all along the eastern seaboard trying to find a place

for their garbage. Rejected by each and every state, they finally went to Mexico which rejected it, Belize rejected the garbage. Eventually, the barge went back to Islip, New York where the garbage was burned and buried there in the town. We don't want Anchorage's garbage up here. Let's let Anchorage deal with their own garbage. Thank you.

CHAIR: Thank you. I'm going to have to try -- I'm going to ask you to refrain from any applause or booing because then I'd have to do both sides and we want to get through this as expeditiously and as professionally as possible. I believe we're are Mr. John Rozzi but state your name for the record, please.

MR. ROZZI: John Rozzi. I'm here speaking against the approval of the permit. I'm from Mountain View Estates community and I'm not going to give you -- I'm not going to articulate anything about this particular event because everybody else has been doing such a great job at it. All I want to do is make sure that I'm on record against having this approved and, quite frankly, I'm surprised we're back here and I want to thank the commissioners that voted this down earlier and I want to encourage move of you to get on board voting against it this time. Thank you.

CHAIR: Thank you, sir. Evelyn Bunch, Barbara Landi.

MS. BUNCH: I'm Evelyn Bunch. I'm a resident of Sky Ranch Subdivision which isn't too far from the monofill. I

want to talk about property values and the minimal economic benefit. The proposed monofill offers minimal economic benefit while posing significant risk to millions of dollars of residential property. What protection is the Borough offering homeowners who could see their value decline up to 10 percent or potentially more and see their water polluted? According to a review of the Mat-Su property records, there are more than 250 homes in the surrounding subdivisions of Crimson View, Pioneer Meadows, Canoe Lake and Sky Ranch at an average low estimated value of $200,000 each. This adds up to at least 50 million in assessed property value and that is probably an under-estimate.

Some of these properties and their wells are as close as 500 feet from the proposed monofill site. You are putting this property value at risk by approving this operation as proposed. What will you do to make up this lost property tax revenue when people apply for reductions based on the siting of the landfill? A study by the Prima -- Pima County, Arizona assessor's office showed that subdivisions near a landfill lose six percent to 10 percent in value compared with a subdivision that isn't near a landfill. All other residential factors being equal including house size, school quality and residential incomes, how much more of a loss will there be for a dump -- a site dumping asbestos?

CMS submitted a report that property values had gone up

near the borough landfill. My question is what was their comparable. Property values have gone up all over the Borough. CMS's application states they expect to create three full-time jobs and 30 periodic jobs. This is a drop in the bucket compared to the value surrounding residential property and the value of clean water. In addition, the 118-acre property owned by CMS is valued at less than $300,000, a property value that is unlikely to increase as used as a dump.

This operation provides very little economic benefit for the Borough or borough residents while putting millions at risk and should contamination occur, it will most certainly be the taxpayers, primarily borough property owners, who will be footing the bill, not CMS. This permit should not be approved.

CHAIR: Thank you, ma'am. Just to reiterate a little housekeeping rules for those that may have arrived and you know your time is your inventory. We appreciate the engaged participation of our community but the blue sign-up sheet, since I did not close audience participation two weeks ago, are those that have not testified and we've made it through one page. I'm on the second page and I will bring up the blue pages and since it's a continuation of audience participation and we have mandatory adjournment, if this goes late into the evening and you've already testified, I'm giving you the notice now that I may cut it off if you've already testified

last week. So I want to give everyone that has not testified the opportunity and I not -- by law, I did not have to allow a second bite at the apple but because I did say it last week, we will get as far into that if we need to. With that being said, we have Barbara, Barbara Landa [sic]?

MS. LANDI: Yes, Barbara Landi.

CHAIR: Landi. State your name for the record, please.

MS. LANDI: My name is Barbara Landi. I'm the president of the Sky Ranch Homeowners' Association and I guess maybe that qualifies me for five minutes but I hope to just take three minutes anyway.

CHAIR: Thank you. Homeowners' associations are not allowed. You're doing great. Take three and get 'er done.

MS. LANDI: Okay. I'm speaking for the 55, approximately, homeowners who live there although many of my fellow homeowners are here tonight speaking for themselves. First, do not say that we are NIMBY's, that is, not in my back yard complainers and -- because here's the thing, South Palmer, our back yard, already has one trash dump site at the corner of Rigarchek Road and Inner Springer Road adjacent to the fairgrounds. That dump periodically burns and smolders. It smells and smoke burns our eyes. What is burning there for such a long time? Nobody in the Borough can tell us and nobody there seems at all concerned and we know it won't be any better with this dump.

Also already in our back yard is the gravel pit which is now expanding like an enormous amoeba across what used to be a treed landscape along the Glenn Highway directly across from this proposed CMS dump site. Can't do anything about them, they were here first but underground gravel mining can cause a rise in the water table. This potential should be evaluated before permit approval because who will be looking out for the homeowners, the homeowners' wells if toxic substances are continually leaching into the groundwater? You guys? I don't think so.

The point is our back yard is already full and we don't want any more dumps, recyclers or any other private polluting industrial operations. Enough is enough. Lots of nice neighborhoods with good people and nice families live around this site though, clearly, none of them are you on the planning board.

We are not just comfortable, retired people. Many more are hardworking young parents who just want to raise their children in a clean and safe Alaskan environment and don't forget the acres and acres of farmland that grow our food in this area and depend upon the good, sweet water in the aquifer. It is appalling and insulting to think that you are approving a plan that completely disregards the health and well-being of hundreds of families and farmers, a plan that includes thousands of pounds of miscellaneous industrial trash

from all over Southcentral Alaska including asbestos material cut up into 12 little square, 12-inch squares or whatever in this extreme wind environment. You are granting a permit that only meets the minimum standards, no liner, no monitoring of groundwater, no independent oversight of asbestos disposal, no consideration of private wells within 500 feet of this site or the open aquifer and keep in mind you are only approving a plan, a plan submitted by the applicant. What happens when something goes wrong with a plan? Thank you.

CHAIR: Thank you, Barbara, and to the members of the public, make certain you know that I -- as I call an extra name, it's not that I'm rushing anybody, it's not that each testimony isn't important, it's just that we want to get through as much as we can and, obviously, there's written minutes. It's recorded audio minutes. We're live on Radio Free Palmer. You see Mike Molesky over there so that everything you say, people in the homes are listening, so don't think that every piece of testimony is not important to this commission but we do want to make certain we move as efficiently as possible. We have David Palmer followed by Eric Quam and Marie Payne.

MEMBER: David Palmer?

MR. PALMER: Yes, that's correct, my name is David Palmer, Mr. Chair. Good evening, commissioners, and I've heard a lot of testimony here tonight about the water issues

but there's an additional -- I live over off of Parks Highway near the hospital and I would suggest that there should be some consideration given to the wind plume that would result from this site. There are a minimum of three events every year in excess of 80 knots through this area, sometimes frequently exceeding a hundred knots and I have not heard very much discussion or information provided with respect to atmospheric impacts.

The hospital is downstream. The community college is downstream as well as numerous people far beyond the stated perimeter of concern so thank you very much.

CHAIR: Thank you and, again, for the record, we have 4,000 pages of material we've reviewed and there has been content of wind in the papers we've read. Proceed, sir.

MR. QUAM: Yes, I'm Eric Quam. I live in Sky Ranch Estates. I'm a civil engineer. I'm a -- I'm not anti-development, I just think, as a community, if we look at this site, this is probably not the best site. It's world class gravel comes out of this location. To say that we don't need a liner to -- that it's not going to contaminate our water is just -- I don't understand how any -- anybody can think that. The gravel pit's already been mined close to the water table and, as we've heard tonight, that water table is going up and down. That is the water table for our wells and even if it was 10 feet above the water table, what happens to the rain

that comes down and runs through this construction materials that's been dumped and asbestos and if anybody has not been to like the Birchwood monofill or been to any of these sites, contractors, oh, oops, that five-gallon bucket of turpentine just got thrown in this load and it's very difficult for people to check every piece of item that goes into these mono -- these fills. So, unfortunately, what's going to happen is we put that in this location, yes, it's going to get leached through, straight through this world class gravel that we have, this -- right into our groundwater and contaminate it. I just think, as a community, that we should allow a site like this but we need to look at it a little bit closer to find out where the best location geologically is for this to occur. I don't think in this world class gravel area is the best place for this.

Also, with the Mat-Su River being right there next to the riverbanks, as this material floods out, it's going to go straight into the river too which is going to wash downstream. On top of it, if you look at the asbestos, we're going to have asbestos fibers. They bag asbestos in garbage bags. Anybody that's ever been around garbage bags realize you throw a chunk of something that's sharp, it cuts through the bag. Well, they say we double bag it so it doesn't get out. So they throw it in the bags and they go and they dump it in the dump. Well, in Palmer here, we're blessed with some wonderful winds

and they just never seem to stop. So when you look at the air quality, to guarantee, yes, they probably have to cover it every night but while -- when these winds come up, where is this asbestos material going? I just think, as a community, we need to look at a better location for this type of activity to occur. Thank you.

CHAIR: Thank you, sir. We have Marie Payne followed by Helen Hoffman and Samuel Raynovic.

MS. PAYNE: Hi, I'm Marie Payne. A lot of people have came up here and had very valid issues and opinion. I am here to speak about, as a landowner, that the beauty of the land there and the topography, like he says, of the ground, the gravel, I have lived here in Alaska since '76, in Palmer since 1995. We own a thousand acres right there off the Glenn Highway on Mile 37 so we are around Echo Lake, Kepler Lakes, also Spring Creek and that Spring Creek is full of silver salmon. MTA accidentally drilled through the lake -- the creek and it was like Old Faithful. The salmon just blew -- you know, came right out. So -- and then our well is 335 feet down. The aquifer under there are related. They're all through there. It's very, very gravelly. We have dug for septic, commercial septics, there and wells and also it's a highway, byway that is considered very scenic, one of the top areas in the -- in Alaska, the Glenn Highway, and the United States many people go through. So what happens? They go

through and they look at the -- you know, the fake lake and another fake lake and possibly coming up, it's -- you know, and all these gravel pits and thank God we didn't get the prison system because they would have had a five-star view. There are a lot of animals there that depend on clean water.

In my yard, I have -- it's not uncommon to see three juveniles and two adult eagles or -- I even had a heron, you know. I have black bears that come through there around Echo Lake and Kepler Lake. We bought that land to preserve that -- then we even have the mineral rights. We bought that land to preserve it. We have a railroad that the railroad owns a buttress on the right, left and the back and then our home is the other side and we are up on a hill but that is all wetland and I just would hate to see that wetland get ruined. I really do, I don't want the wetlands to get ruined, the animals be affected, our property values, tourism decrease. Oh, there's a lot of dust that comes as it is, you know. We have the train coming right through our hou -- right through our yard which we don't mind. It's really unique and et cetera but I -- there's a lot of people said a lot of things about why it shouldn't be here. I mean, yes, we want development, yada-ya -- hey, put it by the prison, you know? That's a good place, right there on Mountain -- Point McKenzie. Yeah, out of sight, out of mind, yahoo.

CHAIR: A thousand acres. You have a big back yard.

MS. PAYNE: Yes, I do.

CHAIR: Congratulations.

MS. PAYNE: Yeah, I worked hard for that.

CHAIR: Thank you.

MS. PAYNE: I don't want it messed up.

CHAIR: I understand. Helen Hoffman, Samuel. Proceed with your name, please.

MS. HOFFMAN: Hi, my name is Helen Hoffman. My husband, Douglas, and I, along with our five children, live in the Crimson View Subdivision. We also own a hobby farm in the connecting trails and subdivision as well and we've lived here for the past 15 years. Even though I'm not an environmental scientist, a ecologist or a hydrologist, I feel compelled, as a member of my community, to voice my opinion against the proposed monofill and these are the quick reasons why.

First of all, there's aesthetic reasons. No one in their right mind wants to live by a dump, right? That's pretty obvious. There are economic reasons. Property values will likely decrease while interested buyers will be few and far between and, unfortunately, this has already been experienced by one of my neighbors who's putting her house on the market.

And the most important reason to be against this monofill is that there are health reasons. We live here. We raise our children here and we cultivate our own food here. The potential contamination of our water supplies just worries me

the most. You say the environmental impact is low but what will that impact be in 10, 20, 30 years down the road? One hydrologist says this, another says that. I mean, who knows who's correct but if we don't err on the side of caution, it is a high stakes gamble and we will all have to pay. So please do not allow this monofill in this location. Thank you.

CHAIR: Samuel, Larry Helgeson and Stephen Nowers.

MR. RAYNOVIC: Yes, good evening. My name's Samuel Raynovic. I'm a concerned citizen and a resident of Pioneer Meadow Subdivision. I don't really have a prepared statement here this evening but I kind of -- you know, this has already come up before. I'd like to thank the commissioners who already shot them down one time before. I -- I'm a little upset that it's back again. I don't understand how anybody, you folks, the commission, could possibly consider approving something like this. It's -- you've had people from the DNR tell you that there's issues with them -- water getting dug up. You've had conflicting reports on hydrology. You've, obviously, got a lot of concerned people in the area and for good reason. There's a lot of homes, there are a lot of families and people are getting their water -- they don't want contaminated water.

You've got a record of monofills in the Lower 48 that have got -- had environmental impact issues, pollution. It

baffles me how it could even be considered. It seems like with this amount of community resistance to this, the lack of science or you've got, like I say, conflicting hydrology reports, et cetera. I mean, I don't even understand how you could consider this in good conscience. I mean, what would be the impact if you're wrong? That's the big question of -- everybody's concerned about, what's the impact? I mean, whose health is -- you know, what -- if it impacts somebody's health or family, it impacts the whole community. You've heard issues of property values, you've heard issues of people's water quality in their homes. You've got -- I mean, what's the issue? If you're wrong and there's a bunch of polluted dump in Palmer, what does that lead to? How does that enhance the community. It seems there's got to be a better way to do it.

I can certainly understand the need to deal with this kind of refuse. I'm not against that but I'm against that here. I think it oh, can very well be -- you could find someplace else for it, not in the middle of a prospering community so thank you.

CHAIR: Thank you, sir. Larry Helgeson, Stephen Nowers, Tony Bluma.

MR. HELGESON: Hi, I'm Larry Helgeson. I'm the principal engineer in design of the monofill. I appreciate you taking this time. I am doing public testimony because I am very

concerned about protecting the environment.

This is one of the most studied sites that I've ever seen in development of monofills in Alaska. In your packet, you have almost 400 studies of various aspects on this specific site, specific monofill. Those were done by four independent professionals, not in -- not -- myself included. What I want to ask you at this point is that, as you consider this and you consider the conditions that you're going to be putting on the monofill, all I'm just asking is that you take that very seriously and not do impromptu conditions that might change the monofill design. One example that I want to give to you that that has been brought up here, have been a concern, is the liner. A liner could possibly do more harm for this monofill than help. A liner -- this monofill was designed to have water flow through it and not be caught up in any place where you'd have any kind of a saturated environment. As soon as you put a liner into this, you create a possibility where you could increase the likelihood that some thing might leach into that water that's sitting -- that's saturated, so no.

Another example that I would like you to look at and consider is the wind. The wind was brought up here. That is a very serious issue. We know that the wind is very high in this neighborhood and it has to be controlled. I would ask you to possibly consider any conditions you put on this monofill to prevent the debris being blown away from the wind.

A lot of conditions have been added into the design to take those controls into account and I'd just ask you to deliberately consider that as you move forward and not do anything that's unreasonable.

Finally, the last thing I want to try to bring out, I have read, as many of you have, the 4,000 pages of documents. I have looked at those in detail. After evaluating everything, I have seen nothing in there where, in my opinion, that anything is going to impact the design that we did to protect the environment and protect the people of this monofill. If anybody has any questions, I'll be free to answer those now or later.

CHAIR: Mr. Helgeson, please stay at the podium for a second. This is not a question and answer period but we are allowed not to have discussion between ourself but we are allowed to ask members of the public and I don't see anyone else and, clearly, I studied the reports and, not being an engineer and not a professional, this is a volunteer board and we study to the best of our ability. I so wish I could have had the opportunity to speak to you and that would be *ex parte* contact so I've never contacted you and so, for the record, since it's public, I would like to ask you when you say one of the most -- did you use the word studied?

MR. HELGESON: Studied, yes, sir.

CHAIR: Can you give me a little history of what you --

why you would say that and your historical record of have you engineered other monofills before or why would you say the most studied?

MR. HELGESON: I have been involved in monofills' design. First ones were in the 1990's and I've been around a half dozen since then and, of course, in researching those monofills, I've looked at the designs of numerous other monofills so they're several monofills within the State of Alaska. I have not looked at them all so it's just my opinion on this one. There are more studies involved under -- trying to understand the site in this case and any other ones and from everything that I've seen with looking at it, it still points towards this is a good location for a monofill.

CHAIR: So if there's no one else, Mr. Brian Endle, please, District 1.

COMM. ENDLE: You say, Mr. Helgeson, that the -- a liner could have a negative effect on this particular monofill, this design?

MR. HELGESON: That -- that's correct. The state's code and everything that's been designed on this monofill is not to have a liner underneath the monofill. The numerous studies that are included in your packet, you can see that the likelihood of any leachate coming -- significant amount of any water going through the monofill waste at all is going to be very minimal. If there's anything in there that would catch

any water that might come in -- and it may not even come through the monofill, it may come from the sides of the monofill, flow into a cell from some point, now you have a pool that has been created because you've created a liner and the waste may at that point sit in that saturated environment for extended period of time which would increase the likelihood of something leaching into that water.

CHAIR: Any other questions from the commission? One final question, so do you -- how -- can you encapsulate the concern that we're hearing about polluting the water table? Is there a short answer to take that fear away?

MR. HELGESON: I'm afraid I can't give a short answer because the way I live, anything is possible. All I can do is look at the scientific models that have been presented by not me but hydrologists who are more expert on this and I see very, very, very low risk of the groundwater ever becoming contaminated.

CHAIR: Thank you, sir. Thank you. Stephen? Okay. You have three minutes to speak on behalf of whomever you want to but state your name for --

MS. NOWERS: Okay. I'm speaking on behalf of my husband, Stephen Nowers. My name is Stephanie Nowers and I live on Canoe Lake. I wonder if Mr. Helgeson's analysis would change if they were incorrect about the amount of water getting into this facility, if that would affect what he thinks about a

liner. Rather than flushing it through into our water, a liner would allow you to collect it and if there was pollution, it would allow you to collect it and treat it.

What I do want to talk to you about here today is why we are before you. The reason we're before you today is because the Mat-Su Borough specifically recognized that junkyards pose a potential hazard and should be considered carefully. We are here today because it is your job to look at the facts, to look at the record before you and decide can you look at this facility as proposed and meet the standards that you are required to meet and what are those standards? Just to be clear, according to Mat-Su Borough Code 17.60.100, the planning commission, you, must make the following findings in granting a permit, that the condition use will preserve or not detract from the value, character and integrity of the surrounding area, that granting the conditional use permit will not be harmful to the public health, safety, convenience and welfare.

Look at the record in front of you. I've read it. You cannot look at it and say with anything but great uncertainty that this proposal, as written, will not be harmful to public health, safety and welfare and that it will not detract from the value and integrity of surrounding properties. As you make your decision, please consider what has been said so far and the following, construction and debris landfills across

the country have a clear documented record health environmental impacts to air and water quality. That is in the record before you, especially the report from Ohio.

Turning this site into a dump will harm surrounding property values, not just immediately but long term. All the gravel pits have longstanding reclamation plans to add high-end subdivisions to this area. Do you see those subdivisions being built next to a dump? No, I don't see that happening. This company has a brief but amazingly poor record on this property and their proposal even with the conditions, lacks binding assurances to verify this is done right and even in any effective penalties for doing it incorrectly. There's not even a condition to revoke their permit should contamination occur. There's great uncertainty about the hydrology on this site, as you've heard, and there's a documented record before the Borough that dates back to 2004 documenting complaints about problems on this property.

Judging by what their hydrologist said, we're living in a desert. I guess I'm not a hydrologist but they said they're, you know, take annual precipitation and some experts you heard said you can't look at it that way, we're wet in the spring and the fall and we're dry in the summer. That water is going to get into the site and it's going to leach through and that's a hazard everybody recognizes. Your own staff has recommended approval but with 40 conditions and that's even

before the latest hydrological report from Mr. Munter identifying serious flaws in the hydrological studies commissioned by the applicant.

I believe there are conditions you could put on this that would hold the company to their promises. You could have a liner and leachate collection system. That's prudent given the uncertainty about the hydrology on the site and the documented record of health impacts from leachate coming through here. You can do independent groundwater monitoring. They should set up an escrow account and pay for that to be intermittently tested. You should also have a renewal for this permit in five years so that if we come back and everything's working great, let's give this company a round of applause but if it's not working great, then let's revoke their permit so they can't continue to contaminate.

CHAIR: You're on the record, ma'am. Thank you.

MS. NOWERS: Thank you.

CHAIR: Tony Bluma, Tony Sellen, Kelly Ballard.

MR. BLUMA: My name is Tony Bluma and I reside in Wasilla and I'd like to address the Board, inform them of the following. I'm distressed and disturbed to hear that there is a possibility that a monofill toxic dump is being considered on land down the Glenn Highway from several lakes and homes. As I understand the applying dumping company wants to bring in so-called inert building materials from Anchorage. This inert

building material will be ground up and placed on top of existing aquifers just feet away from potable water.

I ask the commission to consider the following, so-called inert materials are not inert. The drywall will contain lead-based paint from buildings built before 1978 where lead-based paint was outlawed in the U.S. Lead is toxic. Small pieces will be left over and that will be in the fill. This inert material will be ground up and spread over porous sand and gravel just feet from the aquifer.

Now, the EPA states the different toxins, PCB's found in building materials, i.e., calking, PBC found in wiring, piping, halogenated fire flammable retardants, foam, urethane insulation, particle board, formaldehyde, carcinogenic, flame retardants, aluminum trioxide, chromated copper arsenic, pressure-treated wood, ballies (ph), carpet backing, roof membranes, adhesives, glue, short-chain chlorinated paraffins, urethane foam, paints, adhesive calks, sealants, asbestos. We all know it's all toxic.

I don't understand any considerations regarding the approval of these permits allowing this dump to proceed, especially with no oversight. This is the legacy of the building commission here. This toxic dump will be the legacy to our children, grandchildren and generations to come. My suggestion is make a regional park out of the proposed dump site, not a mountain half the size of the butte of toxic

materials along a scenic byway. Thank you.

CHAIR: Thank you, sir. We have Tony Sellen, Kelly Ballard, Jeffrey Vincent. Proceed, sir.

MR. SELLEN: Yes, I'm Tony Sellen. I'm a landowner on Canoe Lake approximately 1,000, 1,200 feet from this proposed site. CMS has asked us to trust them and yet they've already been cited for illegally dumping materials on the site. They've been to my house soliciting neighborhood support that told me they're building structures to house all their contaminants. I'm not hearing that today.

I'm curious on the gravel pit companies that have had this property before. It's my understanding when I bought the property that I currently reside at in 2005 that there was an end of use master plan and that was to develop this property into homes, create a recreational site around the lake and now I don't hear any of that. Where did that master plan -- where is the accountability to the previous owner. Does that mean when this owner suddenly doesn't want it anymore, they sell it and they relinquish their need to clean up what they've left behind? That appears to be what's happening today.

And when I bought the property, this master plan was something that was talked about in homeowners and the realty -- real estate agent had given me documentation so I've got some documentation here, reviewing the master plan, some of the problems that this site has already had when it was a

gravel pit. The hydrology reports that I'm hearing about, nothing says that as they were digging gravel, my water was muddy. I would take times in the summer when they were digging gravel and you couldn't see the bottom of my bathtub. I considered that a mineral bath. That was something that was going to go away in the future and now that same water table, they're going to be dumping products in it that have carcinogens and toxics. I think it's not a matter of weeks, months, years, it can be days. If you were to dump a dye in that lake, it would show up in my well on that lake within hours. That aquifer has already been breached, I think. That's why those water tables are raising.

The other thing I'd like to consider here is I don't understand why this master plan wasn't developed. This property could be worth 30, 40, $50,000 an acre. I have a spare lot here that is assessed at $50,000 for an acre and a quarter. They bought 118 acres for $256,000. That's less than $2,000 an acre. That sounds shady like there's something wrong with the property, like they couldn't build homes on the property. There was water problems with flooding so now instead of building property, developing the property that could -- should be worth much more than that, they've dumped it off to someone else for their problem.

CHAIR: You're on the record, Tony. Thank you, sir.

MR. SELLEN: Did you -- would you like these?

CHAIR: If you would like to turn them into the clerk, please, and she will distribute them so we all have the same information. Kelly, Jeffrey Vincent, Roy Jeffers.

MS. KELLY: Evening. My name is Kelly Ballard-Chambers. I am a homeowner off of Bradley Lake. It's about a block south of the proposed pit. There's a documented record of uncertainty about this hy -- the hydrology on this site that is in the record. Central Monofill has ommitted pieces of critical hydrological data from your application to this commission. The first is a documented link between the gravel pit ponds and water levels in Canoe Lake found in a 2012 Terrasat report for Granite Construction. CMS submitted a copy of this report in their application for a state ADEC permit. This report was not provided to the Borough even though CMS engaged Terrasat as one of their consultants regarding the site's hydrology nor has this report or notes been provided to DNR which is investigating the connection between these ponds and the area lakes and wells.

The relevant page from the Terrasat report was provided to the commission on December 1st and I am submitting the full Terrasat report today as well. On page 5, it references notes kept by the Central Paving Products, the then operator of the gravel pit, about a breach in the barrier between the two gravel pit ponds in 2007 and a resulting rise in Canoe Lake that was tracked by CPP. According to this report, these

notes kept by CPP show the barrier between the gravel pit ponds was breached in May, 2007 and that the water level measurements showed at least a nine-inch rise in the water level of Canoe Lake. This is the equivalent of adding at least five million gallons of water to the lake.

The Terrasat report states that these CPP notes also track the decline in lake levels after repairing the breach. The second omission is Granite Construction's past water monitoring well data. The existence of this data is documented in correspondence between the Borough and Granite from 2009 and 2010 which I'm also submitting today. On September 4, 2009, Borough Code Compliance Officer Pam Ness sent a letter to Joe Sphink (ph), the then manager for Granite Construction. In the letter, Ness references several violations by Granite of their legal nonconforming use status but she also notes that Granite appeared to have monitoring well data on this property. Specifically, she states that at -- on August 24th, 2009, hearing held by the borough planning commission, a Wilder Granite Construction employee noted that there are 20 monitoring wells on the property and surrounding properties and that the company is monitoring these wells weekly from April through November.

In a letter dated January 13th, 2010, plants manager, Travis Edmonson, says Granite does have the data and notes that the wells have been and are moni -- being monitored on a

frequent basis but refuses to provide the information for the Borough. CMS has not provided this well information or the notes from Central Paving Products to the Borough. The 2012 Terrasat report and the CPP notes its references and Granite's well information can help answer critical questions regarding the hydrology of the site and its suitability for the monofill. I can only wonder why Central Monofill is withholding this information from the Borough. That's it. Can I submit this?

CHAIR: Thank you, Kelly. You covered a lot of data. I have Jeffrey Vincent, Roy Jeffers, Jim Cassin. For the record, at 8:00 o'clock, I promised my fellow commissioners two hours max. We will take a four-minute at ease at 8:00 o'clock. We're approximately halfway through the first time people signed up. Please proceed with your name.

MR. VINCENT: My name is Jeffrey Vincent. I'm also a concerned citizen. I have a dog in the fight. I -- my well's located less than a half a mile from Canoe Lake from the proposed site but to also -- one of the things, we all wear different hats in this world. One of the things, I serve my community and my fellow Alaskans as a firefighter with Palmer Fire and Rescue. I'm not here on behalf of Palmer Fire and Rescue, I'm here to give you my two bits in this regard as far as what I know and what I have learned being as -- a fire instructor certified by the state as well as a firefighter-II

engineer and a certified borough rescue tech.

One of the things I'm against this for is because it's not lined. It would -- leachate, according to the engineer design, is designed to go through that. Rainwater will go through that but also it's also designed to accept as construction demolition structures that have burned before. That's allowing things, structure fires and -- clear them away, make room for new structures. When things undergo fire, chemical and physical change happens to those materials. The byproducts from that, either the gases or the physical materials can and sometimes are very toxic to the environment and the water. Those are going to be allowed into the landfill as well and one of the things that when a fire occurs on a fire site, if you've ever been on one, it's difficult to ascertain what is regulatory acceptable to the site and what is not. It's all charcoal, it's all burnt and so that's going to also enter into a potential for incorporating non-regulated material into the landfill that I'm also against.

One of the things that you ha -- also have to worry about is when those things are already charcoaled, they've already been burned, well, you can also run the potential when you bury that, anaerobic oxidation will occur. Those things decompose like everything. Heat is generated. Charcoal will reignite. We've had that before. The Alaska Demolition dump on Rebarchek Road next to the Alaska State Fairgrounds has

before caught on fire. I was there July 11th, July of 2011, twice we were called out there. I can only attest to what I saw when I was there. There was an underground subsurface fire. We extinguished it with copious amounts of water. That was also to check whether or not we should allow copious amount of water. Usually we do use water. I'm not going to assume what the incident commander on scene would do if this facility caught on fire. I'm only saying what we did, we put lots of water and foam. That's usually what you do and you tear it apart to get at the material that is burning and so one of the things that they're going to -- they talk about is allowing water into the site. Well, if it catches fire and those tires catch on fire, are we going to be able to put it out? I don't know.

I live next to this site. I don't want the groundwater contaminated. I don't want all the burned material from the leachates, from the burned fire material into the water as well. Thank you and have a good night and I hope you'll decide this --

CHAIR: I have a brief question.

MR. VINCENT: Yes, sir.

CHAIR: One of the challenges -- like I said, I'm not allowed to do anything unless we went as a group. You said you went to this other little site by the fairgrounds and --

MR. VINCENT: Yes.

CHAIR: -- put out fires and things.

MR. VINCENT: Yes.

CHAIR: What do you think happened to -- how was that --

MR. VINCENT: Oh, I know what happened. It was --

CHAIR: Well, when you put all that water on, where does it go and what's going on and how come I haven't heard an objection to that like I'm hearing about this one?

MR. VINCENT: Because one of the -- the material that was brought in was previously burned material and so it was underground. They buried it. It still caught on fire or reignited.

CHAIR: Thank you. I don't want to get off topic, sir. Thank you.

MR. VINCENT: Okay. I have the two publicly-available from the Bor -- City of Palmer I'd like to enter into the record for the two records for the fire that occurred.

CHAIR: Please provide to the clerk, sir.

MR. VINCENT: Thank you very much. Have a good night.

CHAIR: Thank you for your service. Thank you. Jim? I thought it would be Cassidy but it's not. Is it Cassidy?

MEMBER: Yeah.

CHAIR: Oh, what happened to the D and the Y? Looks like Cassidy but I seen -- I see Super Star Jim. Welcome and state your name for the record, sir.

MR. CASSIDY: It's Jim Cassidy and thanks for --

everybody for letting us have a few minutes of time to talk. I've lived in Crimson View for about 18 years and, as Tony just said just recently, that I've heard all the things too when I moved into Crimson View that we were going to have eventually that they were going to have parks and that there was a -- it was a mom and pop's or, you know, it was a mom and pop organization for the gravel pits. Well, that turned out to be not such a mom and pop's situation but that's what I was told by my realtor and by a prominent builder but we won't get into that but they said they were going to do the parks and all those other things. So there's been a lot of false promises of what's really going to happen so I think it's going to be another false promise.

There's been a lot of people come up here and give some great -- there's a lot of people that did a lot of really good homework and I'm impressed with everybody that's really gone and done their due diligence. There's a lot of factuals, there's a lot of emotion, there's a lot of people that have both but thank you for DNR and such to come in today. They kind of summed a lot of things up. I was going to bring different things up but I think most of the people already have brought most of those factual things up so I just kind of wanted to say what a -- at the bottom, the -- at the end of the day, everything comes down to one question, do the benefits, do the -- does the benefits outweigh the risk.

That's really the only question you guys have on this whole thing is one simple question. I believe it's do the benefits outweigh the risks and I think with all the evidence that everybody's come forth with, with all the risks, the risks, the risk, the risk, I can't see how possible that anybody could vote for the monofill. I mean, the benefits -- and we don't even -- and I was going to ask you and I don't think I can legally do that but what were the -- what would be the revenue or anything for a year or for the Borough versus how much they have to do in expenses. What do -- I mean, what does the Borough actually -- we -- you guys are representing the Borough and all of us. What is the benefits for the Borough? It seems like the benefits would only be some revenue and it would pretty -- be much. The private owner would get the rest of it.

Now, I'm not -- I'm pro business too but you got to look at the whole picture and the bottom line is there again, would the benefits outweigh the risk. There was one -- there was a young lady that spoke last time and I thought it was really interesting. Her eight-year-old son said why would they do this, mom, why would they do this.

And the last thing I wanted to say is the unfortunate thing is too is you guys want to be home with your loved ones on Christmas and everything. If this -- if you guys pass this, you know there's going to be temporary restraining

orders, you know there's going to be all kinds of litigation, go, go, go, go. Be home with your loved ones on Christmas, do the right thing, and you won't have to worry about it.

CHAIR: Well timed, Mr. Cassidy. Barry and Heather and please, your name should be the sweetest sound to your ears so you state your first and last name for us, please.

MR. ORZALLI: My name's Barry Orzalli. That's my bride, Heather, and, basically, I'd like to just echo every fact that's been brought here today has been true as far as all the contamination that it would do to the water and I'm also a landowner off of Drift Lane about 10 acres and one of my main concerns is this, I looked and looked for a home in the Valley and my wife has an autoimmune disease and if the water levels or contamination levels were actually at the level in which we're allowed to have our wells and arsenic and all that, the standard of those levels would hurt her and so if we have the possibility of even the slightest risk of a contamination, because of her autoimmune disease, it makes it a life or death situation for my bride. And so that for me is a big caution that I'll have to look and turn down homes based on water quality and now that I've got a home that's got great water quality now, sitting here thinking that that might be a risk to the well-being of my family is tough and because the gentleman over here who made this thing says the risk is very, very low, that means there's risk and that's not a risk I'm

willing to take so that's why I'm opposed to this going through. Thank you.

CHAIR: Thank you, Barry. Did he speak for Heather?

MEMBER: (Indiscernible).

MS. ORZALLI: Oh, my name is Heather Orzalli. I am Barry Orzalli's wife and just two quick things. Everyone said, basically, what I was thinking and we just basically found out about this as far as we've been really busy. My husband's a pastor off Palmer-Wasilla Highway and we deal with a lot of people with a lot of different health issues and helping families with devastating circumstances, various. Well, if this passes and the permit goes through, it just kind of creates more problems for the community in a large scale, whether it's health issues or psyche issues or devaluing of homes or whatever that circumstance may be but part of my question was why Palmer and I know they mentioned that there was out there further down the road where it was less seen near the prison but why Palmer? And that's kind of the question is why not? Was it established -- was it that they were not able to get on established landfills? I mean, you've got the Big Lake landfill, you've got some other aspects where they could dispose of properties and maybe because the company may or may not be able to meet the regulations -- and those were concerns that kind of -- you know, not really having all the facts and not knowing the history of what's gone on in

these circumstances through this community very well at this moment, just kind of being out of the loop on this subject matter but when just finding out about it a few days ago, it's kind of like the eight-year-old boy who was able to figure out within just a couple minutes. I guess it doesn't take a rocket scientist to figure out that this is probably a questionable thing and should be at least held at bay and removed and maybe possibly provided in another location if it's even environmentally correct for that location. Just because it's far away and it doesn't have a lot of people around it or you don't think that it's going to have devastating effects on the water doesn't necessarily mean it's the right approach.

And, again, I guess I don't really understand -- again, being out of it, my background is legal and I'm a -- I was a teacher prior to becoming -- having autoimmune issues that debilitated me from keeping a regular schedule but, you know, why are we here? I mean, this doesn't seem like some type of decision that couldn't be made without all of us standing here and having to testify how risky it is. It seems as though it's kind of a no-brainer, I guess, in the bottom line and, again, going back to the article in the Frontiersman which kind of made us alert to what's going on, it was very well written. Maybe someone should read that into the record but, again, I appreciate you guys listening to us and I am hopeful

that you guys will see this from our point of view. Thank you.

CHAIR: Thank you. For the record, I asked the clerk and we were not allowed to read the letters to the Frontiersman until the clerk copied them all and put them in so we all were forced to read them. So we all have that same information and it is in the packet and it is in the public file. I promised a four-minute at ease at 8:00 o'clock so we will retrieve at 8:05 with Jesse Hronkin and Melody. Thank you.

(Off record)

CHAIR: Please proceed, sir.

MR. HRONKIN: My name is Jesse Hronkin and I'm a resident of Sky Ranch. My wife and my four kids live back in the neighborhood and, once again, thank you for your infinite patience listening to all of our stories. A lot of good data. It's hard to add to much of that but more of our personal take on this whole project. So, once again, the Borough employees have spent hours and hours of their time away from family and also for the applicant, you know, your patience too because I've gone through conditional use permit process and it's not a lot of fun sitting in that chair but, in short, it's a simple matter of risk versus benefits, do the benefits of having a monofill facility in this location outweigh the potential long-term reversible environmental risks? Perhaps for the applicant who's the only one that stands to benefit

financially or otherwise but to the residents of the area, this is most definitely not worth it.

To clarify, this is not a recycling issue, it's a location issue. Recycled materials, what CMS makes their money from, materials -- they have nothing to do with this site or what our opposition to this site revolves around. Central Monofill Services wants to place these miscellaneous chemical agent leftovers like styrofoam, insulation, asbestos and a multitude of other non-biodegradable leftover material within a quarter mile or less from houses adjacent to recreational trails and parks and mere feet from the water table. I drive right by the award-winning environmentally secure municipal landfill to our neighborhood in order to bypass dump views that will effectively render this land an eternal industrial wasteland as it will never have any use with dirt and grass run over it 30 years from now.

In the future when they're gone and we're gone as well, someone is going to have to deal with this mess. The impact to the dump traffic on the Glenn is another threat to every-day commuters that I've not heard a lot about. Anybody that drives that stretch of the Glenn knows at times how difficult it is to make a left turn onto Outer Springer.

Truly, Central Monofill Services has considered other sites for this facility. There are many that would present far less potential environmental risk and, surely, less

community upset. Please consider what you've heard from those who stand to lose the most if this conditional use permit is approved and ask yourselves what you'd do if you were in our shoes. Would you feel okay about living next door to this operation or having your children drink water from the well that is downstream? You have the opportunity to show that you have the best interest of the borough's residents in mind and are good stewards of the land in making a decision to not -- deny this conditional use permit and we ask that you do just that. Thank you.

CHAIR: Thank you, sir. Melody Wright, Emmett Leffel and Jerry Keeling, bring a little historical perspective. Melody, please state your name for the record, bring that microphone right down and speak right nice and clear into it. You're looking good. Nice smile.

MS. WRIGHT: My name is Melody Wright. I live in Pioneer Meadows. I've lived there for about a decade and I've listened to what everyone has said and, really, everyone has covered my main concerns. I just had two points I wanted to bring up and, hopefully, CMS can answer them and they probably already have. However, I would like the commission -- I would ask the commission to consider asking CMS to do semi-annual water monitoring using an independent water monitor and that the company would be responsible for paying for this monitoring.

I would ask that the commission would hold the company to keep their promises contained in the -- in their document with consequences and if those cons -- if the con -- if the consequences become bad, that the permit would be denied and I would ask that this would be -- the permit would come up for renewal every five years.

One thing that concerned me at the very beginning was, you know, of course, water quality and I know that there is right now a sewer line that goes along Glenn Highway to the hospital and I'm assuming that there could be a water line from Palmer that could also run along that same highway for hookup, future hookup, to get us off the well system should contamination occur and my question is who's going to pay for that hookup for all of us should contamination occur and all of us need to find an alternative water source. About 20 years ago, my husband and I bought our first house in Minnesota and the reason why the guys was selling the house was because he had to pay a water assessment. They were redoing the pipes. They were old copper lead-line pipes and they had -- the guy had to pay $8,000 just to hook up and it was only a 20-foot from the house to the road where the water mine -- main hooked up. So I'm just wondering who's going to have to pay for that eventual hookup should our wells be contaminated so -- and it's going to be a lot of money and, again, the risk versus reward is all on our shoulders and I'm

not just saying the Borough because you represent me and we're all in this together. So I really hope that, as you consider this, you're looking at, you know, what are the contingency plans and who's going to pay for them. Thank you.

CHAIR: Thank you, Melody. We have Emmett and Jerry Keeling.

MR. LEFFEL: Hi, my name is Emmett Leffel. I'm president of the Mountain View Estates Homeowners' Association off Outer Springer. I'm here to speak against the CMS monofill site. I moved from North Pole, Alaska in 2011 because of groundwater and air contamination so I'm concerned here.

CMS has stated that the material they are disposing are inert and that they are heavily regulated under state and federal regulations and that those are enough to protect the water quality. However, this is not the case, I believe, and this body should consider additional conditions to insure that this facility will not harm the surrounding water quality or environment. According to a 2006 report by the University of Michigan, Florida and New Hampshire looking at landfill regulations nationwide, C&D debris are not heavily regulated under U.S. federal regulations. U.S. EPA does not specifically regulate C&D debris. Instead, it has been left to individual states to develop their own appropriate regulatory strategies and wildly -- with wildly differing results. According -- the report entitled -- or titled A

Review of Construction Demolition Regulation in the United States was submitted to you by Friday deadline for this hearing. The authors noted are growing -- the authors noted a growing awareness of the potential risk posed by C&D debris and that several states were looking -- working on revising the regulations.

It also points out that C&D materials are not inert in the sense that you and I would think. Building materials allowed in these states can be hazardous containing trace elements such as lead, mercury, cadmium and arsenic. As a result, the report notes the unsafe management of C&D debris can pose a risk to human health and environment from its demolition process to its final disposal in the landfill.

So, as noted, C&D monofill sites are not highly regulated by the federal level and there are clear obvious risks associated with this type of material. So what protection do we have in the State of Alaska I ask and I'll try and answer that. The authors noted that 23 of the states required liners while 27 required groundwater monitoring include very arid climates such as Arizona. They also noted several were revising -- several states were revising the relations so these -- those numbers have likely increased. In Alaska, however, DEC does not require a liner and does not require groundwater monitoring in an area that receives less than 25 inches of annual rainfall. The regulations to re -- do

require groundwater monitoring if contamination is detected. How do we know it's contaminated unless we're monitoring it? I ask that. It seems ridiculous to me but what do I know.

Alaska regulations do not mandate operator training nor do they ban shredded debris or ban sheetrock disposal as is done in other states. Thank you.

CHAIR: Thank you. And I did say Jerry Keeling is next and -- or ladies first and I need to apologize. Back on page 2, I said Roy Jeffers and then I went to Jim Cassidy and it was actually Ray so after Jaley -- after Jerry, we're going to bring Ray up, please.

MS. KEELING: Thank you, members of the commission. My name is Jerry Keeling. I've lived in Palmer for over 70 years and I think we're very lucky in the Valley that we have so many people as exhibited by these hearing, et cetera, who are so caring and loving of the Valley and have their valley well-being in heart. Now, I have been involved hither and thither slightly in certain precious aspects of the Valley and I can assure you that, having seen results of involvement regarding some of our local assets by persons who do not reside in the Valley, our precious assets don't always get the caring that we might hope for. I am against the appearing of this monofill in South Palmer and I think it's really kind of a sad thing that common sense is being not paid our attention to though I know we all have common sense and we've come in many

different roads to get to this point of hearing tonight.

I would raise the question through how many supporters of the aquifill -- aquifer, excuse me, actually live in the area of the proposed monofill. I would just be curious about that. I wonder how many supporters of the monofill, for whatever reason and most of them totally logical and fair, are somehow affected by their annual income by their participation and the support of the monofill because, of course, those who do not might have a different perspective and that perspective certainly should be given serious consideration. I know this requires serious heartfelt thought and I'm sure you gentlemen up there and ladies who have dealt with all this conversation feel like Santa with his bag to fill and not much time left but this is a serious thing. It's going to be for the total future of the Valley, for the people who live here and love it, for the people who come to visit and make it their home perhaps, for this actual national heritage area location that Mother Nature has blessed us with so much. Our inner voice is talking to us and we're sitting up there and we're wondering what really is the right decision. Well, you know what the right decision is because you've been dealing with it for a long time and it's still talking to you. It's not too late to change decision directions. It's not a bad thing.

Everybody makes forks in the road and comes to forks in the road. Don't be afraid of the fork. Look out for your

valley and vote well for the Valley. I thank you so much.

CHAIR: Jerry, 70 years in Palmer. You think you're going to like it here?

MS. KEELING: I have a feeling.

CHAIR: Thank you, ma'am. I promised to bring Ray back up. Sorry for the delinquency, sir, and then we will go to Joe Hannan and Roger VanderWeele.

MR. JEFFERS: Hi, my name is Ray Jeffers. I live on Canoe Lake. I'd just like to remind you guys and gals that you guys took a position and an oath to uphold the welfare of the Valley, to look out for those of us that live here already, not the ones that want to come in. Your responsibility, as members of the board, is to those of us who are already here.

The science, I'm not going to argue about it. You guys have go an over amount -- overwhelming amount of science to get through but the fact is I don't see the performance to back some of the science that's being pushed on us. It doesn't add up. They have a place to dump in Anchorage. They take it to the dump there. It accepts it. I think it should stay in Anchorage. Having been in the construction industry, the stuff that comes out of some of these old houses and stuff, you don't want to have it out here. It's not our problem. We'll have our own problem in another 10 years when we have to figure out what to do but in the next 10 years, I

really don't think it's our problem to deal with Anchorage. They have places that they can look and I'm sure they've negotiated. I know they -- I know a person in Eagle River that's had meetings about it. I ask that you guys search your hearts and do the right thing like you did last year and turn it down. Thank you.

CHAIR: Thank you, Ray. Mr. Joe Hannan followed by Roger VanderWeele and Ramie DeSchnapps [sic]. I'm sure that's not right but I like --

MR. HANNAN: Mr. Chair, Commission, my name is Joe Hannan. I'm the city manager of Palmer. At the last public hearing, Mayor Johnson came up and brought to you a resolution from our council which was unanimous asking you to deny the conditional use permit. Since that time, we received, as I believe your staff has received, a letter from monofill that had asked for CMS, asking us some really specific questions about where the city is from and what we were looking for. For you, we have our 10-point responses to each of those but I think on a much more global way -- and some of those are in the science part of that regarding water quality but what's important is that the City of Palmer at -- where this is, we are the agency that's responsible, ultimately, if annexation occurs into that area for this parcel and so many of the people that you have heard tonight about maintaining a quality of life, of insuring water quality, of insuring a view area

that you come into the city for the economic development side. We're also in partnership with the Borough, the fire protectors in that area. We are the water and sewer provider to that area and continuing out to trunk road, to some of the questions you heard tonight about if something happened, we would be that provider of how that we -- how you would hook up to that. So we are very concerned about the water quality, about some of the science, about some of the conflicting reports that are in this -- the massive report that you have regarding both potential water quality, about kinds of debris that would come onto that area and, ultimately, could go into and we're the property owner right next to it on the Glenn that goes into the existing ponds there.

So the science part, we'll submit a response to you but, again, in the bigger part of what the city council and the mayor, what we're asking you to do is to help us serve the people that are there of economic development which we're very big on, the view quarter that comes into the city, we're very concerned about everything from the burr to debris issues coming in. We're very concerned about water quality and the residents there and protecting those assets because, like the Borough, we also rely on property taxes there and so tonight, we'd just ask you as one agency that ultimately will be responsible for there to deny this conditional use permit. Thank you.

CHAIR: Thank you, sir.

MR. HANNAN: Okay.

CHAIR: I had Roger VanderWeele and then two people with the last -- same last name. It's D-E-S-H -- I know you know who you are.

MR. VANDERWEELE: Mr. Chairman, Roger VanderWeele couldn't make it due to personal reasons and he's my son and he asked if I could present what he was willing to say.

CHAIR: So your name, please?

MR. VANDERWEELE: My name is Ben VanderWeele.

CHAIR: Thank you. All we need is a chicken to make some --

MR. VANDERWEELE: Yeah.

CHAIR: That'd be a good soup.

MEMBER: I'm not there.

MR. VANDERWEELE: I'm a full-time potato and vegetable farmer in the area south of Palmer since 1967. I have sold Alaska grown produce all over the state. We supply the Alaska Commercial stores, Carr's-Safeway, Fred Meyer, Three Bears, New Sagaya, City Market and Wal-Mart. We also supply several restaurants and farmer's markets. Our clean Alaskan environment is key to the superior quality over the crops that we grow and I brought some samples for you here. In the summertime, we grow six different kinds of lettuce. We do cauliflower, broccoli, radishes, onions and on and on and on

but this is what we have left during the wintertime.

We depend on clean irrigation water. Our farm owns and operates six irrigation wells with water rights from the State of Alaska. We follow the USDA good agricultural practices and good handling practices. Our product is inspected by the Alaska Division of Agriculture, the Alaska Department of Environmental Conservation and the United States Department of Agriculture, Food and Drug Agency. Our crops must have good, clean water.

I hereby urge the planning commission not to allow Central Monofill Service to operate in the state's prime agriculture region south of Palmer. The importance of our local healthy food supply cannot be jeopardized. Thank you.

CHAIR: Thank you, Mr. VanderWeele. You need to submit those vegetables to our clerk. I'm serious. Anything that's exhibited needs to go on record and if we're still here at 11:30, we're going to be snacking. I do ask you to hold your applause please. Otherwise we're going to have to allow boo and we're not going to do that. So anything that's exhibited needs to go on official record and I'm really sorry about these last two names. Does somebody know the last name, D-E-S-C-H-A-N-N, DeSchanne? It looks like a Rany?

MR. DESCHAMPS: Good evening. My name is Romie Deschamps and I -- and those that don't speak French, DesChamps. I answer to both.

CHAIR: Well, from a German, a Klapperich to Deschamps then. I'll get it right. I'm sorry about that, sir, but you said it well. Please proceed.

MR. DESCHAMPS: All right. Thank you. I'm here to speak against this proposed location of the dump. I'm a resident of the Valley for over 38 years. I live on Springer Loop Outer so I'm a little north of the proposed area. I've got about not quite five acres of land where part of it's used for pasture. I have raised six children and four grandchildren here and where I live is a prime area as far as I'm concerned. I have plans of willing my property to my grandchildren and family so this area is of high concern to me.

I'm from Western Montana and there I'm familiar with, as some mentioned, the problems with Butte and Anaconda and some of the areas there from pollution and some of the blue trout streams in Montana were affected by the pollution from the mines mainly. I have a concern with pollution issues, septic, scenic issues, property value issues and a dump is a dump for -- and it's forever. I have -- I lived five years in Tacoma area in Pierce County out in the southern part in Lakewood area and when I was there in the late seventies, they had to stop all the building of homes because of the water table getting polluted by too many home septic systems and I have concern about that where I'm living but I also think for future, we need to concer -- consider our fellow residents and

I think this is basically all I have for you.

CHAIR: Thank you, sir.

MR. DESCHAMPS: Okay.

CHAIR: We have another DeShaney [sic]. Is there another member? Deshawn. Deschamps.

MR. DESCHAMPS: DeShawn.

CHAIR: DeShawn. What I did was I tried to -- and one of my -- oh, how clumsy of me, you were phonetically doing this for me.

MR. DESCHAMPS: Yes, I did.

CHAIR: DeShawn and Deschamps, you gave me two choices.

MR. DESCHAMPS: Yeah, one of my relatives was running for U.S. Congress and his name was Dusty Deschamps but he wrote in the Montana paper D-E-S-C-H-A-M-P-S parentheses D-A-Y-S-H-A-W.

CHAIR: Well, if I would have realized that, I would have had a little saute pan ready for you before Mr. VanderWeele brought those vegetables up there so you could have put your French cooking into them. Thank you. We're moving along fine. I appreciate everyone's patience and their ability to get their message across succinctly. We have Rick Fleming, then Cheyenne Guard and Stephanie.

MR. FLEMING: Good evening. My name is Rick Fleming and so many excellent points have been made and I'm going to be repeating some of those and providing a little bit more detail, some that were alluded to earlier.

Environmentally res -- site makes no sense whatsoever. I was just wondering if you guys have looked at photo -- satellite views or photos, aerial photos, of this area. It's surrounded by lakes and it has the ponds within the site itself and it's also, of course, next to water wells for the neighboring homes. To me it's difficult to understand how anybody would think this is a viable site to dump harmful chemicals.

Economically, there are negative issues as well. Number 1, every home near this site will lose value. This will lead to lower tax assessments which will lead to lower tax revenue for the Borough. Number 2, over the 17 years that my family and I have lived in Crimson View, I have attended almost every annual meeting of the homeowners' association. At about half of those meetings, representatives from Anchorage Sand and Gravel have made presentations regarding their quarry which is located between Crimson View and the former Granite Quarry. They bring large aerial photos of their quarry and the surrounding areas and tell us of their future plans. Their idea is to move the dredge back across the Glenn Highway to their quarry and mine there. The representatives then show us an overlay of the planned lake which looks really nice and tell us that they -- that when they are done, their plan is to reclaim the property and turn it into an upscale equestrian neighborhood and, of course,

upscale is synonymous with expensive. This would bring higher tax revenue for the Borough but if there's a dump next door, there's no way this will happen which will lead to lower tax revenue for the Borough.

Number 3, for a few years now, well before mention of a dump was made, my family and I have been looking for property of our dreams to build our retirement home. We just found that property a couple weeks ago and the developer has our name on it but this means that we're going to have to put our home on the market this spring. Last year I read an article that stated the loss in value of our home could be six to 10 percent which was mentioned earlier. This evening I talked to a real estate agent and she said it would be more like eight to 16 percent if we could even find a buyer to begin with. So, to keep things simple, let's go with 10 percent. For me and my family, that's $24,000. I ask you what's 10 percent of the value of your home and would you want to throw that amount away?

I implore you to deny the request for this dump. Thank you.

CHAIR: Thank you, sir. We have Cheyenne, Cheyenne Guard?

MR. GUARD: Yes, sir.

CHAIR: Stephanie Figon?

MR. GUARD: My name is Cheyenne Guard. I'm here

representing my wife. Wife and I own four properties here in Palmer. I'm also representing 25 bony members of my family and I'm representing friends. Now, you look around you and you see here again that you have a large showing of people are asking you to vote no. This is a small representative of the people out there in our neighborhoods that want you to vote no. So I, on behalf of my family, my grandchildren, my friends and my neighbors ask you do the right thing and say no and say no completely so we're not back here again asking you to say no. Thank you.

CHAIR: Thank you, sir. Stephanie, Melanie Glatt.

MS. FAIGON: Good evening. I'm Stephanie Faigon, live in Canoe Lake Subdivision. I have here a match. This is not a regular dump, this is a recipe for an environmental and financial disaster of epic proportion and it takes about the energy in one match to ignite it. There are 8,400 landfill fires per year. In 2011, we had our very own little landfill fire at Alaska Demo, thankfully, with not much environmental damage.

Landfill fires come from several sources. Could be a match, it could be sparks from equipment, it could be a grass fire. Last summer, I drove by a grass fire not a quarter mile away from this proposed dump site and if that wasn't enough, there's actually a significant risk of spontaneous combustion where this landfill can actually light itself on fire through

the activity of aerobic organisms. The financial and environmental costs of a serious landfill fire will be huge. You can't recover these costs from the operator. The costs are going to fall on us, the Borough, the City of Palmer, the residents of the Canoe Lake Subdivision and the other subdivisions.

When this -- yet this is not an ordinary landfill. This landfill is going to be full of tires, millions of them. EPA doesn't consider scrap tires to be hazardous until a fire occurs. Tires break down into hazardous compounds, poison gases, heavy metal and oil. There are two gallons of oil in the average car tire and that oil when you try to put this fire out with water, millions and millions of gallons of water in an unlined dump that is directly communicating with the water table, that oil will move through our ecosystem with nothing to stop it.

Central Recycling Services, you may not realize, actually operates on top of a super -- an EPA super fund site. If we have a fire here, we will have another EPA super fund site. Thank you. I have evidence to support.

CHAIR: And she needs the match. That's how thorough our clerk is that everybody must get the same information. We had Melanie and Rob Oslund.

MS. GLATT: Hi, my name -- excuse me, my name is Melanie Glatt and I live in Outer Springer Woods. I believe I'm the

only one here tonight to testify on behalf of that subdivision. It's right next to Sky Ridge. Excuse me. I'm also a geologist. I have experience in an -- as an environmental geologist, mineral exploration, oil and gas exploration, drinking water, wastewater with DEC in the Wasilla office and I've also run two bacteriological labs in the Valley, one of which I started.

So I've looked over the CUP because I've been seeing the signs on the roadway all about Palmer toxic dumping. You can't hardly miss it and I've looked through mostly the 4,000 pages that have been submitted to you and, frankly, as an environmental geologist, I would say that you guys did your due diligence at great cost but I do have some concerns. I don't think there's been enough life given to the background on these monitoring wells and I would recommend that, you know, even 20 years is not much as far as their elevation and then also, given our weather, given the passing of hands between the different gravel operators over the umpteen years that they've been mining there, that there's just not enough time on the data to really make a good, conscious decision as to what may or may not happen.

A lot of these issues have been brought up this evening as far as the elevations of groundwater and then also the testing on some of these wells. I think you guys did a good job. You spent a lot of money doing it but I also feel like

-- and especially having worked as an environmental geologist -- that you guys are flying under the regs, you're flying under the radar. You're doing everything from what I can see -- not -- I'm not a professional engineer and I'm also not a hydrologist but you've done everything you can to show due diligence as per the regulation. So my concern is where is the state when they decide on who can put a pit in where, why are they allowing the aquifer to be breached? Why are we looking -- even considering allowing a dump -- a monofill, not a dump, a monofill to be in existence with no set confining layer, no bedrock and then you also have surface waters next door? Most of these homes are potable water but they're also under the influence of surface water which at DEC, opens up a whole 'nother bag of tricks. I recommend to anybody that's seen the adjacent area to get water rights and also to test your wells to get a baseline if there is a problem but, most importantly, five-year renewals on this dump so if something happens, it can be reinvestigated but the state needs to get it together with these gravel pits so you guys don't end up with this headache.

CHAIR: Thank you.

MS. GLATT: Okay.

CHAIR: You're on the record. We have Rob Oslund, Drew Webber, Emily Longbrake. So I have a Rob Oslund?

MEMBER: (Indiscernible).

CHAIR: Thank you. Drew and Rob have left for the evening. Emily Longbrake.

MS. LONGBRAKE: Hi, my name is Emily Longbrake. Thank you for the opportunity to provide comments this evening. These comments are presented on behalf of Alaska Community Action on Toxics, the statewide nonprofit public interest environmental health research and advocacy organization dedicated to protecting public health. ACAT's comments were prepared by Pamela Miller who couldn't be here tonight but she is a biologist and executive director with a master's degree in environmental science with more than 30 years experience in environmental health research, policy and advocacy.

She has -- oh, I'm sorry, ACAT has members that live and recreate in the area that would be affected by the proposed monofill. We believe that the proposed monofill is ill advised because it prevents -- presents serious hazard to ground and surface waters as well as public health and safety. I'll focus my comments on the false assumption that materials to be disposed in the monofill are inert. The State of Alaska defines inert waste to include C&D debris for which a liner system is not required. Hazardous materials are common in C&D debris because buildings are built almost entirely with materials that are synthetic, chemically processed or treated often with persistent and biocumulative substances.

According to a peer-reviewed paper published in the

scientific journal and critical views in Environmental Science and Technology, the disposal of these materials are not adequately regulated and include heavy metals such as lead, mercury, cadmium and arsenic which are common ingredients of any building components. PCB's are still encountered in many other materials. Asbestos is found in floor tiles, roofing mastic, pipe insulation and cement siding. As a result of the unsafe environment of C&D debris can pose a risk to human health and the environment from its generation to its final disposal. Even the primary building components themselves such as drywall and wood can impact the quality of groundwater underneath an unlined C&D debris disposal facility.

In addition, chemicals and C&D waste that would not prevent -- be prevented from disposal in this facility have a high potential to leach from the waste material and contaminate groundwater and to volatilize to air. These materials include formaldehyde which is a known human carcinogen, isocyanates which is a highly reactive respiratory and dermal toxicant, hexabromocyclododecanate used in building insulation and recently listed for global phase-out because of its persistent, biocumulation, toxicity and adverse health effects, perchlorinated compounds including stain-resistant carpets and other fabrics which are highly persistent and associated with kidney and liver damage, PBC which is associated with res -- reproductive harm including testicular

cancer.

This list is not exhaustive. These and other substances that would be disposed in the proposed monofill are not inert and have a high potential to harm human health and in many cases, they could not be properly screened or excluded from the C&D monofill because manufacturers are not required to label them. We urge you to deny the conditional use permit request made by Central Monofill Services due to the proximity of the proposed monofill to residential and recreational areas. Thank you.

CHAIR: Emily, I took your testimony as your personal testimony but you made reference to an organization. What was that name again and where is it headquartered?

MS. LONGBRAKE: It is the Alaska Community Action on Toxics which is based in Anchorage but has members in the Mat-Su Borough.

CHAIR: Thank you, ma'am.

MS. LONGBRAKE: Thank you.

COMMISSIONER: Mr. Chairman?

CHAIR: Yes.

COMMISSIONER: I had a question. I've heard --

CHAIR: Go ahead.

COMMISSIONER: Yeah, just for kind of my own edification, I'd heard -- this is the second time I've heard cadmium mentioned. Can you explain to me what cadmium is used for and

what its harm is to the human body?

MS. LONGBRAKE: I can. Cadmium is found in batteries and paints and I know as a heavy metal, it can cause neurological problems. It's related to -- it's like mercury. Does that make sense?

CHAIR: Thank you, ma'am. Appreciate everyone's patience. We're moving along. We're getting a lot of information. Peggy Egelus. Peggy? Donna Mears, Bill Longbrake.

MS. EGELUS: My name is Peggy Egelus and we've lived at Sky Ranch since 1991. Our kids had a great time being raised on the river and it's a beautiful place but ever since we've lived here, we've had to fight these battles on what to do with our gravel pits and from the beginning, Wilder Construction owned that gravel pit next to us. They propose this beautiful setting with houses and -- in the -- whoever. I don't know who approved it but it was approved and so they went ahead and they dug all the gravel they wanted and then they sold to Granite and Granite showed this wonderful setting. It was going to be a residential area with paved walkways and beautiful homes and condominiums and I don't know what all but that was approved because it was a very nice thing to do around lakes. It looked nice but there's no accountability to all these approvals. Nobody goes back -- once it's sold again to a new business like these guys, then

all of those promises go by the wayside and this has already been addressed but, anyway, we keep fighting these battles. We have gravel pits all over the Valley so it's not just these subdivisions that are close to the gravel pit on the Glenn Highway, it's all over this valley and people should be up in arms over decisions like this.

At one point -- and this has probably been at least 10 years ago -- there was talk of a chemical plant going on the west side of Trunk Road intersection, four corners. Now, a chemical plant with all these houses, there's a lot of other places away from residential areas that can be used but we don't have to use our battle -- our gravel pits for that purpose.

Let's see, the dump that's by the fairgrounds, I remember specifically going to a meeting and that was going to be a soccer field and that was going to be finished within seven years. It would be a soccer field for our kids. That has never happened. If they're still dumping or I don't know, they -- that has not become what it was supposed to be anyway.

It just sets a precedent when you allow this to happen at this gravel pit. All the -- I assume all the other gravel pits are in line to become dumps and why would we want that in our valley? My husband - this is from my husband, you're elected officials to represent us and this is not a threat but we are the voters so just please remember that and we

appreciate you not allowing this to happen.

CHAIR: Thank you, Peggy. We have Donna Mears, Bill Longbrake, Murph O'Brien. Thank you.

MS. MEARS: Good evening. My name is Donna Mears and I thank you for the opportunity to show my support for the conditional use permit in front of you. I'm a licensed professional environmental engineer and I am employed by the Central companies.

Waste management facilities are a needed part of our communities' infrastructure. The currently operating facilities in Palmer and at the central landfill do have a limited lifespan and additional facilities to accept inert waste need to be sited in the region to meet waste disposal needs.

CHAIR: I think just a little closer to the mike because we don't want to miss a word.

MS. MEARS: Sure.

CHAIR: Thank you.

MS. MEARS: There are two significant benefits that we can provide with this facility. First, we recycle 75 percent of the construction and demolition material, leaving a small residual to be land-filled. Second, a facility in the Mat-Su will allow CRS to utilize the backhaul to expand recycling opportunities here and extend the lifespan of existing and future facilities.

With C&D debris typically consisting of 30 percent of the overall waste stream, this is significant. This facility will be overseen by the Alaska Department of Environment Conservation. ADEC regulates hundreds of waste disposal facilities throughout the state. The regulations are formed form the state's experience with disposal facilities and it's founded in science and experience of the EPA.

The application before you not only meets regulatory requirements but also has substantial supporting science to show that this project protects public health and safety. The science and engineering in the application includes studies on seismic, percolation, hydrology and wind. I look forward to the approval of this facility and providing greater recycling opportunities to the Mat-Su. Thank you.

CHAIR: A quick question, you were employed by who?

MS. MEARS: I'm employed by the Central companies, Central Recycling Services.

CHAIR: Thank you very much, ma'am.

MS. MEARS: Thank you.

CHAIR: Bill Longbrake and Murph O'Brien and Grant Goulet. Proceed, sir.

MR. LONGBRAKE: My name's Bill Longbrake. I'm a farmer in the Springer system. I'd like to show you the picture of my granddaughter but you can't have my phone. We can't say with certainty that any of the things that we've heard here

tonight will happen but, as reasonable people, we can say that the facts that we've heard, the evidence we've heard, indicates that these -- this project is not in the best interest of the Valley.

If you could say with absolute certainty that the winds would not blow the dust and debris from this project into this aquifer, our neighborhoods, into our homes, into the fields where our food is grown, if you could say with certainty that the fires that will certainly come from the tires and debris stored in this area will not blow into our homes, into our fields where the food is grown, if you could say anything with certainty about the application in front of you, it might be reasonable to approve this but because this is a quasi-judicial body, I want to read the description of a reasonable person. In law, a reasonable person, a reasonable man, historically, is a composite of a relevant community's judgment as to how typical -- how a typical member of said community should behave in situations that might pose threat of harm through action or inaction to the public.

Now, I would venture to say that everyone here who considers themselves a reasonable man, a reasonable person, would not approve this permit.

CHAIR: Thank you, sir. Murph O'Brien. I believe it's Grant Goulet or -- and Rachel Gernat.

MR. O'BRIEN: Thank you. Murph O'Brien. You guys again

have a tough job ahead of you. You got to take a look at what's going on today with your decision and what might happen 10, 20 years from now. As we all know and love, the Valley's a great place to live and it's a growing place. We got 90,000 people now, projection's to have close to 200,000 in the next 20 years. I'm not necessarily in favor of this but I have just some observations I'd like to share.

There's several hydrological reports that have been prepared. Some say it's a good idea and some say it's not a good idea. I'm not sure what effort has gone through to reconcile those reports, the differences. You know, who's done that, who's had the skills to do that? So perhaps a third-party review of the reports are necessary to come to -- to reconcile the differences.

Condition 37, insurance, is that sufficient. $5 million doesn't go a long way. I mean, certainly, things happen. Comes to mind, you know, nobody expected the Exxon Valdez to go up upon Bligh Reef or the BP oil spill or even that Markair would go bankrupt and leave the state with millions of dollars in contamination from them. So, certainly, the insurance requirement should be considered, reviewed and make sure that the company is financially viable and will be here 30 years from now.

And, finally, Condition 38, the term, a 30-year term is not reasonable. This is a conditional use permit. It's not

a land lease. I think that if it was a three-year term, it would foster serious incentive for performance and after three years, if they've done everything that they've said they're going to do, then you can start looking at a five-year renewal.

Those are my comments. Again, you have an interesting job ahead of you. I'm glad I'm down here and not up there. Thank you very much.

CHAIR: Thank you, Mr. O'Brien. Did I -- G-R-E-A-T, is it Grant, Goulet, G-A-U? Please help me out and then we have Rachel and Glen.

MR. GOULET: My name's Grant Goulet, G-O-U-L-E-T.

CHAIR: Good job.

MR. GOULET: I've been working for CRS for going on five years now and I've had the opportunity to do a gamut of jobs within CRS including running the tip floor where the construction and demolition debris is dumped from the roll-off cans onto the floor where it is sorted and visually inspected for any materials that can be reused whether that is cardboard, plastic, metal, ferrous or non-ferrous or even gypsum scrap which can be repurposed as a soil amendment, condition or a fertilizer which is stored in bins at the facility that I have pictures of here. And I have attended the two meetings previous to this and I keep hear -- I keep hearing individuals say that we don't sort through any

material and that it would be impossible to sort through everything that is there and there's a number of people that work at the facility that are on the tip floor that do perform these tasks. They're specifically hired to do these things and when I hear these things, I'm offended because they are, in turn, saying that I'm not doing my job and that I do not take pride in what I do which is completely false and this year alone, we have tested 33 loads that we suspected to contain as -- have asbestos-containing material in them and less than half of those loads that we tested came back positive for ACM and all the loads that did come back positive, we, as a company, are required to notify EPA and OSHA before we clean them up and dispose of them in a legal and proper manner. That's all I have.

CHAIR: A brief question. You mentioned the type of job you do and you said tip floor or what was that?

MR. GOULET: Tip floor, yes. That's where the trucks come in and they tip the 40-yard, 30-yard, 20-yard cans, whatever the material is that the can is in, that's where they tip the material and it gets dumped on the floor where it's an open area where we can sort through it.

CHAIR: So excuse me if these questions are elementary but the material is actual -- all the material is tipped out and sorted and then put back in the truck? Or, I mean, how -- you're --

MR. GOULET: It's --

CHAIR: When do you inspect that or when does it get tipped?

MR. GOULET: It's -- so it's in a can. It gets tipped up, sorted and it gets put on the ground where it's sorted through and any reasonable material is taken out and then sorted through by hand and with equipment and then it is shredded and that's -- then it will go across -- it will go through the whole facility and the plant and then it's also sorted through again by hand on the pick line where there's three to four employees up there that also pick through material and they pick out metal, cardboard, plastics, concrete and any copper or -- and aluminum that can be repurposed. That all gets taken off and then there's also a set -- there's two magnets on the facility that take out metal from the material that isn't caught by hand or on the floor.

CHAIR: Clearly, this isn't a question and answer period but how are you trained or how do you know what to look for?

MR. GOULET: Training comes a lot of time on the job and then they -- we do have classes that are offered for asbestos and hazardous materials and there's -- the people that do work on the tip floor are trained in those areas and then they bring -- they will be there to help everybody else learn.

CHAIR: Thank you. Again, to my fellow commissioners, I will look for the light. They're allowed brief questions from

testimony. Thank you.

MR. GOULET: That yours?

MEMBER: (Indiscernible).

CHAIR: We have Rachel and Glen and it looks like the final name on the blue not heard from was Bill Ingaldson. Please proceed.

MS. GERNAT: Thank you. I'm Rachel Gernat. I've lived and/or worked in the Valley for 20 years and I currently live off the Southern Outer Springer system. I don't want to discuss the science. I'd like to focus. I want the result of the approval of the request, if you approve this permit, what this would mean.

If you approve this permit, you are telling the residents in this area and in the Mat-Su Borough that there is no harm to health and safety of our citizens. You will be saying that Central Monofill Services' claims are all true. However, if we look at what they've said and done in the past, their honesty is to be questioned. They've been previously fined by this borough and they haven't followed through with what they've been required to do. In the law, when someone is brought up in front of a court, they look at their priors to determine how they will act in the future. To look at CMS's priors is to show how they will act in the future and to question what it is they are bringing to you today.

They have been given a chance to show this borough what

they are willing to do and they have failed in that opportunity. I can't understand why this commission is willing to play with our health and safety. I feel like I'm sitting in a civil action, that novel that focused on Woburn in the contamination by the Woburn tannery but rather than being on the end where we're already going to people saying I am sick and my children are sick, we are at the forefront and we are at the beginning and we can stop something like that from happening but when we look around and see who is supporting this, it's not the people who live here, it's not the people who have to breathe the air or drink the water, it's the people who benefit financially.

One of their environmental representatives said we need to -- we need part of our community -- we need this dump or monofill because we need it as part of our community infrastructure. The community infrastructure where these materials are coming from is not our community. It's another community.

There are people here from all walks of life asking you to deny this request and that's because we all have one central goal. It's all because we want to live in a place that is environmentally safe and our lives all stand to be greatly impacted if you grant this permit. If you deny the permit, then CMS will find another place to go. If you approve it, then we are all victims of your decision.

Approving this permit and allowing this monofill, then what you are saying is that you can look at each and every person here today and say that there is no health and safety risk to us.

More importantly, if you approve this permit, then you are look -- willing to look at all of our children and be able to tell them that we protected you and do not worry, your water, your air will not be affected. If you feel that you can do that, then approve it, but I believe you cannot and I'm asking for you to deny the request.

CHAIR: Thank you. We have Glen.

MR. PRICE: Good evening. My name's Glen Price. I'm one of the attorneys for CMS. I've been before you before with the last application and I'm kind of going to repeat myself. You know, you have an assembly. They passed an ordinance and they set up this body to follow the ordinance. The application came in with a lot more information and reports this time. The borough staff evaluated it, they answered their questions. There's some code sections that say what they have to do. They've met all those requirements. The Borough says they've met them. You know, the public testimony, you know, there's a lot here. Most of it's people's opinions not supported by science and I guess the last thing I would say is, you know, the problem really is there's no zoning in the Valley and, you know, everybody knows

that and if we had zoning, we wouldn't have these issues but, you know, that's a political solution so -- and I'm sure I have 300 people that hate me now but --

CHAIR: 212, Glen. Thank you. Mr. Ingaldson, for the record, you are CMS counsel and at the conclusion of this public hearing, I'm going to invite the applicant to respond so if you take this three minutes, you won't be allowed to do -- respond as the applicant.

MR. INGALDSON: All right. Mr. Jacques is going to respond as the applicant. I'm -- I am the attorney for CMS. I'm also a property owner in the Borough, both residential --

CHAIR: I appreciate that.

MR. INGALDSON: I mean, commercial property and recreational property.

CHAIR: Proceed.

MR. INGALDSON: I just want to say, first of all, I think it's wonderful that all these people are coming out here and expressing their opinions about their land and their property and I cer --

CHAIR: Speak up just a little bit, sir.

MR. INGALDSON: Yeah, and I certainly understand that and I certainly understand the issue of, whether they say it or not, we don't want this in our back yard. I understand that. I get it but we live in a community now -- we live in a society that's a throwaway society. We saw a bag of potatoes

here that's wrapped in a plastic bag that's going to be thrown away somewhere. We have houses, we have buildings, the Carr's shopping mall that just got torn down and thrown into a landfill and the difference with CMS is that they're recycling. What did we hear, 75 percent of what's taken, they are recycling. Alaska Demolition isn't. The Borough landfill is not recycling. So they're do -- and we will not survive as a society unless we're going to encourage some type of recycling.

The last thing I want to mention I think is really important because I heard two main complaints coming out here. One is the issue about wind which has been addressed and the Borough's concerns have been met but remember also they're going to find out if they're not complying with the wind the very first summer, the very first high windstorm and I'm sure the Borough's going to be there saying something and they'll be shut down and they will have -- they will not be able to operate and so if this doesn't work, you will know that before anything can happen.

The second and most important thing that we've heard from anyone is our water, our well water, but if you look at the Terratech [sic] report -- and Mr. Dan Young is here to answer questions if you want -- what's significant is this, the aquifer that you're talking about here that they're -- that the studies go that says this leachate will not reach, it's

not the aquifer of the wells. You have an aquifer and then you have another 40 to 100 feet of silt before you get to the aquifer where the wells are. So this is a really unique location in that with the monitoring wells the Borough's proposing as a condition, you will know what's happening long before it's even possible if -- to get to the drinking wells. That makes this a really unique location as opposed to some of the other locations that -- and the last thing I'll say is this is that that is -- with that monitoring, thing -- they will be responsible and you will know that right away and, remember, there are a lot of people here with very strong opinions. That's certainly understandable but people say let's put it somewhere else and you can bet that no matter where you're going to put a monofill, you're going to have people, wonderful citizens of the community, just like all these people, with the same concerns and complaints that -- because no one wants to have it in their back yard but this is a -- as -- probably as good of a plan you've seen. You've seen the studies. The Borough's concerns have been answered and we've asked you to approve it. Thank you.

CHAIR: Bill, I get one brief question just because, clearly, facts are important in something like this and you mentioned the ideal location because you have the one water table and then you actually mentioned a hundred feet or 140 feet before you get down to the well water.

MR. INGALDSON: Forty to a hundred. It varies but at least 40 feet more of silt before we get down to the wells as I understand it.

CHAIR: Thank you. Out of courtesy, I've allowed -- we're erring on more information instead of less information so I'm going to ask professional respect and accountability and the pink sheet means you've already spoke to us. We have it on record. We have it on minutes, we have it recorded. Please don't come up and say the same thing you said two weeks ago. So if you have new data, something important or a new message, that would be the benefit because this is a continuation of a public hearing and I could have stopped it where we're at but out of the goodness of public testimony and more data is good, I'm going to do this but please try to remember we have your testimony on record from two weeks ago so if you've already testified, please bring us something new. We have Judy Holbrook -- Judy Holbrook -- Judy Crosby, Richard Harbuck and Bonnie Kelly and if you've decided like it's been said and you want to relinquish it, I'll -- I can -- I'll understand. Thank you.

MS. CROSBY: Thank you for letting me speak again. My name is Judy Crosby and I live in the Canoe Lake Subdivision. Concerns are according to their application, CMS will use baled tires and the building of retaining walls and steepled slopes. When questioned, Mr. Durand could not estimate how

many tires would actually be buried. He said a lot of tires. In reference to one of their other sites, we agreed that they would use about 70 to 100 tires per bale. I do believe, looking at the Palmer monofill site, we will be talking about more than 100,000 tire bales. This poses a health and safety hazard.

These quotes were taken from May 18th, 2006 scrap tire management forum in North Dakota in a presentation to states, interested stakeholders and EPA Region 8 where baled tires were used for corrals, windbreaks, roads and foundations. Terry Gray, TAG Resource Recovery, Houston, Texas, stated the following, baled tires fail within two to five years. Even stainless steel bands break. Baled tires do not hold integrity under load. Baled tires still burn. Involved in the Tracy fire site which burned for two years. After a fire, you are left with a mixture that in many cases requires disposal in a Class 1 landfill because of its toxic nature.

Terry Gray has a B.S. in chemical engineering from Princeton University and has been involved in tires since 1984. He has been advisor to 17 states, five providences, two foreign countries and the EPA. He authorized the scrap tire stockpile guide for EPA. David Halderman, division administrator of waste management division, Nebraska Department of Environmental Quality, stated the following, in water, groundwater scrap tires tend to leach iron and zinc and

exceed secondary drinking water standards.

This monofill site and the way it is to be constructed has the potential of being a disaster both economically and environmentally. Most of us have seen what happens when construction trash and -- or tree stumps get buried in the ground and you end up with a sink hole that has to be filled. CMS is proposing 35 acres of ground up construction trash up to 75 feet in height surrounded by thousands of baled tires. The tires -- tire bales will eventually fail, thus degrading the integrity of the berms surrounding the monofill and it has the potential of collapsing in on itself caused by the decaying material.

The other problem is potential for fire. The Alaska Demo site has already caught fire once and the CMS site is using ground-up debris which has a higher potential for fire. I ask that the planning commission do what it -- is right for the local residents, Palmer and the Valley, deny this application by Central Monofill Services. Thank you.

CHAIR: Thank you, ma'am. Richard Harbuck, Bonnie Kelly, John Stuart, Junior.

MR. HARBUCK: (Indiscernible).

CHAIR: Thank you. And your name?

MR. HARBUCK: Richard Harbuck.

CHAIR: Bonnie Kelly?

MS. KELLY: My name is Bonnie Kelly and I just -- I

basically have a couple of questions. I drove by the site today and maybe it's been there for a week or two, I don't know, but there's a big for sale sign along the Glenn Highway there. My question is who in the world is going to want to buy that property? I certainly wouldn't knowing that there's a dump right next to it.

It seems to me that this business probably -- I have no complaint with recycling. I really don't. I think it's a good thing. I just think this is in a wrong place of record for this area. I don't understand why a business would enter into something like this that's going to be controversial without checking with people around to see if they're going to want the prop -- want the business there. I hope they realize that we're going to be watching -- if this passes, we are going to be watching. First place of garbage I see along the highway, the first violation I see, I'm calling the Borough and I'm going to be swearing at the Borough. This is going to open up a big mess.

That's really about all I have to say right now other than I don't envy you making this decision but I want you to know you're probably going to be the most hated people in the Valley if you approve it.

CHAIR: Thank you. John Stuart, Junior?

MR. STUART: (Indiscernible).

CHAIR: Joe Moore, Eugene Haberman?

MR. MOORE: My name's Joe Moore. I'm a Palmer area resident, retired soil scientist. I gave testimony last time. I don't want to repeat it. Basically, what I said last time, that our precipitation and snow melt patterns here in the Valley will infiltrate the soil in certain times of the year. I did hear a statement made that now people are recognizing that there will be moisture moving down through the monofill but it will be unsaturated. I just want to state that it doesn't matter. It can be unsaturated, it can be saturated, it can be anaerobic, it can be aerobic, you still conform leachate which will move through and potentially -- and I say that because it's an unknown -- can go into the water table.

The only way to guarantee that any water infiltration and possible leachate will not enter the water table unless they have a liner or engineered soil underneath the fill and they have an engineered soil cap on top of the closed cells and the only way to detect any possible contamination at its earliest stage is to require a well-designed and independent monitoring system. Thank you.

CHAIR: Thank you, sir. Eugene? Lisa Kallander, Sarah Wolcoff.

MR. HABERMAN: As you know, I've attended quite a few planning commission meetings and most of those times there's hardly any public here. This is one of the rare occasions I'm not alone in this room. Generally, I see people not here, you

do what you want to do. I address you and previously has always on the public process. I've asked you to address concerns earlier and instead of addressing it, you simply says the clerk says we're doing it right. Unfortunately, you're not doing it right, the public process. I didn't appreciate the chair rec -- in words to introduce those who were to speak again. I call it illegal restraining the public to speak by your instructions tonight at the meeting. A redo was what I requested in the previous meeting when I saw that the resolution was not part of the introductory part of the -- introducing this public hearing and then how could the public in the December 1st meeting speak on something they didn't see? And that's why I asked for a full redo.

I also called attention, there's the question about people being recused. Okay? That calls into question the meeting because the whole meeting happened with Kendig present in the audience and many parties witnessed it. You did ask him to be recused but then this public hearing needed to be totally redone.

I also had another note to this thing on this -- when I say on public process and how meetings are held, frequently referred to attorney. Now, for the record for those since there's so many people here, there was a training session on the Open Meetings Act presented by the borough clerk and the attorney, Nick, in August for borough commissions and so

forth, community councils. In closing remarks, Nick, the borough attorney, said in regard to our policy, the Open Meetings Act, everything we're doing is right. He also added the words you are hearing from people that say you're breaking the law. Don't listen to them. This keeps on going day after day, week after week, month after month. Stop listening to the borough attorneys on this. Think for yourself. It's common sense. You're not in compliance. Thank you.

CHAIR: Mr. Haberman, I'm allowed brief questions. Just for the record, if you have a challenge with our borough attorney, take it up with the borough attorney and don't be -- don't -- you know, we, as the commission, are following our instructions and as far as public testimony, I've allowed you up here twice when I could have closed the audience participation because this is a continuation, I've never closed it yet and I understand your vigilance and I appreciate that and I hope you're at every meeting but I don't want the audience to take in participation that I have instructed. I'm letting everyone speak three minutes but because we've already had our audience participation, I could have closed it. So I'm erring on the side of judgment. I'm erring on the side of all public participation.

MR. HABERMAN: On the side of ju -- can I have just a two-line response to that? On the side --

CHAIR: Two lines? On response to that, as I said

earlier in the previous meeting, a redo is everyone. Twice in this meeting, you said earlier that if there's time, you'll allow people to speak again. That's what you said twice.

CHAIR: Thanks.

MR. HABERMAN: That's wrong.

CHAIR: We're doing it. I have a mandatory adjournment time is all I said. Thank you, Mr. Haberman, for your vigilance. Lisa and Sarah?

LISA: I'll pass (indiscernible).

CHAIR: And you are?

LISA: Lisa (indiscernible).

CHAIR: Lisa passes. Sarah Wolcoff, Dave Jenkins. And you are welcome and feel welcome. Thank you.

MS. WOLCOFF: Okay. Thank you. My name is Sarah Wolcoff and I reside in an area where my water comes from underneath a proposed monofill. I was going to read to you the information that you already had, just a reminder that the Ohio study, all 30 -- all 30 of the monofills showed parameters that were exceeded for health and water quality standards.

We don't live in igloos here. We have the same materials in our buildings and our homes as they use in Ohio and I would say probably very similar weather and climate conditions but the point I want to have that's new today is that CMS reports claim that their monofill may cause levels of manganese to rise which they say is no big deal and that this is within the

EPA guidelines, not a harmful element and only affects the palatability of the water but this is untrue. The EPA has published a drinking water health advisory for manganese which I have right here and in this guideline, it seems like they've kind of cherry-picked their facts that they've presented to you. Palatability or organoleptic guidelines are set at .05 milligrams per liter but there is another higher guideline that is listed in the EPA's guidelines and it is set for .3 milligrams per liter and that is set to -- specifically to protect against concerns of potential neurological effects for manganese.

Pioneer Meadows Subdivision had recent well work and testing done to address its very high levels of manganese and testing in this report right here showed a level in our well of 328 parts per billion which is -- equates to .3 to 8 milligrams per liter. So that is already over the EPA level for neurological concern. It is caked into our well pumps and has caused water flow and sediment problems. We are drinking this bitter-tasting water already and shown in this picture right here, this is what our well -- sorry, this is what our well looks like. This is all manganese caked on our well.

So this substance there, that's coming through our well and it's causing chronic exposure already to higher levels of manganese. This can cause Parkinson's like symptoms, psychological problems, learning disabilities and reproductive

problems among other grave concerns. CMS's claim that it is safe and will only yellow our teeth is deceptive and insulting.

CMS has told you that they can run this monofill safely but there are many people here who obviously disagree. There is way too much at stake. You cannot say that this can be operated without any risk to human health or property. Thank you.

CHAIR: Thank you, ma'am. Dave Jenkins, Diane Warta.

MR. JENKINS: Thank you very much for allowing me to speak tonight and two things that stick in my mind after --

CHAIR: Please state your name for the record.

MR. JENKINS: Oh, sorry about that. My name's Dave Jenkins and two things stick in my mind from the previous meeting, things that Mr. Strawn said and he said that the aquifer was a moving target and he -- you know, that would allude to me that, you know, there's a great danger from natural occurrences like heavy rainfall, earthquakes and things of that nature and also -- let's see, I'm -- must be having stage fright here because that second one kind of eluded me but going on to what some of the representatives from the company have said -- and I refer to the young man. I'm sorry, I can't remember his name but worked on the floor and sorted the things. Well, that's all well and good but what kind of oversight does the Borough have? I have not

heard anybody say that there's going to be a borough employee overseeing these operations on a daily basis on the floor with these people and, you know, that gives me a lot of concern too.

The company talks about their science and their studies and I think that that's a really good thing but at the same time, it makes me think back to something a hundred years ago. There were scientists and planners that came out with all sorts of studies on the most perfect ship that could sail the seas. Well, on its maiden voyage, it sunk and killed many, many people. It was called the Titanic, as we all know, and that just shows that despite the good feelings of men that's -- and the best plans of society, that there is no such thing as a sure thing or no certainty of protection and that brings me back to what Mr. Strawn said the second time was that this project was not without risk and I would ask that the commission think of that deeply because there's a lot of people here that have come out of their homes and there's many more that didn't but the preponderance of the public opinion is that this should be denied and I would agree with that, that we all want to live in a safe community and I want to drink my water that's filtered through God's green earth, not that's filtered through manmade green asbestos and I thank you very much for your time and I would ask you to walk the moral high ground and deny this application. Thank you for your

time.

CHAIR: Thank you, sir. Diane Warta, Kathy Joe Johnson. Warta.

MS. WARTA: I'm Diane Warta. I live in Pioneer Meadows. I -- I'm a homeowner there. I grew up in Palmer. I want to thank you all for coming to my birthday party tonight. What I can't comprehend is why our borough would dismiss the report of a hydrologist they hired to evaluate the safety of the monofill location. Mr. Munter said it would very likely lead to the contamination of our aquifer. Why do we listen to the hydrologist paid for by CMS? They have done what they are paid to do which is contradict Mr. Munter's findings.

It seems certain that the Borough would not choose this site for a landfill. They would not risk their liability. Why do we let a private company who stands to make financial gains at the community expense establish a landfill here? As residents, we see the fluctuating groundwater. Since the last meeting, I was talking to a resident who's been here, I don't know, 50 years, more than 50 years, and she talked about the meandering Matanuska River. When it was over on her side, their water levels were much higher. Right now, we're looking at water levels in the proposed site and we're saying, you know, they're a certain height, we're hoping they'll be 10 feet below the site but right now, the Matanuska River is on the far side. It's not on our near -- the near side. And it

will come back. It's a meandering river. It's done it over the years. It's not going to change.

So I'm not -- the many concerns voiced tonight, I'm not asking you to impose stricter regulations on Central Monofill Services, I'm asking you to deny the conditional use permit which would allow for certain contamination of our aquifer. I'm asking you to listen to the strongly-voiced concerns of the individuals and families who make this community their home. I'm asking you to follow the advice that Mr. Munter's given in stating the unsuitability of this site. We can't afford to clean up a contaminated aquifer and Central Monofill Services certainly won't. Thank you.

CHAIR: Thank you. Kathy Joe Johnson? Kent Johnson?

MR. JOHNSON: My name is Kent Johnson. I just wanted to speak to start with on a statement that Mr. Jacques made last time about if the spillway was completely filled and stopped flowing, the water level would rise about eight inches. So I've got a picture here I'll show you later. It shows the height of the weir when Wilder operated it and the height of the spillway. There's quite a bit of difference and you've got to wonder why they needed that extra height. I think maybe Mr. Sellen explained it because they were selling liability and you say why is it a liability. Well, here is the third pond, the east pond closest to Palmer. It has a elevation at the ice level of 90 foot above sea level. The

center pond has a level of 88 feet above sea level. That shows you the water's pushing towards Palmer even though it's spilling and this is the spill where you can see this narrow band here.

The west pond is 72 foot above sea level. That's 14-foot difference. Now, you wonder where the water goes? Their own hydrologist tells you it's flowing into the lakes nearby and the water. Irene Lake in the winter -- or the summer of 2013 had a discoloration. DNR came out, did water tests and said there was a high level of iron oxide that showed up from an unknown source. When the water froze in the winter, I got pictures, this is a red lake. It's pristine -- or it's not pristine, it's red, it's ugly. Now, you wonder what else happens. We got pictures of Irene Lake after a death gauge was placed and this was after the water had already risen about two feet. It shows another 2-1/2 feet rise and you can see the property destruction and shoreline loss.

Same thing happens on Canoe Lake. You can see the property rise, you can see this used to go down to the dock. Now you walk up the dock after you walk in the water. This is the depth of a shore-side ecosystem. These lake -- these trees are hundreds of years old. This is all of Canoe Lake, Irene Lake, Kepler Lake, Bradley Lake, a whole watershed down to the Matanuska River. This is kind of a time line picture of the water here. By the end of the summer, it's up here,

this tree is dead. That's at least five foot and what did CMS bring to the party? Well, they brought shredded debris on top of wet, saturated soil barricaded with tires. These tires -- take a look at this. They've got their shredded stuff, the tires here maybe to stop the wind from blowing the debris in but, actually, it's to hide the water behind the tires. These tires are sitting directly in the water and talking about tires in the water, they're floating in this east pond. They float for while and then they sink out of sight, out of mind. Same thing with the debris in the center pond.

You guys can believe whatever you have to say there about say CMS but it's obvious, they're affecting all of our water and you guys are fools if you approve this because everybody here will be paying for it including you, the Borough. It's just -- it's so obvious. Thank you for your time.

CHAIR: Thank you. Please turn those into the clerk. I have two names on the pink sheet and then one last for the blue, then I'll ask for anybody else from the floor. I have Bill Quantick, Stephanie Nowers and then Joe Feigen.

MR. QUANTICK: My name is Bill Quantick and I have a few things that I'd like to just put in here. I want to submit this afterwards but a lot of this thing has already been read over. One of the things that I was really concerned if this thing goes through, if the issue of the permit for three years and then require a renewal process, it was done with a -- an

Alaska Demo permit, also including a re -- all -- a clause to revoke and permit. There should be multiple violations or evidence of water or air contamination. Now, my que -- my thing is like if this contamination is found, the applicant must remove all debris, restore land back to its original prior to the monofill. That's one thing that should be put in there because it's a penalty that you have to pay if you're not playing the right game.

Second thing is that including real penalty, if they do it wrong and require they put up a reasonable amount of money to cover potential cleanup costs, this should be -- include more bonding insurance in the $5.5 million currently required. There should be a signed document -- and this is what I'm saying, in any kind of -- when you rent any kind of property, commercial property, anything else, there is a personal guarantee involved. You are guaranteed for the length of whatever time personally to guarantee this, not your business line. You can't hide it in any kind of shell corporation or anything like this. So I want to see a personal guarantee for companies, all of theirs, and the president and the manager needs to sign it. Now, if they refuse to sign it, you know there's no guarantee to this. It's a false world they're living in and the next thing is the question to ask is in merc material, one time they were talking about it, there was a value to it. Okay? And they said they could sell it. I

don't know if this is going on with the Anchorage landfill or not, they're still selling it to them or not but if they sold it, they put it in a package, in a bag, would there be an SDS sheet applied to that? Ask that question. If there's no safety data sheet a part of this, then the stuff is good. Okay? But if they have -- they're required by law to put a safety data sheet in there, then you know what they're putting in our ground is not good.

So 25 percent waste, there's another profit margin for them that they could go into by selling this stuff as whatever they want. That's it.

CHAIR: Thank you, sir. Stephanie?

MS. NOWERS: Thank you. Thanks for taking the time tonight. I want to speak to a few of the things that have been said. There's been asked why we didn't speak out against the Alaska Demo site. I can only speak for myself. I did not know it was up for renewal. I also know there's some significant differences to me between this site and that one. It's smaller, they don't accept shredded debris which is shown to have hazards in other sites nationwide and it doesn't appear to be surrounded by a -- it doesn't have the water problems I know of that this site has.

There's been reference to the recycling and CRS operation. I don't want the Board to be confused between the recycling and what this is which is a dump. None of the

people who have talked to you today who have talked about the careful work they do at the recycling are operating where they would dump this material. The talk of how carefully they sort things does not take into consideration all the materials that would still be allowed in the dump that have been shown elsewhere to leach toxins. So they may do a good job sorting but that material is still going to be in there that's leaching some of those materials you've heard about.

Glen Price, one of their attorneys, said this is not supported by science in terms of what the residents brought to you. Actually, what the residents have brought to you is a record of science. They brought you documents, studies and records from the Borough government and scientific agencies. CMS has given you empty promises and has not addressed the concerns that have been brought up by residents or the documented concerns in other states.

Mr. Ingaldson said we are a trash society. We are, Mr. Ingaldson, but there are places for taking that trash. We have regulated public dumps that have public oversight and have rules. What this is is a private operation looking to make money by not dumping at a regulated facility and doing it in a way that puts the burden on residents.

Mr. Ingaldson also criticized us for being full of opinion. For that, he's been very certain of his hydrological opinion of this site given that he's not a hydrologist. I

wonder if he's aware that in Granite in 2010 admitted to the Borough that he had mined into the aquifer. He also said this will be shut down if the wind blows right away. Where do you see that? I don't see anything that says it will be shut down if the wind blows. It says you'll clean up. Where do you also see penalties in this conditional uses for if they -- if something goes wrong in terms of contamination?

CMS is making promises that they can do this right and I want to take them at their word. I believe it is a terrible site but if you want to do this right, put some skin in the game, show us you believe what you say, put a liner in, groundwater monitoring and agree to a five-year review. If you believe what you say, when it comes up for a five-year review, we will all support you. Also, recognize the science that's out there. Do not put sheetrock in here, burned materials and do not allow shredded materials as they're not allowed in other states. Ohio has recognize shredded materials as a particular hazard because they cannot -- the regulators cannot tell what the original material was.

I recommend the commission add these conditions to the proposal and that they take into account that, again, you have to protect the health, safety and welfare and, given the record in front of you looking at health, safety and welfare and property values, that you need to add -- if you're going to approve this -- additional conditions to this, that make

sure that this is enforced and that the empty promises of the past, that those mistakes are not repeated in this case and that you have a way to shut this down should something go wrong. Thank you.

CHAIR: Thank you. We have Joe that has not spoken previously and it was page 6 of 6 on the blue sign-up sheet. Please state your name for the record.

MR. FIGON: My name's Figon. I live on Dunn Court and everybody's pretty well covered the water, the air. Well, what about noise pollution? What kind of equipment are they going to have set up there? The crushers, the loaders, the trucks going in and out, the traffic, all the above plus that all has a potential to fail. Failure means broken hydraulic lines, oil spills. I worked on the Slope. If you dumped over a half a cup of oil, you dumped the ground out, bagged it, double bagged it, took it down and then burned off the oil to clean the sand. This ain't going to happen here.

Like the other -- young gentleman said, they pull a truck in, they dump it. Who knows what's in that truck? There could be a ruptured five-gallon drum in there. Gets everywhere. That means it's going to slowly float into the water system. Okay. That's fine. Spring, fall, we like -- yeah, this is Palmer. This is the largest fly-way there is. You've seen the geese and stuff by the fairgrounds. They don't pick a lake. They pick a lake, they land and it's

surface water that's going to be contaminated plus our -- probably our groundwater. I'm against it. Thank you.

CHAIR: Joe. I have taken everyone as they've signed up. I've given everyone a chance that had not spoken to speak first. I've taken everyone that wanted to re-speak the opportunity to speak. This is the continuation of the public hearing from December 1st, previous testimony. Is there anyone that has not spoken on Resolution 14-33 that would like to? Please come forward. There should be a sign-up sheet at the podium. Take the time to write your name. Nothing there?

MS. LEWIS: I do not see one here.

CHAIR: Okay. in the -- well, you can just take this one down there. Again, to make certain that everyone gets the opportunity that I've given everyone else, I've taken everyone as they have signed and if the spirit is moving anyone that has not spoken, I will invite you up to the podium. Write your name, first and last, clearly legible and then speak your name into the microphone and then the time will start. Notice her three minutes has not started yet.

MS. LEWIS: Thank you. My name is Kristin Lewis and I reside in the Grandview Subdivision. A lot of the points that I would have liked to have made have already been made so I'll just focus on three things. The first is in the Mat-Susitna comprehensive development plan, it states the Borough encourages active public participation in comprehensive

planning efforts. I can only assume that the point of this is not to just make the public feel like they are participating but because taking their counsel into consideration yields a better decision. I urge you to take our counsel into consideration.

And also it states later a comprehensive plan cannot be implemented entirely by codes and ordinances. It states promoting redevelopment or in-field development and fostering good public participation, perhaps the keystone and the catalyst of most plan implementation techniques. I would like to call to your attention that keystone is defined like this, the central wedge-shaped stone of an arch that locks the others together. Again, I urge you to heed this good public participation. The Borough has gone so far as to call it the keystone of this process.

Finally, I would like to state after five-ton, 15 years of poisons leaching into the lakes and streams and groundwater, it will only be getting started. Once placed underground, those toxic materials are committed to a very long-term relationship with the Matanuska Borough. Many of won't see this permit through to its conclusion. It will probably be others who will have to debate the outrageous, extreme measures required to remove this future blight to the Matanuska Valley at the cost and expense to the Borough and residents, taxpayers, the state and the federal government.

Alex Strawn stated it's risky about the varying water table. The Borough's mission statement is to protect the welfare of the residents. Therefore, the borough staff recommends approval? Am I missing something here? Thank you very much. Especially thank you for your service.

CHAIR: Thank you, Kristin Lewis. Is there anyone else in the audience that has not addressed this commission regarding Resolution 14-33? Before I officially close the public hearing that began on December 1st, I would invite the applicant to respond to questions or statements from the public. I can publicly state I appreciate the succinctness and the sticking to a fact as complex of this application is. We could review a lot for a long time. I'm not limiting your testimony at all and we are allowed to question you as commission members. No commissioner discussion at this time. I will invite the Borough to state anything. At this time, they've stated their case unless they hear something else but at this time, the applicant has the floor. You can take the podium if you'd too or -- thank you, sir. It's important we all hear you so try to get that microphone so --

MR. JACQUES: That's what I was trying to work.

CHAIR: I understand.

MR. JACQUES: And I'm a little nervous so --

CHAIR: You're doing fine. Put the microphone between the documents there.

MR. JACQUES: There we go. Okay. Before we start into that, my closing on this, I'd like to say if they've -- before we start on my closing, I'd like to introduce two of our experts. You've already heard from one, Mr. Larry Helgeson, the landfill design engineer of record, and Mr. Dan Young with Terrasat, one of the professional hydrologists that performed the research and modeling of the landfill design in the event that the chair or members of the Board have any further technical questions they would like to have addressed before I do my closing.

CHAIR: I'm going to ask you to speak up just a little bit and then --

MR. JACQUES: Okay.

CHAIR: -- have your gentlemen stand up so we know who you're talking about.

MR. JACQUES: Okay. This is Dan Young with Terrasat and Larry Helgeson.

CHAIR: Thank you, gentlemen.

MR. JACQUES: Okay. Good evening, members of the Board. Thank you for the opportunity to address you with closing comments. First I would like to say thank you for your time throughout this process. I'm sure this has been a very time-consuming process for the board members. There's a lot of documents. There's a great deal of information to review and absorb prior to making an informed decision and I also want to

thank the public for their inputs.

We've taken to heart the issues raised by both the board members and the public. We hope that we've addressed your questions and concerns. We've revised the design that's needed to address the valid concerns. For example, Commissioner Healy during the last hearing, you had expressed concern about the impact of the proposed highway widening and visibility from rights-of-ways. The revised design addresses those issues. Commissioner Rauchenstein in the prior hearing expressed concern about precipitation causing leachate. In response, we hired three sep -- professional engineering and hydrology firms to perform studies which included extensive research and modeling and revised the design to incorporate their recommendations.

We've worked extensively with the Mat-Su Borough planning staff and I will tell you that they were very thorough in their review. We responded to substantial detailed questioning from the staff over the past year, the result of which is the almost, well, now 4,000 pages of information that the Board has in front of them.

Regardless of what anybody's position is on this CUP, staff should be thanked for their huge effort that they expended in thoroughly reviewing our application. The recycling that we propose addresses a large component of our waste, construction and demolition debris. This project will

be able to expand C&D recycling for the entire Mat-Su Borough. This is an opportunity for all the residents in the Mat-Su Borough to substantially and responsibly increase recycling what would otherwise be waste into the landfill. I would expect that most of the people present at these hearings would say they support recycling because it's the right thing to do. We currently recycle an average of almost 2,000 ton -- 20,000 tons of waste a year at our Anchorage facility alone and, while I appreciate that many folks here separate cardboard and plastics from their daily trash, this only removes a very small percentage of the material from the disposal waste stream. To provide a significant impact on waste reduction, we need to divert much larger waste streams such as C&D wastes from the landfills for recycling.

In addition to removing recyclable materials from the waste stream, we work to develop new uses for large quantities of materials for local use that would otherwise just become trash in landfills. This is how real meaningful recycling works.

If we, as a society, want to effect the changes needed to reduce the vast amount of waste that we are throwing away daily, we need to increase recycling as one of the components of that change. We need facilities such as what we are proposing. The folks here may well agree but say just put it out in the middle of nowhere, let somebody else have to deal

with it. I understand that reaction, just don't put it in my back yard. However, as we've seen, that sentiment is expressed by neighbors wherever it's located. Since this facility is not publicly funded, the siting of the monofill and the recycling operation has to make sense. This is the property that we own. It's centrally located and the location is convenient for the users of the Mat-Su Borough. People simply won't travel out of their way to recycle. As a former gravel pit, it's already been excavated and the property is industrial property surrounding primarily by operational gravel pits.

Central Monofill Services owns a permitted monofill at Salcha in the Fairbanks North Star Borough operated by CRS. Certainly most people here would consider that to be in the middle of nowhere. However, during the Fairbanks North Star Borough CUP hearing process, we had many local residents address the same concerns that we've heard here tonight. The CUP was approved and the monofill constructed and now some of those same residents have submitted letters of support for this Mat-Su Borough hearing. This facility recently received a routine inspection by ADEC and was given a perfect score. We're committed to operating the facility in a responsible manner and our actions at the Salcha monofill bear this out.

Now let's address some specific issues. First, I've heard tonight people talk about a five-year renewal. ADEC

already requires a renewal of the ADEC monofill permit every five years and they are the regulatory agency. The next -- the discussion about 10-foot separation distance and the liner, for example, there have been comments that the Board could modify the conditions to increase the separation distance to greater than 10 feet or require a liner under the monofill. First, as discussed, this monofill design is the result of extensive and comprehensive discussion with staff, detailed and comprehensive reviews by experts and industry standards. Based on this extensive consideration and review, staff is supporting our proposal.

Second, ADEC, the agency that develops the applicable regulations established the 10-foot separation distance and does not include the requirement for a liner at -- for this monofill. These standards are based on the agency's management of the over 487 recorded landfills and 130 active landfills currently in Alaska. While a minority of other states may require liners, their requirements are based on the environments and conditions present in their states which may have -- which may vary dramatically from the conditions in Alaska. For example, there have been some references made to an Ohio report. However, what has failed to be mentioned is that the average precipitation in those locations is almost three times the precipitation at our location, at our proposed site. Even so, what has not been mentioned is that a follow-

up study does not indicate the presence of contaminants where the separation distance between the fill and the groundwater exceed 10 feet as proposed in our design.

There was also no information provided in the report, in the Ohio report, as to the age of the monofills, some which turned out to be legacy landfills, former unregulated or municipal landfills, converted to regulated monofills or whether there was any prescreening of the waste placed into these facilities. Most significantly, all of the studies that we have submitted show that, as designed, the 10-foot separation distance is more than adequate and no liner is required for that requirement.

Both the law and the science support the proposed design. I respectfully request that neither the Board now the Mat-Su Borough staff attempt to reengineer this design this evening and arbitrarily impose conditions that have no basis in Mat-Su Borough code, applicable regulations or science.

Regards to discussions on the monofill cap, there was a comment about amending the CUP to require installation of some as yet undefined layer of material or membrane with a 10 to the minus four porosity in the final two-foot closure cap material. Again, the regulating agency, ADEC, defines the requirements for the final cap material based on applicable regulations. The MSB has no applicable code with which to draw this requirement from. We recommend that if the Board

considers placing any conditions which modify the proposed design, rather than place an arbitrary standard, phrase the resolution to require the permit holder to resolve this issue with the appropriate regulatory agency.

Post-closure monitoring. There has been discussion requesting placement of a condition to require the permit holder to monitor the monofill for five years following the closure to insure that if there is any settlement, the area will be filled to avoid ponding. The regulating agency, ADEC, already has this requirement and term as part of their post-closure requirements.

We talked about conditions last time. Two conditions that I had brought up that I would like the Board to reconsider. As discussed in the December hearing, we requested the Board modify some of the conditions proposed by staff in the final report. Conditions 13 and 14. I recommend that Conditions 13 and 14 be deleted and Condition 12 be modified to include the following statement, a wind -- and this would be the statement -- a wind monitoring plan will be submitted to the Mat-Su Borough staff for approval prior to the start of monofill operations. The plan will identify the weather station design, location and establish appropriate wind speed limits and action levels for continued monofill operations.

Condition 36 that related to the hours of operation, I

would respectfully request we revise the wording. The sentence would start with monofill only and then continue on. As presented and as agreed by staff. we've met the Mat-Su Borough code requirements for the approval of the CUP in front of the Board. I also want to address a couple of other issues that came up tonight. You know, we've talked about this in the previous, you know, property values. I know that's been stressed heavily. There's been no decrease in property values at or near the Alaska Demo landfill or the Mat-Su Borough landfill. Property values surrounding these locations have increased at the same rate as the rest of the borough. There is no support for statements that property values will drop. This has not been the case in Alaska.

The aquifers that -- the water. The aquifers that the wells are drawing their water from is deeper than the aquifer that feeds the ponds on the property. As stated by one speaker, her well is 335 feet deep. This aquifer is, you know, a hundred feet deep at the most. Again, we are not placing -- this is -- I can't say how many times I got to say this, we are not placing any materials in the lakes, in the ponds. We have not, we are not placing any materials in the ponds. No material will be placed within a hundred feet of the lakes. No material will be placed within 10 feet of the water table.

We've -- again, we've not placed any materials into the

ponds. People have showed examples of where there was a lake that was -- had turned red. Now they showed an example where they have this high manganese in the water. Those are not caused by our operation. These people need to look to the source of their current problems. That is not our operation.

DNR made some comments this evening and I'd like to respond to those. Let me be clear, number one, CMS responded to Mr. Schade in writing on April 22nd, 2014 and specifically addressed the issues raise by DNR. To date, we've not heard back from them. As confirmed by Mr. Cobb, CMS has cooperated with DNR. We have allowed unrestricted access for DNR onto our site to monitor the water levels. Mr. Cobb stated that he did not approve of CMS's plan to improve the performance of the barrier of F spillway. CMS provided our plan to Mr. Cobb before we performed the work and we performed the work at DNR's request.

The monofill is not located on or in the -- or near the ponds. The issue with the spillway does not impact the monofill. These are two totally separate issues. The monofill is designed as more than 10 feet above the highest groundwater levels measured. DNR has a position as to the potential issues of the water as do we and there's -- that research continues to go on now. We've responded to DNR. We'll continue working with them to resolve this issue and then -- and when there is more data available, then decisions

will be made and moved forward but, again, I have to stress the issue with the spillway does not affect the monofill. They're two separate -- totally separate issues. Nothing in our permit application is at the ponds.

With that said, I guess I would thank you for your time and again request that if you have any questions regarding our proposal, do not hesitate to ask me.

CHAIR: Thank you, sir.

MR. JACQUES: You're welcome.

CHAIR: Would the Mat-Su Borough have comments or additions, questions at this time?

MR. STRAWN: Yes. Thank you, Mr. Chair. This is Alex Strawn, Mat-Su Borough development services manager, and I just have a few things I'd like to over. One is if the Board does choose to adopt a condition that would require a liner, I do have a -- I prepared a condition that would fulfill that that would be in compliance with DEC and accomplish the goal of not creating the worst problem with ponding and things like that. It would have a little point where leachate would be collected and can be disposed of properly.

The -- a couple of the conditions, just listening to public testimony and kind of going over this a lot, is I think some of them are worthy of tweaking if you do adopt this resolution. One is Condition No. 23. Talks about a 10-foot vertical separation shall be maintained -- or there has to be

a 10-foot vertical separation between the water table and the deposit material and I think it should be tweaked to say that it shall be maintained and not just from the git-go, it's 10 feet and then from there, it can be seven feet or five feet, things like that. I think it should be maintained. I think that the monitoring well data should be available to the Borough upon request so that we can determine whether or not that 10-foot separation has been maintained.

I think once this material goes in if it get -- this gets approved, then the likelihood of it ever coming out is going to be very slim, even if that separation has been requested. So I guess I stand by if the commission did decide to put a little bit of extra leeway in there to insure that fi -- the 10-foot separation's maintained, I still think that would be a good idea, especially considering that this, indeed, is a moving target, the water table, because of the -- you know, the testimony tonight by the Office of Dam Safety that it's unresolved, that the spillway issue is unresolved, the fact that there is a potential dredging operation north adjacent -- north of this pit that would affect the water table depth is also unresolved or that's going to happen which will affect it. So I think that you should consider adopting an additional couple feet, at least, for a buffer to maintain that 10-foot throughout the life of the operation.

And then as far as removing Condition 13 and 14, I think

that's a really bad idea. Going out to Birchwood where they have a very similar type of operation, I personally observed thousands and thousands of tiny little pieces of plastic that was on top of this after it had been compacted and I think that, given a wind event, I -- there should be some way to control this material from flying off into neighboring properties, neighboring lakes. The visitors' center's right south of that. I think it's important to have adequate controls for the wind. So I would strongly recommend that you keep Condition 13 and 14 if this is approved. And that's all I have.

CHAIR: Would the applicant like to respond?

MR. JACQUES: Please.

CHAIR: Please proceed.

MR. JACQUES: I -- I'm unsure if Mr. Strawn understood what I was saying there on Conditions 13 and 14. I'm recommending that we delete the -- those two conditions but that we add in Condition 12 a wind monitoring of a plan will be submitted to the Mat-Su Borough for approval prior to the start of monofill operations. So the Borough would have input into whether or not the wind speeds are correct or not and the plan will identify the weather station locations and establish appropriate wind speeds and action levels so -- to be approved by Mat-Su Borough staff. I don't know what more you would want.

CHAIR: Mr. Strawn?

MR. ASCHENBRENNER: John Aschenbrenner, deputy borough attorney. I think the lack of clarity with regard to that condition would be a problem. You're -- this is the approving authority. If it is approved, you would really have what appear to be a delegation of authority to staff for a condition that we don't know the parameters of it so I'd urge the Commission to follow Mr. Strawn's recommendation.

CHAIR: Thank you. Obviously, that's 15-mile per hour, decrease less than 10 miles per hour, that's a fairly stringent threshold when we talk about winds in the Valley but before I close public hearing, officially close public hearing, we, as planning commissioners, are allowed to question the applicant and/or the Borough but before I bring that up here for questioning, I'm going to close the public hearing. So at 10:15, the public hearing has been closed that was opened on December 1st for Resolution 14-33, a resolution approving a conditional use permit in accordance with 17.60.030 for an operation of an inert material monofill.

The public hearing has been closed. Is there any questions from the commissioners for either the applicant or the Borough? You're right, you said 4,000 pages. You were just a couple hundred off. It was 4,200 pages. Mr. Tomas Adams.

COMM. ADAMS: Thank you, Mr. Chair. I guess this

question would be directed at the applicant but I just want to -- I'm a bit confused upon about reading through or sifting through the information I've been provided but it -- it's with respect to your ongoing application to DEC. It's unclear to me what the status of that is. I think I heard from Mrs. Aldrich during the recording of last -- the last testimon -- or the meeting -- the testimony she provided last meeting that suggested that they conceded that they've received a complete application but it appears in some of this correspondence that DEC has yet to issue a permit nor have they really investigated the application itself. Can you clarify what exactly your belief in the status of that DEC permit is?

MR. JACQUES: Yes, sir. My understanding of the status of the ADEC permit is that, as Ms. Aldrich noted, they've confirmed that we've complied with all the requirements at this point. They have -- they determined that they had made an error in their public comment period the previous time in regards to the asbestos and so they've put it back out again to public comment. So that period is going on. They've done a substantial amount of the evaluation of the data already but they've not finalized that. They won't do that until after they've received all the public comment. I believe public comment closes somewhere here right at the end of December, the public comment period.

CHAIR: Proceed, Mr. Adams.

COMM. ADAMS: No, that answers my question. I basically interpret it that DEC hasn't issued a permit now -- which might give us some insight of what conditions they might attach to their permit so that -- that's my -- that was my curiosity and thank you for clarifying that.

MR. JACQUES: Okay. You're welcome. Yes, DEC has not issued a permit at this point so --

CHAIR: That would be a Mr. Thomas Healy, District 2.

COMM. HEALY: Thank you, Mr. Chair. I have a couple quick questions for the applicant. One is it -- maybe I missed it in the pages and pages but the responsibility for the post-closure -- responsibilities. Say this is built. It's all filled up after 30 years. What happens next in terms of there may be DEC regulations and who is a responsible party for the facility when it's done?

MR. JACQUES: Well, we, as the owner, would continue to be the responsible party for the facility once it's completed. ADEC establishes a post-closure cost, basically, and a - and we're required to provide a bond for that.

COMM. HEALY: And a --

MR. JACQUES: And a bond has to extend at least the pa -- at least to the five-year period past the end, the completion of the monofill.

COMM. HEALY: So it's a five-year after closure requirement that --

MR. JACQUES: That -- as far as the bond goes, that's correct, as far as --

COMM. HEALY: That satisfies the state's requirement then?

MR. JACQUES: The -- that is the state's requirement, that's correct.

COMM. HEALY: Okay. So after five years after closure, is it -- are all conditions removed? Is there any monitoring or -- I'm just curious to see what happens with this in the long term.

MR. JACQUES: Well, at this point, you know, that -- that's what the ADEC's requirements are. Now, however, you know, we're -- we still have monitoring going on and the monitoring with wells would still be in place. We, as the property owners, still have an obligation and a liability there to insure that we're keeping track of everything and that part doesn't go away forever in laws.

COMM. HEALY: Could -- you could sell the property though, is that correct?

MR. JACQUES: We could sell the property and whomever purchased it would then have that obligation, that's correct. But then we -- but also so would we. I mean, as a potentially responsible party, we never lose that obligation even upon sale.

COMM. HEALY: Okay. There is that standard then?

MR. JACQUES: That's correct, yes, we --

COMM. HEALY: And potential respons -- okay.

MR. JACQUES: We retain -- we remain on the hook.

COMM. HEALY: And that's under a federal law, I believe?

MR. JACQUES: That's under federal law, that's correct.

COMM. HEALY: Right. Okay. I had one more question.

MR. JACQUES: Federal and state law.

COMM. HEALY: Okay.

CHAIR: Proceed, Mr. Healy.

COMM. HEALY: This gets back to my question previously about the Glenn Highway expansion project --

MR. JACQUES: Mm-hmm. Yes, sir.

COMM. HEALY: -- and I'm curious how that -- well, from the material in the packet, it -- there was a -- an aerial photo, I think, that was provided by DOT showing the right-of-way take that they're looking at at this point for the expansion of the Glenn Highway and in the area of the -- this proposed monofill, there was going to be an intersection there according to the plans at this point with an access road coming in and then slanting up the north -- I guess it would be the -- kind of to the west but it appears to me that from DOT's proposed right-of-way take maps, that if that occurs, it's going to take four acres or so out of the area --

MR. JACQUES: That's correct.

COMM. HEALY: -- and I've sketched briefly what kind of

transposed those lines and it's almost half of the area proposed for this actual monofill. So I guess I ask again if you -- if we're aware -- if you are aware of DOT's plans in terms of right-of-way -- and, obviously, the design isn't complete yet -- it would seem to me that if that came to pass, that would have a significant impact on this plan. So I'd just like some comments from you on that if you could.

MR. JACQUES: We -- we've reviewed their proposed plan and, as we've stated in our package, that if that project does, in fact, go forward and that plan is the plan that they end up sticking with, though at this point there's no certainty to that, then we would revise our monofill design accordingly. It would be smaller. I mean, that's just the reality of it.

COMM. HEALY: Okay. Thanks.

CHAIR: Mr. Vern Rauchenstein, District 7.

COMM. RAUCHENSTEIN: Yes, I have some questions about the previous ownership. Somebody mentioned that Wilder Con and -- in other words Wilder owned it to begin with and, obviously, they made a contract with the Borough and what was the life of that contract?

MR. JACQUES: Sir, I really don't know. I -- you know, I'm not a party to that agreement so --

COMM. RAUCHENSTEIN: And then it sold to Granite Company and how long was their contract? The reason I ask is they

promised that they would put in sites, nice sites and nice building --

MR. JACQUES: Mm-hmm.

COMM. RAUCHENSTEIN: -- and whatever and they -- you -- when you bought that, you must have been aware of that.

MR. JACQUES: Aware of what they're --

COMM. RAUCHENSTEIN: Over -- yeah, because that was attached to the property.

MR. JACQUES: But that was their require -- their -- that's what they had proposed or whatever.

COMM. RAUCHENSTEIN: Good. Okay.

MR. DURAND: Upon purchasing the properties -- sir, upon purchase of the property, Central Monofill Services would have assumed the nonconforming rights in the gravel extraction requirements so part of that there was a DNR bond to do reclamation of the property when it was done. So we have determined that this was the highest, best use to convert the property into our facility should this not come to fruition or we don't find another higher and best use, we would still be obligated per the DNR bond to reclaim the property, to basically slope it off and seed it.

COMM. RAUCHENSTEIN: I'm sorry, I don't understand. If Granite has a contract, the CUP with the Borough, and they have a life of the contract and after the contract is finished, that have to be -- whatever has to be done.

Apparently, that wasn't done when you purchased the property.

MR. DURAND: It still has the active requirement. Maybe Alex could answer that question (indiscernible).

CHAIR: Mr. Strawn?

MR. STRAWN: Thank you, Mr. Chair. So when both Wilder and Granite owned the land, it was -- there was never a contract with the Borough as far as I know. They had preexisting legal nonconforming status which had certain requirements although they were very minimal. We did not have reclamation requirements at the time. They had submitted a reclamation plan and revised it a couple times along the way. However, there was no reclamation plan and when gravel regulations were adopted in 2005 and -- or reclamation requirements later were adopted in -- I think in 2010 or so, the reclamation requirements did not apply to preexisting nonconforming status pits.

COMM. RAUCHENSTEIN: Okay. Thank you.

CHAIR: Mr. Tomas Adams?

COMM. ADAMS: Thank you, Mr. Chair. I want to follow up on a -- kind of an inquiry Mr. Healy was at on with respect to DOT's project and I guess I'm looking at page 188 of the packet. It -- it's the operation plan, Sheet 5 of the applicant's plan set. If I were to take a look at this, it -- there -- the cells are labeled alphabetically A, B, C, D, E and I guess upon first inspection, it would appear that that

would give an intent that the pit would be developed in that manner so that Cell A would be the first area to be excavated and then backfilled, B, C, D, E and otherwise. Is that the general intent?

MR. DURAND: Sorry, Shane Durand. The operations plan has us starting back in the corner of Cell A and working our way out of the -- out.

COMM. ADAMS: So I guess to kind of dig into a little bit Mr. Healy's inquiry is that if DOT and albeit, you know, their plans are plans, if your Cell A, B and C were completed by the time DOT came through, that certainly could be a detrimental impact upon a potential highway up there?

MR. DURAND: If you have Sheet 22-E-6 would be the DOT highway drawing -- sure. So Cell A generally parallels the Glenn Highway and roughly where they're indicating they would bring the intersection through is what would be on the right side of Cell A there. So we would still have a section of Cell A and Cell G that would be fillable depending on how wide an easement they took coming through there. In general in our discussions, it sounds like it was going to be about five acres and the footprint of the monofill is 35.

COMM. ADAMS: But it still would appear to me that that would require, potentially, that excavation -- re-excavation of that area and removal of man build materials?

MR. DURAND: Depends on when they're going to build their

project. When we start there in Cell A, there's several years before we'll be at that point where that -- where they're just fixing --

COMM. ADAMS: So, generally, the plan is for Cell A to be the first and, depending on DOT's time line which none of us can really predict at this point --

MR. DURAND: Right, and, generally, the area they're looking at is a -- it's probably about a balance cut to fill from their -- Cell J is -- you can see in the Sheet 5, there's kind of an aw-bright (ph) there and that's roughly where they were discussing coming through to that knob and then right to the right of where it says Cell A, it would go over and connect to the Glenn Highway.

COMM. ADAMS: Well, I guess they overlap -- we agree though that they overlap?

MR. DURAND: That --

COMM. ADAMS: And your Cell A and DOT's proposed intersection there on this 20 -- Sheet Joint 286?

MR. DURAND: Yes, sir, a portion of their right-of-way would be in Cell A and Cell G.

COMM. ADAMS: And, Mr. Chair, if I may, just one clarification on the groundwater monitoring plan that the application submitted on page 446, the narrative talks about the duration of the monitoring as one year after the monofill is no longer in use but the schedule under Appendix C, as a

footnote, says that three years after the project termination. I'm just curious which one's correct.

MR. DURAND: Go ahead.

MR. JACQUES: It would be the longer duration.

COMM. ADAMS: So the footnote on -- in Appendix C should be the one that -- it should be understood as the duration?

MR. JACQUES: That was incorrect, yes.

COMM. ADAMS: Okay. Thank you, Mr. Chair.

CHAIR: Mr. Vern Rauchenstein, District 7.

COMM. RAUCHENSTEIN: I mean, again, Terrasat mentioned coverage when -- coverage. So we're over 18 inches of silt and 16 inches of topsoil but then it was mentioned that it's just two feet of topsoil, no silt in there so which is --

MR. DURAND: Oh, yeah, that -- no, that -- I'm sorry, that's incorrect, the ADEC again basically --

COMM. RAUCHENSTEIN: They don't require that but then Terrasat come in with the 18-inch silt.

MR. DURAND: Yeah, we would be putting in a 18-inch silt and then either -- I believe it's six inches of topsoil is the DEC requirement.

MEMBER: (Indiscernible).

MR. DURAND: Okay. So that's what page? Yeah, but what page? Page 186?

MEMBER: Right.

MR. DURAND: Sheet 3?

MEMBER: Mm-hmm.

COMM. RAUCHENSTEIN: Yeah, the reason I'm mentioning it, it wasn't in all the things here. Okay. Thank you.

MR. DURAND: Okay. Yes, sir.

CHAIR: Any other questions for the Borough or for the applicant? Mr. Tomas Adams?

COMM. ADAMS: Thank you, Mr. Chair. I guess one more clarification since we'll move on into discussion amongst the commission and we won't have his answer. In this current application, the intent is to have maximum finished elevation in the monofill not to exceed 162 feet. The prior application was 150. Can you describe what changed in the design that required to go from 150 maximum elevation to 162?

MR. JACQUES: (Indiscernible) better answer that but we changed the shape of the top to create more positive drainage.

COMM. ADAMS: So would that then suggest that the maximum elevation of 162 would take place more towards the center of the operation versus towards the perimeter?

MR. HELGESON: Thank you. The design did not significantly change. We do have the drainage in there. The 155 to 162 is a coordinate system that the -- it is designed on so you can read the first note on that page and there's a difference in their coordinate systems that was used when we first presented in June and a coordinate system that was used for that problem.

COMM. ADAMS: So the vertical data in a prior one that suggested you only -- you go to 150 so the elevation that -- the maximum elevation is the same but there's a 12-foot difference in the vertical data?

MR. HELGESON: I believe it's 155 to 162 and the difference in the datum between the Mat-Su Borough plain that was used and original that we just -- by DOT was 6-1/2 feet but it's been rounded off.

COMM. ADAMS: Bear with me real quick. I guess all I'm suggesting is in a prior application, there was a condition of approval albeit the permit was denied that referenced 150 feet as the maximum elevation. So I'm sure the information you're suggesting about the -- you know, some description and the difference in the datum is in here somewhere. Right now I don't know that I can find that.

MR. JACQUES: Page 189.

COMM. ADAMS: 189?

MR. JACQUES: Be near 6.

MEMBER: Page 189, Note No. 1.

COMM. ADAMS: Okay. I understand that you recognize there's a difference. I guess there's still some -- it still referenced 150 in the prior conditions. I believe that's what's misleading me. Thanks.

CHAIR: Any other direct questions for either the Borough or the applicant? Mr. Thomas Healy?

COMM. HEALY: Thank you, Mr. Chair. A quick question for the applicant. Maybe I missed it in the previous discussion but looking at Sheet 5, the operations plan, is the lettering of the cells, is that the sequence for when they will be filled; that is, A, B, C, et cetera?

MR. JACQUES: Excuse me? In general, the Cell J, some of the cover material that will be used for Cell A will come out of Cell G so as the bottom of Cell A is filled, there will be some excavation of Cell G to carry that material over as cover into Cell A. So as Cell A is filled, Cell J will be -- some material will be removed from there.

COMM. HEALY: Okay. But you start at Cell A?

MR. JACQUES: Yes, in the corner.

COMM. HEALY: Okay. Mr. Chair, I have a quick question for the Borough.

CHAIR: Please proceed.

COMM. HEALY: The rec -- the staff's recommendation is that -- it includes a requirement that the facility be screened from roadways and adjacent properties. If the -- and currently, there's a rather -- a dirt berm along that side which then screens the property from the Glenn Highway. However, if they expand the Glenn Highway, that berm is going to come down and so I was curious the -- I mean, the staff's recommendation, I think, the draft resolution, calls for the facility to be screened from view from the highway. How is it

going to be screened from view on the highway if that berm's gone and what would you consider screening?

MR. STRAWN: Thank you, Commissioner Healy. Alex Strawn, Mat-Su Borough development services manager. Condition No. 22 that we're recommending states should the operation be modified as a result of the Glenn Highway reconstruction project, an updated site plan and plan of operations shall be submitted to the Borough and the standard is that it has to be completely obscured from public rights-of-way. So if you're standing on a public right-of-way, you cannot see it. That is the standard.

COMM. HEALY: Oh, I guess I'll hold my comments on that. Thanks.

CHAIR: I'll allow a brief explanation. Go ahead.

MR. JACQUES: On page 194 which is Sheet 10, there's an example of the -- what would be constructed at the section line easement that was found across the property.

COMM. HEALY: I think you're referring to these cross-sections?

MR. JACQUES: Yes. Yes, sir.

COMM. HEALY: Well, I guess that's one of my quest -- or what is -- where is the screening of this?

MR. DURAND: The berms would be -- the dirt berms that create the cells would be constructed first so that would create an earthen berm would be the screening to meet the CUP

requirements so you would --

COMM. HEALY: So the slope of the fill would be the screening you're saying.

MR. DURAND: You'd build the south wall and the topsoil, the slope, would be the screening, yes, sir.

COMM. HEALY: Is that the Borough's understanding?

MR. STRAWN: Yes, my understanding that -- is that they would use tire bale construction and then cover that with topsoil and seed it so that it would appear to be a grassy.

COMM. HEALY: Okay. Thanks.

CHAIR: Mr. Vern Rauchenstein, District 7?

COMM. RAUCHENSTEIN: On -- in the planning commission resolution on No. 25, it states the groundwater monitoring plan prepared for the site by Terrasat dated May 17, 2013 and have -- you have a letter written November 6th, 2014. Based on our conversation, I have attached a proposed plan that help with PS (ph) associated with water in relation to the monofill and you state here that a new well will be placed directly down gradient from Cell A on the -- well, it's page 2132. That's -- the point being if Terrasat had made the plan on May 17, 2013 and then you're proposing that -- to put in a monitoring well and you do it -- say that in November, I'd like to include that monitoring well on Cell A into that then.

MR. JACQUES: I want to make sure I understand your statement. It is that you would like to have that monitoring

well included in Cell A?

COMM. RAUCHENSTEIN: Yeah, that I don't think Terrasat had that in mind.

MR. JACQUES: I'm uncertain of that without going back and looking at their plan but, if not, we certainly don't have a problem including that well.

COMM. RAUCHENSTEIN: It's a -- Mr. Durand, Shane Durand, wrote to Alex Strawn and proposed that.

MR. JACQUES: Yes, sir.

COMM. RAUCHENSTEIN: And because that -- that's the one, that's the part that's southbound (ph) --

MR. JACQUES: Mm-hmm.

COMM. RAUCHENSTEIN: -- and it would be a good idea to have that on Cell A monitoring well like that.

MR. JACQUES: That's all right. I don't disagree with that. Thank you.

CHAIR: Any further questions? Clearly, this is complex and there's been a lot and I'm just a voting member of this planning commission. I don't preside over this as a mayor. I'm just one vote. I will speak last but I would like to just for the record like to ask Alex Strawn your review and your process with these conditions are recommending approval of the CUP and my question is the governing agency or the regulating is really Alaska Department of Environmental Conservation. What is your relationship with the ADEC and how have you

coordinated -- have you taken advice from them recommending this approval or, really, how -- what was the dialog there?

MR. STRAWN: Well, most of the dialog has been between Susan Lee and DEC and a lot of it was do they have a permit, the same questions that you have been asking DEC. You know, there's multiple layers of the onion here. They are from a -- certainly, a environmental conserva -- or conservation standpoint, we are from a land use standpoint and so I guess I can -- Susan, if you have any additional correspondence that you'd like to talk about with DEC?

MS. LEE: No, other than they have to have both permits in order to operate, the DEC permit as well as the Borough permit. They can't operate with just one of them.

CHAIR: So it this ordinary where the -- you would recommend approval before the ADEC approves it?

MR. STRAWN: Well, we don't have any requirement that says that a DEC permit has to be approved first. Some permits are like that, that all other required compliance with local, state and federal law has to be in place prior. In this case, that's not the situation. In fact, it seems like part of their review is that they have our permit in place and so we wouldn't want to put them in a chicken and the egg type of scenario.

CHAIR: Thank you. Mr. Healy?

COMM. HEALY: Could I request a brief break, please?

It's only been three hours that we've been sitting here.

CHAIR: Been two hours and 42 minutes. Don't be stretching it. I've been watching it.

COMM. HEALY: Round up.

CHAIR: Four minutes, sir.

COMM. HEALY: Thank you.

CHAIR: Betty?

(Off record)

CHAIR: Yeah, 10:50 p.m. Out of interest to all the attendees and there's people here that came for the tall taller structures which is the next item, 14-35. I would like to bring this item which some say we've been working on for two years, some say for two months. I would like to ask the commission for a motion to approve a Resolution 14-33.

COMM. WALDEN: So moved, Mr. Chairman.

CHAIR: That's Mr. Bruce Walden from District 4 has made a motion to approve dash 14-33. Do I have a second?

COMM. RAUCHENSTEIN: Second.

CHAIR: It's been seconded by Vern Rauchenstein. Discussion. A motion's been made and seconded. Vern, you got the red light on? Discussion. Mr. Thomas Healy, District 2.

COMM. HEALY: Thank you, Mr. Chair. At least I'll get started with some of my issues on this. I think -- I have some very serious concerns about this application.

CHAIR: Speak loud and clearly, sir.

COMM. HEALY: I have some serious concerns about this application and, primarily, its location. I think the services that are provided by this firm are good and serve a purpose but I think there's just too many doubts in my mind about this facility in this location. That's kind of the gist of it. I can go down in some detail.

I think we're -- in terms of its compliance with the borough comprehensive plan, for example, there are statements that, you know, protect and enhance public safety, health and welfare. Those are general statements that can be interpreted and used in many ways but I think this is a kind of health and safety issue. There's a goal in the comprehensive plan to protect residential neighborhoods and associated property values. We've heard overwhelming testimony from the -- primarily the residents in this area who are very much concerned about their neighborhoods and their property values and water quality and other issues.

There's a goal in the comprehensive plan to encourage commercial and industrial development that is compatible with residential development and local community desires. I don't think this facility does that. We've heard from -- again, from many residents of this area as well as the, you know, City of Palmer, the community council which -- and the homeowners' associations which sort of, in addition to the citizens, represent the local community desires, protect

groundwater supplies, air quality, et cetera.

So there was also a core area comprehensive plan that talked about sort of reuse of these gravel area and there was discussion in that plan about that that's included in the staff report in reading from -- which seemed to suggest that the reuse of the gravel pits once they're done and worked out would be towards -- well, light industrial, commercial, light industrial uses, that sort of thing. I didn't really see a strong emphasis on industrial reuse of that.

Now, the applicant is -- the application does involve a -- an industrial activity on property. It is currently or in the recent past a gravel pit, has been an industrial use. I think that the gravel operations, as identified by the Borough, are interim uses of lands with the thought being that once the gravel is gone, something else would go in there. I think that the -- well, one of my major concerns is this, is that there is this significant gravel resource in that area and other areas of the Borough. If we were to allow this monofill to occupy a former gravel site in this area which has several environmental concerns but also is sort of a precedent-setting issue, I think that would be the -- that's what a lot of the residents in that area would have to look forward to is continued sort of industrial reuse of what has been an interim industrial use. So I have a real concern about that both from the Gateway of Palmer point of view as

well as the quality of life in that area.

I don't want to hog all the time here but I talked about some comp plan issues. I have several others. I think the DOT highway plans in the Glenn Highway, this -- there's just something about this that doesn't sit right with me where the record has evidence of DOT's intention to obtain right-of-way which would -- as I see it, would basically take about half of the area that they're proposing for this monofill if DOT's plans prevail. Now, if they start the monofill before the DOT comes along and buys property, then they'll change the plan for the highway rather than dig it all out but it just seems -- I don't know what the word is but if we all know that DOT is going to expand the highway in a certain design, then I think that should be considered in this application for this monofill where if we can see that the DOT plan is going to take half the monofill area, I think that makes the plan that we're being presented -- I think that makes it kind of irrelevant or at least open to some real scrutiny in terms of what practically can go in that location given DOT's plans.

It's said that the -- if we go ahead with this and DOT comes back and says all right, we're going to, you know, take this property, you know, the applicant has said that they will then modify their site plan and I -- as was mentioned at the last meeting, I think, in questions of borough staff that if that's the case, then the modification of that site plan is

not a -- it doesn't come back to the planning commission. It's an administrative function and so it would seem to me that it's likely that then if this is approved, the final -- given DOT's plans, the final form of the landfill will be -- or the monofill will be de -- would be an administrative decision. I'll stop there for now. Thanks.

CHAIR: District 1, Brian Endle?

COMM. ENDLE: Thank you, Mr. Chair. When this permit first came out, I was not in favor of it and, you know, I look at what's come to pass and, you know, the information was provided because the information was provided for more clarity and we're supposed to learn more off of what we get here. So what I disagreed with before was the fact of the -- where the water table was, the uncertainty of the water table, et cetera, and the open ponds and the wind and what that would do to debris like that was chopped up in small pieces and so I -- I'm looking for something that the applicant would provide that would show me okay, we've solved these problems. I don't see that. I'm just -- at a high level, I don't see that. I don't see that -- you know, you can't stop 70, 80-mile-an-hour winds. You can put fences up but that material can lift and it can fly all different directions which, you know, we've seen happen and with a minimal amount of time to react to the wind, how are you going to stop it? How are you going to stop this material from blowing? I still don't see that,

especially if it lift -- if it were to lift over the fences and so forth.

I see the -- well, I'll go to my points. I wrote down a few of them as I was reading over the material and stuff. I tried to do this relatively fast but permit applicant doesn't have to be a good neighbor, they just have to fulfill the requirements. It would help if they were though and I was looking for, you know, as much as I could to see that although that does not -- that would not be a real good kind of permit (ph). I wasn't -- I couldn't find any evidence that the water table will rise or fall at any given level. In other words, there wasn't any evidence for it nor against it because there wasn't much data to prove it but what I did see was that it's -- it tends to be unstable, you know, from the testimony we seen -- many people testified that the water level had risen significantly at different times but still, it seems to be a moving target.

Speaking to the one point there with the applicant before the permit was obtained which was, you know, like in May of 2013, I think it was, they reported screen fines were pushed into the water on page 5 of 6, I think it was, in this guy's report. He quote -- I -- I'm quoting him somewhat. I hope I'm quoting him exactly but I wrote it down as I read it in there. Leads me to believe that screen fines were being buried and it appears to be -- and I quote -- near black --

back bladed over. Reported that Mr. Grant had a problem removing all the screen fines because they were -- there were -- some of them were buried. So this was before the permit was taken place so I'm looking for, you know, what are we going to see later here.

And for this permit, you know, the burden of proof isn't -- I don't have to prove that he's going to make this permit. He's got to prove to me that this permit -- that he meets the qualifications of the permit. I don't -- I just don't see that he's done that. The people that he hired, the consultants, they basically attached what the Borough's consultant was saying. They tried to say that there wasn't going to be much water. Well, they're looking at a time frame. We have so much rain. We have -- and I'm not sure if they included snowfall. I don't remember for sure but we have so much precipitation and that precipitation evaporates so the end result is we've got this minimal semi-arid climate. I don't buy that. We have -- in the fall, we have lots of rain and we have lots of -- we can have lots of snow in the winter. To say that there'd be minimal water going through that material, I don't buy that either.

So speaking to -- and they're going to place material within 25 to 100 feet of these industrial ponds. Larry Helgeson was the engineer of the monofill. He didn't want to -- and I asked him specifically. He didn't want to put a

liner in there because it could have a negative effect. Well, so his -- the way they're designing it is so the precipitation, whatever is left, you know, that's -- you know, you guys know better than I do, it's going to go through. That's the way it's designed but and applicant doesn't want to modify the design. So, with all that, I don't -- I'm not in favor of this permit.

CHAIR: Discussion. Making a motion?

COMMISSIONER: Thank you, Mr. Chairman. I absolutely understand my fellow commissioners' concerns and the concerns of the people here today. I would ask that we consider something before we go forward and vote. Things can be fixed, hopefully, to -- like Mr. Strawn said, to put a liner in this if need be.

Something to consider -- and you can be angry with me if you want to but you can just look at the numbers -- Alaska lives in an economic bubble outside of the rest of the country, I large part. We've got our oil, we've got this, we got that. That bubble just burst. The Saudis started flooding the market with cheap oil. I paid 2.99 a gallon. Never thought I'd be thankful for that. Our income as people is going to start to drop. Mine already is. It's dropping about $3.00 an hour starting next month. Jobs are going to begin to disappear. I am very much in favor of 30 jobs, 10 jobs, 15 jobs, because there's only 700,000 of us here in the

State of Alaska. Every little job you can get your hands on, you better grab onto it and hold on for dear life because there are hard times coming and we are through the bubble now so please consider that.

MR. CHAIR: Mr. Rauchenstein, second?

COMM. RAUCHENSTEIN: Well, there is -- in the resolution, there is four items that I have difficulty with but that -- I'll not tend to fix it and on that No. 21, it states there is two feet of topsoil to cover and the monofill is finished and Terrasat themselves put in 18 inches of silt and six inches of topsoil. They'd have to change that.

Then the bottom of the monofill shall not be located closer than 10 feet above the seasonal water table. That could be raised to 12, 13 feet. Then the groundwater monitoring plan and prepare for this site by Terrasat and, obviously, it doesn't include that monitoring well that is to (indiscernible).

(Off record conversation)

COMM. RAUCHENSTEIN: Ask for and that's in Cell A and then I would like to see some more insurance in it in case there is a problem, that the insurance would cover it. So those are the four points and I'd like to work on this.

CHAIR: So are you ready to make a motion or should we have further discussion?

COMM. RAUCHENSTEIN: Further discussion.

CHAIR: Mr. Tomas Adams.

COMM. ADAMS: Well, Mr. Chair, the only thing that I really decided upon as I read these 4,000 plus pages, that no matter what decision we come forward tonight, there's going to be an unhappy party. There's a tremendous amount of information in here. You know, I too am an engineer and, you know, I understand some science but I don't know that all of you do, you know, and it's very -- I didn't. I mean, there's a lot of information in here that is an expertise that belongs somewhere on the other side of this dais.

Mr. Helgeson said earlier -- and I'm sure that he provided the best landfill design that he can to minimize the risk and I understand exactly what he said, that he couldn't make guarantees. He shouldn't. You know, I completely agree with that. I mean, I think that's really what this comes down to. I don't know that any of us can sit up here and debate very long the merits of a -- the applicant's business and the points Mr. Walden said with respect to, you know, we need to find a way to make this business work because it -- you know, we have materials that need to be recycled but I have serious concerns about this particular location. I know there's been a lot of money spent on hydrology -- you know, taking a look at the hydrology and the aquifer on this, you know, and we do have those experts that have submitted those reports. Unfortunately, we have multiple experts that disagree about

what that decision is. We have the applicant's hydrologists that contend that their solution is correct and that there will be no risk but we have the Borough's hydrologist who submitted an original report and is a professional that reiterated his opinion that there is risk here. I don't know how to define who's right. You know, is it the applicant's hydrologist? Is it the Borough's hydrologist? Somewhere out there there's an answer that's correct. What I really came to -- and this is why I asked about where we're at with ADEC -- DEC has the scientist. They have the engineers that have the background to really pick this application apart and I think it's unfortunate that we haven't seen their permit issued that would contain those stipulations that would give us some assurances that the folks with that expertise in a government agency can then afford us the opportunity to take a look at okay, they did decide there's no liner required, I -- you know, the applicant did suggest that there is -- you know, state law currently doesn't require a liner nor does it require a monitoring plan but it also doesn't prevent DEC from including those as conditions of approval. I don't know whether or not given a full review of this application whether DEC might issue a permit contingent upon that.

And so, you know, I don't have that background. I know there's a lot of information here that attempts to provide us the information but I think there's enough documentation that

disputes one another that I just don't have the assurance that there is no risk and I believe the applicant would also say that they have not provided information in here anywhere that says there is no risk, there's a minimum risk, words like likely won't, may not. You know, those aren't guarantees and, you know, when I take a look at what we're -- preface for our -- how our decision is made, O does say that there are conditions upon how we evaluate this permit and the one that I look at is one that Mr. Healy alluded to earlier, that granting the conditional use permit will not be harmful to the public. It doesn't say may not, will not likely, has the least potential risk of. This says will not be harmful. I don't know that this will be harmful. I don't know that this will not be harmful and, unfortunately, with the information that I have, even though it's 4,000 pages of it, I don't believe I have the proper information which I think would be the DEC's permit to make a good, informed decision that would support this permit.

CHAIR: It's 11:15. We have mandatory midnight adjournment. We have four affirmative votes taken to pass any legislation. We could go through those 40 conditions. We could follow Mr. Adams saying let us see the ADEC permit first and then review. We could postpone the time certain. We have options. Before I weigh in, I will go to Vern Rauchenstein. He's got a lot of love letters there.

COMM. RAUCHENSTEIN: Yes, I have to answer to Mr. Adams. He's mentioning the ADEC and a lot of those standards that ADEC and EPA have are arbitrary standards. I'm not of the field but I'm from Talkeetna and in Talkeetna, we had very good water. We had 12 parts per million or 10 million of arsenic in our water and we was just fine when the -- when the minimum was allowed, it was 50 parts per million. Then the politics in Washington, DC changed. They went to 10 parts per million that are south in Talkeetna on the Borough and they spent close to a million dollars to upgrade the system so we could be legal with the 10 parts per million and about three, four months ago, they relaxed the standard to 15 parts per million so we'd be legal now so we blew a million dollars that the people in Talkeetna can't afford and the Borough can't afford and the whole thing was politics.

So I question all them arbitrary standards. The most (indiscernible).

CHAIR: Well, as chair, I'm not going to sit here and pontificate and go over and rehash. No, no, no, you didn't pontificate but I highly agree with my highly-trained and educated engineer associate there, Mr. Thomas Adams, that out of 4,000 pages, the more I read the more I knew I didn't know and, being quasi-judicial and *ex parte*, I was not allowed to talk to the engineer. I was not allowed to talk to the applicant. I was not allowed to talk to the Borough. I was

not allowed to go to Chugiak. I was not allowed to go to Anchorage. I was not allowed to research what worked in the Lower 48. I wasn't allowed to talk to my fellow people and I think that's a little flaw in the system because when I really wanted to dig deep and get some information and do some internal things, I was not allowed to do it. So when the Borough comes to me and said a year ago, the applicant came and said what can we do to meet your standards, what can we do so that you're satisfied, what conditions can you put on us and when the Borough staff that has talked to all the engineers, went to all the on-site and Alex Strawn comes to us and says we have crossed every T and dotted every I and we put 40 conditions and it's not going to happen unless the ADEC approves it and we've got these conditions in it, I would be remiss to the public, I would be remiss to the applicant and the Borough to say I'm smarter than you, Alex, I'm smarter than the Borough, I'm smarter than what -- all the research you've put in this. We are a volunteer board. I worked -- stayed up weeks on this. So, in summary, if the Mat-Su Borough staff who has looked at it and researched it and spent a year on it says our job is to protect the public, it's on the Borough and on Alex's shoulders so I cannot say I'm an expert and overrule them.

So that's where I stand that the people that have known at all, talked to all the engineers, done everything, have

more information than I have. So my point is I can't overrule what the Borough is recommending to me. Mr. Thomas Healy.

COMM. HEALY: Well, sort of following along in that line, I was looking at this resolution and there -- Resolution 14-33 in -- on the leachate issue and I guess it kind of starts on page 2153. It's a lengthy whereas and it carries on to page 2154, et cetera. I find this -- okay. So this is the borough staff telling the commission what -- well, it's what they're telling us or at least that's what's proposed in this resolution but I find this is just basically lifting almost word for word information from the applicant's engineers and putting it into the resolution.

Now, this gets to the basic issue I have about the hydrology of all this and there's been a number of experts weigh in on this but they don't agree. There's a fundamental disagreement between one of the engineers and the others and I think that's a significant issue for me, particularly with what's at stake in terms of the water table and possible leachate but the -- you know, the -- getting back to the resolution, I find this almost word for word out of the applicant's information. If there is any leachate at all, it says, the monofill is designed to minimize the moisture levels and the material. It talks about the semi-arid climate. Under these climatic conditions, leachate is not formed in a land fill, et cetera. I think this is taking one side of the

view in terms of the groundwater situation and I just wanted to express that concern with how that resolution was put together. I don't agree with that. I think for there to be statements that no leachate will be produced I think is a stretch. I ask for information on the Borough's central landfill and, certainly, we cannot compare not necessarily that facility with this proposal. There are differences.

However, the Borough hauls like 1.6 million gallons a year of leachate out of the central landfill. That's the same climate as down at this facility. Now, there's different constituents going into that landfill. I know it's not an apples and apples thing but there is leachate coming into the -- into these areas. So the bottom line is I think, considering the risk and the -- well, the risk of groundwater contamination, I just don't think it's worth it and I think the -- so I can't support this resolution at all.

CHAIR: You're on the record. Mr. Strawn, would you like to respond to that? It seemed like Commissioner Healy felt that your due diligence wasn't adequate.

COMM. HEALY: Oh, I was not saying that, Mr. Chair.

CHAIR: It sounded like that.

COMM. HEALY: Oh.

CHAIR: It sounded like you say they lifted the language from the applicant.

COMMISSIONER: I would call a point of order, Mr. Chair.

I mean, this is discussion between the commission at this time and, really, the -- if we sought input from a staff, we would come through you. I don't think Mr. Healy was challenging staff's input, he was just supporting the basis of his future decisions.

CHAIR: Point well taken. Thank you. Further discussion? Mr. Tomas Adams.

COMM. ADAMS: Well, not to beat a dead horse but, again, I come back to DEC's decision and what confused me is on page 1689 of our packet, DEC has an e-mail that speaks to several issues that are in the application. Now, this originating e-mail is dated March 7th and there seemed to be some follow-on correspondence and which is why I was confused as to the status of the DEC permit but -- so I -- the final -- or most recent, I should say -- and this application on page 1677 is another follow-up e-mail from Ms. Aldrich dated October 29th but I want to go back to the March 7th because she says, basically, in this correspondence, the trail of e-mails, that the March 7th comments that she provided are still relevant and it really just breaks down a couple things that were said that appear to be concerns to me as to why I really am curious of where DEC is going to go when they review this application. Page 1689.

It -- there's a couple points on here. One of them is to -- you know, on page 17, I'm assuming she's referencing the

applications. There was a statement that the DEC permit was approved when, in fact, that permit has not been approved, all they've done is accepted the application in order -- and otherwise saying it was a complete application and, therefore, going to a public comment period.

On page 28 of the application, it suggests that more than 70 percent of existing monofill footprint is already in excess of 10 foot above the seasonal groundwater table. Those areas with insufficient separation from groundwater would be filled with on-site earth and materials to obtain a minimum separation of 10 feet. Those are the statements out of the application. DEC's response is -- go through the entire discussion if that was necessary but it basically says no discussion of fill to obtain the proper groundwater separation was discussed. Areas are filled. We need to resurvey the site and submit a new drawing of the present conditions. These could be concerns -- you know, deserve our attention or might not deserve our attention. I -- you know, these are certainly concerns that DEC's pointed out of I'm not going to say flaws in the application but, sir, you can certainly miss statements in the application that have caused them to respond.

Talks about the DEC permit requiring the owner to provide bonding or other financial assurances and DEC's comment was CMS has not presented adequate financial assurance to meet

this requirement and they go on to say they would not demand that or expect it until the permit was issued or denied.

So, I mean, that e-mail to me is one that really launched me into being concerned about what is the status of the DEC permit and why we should be concerned about, you know, the actual design of the landfill. You know, I don't know that any of us up here has the experience to say that it should be lined or shouldn't be lined. We can be concerned and overreact but, in fact, it's Mr. Helgeson's design that -- you know, he's responsible for what that design is. You know, if we impose upon -- a liner upon this condition, well, in some respect, we assume the responsibility when that liner doesn't work. You know, he made a statement earlier that that liner could potentially be a flaw in the design and cause more harm than good. That's not our intent. We don't have a background to really say that. All we're doing is reacting from the bit. Similarly with a leachate collection system.

On the other hand, DEC, back to my point earlier, they do have those scientists, they do have those engineers that can have that conversation and recognize whether their liner is a reasonable reaction to putting a monofill at this site or not.

Similarly with bonding and placing the right amount of insurance. What is the right amount of insurance? What is something goes wrong and pollutes this water body, causes significant harm to an individual or individuals. Is it five

million? Is it 10 million? I don't know, I don't have that answer. So, you know, I'm assuming in their review, DEC will consider all of that and I -- again, going back, if we had their permit to see what their conditions and really fully understand what their concerns were so that we could evaluate not the design of the landfill but then we could really get to the heart of is it in the right place.

So, again, I reiterate as this condi -- as this application is currently submitted, I have a hard time supporting it and might suggest the applicant consider pulling the application and perhaps they have that DEC permit.

PHONE: The conference has ended. Good-bye.

COMM. ADAMS: I guess I'm done, Mr. Chair.

CHAIR: So is there an amendment? What's the will of the commission?

COMM. ADAMS: Mr. Chair, I'll -- just for discussion purposes, I mean, there's certainly -- sit here and belabor some amendments but it might be not be to -- might not be a good use of our time I would say but here's an idea that was thrown out orig -- and I think is -- it warrants some discussion and the applicant did suggest that DEC has a similar time line to their permit but if DEC chooses to issue their permit with a five-year time line and -- I think that perhaps we should consider more a restrictive time line to issue this CUP. Thirty years is a long time. Unfortunately,

many of us in this room may not be here 30 years from now. I'd really like to see some kind of testing period if we choose to approve this permit and we get an opportunity to see how this operates so we can see if our fears are allayed or if they come to fruition and give the next body that replaces us at this table an opportunity to really fully evaluate how this operation's taken place and then consider whether or not to reissue the permit.

So it'd be my intent if we're going to start making motions to amend the conditions of approval, that we change the 30-year expiration date to something more along the lines of a five-year period so I guess I'll launch into making a motion to amend Condition of Approval No. 38 to replace 2045 with 2020. That actually gives it a full five-year period. So it'll read this conditional use permit shall expire December 31st, 2020.

CHAIR: A motion's been made to change the verbiage, as Mr. Adams read into the record, instead of 30 years to five years.

COMM. ADAMS: I -- yeah, I made it date specific, Mr. Chair, not necessarily durational. So Condition No. 38 on Resolution 14-33, page 2179, my motion to amend, this condition will read this conditional use permit shall expire December 31st, 2020.

CHAIR: So, for clarity and for the record, if it takes

DEC two years to approve or three years to approve, it may be a two-year permit then because there's other conditions before this could be implemented. Let's do a -- does everyone understand that motion? Would anybody second that? I need a second to move that.

COMM. ENDLE: I'll second it.

CHAIR: Motion's been made by Thomas Adams, seconded by Brian Endle for date certain. Discussion? Vern?

COMM. RAUCHENSTEIN: Yes, I -- I'd like to add a sentence that it can be a renewal if everything's okay, that this condition that is -- expires or shall be renewed after December 23rd -- after December 23rd, then this conditional use permit shall expire December 31st, 2020 and shall be renewed it's --

CHAIR: In total compliance.

COMM. RAUCHENSTEIN: -- if in total compliance. Like that, yes, because I would think that the applicant will have quite a bit money tied in it and so he has to have some assurance that it gets renewed if he's in total compliance.

CHAIR: We have a motion that's been made and seconded. Would the maker allow that amendment to the amendment?

COMM. ADAMS: No, Mr. Chair, I wouldn’t accept that and here's why. My intent is to make this permit as it stands here valid for that period of time. The actions of the applicant during that period of time will then serve as the

foundation for his future application to renew the CUP and whatever supporting documents he brings forward about his operational activities, success or failures of, you know, that next body then has full authority to evaluate an issue that next permit. I would not be imposing this permit upon the next body to reissue.

CHAIR: Thank you. Mr. Thomas Healy?

COMM. HEALY: I'm going to vote against this amendment. I think it's -- I don't think it's enough protection. If it's a five-year permit, then in five years, this monofill could be well under way on that site. I still come back to the conflicting opinions of the hydrologists on this issue in terms of possible leachate and its effects on the groundwater. Whether it's -- if you review it in five years or 10 years or might not have a problem for 15 years but what about 20 years? I -- it -- it's -- I don't -- it's not the time to me, it's the location and the concern of the conflicting hydrological opinions on this. I would rather err on the side of caution.

CHAIR: I have a motion on the table. We either need to vote or rescind it. Any other discussion? Any objection? Obviously, there is.

COMMISSIONER: I would object.

CHAIR: So we need to vote. The amendment, a vote yes changes the verbiage as read into the record, expires 12/31/2020. A yes vote changes it to that. A no vote

obviously does not change it to five years. Takes four affirmative votes for legislation. Are we ready to vote, Ms. Brodigan?

MS. BRODIGAN: (Indiscernible). Has everyone voted?

CHAIR: No. Does everyone understand a yes makes it a date certain to 12/31/2020.

MS. BRODIGAN: The vote passes with Commissioners Endle and Healy in opposition.

CHAIR: Back to the main motion. Discussion?

COMM. ADAMS: I just want to reiterate, Mr. Chair, I mean, there were a number of conditions of approval in here that I certainly have a desire to modify but I don't know that I have the expertise to modify and I deferred back to my prior statements with respect to DEC's involvement here and whether or not I would be satisfied having their input and knowing what their responses were so I guess that's more of a statement that I'm not going to choose to modify additional conditions of approval because, you know, for instance, insurance amounts, prohibiting certain materials from being disposed in this monofill, prohibiting, you know, the regulated asbestos-containing materials or ACM or drywall, for instance, things that might be considered as a reaction to allow this here but, you know, I agree that those are the types of decisions and inputs I would expect from DEC and I don't know what the contribution of those elements in the

disposal chain really -- you know, what their high rate of risk is. So, again, just a statement that there are a number of conditions here and I just have reservations about trying to attempt to change them because I don't know I'm making them better or not.

COMM. ENDLE: Mr. Chair?

CHAIR: Yes, Brian Endle, District 1.

COMM. ENDLE: I'm just looking at the time and some thoughts. Maybe I'll pass them by and see what everybody else thinks but I could be wrong but it does -- I'm not sure if this permit as enough votes to make it. If we were to vote on this and it does pass, could we pull it back and work on it? Versus -- or if it fails, we could, you know, get some time where we can work on the opposite. It may be a -- maybe speed up the time on that? Just a suggestion. I don't know.

CHAIR: Well, we have options. There's also the option of postponing until date certain. I like to -- I mean, clearly, we could fast forward and let the tall towers structure people leave. I don't think we're going to get that if I have to adjourn at midnight but I guess, Mr. Adams, you made the motion to five-year and now I'm hearing that there's other things you can't overcome so I just want to make certain when you made the motion to change from 30 to five years, how would you like to proceed?

COMM. ADAMS: Well, I think in all fairness to the

applicant and to the folks in this room that we complete our discussion. I'm just making a motion to amend that tries to bring this closer to something that if it does pass, that I will feel more comfortable with. It doesn't suggest that I'm still in favor of this resolution so I think we continue our discussion. If we have no further amendments, that we look to move on the main motion.

CHAIR: Okay. Is there any unfinished business, further discussion? Vern Rauchenstein?

COMM. RAUCHENSTEIN: I'd like to make a motion changing No. 21 from two feet topsoil to 18 inches silt and six inches topsoil. That's on page 2177 and upon completing, the monofill shall be covered with 18 inches top -- silt and two feet topsoil. Then that -- silt and two feet and six inches topsoil. Yes. And on 23 --

(Off record conversation)

CHAIR: Okay. Let's get a second on that.

COMM. RAUCHENSTEIN: Is there a second?

CHAIR: No, let's see if we can get a -- a motion's been made to change as per read, 18 inches of silt and six inches of topsoil. Do we have a second? Motion fails for not getting a second. Further discussion.

COMM. RAUCHENSTEIN: I'd like a motion to change 23, the bottom of the monofill shall not be located closer than 12 feet instead of 10 feet.

CHAIR: Vern Rauchenstein made a motion to change Condition No. 23 from 10 feet to 12 feet. Do we have a second? Motion's been made to change from 10 feet to 12 feet. Do we have a second? Motion fails for not getting a second. Discussion. Thomas Healy.

COMM. HEALY: Well, I would just point out that I think some of these proposed amendments are sort of like rearranging deck chairs. In my mind, there's -- there are bigger issues here with this resolution and this application. There's issues of, you know, public safety which some of these amendments would encourage but health and safety but also I think there's just some fundamental flaws in the way this has been proposed and I think there's some fundamental flaws in the suitability of this facility at the location proposed. I think in the right location, it's a good idea but not here. So I would ask to vote on the main motion.

CHAIR: On the record. You actually calling to end discussion?

COMM. HEALY: No, no, I'm not, I just --

CHAIR: Okay.

COMM. HEALY: I will wait until there's a main motion. I think we do this evening.

COMMISSIONER: I'll call for it.

CHAIR: Any objection? Main motion, Resolution 14-33, a resolution approving a conditional use permit in accordance

with 17.60.030, permit required for the operation of inert material monofill on Mat-Su Borough parcels as written into the record. Four yes votes to pass legislation. Are we ready to vote? Yes vote approves the resolution recommended by the Borough, a no vote, obviously, does not. Everyone's clear? Yes or no.

MS. BRODIGAN: The motion failed as it is a tie. It does require four po -- affirmative votes for the commission to take action.

CHAIR: Motion fails.

MS. BRODIGAN: And for the record -- sorry, this is hard to see -- Commissioners Endle, Adams and Healy voted it up in opposition to the resolution.

CHAIR: What's the will of the commission, 11:45 p.m. Do we want to tackle tall structures?

COMM. ENDLE: Point of order, Mr. Chair, for at least a question?

CHAIR: Mr. Brian Endle?

COMM. ENDLE: Do we have to make a decision and then put something forward? This is kind of a conundrum here because we got three and three and we don't have enough to -- if the lines are like that, we don't have enough to support the --

CHAIR: No, it clearly fails because it needs four yes votes to do anything so it's failed.

COMM. ENDLE: I understand that.

MR. ASCHENBRENNER: Mr. Chairman, may I address the commission?

CHAIR: Yes.

MR. ASCHENBRENNER: John Aschenbrenner, deputy borough attorney here on behalf of staff. Even though the motion did not garner a majority, Supreme Court precedent mandates that the rationale for the commission's decision must be reduced to writing with findings of fact and conclusions of law. In the past, the commission has used the 30-day time frame allowed under 17.60.040 to come forward with findings and I realize it's getting rather late but I just encourage the commission to adopt those findings and perhaps the applicant and his counsel would like to address the Board on this same matter, I don't know.

CHAIR: The Borough spoke. Would the applicant have a comment at this time? The findings of fact and conclusions of law are something we do need to do for quasi-judicial. Do we want to tackle them now? Postpone to date certain? Mr. Adams?

COMM. ADAMS: Mr. Chair, as attorney Aschenbrenner suggested, there is a 30-day time frame from which we have to actually provide those findings of fact between the closure of the public hearing which happened this evening. So I would suggest that the three of us that chose not to support the resolution as presented submit to the clerk our findings of

fact and perhaps somehow or another, we'll get down into a singular document that would be presented two meetings from now long as that's within the 30-day time frame?

CHAIR: Next meeting is January 5th.

COMM. ADAMS: I'm sorry.

CHAIR: Ms. Brodigan, the clerk, is that appropriate to have the three yes -- the three no votes present their findings to you?

MS. BRODIGAN: Yes, but it does need to be at the next meeting and they would need to send the findings to me and then I can prepare them in such a way that the commission can review.

CHAIR: Thank you. Agreement with that? I believe the next meeting is January 5th, correct?

MS. BRODIGAN: Yes. (Indiscernible).

COMM. ENDLE: Just a -- Mr. Chair?

CHAIR: Yes, Mr. Brian Endle.

COMM. ENDLE: Just a clarification, do we have 30 days? Is it three days from the end of this meeting here or is it 30 days from another date? I just want to make sure we have enough time.

COMM. ADAMS: It's 30 days from the closure of the public hearing that the commission has to issue their findings.

CHAIR: So 30 minutes from 10:00 o'clock tonight. Thirty days from 10:00 o'clock, right.

MS. DRISCOLL: Just through you, Mr. Chair, Mr. Adams asked when they would have to have the information to me and the cutoff date for the January 5th meeting. The packet cutoff date would be Wednesday, December 17th at 5:00 p.m.

CHAIR: December 17th a 5:00 p.m., five days.

COMM. ADAMS: What is the cutoff for?

MS. DRISCOLL: (Indiscernible).

COMM. ADAMS: Because it doesn't need to be noticed.

MS. DRISCOLL: No. (Indiscernible).

COMM. ADAMS: So why are we shooting for January 5th meeting now? It doesn't give us 30 days, does it? It'd be well within 30 days. That's what I'm saying, is there another meeting after the 5th that would still meet the 30-day window?

(Off record conversation)

COMM. ADAMS: Okay.

CHAIR: So we only have one meeting in the next 40 days.

COMM. ADAMS: December 17th is like two days from now. That is insufficient time. That is insufficient time.

(Off record conversation)

COMM. ADAMS: I think we're going to have to make that work. Yeah.

CHAIR: Brian --

COMM. ADAMS: So let Mr. Endle know, yeah.

MS. DRISCOLL: Does the 15 -- or the --

CHAIR: 22nd.

MS. DRISCOLL: -- 22nd work for you? That's next Monday, giving your findings to Mary? Okay. That gives (indiscernible). Okay. Monday, the 22nd.

CHAIR: Okay. Findings of fact will be provided by the three by the 22nd to the clerk. We'll get them in the next week's packet. The dates of the next commissioner meetings have been amended for the holidays so we only have -- our next meeting is January 5th which we will vote on the findings of fact and conclusions of law. That gets us through Resolution 14-33. I don't think you need a -- you don't need a motion for these

(Off record conversation)

CHAIR: Findings of fact.

COMM. ADAMS: Just to make it easy, Mary, on you, I'll make a motion that we have our findings of fact by December 22nd to you for the January 5th -- for consideration at the January 5th meeting.

COMMISSIONER: Second.

CHAIR: We haven't closed out 14-33 yet, we've just closed that we're going to have the findings of fact and conclusions of law given to the clerk to be brought to the full commission on January 5th. I'm going to allow Mr. Bill Ingaldson.

MR. INGALDSON: This is just a point of clarification because I don't want to have -- do something that's going to

compromise the meeting. I'm not certain and I don't know the answer to this but I'm not certain I understand it. I don't think that the commissioners can meet privately and agree on one so -- but maybe that's not what they're proposing. They're all proposing separate?

MS. BRODIGAN: Yeah, they --

CHAIR: Explain. Ms. Lauren Driscoll?

MS. DRISCOLL: Point of clarification, what we're suggesting is Mary has a certain amount of time she needs necessary to get the packet ready and out on time to the public so the dissenting votes need to submit via e-mail to Mary as individuals their findings of facts and then she compiles that based on those. So we were just establishing a date in which they needed to get those to her and then that document is then available in the packet and will be taken up at the next meeting.

MR. INGALDSON: And do the commissioners that voted in favor do findings of fact too, proposed?

MS. DRISCOLL: No, it's just part of the documentation necessary for when something like this fails in this way, it -- you know, why did these dissenting votes happen and it gives clarification.

MR. INGALDSON: Right, I just want to know what the record is because I anticipate that there will be an appeal and so I just want to make sure that the findings of fact,

that everyone has an opportunity because I think everyone has to vote on the findings of fact to adopt them.

MS. DRISCOLL: Mm-hmm.

MR. ASCHENBRENNER: Approve -- through the chair, may I address the Board -- the commission? John Aschenbrenner, deputy borough attorney. I agree with Mr. Ingaldson that both the votes in favor of the motion as well as those against could come up with findings of fact. It would be basically like *per curiam* or a plurality type opinion although you're obviously a commission but there's nothing stopping those folks that voted in favor of the motion from likewise submitting draft findings and then each separate three commissioners could adopt those findings, those in support and those against.

CHAIR: So all the commissioners less Mr. Kendig should submit by next Friday and then board total discussion on January 5th. By the 22nd. Okay. 11:55.

COMMISSIONER: There's a previous motion.

CHAIR: A motion's been made by Thomas Adams, second by Endle. Any objection?

COMMISSIONER: what was the motion again, please?

(Off record conversation)

COMMISSIONER: Does that include everybody? With the exception of Mr. Kendig.

CHAIR: Any objections? Seeing and hearing none, it

passes unanimously. Brings us up to a legislative matter.

COMM. ADAMS: Mr. Chair, I make a motion to adjourn. We got to do that officially? Well, then I'll pull my motion, Mr. Chair, to let other administrative actions take place.

CHAIR: Well, no, we have to make a motion to postpone until date certain this tall structure so who wants to do that and we want a -- Item 10? So you want to postpone all future business?

COMM. ADAMS: I'll make that mo -- I guess I would postpone any remaining business in this -- tonight to the next meeting, January 5th.

CHAIR: Everybody understand that, postpone and additional items on the agenda to date certain which would be the January 5th meeting, 2015.

COMM. RAUCHENSTEIN: Second.

CHAIR: Vern Rauchenstein beat you to it. Been made by Mr. Healy, seconded. Any objections? Seeing and hearing none, it passes unanimously by non-objection. Any objection to adjournment at 11:57? Second and hearing none, meeting adjourned.

(End of requested portion)

TRANSCRIBER'S CERTIFICATE

I, Linda S. Foley, hereby certify that the foregoing pages numbered 2 through 197 are a true, accurate, and complete transcript of Matanuska Susitna Borough Planning Commission Regular Meeting (Excerpt) (re Conditional Use Permit, Res. No. 14-33) of December 15, 2014, transcribed by me from a copy of the electronic sound recording to the best of my knowledge and ability.

February 12, 2015

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Linda S. Foley, Transcriber

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MATANUSKA SUSITNA BOROUGH

PLANNING COMMISSION REGULAR MEETING (EXCERPT)

(RE FINDINGS OF FACT AND CONCLUSIONS OF LAW; RES. No. 15-01)

JANUARY 5, 2015

CHAIR: I believe this brings up to Item 12, unfinished business, and we're only 73 minutes into tonight's meeting so I would like to proceed if I could and I'm going to read the resolution into the record and then I'm going to ask Mr. Commissioner Kendig to exit the room. Resolution 15-01, a resolution adopting findings of fact and conclusions of law to support the planning commission's failure to approve Resolution 14-33 from the decision rendered at the December 15th, 2014 meeting, the applicant, CMS, staff, Susan Lee and Alex Strawn.

It was determined at that time, Commissioner Kendig recused himself from participation in that resolution. I would ask Commissioner Kendig if he could please stick around and return for the conclusion of the meeting and we'll have Mr. Endle release you from your chambers at the appropriate time.

I've read the resolution into the record. Additional data? The public hearing for Resolution 14-33 was closed on December 15th, 2014 and the motion to approve failed with Commissioners Klapperich, Walden and Rauchenstein in favor, the planning commission board to continue determining findings of fact and conclusion of law in support of denying Resolution 14-33 until tonight, January 15th, 2015.

There is no commissioner discussion at this time but, by recommendation, law and appropriateness, I'm going to read the

conflict of interest, *ex parte* questions into the record. In response to recent inquiries and in order to insure a fair decision on planning commission decisions, the following shall be read by the chair after the resolution title before each quasi-judicial case is heard based on Mat-Su Borough 15.08.150, conflict of interest, *ex parte* contact. Question 1, do you or any member of your immediate family have a substantial financial interest in any property affected by this decision or will you recognize a foreseeable profit as a result of this decision? Question 2, have you received or otherwise engaged in *ex parte* contact with the applicant, other parties interested in the application or members of the public concerning the application or issues presented in this application either before the application or during any period of time the matter is submitted for a decision outside of the public processes provided by the Borough.

Item 3, are you able to be impartial in this decision? If anyone answers yes to Questions 1 or 2 or no to Question 3, both the borough staff and the applicant will be given the opportunity to ask further questions. Following this, the planning commission will render the decision as to whether or not the commissioner has a conflict of interest or can make an impartial decision.

With the information in front of you both in packet, previous discussion and recent handouts, I ask if any planning

commissioner answers yes to Question 1 or 2 or no to Question 3.

COMMISSIONER: Mr. Chair, I got a parliamentary question.

CHAIR: Proceed.

COMMISSIONER: I'm just curious that you're asking us these conflict of interest questions. You know, the way -- the point that we're at in the agenda is unfinished business for a decision that's already been made by this body and all we're doing at this point is having a discussion about the findings of fact and conclusions of law. So I'm just curious of why the conflict of interest. Is it the intent of the chair to seek answers to those three questions as they pertain directly to the discussion about to take place or is it --

CHAIR: I think in --

COMMISSIONER: -- in retrospect to the decision that's already been made?

CHAIR: I think the clerk in the -- in -- is erring on the side of make certain that when we're concluding quasi-judicial matters, that something may have occurred in the last two weeks or something may have came up, that it's just a second check mark that both the applicant, the Borough and the public understands that time has passed since I asked this question on this. I --

COMMISSIONER: Those questions are directly related to this body making a decision on that application that

decision's been made.

CHAIR: I understand but the Borough --

COMMISSIONER: I -- I'm just trying to clarify where we're at and the reason I'm asking, I think it's unfortunate from my opinion that this letter which I've chosen not to read was accepted because, from my perspective, it's additional information from the applicant directly related to that -- like I said, a decision that's already been made. If this is an issue at this point, again from my perspective, it's one that needs to be taken up upon appeal and all we're here tonight is to talk about the findings of fact and conclusions of law. So I guess I'm looking with a little bit of direction about what the relevance of this document is --

MR. ASCHENBRENNER: Mr. Chairman?

COMMISSIONER: -- and what the relevance of those questions are.

MR. ASCHENBRENNER: John Aschenbrenner, may I address the commission?

CHAIR: Does the planning commission have any objection to hearing from Mr. John Aschenbrenner on this question? Seeing and hearing none, proceed, sir.

MR. ASCHENBRENNER: Oh, John Aschenbrenner, deputy borough attorney. I'm here as an advocate on behalf of staff. I understand earlier in the evening, the applicant in this matter submitted a document which we have yet to see after the

decision has been rendered. We lodged an objection to the filing of that after the decision and where the applicant has not objected through the entire proceedings in this matter and after the vote, then lodges an objection with regard to a commissioner sitting. For those reasons, we urge the commission not to take up the matter and also concur with Commissioner Adams' comments that it's a little late in the game after you see how the Board -- or the commissioner votes to lodge your objection to that commissioner sitting. Thank you.

CHAIR: I think it would be appropriate to make certain since the clerk makes certain things are done in proper protocol and parliamentary procedure, might you want to just address why you thought it was important to re-read this?

MS. BRODIGAN: Thank you, Mr. Chair. We actually did this once before in a case and at the request of the planning director. The director has been out so I did not have a chance to discuss this with her but I chose to err on the side of doing what we did once before. So it's entirely up to the commission as to whether you answer those questions.

CHAIR: Well, not to muddy waters but we have six commissioners here so I would guess I would like to ask the will of the commission to disregard this statement tonight or to regard it? I'm the chair.

Well, I think the question should always be asked, are

you able to be impartial in this decision and if for some reason you can't be, that should be brought up. Thank you, Mr. Adams.

COMMISSIONER: I don't disagree with the chair but I guess my point is the decision's been made on this particular application. Now, I mean, this is where we're going to get a little bit squirrely in how we talk about our findings of fact and conclusions of law because, really, we're doing another resolution but that doesn't necessarily affect the fact that there was a lack of support for the prior resolution for the CUP and so my point here is the questions with respect to a conflict of interest are not pertaining to the decision made but now to the supporting statements on how that decision was made, how it was made, not the decision being made.

CHAIR: I understand. So, wait a minute, you're --

COMMISSIONER: So I guess if you're seeking input, I would suggest that we not continue, potentially, with a form of precedence of asking those same questions when we have our discussion about findings of facts and conclusions of law. That would be my suggestion to your decision.

CHAIR: So it's been suggested that we disregard these questions at this evening's discussion. Obviously, we can't reverse what we've -- what's already happened but the findings of fact and conclusions of law are a crucial accompanying document to this. So I guess is there any objections to Mr.

Adams' suggestion that we disregard this memorandum and the questions I asked for tonight? Mr. Vern Rauchenstein?

COMM. RAUCHENSTEIN: Yes, I'd like to state that we've had six board members and the vote was three to three so no matter which way it goes, you would not have both people voting and so the request here will be denied.

CHAIR: Excuse me, just to make clear for the record, the discussion's been made -- I guess Mr. Tomas Adams says that it would be -- it's inappropriate or unneeded to ask these questions tonight. So he's asking me that we disregard what I read whether you are impartial to the decision because the decision's already been made so I'm asking if there's any objection to disregarding that and, as chair, I believe I will go along with Mr. Adams and disregard it. Strike it from the record. Any objections? Seeing and hearing none, the planning commission quasi-judicial action memo I read is struck from the record. Mr. Adams?

COMM. ADAMS: Well, I just want to bring one point forward, Mr. Chair. Again, this document that was submitted through the audience participation section of tonight's agenda specifically to address that resolution, I would suggest that this information that we, as commissioners -- and it might be too late at this point. It, you know, probably would have been better to have a point of order not to accept this and distribute it earlier this evening but I guess I'm looking for

direction on how we ought to consider this in this next discussion.

CHAIR: Ms. Brodigan?

COMM. ADAMS: From my perspective, again, it's a decision made and --

CHAIR: I'm with Mr. Adams, I've been busy with other business and haven't had a chance to read it.

MS. BRODIGAN: Once again, it's up to the commission to -- whether they wish to review or to take into consideration information that has been passed out at the last minute. The commission did determine that they would not accept information that they did not receive the Friday before a planning commission meeting. As clerk, I will accept the information. As commissioners, you do not have to consider it or read it.

CHAIR: So it's been officially accepted and past history has adhered to the 5:00 p.m. on Friday. I think it's appropriate that if there was something to get into this packet and of this magnitude, it would have been needed to get to us to review before I open the meeting. So as of now, I think the handouts, read or unread, will go back to the clerk and we'll decide how to get them back to us. Any objection? Mr. Adams, you don't look comfortable.

COMM. ADAMS: It's just that, you know, trying to understand where we're at and making sure, understanding the

sensitivity of this particular application and making sure that we do the right thing but my -- from my perspective, we are doing the right thing, just I'm one voice expressing my opinion.

CHAIR: Well, we had six people that are going along with it and, clearly, transparency and the public process being fair to the applicant, to the Borough and to the residents is what I'm after and yet it's a complicated world we live in so I think we're ready to proceed. Mr. Thomas Healy?

COMM. HEALY: Oh, it's just a general comment. I think, you know, but, quote/unquote, disregarding those questions this evening, we're not disregarding the rule that they represent that, you know, these questions were asked of the commission at the onset of this issue and those of us sitting here declared no conflict and so I just don't want the impression that we're disregarding the conflict of interest rules. We are still under those and we respect those.

CHAIR: Thank you. It's on the record. So you have Resolution 15-01. Okay. Let's make certain I'm getting to where we're going here. You see on page 341 of your packet, page 1 of 12, a resolution of the Matanuska-Susitna Borough Planning Commission adopting findings of fact and conclusions of law to support their failure to approve planning commission resolution. Commissioners may amend the resolution. Commissioners Endle, Adams, Rauchenstein, Adams provided

suggestions for findings of fact and conclusions of law that can be added to Resolution 15-01 by amendment. You have all the information in front of you and reviewed the input. By those, you'll see on page 355 there's been a lot of work put in by the clerk where you have amendment E-1. It would be Brian Endle, District 1, Endle-2, Endle-3, Endle-4 and then you'll proceed to Endle-6, 7, 8, 9, 10. Tomas Adams provided A-1 through A-12, A-13, Rauchenstein R-1 through R-4 and Thomas Healy. I believe Healy's goes 1 through 32. Takes four affirmative votes are necessary, approval of the proposed action. Commissioners must come up with findings of fact and conclusion of law in support of denial of Resolution 14-33.

So I, as chair, will ask for suggestions how you want to proceed. Well, do I have a motion to approve Resolution 15-01?

COMM. ENDLE: Mr. Chair, I'll make that motion to approve 15-01.

CHAIR: Brian Endle is making a motion to approve. Do I have a second?

COMM. HEALY: I'll second it.

CHAIR: Thomas Healy second. Discussion.

COMM. ENDLE: Mr. Chair?

CHAIR: Yes.

COMM. ENDLE: Thank you, Mr. Chair. I don't see everything that I had asked for in this particular resolution

but, as a template which we can start with and then change, modify, add, subtract, I think it'd be a good way to start and that's why I recommend starting with the -- with 15-01. I have some of my own amendments but I wanted to at least get this started. So I'll wait for other discussion and see how we proceed.

CHAIR: So since you've taken the opening statement and you didn't see anything, would you like to make amendments to this template?

COMM. ENDLE: Sure, Mr. Chair, I would like to do that. Let me get to the right place here. I looked through my amendments and this 15-01 and there were a number of things in here that I saw already and one of the things that I did not see was a reference back to the original resolution that occurred in 2013, 13-30, which denied a conditional use permit and it's just a fact that is related to this one whereas if someone was to look at this 15-01, it would note that there was previous -- a previous resolution that was denied and I wanted to add -- so I'd like to make an amendment to add E-2 on page 355 with a slight change and --

CHAIR: Okay. Speak nice -- loud and clear. He's taken use to page 355 --

COMM. ENDLE: Mm-hmm.

CHAIR: -- of his amendment which is referenced Endle-2.

COMM. ENDLE: So the amendment says whereas Resolution

13-30 contains findings of fact and conclusions of law which support denial of the -- and I will -- I'd like to add right at that point after the the, previous application for the same so it would read denial of the previous application for the same conditional use permit and my point being is that there was a use -- a conditional use permit which was put forth in Resolution 13-30 and it was denied and that was the -- that's the reason for that.

CHAIR: A motion's been made to add the language that Lauren is putting in.

COMM. ENDLE: For the same. That's good. Thank you.

CHAIR: I'll ask for a second and then I have a comment. Is there a second on that? Mr. Adams?

COMM. ADAMS: I'll second, Mr. Chair, but I have a question, just again where -- how we're proceeding on this. I understand Mr. Endle's making an amend -- or -- yeah, making a modification of his proposed amendment but how and where do you propose that modified amendment be placed within the resolution?

CHAIR: Yeah, clearly, this is -- it's complex because this was just a -- this was a -- just a bit roadmap that was provided to us and we can take different routes to get there so make certain I understand. Ms. Brodigan would like a comment on that.

MS. BRODIGAN: Through the Chair to Mr. -- to

Commissioner Adams, Based in the information that I got from the -- from all four commissioners, I didn't know where to put those so that's why I numbered them, so it would be easy to say I move to add amendment E to after such and such so make it easier for Mr. Skull to cut and paste and for us to track.

COMM. ADAMS: Oh, I absolutely understand that. I'm trying to ask where Mr. Endle --

MS. BRODIGAN: Oh.

COMM. ADAMS: -- seeks to take that path.

CHAIR: So do you have an area in this 12-page resolution where you'd like to put this?

COMM. ENDLE: I do, Mr. Chair. Thank you. It looks like Ms. Driscoll might have something to add. I'll let her do her thing if she wants.

MS. DRISCOLL: Just to preface the question --

CHAIR: Microphone, please.

MS. DRISCOLL: I guess maybe before we start cutting and pasting and moving things over, of the list of commissioner amendments I have here, are there any others that need tweaking like you were suggesting that you had found other things so maybe kind of addressing these before we go moving them over in the template? Because then we can kind of cut and paste because right now, we're kind of in modifying mode. As we start moving those over and then we're popping back over and we're modifying, it's going to get a little on the hairy

side.

CHAIR: I appreciate that, Lauren, but unless -- I go with -- unless we give each commissioner an opportunity to make certain that his words are put in and we vote on it, I don't know how --

MS. DRISCOLL: Well, I guess my question -- and I'll do the will of the commission, of course, but my suggestion would be Mr. Endle is suggesting, you know, E-2 needed to be amended. Are there any other amendments that need to be made to these E amendments that are here that were I the packet and, if so, should we move more in those -- more than one of those at a time or are we going to try and amend them in the document?

CHAIR: I'm afraid if we -- I don't -- I'm afraid we can't -- if we put -- bulk them altogether, we'll still be working on one at a time. I think the quickest way is to boom this, up, down, go to the next because otherwise if we put four in, then we're going to be still talking about each one and we don't know which one to vote on. So let's see how fast we can move on this. Proceed, Mr. Endle.

COMM. ENDLE: Thank you, Mr. Chair. I agree with you and to Mr. Adams' point, I'll thank you because I did not indicate where to put it and I would like to put it at the beginning. I'm comfortable with moving anywhere else that the commission would find that might be better but I'm looking at

sequentially here. This is referencing something that happened in a previous year and it's -- putting it first would be probably preferential. Before the first whereas I 15-01, please. Thank you.

COMM. ADAMS: Mr. Chair?

CHAIR: Proceed, Mr. Adams.

COMM. ADAMS: If I may -- Mr. Adams -- to suggest that the opening we're at sets up this particular resolution that we denied and also provides a legal description? I would maybe suggest your amendment E-2 be placed as a second whereas. That's -- that would be my suggestion. Otherwise I'm not opposed to your amendment.

CHAIR: Any objection to moving it to the second whereas?

COMMISSIONER: I have no objection to that.

CHAIR: Mr. Thomas Healy?

COMM. HEALY: I appreciate that intent of providing some past history on this issue but I need to confirm, as it's written, application for the same conditional use permit, I just want to clarify with the staff, it seems to me that the previous application for this monofill was denied by the commission and so am I not correct in assuming that the one we're dealing with under Resolution 15-01 is an entirely new application for a conditional use permit?

CHAIR: Exactly. Mr. Strawn?

MR. STRAWN: Thank you, Mr. Chair. So this is a new

application. There are differences. It's got a new site plan. It's -- has a different configuration. It takes into account the section line easement that runs through it. It has additional screening. There's -- so that's the reason I didn't incorporate all that resolution. There are some findings in there that I don't think apply anymore. There's findings that it be visible from the Parks Highway which this application is not. So, in preparation for this draft resolution that I supplied to you, I did pull some of the old findings from that resolution and plunked them into here. So I think if there are specific whereases for that resolution that are not in here that you like, I think that if you could incorporate those if they're still applicable to the current application.

CHAIR: Mr. Healy and then I have a comment, please.

COMM. HEALY: Yeah, my point is I think we need to focus on the 14 -- the conditional use permit application that we've considered here over the past few weeks.

CHAIR: And I concur. I clearly, with spending months on this, did not look at this as the same application. Clearly, the conditions of this were completely different. Your presentation was completely different. You spent time and you've done things and I don't look at this as the same conditional use permit. It was a completely different conditional use permit with completely different conditions.

So I certainly wouldn't vote for approving the same conditional use permit. Further discussion. There's a motion on the table that's been made and seconded for this. Further discussion, objection.

COMM. HEALY: I have an objection.

CHAIR: This may be the long way to get through this but I don't know of -- and, see, and you could tell me a better way but Mr. Endle certainly has a right to request this and if we have four affirmative votes, they go in. Mr. Brian Endle?

COMM. ENDLE: I'd be in favor of removing this but I would like to put something in there which references 13-30 because it's the same it's the same company making a request for a conditional use permit for a monofill. They may have different facts and so forth that they put forth but they're still applying for a monofill. So I'll withdraw this one but I'd like to try different words.

CHAIR: Again, you have the right but you looked at the facts and findings of this application. We didn't review anything of the past application.

COMM. ENDLE: I understand that, Mr. Chair, but to me, I didn't see any difference between the first application and the second one. That's why I put that in there but I see that -- I see the reasoning where many of you can see that this is different. I don't see a difference but it -- I'm not -- my main point isn't that -- my main point isn't to say it's the

same, my main point is to say that there's a reference so that when I look at 15-01, I've got a note that hey, there was something else that took place in the past which was an application for a conditional use permit for a monofill.

CHAIR: I appreciate that but that's not a new finding of fact or conclusion of law. That's not finding that it would -- it should be based on this application. My thoughts. Further discussion. Lauren, you look -- Mr. Healy's got his light on. You're overruled.

COMM. HEALY: I just agree with your statement, Mr. Chair. I think, yes, there was a previous application but I think kind of from a structural and procedural point of view, we're dealing with the current application and I think we should just deal with that. The previous proceeding on the other application was -- you know, it's a matter of record. It's -- it doesn't -- I don't think it needs to be included in this finding of fact and conclusion document.

CHAIR: Thank you. We have a motion on the table that's been made and seconded. Mr. Tomas Adams.

COMM. ADAMS: Mr. Chair, I think Mr. Endle actually review his motion.

CHAIR: Okay.

COMM. ADAMS: As the second, I would concur although I see the merits of both viewpoints. I think it would be cleaner if he just stuck to his particular resolution we're

acting on this evening in the end and the action --

CHAIR: The motion that's been made and seconded and -- has been withdrawn by the maker and the second.

COMMISSIONER: Mr. Chair, if I could just make a -- it's more of a statement than anything. You know, I think we're going to struggle with this tonight anyhow. We typically do and we get a little sloppy doing these findings of fact and I think we need to tighten up how we do these because each and every one of us are going to have a different opinion how we arrive at our own conclusions and so I think you see that in the three dissenting votes and then, actually, one of the affirming votes submitted their opinion on the conclusion -- or findings of fact, conclusions of law so I thought that was interesting but just interesting how we're going to move forward here and where each one of us tries to get our opinions in -- enter -- injected into this resolution. It's going to be a little time-consuming, painstaking and sloppy.

CHAIR: Well, I guess my point is make certain you feel strongly enough that that opinion is needed to make this work. So I'm open for a smoother process if you have any suggestions. If I can go through and ask for your top one, we'll go through each one and then your top two and then maybe we have them all addressed in a minimal time instead of going through all of Endle's, all of -- each person's. Some of them you have 33 and they may be partially addressed. The clerk

put them in there so we have record of them but, clearly, she has 12 pages or -- of some in there. So we're back to no motion. Is there a cleaner process? Mr. Thomas Healy?

COMM. HEALY: Well, as far as I'm concerned, the only amendment I'd like to see to make it to the -- well, as a general statement, I think the Resolution 15-01 we have before us that was put together by staff as sort of gathering pieces of the findings and conclusions that commissioners submitted, I think it adequately establishes the facts and conclusions. It may not have everything in there that individual commissioners including myself provided but I think it provides a very good framework in supporting document to withstand as findings of fact and conclusions. So I'm satisfied with it as it is. I think my main point in my findings was that the basic point that lacking any kind of comprehensive land use and zoning regulations, the commission has to pay particular attention with these applications to provisions and goals and policies in the comprehensive plans that apply to land development and I think the resolution provides a -- an extensive list of the policies and goals of the comprehensive plans that apply to this, both the overall borough comprehensive plans as well as the core area comprehensive plan and it establishes clearly that this application is not consistent with those plans and that's a big deal to me and I think the testimony and the record

indicates information that can support that finding of inconsistency.

CHAIR: Thank you.

COMM. HEALY: So that's my basic statement. All I wanted to do is point out a -- it's kind of a typo on page 4 of 12 of the resolution, page 330 -- 344 of the packet, top line, goal -- it says LU-5 and I believe that should be LU-4. You might just want to check that.

CHAIR: The clerk will check on the LU-5 versus LU-4 and report back. Now, we kind of took the floor away from Mr. Endle but I think we've made great progress. Mr. Healy had 35 findings of fact and he's -- feels that none of them were disregarded and the staff did a good job incorporating them. So, for the record, I'm going to announce we're going to take a five-minute at ease at 8:15. That gives us 25 minutes to see where we're at at 8:15 for the public to realize and my fellow commissioners. So Mr. Healy presented 32. Other than the LU-5 versus LU-4, I think I'd like to go back to Mr. Endle because I feel that I want to make absolutely certain that all your entries, just because we reviewed one, I would like you to go through the rest of them that you feel strongly that haven't been incorporated and then I will go to Mr. Adams. Is there any -- other than that in the record, is there any other of your findings of fact that you provided to the clerk that you feel strongly that have not been put in that we would like

to address?

COMM. ENDLE: No, I just -- I had two but then I looked at them and I'm confident with what we have here that it's good enough. I covers what I had but I -- I'll retract my words as well. I won't go and try to put that one in. I don't think the first one had enough support but I -- I'm still confident that there's no difference between the first one and the second one.

CHAIR: It's on the record, sir. Any objection to be asking Mr. Adams to address his input? Seeing and hearing none, Mr. Adams, you have the floor.

COMM. ADAMS: Thank you, Mr. Chair. I do believe, again, most of the concepts, I guess, that we've all embodied in each of our separate findings of fact and conclusions. I guess our -- it can be characterized as being within these -- the existing resolution. I guess I'm just curious just going forward -- and this is probably more of a procedural item, you know, this resolutions -- and there's a bunch of whereases and whereases, whereases but none of these really identify which are the findings of fact and which are our conclusions and so I'm just curious, you know, I think we need to -- that's where I think this gets a little sloppy but from my perspective, the intent -- you know, the intent of how I came to my conclusion, the intent of perhaps how Mr. Healy has stated his and his submittal and Mr. Endle and I'm sure Mr. Rauchenstein who also

made a submittal will get an -- a similar opportunity to say but I think, you know, there can be an argument that all of those concepts are captured in the resolution. So I'd be willing to concede any suggestions I need to specifically take any of my amendments and place them in the resolution because I think you could find somewhere in there there's a concept that is consistent with my statement.

CHAIR: Well, I too, I don't like, you know, when Mr. Adams uses the word sloppy. As chair, I want to make certain this isn't sloppy so I either would ask Mr. Strawn or Ms. Brodigan or Ms. Driscoll, it's clearly at 11 of 12 of the -- you know, it states whereas based on the above findings of fact, the commission concludes. So we're kind of summarizing that, these whereases where the above findings of fact, do you feel that there should be different words used than whereas?

COMM. ADAMS: Well, again, Mr. Chair, you know, I'm not intending to suggest that the work of staff is sloppy. I think this body, in the way we deal with these particular -- how we come -- how we've addressed these findings of facts in the past and now, we need a little bit better guidance and then I'm just suggesting that you look at your -- just as you pointed out in that paragraph, it says above findings of fact but there's -- there aren't any findings of fact. You know, you can make a reference if it's appropriate, Mr. Chair, with respect to -- under the prior agenda item out of BOAA where

they specifically show a format that shows the findings of fact listed whose is long listed and I don't know if that's the right way or the wrong way but it's different than the way we've done it and, you know, we're making reference to findings of fact when you can't out of this resolution pick out where we are separating findings of fact, conclusions of law and if this is acceptable to staff and this is the presence, that's fine. I'm not -- I'm just not comfortable that we dealt with it consistently.

CHAIR: Would staff or someone from the attorney's office like to reassure Mr. Adams that this is proper?

MR. ASCHENBRENNER: John Aschenbrenner, deputy borough attorney here on behalf of staff. I think the intent and perhaps a little additional language on the first and second paragraphs on page 11 of 12, the intent were that those two paragraphs be the conclusions of law so perhaps something -- could put a heading just before those saying conclusions of law or you could add perhaps whereas the commission finds, as a conclusion of law, that it cannot find that this conditional use permit will preserve but not detracting the value and character. There's a lot of negatives in that line. I understand that. So maybe a heading would be better but the same idea in the next paragraph, based on the above findings, the commission makes a conclusion of law that it cannot find that this conditional use permit will not be harmful to the

public's health, safety and convenience and welfare. I think the intent is that those two paragraphs are the conclusions of law and if there was any amendments, I think those would be the appropriate place. I apologize for not catching that and helping staff on that issue.

COMM. ADAMS: You know, Mr. -- I guess, from my perspective, all we're doing -- I mean, this document really is one that should just be appealed and go forward, becomes part of the record and really is one that, regardless of the format, I guess, it shows the intent of this commission how we achieved our decision so I guess I'm comfortable with where it's at because I think it does embody the concepts or the discussion of how we arrived at our decision. I just -- I think at some point in the future here, we need to take this discussion beyond a specific case and really kind of conclude what -- how we want to conduct this business going forward.

CHAIR: Oh, for the record, I would like two items. No. 1, the decision has been made and it is not allowed for me to invite the applicant to participate. The applicant is in the audience. It's on record and we're having discussion between the Borough and this chamber to get these words right and not on any case but Mr. Nick Spiropoulos, the borough attorney, is on the agenda to address your concerns exactly how all these quasi-judicial cases go forward so that we make certain that we are clear and understanding and he has

volunteered to give us a lesson on uniformity on not any case but I think some of our questions will be answered in the future but, clearly, we are where we are tonight and you're comfortable. There has been some additional language that it may be possible to put in from Mr. Aschenbrenner. With that being said, you still have the floor, Mr. Adams.

COMM. ADAMS: No, I think I've said enough, Mr. Chair. Thank you.

CHAIR: Mr. Lauren Driscoll [sic].

MS. DRISCOLL: (Indiscernible).

CHAIR: Microphone, please.

MS. DRISCOLL: Just trying to clarify if the body wishes to have subtitles like conclusions of law and finding of facts as suggested.

CHAIR: I'll refer to Mr. Adams. Would you like to add that?

COMM. ADAMS: At this point, it's just a formatting issue, Mr. Chair. I don't see how that really -- I'm not going to make that motion to amend.

CHAIR: We've addressed Mr. Healy's input, Mr. Adams' input, Mr. Endle's input. Mr. Vern Rauchenstein, you had four findings. Is there something that you feel that you'd like particularly in there?

COMM. RAUCHENSTEIN: No, I feel everything that I wrote is at rest in the findings. I had quite a bit of difficulty

in coming up with that but the direction was that we all come up with negative aspects of that resolution.

CHAIR: Well, we were all invited. We wanted to make certain that everyone could participate.

COMM. RAUCHENSTEIN: Yeah. Yeah, so I did.

CHAIR: Thank you. I think more information is good but you don't see any Klapperich or Walden but we were invited. So Mr. Endle made the motion to approve 15-01. Mr. Thomas Healy seconded it. Is there further discussion? Mr. Thomas Healy.

COMM. HEALY: I'm sorry, were you talking about the -- which motion are we -- at the main motion?

MEMBER: The main motion. There's no --

CHAIR: There's been no amendments by anyone that are on the table.

COMM. HEALY: If I could, Mr. Chair, I think we -- the point of kind of the structure of the -- where the conclusions of law and where the findings of fact are is one of kind of how this is drafted by the staff but I agree, I think it could be made more clear and I don't know whether to make these as a motion or as a suggestion on how this is drafted but following up on Mr. Aschenbrenner's suggestion was I would throw out the suggestion which I -- which maybe -- what you were proposing but on page 351, page 11 of 12, the third line down where it talks about whereas, actually take the -- in the center of the

page, the now therefore be it resolved that the Matanuska-Susitna Borough Planning Commission hereby adopts the aforementioned findings of fact and makes the following conclusions of law supporting denial of the commission -- planning commission Resolution 14-33, put that up for the first complete whereas statement on that page and then that would be followed by I guess the wording on the third line, the commission cannot find that this conditional use permit preserved, blah, blah, blah. So this would be like a conclusion. Further, then you go to the next whereas and these can either be numbered or however, based on the above findings of fact, the commission concludes that it cannot find, et cetera, and, as a suggestion too, I would bring the whereas at the bottom of page 2 which talks about it being inconsistent with the comprehensive plans as one of the conclusions. So that's just a suggestion. I can put that more precisely in a motion or --

CHAIR: Well --

COMM. HEALY: It's a drafting how we kind of structure the drafting of the conclusions, I guess.

CHAIR: You plowed a lot of ground in a short time there. I -- before you make it as an official motion, could you just state how that's improving, what was your intent with that?

COMM. HEALY: Well, the intent was to, I guess, respond to the question that was asked of -- I guess the intention was

to make it a little more clear what are the conclusions of law. As it is, it just has these whereases all the way to the bottom and then it says this is what we conclude and I think if the current language, as written, is adequate to show to whoever might want to pay attention to this in the future that the findings and conclusions are clear that I'm fine with the present language but it seemed to me there was some call for some clarification that I more clearly identify the conclusions.

CHAIR: Well --

COMM. HEALY: I guess I would defer to staff in the sense of if they feel they prefer that --

CHAIR: Thank you. Mr. Healy is deferring to staff. Would one of the three like to respond?

MR. ASCHENBRENNER: John Aschenbrenner, deputy borough attorney. I think Commissioner Healy's recommendation is -- certainly makes sense and so the staff concurs with moving the now therefore be it resolved above the first whereas on page 11 of 12 and adding the language and adopts the following conclusions of law within the body of that paragraph. Then there would be two whereases which, clearly, the intent of the resolution is that those whereases were the conclusions of law and I think Commissioner Healy makes a good point that if the first whereas on page 2 of 12 were moved to page 11 of 12 and added to the conclusions of law, that would make sense.

CHAIR: Ms. Lauren Driscoll?

MS. DRISCOLL: (Indiscernible).

CHAIR: Microphone, please. Before I ask for total for clarification, I would like to make certain staff is finished on why they didn't include what they're recommending now.

MR. STRAWN: So I think the reasons that we typically do not differentiate between findings and conclusions within the resolutions, there's -- occasionally, we'll say based on the following findings and we'll just list them out so that I guess we'd separate it out but I don't think it's a problem separating them out. I think it can make it more clear, absolutely.

CHAIR: Does everyone concur? Ma'am?

MS. DRISCOLL: (Indiscernible).

CHAIR: Ms. Driscoll, you have the floor, then Mr. Adams.

MS. DRISCOLL: I guess I'm -- what I'm looking for is clarification on what exactly Mr. Healy would like and then we can actually do that to the documents so the body can see what that would look like. If I'm understanding right, it's not significant change, it's just moving kind of the pieces of the document around so they're organized in a different fashion. So if you could bear with me and just follow along.

CHAIR: Before I go to Mr. Healy, Mr. Adams, please.

COMM. ADAMS: Well, I would move to recess to allow that to take place so that we can come back and see the proposed

changes and give Mr. Healy and Mrs. Driscoll an opportunity to get the proposed amendment correctly formatted while we're not all sitting here, just take advantage of the down time.

CHAIR: Does that work, Ms. Driscoll, Mr. Healy? So we're not approving anything and there has been no motion officially made but it'll be worked on and I'll move my 8:15 at ease to 8:08. At ease for five minutes.

(Off record)

MEMBER: January 5th, the planning commission, regular meeting of the planning commission reconvenes at 8:14 p.m.

CHAIR: I believe Mr. Thomas Healy would like to make a motion soon as he gets done with that Granola bar. Let's get some energy there, my friend.

COMM. HEALY: Mixed nuts.

CHAIR: You're not making reference to this commission?

COMM. HEALY: I'd -- far be it for me. Well, if I might, Mr. Chair, I think Ms. Driscoll has made the proposed changes and so I would make a motion that they be adopted. Essentially -- well, if you want to wait for a second before I proceed.

CHAIR: Need a glass of water, another cashew?

COMM. HEALY: No, I -- I'm just wondering if -- I would move these changes but before I go into an explanation, would we need a second?

MS. DRISCOLL: Essentially (indiscernible).

CHAIR: Well, I need somebody to summarize these changes, either scroll and identify or -- so that we can all look at them before I ask for the second.

COMM. HEALY: All right. I would make a motion then to include -- this basically just rearranges what's already in the resolution.

CHAIR: Well, go page by page, paragraph by paragraph, and then if somebody could scroll and give us time enough to read and keep moving through that and I would say instead of -- if a commissioner has a problem with a paragraph, we address it and go to the next one, and we go to the next one because I think that would be easier than going -- denying the motion and then going back. We'll ask if it's acceptable so instead of making the motion, just let us proceed and tell us why.

COMM. HEALY: You'd like just a description of what's being proposed?

CHAIR: Please, sir.

COMM. HEALY: Okay. Well, if you look on page 11 of 12 of the resolution on page 351 of the packet, you'll see in the middle of the page the now, therefore, be it resolved, that paragraph has been moved up to what you see on the screen as the now, therefore, be it resolved hereby adopts the aforementioned findings of fact and then added the language and makes the following conclusions of law supporting denial

of the planning commission, that -- oh, I see. Okay. So there's that change, basically the same language moved up. What we then did was under that, then it's colon, then numbered 1 is the paragraph that is currently the first complete whereas on the top of page 11 so that just makes it a No. 1 instead of a whereas and then No. 2 -- these are then then conclusions of law and No. 2 is basically the -- what is the second full whereas on page 11. Basically the same language is there and then the No. 3 conclusion is a whereas that was taken from -- it's actually the first -- well, it's the -- the whereas at the bottom of page 2 of 12 that addresses the inconsistency with the comprehensive plans and so that moves that to a conclusion.

CHAIR: Okay. It would have been nice if we would have started from page -- from the beginning to the end but we addressed page 11 and now we're on page 2.

COMM. HEALY: I'm just saying what we brought to page 11, this conclusion No. 3, the one in green, is the whereas from page 2. It was just a matter of relocating it to a conclusion at the end of the resolution rather than it being closer to the front.

CHAIR: So the difference between green, red and yellow, the red is being scratched, the green is being moved.

MS. DRISCOLL: So I blocked from page 2. Is that where I am? Brought it down to page 11 and plopped it down there to

go there.

CHAIR: Proceed.

COMM. HEALY: So that's essentially it, just scrolling down, the deleted -- if you'd just scroll up just a little bit, that deleted and now, therefore, be it resolved. Well, that's essentially what was moved up to the top of the page. So it's showing deleted in that location. I'm going to add an R to further.

CHAIR: And how did that strengthen this document?

COMM. HEALY: Well, it basically didn't change the language of anything other than sort or organizing it to specify that there are specific conclusions of law based on all the previous findings.

CHAIR: Thank you. Before I ask for the motion, I see Mr. Tomas Adams.

COMM. ADAMS: I actually think Mr. Healy's going the direction that reinforces, you know, the separation of findings of fact and conclusions of law. I think, you know, these are changes that go the direction. I would make a suggestion, maybe go back up to right above there. Nope, that one right -- no, No. 1. Perhaps if we just put a period after the citation for MSB-1760 because all the rest of that paragraph says based on the -- this as the original lead-in to all that and now we don't need it so we would delete all that. Correct. So that paragraph still speaks to what is attendant

speak and you've already restructured it so --

CHAIR: Is the commission comfortable with us taking everybody's input here and then reviewing it one more time for one motion and a second? Mr. Brian Endle?

COMM. ENDLE: I was just going to second it for discussion purposes.

CHAIR: Okay. We don't have a first yet. We'll just -- I think it would be --

COMM. ENDLE: Is there more first?

CHAIR: No, there's -- we're just explaining it and we're adding some things in here and then we will review all the amendments, adjustments and/or corrections at one time. Proceed, Mr. Adams.

COMM. ADAMS: Oh, I'd just support the changes here so that when Mr. Healy does make the motion to amend, there's at least two of us.

CHAIR: Is there any other changes, recommendations to make certain everyone feels comfortable with this? Mr. Strawn?

MR. STRAWN: I think it looks great. Thank you.

CHAIR: Do we want to -- is there a further review or does there -- do my commissioners understand the changes that are being -- may be made into a motion? Obviously, I don't agree with some of these. And, Mr. Adams, you can resist anything but temptation but I applaud you.

COMM. ADAMS: Oh, I just figure you'll have the opportunity once Mr. Healy makes his motion to amend to voice your opinion, Mr. Chair.

CHAIR: Thank you.

COMM. HEALY: Mr. Chair, I'm ready to make a motion.

CHAIR: Proceed.

COMM. ADAMS: I'd like to second that motion.

COMM. HEALY: Yeah, do I have to go through all of this all over again or can I just refer to --

CHAIR: Just put in some brevity. Summarize what you just did.

COMM. HEALY: To the --

CHAIR: Summarize what you and Adams did.

COMM. HEALY: I would make a motion to adopt -- to amend the -- to re --

CHAIR: Uh-huh.

COMM. HEALY: -- amend Resolution 15-01 to include the changes that you see before you on the screen to basically just reorder some already-existing language into a little more clear conclusions of law.

CHAIR: Does everyone understand that motion? Anyone unclear? Do I have a second? District 1.

COMM. ENDLE: I'll second that, Mr. Chair.

CHAIR: Mr. Brian Endle is actually endorsing something in its entirety. It's been made by Mr. Healy, seconded by Mr.

Brian Endle. Any objections? Any objections to these changes? If this were to get four votes, I'll be signing this so I just want to -- well, no, I guess it doesn't matter. There's a motion been made and seconded on this amendment, made by Mr. Healy, seconded by Mr. Endle. Any objections? I guess it's on the record that I voted against a lot of this so I'm going to go on the record that I -- I'm not approving this. So are we ready to vote on the amendment? It takes four affirmative votes for action. If there's no further discussion, a yes vote approves this amendment, a no vote denies it. Mr. Aschenbrenner, you have the microphone.

MR. ASCHENBRENNER: John Aschenbrenner, deputy borough attorney. I was going to wait perhaps until after the vote but I think I'll say it now. I think that regardless of the vote of the entire body, the Alaska Supreme Court decisions which mandate that findings of fact be adopted which lay out the reasons for the planning commission's actions would, in essence, trump the requirement for four votes to, quote/unquote, take action. In other words, what I'm trying to say is, as I mentioned at the last hearing, those folks that voted to grant this permit could have come forward and presented findings for why they voted the way they did and I think what has happened at this hearing is that the commission has worked together to come up with a decision enunciating the reasons for the votes to deny this permit. So even though I

understand where the chair is going with a vote and needing four votes, if you go forward and you -- you know, you take the idea that it takes four votes to adopt this resolution, I would say, nonetheless, even if that happens, I would urge the three members that voted to deny this permit to, nonetheless, note on the record that they adopt this decision as the rationale for why they voted the way they did because if this matter is appealed to the Board of Adjustment and Appeals and Superior Court, what's going to happen is if no findings of fact are adopted, it's going to plop right back down to the BOAA, to the planning commission, and we'll have to go through it all again because the Superior Court's going to say look, I can't review the decision unless I know the reason why the decision was made. So, again, I understand the four votes and the rule in the borough code with regard to taking action but I would submit that the Alaska Supreme Court's decisions -- and I brought down a book listing a whole slew of them and I could list them out -- which mandate that this body generate a document that explains why it made the decision it did is, nonetheless, going to trump those planning commissioner rules for four votes.

So, having said that, I guess it made sense to say it before you voted but, again, I urge the body to either do it as a whole or the three commissioners that voted to deny it adopt this resolution as the reasons for why they voted the

way they did. Thank you.

CHAIR: Are we ready for the vote?

COMM. ADAMS: Just to clarify, Mr. Chair, we're doing the motion to amend, correct?

CHAIR: Just one minute. Yeah. So a yes vote approves this amendment. We've plucked some pages from page 2, moved them around. Before we go to the main motion, a yes vote approves the amendment that's been made by Healy, seconded by Endle. Are we ready to vote? A yes vote approves, a no vote does not. Yes approves. No doesn't.

(Off record conversation)

MS. BRODIGAN: Commissioner Rauchenstein, as a member of the commission, cannot abstain on a vote.

CHAIR: It kind of looked like Christmas up there.

MS. BRODIGAN: It certainly does.

CHAIR: Red and green. Okay?

MS. BRODIGAN: The motion passes with Commissioners Rauchenstein and Klapperich in opposition.

CHAIR: Are we ready for the main motion as per amended? Resolution 15-01 as per amended. It's been -- motion's been made by Mr. Healy and seconded by Mr. Endle. Any objections? Yes. Are we ready to vote? Yes approves Resolution 14-01. What? Fifteen. Did I say 13? Huh. I might say 16. It's Resolution 15-01. Yes approves a resolution of the Matanuska-Susitna Borough Planning Commission adopting findings of fact

and conclusion of law to support their failure to approve planning commission resolution. Yes approves, no does not. Please vote.

MS. BRODIGAN: The motion passes with Commissioners Rauchenstein and Klapperich in opposition.

CHAIR: Concludes Item 11. Excuse me, Item 12, the unfinished business. Item 13, new business.

(End of requested portion)

TRANSCRIBER'S CERTIFICATE

I, Linda S. Foley, hereby certify that the foregoing pages numbered 2 through 41 are a true, accurate, and complete transcript of Matanuska Susitna Borough Planning Commission Regular Meeting (Excerpt) (re Findings of Fact and Conclusions of Law, Res. No. 15-01) of January 5, 2015, transcribed by me from a copy of the electronic sound recording to the best of my knowledge and ability.

February 12, 2015

_____
Linda S. Foley, Transcriber

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Planning Commission
SUPPLEMENTAL INFORMATION

October 28, 2016

- Handout Provided by Stephanie Nowers, October 17, 2016
- Email from Shane Durand, October 26, 2016
- Supplemental Information Provided by Shane Durand, October 26, 2016

SUPPLEMENTAL INFORMATION

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Dear Commission Members,

My Name is Stephanie Nowers and I live in the Canoe Lake Subdivision near the Parks-Glenn Interchange.

The Borough Ethics Advisory Board recently issued a unanimous 3-0 opinion that Mr. Bill Kendig has a conflict of interest in regards to resolutions before this body for a monofill proposed by Central Monofill Services.

I don't have time to speak to some of Mr. Kendig's other actions such as his recent attempt to sway a commissioner's vote on his recusal and his violations of planning commission guidelines that ban ex parte contact and returning to the room after recusal.

What I do want to focus on tonight is the information that came out during that Ethics Board hearing. At the hearing, on Oct. 10, which you can listen to yourself, Mr. Kendig disclosed for the first time the amount of business he had done. He sold the people who own Central Monofill Services, the folks who are proposing this development, who stand to benefit hugely financially if you approve their permit – He sold them $10,000 worth of steel pipe right before - just a few months before - their case came before this body the last time around.

Mr. Kendig told the ethics board he bought the steel pipe at an auction hoping to make money, but the steel market took a dive. He shopped the pipe around. The only ones to make an offer were the owners of CMS. Strangely he hadn't done business with them in 4 to 5 years. Suddenly out of the blue, right before they are to ask this commissson for a permit, they are the only and highest bidder. Mr. Kendig said he took a loss on the sale but a LOT LESS than he would have otherwise.

I want to stress that I say he sold to the owners of CMS. Mr. Kendig actually sold to Central Environmental or Central Recycling. I'm not sure. He has given different stories at different times. But the SAME people own and run all three companies. You can look it up on the state corporations website (https://www.commerce.alaska.gov). Ken Martin, Stuart Jacques, Shane Durand own 95% to 100% of all 3 companies.

What I find most distressing is that you are having to deal with this at all.

Mr. Kendig knew all this the first time it came up at the December 2014 hearing. He knew the amount. He knew that the people from CMS sitting before you were the same people that he had sold to. But he said nothing. He said nothing while this body spent an hour going back and forth agonizing over whether these were somehow totally separate companies and different people so the conflict rules didn't apply, while CMS' attorney Bill Ingaldsson made specious arguments comparing the transaction to buying a latte from a coffee stand or tires from Target.

Mr. Kendig could have spoken up. He could have let his fellow board members know it was not a $1 cup of coffee and that it was in fact $10,000, enough practically to buy a whole espresso stand. That in fact the same people from CMS were the same people he had sold the pipe to.

The owners of CMS also could have spoken up too, but they decided to play games with you. Stuart Jacques, CMS' president, sat there and talked about how they were totally different corporations so the conflict of interest rules didn't apply. It wasn't until Mr .Aschenbrenner read from one of the company's own emails that had a tag line "separate companies, same owners" that the gig was finally up. I don't know about you, but I don't like when people play games with me. I don't like them wasting my valuable

Handout Provided by
Stephanie Nowers
Planning Commission Meeting 10/17/16

time and trying to hide the truth until you catch them totally red handed. It's not the mark of an honest upfront company that you would want to do business with.

Mr. Kendig and CMS could have saved you, many other people and the borough taxpayers a lot of time and money by just disclosing the facts. Instead, this whole issue is back before you because of technicality involving how the question for Mr Kendig's recusal was phrased. If he had been upfront, there wouldn't have been a need for a vote. The conflict is that clear.

In fact, Dan Kennedy, the chair of the Ethics Board, himself told Mr. Kendig had it been him, he would have recused himself.

I am sympathetic to volunteer bodies. I serve on a few myself. It is not easy and it's a real challenge to take time out of your busy lives, and to understand all the ins and outs of the position. But it is a disrespect to this body, to you who taken the time to read your manuals, who do your best to understand the code and apply it, and to avoid and accurate disclose the conflicts of interest that are unavoidable in our small community, to let Mr Kendig sit on this issue.

I urge you to consider these facts when you make your decisions. I also respectfully urge Mr. Kendig to do the right thing, and to recuse himself.

Thankyou!

Stephanie Nowers

Central Monofill, Central Recycling and Central Environmental Ownership

NAME(S)

Type	Name
Legal Name	Central Monofill Services, Inc.

ENTITY DETAILS

Entity Type: Business Corporation
Entity #: 129201
Status: Good Standing
AK Formed Date: 2/1/2010
Duration/Expiration: Perpetual
Home State: ALASKA
Next Biennial Report Due: 1/2/2018
Entity Mailing Address: 311 N. SITKA STREET, ANCHORAGE, AK 99501
Entity Physical Address: 311 N. SITKA STREET, ANCHORAGE, AK 99501

REGISTERED AGENT

Agent Name: Stuart Martin Jacques
Registered Mailing Address: 311 N. Sitka Street, Anchorage, AK 99501
Registered Physical Address: 311 N. Sitka Street, Anchorage, AK 99501

OFFICIALS

Show Former

AK Entity#	Name	Titles	Percent Owned
	Kenneth G. Martin	Shareholder, Vice President	3
	Michael Rush	Shareholder	5
	Shane P. Durand	Shareholder, Secretary, Treasurer	15
	Stuart Jacques	Director, President, Shareholder	77

pe	Name
gal Name	Central Recycling Services, Inc.

NTITY DETAILS

Entity Type: Business Corporation
Entity #: 119315
Status: Good Standing
AK Formed Date: 11/21/2008
Duration/Expiration: Perpetual
Home State: ALASKA
Next Biennial Report Due: 1/2/2018
Entity Mailing Address: 311 N. SITKA STREET, ANCHORAGE, AK 99501
Entity Physical Address: 311 N. SITKA STREET, ANCHORAGE, AK 99501

EGISTERED AGENT

Agent Name: Stuart Martin Jacques
Registered Mailing Address: 311 N. SITKA STREET, ANCHORAGE, AK 99501
Registered Physical Address: 311 N. SITKA STREET, ANCHORAGE, AK 99501

FFICIALS

Show Former

‹ Entity#	Name	Titles	Percent Owned
	KENNETH G. MARTIN	Shareholder, Vice President	3
	Michael Rush	Shareholder	5
	SHANE P DURAND	Shareholder, Secretary, Treasurer	15
	STUART MARTIN JACQUES	Director, President, Shareholder	77

Type	Name
Legal Name	CENTRAL ENVIRONMENTAL, INC.

ENTITY DETAILS

Entity Type: Business Corporation
Entity #: 35790D
Status: Good Standing
AK Formed Date: 5/20/1985
Duration/Expiration: Perpetual
Home State: ALASKA
Next Biennial Report Due: 1/2/2017 File Biennial Report
Entity Mailing Address: 311 N. SITKA STREET, ANCHORAGE, AK 99501
Entity Physical Address: 311 N. SITKA STREET, ANCHORAGE, AK 99501

REGISTERED AGENT

Agent Name: STUART JACQUES
Registered Mailing Address: 311 N Sitka St, Anchorage, AK 99501
Registered Physical Address: 311 N Sitka St, Anchorage, AK 99501

OFFICIALS

Show Form

AK Entity#	Name	Titles	Percent Owned
	Kenneth G. Martin	Shareholder, Vice President	3
	Shane Durand	Shareholder, Treasurer, Secretary	15
	Stuart M. Jacques	Director, President, Shareholder	82

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Mary Brodigan

From: Durand, Shane <shane@cei-alaska.com>
Sent: Wednesday, October 26, 2016 4:56 PM
To: Mary Brodigan; Alex Strawn
Subject: CMS CUP Amendment
Attachments: Frontiersman 10 2016.pdf; CMS Attachments 10-26.pdf; CMS CUP Supplement 10-26-16.pdf

Alex,

Please see the attached amendment to our CUP. Let me know if you have any questions.

Thanks

Shane Durand
Central Environmental Inc.
311 N. Sitka St.
Anchorage, AK 99501
(907)561-0125
(907)561-0178 fax
www.cei-alaska.com

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CENTRAL MONOFILL SERVICES

Anchorage
311 N. Sitka Street
Anchorage, AK 99501

Fairbanks
1301 Wells Street
Fairbanks, AK 99701

October 26, 2016

Alex Strawn, Development Services Manager
Planning and Land Use Department - Development Services Division
350 East Dahlia Avenue
Palmer, AK 99645

Re: **Conditional Use Permit Application – Amendment**
Planning Commission Resolution 16-41
2480 & 2560 South Glenn Highway
17N02EC010 & 17N02E19B006

Dear Mr. Strawn and Planning Commissioners;

Central Monofill Services, (CMS) respectfully submits this package of supplemental information to amend our request for a Conditional Use Permit (CUP) for a recycling facility and monofill. This submittal includes additional information on areas of concern, as well as details on design modifications, including the addition of a liner and leachate collection system for the monofill. This project represents the most environmentally responsible project for management of construction and demolition (C&D) debris in the state of Alaska.

CMS previously submitted substantial information to the Matanuska-Susitna Borough (MSB) in support of this CUP. As a result of the public process for this project, CMS submits the additional information in this amendment, including:

- Community Benefits
- Environmental Protection
- Planning Objectives
- Revised design including a liner, groundwater monitoring, and reduced monofill footprint
- Illustration of Glenn Highway viewshed

During the last Planning Commission process, there were questions raised about the operation of the MSB Central Landfill. We request that as the MSB subject matter expert, the Solid Waste Division Manager be invited to attend the Planning Commission meetings to address Monofill

concerns as well as be available to answer technical questions including, health, safety, landfill construction and operation standards.

CMS requests construction and operation of the monofill be conditioned upon obtaining the required ADEC permit, and that use of the site for recycling be allowed upon approval of the CUP.

Please let me know if we can supply additional information in support of this request for approval. I can be reached by email *shane@cei-alaska.com* or on my cell phone at 350-6062.

Thank you,

Shane Durand

Attachments:

- Supplemental Information
- Frontiersman Article
- Surrounding Land Use
- Enhanced Monofill Design
- Illustration of Glenn Highway Viewshed

This supplement to the request for a CUP contains information intended to clarify the community benefits of a more robust, sustainable waste management infrastructure, as well as highlight the measures for protection of health and the environment. This project has evolved significantly through staff review, public hearings, and planning commissioner review. As a result of this process, CMS has a much greater understanding of the community's concerns, and has implemented design changes to ensure even greater protection of human health and the environment. Through the public process, a number of operational conditions and changes have been added to:

protect neighborhood values through the reclamation of the existing gravel pit into a green buffer from the Glenn Highway and the industrial uses along it, significantly increase recycling, address neighbor concerns through design and operation changes;

improve environmental protection through the addition of a liner and leachate collection system under the monofill to prevent any chance of water contamination, increasing the separation distance between the bottom of the waste and groundwater, and monitoring groundwater parameters;

reduce the size of the monofill by increasing separation distances to the on-site ponds, removing areas identified by ADOT & PF for Glenn Highway improvements, and limiting the scope of the CUP to 3 cells

eliminate wind-blown debris through restriction of operation during certain wind conditions, wind buffer by berms, compaction of waste, debris collection by fences & site monitoring; and

maintain the view from the Glenn Highway through operational controls, design, and required screening. The limits of the project are illustrated in an attachment.

Community Benefits

Solid waste facilities are an essential part of community infrastructure, and an important component for economically viable development in the region. The Matanuska-Susitna Borough historically manages approximately 70,000 tons per year of waste and recycling through the Central Landfill and Valley Community for Recycling Solutions (VCRS). With continued projected construction in Palmer, Wasilla, and the Mat-Su Borough, reducing the amount of landfilled C&D material in the Borough will extend the life of Central Landfill cells thereby reducing costs to the MSB, as well as provide increased environmental protection. This issue was explored recently in the attached Frontiersman article "Dirty Business: Borough's solid waste division tries to keep pace with growth."

The facility operator, Central Recycling Services (CRS), operates a construction and demolition recycling facility with a consistent 75% recycling rate. CRS can easily process in excess of 15,000 tons a year from the MSB, 10 times the amount currently processed by VCRS. The current proposal of a lined inert monofill will provide greater environmental protection than the unlined construction and demolition (C&D) cell at the MSB Central Landfill, and other privately owned monofills in the region. Additionally,

the residual material from the recycling operation destined for the monofill has had greater screening and handling than typical waste with all material hand sorted ensuring prohibited materials are removed. Yet another benefit of local C&D recycling is production of recycled content materials which reduces demand for material extraction as well as decreasing new construction costs. Neither the MSB nor VCRS have the capacity to provide the type and quantity of recycling that CRS will provide. Glass, concrete, and wood make up a large percentage of waste and issuance of this CUP would allow CRS to bring recycling of these materials and more for the Mat Su Valley.

The MSB Solid Waste Division strongly supports recycling to reduce long term construction and operation costs to the borough for the Central Landfill. Extending the life of the cells in the landfill saves the MSB money. The Solid Waste Division operates a Class I landfill, an unlined C&D monofill, and have staff trained in a number of fields. For example, the Division Manager, Butch Shapiro, is a trainer for the Manager of Landfill Operations (MOLO) course sponsored by the Solid Waste Association of North America, which is a certification required for Class I landfills. We request questions and concerns related to the proposed design and operation of the monofill portion of the CUP could be directed to Mr. Shapiro as he is the MSB expert on solid waste matters.

The proposed development supports the Solid Waste Division mission:

> *A Mananuska Susitna Borough wide sustainable, long term recycling program, supported by Community Members, Community Councils and the Borough.*

This completed project will continue to provide benefits to the community. Many capped waste sites become recreation properties after closure, and that is a proposed and likely use for this site. The former Peters Creek Landfill is now the equestrian center at Loretta French Park, the Anchorage International Airport Road Landfill now hosts the ball fields of Javier De la Vega Complex, and at Merrill Field the former municipal landfill is now an airport. Parks and recreational areas are good transitional property uses, providing buffers between the surrounding material extraction and the residential area.

Additionally, light agricultural uses are compatible with this site. For the last three years the site has been used for bee keeping with over 50 hives maintained. This use will continue with approval of the CUP. Closed monofill cells can be seeded and used for production of hay or other agriculture products.

The subject property is currently used by local non-profit and hobbyist groups whose use could be increased with issuance of the CUP. Local Search and Rescue (SAR) groups have used the property for training of rescue dogs and dive certification training. With the CUP in place CMS can use construction debris and recycle materials to build a training area for MSB emergency response and rescue groups to use for disaster preparedness training. Materials to be processed and recycled by CRS, which require the CUP, are prefect for training. Piles of concrete rubble and building debris, scrap metals and equipment slated for recycling can all be staged for emergency response and disaster response training.

Environmental Protection

Protection of human health and the environment is important to Central Monofill Services and our operator, Central Recycling Services. CMS and CRS are locally owned Alaskan companies with strong roots in the local construction and environmental communities. CRS has greatly increased recycling throughout the state since its inception in 2009. CRS is the only full-service construction and demolition debris recycler in Alaska, and the largest recycler in the state recovering a large range of materials.

Through the recycling process at CRS's facility, C&D waste gets thoroughly inspected at the tipping floor, and throughout the sorting process, much of which is done by hand. As a result, the residual waste from the recycling process has been fully examined to assure no unacceptable materials are present.

With authority from the Environmental Protection Agency, Alaska Department of Environmental Conservation (ADEC) is the regulating body over waste disposal in Alaska, including the MSB's own Central Landfill. This CUP does not require the Planning Commission to create new standards or requirements to ensure the health and safety of residents. The purpose of ADEC is to "promote cost-effective, environmentally-sound solid waste management and to ensure that landfills are designed, built, and operated to minimize health and safety threats, pollution, and nuisances." By requiring CMS to have the ADEC permit in hand prior to constructing and operating the monofill, the health and safety of the public is ensured. ADEC's Solid Waste program will evaluate CMS design and operating standards through their permitting process, which includes public notice and opportunity for public comment.

Revised Design

CMS has revised the monofill design to further increase environmental protection, and in consideration of other potential surrounding development such as the Glenn Highway expansion and community concerns related to water protection. These design changes are reflected on the attached Sheet B, and include the following:

- Addition of a liner and leachate collection system
- Reduced monofill footprint from 30% to under 9% of site
- Adjusted Phase I footprint to account for proposed ADOT & PF projects
- Increased separation distance to gravel ponds to a minimum of 200 feet
- Groundwater monitoring

Despite the engineering and scientific reports provided in our prior submittals showing little to no leachate generation nor a risk to the water supply, CMS has added a liner and leachate collection system to the monofill design that will eliminate the potential for ground water contamination. Although there are no current requirements for a monofill to have a liner or collection system, CMS has discussed the potential for future regulations with ADEC, and is updating the design with a liner to meet a maximum permeability of 1×10^{-5} cm/sec. The addition of the liner system will also increase the minimum separation distance from the bottom of the waste to the groundwater to 12 feet. The elevation used for the groundwater design is the highest observed level over the last four years. This would be the first lined inert waste monofill in the state, and coupled with the upstream recycling it will provide the **greatest level of environmental protection for C&D waste management in Alaska.**

The footprint of the monofill has also been reduced, and reflects a Phase I of Cells C, D, and E, and considers the proposed ADOT & PF highway project. The footprint reduction also increases the separation distance from the monofill boundary to the existing gravel ponds to a minimum distance of 200 feet. This separation distance is double the ADEC requirement and double the separation distance for a residential water well and septic system.

The proposed monofill footprint is less than 10 acres, a small portion of the site size of 118 acres, and significantly smaller than the originally proposed 35.5 acre monofill. Only 0.14 acres will be open at any time as the working face for placement of waste.

The balance of the requested CUP area outside the monofill will be utilized for recycling operations. Recycling will include but not be limited to collection and processing of glass, concrete, wood, cardboard and metals. By providing a responsible recycle location for these materials, illegal dumping in the MSB will be reduced, and recyclable materials will not have to be thrown into the landfill. Neither the MSB nor VCRS recycle the large volumes of concrete, wood and glass that CRS would be able to recycle at this site.

Wind-blown debris

Several considerations for mitigating wind-blown debris have been taken into consideration for the design and operation of the monofill. Some of these practices are utilized at the Central Landfill. More detail has been previously submitted, and include:

- Placement of waste within 15' tall cell berms
- Compaction of waste with a large sheeps foot landfill compactor
- Installation of a remote weather station on site
- Work restrictions when wind speed over 20mph
- Site shall be monitored for windblown material, and litter picked up
- Open waste placement (working face) limited to 6,000 s.f.
- Use of portable catch fences.

Financial Obligations

Earlier in the public process, concern was raised about long term financial obligations and the viability of the company. The ADEC has financial obligation requirements in place as part of their permit process to ensure the monofill operator can pay for future reclamation, closure and monitoring of the site. Based upon the design, size and location of the facility ADEC calculates the cost required to reclaim, close and provide long term environmental monitoring of the permitted facility. The permittee has to provide an approved financial instrument such as a bond to cover these long term costs before the ADEC will issue the permit. The Alaskan owners of Central Environmental Inc. (CEI) founded both CMS and CRS. CEI is an Alaskan based business that has had offices in Fairbanks and Anchorage for over 30 years.

Planning objectives

Many of the previous concerns about conflict with planning objectives related to water protection – these have been overcome by the installation of a liner and leachate collection system. Although CMS is confident the original design is protective of groundwater and surface water resources, the continued concerns from the neighbors and planning commission prompted the change in design. There are no other lined inert waste monofills in the state, and with the additional sorting and recycling of construction and demolition waste by Central Recycling Services this will be the most environmentally protective construction and demolition waste and recycle facility in Alaska.

Compatible Uses

The subject parcel is located on a site used for gravel extraction, and in the vicinity of other gravel extraction operations which have a lifespan greater than the proposed fill operations in this request. Seventy-six percent of the surrounding land uses on the site are non-residential. Please see the attached illustration. The proposed monofill construction would be active in a small portion of the site at any time. The original monofill was approximately 30% of the site and has now been reduced to less than 9%. At any time less than ¼% (6,000 square feet) will be open for waste placement. As cells of the monofill are filled and covered, green space will be created providing a permanent buffer between the residents to the west and the industrial uses along the highway including the existing gravel extraction, proposed recycling, Matanuska Valley Sportsmen's shooting range, and Red Dog Masonry. Green space will consist of agriculture or recreation areas created on top of the monofill.

The long-term recycling operation is a light industrial use, and is consistent with the Core Area Comprehensive Plan's Policy 1-J: Encourage light industrial parks

> *The Core Area does not have and is not expected to attract much heavy industry, not including earth materials extraction sites. However, the Core Area already has pockets of light industrial uses such as outdoor storage, construction yards, warehousing, utility buildings, miscellaneous outdoor storage, etc. These industrial uses are necessary and a good fit for the local economy, with good growth potential. Demand for sites for industrial uses will increase as the Core Area's economy matures. Even so, industry will remain a modest land use in the overall picture.*
>
> *These light industrial uses are generally mutually compatible. They tend to have similar locational requirements, such as a good highway access and public utilities, and separation from residential neighborhoods, schools and recreation facilities, and public institutions. Designating sufficient well-situated tracts for light industry will help create a more attractive climate for these activities by enabling them to operate efficiently and with minimal conflict with other uses. Restored earth materials extraction sites with good highway access can be prime candidates for light industrial uses.*

Other potential uses for the subject property have been explored. One was to develop the property into a residential subdivision, however this only moved more residential land use

closer to the other existing material extraction sites and left no buffer or transitional property as shown in the attached land use illustration. Other potential uses explored for the site were heavy industrial or commercial, both of which were found to be not compatible with the existing site conditions. Conversion of the property into any kind of public space or recreational space requires a basis of income to support the improvements. As proposed the CUP allows for operation of the recycle facility and monofill which would both support the community while being compatible with surrounding land uses. The proposed operations also reclaim the existing extraction site into future green space without public money.

Visual Appearance

Concerns had been raised over the screening and viewshed from the Glenn Highway. As per MSB Code 17.60.110, this project must be completely obscured from the view of any traveled or public right-of-way. CMS retained Corvus Design to model the visual appearance of the proposed monofill design, and the results of this model are attached. Photographs from the site were incorporated with the AutoCAD design of the monofill, and the visual appearance from the photos' perspective is portrayed from along the Glenn Highway. As shown in the attached sheet, the final design height would be obscured by the existing berm and trees. Even with potential future development of the Glenn Highway corridor and Colleen Street intersection by the Alaska Department of Transportation and Public Facilities (ADOT & PF) the berm and landscaping would push back maintaining the required screening. Additionally, the location of the monofill on the site is in the most visually protected portion of the property. Tourists and residents traveling along the "Scenic Byway" will not be able to see or hear the monofill.

The location of the monofill on the site is in the south corner would also provide a permanent buffer from the Glenn Highway for the residential area off S. Colleen Street.

Conclusion

Approval of the subject CUP will benefit the community by:

- greatly expand recycling in the MSB
- enhance protection of groundwater over existing waste disposal options
- restore earth material extraction site with future green space and buffers
- provide transitional land use between existing material extraction and residential
- reduce waste disposal costs
- reduce new construction material costs
- provide SAR and EMS training facility to MSB
- creation of 20 or more new local jobs

Approval of the subject CUP will protect the health and environment by:

- reduce waste burial by diverting materials to recycling
- provide more inspection of waste and ability to remove prohibited materials from the C&D waste stream
- construct the first and only lined monofill in Alaska
- provide ground water monitoring

Approval of the subject CUP meets MSB goals and objectives by:

- protect safety, health and welfare of Borough residents
- protect groundwater and surface water resources
- duration of industrial use (operation of the monofill) will be less than the significant portion of the surrounding land use of material extraction
- once complete, will provide permanent green buffer from residents to industrial uses along Glenn Highway
- protect viewshed along the Glenn Highway
- provide light industrial use (recycling) along the Glenn Highway corridor
- significantly increase recycling in the Mat Su Borough
- reduce landfill construction costs to the MSB
- support original MSB staff review which found the CUP consistent with goals and policies

Central Monofill Services believes the proposed recycling facility and monofill will provide significant benefits to the community, including the Matanuska Susitna Borough, City of Palmer and City of Wasilla. This project is a needed and important resource for solid waste management infrastructure in this rapidly developing community, bringing new jobs, services and opportunities. The use is consistent with the surrounding heavy industrial material extraction, and light industrial uses. The monofill project has a lifespan of 20-30 years, after which time it will provide a permanent green buffer between the adjacent residential properties (approximately a quarter of the adjacent properties) from existing material extraction, as well as the developing light industrial uses along the Glenn Highway.

Three professional engineering reports have been provided that reviewed the original design of the facility substantiating the engineering and science used to protect health and safety, including protection of water. Our proposed changes provided in this amendment only further supports those findings. The application and substantial supporting materials previously submitted for this CUP was supported by the MSB Planning and Land Use staff.

- This CUP is compatible with the surrounding land use as shown in the attachment.
- This CUP is protective of human health and the environment as reviewed in the professional reports previously submitted and now enhanced.
- This CUP provides substantial benefits to the MSB and community as described above

- The CUP applicant is an Alaska Based company with over 5 years operating similar facilities with exceptional reviews by ADEC
- This CUP was previously supported by Planning Staff as meeting MSB Land Use and Comprehensive Plan goals.

These changes to the design and operation plans for the monofill evolved during the public process with the Planning Commission to address concerns. As a result, this project will provide the highest level of recycling and environmental protection for C&D waste disposal in the state. CMS respectfully requests the approval of this request for a Conditional Use Permit from the MSB Planning Commission. We look forward to serving the community.

LEGEND:

- MATERIAL EXTRACTION
- NON-RESIDENTIAL
- CMS MATERIAL EXTRACTION

PLAN NORTH

400 0 200 400 800 1600

GRAPHIC SCALE (IN FEET)

CENTRAL MONOFILL SERVICES

SURROUNDING LAND USE

SCALE: 1 : 800

PREPARED BY: MBB

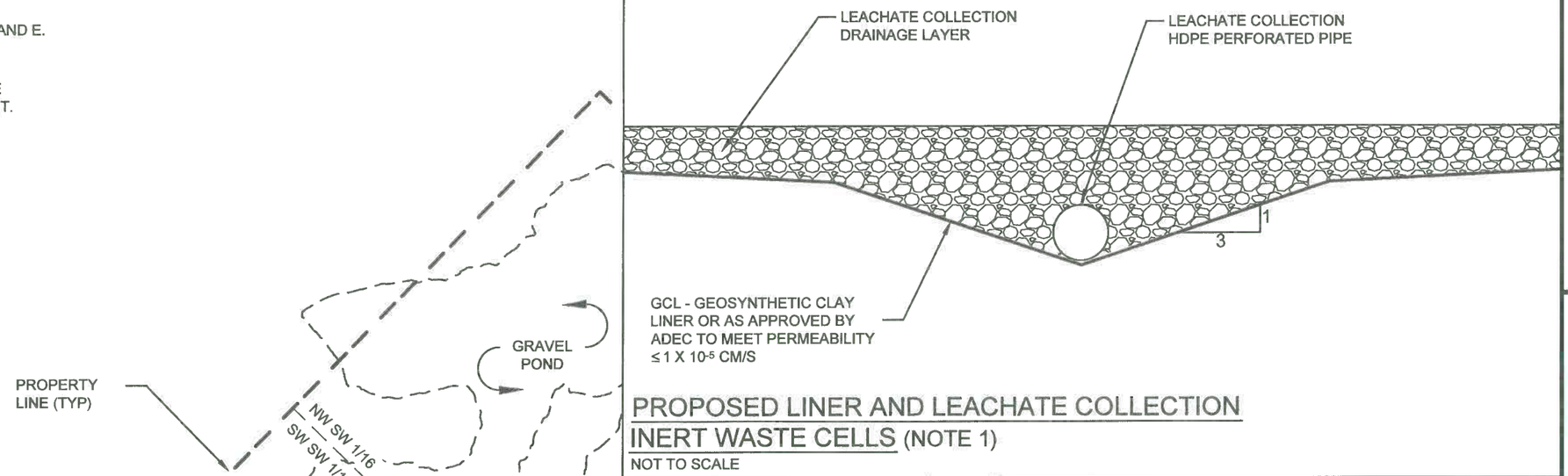
REVIEWED BY:

DATE: 10/26/2016

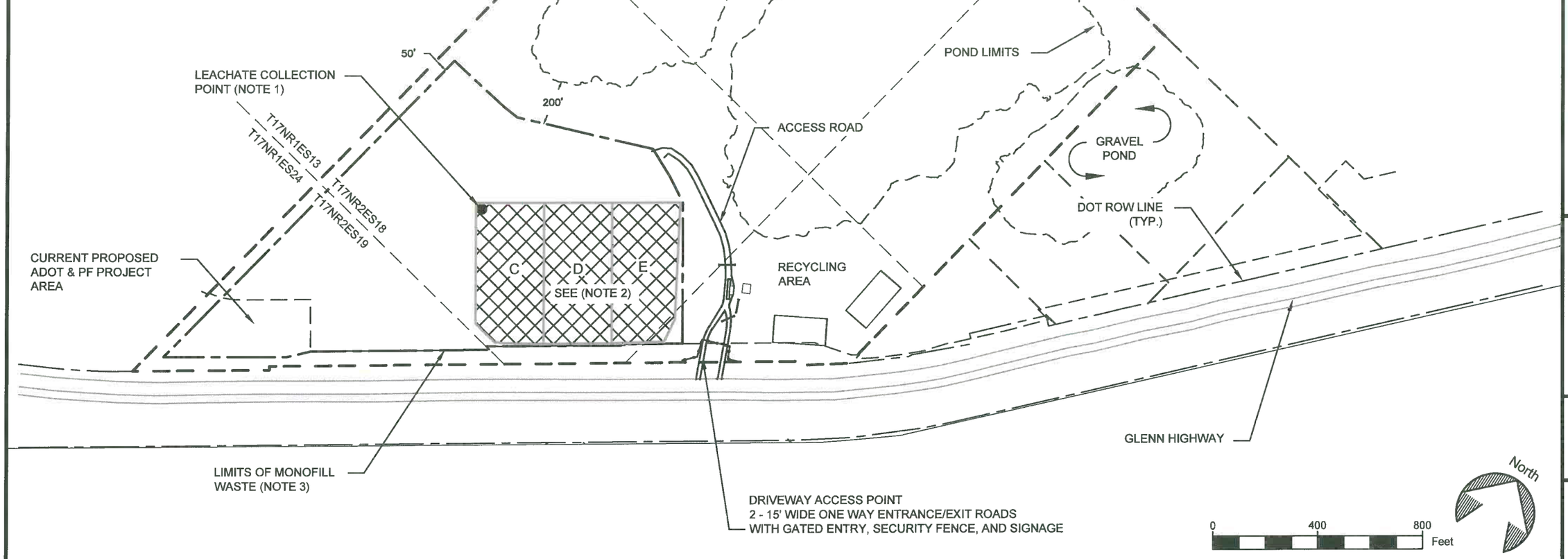
SHEET: 1

NOTES:

1. ADEC IS CONSIDERING DEVELOPMENT OF ADDITIONAL REGULATIONS FOR MONOFILLS. LINER AND LEACHATE COLLECTION SYSTEM SPECIFICATIONS WILL MEET OR EXCEED ADEC STANDARDS AND ARE SUBJECT TO ADEC APPROVAL OF DESIGN AND PERMIT REQUIREMENTS.
2. REVISED DESIGN ONLY INCLUDES CELLS C, D AND E.
3. MONOFILL WASTE WILL BE LOCATED OUTSIDE CURRENTLY PROPOSED ADOT & PF EASEMENT.



PROPOSED LINER AND LEACHATE COLLECTION
INERT WASTE CELLS (NOTE 1)
NOT TO SCALE



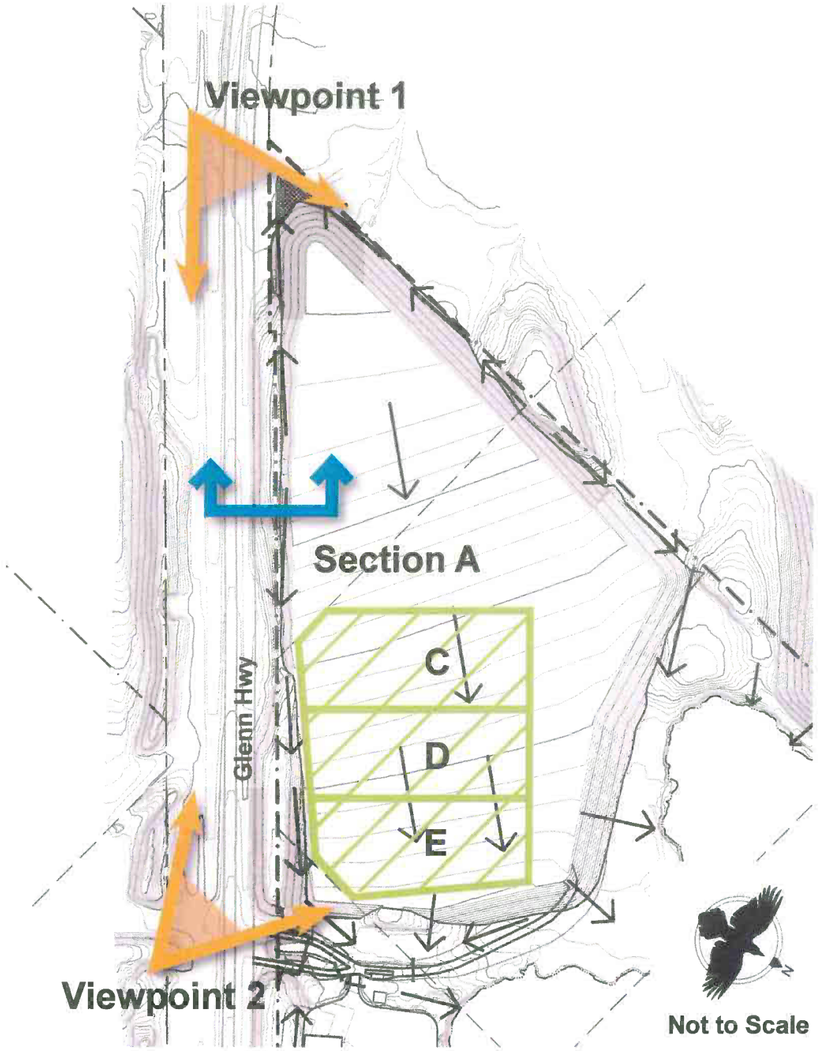
CENTRAL MONOFILL SERVICES
PALMER MONOFILL
PALMER , AK

PALMER CMS MONOFILL
PHASE 1 2017-2022

EMI Consulting, Engineering & Training

PREPARED: ADA
DRAWN: ADA
REVIEWED: LAH
DATE: 10/5/16

SHEET:
B



Viewpoint 1

Viewpoint 2

Typical Berm - Section A

Not to Scale

Original Design Height

Existing Berm

Revised Cells C, D, & E

Palmer Monofill Illustrations

REV: 10/11/2016

Corvus Design

Landscape Architecture • Planning • Industrial Design

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http://www.frontiersman.com/news/dirty-business/article_1f8e029a-8ddb-11e6-8a75-1b0c4d8e1d91.html

Dirty business

Borough's solid waste division tries to keep pace with growth

By CHRIS FORD Oct 9, 2016

CHRIS FORD/Frontiersman

Perfect weather on Wednesday greeted a group of volunteers and Mat-Su Borough Department of Public Works emp
Talkeetna. Everyone assembled at the city's old landfill site off Talkeetna Spur Road to remove much of the fencing
the landfill was operational. Closed and capped for more than three decades, the site has become a popular spot fo
development.

TALKEETNA — As the Mat-Su Borough continues a 3.5 to 4 percent annual growth rate, so does the amount of trash it generates. A great majority of that ends up in the borough's Central Landfill facility in Palmer. Borough Solid Waste Division Manager Butch Shapiro said his department is making a concerted effort to keep as much of that debris out of the landfill as possible.

To accomplish this, Shapiro's department has instituted a number of in-house programs. Included in the mix are the transfer station recycling container program, implementation of the recycling coalition, offering compost education classes, and a reuse program for paints and pesticides.

The cost of properly and safely disposing of waste is not cheap, Shapiro noted. His department's budget sits at approximately $8.5 million annually. The current landfill was developed in 1989 and encompasses 640 acres. When it was built, it was designed to meet the borough's needs for the next 100-plus years. Unlike many landfills in the Lower 48, Shapiro noted Central is not funded through tax revenues but rather fees charged to utilize the site.

Shapiro said landfills are basically a place where lined cells can be developed to hold waste. Central is on its third cell which is six acres in size, and has a volume of approximately 900,000 cubic yards with a five to seven-year life expectancy. Cell construction costs is between $4-5 million. Closure costs come in at $3-4 million with an annual maintenance budget of just under $2 million.

The borough's size also plays a major factor in overall picture. To help ensure refuse is properly and safely disposed of, Central Landfill operates 13 transfer stations in Mat-Su's outlying areas including: Big Lake, Butte, Sutton, Talkeetna, Willow, Skwentna, two sites in Glennallen, Glacier View, Gakona, Point MacKenzie and Trapper Creek. Shapiro said the collected transfer station tipping fees do not cover actual operating costs to the tune of more than $1 million annually and that recycling can help shrink that gap.

Shapiro said the recycling not only saves the consumer money, it also cuts landfill costs and generates additional landfill lifespan. Each pound of waste kept out of the stream generates a savings of slightly more than 25 cents. At the same time, individuals participating in available recycling programs spend less money to properly dispose of generated trash.

Working with Valley Community for Recycling Solutions (VCRS), as noted in a previous story, Central implemented satellite recycling programs at three borough transfer stations with a fourth in the works planned for Sutton.

“The more trash we can squeeze into a cubic yard (at the landfill), the more money we save, and the longer the landfill lasts” Shapiro said.

The borough recycling coalition is in its first year. Shapiro said he’s working closely with many borough community councils to develop the coalition and the still loose-knit group continues to evolve. Holding quarterly meetings, the group always welcomes new faces. Covered topics run the gamut on recycling-reuse topics and Shapiro is hoping to get additional public involvement.

Shapiro said the coalition will hold its next quarterly session Saturday, Oct. 8 starting at 10:30 a.m. Meetings are held at the landfill offices in Palmer.

Composting organic materials is another great way to lower the stream of items destined for the landfill, Shapiro said. The borough’s waste management division has hired Ellen Vande Visse of Good Earth Garden School in Palmer. As much as a third of household refuse could be converted to compost. Central landfill sponsors three different compost classes—including vermi-composting. The latter incorporates adding worms to the compost pile to both speed the process and produce a better compost product.

Central’s basic and vermi classes can be completed in one day while the master-composting class is a two-day event. All are free of charge and open to the public. Most recent classes just wrapped up last weekend. The program will pick up again next spring. More information can be obtained by contacting compost@matsugov.us.

Yet another way Central cuts down and helps keep hazardous materials out of the waste stream is its reuse program. Shapiro said customers' paints and pesticide products are pulled aside and checked. Those deemed usable are set aside.

"People can come in and take what they need for no charge," Shapiro said. "There's no reason for anyone to buy paint. You can get enough for a base, take it to a paint shop and have it tinted for very little cost."

For additional information, contact Community Cleanup and Recycling Coordinator Ivy Spencer at 861-7605. Central Landfill is located at the end of North 49th State Street off Palmer-Wasilla Highway between Glenn Highway and Trunk Road.

PUBLIC HEARING

QUASI-JUDICIAL

Resolution No. 16-37

907 Club CUP

2541 S. Rosalie Court

(Page 3,225 – 3,384)

PUBLIC HEARING

STAFF REPORT

MATANUSKA-SUSITNA BOROUGH

Planning and Land Use Department
Development Services Division
350 East Dahlia Avenue • Palmer, AK 99645
Phone (907) 861-7822 • Fax (907) 861-8158
www.matsugov.us

DEVELOPMENT SERVICES DIVISION STAFF REPORT

File Number:	177020160002
Applicant:	Robert Mark Button, (dba: RMB, LLC; Nine Oh Seven, Corporation; 907 Club)
Property Owner:	RMB, LLC (Robert Mark Button)
Request:	Planning Commission Resolution 16-37 Request for an alcoholic beverage dispensary (bar) conditional use permit in accordance with MSB Chapter 17.70 – Regulation of Alcoholic Beverage Uses
Location:	Marjorie's Manor Subdivision, Tract A; 2541 South Rosalie Court; Township 17 North, Range 3 West, Section 21, Seward Meridian
Size of Property:	4.96-acres
Public Hearing:	November 7, 2016
Planning Commission Action:	The planning commission shall conduct a public hearing and render a decision on the application for a conditional use permit
Reviewed By:	Eileen Probasco, Planning & Land Use Director EP Alex Strawn, Development Services Manager AS
Staff:	Mark Whisenhunt, Planner II MW
Staff Recommendation:	Approval, with conditions

EXECUTIVE SUMMARY

A conditional use permit application has been submitted for the operation of an alcoholic beverage dispensary (bar) at the 907 Club. The owner is proposing to operate a 2,496-square foot bar and full service restaurant with an enclosed 150-square foot smoking room. MSB

17.70.020(A)(1) requires a conditional use permit for the operation of an alcoholic beverage dispensary (bar).

Unless this type of use is maintained under and in accordance with a lawfully issued permit, an alcoholic beverage dispensary (bar) is declared to be a public nuisance. Operation of such a land use without a permit is prohibited.

LAND USE

Existing Land Use:
The subject property is 4.96-acres in size. The proposed conditional use will occupy approximately 1.85-acres on the east side of the property, which accesses South Rosalie Court. Construction on the main structure and parking lot has started. The remainder of the parcel is vacant.

Surrounding Land Uses:
The subject property sits at the corner of S. Big Lake Road and S. Rosalie Court. South Big Lake Road lies to the south. South of Big Lake Road is both vacant and commercial properties. To the southwest and northeast there is a mixture of vacant, commercial and residential property. To the north and west there are primarily residential homes with some vacant land and a campground.

The subject parcel was originally Lots 2, 3, & 4, of Block 1 of the "Rocky Big Lake Subdivision". The "Rocky Big Lake Subdivision" has since been re-subdivided and is now known as, Rocky Lake Subdivision, Rocky Big Lake Subdivision, and Marjorie's Manor. Covenants that apply to the subject property are recorded with the State of Alaska's Recorder's office, in Book 186 Page 928. The Matanuska-Susitna Borough does not enforce covenants.

COMPREHENSIVE PLAN

This property is located within the Big Lake Comprehensive Plan planning area. The comprehensive plan does not specifically address commercial liquor uses. The Big Lake Comprehensive Plan (2009) Guide Map shows this parcel within the *"Gateway Corridor"*, which is defined as *"mixed-use corridor"* that includes the first row of lots on either side of the road.

The comprehensive plan states the "Gateway Mixed Use Corridor" area is intended to balance two objectives: *"to allow for a range of uses and, at the same time, to ensure this corridor provides an attractive entry to Big Lake."* Specific objectives for this area include:

- Allow a mix of uses, including commercial activities and residential uses
- Discourage large scale, industrial uses

The proposed conditional use is consistent with the Big Lake Comprehensive plan, as the proposed conditional use is commercial in nature.

The property is also located within the Borough-Wide Comprehensive Plan (2005 Update) boundary. Some of the goals and policies that apply to this project are as follows:

Land Use Goals and Policies:
Goal (LU-1): *Protect and enhance the public safety, health, and welfare of Borough residents.*
Policy LU1-1: Provide for consistent, compatible, effective, and efficient development within the Borough.

Goal (LU-2): *Protect residential neighborhoods and associated property values.*
Policy LU2-1: Develop and implement regulations that protect residential development by separating incompatible uses, while encouraging uses that support such residential uses including office, commercial and other mixed-use developments that are shown to have positive cumulative impacts to the neighborhood.

Goal (LU-3): *Encourage commercial and industrial development that is compatible with residential development and local community desires.*
Policy LU3-1: Develop and implement regulations that provide for non-residential development.

As detailed in the application, the applicant is taking measures to minimize off-site impacts and to develop the proposed conditional use that is compatible with the surrounding area. According to the residents of Rocky Lake Subdivision, and the Rocky Lake State Recreational Site Manager, the area is known to have a quiet, family-friendly atmosphere. Both boat restrictions and quiet hours are in place to preserve the value and character of the area. The applicant is proposing to operate until 2:00 a.m. daily, and staff recognizes the concern of noise and other incidents which may be caused by patrons while in the parking lot of the 907 Club during the late hours of the night. Staff urges the Planning Commission to discuss this topic further and to consider the conditions outlined in this staff report. In order to be compatible with the Borough-Wide Comprehensive Plan (2005 Update), conditions must be in place to protect existing neighboring residential development.

As proposed and with conditions, the proposed conditional use is consistent with the Borough-Wide Comprehensive Plan (2005 Update).

REVIEW OF APPLICABLE CRITERIA AND FINDINGS

MSB 17.03 – Public Notification
Finding: Notices were mailed to all property owners within one-half mile of the subject property and to the Big Lake Community Council on September 2, 2016. There were 162 public hearing notices mailed in total. 18 written comments were received, of which one was in support, four were neutral, and 13 were in opposition. The public hearing notice was published in the Frontiersman on September 2, 2016. The notice and application material were posted on the borough web page on September 2, 2016. Big Lake Community Council did not submit any comments for this request.

General comments and concerns in opposition were:

- General opposition
- Noise would change the character of the neighborhood/area

- General traffic increase to the area
- Concerns for bike path/ATV traffic and potential intoxicated driver from bar
- Use is not compatible with quiet character of area
- May attract snow-machines onto Rocky Lake
- May add to crime incidents in the area
- Concerns about loud intoxicated bar patrons in parking lot
- Concerns about loud music from the vehicle of intoxicated bar patrons in parking lot
- Concerns about intoxicated bar patrons loitering in the area
- Concerns campers staying at the Rocky Lake State Campground will become "rowdy partiers" due to proximity of proposed bar
- Is a bar with food, not a restaurant
- Will damage the safety and security of the Big Lake community
- Will cause harm to nearby residential area
- Increased human nuisances
- Issues related to lighting in parking lot
- Increased need for police enforcements
- Significant safety issues for children
- Increased traffic with potential drunk drivers
- Garbage problems
- Drainage issues (close to proximity of pristine lake)
- Potential litigation for Mat-Su borough
- Dumpster /waste smell & odor
- Poor transition/buffer between commercial and residential lots
- Long established residential community with bar having (-) impact
- Strong potential to have decrease in residential home values close to bar
- Not compatible with and will not preserve the character, integrity, or value of the surrounding area. Specifically impacting the Rocky Lake State Campground (49 acres and 11 campsites) and surrounding peaceful lake front homes and cabins

General comments of support for this request were:

- It would be a new place to eat, drink, and socialize
- Will contribute to a good economy

Some comments requested the following conditions be imposed:

- No access to Rocky Lake Dr. from Marjorie's Manor Tract A.
- Establish and maintain a vegetative screening buffer on an 8' earthen berm surrounding the parking lot. The buffered berm shall be hydro-seeded with natural wild grass mix.
- No outside band stand, outdoor concerts, or amplified audio performances.
- Meet the dark sky lighting standards. All lighting shall be downcast with half lens luminaires on the building and parking lot to limit illuminations to adjoining properties. No flashing lights to distract drivers or create a nuisance.
- It was also suggested that a condition be imposed to limit the late night hours of operation. One specifically suggested 11:00 p.m.

One document received during the comment period was signed by the applicant, Mr. Mark Button, and two Rocky Lake residents. The document is an agreement for four conditions to be imposed should the Conditional Use Permit be approved. It reads as follows:

> *Conditions for Mark Button to submit as amendments to his 907 Club CUP application. Amendments shall be submitted to MSB Planning not later than October 18, 2016.*
>
> 1. *No access to Rocky Lake Dr. from Marjorie's Manor Tract A.*
> 2. *Establish and maintain a vegetative screening buffer based on the existing 8' high earth berm which we are fine with. The buffer shall also include a continuous row trees to defer noise, 4'-6' tall, spaced 8' apart. Buffer berm shall be hydro-seeded with natural wild grass mix.*
> 3. *No outside band stand, outdoor concerts or amplified audio performances.*
> 4. *Meet the Dark Sky lighting standards. All lighting shall be downcast with half lens luminaires on the building and parking lot to limit illuminations to adjoining properties. No flashing lights to distract drivers or create a nuisance to neighbors.*

Section 17.70.100 Standards

(A) A conditional use may be approved only if it meets the general requirements of this section in addition to any other standards required by this chapter.

(1) Findings. In granting a conditional use permit the planning commission must make the following findings:

(a) The conditional use is compatible with and will preserve or not materially detract from the value, character and integrity of the surrounding area.

Applicant Response: *"Yes. The proposed development is compatible with the surrounding area and will preserve rather than detract from the value, character and integrity of the surrounding area.*

The proposed project will be within the core area as set forth in the Big Lake Comprehensive Plan, and will adhere to said plan, that allows for diverse and "mixed use" businesses. The site itself will be beautifully landscaped with a log sided "cabin look" structure and visually appealing. The proposed project is located in an area that is well known within the State of Alaska as being "Alaska's Playground".

This proposed full service restaurant and bar will promote a family atmosphere offering a full menu. The proposed restaurant and bar will not only preserve the value, character and integrity of the Big Lake Gateway Corridor, but will also enhance it. The proposed business will cater to the public in a very basic way ~ to provide wholesome meals. There are very few dining options within the core area which provide wholesome meals. Those that do, have very limited hours.

The proposed project will provide a much needed service by enhancing the dining options for not only the residents, but also our visitors. The proposed project will enhance the value and integrity of the surrounding area by providing needed services that all residents and visitors may use on a year-round basis."

Staff Findings:

Finding: Goal LU-1 of the Borough-Wide Comprehensive Plan (2005 Update) is to Protect and enhance the public safety, health, and welfare of Borough residents.

Finding: Policy LU1-1 Borough-Wide Comprehensive Plan (2005 Update) is to Provide for consistent, compatible, effective, and efficient development within the Borough; and

Finding: Goal LU-2 of the Borough-Wide Comprehensive Plan (2005 Update) is to Protect residential neighborhoods and associated property values.

Finding: Policy LU2-1 of the Borough-Wide Comprehensive Plan (2005 Update) is to Develop and implement regulations that protect residential development by separating incompatible uses, while encouraging uses that support such residential uses including office, commercial and other mixed-use developments that are shown to have positive cumulative impacts to the neighborhood.

Finding: Goal LU-3 of the Borough-Wide Comprehensive Plan (2005 Update) is to Encourage commercial and industrial development that is compatible with residential development and local community desires.

Finding: Policy LU3-1 of the Borough-Wide Comprehensive Plan (2005 Update) is to Develop and implement regulations that provide for non-residential development.

Finding: The Big Lake Comprehensive Plan (2009) Guide Map shows this parcel within the *"Gateway Corridor"*, which is defined as *"mixed-use corridor"* that includes the first row of lots on either side of the road.

Finding: The comprehensive plan states the "Gateway Mixed Use Corridor" area is intended to balance two objectives: *"to allow for a range of uses and, at the same time, to ensure this corridor provides an attractive entry to Big Lake."* Specific objectives for this area include: Allow a mix of uses, including commercial activities and residential uses; and discourage large scale, industrial uses.

Finding: The developed properties along South Big Lake Road are predominantly commercial, but some industrial and residential uses are also present.

Finding: The nearest operating alcoholic beverage dispensary in the Big Lake area is Floaters on Big Lake Road, about one quarter mile from this site.

Finding: The subject parcel was originally Lots 2, 3, & 4, of Block 1 of the "Rocky Big Lake Subdivision". The "Rocky Big Lake Subdivision" has since been re-subdivided and is now known as, Rocky Lake Subdivision, Rocky Big Lake Subdivision, and Marjorie's Manor.

Covenants that apply to the subject property are recorded with the State of Alaska's Recorder's office, in Book 186 Page 928.

Finding: Rocky Lake Subdivision abuts the proposed conditional use.

Finding: The character of the Rocky Lake Area is known to be of a quiet and family-friendly atmosphere.

Finding: Alaska Administrative Code 11 AAC 20.922 – Use of Power Boats at Rocky Lake State Recreation Site, prohibits the use of jet skis, jet boats with inboard motors, and airboats.

Finding: Rocky Lake State Recreation Site is less than 600 feet from the proposed conditional use.

Finding: Rocky Lake State Recreation Site has quiet hours of 10:00PM to 6:00AM, daily.

Finding: The application material shows a 2,496 square foot bar with a 150 square foot enclosed smoking room, and an arctic entryway.

Finding: The application material states the proposed hours of operation are: restaurant/food service is 6:00 a.m. to 12:00 a.m. and liquor service is 10:00 a.m. to 2:00 a.m.

Finding: The nearest developed residential lot abuts the subject parcel to the northeast.

Finding: MSB 8.52.010(A) declares: "The borough hereby finds and declares that noise, volume-enhanced sounds and their concomitant vibration are significant sources of environmental pollution which represent a present and increasing threat to public peace and to the health, safety, and welfare of the residents of the borough. Loud noise and amplified sounds have an adverse effect on the psychological and physiological well-being of persons."

Finding: The proposed structure will have a log sided "cabin look."

Finding: The applicant has signed an agreement with some neighboring property owners to further make the conditional use compatible with, preserve, and not materially detract from the value, character and integrity of the surrounding area by imposing the following four conditions:

1. No access to Rocky Lake Dr. from Marjorie's Manor Tract A.
2. Establish and maintain a vegetative screening buffer based on the existing 8' high earth berm which we are fine with. The buffer shall also include a continuous row trees to defer noise, 4'-6' tall, spaced 8' apart. Buffer berm shall be hydro-seeded with natural wild grass mix.
3. No outside band stand, outdoor concerts or amplified audio performances.
4. Meet the Dark Sky lighting standards. All lighting shall be downcast with half lens luminaires on the building and parking lot to limit illuminations to adjoining properties. No flashing lights to distract drivers or create a nuisance to neighbors.

Finding: According to the application material, a combination of foam insulation, sheetrock and a noise reduction product known as Acoustica Barrier (DB-3, Model #DB348X96BX) will be used in the walls and ceiling to achieve a 90% reduction in noise.

Finding: According to the application material, triple paned windows will be installed in the proposed structure to achieve a 68% reduction in noise.

Discussion: Through public comments, there are concerns that noise during late hours from the proposed use and its patrons will disrupt nearby residential and recreational uses. Some commenters recommend a restriction on the hours of operation to coincide with the Rocky Lake Campground quiet hours (10:00 p.m. to 6:00 a.m.). While the applicant has taken measures to reduce noise from escaping the structure and agreed to the conditions such as, building a berm with vegetation and prohibiting outside entertainment; staff recognizes the concern of noise and other incidents which may be caused by patrons while in the parking lot of the 907 Club. Staff urges the Planning Commission to discuss this topic further and to consider the following conditions related to this topic:

- Hours of operation shall not exceed: 6:00 a.m. – 10:00 p.m., Sunday through Thursday; and 6:00 a.m. – 2:00 a.m., Friday and Saturday.

- The operation shall provide parking lot security daily, starting at 10 p.m. until the premises are vacated. Security shall ensure patrons do not loiter.

It is staff's position that conditions protecting the adjacent residential developments must be in place in order for the proposed use to be compatible with, preserve, and not materially detract from the value, character and integrity of the surrounding area.

Conclusions of Law: Based on the above findings and with recommended conditions, the conditional use is compatible with, will preserve, and will not materially detract from the value, character and integrity of the surrounding area (MSB 17.70.100(A)(1)(a)).

(b) That granting the conditional use permit will not be harmful to the public health, safety, convenience and welfare.

Applicant Response: *"No. The proposed development will not be harmful to the public health, safety, convenience or welfare. First and foremost, the applicant has a proven history of operating businesses within the boundaries of the law. For over 20 years the applicant has operated a convenience store in the Big Lake core area. For the past five years, the applicant has operated a liquor package store within the core area of Big Lake. The State of Alaska laws are very specific to operating a liquor license of any type, which are enacted to protect the public health, safety and welfare of the public. The applicant has a proven track record of operating a law-abiding business.*

RMB, LLC and Nine OH Seven, Corp takes the State of Alaska laws regarding the sale and distribution of liquor, under Alaska State Statutes, seriously. All of the employees of the proposed establishment will have the required TAP certification. In-House policies will ensure the laws are explicitly followed regarding the sale

of liquor to minors as well as the sale of liquor to individuals who are intoxicated, not only by requiring the TAP certification, but providing In-House training and general expectations for employees and their responsibilities to the public welfare while serving alcohol. In House policies will reflect the concerns we all have regarding individuals driving under the influence. Explicit measures will be taken to ensure individuals who may be impaired do not leave the premises in their own vehicle, ATV, snow-machine or by walking. Alaska State law requires an establishment notify law enforcement in the event an impaired individual refuses to cooperate with these policies which are reflective of Alaska State Statutes."

Staff Findings:

Finding: The nearest operating alcoholic beverage dispensary in the Big Lake area is Floaters on Big Lake Road, about one quarter mile from this site.

Finding: The nearest school is Big Lake Elementary which is about 4,200 feet from this site. State regulations preclude beverage dispensary licenses within 200 feet of a school.

Finding: The nearest church is about 1,200 feet from this site. State regulations preclude beverage dispensary licenses within 200 feet of a church.

Finding: The Big Lake Comprehensive Plan (2009) Guide Map shows this parcel within the *"Gateway Corridor"*, which is defined as *"mixed-use corridor"* that includes the first row of lots on either side of the road.

Finding: The comprehensive plan states the "Gateway Mixed Use Corridor" area is intended to balance two objectives: *"to allow for a range of uses and, at the same time, to ensure this corridor provides an attractive entry to Big Lake."* Specific objectives for this area include: Allow a mix of uses, including commercial activities and residential uses; and discourage large scale, industrial uses.

Finding: The developed properties along South Big Lake Road are predominantly commercial, but some industrial and residential uses are also present.

Finding: The character of the Rocky Lake Area is known to be of a quiet and family-friendly atmosphere.

Finding: Alaska Administrative Code 11 AAC 20.922 – Use of Power Boats at Rocky Lake State Recreation Site, prohibits the use of jet skis, jet boats with inboard motors, and airboats.

Finding: Rocky Lake State Recreation Site is less than 600 feet from the proposed conditional use.

Finding: Rocky Lake State Recreation Site has quiet hours of 10:00PM to 6:00AM, daily.

Finding: The application material states the proposed hours of operation are: restaurant/food service is 6:00 a.m. to 12:00 a.m. and liquor service is 10:00 a.m. to 2:00 a.m.

Finding: MSB 8.52.010(A) declares: "The borough hereby finds and declares that noise, volume-enhanced sounds and their concomitant vibration are significant sources of environmental pollution which represent a present and increasing threat to public peace and to the health, safety, and welfare of the residents of the borough. Loud noise and amplified sounds have an adverse effect on the psychological and physiological well-being of persons."

Finding: The applicant has signed an agreement with some neighboring property owners to further make the conditional use compatible with, preserve, and not materially detract from the value, character and integrity of the surrounding area by imposing the following four conditions:

1. No access to Rocky Lake Dr. from Marjorie's Manor Tract A.
2. Establish and maintain a vegetative screening buffer based on the existing 8' high earth berm which we are fine with. The buffer shall also include a continuous row trees to defer noise, 4'-6' tall, spaced 8' apart. Buffer berm shall be hydro-seeded with natural wild grass mix.
3. No outside band stand, outdoor concerts or amplified audio performances.
4. Meet the Dark Sky lighting standards. All lighting shall be downcast with half lens luminaires on the building and parking lot to limit illuminations to adjoining properties. No flashing lights to distract drivers or create a nuisance to neighbors.

Finding: According to the application material, a combination of foam insulation, sheetrock and a noise reduction product known as Acoustica Barrier (DB-3, Model #DB348X96BX) will be used in the walls and ceiling to achieve a 90% reduction in noise.

Finding: According to the application material, triple paned windows will be installed in the proposed structure to achieve a 68% reduction in noise.

Finding: The operator of the proposed use is required to operate in accordance with Alaska Statute, which includes but is not limited to, mandatory alcohol server education.

Finding: According to the application material, measures which include contacting law enforcement, will be taken to ensure individuals who may be impaired do not leave the premises operating a vehicle, ATV, snow-machine or by walking.

Conclusions of Law: Based on the above findings, the proposed use with conditions, will not be harmful to the public health, safety, convenience and welfare (MSB 17.70.100(A)(1)(b)).

(c) That sufficient setbacks, lot area, buffers or other safeguards are being provided to meet the conditions listed in subsections (A) and (B) of this section.

Applicant Response: *"Yes. The plan provides for sufficient setbacks, lot area, buffers and other safeguards. Please refer to the attached, relevant plans. The setbacks for the actual structure exceed required setback guidelines. In addition, there will be an eight-foot fence which will border the property on the North-east side of the property and protect the public and property from the cut-through that is a utility easement between the said property and the Yamaha Shop."*

Staff Findings:

Finding: The subject property is 4.96-acres in size. The proposed conditional use will occupy approximately 1.85-acres on the east side of the property, which accesses South Rosalie Court.

Finding: A Matanuska-Susitna Borough driveway permit is required for access onto South Rosalie Court. The applicant was previously given approval to construct the access and has requested the Borough to conduct a final inspection for the constructed driveway.

Finding: According to the application material, an arctic entry will be constructed and its door will face east towards Rosalie Court to minimize noise spilling from the building.

Finding: According to the site plan dated July 15, 2016, an 8-foot tall wooden fence is to be constructed along the northeast property line that abuts a residential development.

Finding: The Big Lake Comprehensive Plan (2009) Guide Map shows this parcel within the *"Gateway Corridor"*, which is defined as *"mixed-use corridor"* that includes the first row of lots on either side of the road.

Finding: The comprehensive plan states the "Gateway Mixed Use Corridor" area is intended to balance two objectives: *"to allow for a range of uses and, at the same time, to ensure this corridor provides an attractive entry to Big Lake."* Specific objectives for this area include: Allow a mix of uses, including commercial activities and residential uses; and discourage large scale, industrial uses.

Finding: The developed properties along South Big Lake Road are predominantly commercial, but some industrial and residential uses are also present.

Finding: The nearest operating alcoholic beverage dispensary in the Big Lake area is Floaters on Big Lake Road, about one quarter mile from this site.

Finding: The character of the Rocky Lake Area is known to be of a quiet and family-friendly atmosphere.

Finding: Alaska Administrative Code 11 AAC 20.922 – Use of Power Boats at Rocky Lake State Recreation Site, prohibits the use of jet skis, jet boats with inboard motors, and airboats.

Finding: Rocky Lake State Recreation Site is less than 600 feet from the proposed conditional use.

Finding: Rocky Lake State Recreation Site has quiet hours of 10:00PM to 6:00AM, daily.

Finding: The application material states the proposed hours of operation are: restaurant/food service is 6:00 a.m. to 12:00 a.m. and liquor service is 10:00 a.m. to 2:00 a.m.

Finding: MSB 8.52.010(A) declares: "The borough hereby finds and declares that noise, volume-enhanced sounds and their concomitant vibration are significant sources of

environmental pollution which represent a present and increasing threat to public peace and to the health, safety, and welfare of the residents of the borough. Loud noise and amplified sounds have an adverse effect on the psychological and physiological well-being of persons."

Finding: The applicant has signed an agreement with some neighboring property owners to further make the conditional use compatible with, preserve, and not materially detract from the value, character and integrity of the surrounding area by imposing the following four conditions:

1. No access to Rocky Lake Dr. from Marjorie's Manor Tract A.
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3. No outside band stand, outdoor concerts or amplified audio performances.
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Finding: According to the application material, a combination of foam insulation, sheetrock and a noise reduction product known as Acoustica Barrier (DB-3, Model #DB348X96BX) will be used in the walls and ceiling to achieve a 90% reduction in noise.

Finding: According to the application material, triple paned windows will be installed in the proposed structure to achieve a 68% reduction in noise.

Finding: The operator of the proposed use is required to operate in accordance with Alaska Statute, which includes but is not limited to, mandatory alcohol server education.

Finding: According to the application material, measures which include contacting law enforcement, will be taken to ensure individuals who may be impaired do not leave the premises operating a vehicle, ATV, snow-machine or by walking.

Discussion: As noted in the findings above, the applicant has signed an agreement with neighboring property owners to impose four specific conditions. Staff recommends adopting the four conditions, or similar conditions which achieve the same or better protection for the neighboring property owners. Physical screening (earthen berm or fence) will not only attenuate noise, but it will discourage foot traffic, prevent vehicular access onto Rocky Lake Drive, and block light spillage from vehicles in the parking lot.

It is staff's position that conditions protecting the adjacent residential developments must be in place in order for the proposed use to be compatible with, preserve, and not materially detract from the value, character and integrity of the surrounding area.

Conclusions of Law: Based on the above findings and with recommended conditions, sufficient setbacks, lot area, buffers or other safeguards have been provided (MSB 17.70.100(A)(1)(c)).

(2) General Standards. In considering whether the general standards are satisfied, the planning commission may weigh factors contributing or detracting from the development of a safe, convenient and attractive community, including, but not limited to:

(a) Any potential negative effect upon other properties in the area due to such factors as dust, noise, obtrusive advertising and glare.

Applicant Response: *"No. The other properties in the surrounding area will not be negatively affected by dust, noise, obtrusive advertising or glare. Paved areas will prevent and control dust. Noise levels and signage will comply with Matanuska-Susitna Borough regulations. Glare from lighting will be at a minimum and will comply with all Matanuska-Susitna Borough, State of Alaska and Federal laws and regulations.*

Dust: The artery that will be used to access the proposed project, which is Rosalie Court is paved. The parking lot for the proposed project will be paved as well. This will do a great service to the surrounding area by to a great degree eliminating, but keeping to a minimum, the dust that would arise if the road and/or parking lot were not paved. In addition, the areas not paved will be seeded and landscaped. The paving, landscaping and fence will contribute to the reduction of dust that presently comes from the area that has been traditionally used for the Big Lake Mud Volleyball event.

Noise Levels: The building will be constructed with 2x6 walls with three inches of foam insulation and fiberglass insulation. This in itself will decrease the noise level significantly. In addition, an Acoustica Barrier (DB-3, Model # DB348X96BX) will be used in the walls and ceiling. This material has an NRC (Noise Reduction Coefficient) rating of .75. Which essentially means that 75% of the noise that hits the material will be defected. This material will be installed between the foam insulation and the sheetrock. The building will be sided with two inch "log" siding. The layers of said walls will be: two-inch log siding, Tyvec wrapping, ½" CDX sheeting, three inches of sprayed high density foam, 2 1/2 inches of fiberglass insulation, Acoustica Barrier, and ¾ inch sheetrock. In addition, the ceiling will have the aforementioned as well as dropped ceiling panels. The total NRC rating is .90, this calculates to exterior decibels of 12, directly outside of the building. Normal speaking registers at roughly 50 decibels. All walls and ceiling will be constructed in the manner described above to virtually eliminate any sounds coming from the building.

The windows will be tripled paned, High E Argon, with an NRC rating of .68. The highest window rating on the market.

The main entrance door will face East, to allow for any noise pollution which may occur with the opening and closing of doors.

These construction methods and planned building practices have been designed to mitigate and address any noise concerns the residents of Big Lake may have regarding noise pollution.

Glare: The signage will be located between the building and Big Lake Road. The building itself will if not block completely, will deflect any glare that may travel through the existing foliage/trees that border Rocky Lake Drive. In addition, the sign will be Alaskana in design. The sign will picture a map of our great State of Alaska painted with the Aurora Borealis. The words 907 Club will be written over the Aurora Borealis. The back ground color will be night sky blues. The sign will be backlit. The night sky blue background will deflect any glare that would result if say the background was a light color or white. The sign will have a border of blue lights similar to blue rope lighting The and presentation will be reflective of the aesthetics of a "log cabin" and therefore will not be garish.

The lighting in respect to exterior lighting will as required follow required lighting expectations for a commercial building of this type. The plans indicate four parking lot lamps. The parking lot lamps will be at each side of the West and East sides of the parking lot. The lamps will be LED bulbs and will reflect downward. The light poles will be approximately 24 feet tall. If looking from the Rocky Lake Road area, there will be zero glare due to side shields as well as existing natural foliage/trees that are presently in the road easement. Building codes requires that the building be lit sufficiently to accommodate Federal ADA (Americans with Disabilities Act) laws. The lighting fixtures on the side of the building will be flush mount within the soffit of the building and spaced every 20 feet around the perimeter of the building. These will reflect down upon the building and pathways and will not have any glare associated with them for residents within the Rocky Lake area or the traffic along Big Lake Road. The entrance will also be lit according to Federal ADA guidelines, but as mentioned above, will deflect to the actual building and pathway."

Staff Findings:

Finding: The adjacent properties to the back (north and northwest) side of this lot are developed with residential homes.

Finding: The application material shows a 2,496 square foot bar with a 150 square foot enclosed smoking room, and an arctic entryway.

Finding: The subject parcel was originally Lots 2, 3, & 4, of Block 1 of the "Rocky Big Lake Subdivision". The "Rocky Big Lake Subdivision" has since been re-subdivided and is now known as, Rocky Lake Subdivision, Rocky Big Lake Subdivision, and Marjorie's Manor. Covenants that apply to the subject property are recorded with the State of Alaska's Recorder's office, in Book 186 Page 928.

Finding: Rocky Lake Subdivision abuts the proposed conditional use.

Finding: The character of the Rocky Lake Area is known to be of a quiet and family-friendly atmosphere.

Finding: Alaska Administrative Code 11 AAC 20.922 – Use of Power Boats at Rocky Lake State Recreation Site, prohibits the use of jet skis, jet boats with inboard motors, and airboats.

Finding: Rocky Lake State Recreation Site is less than 600 feet from the proposed conditional use.

Finding: Rocky Lake State Recreation Site has quiet hours of 10:00PM to 6:00AM, daily.

Finding: According to the application material, a combination of foam insulation, sheetrock and a noise reduction product known as Acoustica Barrier (DB-3, Model #DB348X96BX) will be used in the walls and ceiling to achieve a 90% reduction in noise.

Finding: According to the application material, triple paned windows will be installed in the proposed structure to achieve a 68% reduction in noise.

Finding: The operator of the proposed use is required to operate in accordance with Alaska Statute, which includes but is not limited to, mandatory alcohol server education.

Finding: According to the application material, measures which include contacting law enforcement, will be taken to ensure individuals who may be impaired do not leave the premises operating a vehicle, ATV, snow-machine or by walking.

Finding: The parking lot and driveway have been paved.

Finding: The applicant has signed an agreement with some neighboring property owners to further make the conditional use compatible with, preserve, and not materially detract from the value, character and integrity of the surrounding area by imposing the following four conditions:

1. No access to Rocky Lake Dr. from Marjorie's Manor Tract A.
2. Establish and maintain a vegetative screening buffer based on the existing 8' high earth berm which we are fine with. The buffer shall also include a continuous row trees to defer noise, 4'-6' tall, spaced 8' apart. Buffer berm shall be hydro-seeded with natural wild grass mix.
3. No outside band stand, outdoor concerts or amplified audio performances.
4. Meet the Dark Sky lighting standards. All lighting shall be downcast with half lens luminaires on the building and parking lot to limit illuminations to adjoining properties. No flashing lights to distract drivers or create a nuisance to neighbors.

Finding: The operation must comply with the maximum permissible sound level limits allowed, per the requirements of MSB 8.52 – Noise, Amplified Sound and Vibration.

Discussion: As noted in the findings above, the applicant has signed an agreement with neighboring property owners to impose four specific conditions. Staff recommends adopting the four conditions, or similar conditions which achieve the same or better protection for the neighboring property owners. Physical screening (earthen berm or fence) will not only attenuate noise, but it will discourage foot traffic, prevent vehicular access onto Rocky Lake Drive, and block light spillage from vehicles in the parking lot.

It is staff's position that conditions protecting the adjacent residential developments must be in place in order for the proposed use to be compatible with, preserve, and not materially detract from the value, character and integrity of the surrounding area.

Conclusions of Law: Based on the above findings and with recommended conditions, there will not be negative effects upon the properties in the area due to such factors as dust, noise, obtrusive advertising and glare (MSB 17.70.100(A)(2)(a)).

(b) Any potential negative effect on the safe, efficient flow of traffic on any highway arterial, collector or street from which access to and from the establishment is obtained.

Applicant Response: *"No. Safe and efficient flow of traffic will not be negatively impacted.*

With the new roundabout road construction that is presently occurring in Big Lake, the roundabout creates a safer corner and will increase the safety level of access to and from Rosalie court. Cars will no longer be able to careen around the corner and proceed down Big Lake Road at a high rate of speed. Therefore, entrance to and exit from Rosalie Court will be much safer. In addition, Rosalie Court only has one access point as it has a cul-de-sac at the end. The driveway for the proposed project is located in the cul-de-sac area. In addition, the applicant has hopes that a street light will be placed at the junction of Big Lake Road and Rosalie Court. The need for this street light installation will be determined by the State of Alaska DOT and/or the Matanuska-Susitna Borough and is not within the direct control of the applicant."

Staff Findings:

Finding: The subject property is 4.96-acres in size. The proposed conditional use will occupy approximately 1.85-acres on the east side of the property, which accesses South Rosalie Court.

Finding: A Matanuska-Susitna Borough driveway permit is required for access onto South Rosalie Court. The applicant was previously given approval to construct the access and has requested the Borough to conduct a final inspection for the constructed driveway.

Finding: South Rosalie Court is not a Matanuska-Susitna Borough maintained road.

Finding: Only two properties, including the proposed conditional use access onto South Rosalie Court.

Finding: According to a report dated April 30, 3014, by Alaska Rim Engineering, South Rosalie Court has been built to Matanuska-Susitna Borough standards.

Finding: ITE Trip Generation 7th Edition shows a "Drinking Place" of 2,400-square feet in size is expected to produce 37 trips per peak PM hour, which does not require a traffic impact analysis.

Finding: The Alaska Department of Transportation (ADOT) was solicited for comments. ADOT did not submit any comments for the proposed conditional use.

Conclusions of Law: Based on the findings above, there should not be any negative effect on the safe, efficient flow of traffic on any highway, arterial, collector or street from which access to and from the establishment is obtained (MSB 17.70.100(A)(2)(b)).

(c) The effectiveness of any measures to reduce any negative effect upon adjacent and nearby properties by property line buffers and arterial buffers, planted berms, landscaping, reduction or elimination of obtrusive or garish signing or other features, lowered building elevation, clustering with other commercial establishments and use of frontage roads to reduce the number of entries and exists onto highways, arterials and collectors, and where the surrounding area is predominantly residential in character, site and building design features that contribute to the residential character of the development.

Applicant Response: *"To reduce any negative affect upon adjacent and nearby properties, the applicant proposes to follow all Matanuska-Susitna Borough, State of Alaska and Federal laws regarding all identifiers addressed within question number six. The proposed development's primary goal in aesthetics is to be compatible with the Big Lake surrounding area. The proposed project will be within the core area as set forth in the Big Lake Comprehensive Plan, and will adhere to said plan, that allows for diverse and "mixed use" businesses.*

As described above, the property will be bordered by an eight-foot fence. The building will be sided with beautiful "log cabin" siding and constructed to have a minimal noise impact. The property will be beautifully landscaped with plantings of grass, shrubbery and Canadian Red Maples. The sign will measure 10 feet by 16 feet. The bottom edge of the sign will be 16 feet from the ground. The signage will be Alaskana in design and presentation, as described above, and be reflective of the aesthetics of a "log cabin" and therefore will not be garish. The entry/exit is directly onto Rosalie Court which feeds from Big Lake Road as described in detail above. The surrounding area is within the Big Lake core and commercial by nature."

Staff Findings:

Finding: The developed properties along South Big Lake Road are predominantly commercial, but some industrial and residential uses are also present.

Finding: The Big Lake Comprehensive Plan (2009) Guide Map shows this parcel within the *"Gateway Corridor"*, which is defined as *"mixed-use corridor"* that includes the first row of lots on either side of the road.

Finding: The comprehensive plan states the "Gateway Mixed Use Corridor" area is intended to balance two objectives: *"to allow for a range of uses and, at the same time, to ensure this corridor provides an attractive entry to Big Lake."* Specific objectives for this area include:

Allow a mix of uses, including commercial activities and residential uses; and discourage large scale, industrial uses.

Finding: MSB 8.52.010(A) declares: "The borough hereby finds and declares that noise, volume-enhanced sounds and their concomitant vibration are significant sources of environmental pollution which represent a present and increasing threat to public peace and to the health, safety, and welfare of the residents of the borough. Loud noise and amplified sounds have an adverse effect on the psychological and physiological well-being of persons."

Finding: The proposed structure will have a log sided "cabin look."

Finding: The applicant has signed an agreement with some neighboring property owners to further make the conditional use compatible with, preserve, and not materially detract from the value, character and integrity of the surrounding area by imposing the following four conditions:

1. No access to Rocky Lake Dr. from Marjorie's Manor Tract A.
2. Establish and maintain a vegetative screening buffer based on the existing 8' high earth berm which we are fine with. The buffer shall also include a continuous row trees to defer noise, 4'-6' tall, spaced 8' apart. Buffer berm shall be hydro-seeded with natural wild grass mix.
3. No outside band stand, outdoor concerts or amplified audio performances.
4. Meet the Dark Sky lighting standards. All lighting shall be downcast with half lens luminaires on the building and parking lot to limit illuminations to adjoining properties. No flashing lights to distract drivers or create a nuisance to neighbors.

Finding: According to the application material, a combination of foam insulation, sheetrock and a noise reduction product known as Acoustica Barrier (DB-3, Model #DB348X96BX) will be used in the walls and ceiling to achieve a 90% reduction in noise.

Finding: According to the application material, triple paned windows will be installed in the proposed structure to achieve a 68% reduction in noise.

Finding: A Matanuska-Susitna Borough driveway permit is required for access onto South Rosalie Court. The applicant was previously given approval to construct the access and has requested the Borough to conduct a final inspection for the constructed driveway.

Finding: South Rosalie Court is not a Matanuska-Susitna Borough maintained road.

Finding: Only two properties, including the proposed conditional use access onto South Rosalie Court.

Finding: According to a report dated April 30, 3014, by Alaska Rim Engineering, South Rosalie Court has been built to Matanuska-Susitna Borough standards.

Finding: ITE Trip Generation 7th Edition shows a "Drinking Place" of 2,400-square feet in size is expected to produce 37 trips per peak PM hour, which does not require a traffic impact analysis.

Discussion: Through public comments, there are concerns that noise during late hours from the proposed use and its patrons will disrupt nearby residential and recreational uses. Some commenters recommend a restriction on the hours of operation to coincide with the Rocky Lake Campground quiet hours (10:00 p.m. to 6:00 a.m.). While the applicant has taken measures to reduce noise from escaping the structure and agreed to the conditions such as, building a berm with vegetation and prohibiting out entertainment; staff recognizes the concern of noise and other incidents which may be caused by patrons while in the parking lot of the 907 Club. Staff urges the Planning Commission to discuss this topic further and to consider the following conditions related to this topic:

- Hours of operation shall not exceed: 6:00 a.m. – 10:00 p.m., Sunday through Thursday; and 6:00 a.m. – 2:00 a.m., Friday and Saturday.

- The operation shall provide parking lot security daily, starting at 10 p.m. until the premises are vacated. Security shall ensure patrons do not loiter.

As noted in the findings above, the applicant has signed an agreement with neighboring property owners to impose four specific conditions. Staff recommends adopting the four conditions, or similar conditions which achieve the same or better protection for the neighboring property owners. Physical screening (earthen berm or fence) will not only attenuate noise, but it will discourage foot traffic, prevent vehicular access onto Rocky Lake Drive, and block light spillage from vehicles in the parking lot.

It is staff's position that conditions protecting the adjacent residential developments must be in place in order for the proposed use to be compatible with, preserve, and not materially detract from the value, character and integrity of the surrounding area.

Conclusions of Law: Based on the above findings and with recommended conditions, measures are in place to reduce any negative effect upon adjacent and nearby properties (MSB 17.70.100(A)(2)(c)).

(d) Whether there are adequate parking facilities to accommodate a reasonably expected increased demand for parking created by issuing the permit.

Applicant Response: *"Yes. Adequate parking facilities are provided. The proposed project will follow all applicable Alaska State Building Codes, applicable Fire Marshall Codes and applicable tenants within the Federal Americans with Disabilities Act.*

The Alaska State Fire Marshall and Building Codes have specific requirements for parking guidelines based on the building size and building use. The local architect has determined through a review of these requirements, this project requires 44 parking spaces, two of which will be handicapped accessible. In the event there is an increased demand for parking, the applicant will have enough available and useable land to accommodate the needs for increased parking."

Staff Findings:

Finding: The borough does not have parking standards, however, according to the site plan dated July 15, 2016, 44 parking spaces and two handicap accessible spaces will be provided.

Finding: The building and parking lot have been designed by Brian McMillen, a registered professional architect in the state of Alaska.

Conclusion of Law: Based on the above findings, adequate parking is being provided (MSB 17.70.100(A)(2)(d)).

(e) Whether access to the premises will create an unreasonable traffic hazard.

Applicant Response: *"No. Access to the proposed project will not create an unreasonable traffic hazard.*

As described above, with the new roundabout road construction that is presently occurring in Big Lake, the roundabout creates a safer corner and will increase the safety level of access to and from Rosalie court. Cars will no longer be able to careen around the corner and proceed down Big Lake Road at a high rate of speed. Therefore, entrance to and exit from Rosalie Court will be much safer. In addition, Rosalie Court only has one access point as it has a cul-de-sac at the end. The driveway for the proposed project is located in the cul-de-sac area. In addition, the applicant has hopes that that a street light will be placed at the junction of Big Lake Road and Rosalie Court. The need for this street light installation will be determined by the State of Alaska DOT and/or the Matanuska-Susitna Borough and is not within the direct control of the applicant."

Staff Findings:

Finding: A Matanuska-Susitna Borough driveway permit is required for access onto South Rosalie Court. The applicant was previously given approval to construct the access and has requested the Borough to conduct a final inspection for the constructed driveway.

Finding: South Rosalie Court is not a Matanuska-Susitna Borough maintained road.

Finding: According to a report dated April 30, 3014, by Alaska Rim Engineering, South Rosalie Court has been built to Matanuska-Susitna Borough standards.

Finding: ITE Trip Generation 7th Edition shows a "Drinking Place" of 2,400-square feet in size is expected to produce 37 trips per peak PM hour, which does not require a traffic impact analysis.

Finding: The Alaska Department of Transportation (ADOT) was solicited for comments. ADOT did not submit any comments for the proposed conditional use.

Conclusion of Law: Based on the above findings, access to the premise will not create an unreasonable traffic hazard (MSB 17.70.100(A)(2)(e)).

(f) Whether a reasonably expected increase in traffic will overtax existing road systems.

Applicant Response: *"No. A reasonable increase in traffic will not overtax the existing road system.*

The new roundabout has been designed with an eye-to-the future and an expectation of increased traffic along the Big Lake Gateway Corridor. Rosalie Court is located on a straight stretch of road between the new roundabout and the Parks Highway. The existing traffic consists of residents and visitors. The proposed project has the ultimate goal of serving existing residents and the visitors that have traditionally made their way to Big Lake. Therefore, it is not expected that there will not be an influx of patrons who will drive to Big Lake only for the purpose of visiting the new establishment which would overtax the existing road system. In addition, the other access to Big Lake from Wasilla is Hollywood Road. Individuals who presently come to Big Lake for other purposes use Hollywood Road as well as Big Lake Road. If a patron accesses Big Lake from Hollywood Road will necessarily pass through the new roundabout to access Rosalie Court."

Staff Findings:

Finding: A Matanuska-Susitna Borough driveway permit is required for access onto South Rosalie Court. The applicant was previously given approval to construct the access and has requested the Borough to conduct a final inspection for the constructed driveway.

Finding: South Rosalie Court is not a Matanuska-Susitna Borough maintained road.

Finding: According to a report dated April 30, 3014, by Alaska Rim Engineering, South Rosalie Court has been built to Matanuska-Susitna Borough standards.

Finding: ITE Trip Generation 7th Edition shows a "Drinking Place" of 2,400-square feet in size is expected to produce 37 trips per peak PM hour, which does not require a traffic impact analysis.

Finding: The Alaska Department of Transportation (ADOT) was solicited for comments. ADOT did not submit any comments for the proposed conditional use.

Conclusion of Law: Based on the above findings, traffic will not overtax existing road systems (MSB 17.70.100(A)(2)(f)).

(g) Whether the use is incompatible with the character of the surrounding neighborhood.

Applicant Response: *"Yes. The proposed project use is compatible with the surrounding area because it adheres to the Big Lake Comprehensive Plan, which states that the proposed site is within the "Big Lake Gateway Corridor". This plan allows for a diverse and mixed set of business. The proposed project will promote a family atmosphere, full-service restaurant and provide services to*

the community members as well as the plethora of visitors Big Lake receives each year. In addition, the site will be aesthetically beautiful and will be an asset to visitors entering the Big Lake Gateway Corridor."

Staff Findings:

Finding: The adjacent properties to the back (north and northwest) side of this lot are developed with residential homes.

Finding: Goal LU-1 of the Borough-Wide Comprehensive Plan (2005 Update) is to Protect and enhance the public safety, health, and welfare of Borough residents.

Finding: Policy LU1-1 Borough-Wide Comprehensive Plan (2005 Update) is to Provide for consistent, compatible, effective, and efficient development within the Borough; and

Finding: Goal LU-2 of the Borough-Wide Comprehensive Plan (2005 Update) is to Protect residential neighborhoods and associated property values.

Finding: Policy LU2-1 of the Borough-Wide Comprehensive Plan (2005 Update) is to Develop and implement regulations that protect residential development by separating incompatible uses, while encouraging uses that support such residential uses including office, commercial and other mixed-use developments that are shown to have positive cumulative impacts to the neighborhood.

Finding: Goal LU-3 of the Borough-Wide Comprehensive Plan (2005 Update) is to Encourage commercial and industrial development that is compatible with residential development and local community desires.

Finding: Policy LU3-1 of the Borough-Wide Comprehensive Plan (2005 Update) is to Develop and implement regulations that provide for non-residential development.

Finding: The Big Lake Comprehensive Plan (2009) Guide Map shows this parcel within the *"Gateway Corridor"*, which is defined as *"mixed-use corridor"* that includes the first row of lots on either side of the road.

Finding: The comprehensive plan states the "Gateway Mixed Use Corridor" area is intended to balance two objectives: *"to allow for a range of uses and, at the same time, to ensure this corridor provides an attractive entry to Big Lake."* Specific objectives for this area include: Allow a mix of uses, including commercial activities and residential uses; and discourage large scale, industrial uses.

Finding: The developed properties along South Big Lake Road are predominantly commercial, but some industrial and residential uses are also present.

Finding: The nearest operating alcoholic beverage dispensary in the Big Lake area is Floaters on Big Lake Road, about one quarter mile from this site.

Finding: Rocky Lake Subdivision abuts the proposed conditional use.

Finding: The character of the Rocky Lake Area is known to be of a quiet and family-friendly atmosphere.

Finding: Alaska Administrative Code 11 AAC 20.922 – Use of Power Boats at Rocky Lake State Recreation Site, prohibits the use of jet skis, jet boats with inboard motors, and airboats.

Finding: Rocky Lake State Recreation Site is less than 600 feet from the proposed conditional use.

Finding: Rocky Lake State Recreation Site has quiet hours of 10:00PM to 6:00AM, daily.

Finding: The application material shows a 2,496 square foot bar with a 150 square foot enclosed smoking room, and an arctic entryway.

Finding: The application material stated the proposed hours of operation are: restaurant/food service is 6:00 a.m. to 12:00 a.m. and liquor service is 10:00 a.m. to 2:00 a.m.

Finding: The nearest developed residential lot abuts the subject parcel to the northeast.

Finding: MSB 8.52.010(A) declares: "The borough hereby finds and declares that noise, volume-enhanced sounds and their concomitant vibration are significant sources of environmental pollution which represent a present and increasing threat to public peace and to the health, safety, and welfare of the residents of the borough. Loud noise and amplified sounds have an adverse effect on the psychological and physiological well-being of persons."

Finding: The proposed structure will have a log sided "cabin look."

Finding: The applicant has signed an agreement with some neighboring property owners to further make the conditional use compatible with, preserve, and not materially detract from the value, character and integrity of the surrounding area by imposing the following four conditions:

1. No access to Rocky Lake Dr. from Marjorie's Manor Tract A.
2. Establish and maintain a vegetative screening buffer based on the existing 8' high earth berm which we are fine with. The buffer shall also include a continuous row trees to defer noise, 4'-6' tall, spaced 8' apart. Buffer berm shall be hydro-seeded with natural wild grass mix.
3. No outside band stand, outdoor concerts or amplified audio performances.
4. Meet the Dark Sky lighting standards. All lighting shall be downcast with half lens luminaires on the building and parking lot to limit illuminations to adjoining properties. No flashing lights to distract drivers or create a nuisance to neighbors.

Finding: According to the application material, a combination of foam insulation, sheetrock and a noise reduction product known as Acoustica Barrier (DB-3, Model #DB348X96BX) will be used in the walls and ceiling to achieve a 90% reduction in noise.

Finding: According to the application material, triple paned windows will be installed in the proposed structure to achieve a 68% reduction in noise.

Discussion: Through public comments, there are concerns that noise during late hours from the proposed use and its patrons will disrupt nearby residential and recreational uses. Some commenters recommend a restriction on the hours of operation to coincide with the Rocky Lake Campground quiet hours (10:00 p.m. to 6:00 a.m.). While the applicant has taken measures to reduce noise from escaping the structure and agreed to the conditions such as, building a berm with vegetation and prohibiting out entertainment; staff recognizes the concern of noise and other incidents which may be caused by patrons while in the parking lot of the 907 Club. Staff urges the Planning Commission to discuss this topic further and to consider the following conditions related to this topic:

- Hours of operation shall not exceed: 6:00 a.m. – 10:00 p.m., Sunday through Thursday; and 6:00 a.m. – 2:00 a.m., Friday and Saturday.

- The operation shall provide parking lot security daily, starting at 10 p.m. until the premises are vacated. Security shall ensure patrons do not loiter.

It is staff's position that conditions protecting the adjacent residential developments must be in place in order for the proposed use to be compatible with, preserve, and not materially detract from the value, character and integrity of the surrounding area.

Conclusion of Law: Based on the above findings and with recommended conditions, the proposed conditional use is compatible with the character of the surrounding neighborhood (MSB 17.70.100(A)(2)(g)).

---

(3) The commission shall deny the application if it does not meet the application standards.

17.70.110 Special Standards for Liquor Uses.

(A) In addition to the general standards, a commercial use shall only be approved if it meets the requirements of this section.

(B) An application shall be denied if the planning commission finds, based on the evidence presented, that one or more of the following are applicable.

(1) There is, or the use would tend to result in, a high crime rate or a high incidence of alcohol-related accidents in the area.

Applicant Response: *"No. First and foremost, the applicant has a proven history of operating businesses within the boundaries of the law. For the past five years, the applicant has operated a liquor package store within the core area of Big Lake. The State of Alaska laws are very specific to operating a liquor license of any type, which are enacted to not only protect the public health, safety and welfare of the public, but to decrease any crime that would result from alcohol abuse and alcohol related accidents. The applicant has a proven track record of operating a law-abiding business.*

RMB, LLC and Nine OH Seven, Corp, seriously regards the State of Alaska laws regarding the sale and distribution of liquor, under Alaska State Statutes. All of

the employees of the proposed establishment will have the required TAP certification. In House policies will ensure the laws are explicitly followed regarding the sale of liquor to minors as well as the sale of liquor to individuals who are intoxicated, not only by requiring the TAP certification, but providing In-House training and general expectations for employees and their responsibilities to the public welfare while serving alcohol. In-House policies will reflect the concerns we all have regarding individuals driving under the influence and other crime related issues that could arise. Explicit measures will be taken to ensure individuals who may be impaired do not leave the premises in their own vehicle, ATV, snowmachine or by walking. Alaska State law requires an establishment notify law enforcement in the event an impaired individual refuses to cooperate with these policies which are reflective of Alaska State Statutes.

Summary: The proposed project will operate fully under Alaska State laws regarding the service of food and alcohol. All patrons who attempt to purchase alcohol will be carded. In addition, all employees will hold TAP certification to ensure knowledge of the law and ensure practical application of the law."

Staff Findings:

Finding: According to the application material, all employees will have Training for Alcohol Professionals (TAP) certification.

Finding: The operator of the proposed use is required to operate in accordance with Alaska Statute, which includes but is not limited to, mandatory alcohol server education.

Finding: According to the application material, measures which include contacting law enforcement, will be taken to ensure individuals who may be impaired do not leave the premises operating a vehicle, ATV, snow-machine or by walking.

Conclusion of Law: Based on the above findings and with recommended conditions, the proposed conditional use will not increase the crime rate in the area or increase alcohol-related accidents (MSB 17.70.110(B)(1)).

---

(2) The applicant or a person with an interest in the application has had an interest in a liquor license which was suspended or revoked in the 12 month preceding the application.

***Applicant Response:** No – applicant has operated two package stores for over four years with no violation at either location. Our employees are not only TAM qualified, but go the extra step.*

Staff Findings:

Finding: The Alcoholic Beverage Control Board (ABC) has no record of violations by Robert Mark Button.

Conclusion of Law: Based on the above finding, the applicant has not had a liquor license suspended or revoked in the 12 months preceding the application (MSB 17.70.110(B)(2)).

---

(3) The applicant or person with an interest in the application demonstrated that the person is untrustworthy or unfit to conduct the operation of a licensed business, or is a potential source of harm to the public.

Applicant Response: *"No. The applicant does not have a history of liquor license violation. The applicant in fact has a long history of liquor license compliance and has operated successfully without a single suspension or revocation within the last twelve months."*

Staff Findings:

Finding: No information has been submitted to the borough indicating the applicant is untrustworthy or unfit to conduct business in the borough or that the applicant is a potential source of harm to the public.

Finding: The Alcoholic Beverage Control Board (ABC) has no record of violations by Robert Mark Button.

Conclusion of Law: Based on the above findings, the applicant has demonstrated that he is trustworthy and fit to conduct business in the borough or that the he is not a potential source of harm to the public (MSB 17.70.110(B)(3)).

STAFF RECOMMENDATIONS

The applicant meets all the standards of MSB 17.70 and staff recommends approval of this permit with the following conditions:

1. The owner and/or operator shall comply with all other applicable federal, state, and local regulations.

2. All aspects of the operation shall comply with the description detailed in the application material and with the conditions of this permit; and an amendment to the Conditional Use Permit shall be required prior to any alteration or expansion of the conditional use.

3. The Matanuska-Susitna Borough driveway permit for access to 2541 S. Rosalie Court shall be finalized prior to operating the conditional use.

4. The applicant shall install indoor sound dampening panels in the bar structure, as detailed in the application. Proof of installation of the sound damping panels shall be provided to the Borough prior to operating.

5. The operation shall comply with the maximum permissible sound level limits allowed, per the requirements of MSB 8.52 – Noise, Amplified Sound and Vibration.

6. Patrons shall enter and exit the enclosed smoking room through the bar only.

7. All parking for the conditional use shall be on-site.

8. There shall be no outdoor amplified sound or entertainment of any kind.

9. Access related to this conditional use shall be made onto South Rosalie Court only. There shall be no access to Rocky Lake Dr. from Marjorie's Manor Tract A.

10. Signage and lighting shall be:

    a. Non-glare, located and shielded to direct the light towards the ground, in order to minimize light spillage onto adjacent properties and upward into the night sky.
    b. Lights in the parking lot and signage must be mounted no more than 20 feet above ground.
    c. Flashing lights are prohibited, with the exception of seasonal holiday lights used during the period directly associated with the holiday.

11. An earthen berm, at least eight feet in height, shall be constructed and maintained adjacent to the north and west sides of the parking lot. The berm shall be vegetated with a wild grass mix to prevent soil erosion. Atop the berm shall be a row of trees, planted approximately eight feet apart and shall be four to six feet in height at the time of planting. As suggested by the applicant the trees shall alternate between deciduous and conifer atop the berm. All vegetation including that shown on the site plan dated July 15, 2016, shall be planted by August 1, 2017.

12. Due to the proximity of the utility easement from the vegetated berm, the applicant shall obtain and provide to the Borough, non-objection letters from all applicable utility companies prior to operating.

13. A wooden fence, at least eight feet in height, shall be constructed and maintained in good repair along the northeast property line as shown on the site plan dated July 15, 2016.

14. In the case where one or more utility company objects to the earthen berm, a wooden fence at least eight feet in height shall be constructed and maintained adjacent to the north and west sides of the parking lot. This fence shall connect to the wooden fence referenced in condition #13.

15. Prior to operating, the applicant shall submit an updated site plan, showing the location of the eight foot tall earthen berm identified in condition #11 or the fence identified in condition #14.

16. Hours of operation shall not exceed: 6:00 a.m. – 10:00 p.m., Sunday through Thursday; and 6:00 a.m. – 2:00 a.m., Friday and Saturday.

17. The operation shall provide parking lot security daily, starting at 10 p.m. until the premises are vacated. Security shall ensure patrons do not loiter.

If the Planning Commission chooses to deny this permit, findings for denial must be prepared by the Commission.

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Contents

Next

Previous

Query

Next Hit

Prev. Hit

Home

FOLIO INFOBASE How to Query

11 AAC 20.922. Use of power boats at Rocky Lake State Recreation Site

The use of power boats is allowed at Rocky Lake State Recreation Site with the following exceptions:

(1) jet skis,

(2) jet boats with inboard motors,

(3) airboats.

History: Eff. 5/11/85, Register 94; am 7/1/89, Register 110

Authority: AS 41.21.020

AS 41.21.040

Title 11 Natural Resources
Part 2 Parks, Recreation, and Public Use
Chapter 20 State Park Land and Water
Article 18 Special Provisions

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BOOK 186 PAGE 928

COVENANTS

ROCKY BIG LAKE SUBDIVISION

Located in Government Lots 1,2,3, and 4 and the Southwest One-Quarter of the Northeast One-Quarter of Section 21, Township 17 North, Range 3 West, Seward Meridian, Alaska; the Plat of said ROCKY BIG LAKE SUBDIVISION of which is filed in the Office of the Recorder for the Palmer Recording District as Plat No. 79-313, Serial No. 79-3220 of said Records, which said Plat takes reference to these covenants.

1. A minimum residential lot shall accomodate only one detached single family residence, plus buildings accessory to the residential use.

2. No structure shall be placed nearer than twenty-five feet from the right-of-way line of any public right-of-way.

3. No structure shall be placed nearer than ten feet from any side lot line or rear lot line.

4. Structures shall not be closer than seventy-five feet from the normal high water mark of a water course or body of water in a shoreland.

5. No part of a subsurface sewage disposal system shall be closer than one hundred feet from any body of water or watercourse.

6. MULTI-RESIDENTIAL:
Any lot within this subdivision may be used for multi-residential purposes providing all Federal, State and Borough laws, regulations, and requirements can be complied with, and providing it is in accordance with the covenants and restrictions set aside for this subdivision.

7. COMMERCIAL:
Lots 1, 3, and 4 of Block 1; Lots 1 and 2 of Block 2; Lots 1, 2, 3, 4, and 5 of Block 3; Lots 1, 8, and 9 of Block 4 are herein designated as commercial property.

8. No lot shall be used as a garbage dump, sanitary fill or junkyard.

9. No lot designated as commercial shall be used as a trailer court.

10. No activity which is noxious or offensive shall be permitted nor shall anything be done thereon which may be unsightly, or become an annoyance or nuisance to the neighborhood.

11. No development will be allowed on any lot which would affect the eco-system of ROCKY LAKE.

12. Invalidation of any of these covenants by judgement or court action shall in no way affect any of the other provisions which shall remain in full force and effect.

BOOK 186 PAGE 929

page 2-COVENANTS- ROCKY BIG LAKE SUBDIVISION

13. Enforcement shall be by proceedings at law or in equity against any person or persons violating or attempting to violate any covenant, either to restrain violation or recover damages.

Ann V. Farr

David B. Farr

NOTARY'S ACKNOWLEDGEMENT:

SUBSCRIBED AND SWORN BEFORE ME THIS 14th DAY OF March, 1979.

Joan Campbell
Notary for Alaska

April 4 1979
My Commission Expires

NOTARY PUBLIC STATE OF ALASKA JOAN CAMPBELL

79-003221-7

RECORDED ~~FILED~~
~~IN REC. DIST.~~
DISTRICT

MAR 14 3 21 PM '79

REQUESTED BY ~~MATANUSKA~~ - SUSITNA BOROUGH

ADDRESS _____ BOX B
PALMER, ALASKA 99645

46603

ALASKA RIM ENGINEERING, INC.
ENGINEERS – PLANNERS – SURVEYORS
9742 E. Frontage Road
Palmer, Alaska 99645
Telephone (907) 745-0222
Fax (907) 746-0222
Online at: www.alaskarim.com

RECEIVED
APR 30 2014
PLATTING

April 30, 2014

Mr. Paul Hulbert
Matanuska Susitna Borough
Platting Department
350 E. Dahlia
Palmer, AK 99645

RE: Rocky Lake # 2 – Rosalie Court

Subject: Final Road Sign off

Dear Mr. Hulbert,

You have requested confirmation that the Rosalie Court has been built to Subdivision Construction Manuel Standards. Enclosed are the inspection report summaries and record drawing we provided ADOT&PF.

If you have any questions or wish to discuss this matter further, please contact me.

Sincerely,
ALASKA RIM ENGINEERING, Inc.

Charles A. Leet, P.E.
Principle Engineer

cc: AK Rim File # 04-01102

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INSPECTION REPORT

Date Request for Final Inspection received:

Subdivision Name: Rocky Lake #2

Road Building Contractor: Mike Zipay

Comments: Drainage, Slope & Traffic Marking Remain

	YES	NO	NA
Engineer's Report Received (from): _____	☐	☐	☐

ROAD SURFACE:

Road centered in right-of-way	☒	☐	☐
Width in Compliance with Code	☒	☐	☐
Traveled Way & Shoulders Compacted to 95% of Max Density	☐	☐	☐
3% Crown	☒	☐	☐

ROAD MATERIAL:

Top 24" NFS Material (Comments on last page)	☑	☐	☐
Top 6" is 3" minus gravel material.....	☐	☐	☒
Binder material exists in Top 6" & meet requirements	☐	☐	☒

Comments: Top A" consist of 2"D-1 gravel and 2"A.C pavement.

DITCHES:

Foreslopes (3:1 or Flatter for 1st 7.5 feet then 2:1) (some areas need work)	☒	☐	☐
Backslopes (2:1 or Flatter)	☐	☒	☐

All brush, trees, stumps and oversize rocks (over 6") have been removed from the right of way:

	YES	NO	NA
Foreslopes	☒	☐	☐
Ditch Bottom	☒	☐	☐
Backslopes	☒	☐	☐

Comments: No ADA on bike path (indicators)

Drainage Ditches constructed out side of R.O.W.	☐	☒	☐
Drainage Ditches not constructed, but need to be constructed, outside of R.O.W.	☐	☐	☐

If Yes, Location(s) and Dimensions:(Normally 20' x Length to day light)

_____

_____

Drainage Easements needed to maintain MSB control over ..... location where water will be draining outside of R.O.W. (examples; swale or man-made ditch)	☐	☒	☐
Cross Culverts in good condition	☐	☐	☒

DRIVEWAYS:

Curve returns constructed	☒	☐	☐
Driveway Width is 20 feet or less	☐	☒	☐
12 inch CMP installed where needed	☐	☒	☐

Number of driveways found (Show approx Location on Plat): 1

Comments: Commercial driveway >20'

CURVE RETURNS:

	YES	NO	NA
INTERSECTIONS			
30 foot radius or better exists	☐	☐	☒

PRIOR TO CUL-DE-SAC

50 foot radius or better exists	☒	☐	☐

CUL-DE-SAC:

Cul-de-sac is round and measures a diameter of	☒	☐	☐
Constructed Cul-de-sac is centered in the right-of-way	☒	☐	☐
3% Crown (High point at center of c-d-s)	☒	☐	☐
Maximum 4% uniform Grade through c-d-s, where c-d-s is on sideslope .	☐	☐	☒

Comments: Cul-de-sac 86'

"T" TURNAROUND:

"T" Turnaround Traveled Way constructed at 22' Shldr to Shldr	☐	☐	☒
Constructed "T" Turnaround is centered in R.O.W.	☐	☐	☒
3% Crown	☐	☐	☒
Curve returns constructed at 30 foot radius	☐	☐	☒
Constructed "T" Turnaround is centered in ROW	☐	☐	☒
3% Crown (High point at center of c-d-s)	☐	☐	☒

UTILITY EASEMENTS:

Utility Easements are cleared and grubbed:	☒	☐	☐

Comments: _____

PROPERTY CORNERS:

Front Property Corners Set and in Good Condition:	☐	☐	☒
Back Property Corners Set and in Good Condition:	☐	☐	☒

	YES	NO	NA
Stop Signs and Road Name Signs in place	☒	☐	☐

Comments: Stop signs yes; Road signs no

Approach onto existing paved road is paved & has 40' radius return curve and a good seal at existing pavement	☒	☐	☐

Comments :

Location of Organics & Stump Disposal Site: (If Verified)

Apparently off site or buried – not on site.

Location of Gravel Extraction Site or Import Source: (If Verified)

Not verified.

ENCROACHMENTS WITHIN UNCONSTRUCTED PORTIONS OF R.O.W.

Stumps, Logs and Organics	☐	☒	☐
Piled Gravel or Top Soil	☐	☒	☐
Excavated Pits	☐	☒	☐

Comments & Location(s):

Some existing terrain encroaches into R.O.W.

General Comments:

_____

_____

_____

Nov 17, 2008

Date

Alaska Rim Engineering, Inc.

Phone (907) 745-0222
Fax (907) 746-0222
akrim@rogershsa.com

P.O. Box 2749
Palmer, Alaska 99645

April 25, 2005

Ms Linda Hummel
State of Alaska
Department of Transportation and Public Facilities
PO Box 196900
4111 Aviation Avenue
Anchorage, AK 99519-6900

RE: Lot 2, Rocky Lake #2
Parcel 1, T17N, R2E, Sec.5

Subject: New Road Intersection Permit - revised drawings

Dear Ms. Hummel:

We have revised Dan Lucas New Road Intersection drawing and Lot 2, Rocky Lake #2 New Road Intersection drawing according to your comments by e-mail from 04.22.05. Revised drawings are attached.

If you have any question or wish to discuss this matter further, please contact me at 745-0222 or at Victoria@alaskarim.com

Sincerely,
Alaska Rim Engineering, Inc.

Victoria Preston

Cc: AK Rim File #04-01102
#03-00621

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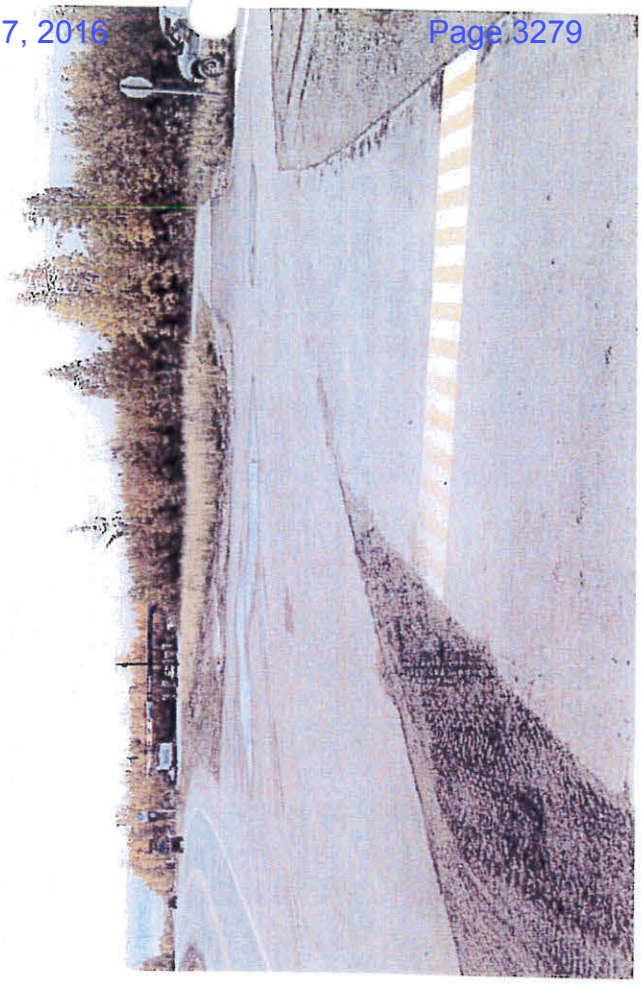

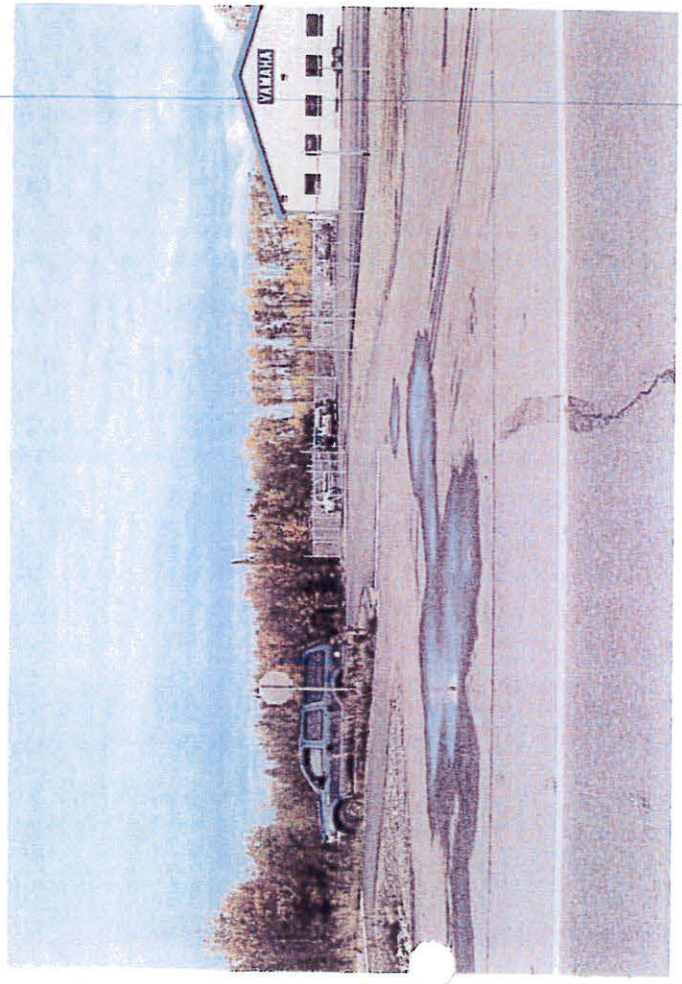
WATAVA

BIG LAKE
STOP

S ROSALIE CT
W BIG LAKE RD
STOP

MATANUSKA-SUSITNA BOROUGH
Planning and Land Use Department
Development Services Division
350 East Dahlia Avenue • Palmer, AK 99645
Phone (907) 861-7822 • Fax (907) 861-8158
www.matsugov.us

October 19, 2016

Sarah Oates
Alcoholic & Marijuana Control Office
~~5848 E. Tudor Road~~ 550 W. 7th Avenue, Suite 1600
~~Anchorage, AK 99507~~ Anchorage, AK 99501

SUBJECT: Matanuska-Susitna Borough Permit for Alcoholic Beverage Uses

The Matanuska-Susitna Borough, Planning Department, received an application for an Alcoholic Beverage Uses Permit from ***Nine OH Seven, Corporation to operate an alcohol beverage dispensary (bar) at the 907 Club.*** (See attached map)

Section 17.70.110 of the Borough Code requires that we determine if the applicant(s) or person(s) with an interest in the application had an interest in a liquor license which was suspended or revoked in the twelve months preceding the application.

We would appreciate receiving this information ten (10) days from receipt of this letter. This information will be provided to the Planning Commission for their review. Please fill in the information request and return this notice to the Matanuska-Susitna Borough, Planning Division, 350 E. Dahlia Avenue, Palmer, AK, 99645. Attach additional pages if required.

Sincerely,

Mk. Wh

Mark Whisenhunt, Planner II
Matanuska-Susitna Borough

ALCOHOLIC BEVERAGE CONTROL BOARD REVIEW

DATE: 10/19/2016 APPLICATION: #1034 DBA 907 Club

X NO COMMENT

___ COMMENTS: _____

SIGNATURE: Sar Sarah D. Oates POSITION Program Coordinator

Matanuska-Susitna Borough
Planning & Land Use Department
Development Services Division
350 East Dahlia Avenue
Palmer, Alaska 99645

FIRST CLASS MAIL

sv03220 162
907 CLUB
9/1/2016 4:54:10 PM

The Matanuska-Susitna Borough Planning Commission will consider the following:

Application: Conditional Use Permit for an alcohol beverage dispensary (bar)
MSB Code Section: MSB 17.70 - Regulation of Alcoholic Beverage Uses
Applicant: Nine Oh Seven, Corporation
Location: 2541 S. Rosalie Court (Tax ID# 5428000T00A); Township 17 North, Range 3 West, Section 21, Seward Meridian
Request: An application has been submitted for the construction and operation of an alcohol beverage dispensary (bar) at the 907 Club.

The MSB Planning Commission will conduct a public hearing concerning the proposed Conditional Use Permit (CUP) application on Monday, ***November 7, 2016***, at 6:00 p.m. in the Borough Assembly Chambers located at 350 E. Dahlia Avenue in Palmer. You are invited to attend.

The Planning Commission members may submit questions to the Planning Commission Clerk concerning the matter or request for more information from the applicant at the time of introduction. All questions and requests submitted by the Commission shall be in writing and copies will be provided to the applicant and made available to all interested parties and the public upon request. Answers to questions and additional material requests will be addressed in the staff report for the public hearing. Application material may be viewed online at www.matsugov.us by clicking on 'All Public Notices & Announcements'. Application material may also be reviewed in the Borough Permit Center. If you have any questions or would like to send us comments concerning the proposed action, this form may be used for your convenience by filling in the information below and mailing it to: MSB, Development Services Division, 350 E. Dahlia Avenue, Palmer, Alaska 99645. You may fax comments to 861-7876 or e-mail to mwhisenhunt@matsugov.us. For more information, please contact Mark Whisenhunt at 861-8527. Commission members may not receive or engage in ex-parte contact with the applicant, other interested parties in the application, or members of the public concerning the application or issues presented in the application. In order to be eligible to file an appeal from a decision of the Planning Commission, a person must be designated an interested party. See MSB 15.39.010 for definition of "Interested Party". The procedures governing appeals to the Board of Adjustment and Appeals are contained in MSB 15.39.010-250, which is available on the Borough internet home page: www.matsugov.us, in the Borough Clerk's office, and at various libraries within the borough.

Comments are due on or before to October 18, 2016 will be included in the Staff Report to the Planning Commission. **Please be advised that comments received from the public after that date will not be included in the staff report to the Planning Commission. If there is not enough room below, please attach this sheet to another piece of paper.**

Name: _____ ***Address:*** _____

Location/Legal Description of your property: _____

Comments: _____

_____

_____

_____

_____

_____

_____

Note: Vicinity Map Located on Reverse Side

VICINITY MAP

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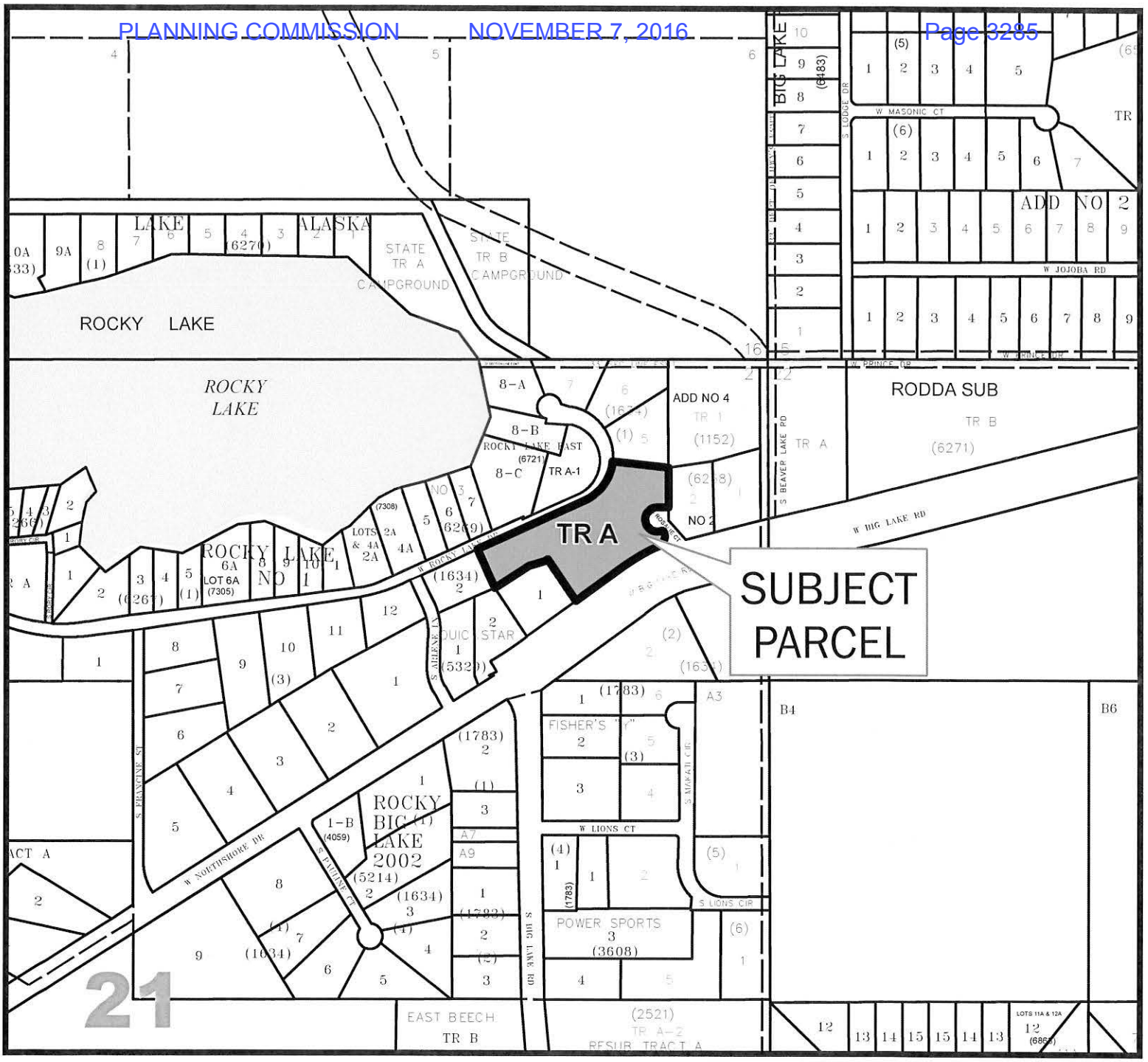

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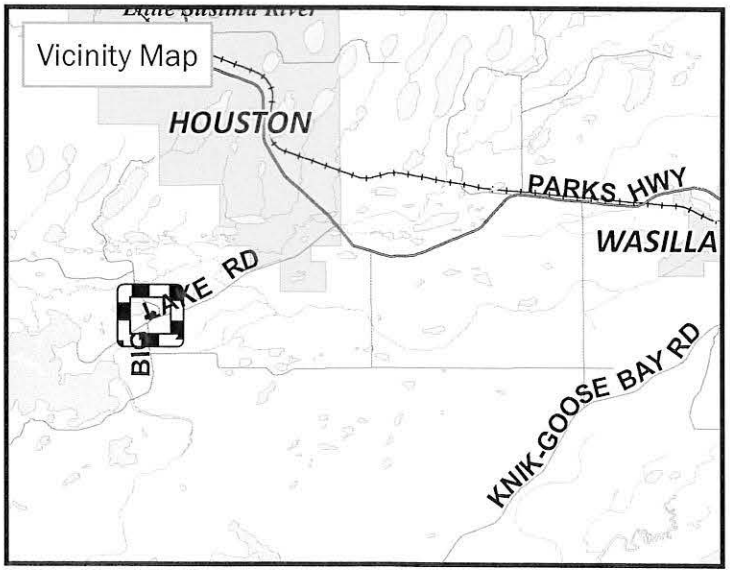

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N

MSB Information Technology/GIS
December 11, 2014

0 200 Feet

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This map is solely for informational purposes only. The Borough makes no representation or warranty with respect to the accuracy, function, or capabilities of the map or the suitability of this map for any particular purpose beyond those originally intended by the Borough. For information regarding the full disclaimer and policies related to acceptable uses of this map, please contact the Matanuska-Susitna Borough GIS Division at 907-861-7801.

907 Club Proposed Conditional Use

1 inch = 600 feet

0 600 1,200 Feet

N

Rocky Lake State Campground

907 Club

Rocky Lake

BEAVER LAKE

DAWSON

ROCKY

LOON NEST

ROCKY

RORY

ROCKY LAKE

ARLENE

FRANCINE

GENOA

N/A

PAULINE

NORTHSHORE

LODGE

MASONIC

SIMON

KNIGHTS

HENRY AARON

AIRIGIN

BIRCH LAKE

N/A

LOTUS

SHOTGUN

JOJOBA

PRINCE

BIG LAKE

MAPLEWOOD

KNOLLWOOD

CHERRYWOOD

LIONS

MAKATI

SUNRISE

KLUANE

KLUTINA

KLONDIKE

N/A

Legend

- 1/2 Mile Notice Area
- 2541 S. Rosalie Court
- Residential
- Commercial
- Industrial
- Public
- Agricultural
- Recreational

This map is solely for informational purposes only. The Borough makes no warranties, express or implied, as to the character, function, or capabilities of the map or the suitability of the map for any particular purpose beyond those originally intended by the Borough. For information regarding the full disclaimer and policies related to acceptable uses of this map, please contact the Matanuska-Susitna Borough GIS Division at 907-861-7801.

907 Club Proposed Conditional Use

1 inch = 300 feet

0 300 600 Feet

N

DAWSON

ROCKY

LOON NEST

BEAVER LAKE

LODGE

PRINCE

Rocky Lake State Campground

ROCKY

RORY

ROCKY LAKE

FRANCINE

ARLENE

NORTHSHORE

ROSALIE

BIG LAKE

907 Club Building & Parking Lot

LIONS

MAKATI

Legend

- 1/2 Mile Notice Area
- 2541 S. Rosalie Court
- Residential
- Commercial
- Industrial
- Public
- Agricultural
- Recreational

SITE PLAN

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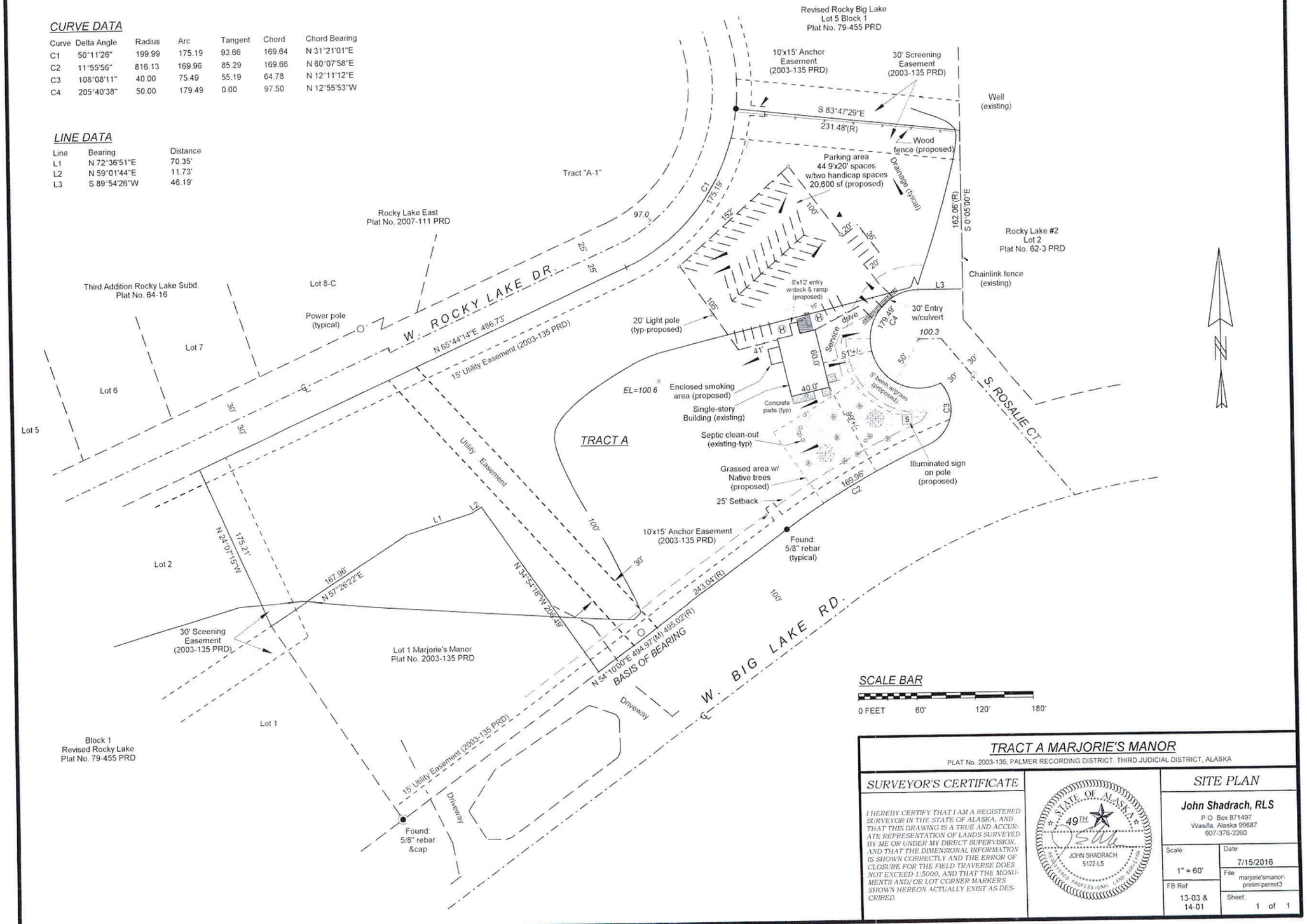
CURVE DATA
Curve Delta Angle Radius Arc Tangent Chord Chord Bearing
C1 50°11'26" 199.99 175.19 93.66 169.64 N 31°21'01"E
C2 11°55'56" 816.13 169.96 85.29 169.66 N 60°07'58"E
C3 108°08'11" 40.00 75.49 55.19 64.78 N 12°11'12"E
C4 205°40'38" 50.00 179.49 0.00 97.50 N 12°55'53"W
LINE DATA
Line Bearing Distance
L1 N 72°36'51"E 70.35'
L2 N 59°01'44"E 11.73'
L3 S 89°54'26"W 46.19'
Revised Rocky Big Lake
Lot 5 Block 1
Plat No. 79-455 PRD
10'x15' Anchor Easement (2003-135 PRD)
30' Screening Easement (2003-135 PRD)
Well (existing)
S 83°47'29"E
231.48'(R)
Wood fence (proposed)
Parking area
44 9'x20' spaces
w/two handicap spaces
20,600 sf (proposed)
Drainage (typ/cal)
Tract "A-1"
C1
175.19'
97.0
Rocky Lake East
Plat No. 2007-111 PRD
162.06'(R)
S 0°05'00"E
Rocky Lake #2
Lot 2
Plat No. 62-3 PRD
Chainlink fence (existing)
Third Addition Rocky Lake Subd.
Plat No. 64-16
Lot 8-C
W. ROCKY LAKE DR.
Power pole (typical)
N 65°44'14"E 486.73'
15' Utility Easement (2003-135 PRD)
20' Light pole (typ-proposed)
8'x12' entry w/deck & ramp (proposed)
30' Entry w/culvert
100.3
179.49'
C4
Service drive
60.0'
41'
51'+/-
50'
30'
S. ROSALIE CT.
Lot 7
Lot 6
Lot 5
30'
TRACT A
EL=100.6
Enclosed smoking area (proposed)
Single-story Building (existing)
40.0'
Concrete pads (typ)
5' berm w/grass (proposed)
Septic clean-out (existing-typ)
Grassed area w/ Native trees (proposed)
25' Setback
169.96'
C2
Illuminated sign on pole (proposed)
Utility Easement
100'
10'x15' Anchor Easement (2003-135 PRD)
Found: 5/8" rebar (typical)
L1
L2
175.21'
N 24°07'15"W
167.96'
N 57°26'22"E
N 34°54'18"W 209.49'
243.04'(R)
Lot 2
30' Sceening Easement (2003-135 PRD)
Lot 1 Marjorie's Manor
Plat No. 2003-135 PRD
N 54°10'00"E 494.97'(M) 495.02'(R)
BASIS OF BEARING
W. BIG LAKE RD.
Driveway
Lot 1
15' Utility Easement (2003-135 PRD)
Driveway
Found: 5/8" rebar &cap
Block 1
Revised Rocky Lake
Plat No. 79-455 PRD
SCALE BAR
0 FEET 60' 120' 180'
TRACT A MARJORIE'S MANOR
PLAT No. 2003-135, PALMER RECORDING DISTRICT, THIRD JUDICIAL DISTRICT, ALASKA
SURVEYOR'S CERTIFICATE
I HEREBY CERTIFY THAT I AM A REGISTERED SURVEYOR IN THE STATE OF ALASKA, AND THAT THIS DRAWING IS A TRUE AND ACCURATE REPRESENTATION OF LANDS SURVEYED BY ME OR UNDER MY DIRECT SUPERVISION, AND THAT THE DIMENSIONAL INFORMATION IS SHOWN CORRECTLY AND THE ERROR OF CLOSURE FOR THE FIELD TRAVERSE DOES NOT EXCEED 1:5000, AND THAT THE MONUMENTS AND/OR LOT CORNER MARKERS SHOWN HEREON ACTUALLY EXIST AS DESCRIBED.
STATE OF ALASKA
49TH
JOHN SHADRACH
5122-LS
REGISTERED PROFESSIONAL LAND SURVEYOR
SITE PLAN
John Shadrach, RLS
P.O. Box 871497
Wasilla, Alaska 99687
907-376-2260
Scale: 1" = 60'
Date: 7/15/2016
FB Ref: 13-03 & 14-01
File: marjorie'smanor\ prelim permit3
Sheet: 1 of 1

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APPLICATION MATERIAL

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Mark Whisenhunt

From: Jenna Lundy <jlsagesse@gmail.com>
Sent: Tuesday, October 25, 2016 12:58 PM
To: Mark Whisenhunt
Subject: RE: 907 Club CUP

Thank you for letting me know.

Have a good day today.

Jenna Lundy- Conner
Project Manager
Nine-OH-Seven Corp.
jlsagesse@gmail.com
Cell: (907) 203-7713

From: Mark Whisenhunt [mailto:Mark.Whisenhunt@matsugov.us]
Sent: Tuesday, October 25, 2016 12:28 PM
To: Jenna Lundy <jlsagesse@gmail.com>
Subject: RE: 907 Club CUP

Received. Thank you.

Respectfully,

Mark Whisenhunt
Planner II
Matanuska-Susitna Borough
Office: (907) 861-8527
Fax: (907) 861-7876
mark.whisenhunt@matsugov.us

From: Jenna Lundy [mailto:jlsagesse@gmail.com]
Sent: Tuesday, October 25, 2016 11:18 AM
To: Mark Whisenhunt
Subject: FW: 907 Club CUP
Importance: High

Good morning again,
Will you please let me know you receive this?

Thank you,

Jenna Lundy- Conner
Project Manager
Nine-OH-Seven Corp.
jlsagesse@gmail.com
Cell: (907) 203-7713

From: Jenna Lundy [mailto:jlsagesse@gmail.com]
Sent: Tuesday, October 25, 2016 11:17 AM
To: 'Mark Whisenhunt' <Mark.Whisenhunt@matsugov.us>
Subject: 907 Club CUP
Importance: High

Good morning Mark,
Please the attached document we discussed last week.

I apologize for the delay. I only received word last night that I have permission to submit.

Thank you,

Jenna Lundy- Conner
Project Manager
Nine-OH-Seven Corp.
jlsagesse@gmail.com
Cell: (907) 203-7713

Date: October 21, 2016

TO: Mark Whisenhunt, MSB Planner

FROM: Robert M. Button, Nine-OH-Seven Corp.

RE: Nine-OH-Seven Corp. Conditional Use Application

Matanuska - Susitna Borough
Development Services
OCT 25 2016
Received

Project: The Nine-OH Seven Corp. proposes to open a restaurant/bar at 2541 S. Rosalie Court. A Conditional Use Permit application has been submitted to the Matanuska-Susitna Borough Planning Commission.

Concern: The residents of the adjoining Rocky Lake neighborhood have voiced concerns regarding the 907 Club.

Resolution: The Rocky Lake residents and Mr. Button have agreed to the following terms:

1. No access to Rocky Lake Drive from Marjorie's Manor, Tract A.
2. Establish and maintain a vegetative screening buffer on an 8' earthen berm surrounding the parking lot. The buffered berm shall be hydro seeded with natural wild grass mix.
3. No outside band stand, outdoor concerts or amplified audio performances.
4. Meet the dark sky lighting standards. All lighting shall be downcast with half lens luminaries on the building and parking lot to limit illuminations to adjoining properties. No flashing Lights to distract drivers or create a nuisance.

Plans to Comply:

1. *No access to Rocky Lake Drive from Marjorie's Manor, Tract A.*
   A. An earthen berm has been constructed along the property line which borders Rocky Lake Drive. The berm has a variance of eight to 12 feet. The earthen berm will discourage foot traffic from accessing the Rocky Lake neighborhood. The berm's construction makes it unlikely that vehicles will access Rocky Lake Drive from the 907 Club Parking Lot.
   B. Per MSB requirements, letters of non-objection regarding utility right-of-way from relevant utilities are required. MTA and MEA have been contacted and requests for these letters have been submitted. Due to the time constraints presented by MTA and MEA, an extension to comply for letters of non-objection is requested with a compliance date of August 1, 2017.

C. Per MSB requirements, and amended site plan is required which accurately portrays the constructed berm. Due to the time constraints presented by the current construction season and the surveyor's schedules, a compliance extension is requested with a compliance date of August 1, 2017.

2. *Establish and maintain a vegetative screening buffer on an 8' earthen berm surrounding the parking lot. The buffered berm shall be hydro seeded with natural wild grass mix.*
   A. As discussed with members of the Rocky Lake neighborhood, it is late in the construction season to be planting vegetation or hydro seeding. The project therefore requests this condition compliance be extended to August 1, 2017 to comply with landscaping the berm.
3. *No outside band stand, outdoor concerts or amplified audio performances.*
   A. Per the CUP application, outside noise will be kept at a minimum: The actual building construction has been designed to prevent excess noise from emanating from the building. There are no plans for a band stand or outdoor concerts.
   B. The building will be constructed with 2x6 walls with three inches of foam insulation and fiberglass insulation. This in itself will decrease the noise level significantly. In addition, an Acoustica Barrier (DB-3, Model # DB348X96BX) will be used in the walls and ceiling. This material has an NRC (Noise Reduction Coefficient) rating of .75. Which essentially means that 75% of the noise that hits the material will be defected. This material will be installed between the foam insulation and the sheetrock. The building will be sided with two inch "log" siding. The layers of said walls will be: two-inch log siding, Tyvec wrapping, ½" CDX sheeting, three inches of sprayed high density foam, 2 1/2 inches of fiberglass insulation, Acoustica Barrier, and ¾ inch sheetrock. In addition, the ceiling will have the aforementioned as well as dropped ceiling panels. The total NRC rating is .90, this calculates to exterior decibels of 12, directly outside of the building. Normal speaking registers at roughly 50 decibels. All walls and ceiling will be constructed in the manner described above to virtually eliminate any sounds coming from the building.
   C. The windows will be tripled paned, High E Argon, with an NRC rating of .68. The highest window rating on the market.
   D. The main entrance door will face East, to allow for any noise pollution which may occur with the opening and closing of doors.
   E. These construction methods and planned building practices have been designed to mitigate and address any noise concerns the residents of Big Lake may have regarding noise pollution.

4. *Meet the dark sky lighting standards. All lighting shall be downcast with half lens luminaries on the building and parking lot to limit illuminations to*

adjoining properties. No flashing Lights to distract drivers or create a nuisance.

Per the CUP application, outdoor lighting will be will be kept at a minimum:

A. The signage will be located between the building and Big Lake Road. The building itself will if not block completely, will deflect any glare that may travel through the existing foliage/trees that border Rocky Lake Drive. In addition, the sign will be Alaskana in design. The sign will picture a map of our great State of Alaska painted with the Aurora Borealis. The words 907 Club will be written over the Aurora Borealis. The back ground color will be night sky blues. The sign will be backlit. The night sky blue background will deflect any glare that would result if say the background was a light color or white. The sign will have a border of blue lights similar to blue rope lighting The and presentation will be reflective of the aesthetics of a "log cabin" and therefore will not be garish.

B. The lighting in respect to exterior lighting will as required follow required lighting expectations for a commercial building of this type. The plans indicate four parking lot lamps. The parking lot lamps will be at each side of the West and East sides of the parking lot. The lamps will be LED bulbs and will reflect downward. The light poles will be approximately 24 feet tall. If looking from the Rocky Lake Road area, there will be zero glare due to side shields as well as existing natural foliage/trees that are presently in the road easement. Building codes requires that the building be lit sufficiently to accommodate Federal ADA (Americans with Disabilities Act) laws. The lighting fixtures on the side of the building will be flush mount within the soffit of the building and spaced every 20 feet around the perimeter of the building. These will reflect down upon the building and pathways and will not have any glare associated with them for residents within the Rocky Lake area or the traffic along Big Lake Road. The entrance will also be lit according to Federal ADA guidelines, but as mentioned above, will deflect to the actual building and pathway.

Project Contact: Jenna Lundy
jlsagesse@gmail.com
(907) 203-7713

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MATANUSKA-SUSITNA BOROUGH

Planning and Land Use Department
Development Services Division
350 East Dahlia Avenue • Palmer, AK 99645
Phone (907) 861-7822 • Fax (907) 861-7876
Email: permitcenter@matsugov.us

APPLICATION FOR A CONDITIONAL USE PERMIT
REGULATION OF ALCOHOLIC BEVERAGE USES – MSB 17.70

Carefully read instructions and applicable borough code. Fill out forms completely. Attach information as needed. Incomplete applications will not be processed.

RECEIVED
JUL 2 2 2016
PERMIT CENTER

Application fee must be attached:
__X__ **$1,000** for **Liquor Beverage Dispensary**
_____ **$1,000** for **Liquor Package Store**

*Prior to the public hearing, the applicant must also pay the mailing and advertising fees associated with the application. Applicants will be provided with a statement of advertising and mailing charges. Payment must be made **prior** to the application presentation before the Borough Planning Commission.*

Subject Property Township: 17N, Range: 03W, Section: 21, Meridian S
MSB Tax Account # 5428000T00A
SUBDIVISION: Marjorie's Manor Tract A BLOCK(S): _____, LOT(S): _____
STREET ADDRESS: 2541 S. Rosalie Court, Big Lake, Alaska 99652
(US Survey, Aliquot Part, Lat. /Long. etc) _____

Ownership A *written authorization by the owner must be attached for an agent or contact person, if the owner is using one for the application.* Is authorization attached? **x Yes o No o N/A**

Name of Property Owner
RMB, LLC, DBA: Nine OH Seven Corp, 907 Club
Address: P.O. Box 521115
Big Lake, Alaska 99652
Phne: Hm 892-7831 Fax 892-8165
Wk 892-8000 Cell 982-4365
E-mail suprmark@mtaonline.net

Name of Agent/ Contact for application
Jenna Lundy-Conner
Address: P.O. Box 521115
Big Lake, Alaska 99652
Phne: Hm _____ Fax _____
Wk 907-521-2768 Cell _____
E-mail jlsagesse@gmail.com

In order to grant a conditional use permit under MSB 17.70, the Planning Commission must find that each of the following requirements have been met. Explain the following in detail:	**Attached**
1. Is the conditional use compatible with and will it preserve or not materially detract from the value, character and integrity of the surrounding area?	Yes See Attached
2. Will the granting of the conditional use permit be harmful to the public health, safety, convenience and welfare?	No See Attached

3. Are sufficient setbacks, lot area, buffers and other safeguards being provided?	Yes, See attached
4. Is there any potential negative effect upon other properties in the area due to such factors as dust, noise, obtrusive advertising and glare?	No See Attached
5. Is there any potential negative effect on the safe, efficient flow of traffic on any highway, arterial, collector or street from which access to and from the establishment is obtained?	No See Attached
6. What measures are being proposed to reduce any negative effect upon adjacent and nearby properties by property line buffers and arterial buffers, planted berms, landscaping, reduction or elimination of obtrusive or garish signing or other features, lowered building elevation, clustering with other commercial establishments and use of frontage roads to reduce the number of entries and exits onto highways, arterials and collectors and where the surrounding area is predominantly residential in character, site and building design features that contribute to the residential character of the development?	See Attached
7. Are there adequate parking facilities to accommodate a reasonably expected increased demand for parking created by issuing the permit?	Yes See Attached
8. Will access to the premises create an unreasonable traffic hazard?	No, See Attached
9. Will a reasonably expected increase in traffic overtax the existing road system?	No See Attached
10. Is the use compatible with the character of the surrounding neighborhood?	Yes, See Attached
11. Is there or would the use tend to result in, a high crime rate or a high incidence of alcohol-related accidents in the area?	No See Attached
12. Does the applicant or a person with an interest in the application have an interest in a liquor license which was suspended or revoked in the 12 months preceding the application?	No See Attached
13. Has the applicant or person with an interest in the application demonstrated that the person is untrustworthy or unfit to conduct the operation of a licensed business, or is a potential source of harm to the public?	No See Attached

Supplemental Information – Explain in Detail	**Attached**
1. Maximum occupancy capacity of facility as determined by Fire Marshall	96
2. Number of employees proposed to work on largest work shift.	10
3. Number of regular parking spaced provided.	44
4. Number of handicapped parking spaces provided.	2
5. Is the use a sole occupant in a building or a tenant in a building?	Sole Occupant
6. Total square footage of space in building occupied by this use.	2687 S.F.
7. Hours of operation.	See Attached
8. Noise mitigation measures	See Attached

SITE PLAN – Attach a detailed, to scale, site plan clearly showing the following information:	**Attached**
1. Proposed and existing structure(s) on the site. Indicate which structure(s) will be used for the liquor use. Draw lot dimensions and indicate setback distance of structure(s) from the lot lines, rights-of-way, and waterbodies.	✓
2. Dimensions of all structures	✓
3. Interior floor plans (specific location of the use or uses to be made of the development)	✓
4. Signage – Existing and Proposed	✓
5. Location and dimensions for all access points to and from the site to public rights-of-way or public access easements.	✓
6. Proposed contouring	✓
7. Vegetation and any landscaping	✓
8. Buffering – Fences, trees, topography, or berms	✓
9. Drainage	✓
10. Vehicular and pedestrian circulation patterns	✓
11. Exterior site lighting	✓
12. Distance(s) to the nearest intersection in all directions from proposed permit site along roads adjacent to the site.	✓
13. Location and dimensions of parking areas to be provided	✓
14. Boundary protection	✓
15. Scale and north arrow.	✓

OWNER'S STATEMENT: I am owner of the following property:

MSB Tax parcel ID #(s) 5428000T00A and, I hereby apply for approval an alcoholic beverage use conditional use permit on that property as described in this application.

I understand all activity must be conducted in compliance with all applicable standards of MSB 17.70 and with all other applicable borough, state or federal laws.

I understand that other rules such as local, state and federal regulations, covenants, plat notes, and deed restrictions may be applicable and other permits or authorization may be required. I understand that the borough may also impose conditions and safeguards designed to protect the public's health, safety and welfare and ensure the compatibility of the use with other adjacent uses.

I understand that it is my responsibility to identify and comply with all applicable rules and conditions, covenants, plat notes, and deed restrictions, including changes that may occur in such requirements.

I understand that this permit and zoning status may transfer to subsequent owners of this land and that it is my responsibility to disclose the requirements of this status to the buyer when I sell the land.

I understand that changes from the approved conditional use permit may require further authorization by the Borough Planning Commission. I understand that failure to provide applicable documentation of compliance with approved requirements, or violation of such requirements will nullify legal status, and may result in penalties.

I grant permission for borough staff members to enter onto the property as needed to process this application and monitor compliance. Such access will at a minimum, be allowed when the activity is occurring and, with prior notice, at other times necessary to monitor compliance.

The information submitted in this application is accurate and complete to the best of my knowledge.

Robert M. Button — Robert M. Button — 07/21/2016

Signature: Property Owner — Printed Name — Date

Jenna Lundy-Conner — Jenna Lundy-Conner — 7/21/2016

Signature: Agent — Printed Name — Date

Conditional Use Permit Application

RMB, LLC, Nine OH Seven, Corp; DBA The 907 Club

Letter of Introduction

My name is Robert Mark Button and I am the petitioner for the Conditional Permit for the RMB, LLC, Nine OH Seven, Corp; DBA The 907 Club.

You will notice that this application does not have near the quantity of narrative that my Application from last attempt at getting a license approved and that was done intentionally, not maliciously, and I mean no disrespect. I am not certain what information you are requesting be it either narrative or additional information on some issue.

If you could send this to your departments, and they would like more information or narrative, about any issue, I would be more than happy to furnish you the information. If Borough Department Staff has questions, or require more information, please let me know specifically what they would like, because I am not sure. I will answer every question that I can, and give narrative to any questions posed.

I feel that in this way, I will know specifically what you require, can respond appropriately by giving you the specific information that you require. Rather than putting a lot of things down that may not be pertinent, and may be time consuming for all of us.

I want to tell you that I come to you with a legal, Alcoholic Beverage Dispensary License, and property and a building. The project building has been designed by a local architect and meets all codes.

As stated earlier, if a Borough Department Staff has questions, or requires more information, please let me know specifically what you would like. I am not sure of exactly what information you will need. I will answer every question that I can, and give narrative to any questions posed.

Under Alaska State Law, Title 4, it states that local governing bodies may impose restrictions, and/or conditions upon the license.

I am asking the Matanuska-Susitna Borough to tell me the conditions that I may legally operate the Alcoholic Beverage License.

I hope this letter demonstrates that I am ready to answer questions and comply with conditions that may be set upon this license/permit to appease my neighbors, the community, and the Borough and State.

I feel very confident that the area of Big Lake, and its fine residents and visitors will greatly appreciate the good food, and good service that our establishment plans on delivering.

Please do not hesitate to speak with either Jenna Lundy, my Assistant, or myself with any correspondence. I look forward to working with you and want this process to go smoothly for all of us, and would not want a repeat of last year. I will work with the local residents, the Borough and State and ensure that the issuance of this license will be a benefit to all of us!!!

Respectfully,

Robert Mark Button

Nine OH Seven, Corp

08/05/2016

RMB, LLC – DBA Nine OH Seven Corporation
P.O. Box 521115
Big Lake, Alaska 99652

Matanuska-Susitna Borough
Application for Conditional Use Permit

Narrative Responses for: Questions 1 thru 13;

1. Yes. The proposed development is compatible with the surrounding area and will preserve rather than detract from the value, character and integrity of the surrounding area.

   The proposed project will be within the core area as set forth in the Big Lake Comprehensive Plan, and will adhere to said plan, that allows for diverse and "mixed use" businesses. The site itself will be beautifully landscaped with a log sided "cabin look" structure and visually appealing. The proposed project is located in an area that is well known within the State of Alaska as being "Alaska's Playground". This proposed full service restaurant and bar will promote a family atmosphere offering a full menu.

   The proposed restaurant and bar will not only preserve the value, character and integrity of the Big Lake Gateway Corridor, but will also enhance it. The proposed business will cater to the public in a very basic way ~ to provide wholesome meals. There are very few dining options within the core area which provide wholesome meals. Those that do, have very limited hours. The proposed project will provide a much needed service by enhancing the dining options for not only the residents, but also our visitors.

   The proposed project will enhance the value and integrity of the surrounding area by providing needed services that all residents and visitors may use on a year-round basis

2. No. The proposed development will not be harmful to the public health, safety, convenience or welfare.

   First and foremost, the applicant has a proven history of operating businesses within the boundaries of the law. For over 20 years the applicant has operated a convenience store in the Big Lake core area. For the past five years, the applicant has operated a liquor package store within the core area of Big Lake. The State of Alaska laws are very specific to operating a liquor license of any type, which are enacted to protect the public health, safety and welfare of the public. The applicant has a proven track record of operating a law-abiding business.

RMB, LLC – DBA Nine OH Seven Corporation
P.O. Box 521115
Big Lake, Alaska 99652

RMB, LLC and Nine OH Seven, Corp takes the State of Alaska laws regarding the sale and distribution of liquor, under Alaska State Statutes, seriously. All of the employees of the proposed establishment will have the required TAP certification. In-House policies will ensure the laws are explicitly followed regarding the sale of liquor to minors as well as the sale of liquor to individuals who are intoxicated, not only by requiring the TAP certification, but providing In-House training and general expectations for employees and their responsibilities to the public welfare while serving alcohol. In House policies will reflect the concerns we all have regarding individuals driving under the influence. Explicit measures will be taken to ensure individuals who may be impaired do not leave the premises in their own vehicle, ATV, snow-machine or by walking. Alaska State law requires an establishment notify law enforcement in the event an impaired individual refuses to cooperate with these policies which are reflective of Alaska State Statutes.

3. Yes. The plan provides for sufficient setbacks, lot area, buffers and other safeguards. Please refer to the attached, relevant plans.

The setbacks for the actual structure exceed required setback guidelines. In addition, there will be an eight-foot fence which will border the property on the North-east side of the property and protect the public and property from the cut-through that is a utility easement between the said property and the Yamaha Shop.

4. No. The other properties in the surrounding area will not be negatively affected by dust, noise, obtrusive advertising or glare. Paved areas will prevent and control dust. Noise levels and signage will comply with Matanuska-Susitna Borough regulations. Glare from lighting will be at a minimum and will comply with all Matanuska-Susitna Borough, State of Alaska and Federal laws and regulations.

Dust: The artery that will be used to access the proposed project, which is Rosalie Court is paved. The parking lot for the proposed project will be paved as well. This will do a great service to the surrounding area by to a great degree eliminating, but keeping to a minimum, the dust that would arise if the road and/or parking lot were not paved. In addition, the areas not paved will be seeded and landscaped. The paving, landscaping and fence will contribute to the reduction of dust that presently comes from the area that has been traditionally used for the Big Lake Mud Volleyball event.

RMB, LLC – DBA Nine OH Seven Corporation
P.O. Box 521115
Big Lake, Alaska 99652

Noise Levels: The building will be constructed with 2x6 walls with three inches of foam insulation and fiberglass insulation. This in itself will decrease the noise level significantly. In addition, an Acoustica Barrier (DB-3, Model # DB348X96BX) will be used in the walls and ceiling. This material has an NRC (Noise Reduction Coefficient) rating of .75. Which essentially means that 75% of the noise that hits the material will be defected. This material will be installed between the foam insulation and the sheetrock. The building will be sided with two inch "log" siding. The layers of said walls will be: two-inch log siding, Tyvec wrapping, ½" CDX sheeting, three inches of sprayed high density foam, 2 1/2 inches of fiberglass insulation, Acoustica Barrier, and ¾ inch sheetrock. In addition, the ceiling will have the aforementioned as well as dropped ceiling panels. The total NRC rating is .90, this calculates to exterior decibels of 12, directly outside of the building. Normal speaking registers at roughly 50 decibels. All walls and ceiling will be constructed in the manner described above to virtually eliminate any sounds coming from the building.

The windows will be tripled paned, High E Argon, with an NRC rating of .68. The highest window rating on the market.

The main entrance door will face East, to allow for any noise pollution which may occur with the opening and closing of doors.

These construction methods and planned building practices have been designed to mitigate and address any noise concerns the residents of Big Lake may have regarding noise pollution.

Glare: The signage will be located between the building and Big Lake Road. The building itself will if not block completely, will deflect any glare that may travel through the existing foliage/trees that border Rocky Lake Drive. In addition, the sign will be Alaskana in design. The sign will picture a map of our great State of Alaska painted with the Aurora Borealis. The words 907 Club will be written over the Aurora Borealis. The back ground color will be night sky blues. The sign will be backlit. The night sky blue background will deflect any glare that would result if say the background was a light color or white. The sign will have a border of blue lights similar to blue rope lighting The and presentation will be reflective of the aesthetics of a "log cabin" and therefore will not be garish.

RMB, LLC – DBA Nine OH Seven Corporation
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The lighting in respect to exterior lighting will as required follow required lighting expectations for a commercial building of this type. The plans indicate four parking lot lamps. The parking lot lamps will be at each side of the West and East sides of the parking lot. The lamps will be LED bulbs and will reflect downward. The light poles will be approximately 24 feet tall. If looking from the Rocky Lake Road area, there will be zero glare due to side shields as well as existing natural foliage/trees that are presently in the road easement. Building codes requires that the building be lit sufficiently to accommodate Federal ADA (Americans with Disabilities Act) laws. The lighting fixtures on the side of the building will be flush mount within the soffit of the building and spaced every 20 feet around the perimeter of the building. These will reflect down upon the building and pathways and will not have any glare associated with them for residents within the Rocky Lake area or the traffic along Big Lake Road. The entrance will also be lit according to Federal ADA guidelines, but as mentioned above, will deflect to the actual building and pathway.

5. No. Safe and efficient flow of traffic will not be negatively impacted.

With the new roundabout road construction that is presently occurring in Big Lake, the roundabout creates a safer corner and will increase the safety level of access to and from Rosalie court. Cars will no longer be able to careen around the corner and proceed down Big Lake Road at a high rate of speed. Therefore, entrance to and exit from Rosalie Court will be much safer. In addition, Rosalie Court only has one access point as it has a cul-de-sac at the end. The driveway for the proposed project is located in the cul-de-sac area. In addition, the applicant has hopes that a street light will be placed at the junction of Big Lake Road and Rosalie Court. The need for this street light installation will be determined by the State of Alaska DOT and/or the Matanuska-Susitna Borough and is not within the direct control of the applicant.

6. To reduce any negative affect upon adjacent and nearby properties, the applicant proposes to follow all Matanuska-Susitna Borough, State of Alaska and Federal laws regarding all identifiers addressed within question number six. The proposed development's primary goal in aesthetics is to be compatible with the Big Lake surrounding area.

The proposed project will be within the core area as set forth in the Big Lake Comprehensive Plan, and will adhere to said plan, that allows for diverse and "mixed use" businesses

RMB, LLC – DBA Nine OH Seven Corporation
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As described above, the property will be bordered by an eight-foot fence. The building will be sided with beautiful "log cabin" siding and constructed to have a minimal noise impact. The property will be beautifully landscaped with plantings of grass, shrubbery and Canadian Red Maples. The sign will measure 10 feet by 16 feet. The bottom edge of the sign will be 16 feet from the ground. The signage will be Alaskana in design and presentation, as described above, and be reflective of the aesthetics of a "log cabin" and therefore will not be garish. The entry/exit is directly onto Rosalie Court which feeds from Big Lake Road as described in detail above. The surrounding area is within the Big Lake core and commercial by nature.

7. Yes. Adequate parking facilities are provided. The proposed project will follow all applicable Alaska State Building Codes, applicable Fire Marshall Codes and applicable tenants within the Federal Americans with Disabilities Act.

The Alaska State Fire Marshall and Building Codes have specific requirements for parking guidelines based on the building size and building use. The local architect has determined through a review of these requirements, this project requires 44 parking spaces, two of which will be handicapped accessible. In the event there is an increased demand for parking, the applicant will have enough available and useable land to accommodate the needs for increased parking.

8. No. Access to the proposed project will not create an unreasonable traffic hazard.

As described above, with the new roundabout road construction that is presently occurring in Big Lake, the roundabout creates a safer corner and will increase the safety level of access to and from Rosalie court. Cars will no longer be able to careen around the corner and proceed down Big Lake Road at a high rate of speed. Therefore, entrance to and exit from Rosalie Court will be much safer. In addition, Rosalie Court only has one access point as it has a cul-de-sac at the end. The driveway for the proposed project is located in the cul-de-sac area. In addition, the applicant has hopes that that a street light will be placed at the junction of Big Lake Road and Rosalie Court. The need for this street light installation will be

RMB, LLC – DBA Nine OH Seven Corporation
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determined by the State of Alaska DOT and/or the Matanuska-Susitna Borough and is not within the direct control of the applicant.

9. No. A reasonable increase in traffic will not overtax the existing road system.

The new roundabout has been designed with an eye-to-the future and an expectation of increased traffic along the Big Lake Gateway Corridor. Rosalie Court is located on a straight stretch of road between the new roundabout and the Parks Highway. The existing traffic consists of residents and visitors. The proposed project has the ultimate goal of serving existing residents and the visitors that have traditionally made their way to Big Lake. Therefore, it is not expected that there will not be an influx of patrons who will drive to Big Lake *only* for the purpose of visiting the new establishment which would overtax the existing road system. In addition, the other access to Big Lake from Wasilla is Hollywood Road. Individuals who presently come to Big Lake for other purposes use Hollywood Road as well as Big Lake Road. If a patron accesses Big Lake from Hollywood Road will necessarily pass through the new roundabout to access Rosalie Court.

10. Yes. The proposed project use is compatible with the surrounding area because it adheres to the Big Lake Comprehensive Plan, which states that the proposed site is within the "Big Lake Gateway Corridor". This plan allows for a diverse and mixed set of business. The proposed project will promote a family atmosphere, full-service restaurant and provide services to the community members as well as the plethora of visitors Big Lake receives each year. In addition, the site will be aesthetically beautiful and will be an asset to visitors entering the Big Lake Gateway Corridor.

11. No. First and foremost, the applicant has a proven history of operating businesses within the boundaries of the law. For the past five years, the applicant has operated a liquor package store within the core area of Big Lake. The State of Alaska laws are very specific to operating a liquor license of any type, which are enacted to not only protect the public health, safety and welfare of the public, but to decrease any crime that would result from alcohol abuse and alcohol related accidents. The applicant has a proven track record of operating a law-abiding business.

RMB, LLC – DBA Nine OH Seven Corporation
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Big Lake, Alaska 99652

RMB, LLC and Nine OH Seven, Corp, seriously regards the State of Alaska laws regarding the sale and distribution of liquor, under Alaska State Statutes. All of the employees of the proposed establishment will have the required TAP certification. In House policies will ensure the laws are explicitly followed regarding the sale of liquor to minors as well as the sale of liquor to individuals who are intoxicated, not only by requiring the TAP certification, but providing In-House training and general expectations for employees and their responsibilities to the public welfare while serving alcohol. In-House policies will reflect the concerns we all have regarding individuals driving under the influence and other crime related issues that could arise. Explicit measures will be taken to ensure individuals who may be impaired do not leave the premises in their own vehicle, ATV, snow-machine or by walking. Alaska State law requires an establishment notify law enforcement in the event an impaired individual refuses to cooperate with these policies which are reflective of Alaska State Statutes.

Summary: The proposed project will operate fully under Alaska State laws regarding the service of food and alcohol. All patrons who attempt to purchase alcohol will be carded. In addition, all employees will hold TAP certification to ensure knowledge of the law and ensure practical application of the law.

12. No. The applicant does not have a history of liquor license violation. The applicant in fact has a long history of liquor license compliance and has operated successfully without a single suspension or revocation within the last twelve months.

13. No. The applicant has been a contributing member of the Big Lake community for more than 20 years. During this time, the applicant has fully demonstrated competence in business practice. The day-to-day operations of his existing businesses have always reflected safe and courteous service to the community members of Big Lake *and* the Settler's Bay area of the greater Knik-Goosebay community.

In addition, the State of Alaska requires fingerprint cards to be submitted along with a liquor license application. In the event the applicant is found criminally unworthy of holding said license, the State of Alaska will not issue said license to the applicant.

RMB, LLC – DBA Nine OH Seven Corporation
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Big Lake, Alaska 99652

Supplemental Information Questions 1 thru 8

1. Maximum Capacity: 96

2. Number of Employees proposed on larges shift: 10

3. Number of regular parking spaces: 44

4. Number of handicapped parking spaces provided: 2

5. The sole occupant of the building will be the applicant.

6. Total Square feet: 2687 S.F.

7. Hours of Operation:

Restaurant/Food Service
Sunday through Saturday: 6:00 a.m. – 12:00 a.m.
Liquor Service
Sunday through Saturday: 10:00 a.m. – 2:00 a.m.

8. Noise Mitigation Issues
Noise levels will comply with applicable Matanuska-Susitna Borough and State of Alaska noise compliance codes.

The building will be constructed with 2x6 walls with three inches of foam insulation and fiberglass insulation. This in itself will decrease the noise level significantly. In addition, an Acoustica Barrier (DB-3, Model # DB348X96BX) will be used in the walls and ceiling. This material has an NRC (Noise Reduction Coefficient) rating of .75. Which essentially means that 75% of the noise that hits the material will be defected. This material will be installed between the foam insulation and the sheetrock. The building will be sided with two inch "log" siding. The layers of said walls will be: two-inch log siding, Tyvec wrapping, ½" CDX sheeting, three inches of sprayed high density foam, 2 1/2 inches of fiberglass insulation, Acoustica Barrier, and ¾ inch sheetrock. In addition, the ceiling will have the aforementioned and dropped ceiling panels. The total NRC rating is .90, this calculates to exterior decibels of 12, directly outside of the building. Normal speaking registers at roughly 50 decibels. All walls and ceiling will be constructed in the manner described above to virtually eliminate any sounds coming from the building.

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The windows will be tripled paned, High E Argon, with an NRC rating of .68, the highest window rating on the market.

The main entrance door will face East, to allow for any noise pollution which may occur with the opening and closing of doors.

These construction methods and practice have been designed to mitigate and address any noise concerns the residents of Big Lake may have regarding noise pollution.

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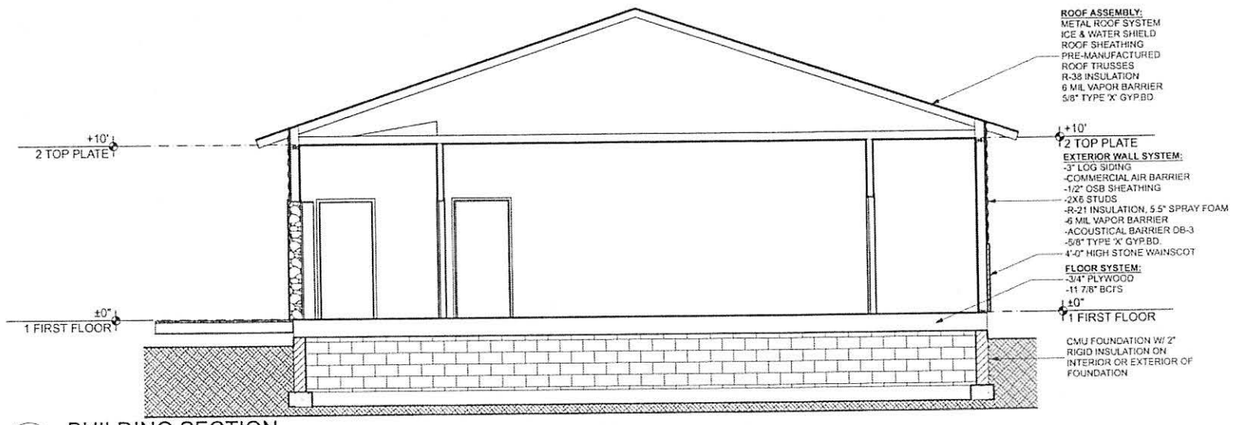

1 BUILDING SECTION
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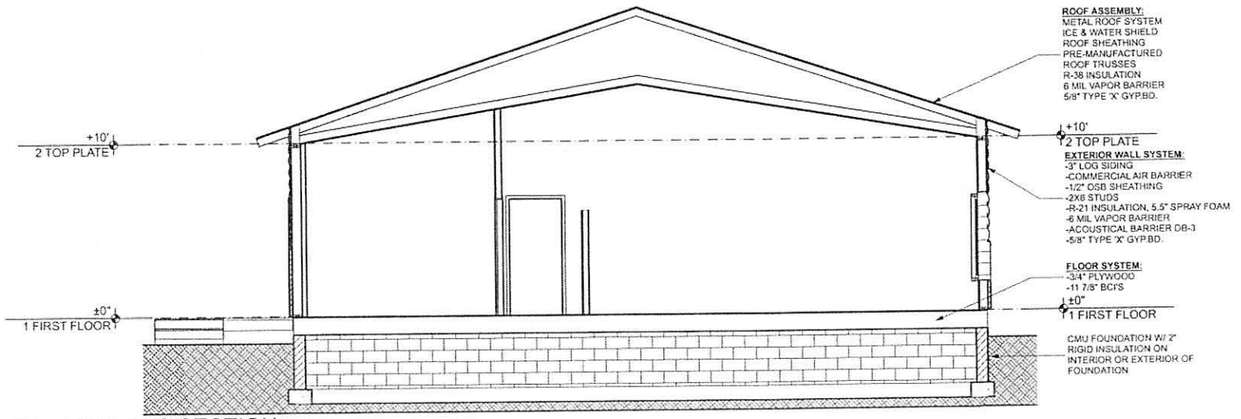

2 BUILDING SECTION
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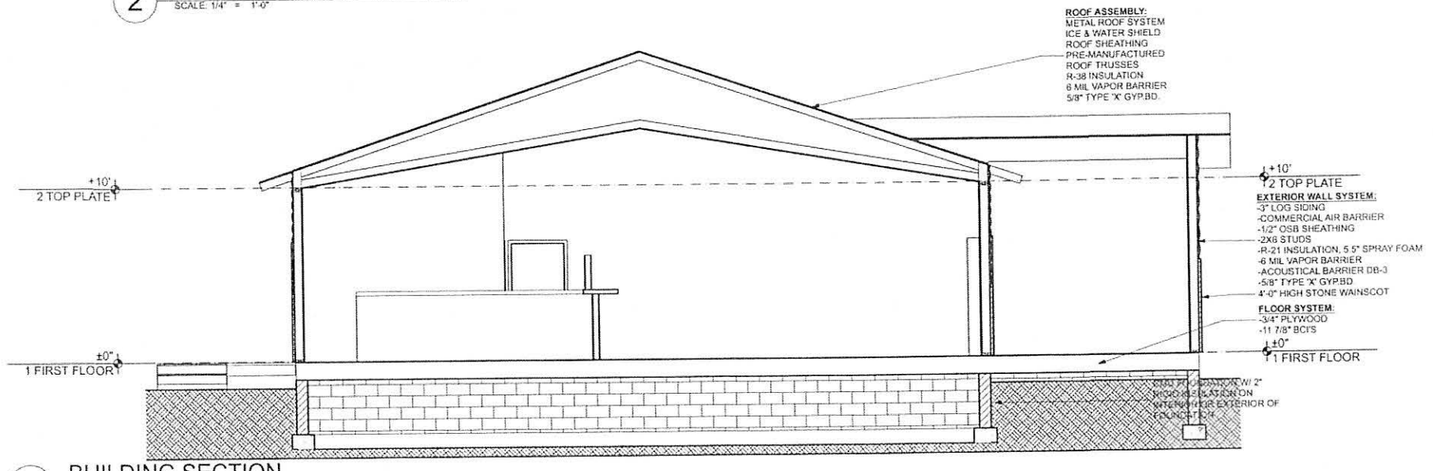

3 BUILDING SECTION
SCALE: 1/4" = 1'-0"

McMILLEN DESIGNS
COMMERCIAL & RESIDENTIAL ARCHITECTURE
5099 E. BLUE LUPINE DR. SUITE 116
WASILLA, ALASKA 99654
PHONE: 907.376.5795 FAX: 907.376.5765
Email: Brian@McMillenDesigns.com www.McMillenDesigns.com
AMD ARCHITECTURE

STATE OF ALASKA 49TH BRIAN KELLEN MCMILLEN No. 12234 REGISTERED ARCHITECT

907 CLUB
MARK BUTTON
BIG LAKE, ALASKA
Tel 907.892.8000

BY	REVISIONS	DATE

Date:	7/13/16
Scale:	AS NOTED
Drawn:	
Job:	
Sheet	

A.05

Plotted On 7/13/16

BUILDING SECTIONS

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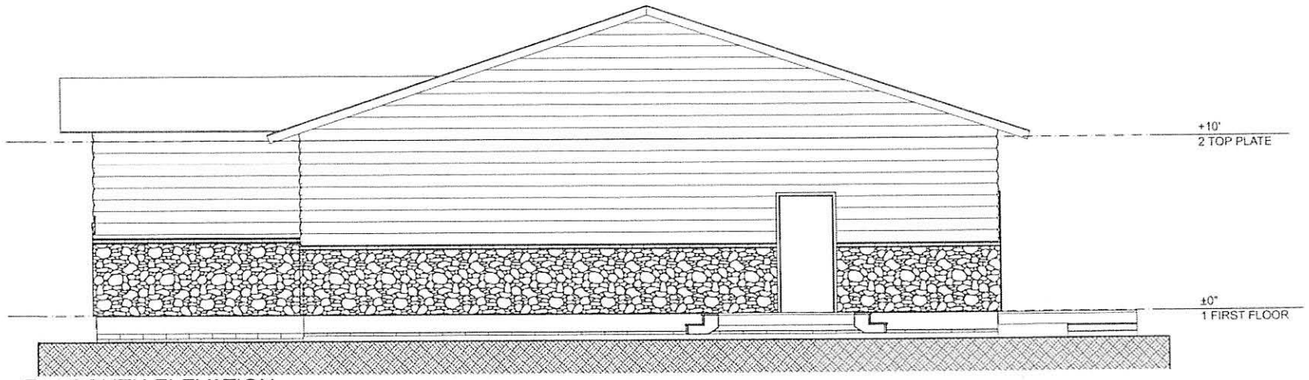


1 SOUTH ELEVATION
SCALE: 1/4" = 1'-0"

NEW WINDOW SCHEDULE

MARK	SIZE		TYPE	NOTES
	WIDTH	HEIGHT		
101	8'-0"	5'-0"		
102	8'-0"	5'-0"		

NEW DOOR AND FRAME SCHEDULE

MARK	SIZE		MATL	GLZ	FRAME		FIRE RATING	HDWR	NOTES
	W	HT			MATL	GLZ			
101	3'-0"	6'-8"	IHM		IHM				
102	3'-0"	6'-8"	IHM		IHM				
103	3'-0"	6'-8"	IHM		IHM				
104	3'-0"	6'-8"	WD		HM				
105	3'-0"	6'-8"	WD		HM				
106	3'-0"	6'-8"	FG		HM				
107	3'-0"	6'-8"	HM		HM				
108	3'-0"	6'-8"	HM		HM				
109	5'-0"	6'-8"	IHM		IHM				
110	3'-0"	6'-8"	IHM		IHM				
111	2'-6"	6'-8"	IHM		IHM				
112	2'-6"	6'-8"	IHM		IHM				
113	3'-0"	6'-8"	IHM		IHM				

ROOM FINISH SCHEDULE

RM #	ROOM NAME	FLOOR	BASEBOARD	WALL	CEILING	REMARKS
101	SEATING	F3	B2	W1	C1	---
102	MENS	F2	B1	W1	C1	---
103	WOMENS	F2	B1	W1	C1	---
104	MECH	F1	B1	W1	C1	---
105	KITCHEN	F2	B1	W1	C1	---
106	KEGS	F2	B1	W1	C1	---
107	STORAGE	F2	B1	W1	C1	---
108	COOLER	F1	B1	W1	C1	---
109	FREEZER	F1	B1	W1	C1	---
110	BAR	F3	B2	W1	C1	---
111	ENTRY	F2	B1	W1	C1	---
112	SMOKE ROOM	F2	B1	W1	C1	---

FINISH MATERIAL LEGEND:

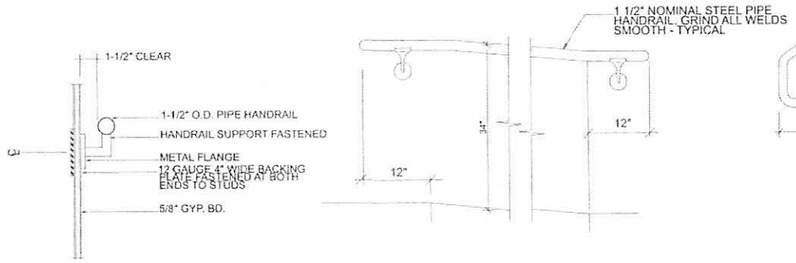
FLOOR:
- F1. VINYL
- F2. TILE
- F3. CUSTOM MOSAIC & LIMESTONE

BASE:
- B1 4" RUBBER BASE
- B2 MILLED WOOD PROFILE

WALLS:
- WL1 5/8" TYPE 'X', SEMI-GLOSS

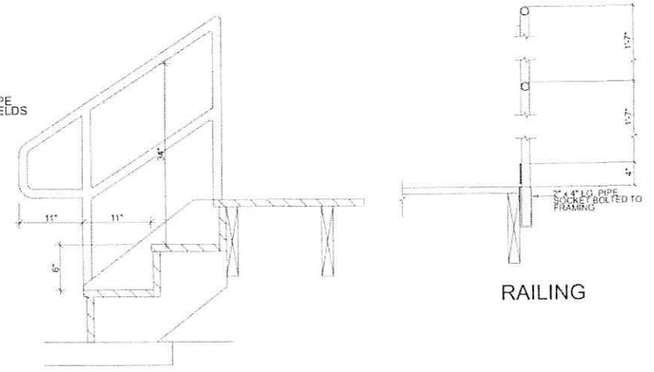
CEILING:
- C1 5/8" TYPE 'X', SEMI-GLOSS

DOOR / WINDOW:
- HM HOLLOW METAL
- IHM INSULATED HOLLOW METAL
- ALUM ALUMINUM
- VN VINYL
- WD WOOD



STAIR HANDRAIL- SECTION

HANDRAIL DETAIL



Stair Section At Deck

RAILING

5 STAIR & RAMP DETAILS
SCALE: 1" = 1'-0"

McMILLEN DESIGNS
COMMERCIAL & RESIDENTIAL ARCHITECTURE
5099 E. BLUE LUPINE DR. suite 110
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PHONE: 907.376.5755 FAX: 907.376.5765
Email: Brian@McMillenDesigns.com www.McMillenDesigns.com
MD ARCHITECTURE

STATE OF ALASKA 49TH BRIAN MCLEAN MCMILLEN NO. 12184 REGISTERED ARCHITECT

907 CLUB
MARK BUTTON
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BY	REVISIONS	DATE

Date:	7/13/16
Scale:	AS NOTED
Drawn	
Job:	
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A.04

Plotted On: 7/13/16

BUILDING ELEVATIONS & SCHEDULES

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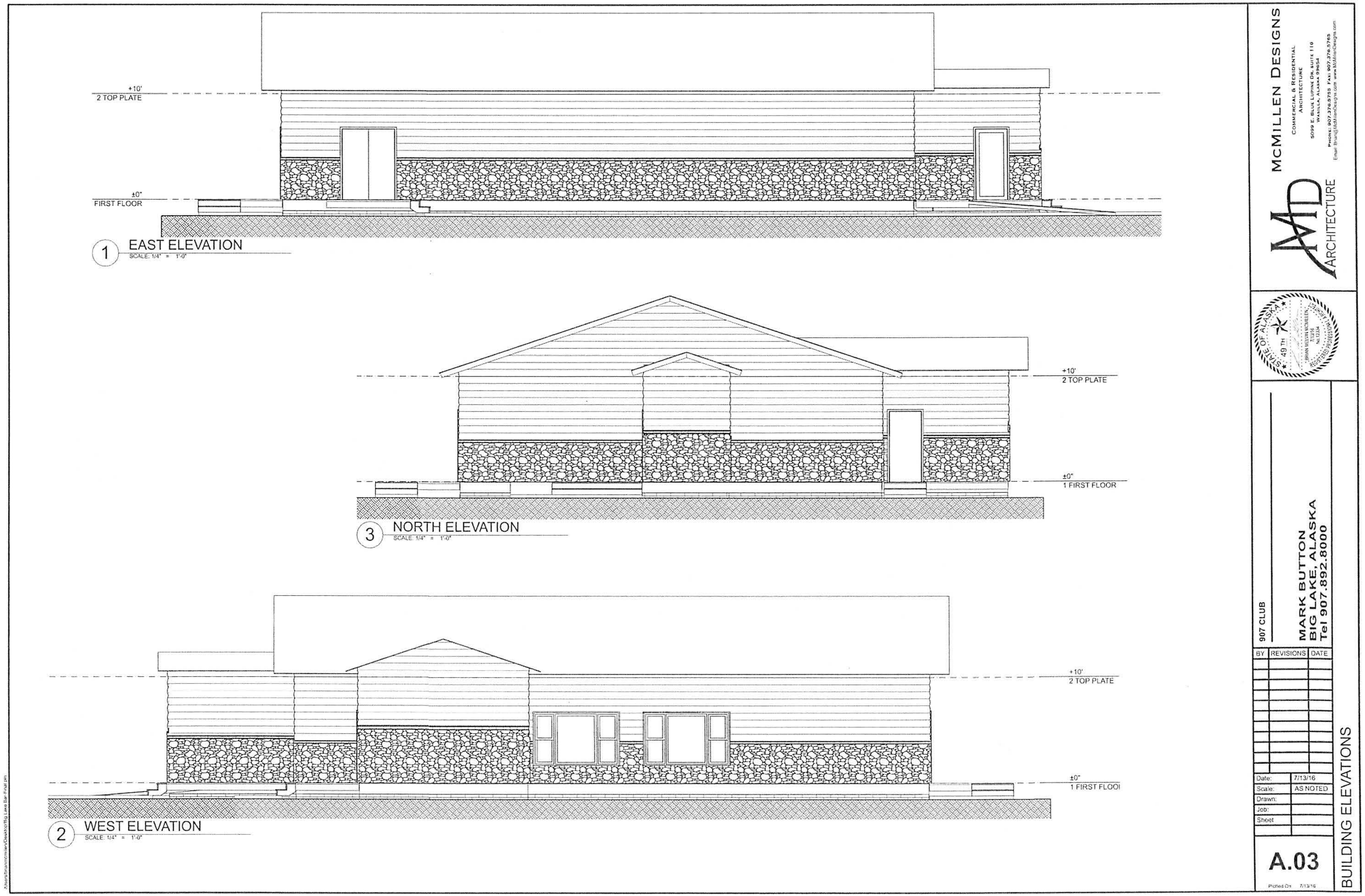
+10'
2 TOP PLATE
±0"
FIRST FLOOR
1 EAST ELEVATION
SCALE: 1/4" = 1'-0"
+10'
2 TOP PLATE
±0"
1 FIRST FLOOR
3 NORTH ELEVATION
SCALE: 1/4" = 1'-0"
+10'
2 TOP PLATE
±0"
1 FIRST FLOOR
2 WEST ELEVATION
SCALE: 1/4" = 1'-0"
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MD ARCHITECTURE
STATE OF ALASKA
49TH
BRIAN MELVIN MCMILLEN
No.12334
REGISTERED PROFESSIONAL ARCHITECT
907 CLUB
MARK BUTTON
BIG LAKE, ALASKA
Tel 907.892.8000
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REVISIONS
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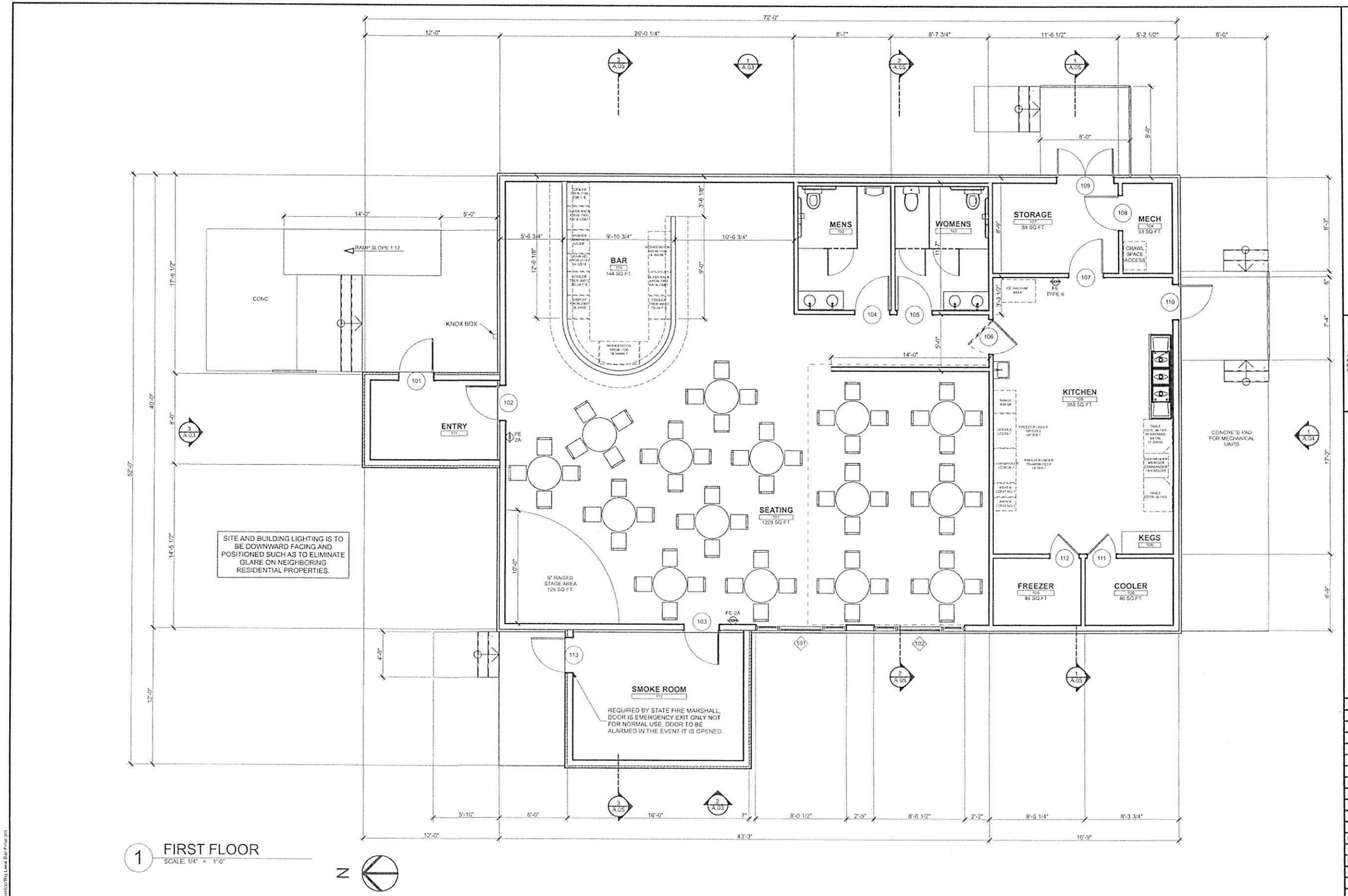
BUILDING ELEVATIONS



1 FIRST FLOOR
SCALE: 1/4" = 1'-0"

N

McMILLEN DESIGNS
COMMERCIAL & RESIDENTIAL ARCHITECTURE
5099 E. BLUE LUPINE DR. SUITE 116
WASILLA, ALASKA 99654
PHONE: (907.376.5755 FAX: (907.376.5765
Email: Brian@McMillenDesigns.com www.McMillenDesigns.com

MD ARCHITECTURE

STATE OF ALASKA 49 TH BRIAN MELVIN MCMILLEN No 12304

907 CLUB

MARK BUTTON
BIG LAKE, ALASKA
Tel 907.892.8000

BY	REVISIONS	DATE

Date:	7/13/16
Scale:	AS NOTED
Drawn:	
Job:	
Sheet	

A.02

Plotted On: 7/13/16

FLOOR PLANS

907 CLUB

ABBREVIATIONS

&	AND
∠	ANGLE
□	SQUARE
℄	CENTERLINE
Ø	DIAMETER
⅊	PLATE / PROPERTY LINE
A.B.	ANCHOR BOLT
A.B.C.	AGGREGATE BASE COURSE
A.C.	AIR CONDITIONING
ACOUS.	ACOUSTICAL
A.C. PAVING	ASPHALTIC CONCRETE PAVING
ADJ.	ADJUSTABLE
A.F.F.	ABOVE FINISH FLOOR
AGGR.	AGGREGATE
ALUM.	ALUMINUM
ALT.	ALTERNATE
APPROX.	APPROXIMATE
ARCH.	ARCHITECTURAL
ASPH.	ASPHALT
BD.	BOARD
BLDG.	BUILDING
BLK.	BLOCK
BLKG.	BLOCKING
BM.	BEAM
B.O.	BOTTOM OF
BOT.	BOTTOM
B.U.	BUILT-UP
CAB.	CABINET
C.B.	CORNER BEAD
C.T.	CERAMIC TILE
CHAN. (C)	CHANNEL
C.I.	CAST IRON
C.I.P.	CAST IN PLACE
C.J.	CONSTRUCTION / CONTROL JOINT
CLG.	CEILING
CLO.	CLOSET
CLR.	CLEAR
C.M.U.	CONCRETE MASONRY UNIT
CNTRSNK.	COUNTERSINK
CNTR. TOP	COUNTER TOP
C.O.	CLEAN OUT
COL.	COLUMN
CONC.	CONCRETE
CONN.	CONNECTION
CONSTR.	CONSTRUCTION
CONT.	CONTINUOUS
CONTR.	CONTRACTOR
CORR.	CORRIDOR
CTR.	CENTER
C.W.	COLD WATER
DBL.	DOUBLE
DEPT.	DEPARTMENT
D.F.	DRAINAGE FLOW
DIA.	DIAMETER
DIM.	DIMENSION
DISP.	DISPENSER
DN.	DOWN
DNSPT.	DOWNSPOUT
D.O.	DOOR OPENING
DR.	DOOR
DTL.	DETAIL
DWG.	DRAWING
DWR.	DRAWER
E.	EAST
EA.	EACH
E.J.	EXPANSION JOINT
ELEC.	ELECTRICAL
ELEC. PAN.	ELECTRICAL PANELBOARD
ELEV.	ELEVATION, ELEVATOR
EMER.	EMERGENCY
ENCL.	ENCLOSURE
EQ.	EQUAL
EQUIP.	EQUIPMENT
E.W.C.	ELECTRIC WATER COOLER
EXIST.	EXISTING
EXP.	EXPANSION
EXT.	EXTERIOR
F.D.	FLOOR DRAIN
FDN.	FOUNDATION
FBRGL.	FIBERGLASS
F.E.	FIRE EXTINGUISHER
F.E.C.	FIRE EXT-GUISHER CAB.
FFE.	FINISH FLOOR ELEVATION
F.G.	FINISH GRADE
F.H.C.	FIRE HOSE CABINET
FIN.	FINISH
FIXT.	FIXTURE
FLASH'G	FLASHING
FLR.	FLOOR
FLUOR.	FLUORESCENT
FPRF.	FIREPROOF
FRMG.	FRAMING
FT.	FOOT OR FEET
FTG.	FOOTING
FURN.	FURNITURE
FURR.	FURRING
GA.	GAUGE
GALV.	GALVANIZED
GL.	GRAB BAR
G.L.BM.	GLASS
GR.	GLU-LAM BEAM
GRND.	GRADE
GWB.	GYPSUM WALL BOARD
GYP. BD.	GYPSUM BOARD.
H.B.	HOSE BIBB
H.C.	HOLLOW CORE
HCP.	HANDICAP
CDWD.	HARDWOOD
HDWR.	HARDWARE
H.M.	HOLLOW METAL
HORZ.	HORIZONTAL
HT.	HEIGHT
HW.	HOT WATER
I.D.	INSIDE DIAMETER
INSUL.	INSULATION
INT.	INTERIOR
INV.	INVERT
JAN.	JANITOR
JT.	JOINT
KIT.	KITCHEN
LAM.	LAMINATE
LAV.	LAVATORY
L.F.	LINEAT FOOT
LT.	LIGHT
MAX.	MAXIMUM
M.B.	MACHINCE BOLT/ MODIFIED BITUMINOUS
MECH.	MECHANICAL
MED CAB.	MEDICINE CABINET
MEMB.	MEMBRANE
MTL.	METAL
MFR.	MANUFACTURER
MIR.	MIRROR
MISC.	MISCELLANEOUS
M.O.	MASONRY OPENING
M.R.	MOISTURE RESISTANT
MTD.	MOUNTED
MUL.	MULLION
N.	NORTH
N.I.C.	NOT IN CONTRACT
NO. OR #	NUMBER
N.T.S.	NOT TO SCALE
O.A.	OVERALL
O.C.	ON CENTER
O.D.	OUTSIDE DIAMETER
O.F.C.I.	OWNER FURNISHED/CONTRACTOR INSTALLED
OFF.	OFFICE
OPNG.	OPENING
OPP.	OPPOSITE
PNLG.	PANELING
PAR.	PARAPET
PART'N.	PARTITION
PBWL.	PAPER BACKED WIRE LATH
PL.	PLATE OR PROPERTY LINE
PLAM.	PLASTIC LAMINATE
PLAS.	PLASTER
PR.	PAIR
P.V.C.	POLYVINYL CHLORIDE
PWD.	PLYWOOD
Q.T.	QUARRY TILE
R.	RADIUS/RISER
R.A.	RETURN AIR
R.D.	ROOF DRAIN
REDWD.	REDWOOD
REF.	REFERENCE
REFRIG.	REFRIGERATOR
REINF.	REINFORCED
REQ'D.	REQUIRED
RESIL.	RESILIENT
RM.	ROOM
R.O.	ROUGH OPENING
ROOF'G.	ROOFING
R.W.C.	RAIN WATER CONDUCTOR
R.W.L.	RAIN WATER LEADER
S.	SOUTH
S.A.	SUPPLY AIR
S.C.	SOLID CORE
SCHED.	SCHEDULE
SECT.	SECTION
S.F.	SQUARE FEET
SH.	SHELF
SHR.	SHOWER
SHT.	SHEET
SIM.	SIMILAR
SPEC.	SPECIFICATION
SQ.	SQUARE
S.S.	STAINLESS STEEL
STD.	STANDARD
STL.	STEEL
STOR.	STORAGE
STRUCT.	STRUCTURAL
SUSP.	SUSPENDED
SYM.	SYMMETRICAL
T.	TREAD
TEL.	TELEPHONE
T & G	TONGUE AND GROOVE
THK.	THICK
T.O.	TOP OF
T.O.C.	TOP OF CURB
T.O.W.	TOP OF WALL
T.S.	TUBE STEEL
T.T.B.	TELEPHONE TERMINAL BOARD
TYP.	TYPICAL
U.N.O.	UNLESS NOTED OTHERWISE
UR.	URINAL
V.C.T.	VYNIL COMPOSITION TILE
VERT.	VERTICAL
VTR.	VENT-THRU ROOF
W.	WEST
W & W/O	WITH AND WITHOUT
W.C.	WATER CLOSET
WD.	WOOD
WDW.	WINDOW
WP.	WEATHERPROOF
WR.	WATER RESISTANT
W.S.	WEEP SCREEN
WT.	WEIGHT

GENERAL NOTES

1. ALL WORK IS TO COMPLY WITH THE LATEST ADOPTED VERSION OF THE INTERNATIONAL BUILDING CODE AND ANY APPLICABLE STATE, LOCAL CODE REQUIREMENTS.

2. CONTRACTOR SHALL REMOVE PROMPTLY AND LEGALLY ALL ACCUMULATED DEBRIS, PROTECT ALL EXPOSED PORTIONS OF WORK FROM ELEMENTS, AVOID OVERLOADING STRUCTURE, AND SECURELY STORE ALL ITEMS TO BE USED FOR CONSTRUCTION.

3. ANY EXISTING UTILITIES TO BE ABANDONED SHALL BE PROPERLY DISCONNECTED, PLUGGED OR CAPPED, AS REQUIRED BY CODE OR SOUND CONSTRUCTION PRACTICE.

4. THESE DRAWINGS ARE DIAGRAMMATIC AND SHALL NOT BE SCALED. ADDITIONAL DATA SHALL BE FROM THE ARCHITECT THROUGH WRITTEN CLARIFICATION ONLY. VERIFY ALL EXISTING CONDITIONS, ELEVATIONS, AND DIMENSIONS BEFORE PROCEEDING WITH ANY PORTION OF ANY WORK.

5. NO CHANGES, MODIFICATIONS OR DEVIATIONS SHALL BE MADE FROM THE DRAWINGS OR SPECIFICATIONS WITHOUT FIRST SECURING WRITTEN PERMISSION FROM THE ARCHITECT.

6. WHERE LACK OF INFORMATION, OR ANY DISCREPANCY SHOULD APPEAR IN THE DRAWINGS OR SPECIFICATIONS, REQUEST WRITTEN INTERPRETATION FROM THE ARCHITECT BEFORE PROCEEDING WITH THAT PORTION OF THE WORK.

7. ALL WORK AS OUTLINED IN THESE DOCUMENTS, SHALL STRICTLY CONFORM TO ALL APPLICABLE CODES AND ORDINANCES. THE EVENT OF A CONFLICT, THE MORE STRINGENT REQUIREMENT SHALL GOVERN AND BE MET.

8. THE CONTRACTOR SHALL PAY FOR ALL FEES, PERMITS, LICENSES, ETC., NECESSARY FOR PROPER COMPLETION OF THE WORK.

9. PROVIDE ADEQUATE CONCEALED BLOCKING AND ANCHORING FOR ALL CEILING AND WALL MOUNTED EQUIPMENT, HARDWARE AND ACCESSORIES.

10. WHEN A SYSTEM OR ASSEMBLY IS CALLED OUT FOR. ALL NECESSARY PARTS AND MATERIALS REQUIRED FOR A COMPLETE INSTALLATION/SYSTEM SHALL BE AND INSTALLED ACCORDING TO THE MANUFACTURERS INSTRUCTIONS.

11. UNLESS OTHERWISE NOTED, ELECTRICAL CONDUITS, PLUMBING LINES, ETC., SHALL BE RUN CONCEALED AND FRAMING SHALL BE ADEQUATE SIZE TO ACCOMPLISH RESULT WITHOUT CAUSING ANY CHANGES IN THE WALL PLANE.

12. COORDINATE WITH ALL TRADES THE LOCATIONS OF SLEEVES OR OTHER PRESET ACCESSORIES INVOLVING OTHER TRADES.

13. DISRUPTED EXISTING CONDITIONS i.e. LANDSCAPING, LIGHTING, IRRIGATION, PEDESTRIAN AND VEHICLE ACCESS SHOULD BE MINIMALLY REPLACED AT THE END OF CONSTRUCTION TO THE SAME CONDITIONS PRIOR TO CONSTRUCTION DISRUPTION.

14. DISRUPTED ELECTRICAL AND WATER LINES RE-ROUTED DURING PROJECT CONSTRUCTION ARE TO REMAIN IN CONTINUOUS SERVICE.

15. DIMENSIONS ARE SHOWN FROM FACE STUD TO FACE OF STUD AND EDGE OF ROUGH OPENING UNLESS NOTED OTHERWISE.

16. ALL EXISTING UTILITIES AND CITY SERVICES ARE TO BE MAINTAINED, KEPT IN SERVICE, AND PROTECTED AGAINST DAMAGE DURING CONSTRUCTION.

17. CONTRACTOR TO VERIFY LOCATION OF ALL EXISTING UNDERGROUND UTILITIES PRIOR TO EXCAVATION.

CODE STUDY

ALL CODES REFERENCED ARE TO BE USED AS AMENDED BY THE STATE OF ALASKA AND LOCAL JURISDICTION.

APPLICABLE CODES:
2009 INTERNATIONAL BUILDING CODE (IBC)
2009 INTERNATIONAL FIRE CODE (IFC)
2009 INTERNATIONAL MECHANICAL CODE (IMC)
2011 NATIONAL ELECTRIC CODE (NEC)

CHAPTER 3
USE AND OCCUPANCY CLASSIFICATION: A-2
THE BUILDING IS FOR A RESTAURANT/BAR

CHAPTER 5
GENERAL BUILDING HEIGHTS AND AREAS:
TABLE 503 (TYPE V-B AND OCCUPANCY A-2)

ALLOWABLE: A-2
BUILDING HEIGHT: 1 STORY
BUILDING AREA PER FLOOR: 6,000 SQ.FT.

ACTUAL:
MAIN BUILDING HEIGHT: 1 STORY
MAIN BUILDING AREA PER FLOOR: 2,687 SQ.FT.

CHAPTER 6
TYPES OF CONSTRUCTION: • CONSTRUCTION TYPE = V-B
•ANY MATERIAL PERMITTED BY THE BUILDING CODE.

CHAPTER 9
FIRE PROTECTION SYSTEMS:
903.2.4 GROUP A-2
AUTOMATIC SPRINKLER SYSTEM IS NOT REQUIRED, DUE TO EXCEPTIONS

906.1 PORTABLE FIRE EXTINGUISHERS:
SIZE & TYPE: 2A10BC
TO BE INSTALLED IN ALL LOCATIONS AS REQUIRED BY THE INTERNATIONAL FIRE CODE IFC 906. INSTALL EXTINGUISHERS 48" ABOVE FINISH FLOOR.

CHAPTER 10
MEANS OF EGRESS:
MAIN BUILDING OCCUPANT LOAD:

MECHANICAL:	33/300 =	0.11 (1)
STORAGE:	180/300 =	0.60 (1)
KITCHEN / BAR:	532/200 =	2.66 (3)
ASSEMBLY, UNCONCENTRATED:	1229/15 =	81.93 (82)
STAGE:	125/15=	8.33 (9)
TOTAL:		96

TABLE 1005.1 - EGRESS WIDTH PER OCCUPANT SERVED:
MAIN BUILDING:
DOORS: REQUIRED: 96 OCCUPANTS X 0.3" = 28.8"
PROVIDED: 4 - 36" DOORS = 144"

TABLE 1015.1 - NUMBER OF REQUIRED EXITS: TABLE 1015.1
EXITS: REQUIRED: 96 OCCUPANTS = 2 EXIT
PROVIDED: 4 EXITS

CHAPTER 11
ACCESSIBILITY:
BUILDING SHALL COMPLY WITH ADA AND ICC/ANSI A117.1

CHAPTER 12
INTERIOR ENVIRONMENT:
1203.1 - VENTILATION: BUILDING WILL HAVE NATURAL OR MECHANICAL VENTILATION.
1210.1 - FLOORS: TOILET AND BATHING ROOM FLOORS SHALL HAVE A SMOOTH, HARD, NONABSORBENT SURFACE THAT EXTENDS UP THE WALL AT LEAST 6".
1210.2 - WALLS: WALLS WITHIN 2 FEET OF PUBLIC WATER CLOSETS SHALL HAVE A SMOOTH, HARD, NONABSORBENT SURFACE TO A HEIGHT OF 4 FEET ABOVE THE FLOOR.

SHEET INDEX

PROJECT SHEET INDEX	
A.01	TITLE SHEET / GENERAL INFO
A.02	FLOOR PLANS
A.03	BUILDING ELEVATIONS
A.04	BUILDING ELEVATIONS & SCHEDULES
A.05	BUILDING SECTIONS

MCMILLEN DESIGNS
COMMERCIAL & RESIDENTIAL ARCHITECTURE
5099 E. BLUE LUPINE DR. SUITE 116
WASILLA, ALASKA 99654
PHONE: 907.376.5755 FAX: 907.376.5765
Email: Brian@McMillenDesigns.com www.McMillenDesigns.com
MD ARCHITECTURE

STATE OF ALASKA ★ 49TH ★ BRIAN MELVIN MCMILLEN 7/13/16 No.12334 REGISTERED PROFESSIONAL ARCHITECT

907 CLUB

MARK BUTTON
BIG LAKE, ALASKA
Tel 907.892.8000

BY	REVISIONS	DATE

Date:	7/13/16
Scale:	AS NOTED
Drawn:	
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Sheet	

A.01

Plotted On: 7/13/16

TITLE SHEET / GENERAL INFO

/Users/brianmcmillen/Desktop/Big Lake Bar-Final.pln

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COMMENTS

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Matanuska-Susitna Borough
Planning & Land Use Department
Development Services Division
350 East Dahlia Avenue
Palmer, Alaska 99645

US POSTAGE PITNEY BOWES
ZIP 99645 $ 000.46⁵
02 1W
0001399405 SEP 02 2016

FIRST CLASS MAIL

Matanuska - Susitna Borough
Development Services

SEP 13 2016

Received

56270B01L001 15
BILLINGSLEA B F TR TRE
PO BOX 76
SOLDOTNA, AK 99669-0076

Land value
7,600

The Matanuska-Susitna Borough Planning Commission will consider the following:

Application: Conditional Use Permit for an alcohol beverage dispensary (bar)
MSB Code Section: MSB 17.70 - Regulation of Alcoholic Beverage Uses
Applicant: Nine Oh Seven, Corporation
Location: 2541 S. Rosalie Court (Tax ID# 5428000T00A); Township 17 North, Range 3 West, Section 21, Seward Meridian
Request: An application has been submitted for the construction and operation of an alcohol beverage dispensary (bar) at the 907 Club.

The MSB Planning Commission will conduct a public hearing concerning the proposed Conditional Use Permit (CUP) application on Monday, ***November 7, 2016***, at 6:00 p.m. in the Borough Assembly Chambers located at 350 E. Dahlia Avenue in Palmer. You are invited to attend.

The Planning Commission members may submit questions to the Planning Commission Clerk concerning the matter or request for more information from the applicant at the time of introduction. All questions and requests submitted by the Commission shall be in writing and copies will be provided to the applicant and made available to all interested parties and the public upon request. Answers to questions and additional material requests will be addressed in the staff report for the public hearing. Application material may be viewed online at w.matsugov.us by clicking on 'All Public Notices & Announcements'. Application material may also be reviewed in the Borough Permit er. If you have any questions or would like to send us comments concerning the proposed action, this form may be used for your enience by filling in the information below and mailing it to: MSB, Development Services Division, 350 E. Dahlia Avenue, Palmer, Alaska 5. You may fax comments to 861-7876 or e-mail to mwhisenhunt@matsugov.us. For more information, please contact Mark Whisenhunt at -8527. Commission members may not receive or engage in ex-parte contact with the applicant, other interested parties in the application, or members of the public concerning the application or issues presented in the application. In order to be eligible to file an appeal from a decision of the Planning Commission, a person must be designated an interested party. See MSB 15.39.010 for definition of "Interested Party". The procedures governing appeals to the Board of Adjustment and Appeals are contained in MSB 15.39.010-250, which is available on the Borough internet home page: www.matsugov.us, in the Borough Clerk's office, and at various libraries within the borough.

Comments are due on or before to October 18, 2016 will be included in the Staff Report to the Planning Commission. **Please be advised that comments received from the public after that date will not be included in the staff report to the Planning Commission. If there is not enough room below, please attach this sheet to another piece of paper.**

Name: BF Billingslea ***Address:*** PO B 76 Soldotna, AK 99669
Location/Legal Description of your property: Lot 1 - right next to campground Lucky Lake
Comments:
Being next to the campground for the last 55 years we have had a lot of break ins, thefts and vandalism, as well as noise from rowdy parties. A bar this close to a quiet lake (- home town) for retirees & 2nd & 3rd generation cabin people as well as migratory birds, would add to the crime, noise & litter that disrupts the peace.

Note: Vicinity Map Located on Reverse Side

BF B

Matanuska-Susitna Borough
Planning & Land Use Department
Development Services Division
350 East Dahlia Avenue
Palmer, Alaska 99645

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ZIP 99645 $ 000.46⁵
02 1W
0001399405 SEP. 02. 2016

Matanuska - Susitna Borough
Development Services

FIRST CLASS MAIL

SEP 14 2016

Received

56268000L002 161
ZIPAY MICHAEL A & SHARLEE
PO BOX 521744
BIG LAKE, AK 99652-1744

The Matanuska-Susitna Borough Planning Commission will consider the following:

Application:	Conditional Use Permit for an alcohol beverage dispensary (bar)
MSB Code Section:	MSB 17.70 - Regulation of Alcoholic Beverage Uses
Applicant:	Nine Oh Seven, Corporation
Location:	2541 S. Rosalie Court (Tax ID# 54280001T00A); Township 17 North, Range 3 West, Section 21, Seward Meridian
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Comments are due on or before October 28, 2016 will be included in the Staff Report to the Planning Commission. **Please be advised that comments received from the public after that date will not be included in the staff report to the Planning Commission. If there is not enough room below, please attach this sheet to another piece of paper.**

Name: Michael & Sharlee Zipay *Address:* 2563 S. Rosalie Court, Big Lake, AK 99652

Location/Legal Description of your property: Rocky LK #2 Lot 2

Comments:

We are hopefull the Borough will not approve this application or Permit. Thank you. Sharlee S. Zipay

Note: Vicinity Map Located on Reverse Side

09/14/2016 11:17 House of Yamaha (FAX)907 892 1022 P.001/001

Matanuska-Susitna Borough
Planning & Land Use Department
Development Services Division
350 East Dahlia Avenue
Palmer, Alaska 99645

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02 1W
0001399405 SEP 02 2016

FIRST CLASS M

56266000L002 12
BEREAN SANDRA D
PO BOX 520526
BIG LAKE, AK 99652-0526

RECEIVED
SEP 20 2016
PERMIT CENTER

The Matanuska-Susitna Borough Planning Commission will consider the following:

Application:	Conditional Use Permit for an alcohol beverage dispensary (bar)
MSB Code Section:	MSB 17.70 - Regulation of Alcoholic Beverage Uses
Applicant:	Nine Oh Seven, Corporation
Location:	2541 S. Rosalie Court (Tax ID# 5428000T00A); Township 17 North, Range 3 West, Section 21, Seward Meridian
Request:	An application has been submitted for the construction and operation of an alcohol beverage dispensary (bar) at the 907 Club.

The MSB Planning Commission will conduct a public hearing concerning the proposed Conditional Use Permit (CUP) application on Monday, *November 7, 2016*, at 6:00 p.m. in the Borough Assembly Chambers located at 350 E. Dahlia Avenue in Palmer. You are invited to attend.

The Planning Commission members may submit questions to the Planning Commission Clerk concerning the matter or request for more information from the applicant at the time of introduction. All questions and requests submitted by the Commission shall be in writing and copies will be provided to the applicant and made available to all interested parties and the public upon request. Answers to questions and additional material requests will be addressed in the staff report for the public hearing. Application material may be viewed online at www.matsugov.us by clicking on 'All Public Notices & Announcements'. Application material may also be reviewed in the Borough Permit Center. If you have any questions or would like to send us comments concerning the proposed action, this form may be used for your convenience by filling in the information below and mailing it to: MSB, Development Services Division, 350 E. Dahlia Avenue, Palmer, Alaska 99645. You may fax comments to 861-7876 or e-mail to mwhisenhunt@matsugov.us. For more information, please contact Mark Whisenhunt at 861-8527. Commission members may not receive or engage in ex-parte contact with the applicant, other interested parties in the application, or members of the public concerning the application or issues presented in the application. In order to be eligible to file an appeal from a decision of the Planning Commission, a person must be designated an interested party. See MSB 15.39.010 for definition of "Interested Party". The procedures governing appeals to the Board of Adjustment and Appeals are contained in MSB 15.39.010-250, which is available on the Borough internet home page: www.matsugov.us, in the Borough Clerk's office, and at various libraries within the borough.

Comments are due on or before to October 18, 2016 will be included in the Staff Report to the Planning Commission. **Please be advised that comments received from the public after that date will not be included in the staff report to the Planning Commission. If there is not enough room below, please attach this sheet to another piece of paper.**

Name: SANDRA BEREAN *Address:* 2637 S. RORY CIRCLE

Location/Legal Description of your property: ROCKY LAKE LOT 2 BLOCK 2

Comments: I'M CONCERNED W/ THE ADDITIONAL NOISE & TRAFFIC THAT MAY SPILL OUT TO OUR SUBDIVISION RDS.. COME WINTER WILL WE HAVE SNOW MACHINERS USING ROCKY LAKE AS CUSTOMERS COME & GO FROM THE SPORTS BAR? I WOULD APPRECIATE THE NOISE ORDINANCES TO BE HONORED BY THE BUSINESS & PATRONS AS THEY COME & GO.

Note: Vicinity Map Located on Reverse Side

Conditions for Mark Button to submit as amendments to his 907 Club CUP application. Amendments shall be submitted to MSB Planning not later than October 18, 2016.

1. No access to Rocky Lake Dr. from Marjorie's Manor Tract A.

2. Establish and maintain a vegetative screening buffer based on the existing 8' high earth berm which we are fine with. The buffer shall also include a continuous row trees to defer noise, 4'-6' tall, spaced 8' apart. Buffer berm shall be hydro-seeded with natural wild grass mix.

3. No outside band stand, outdoor concerts or amplified audio performances.

4. Meet the Dark Sky lighting standards. All lighting shall be downcast with half lens luminaires on the building and parking lot to limit illuminations to adjoining properties. No flashing lights to distract drivers or create a nuisance to neighbors.

Mark Button — 10/14/2016
Mark Button — Date

Rocky Lake Residents Representative — 10-14-16
Rocky Lake Residents Representative — Date

Rocky Lake Residents Representative — 10/14/16
Rocky Lake Residents Representative — Date

Matanuska - Susitna Borough
Development Services

OCT 17 2016

Received

Oct. 13, 2016

To: The Planning Commission

From: Cindy Bettine

Matanuska - Susitna Borough
Development Services

OCT 17 2016

Received

Subject: 907 Club – a Night Club

Located: 2541 S. Big Lake, Alaska 99652

I am testifying tonight on a subject that will have a public hearing on Nov. 7, 2016. I will be traveling and cannot attend at that time. I am the nearest resident to the proposed 907 Club; a night club with an interior band stand.

The following are conditions I wish for the Planning Commission to add to the CUP

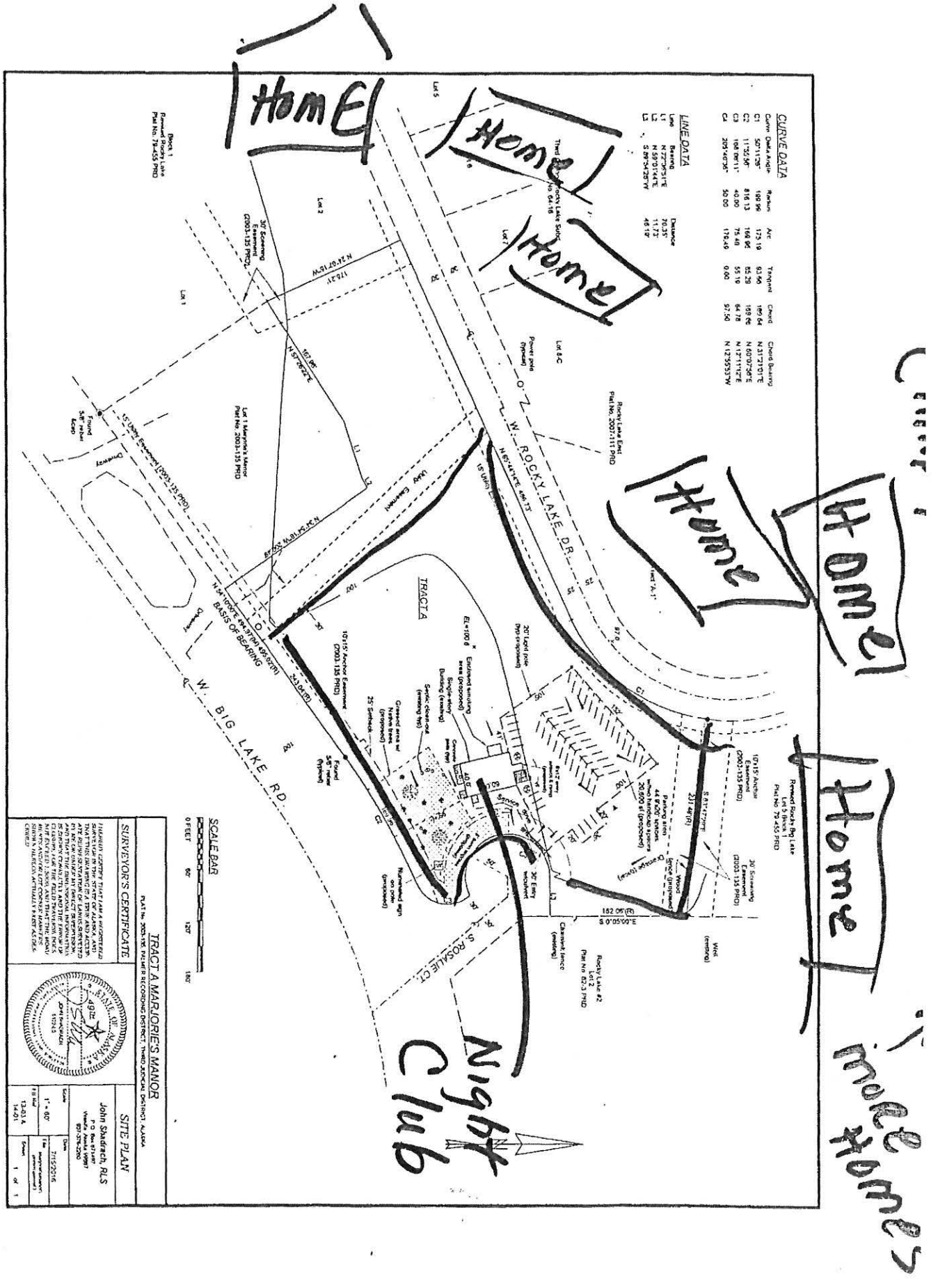
1. No access to Rocky Lake Dr. from Marjorie's Manor Tract A

2. Establish and maintain a vegetative screening buffer based on an 8' earthen berm surrounding the parking lot. The berm shall include a continuous row of conifer/evergreen tees 4 to 6 feet. Spaced 8 feet apart. The buffer berm shall be hydro-seeded with natural wild grass mix. Strictest of standards to prevent noise into a residential neighborhood.

3. No outside band stand, outdoor concerts or amplified audio performances.

4. Eliminate music/noise from windows during music and amplified audio performances.

5. Meet the Dark Sky lighting standards. All lighting shall be downcast with half lens luminaires on the building and parking lot to limit illuminations to adjoining properties. No flashing lights to distract drivers or create a nuisance to neighbors.


Home
Home
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Night Club
Mobile Homes
W. ROCKY LAKE DR.
W. BIG LAKE RD.
S. ROSALIE CT.
TRACT A
CURVE DATA
LINE DATA
SURVEYOR'S CERTIFICATE
SITE PLAN
TRACT A MARJORIE'S MANOR
SCALE BAR
John Shadrach, RLS
STATE OF ALASKA
JOHN SHADRACH
9492
7/15/2016

PLANNING COMMISSION NOVEMBER 7, 2016

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Mark Whisenhunt

From: Mark Whisenhunt
Sent: Wednesday, October 19, 2016 8:33 AM
To: 'Brian Nerland'
Subject: RE: Comments on Conditional Use Permit for Nine Oh Seven, Corporation

Received. Thank you.

Respectfully,

Mark Whisenhunt
Planner II
Matanuska-Susitna Borough
Office: (907) 861-8527
Fax: (907) 861-7876
mark.whisenhunt@matsugov.us

From: Brian Nerland [mailto:bnerland@gci.net]
Sent: Wednesday, October 19, 2016 8:20 AM
To: Mark Whisenhunt
Subject: Comments on Conditional Use Permit for Nine Oh Seven, Corporation

Dear Mr. Whisenhunt:

We are both residents of Big Lake and are deeply concerned about the proposed Nine Oh Seven Club conditional use permit. This is a Bar that is being characterized by the petioner as a Restaurant. The proposed hours are similar to a Bar (2 a.m. closing, etc.) versus restaurants in the area that close at 9 or 10 p.m. (at the latest).

Many of these concerns were expressed previously by us and others when this was last heard by the Planning Commission in January 2015 . The recent actions to alter the property further, without prior Mat-Su Borough approval, are just more examples of how the petitioner operates without regard for regulations and the public process. We oppose the conditional permit for the following reasons:

The Bar is incompatible with the adjacent long time residential and State campground area.

The proposed hours of the Bar are incompatible with the adjacent quiet neighborhood that will have to endure noise, lighting and perhaps crime that are associated with Bars.

The Bar will create increased safety issues for those using the bike trail for walking or biking (including children).

The Bar could attract those that want to drink beyond the legal limit and then walk to the State Campground to crash.

Sincerely,

Brian & Julie Nerland

Mark Whisenhunt

From: Mark Whisenhunt
Sent: Wednesday, October 19, 2016 7:45 AM
To: 'Gail Cartwright'
Subject: RE: 907 Club

Received. Thank you.

Respectfully,

Mark Whisenhunt
Planner II
Matanuska-Susitna Borough
Office: (907) 861-8527
Fax: (907) 861-7876
mark.whisenhunt@matsugov.us

-----Original Message-----
From: Gail Cartwright [mailto:gail.cartwright@yahoo.com]
Sent: Tuesday, October 18, 2016 8:59 PM
To: Mark Whisenhunt
Subject: 907 Club

Dear Mr. Whisenhunt,

I am extremely concerned about the proposed 907 Club. A nightclub in this location is not in congruence with this peaceful residential neighborhood. The noise associated with a drinking establishment alone would destroy the peace and quiet of the area.

I worked in bars for years, and I know firsthand the problems that arise when an establishment serves alcohol.

Late hours + music + alcohol =

Loud fights in the parking lot
Bright lights into the wee hours
Loud laughing and yelling as patrons go in and out of the establishment Increased criminal activity Loud music that sometimes carries for miles Customers loitering outside smoking cigarettes Drunken driving

We have had a residence on Rocky Lake for over 50 years in close proximity to the proposed 907 Club. These are not activities that belong within feet of a quiet, established family neighborhood.

Please deny this application.

Sincerely,
Gail Cartwright
Sent from my iPad

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Mark Whisenhunt

From: Mark Whisenhunt
Sent: Wednesday, October 19, 2016 7:46 AM
To: 'Rodda, John H.'
Subject: RE: Application for Conditional Use Permit - 907 Club, Big Lake, Alaska

Received. Thank you.

Respectfully,

Mark Whisenhunt
Planner II
Matanuska-Susitna Borough
Office: (907) 861-8527
Fax: (907) 861-7876
mark.whisenhunt@matsugov.us

From: Rodda, John H. [mailto:RoddaJH@ci.anchorage.ak.us]
Sent: Tuesday, October 18, 2016 4:27 PM
To: Mark Whisenhunt
Subject: Application for Conditional Use Permit - 907 Club, Big Lake, Alaska

Mark Whisenhunt
Planner II, Mat-Su Borough

Subject: Application for Conditional Use Permit, 907 Club, Big Lake, Alaska

Dear Mr. Whisenhunt,

This is the second application for a Conditional Use Permit for the 907 Club, proposed to be located on Marjories Manor Tract A, in Big Lake, Alaska. This application was not approved for the same reasons as I write to object yet again.

Under MSB 17.70.100 (A)(1)(a) this is not compatible with and will not preserve but will materially detract from the value, character, and integrity of the surrounding area, and under MSB 17.70.100 (A)(2)(g) is not compatible with the character of the surrounding neighborhood. At face value, the application appears to blend a restaurant with bar atmosphere. Reality is, the location is a night club which by its orientation on the lot faces Rocky Lake Campground and quiet residential, long established neighborhood along rocky Lake Drive. Rocky Lake is a family destination, long known for its tranquility and safety for all users whether residents or campground visitors. This should not be violated for the sake of an ill-located business.

The proposed 907 Club will have negative effects for other reasons including public safety on the adjacent bike trail along Big Lake Road, potential for increased exposure and risk by drunk drivers, increased human nuisance or incursions into the neighborhood, general noise created by parking lot and night club activity, garbage/waste odors, etc. The proposed 907 Club is clearly not suited for this location.

I am not sure if the application as presented is the official document for consideration. If it is, the application is not true and accurate as the area immediately north of the parking lot and parallel to Rocky Lake Drive has been completely denuded of the natural vegetation which served as screening for both noise and view all the way to Big Lake Road. Instead, it was replaced with an approximately eight (8) foot high earthen berm. I do not see this on the site plans. By this action alone, the application has

materially affected the character of the neighborhood which now looks without obstruction directly onto the 907 Club site and hears the constant drone of Big Lake Road traffic noise well into the night.

If this application is approved, I hope there is substantial opportunity to impose strict conditions attached to a granted Conditional Use Permit. Such conditions must consider at a minimum the parking lot and night club noise, public safety , light pollution, hours of operation, neighborhood visual and sound screening, and no access to Rocky Lake Drive.

I appreciate the opportunity to comment and look forward to the public hearing on November 7, 2016.

Sincerely,

John H. Rodda
Sixty Year Big Lake Area Family Property Owner
Big Lake Road and Rocky Lake

Mark Whisenhunt

From: Mark Whisenhunt
Sent: Wednesday, October 19, 2016 7:46 AM
To: 'Blake Kowal'
Subject: RE: Comments. 907 Club Conditional Use Permit

Received. Thank you.

Respectfully,

Mark Whisenhunt
Planner II
Matanuska-Susitna Borough
Office: (907) 861-8527
Fax: (907) 861-7876
mark.whisenhunt@matsugov.us

From: Blake Kowal [mailto:brkowal@smumn.edu]
Sent: Tuesday, October 18, 2016 3:46 PM
To: Mark Whisenhunt
Subject: Comments. 907 Club Conditional Use Permit

Mr. Whisenhunt,

Attached is a pdf file of my letter of objection to the 907 Club Conditional Use Permit.

Blake Kowal

October 18th, 2016
Mark Whisenhunt,
Planner II, Matanuska-Susitna Borough
350 E. Dahlia Avenue
Palmer, AK 99645

Re: 907 Club Conditional Use Permit (Parcel ID: 5428000T00A)

To Whom It May Concern:

I would like it noted that I do not support the above proposal being presented to the planning commission. I take my family to the Rocky Lake State Campground throughout the summer months. It is unreasonable to assume that permitting a bar located one thousand feet (half a mile by road) from the campground is not going to affect it in a negative way. Rowdy partiers are ruining a lot of public outdoor areas in the Matsu Valley. Putting a bar this close to a public campground is a beacon for them to camp and party since the bar is walking distance. I believe a topic needing to be discussed is the snowmobile traffic coming from the trail system to the west of Rocky Lake. Snowmobiles traveling to the bar would come from the trail system, cross Rocky Lake and exit through the campground because the road from there is a short distance to the bar. This could cause considerable erosion to the shoreline when the snow on the ground is lacking. Finally, the thought of placing a bar where it is two thirds surrounded by residential parcels is beyond my understanding.

Sincerely,

Blake Kowal

Blake Kowal
10524 Ketch Circle
Anchorage, AK 99515

Mark Whisenhunt

From: Mark Whisenhunt
Sent: Wednesday, October 19, 2016 7:45 AM
To: 'Renschen, Audrey (USAAK)'
Subject: RE: 907 club ajr response 10.18.2016.docx

Received. Thank you.

Respectfully,

Mark Whisenhunt
Planner II
Matanuska-Susitna Borough
Office: (907) 861-8527
Fax: (907) 861-7876
mark.whisenhunt@matsugov.us

From: Renschen, Audrey (USAAK) [mailto:Audrey.Renschen@usdoj.gov]
Sent: Tuesday, October 18, 2016 10:42 PM
To: Mark Whisenhunt
Subject: 907 club ajr response 10.18.2016.docx

Mr. Whisenhunt,
Attached please find my comments on the 907 Club CUP application. Please advise 1) when you have completed your recommendations to the Planning Commission, and 2) if Mr. Button posts any new information before the November 7th meeting.

Thank you so much for your consideration. -ajr

Comments on Conditional Use Permit for Nine Oh Seven, Corporation

-from Audrey Renschen, 14902 W. Rocky Street, Big Lake, Alaska

First, I appreciate that Mr. Button has made attempts to be more thorough in his application this year than last year. Those efforts have certainly narrowed the disputes and created an opportunity to focus and clarify the issues still remaining on the current 907 Club application. My comments address two issues:

1. The application still fails to adequately address the adjacent residential area on Rocky Lake; and
2. The application shakily stands on a proposed "restaurant" that will provide "wholesome meals" when the plan in fact still embodies all the previous preparations for a bar, open 16 hours a day from 10 a.m. to 2 a.m., with a stage for music.

Given the persistence of these two unresolved issues, the current application is not in compliance with Matanuska-Susitna Borough Code (MSB Code) § 17.70.100(A), and should be denied.

1. The Proposed Bar Is Incompatible with Adjacent Rocky Lake Residences

The first conditional use permit (CUP) requirement is that "the conditional use is compatible with and will preserve or not materially detract from the value, character and integrity of the surrounding area." MSB Code § 17.70.100(A)(1)(a).

The Rocky Lake residential neighborhood is a peaceful, quiet place where full-time residents have lived for generations, and part-time recreational users, also generational, enjoy watching loons and trumpeter swans, fishing for rainbow trout, paddling their canoes and kayaks, water skiing, swimming, gardening, and simply enjoying gatherings of family and friends. Jet skis and jet boats are prohibited. There is a stability in the character and nature of the neighborhood that most of us have assumed we would enjoy for the rest of our lives, and for which we have made lifetime financial investments.

A bar, unlike the character of Rocky Lake, is not a peaceful, quiet, place, and on its face, under the Code, i.e., by law, a bar is "declared to be potentially damaging to the property values and usefulness of adjacent properties and potentially harmful to the public health, safety and welfare if they are located outside of established or potential commercial areas." MSB Code § 17.70.020(A). Furthermore, a bar is a "public nuisance" unless it is "maintained under and in accordance with a lawfully issue permit." MSB Code § 17.70.020(A)(1)(a).

While the 907 Club is partially adjacent to a handful of established commercial businesses, it is equally adjacent to residences on Rocky Lake, and in fact within 35 feet of a residential lot line. Yet the application makes only three references to those residences in paragraph 4, and all are related to glare from signage, light posts and building lights. While those aspects are important and appreciated, they don't begin to address other important issues like harms to public health, safety, or noise.

Curiously, the site plan for the 907 Club is extraordinarily backward:

a) the parking area is in the back of the tract, away from Big Lake Road and the quasi commercial areas that are only open during the day, and

b) the bar's main entry/exit directly faces the Rocky Lake residential areas.

Given those physical arrangements and the long hours the bar wants to remain open, people will be coming and going all day long, and most of the night. According to the floor plan, a 125 square foot, raised stage area is near the entry way, so exiting customers will likely be speaking loudly because they've been exposed to loud music and drinking. They will likely also be accompanied when leaving, by some intoxicated people without a care in the world for the adjacent neighbors sleeping in their homes. All will be walking and talking directly toward the Rocky Lake neighborhood to get to their cars, instead of toward the deserted Big Lake Road, where most businesses are closed at night. That convoluted traffic flow has consequences not addressed in the application, and that seemingly have not even been considered. The physical composition of the current parking lot barriers/buffers is also notably unlikely to prevent either excessive noise or intrusive access to the Rocky Lake neighborhood, by car, or on foot, and in short, will not insure that adjoining residents can ever expect another good night's sleep.

Even the Alaska State Recreational Site (SRS) recognizes the dangers of alcohol and concomitant related noise problems. The campground imposes regulations that completely prohibit alcohol at all times, and imposes a quiet time of 10 p.m. to 8 a.m. Those rules contribute to a family campground atmosphere and minimize disturbances to Rocky Lake residents. Without similar hours — i.e. closing time at 10pm to correspond with campground quiet time — the 907 Club will likely denigrate the SRS campground environment too, further compounding the harmful consequences of the bar on residents. Strict conditions on 907 Club's hours plus egress barriers are absolutely necessary to protect the Rocky Lake neighborhood. The short distance (less than the length of a football field) from the bar to the campground will no doubt carve a path through the neighborhood, and increase unwanted alcohol usage and noise at the campground. Sadly, none of these absolutely predictable problems looming over Rocky Lake residents have been recognized or addressed in the CUP application.

2. **The 907 Club Is a Bar with Food, Not a Restaurant**

The portrayal of the 907 Club as a "restaurant" that will provide "wholesome meals" is analogous to the wolf in sheep's clothing. Like the wolf, a bar is a dangerous creature by nature: "potentially damaging to the property values and usefulness of adjacent properties and potentially harmful to the public health, safety and welfare." MSB Code § 17.70.020(A). Calling the bar a "restaurant," just like dressing a wolf to look like a sheep, may initially camouflage and make the bar seem less threatening, but calling a bar a restaurant does not make it less harmful. Especially when the floorplan continues to devote significant areas to a "6 inch RAISED STAGE AREA, 125 SQ. FT." and a "BAR 144 SQ. FT."

Nothing in the floor plans for the 907 Club have changed. They remain the same in 2016, as the ones submitted in 2015, when it was being touted as an indoor and outdoor bar with outside concerts. Words alone cannot be changed to obtain a CUP: actions are required. Without conditions strictly curtailing hours, preventing access to Rocky Lake Drive, barring outdoor music, and providing barriers/buffers between the adjacent neighborhood residences and the bar, the 907 Club is incompatible with the Borough requirements. Because those conditions to consider the adjacent residential neighborhood have not been included in the 907 Club application, the Planning Commission must deny the requested application.

3. **Conclusion: The 907 Club Application Has Not Demonstrated It Will Be Compatible With and Will Preserve or Not Materially Detract From the Value, Character and Integrity of the Directly Adjacent Rocky Lake Residential Area**

Given its location, directly next to a historically pastoral neighborhood, the 907 Club has not met the requirements for the requested CUP. Although this application is an improvement over the original submission, it is still incomplete, and lacks specific conditions like limited hours and planning to avoid intrusions into the adjacent Rocky Lake neighborhood. For those reasons, the application demonstrates that the proposed 907 Club CUP is incompatible with the character of the surrounding neighborhood, including the long-settled Rocky Lake neighborhood and SRS campground. By law, "The commission shall deny the application if it does not meet the applicable standards." MSB Code § 17.70.100(A)(3).

Furthermore, because the application is again incomplete, residents should not be subjected to last-minute, hastily-submitted proposals during the Planning Commission hearing. Any changes in plans for the 907 Club should be fairly vetted in a new application, so that residents in the adjacent Rocky Lake neighborhood have ample opportunity to study any new plans and respond. We are not responsible for the failed considerations and should not be punished by any lack of planning for the 907 Club in this application. We are residents with a decades-long

history and a commitment to maintaining the peaceful and quiet environment we have invested in. That ought not be stripped away by impulsive building without advanced consideration and solid planning.

Thank you. -ajr

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Mark Whisenhunt

From: Mark Whisenhunt
Sent: Tuesday, October 18, 2016 3:38 PM
To: 'hibdar'
Subject: RE: Nine Oh Seven Corp application

Received. Thank you.

Respectfully,

Mark Whisenhunt
Planner II
Matanuska-Susitna Borough
Office: (907) 861-8527
Fax: (907) 861-7876
mark.whisenhunt@matsugov.us

From: hibdar [mailto:hibdar@aol.com]
Sent: Thursday, September 08, 2016 4:20 PM
To: Mark Whisenhunt
Subject: Nine Oh Seven Corp application

Darin Hibdon
2128 s. Lodge biglake alaska
Legal lot 1 block 9
Biglake heights subdivision

To whom it my concern
I have no problem with having another business. Including a bar here in biglake. would welcome it.
We occasionally like to go out and it would be nice to have a place close to home. I would rather spend money here in our community. Than in wasilla. And help our area grow locally.
There are those that say ... oh we don't need another bar or liquor store... this doesn't mean ppl are going to drink more. They are going to drink or not. The number of places to get or visit isn't going to change that. And I believe that more business means competition and competition is a healthy thing for the economy.
Thank you Darin Hibdon

Sent from my Verizon 4G LTE smartphone

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Mark Whisenhunt

From: Mark Whisenhunt
Sent: Tuesday, October 18, 2016 3:37 PM
To: 'Holly Petersen'; Jenna Lundy
Cc: Biessel, Wayne A (DNR); Amyot, Daniel J (DNR)
Subject: RE: Rocky Lake Campground

Received. Thank you.

Respectfully,

Mark Whisenhunt
Planner II
Matanuska-Susitna Borough
Office: (907) 861-8527
Fax: (907) 861-7876
mark.whisenhunt@matsugov.us

From: hollyinak@gmail.com [mailto:hollyinak@gmail.com] **On Behalf Of** Holly Petersen
Sent: Thursday, September 22, 2016 11:31 AM
To: Jenna Lundy
Cc: Biessel, Wayne A (DNR); Amyot, Daniel J (DNR); Mark Whisenhunt
Subject: Re: Rocky Lake Campground

Hello Ms. Lundy,

Thank you for your email regarding the proposed 907 Club in Big Lake. I have reviewed the most recent CUP permit application, filed July 22, 2016.

This application differs significantly from the first in two areas. First, it appears the 907 Club will be operated as a restaurant catering to family dining, while serving alcoholic beverages. Second, there is no mention of an out door seating area, called a Bandstand in the previous application, or of possible outdoor music events or concerts.

If this is the case, Great Holiday Campgrounds has no objection to the 907 Club permit application.

If the 907 Club has plans for outdoor seating as described previously as a 'Bandstand', with nightly or weekend long events, Great Holiday Campgrounds will remain opposed to that Bandstand venue portion of the CUP without strong, enforceable restrictions for noise levels and hours.

As stated in our comments dated January 13, 2015; We do not oppose the establishment of the restaurant and bar and we would not be immediately opposed to single day outdoor events.

We would like to encourage the 907 Club to increase the length of the proposed wood privacy fence to either encompass the parking area or extend it along W. Rocky Lake Dr to create a definitive boundary and increase both the safety of it's patrons and noise reduction between the business and adjacent residential subdivision and Rocky Lake Campground.

Thank you for the opportunity to share our concerns with you. I have attached a copy of Great Holiday Campgrounds 2015 comments on the proposed 907 Club and the most recent CUP application for reference.

Best Regards,
Holly Petersen
General Manager
Great Holiday Campgrounds
907-317-9094

On Fri, Sep 16, 2016 at 9:30 AM, Jenna Lundy <jlsagesse@gmail.com> wrote:

Hi Holly,

I am newly hired by Mr. Button to project manage the process of opening the 907 Club in Big Lake. It is my understanding, from speaking with community members, that in the past you have had several concerns regarding the opening of a restaurant/bar in the vicinity of the Rocky Lake Campground.

I would like the opportunity to meet with you and hear firsthand the concerns you may have. Our goal is to provide an establishment that serves the community members of Big Lake as well as the plethora of visitors to our beautiful part of Alaska. I personally have been a resident of Alaska for 50 years. 10 of those years as a Big Lake resident. I have a vested interest in this big state and a deep concern for the integrity of the Matanuska-Susitna Valley as a whole. Your concerns may offer new perspective to the process I have been engaged in.

Thank you and I look forward to hearing from you soon.

Jenna Lundy-Conner

Project Manager

Nine-OH-Seven Corp.

jlsagesse@gmail.com

Cell: (907) 203-7713

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Great Holiday
CAMPGROUNDS

Big Lake North & South, Rocky Lake, Matanuska Lakes, King Mountain

16200 Black Bear Dr.
Anchorage, AK 99516
907-317-9094
info@biglakeparks.com

Mark Whisenhunt, CFM
Planner II
Matanuska-Susitna Borough
Office: (907) 861-8527
Fax: (907) 861-7876
mark.whisenhunt@matsugov.us
RE: Conditional Use Permit; Nine Oh Seven, Inc.

January 13, 2015

Mr. Whisenhunt,

My name is Holly Petersen, I am the General Manager and Operator of Great Holiday Campgrounds, GHC. Our company operates the Big Lake area State Parks by permit from the State of Alaska, Department of Parks and Outdoor Recreation. Please accept this letter as our public comment regarding the proposed 907 Club, whose owners have submitted a Conditional Use Permit Application, 17.70 Regulation of Alcoholic Beverage Use, to the Borough for the operation of a Restaurant and Bar.

While we do not oppose the establishment of the restaurant and bar, we do oppose the outdoor concert venue; called a 'Bandstand' by the applicant.

Rocky Lake State Recreation Site lays to the North and West of the proposed 907 establishment, the distance between the property lines of the Park and that of the 907 Club is approximately 700 feet. Rocky Lake is a full service State of Alaska Campground offering families an opportunity to swim, fish, rent a canoe, picnic for a day or camp out overnight in a quiet, secluded campground that is still near 'town'. The Park is open seasonally for camping from early May through September. The Park is subject to the basic rules of all State Parks, including *Quiet Hours* between 10:00pm and 7:00am during which time Park users and guests are prohibited from such things as playing loud music, yelling or shouting and/or creating a disturbance or waking Park campers. Alcohol is Prohibited at all 3-Big Lake State Recreation sites. An outdoor Bandstand as referenced in the 17.70 application of the 907 Club is incompatible with the goals of GHC, Alaska State Parks, and with the covenants of the neighboring Rocky Lake Subdivision.

As the managers of the Rocky Lake facility for the past 5-years, GHC and our onsite Campground Hosts have worked very hard to clean up the Park and its one time unsavory reputation as a 'party spot' through enforcement of the State Park Rules, consistent monitoring of Park users and, when necessary, correction of unwelcome behavior. We feel that a bar featuring consistent outdoor music operations would be a detriment to

the Park and its users, particularly on weekends throughout the summer tourist season.

We applaud the owner's apparent willingness to install sound deadening acoustic board within the building and their stated intent to use creative sound limiting landscaping, we encourage the owners to build a solid privacy style fence around the property, including the parking area. The undeveloped private property around the 907 Club building site has been known to attract 'bandit' campers, (usually younger people who do not want to camp in an established campground with rules and fees- not necessarily homeless), and theft from the Park and Rocky Lake residents usually arrives with them; a solid fence providing safety and security for the 907 Club patrons and their vehicles, and limiting through-access to the Rocky Lake Subdivision and parking lot of the Park will undoubtedly be a benefit, and may even help to encourage fewer 'bandit' campers.

Should the owners of the 907 Club apply for a Special Use or One Time Event permit from the borough to hold outdoor live entertainment on a specific date(s), such as a Fourth of July Concert/event, GHC would not be immediately opposed to the issuance of such a permit, but would very much like to have advance notification in the event of a one-time event permit application.

Thank you for the opportunity to comment on the Conditional Use Permit Application submitted by Nine Oh Seven, Inc.

Best Regards,

Holly Petersen
General Manager
Great Holiday Campgrounds
907-317-9094
info@biglakeparks.com

Mark Whisenhunt

From: Mark Whisenhunt
Sent: Tuesday, October 18, 2016 3:36 PM
To: 'Rick Nerland'
Cc: Steve Nerland; Roger Nerland; Brian Nerland; Cindy Bettine
Subject: RE: Club 907

Received. Thank you.

Respectfully,

Mark Whisenhunt
Planner II
Matanuska-Susitna Borough
Office: (907) 861-8527
Fax: (907) 861-7876
mark.whisenhunt@matsugov.us

From: Rick Nerland [mailto:ricknerland@gmail.com]
Sent: Tuesday, October 18, 2016 8:36 AM
To: Mark Whisenhunt
Cc: Steve Nerland; Roger Nerland; Brian Nerland; Cindy Bettine
Subject: Club 907

Mr. Whisenhunt,

Club 907 will come before the Planning Commission on Nov. 7th. We are revisiting an issue that is not favored by Rocky Lake residents as it will impact the quality of life for Rocky Lake residents. Nearby residents have met with Mr. Buttons and discussed several things to mitigate the impact. I have incorporated those and added some stipulations of my own should this go forward.

Please see below.

No access to Rocky Lake Dr. from Marjorie's Manor Tract A.

Establish and maintain a vegetative screening buffer on an 8' earthen berm surrounding the parking lot. The buffered berm shall be hydro-seeded with natural wild grass mix.

No outside band stand, outdoor concerts or amplified audio performances. Music and audio originating from club will not disturb lake residents. Bar closing will be monitored in parking lot an hour before and an hour after closing to ensure appropriate behavior.

Meet the dark sky lighting standards. All lighting shall be downcast with half lens luminaires on the building and parking lot to limit illuminations to adjoining properties. No flashing lights to distract drivers or create a nuisance. Parking lot lights to be on a timer.

Limit hours of operation to ensure peace and quiet for campers and lake residents.

The Planning Commission must be very mindful of the impact of this application. A bar on a quiet lake is not a good idea.

Sincerely,

Rick Nerland
Member-Manager
Rocky Lake LLC
907-529-1933

Mark Whisenhunt

From: Mark Whisenhunt
Sent: Tuesday, October 18, 2016 3:36 PM
To: 'John Rush'
Subject: RE: John Rush Comments on 907 Club Application for Conditional Use Permit

Received. Thank you.

Respectfully,

Mark Whisenhunt
Planner II
Matanuska-Susitna Borough
Office: (907) 861-8527
Fax: (907) 861-7876
mark.whisenhunt@matsugov.us

From: John Rush [mailto:jjrush@gci.net]
Sent: Tuesday, October 18, 2016 10:13 AM
To: Mark Whisenhunt
Subject: John Rush Comments on 907 Club Application for Conditional Use Permit

My name is John Rush, 15152 W Rocky Street, Big Lake Alaska

I urge the Matanuska-Susitna Borough to deny the Application for Conditional Use Permit of the 907 Club. The 907 club would:

1. Create great danger to the children and adults using the bike trail right in front of the proposed location, and heavily traveled roads of the community center;
2. Cause damage to the peaceful recreational spirit of the State Campground within one hundred yards of the proposed location;
3. Will damage the safety and security of the Big Lake Community; and
4. Will do great harm to the long established residential community with homes within 100 yards of the proposed location.

The area of the proposed 907 club is unsuitable for a bar. It is an area that has long been the Big Lake Community Center and an area used for recreation and residences. The applicant seems indifferent to the wellbeing of the community.

Danger to Children and traffic:

The proposed location is the busiest and most dangerous traffic areas in the Big Lake area. It is next door to the gas station/quick stop, and near the Big Lake Recreation center, Post office, and other retail businesses. Directly in front of the proposed location is the Big Lake bike trail. It is used by children not only for biking, but snow machining, four wheeling, roller blading, and walking. Worse yet the large fields on the opposite side of the highway are a playground for children and adults on snow machines, dirt bikes, and four wheelers. Children often cross the roadway there in very random ways. Already we have had one fatal car accident within one hundred yards of this proposed area. Adding drinking drivers to the center of this is asking for deaths and accidents.

Destroys the Peaceful Recreational Spirit of the State Campgrounds:

The Big Lake area has been historically a recreation area. The proposed location is within 100 yards of the Rocky Lake Campground, and very near the two Big Lake State Campgrounds. These campgrounds provide wonderful camping, boating, and fishing adventures for many families each year. Alcohol is prohibited at these campgrounds because of the many problems it caused. Allowing a bar, right next door, ruins the camping and fishing experience and will cause problems at the State Campgrounds.

Will Damage the Safety and Security of the Big Lake Community:

This proposed location will subject all Big Lake families to the dangers of inebriated driving, violence, and crime, common with alcohol. Bars and alcohol are traditional problems for our society. The associated crime and danger are common and notorious. Big Lake has no police department. The State Troopers are a wonderful help, but are a scarce resource. There is only occasional taxi service in the area.

The proposed location is the center for Big Lake community activity. The Post Office, Public Library, Fire Department, Elementary School, Public skating rink, and public volleyball/motocross/snowcross area are all within one mile. The airport, grocery store, gas station, laundry, restaurants, and video stores are nearby as well. The bike trail is directly in front of the proposed location. This proposed location is a danger to the entire community, a more remote location would be much safer for all.

Residential:

Many residents live well within one mile of the proposed club, some within 100 yards. For many years, and often generations, these residents have paid taxes, developed beautiful homes, and built a quiet recreational community of friends. It seems unfair to ruin their longtime work, investment, and contribution to the community for the benefit one person. Allowing a bar in less populous area, will preserve the residents' ability to quietly enjoy their homes. The residents have been there for many years, they will be hurt by allowing a bar next door; whereas, the bar can be located anywhere now, without ruining longtime residents' lives.

Very sincerely,
John Rush
Rocky Lake homeowner and Big Lake area participant for 50 years.

Mark Whisenhunt

From: Mark Whisenhunt
Sent: Tuesday, October 18, 2016 3:36 PM
To: 'Greg Cartwright'
Subject: RE: 907 Club Application

Received. Thank you.

Respectfully,

Mark Whisenhunt
Planner II
Matanuska-Susitna Borough
Office: (907) 861-8527
Fax: (907) 861-7876
mark.whisenhunt@matsugov.us

From: Greg Cartwright [mailto:gregc@cfisandiego.com]
Sent: Tuesday, October 18, 2016 11:42 AM
To: Mark Whisenhunt
Subject: 907 Club Application

Mr. Whisenhunt:

Please include this email with the other responses to the application by Mr. Button:

Our family has owned a cabin on Rocky Lake drive for over 50 years. We are within a couple hundred yards of the proposed bar/restaurant and are very concerned about the fact that alcohol will be served at this establishment, since it is so close to not only occasional use cabins but full time residences as well. In our case the cabin is frequently used by our kids and grandkids, making them the third and fourth generations enjoying the quiet and peaceful environment of Rocky Lake. They use the roads and bike/walking paths on a regular basis and none of us want to think about the possible tragic consequences of inebriated customers sharing those same roads and crossing those same bike/walking paths. In addition to those concerns, we are concerned about the noise problems which will result from customers in the parking lot of this establishment as well as from revelers that have been drinking returning to the public campground and disturbing the peace and quiet of other campers and all of the property owners around the lake. Sound easily carries across the entire lake. In summary, our family is opposed to Mr. Button being granted a liquor license for his proposed establishment. Thank you for your consideration.

Thank you.

Greg Cartwright, CPM®, CCIM
Senior Vice President
Lic. #00941729

T: (858) 200-4274
M: (619) 851-4129
gregc@cfisandiego.com

CFI
10951 Sorrento Valley Rd. 2A, San Diego, CA 92121
Lic. #00288311
cfisandiego.com

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Mark Whisenhunt

From: Mark Whisenhunt
Sent: Tuesday, October 18, 2016 3:36 PM
To: 'Harmon_Jim'
Subject: RE: letter 907club application

Received. Thank you.

Respectfully,

Mark Whisenhunt
Planner II
Matanuska-Susitna Borough
Office: (907) 861-8527
Fax: (907) 861-7876
mark.whisenhunt@matsugov.us

-----Original Message-----
From: Harmon_Jim [mailto:Harmon_Jim@asdk12.org]
Sent: Tuesday, October 18, 2016 12:39 PM
To: Mark Whisenhunt
Subject: RE: letter 907club application

Hi Mark,

Please see attached letter regarding the 907CLUB request for conditional land use permit.

Thanks

Jim Harmon

From: mrbizhub04@asdk12.org [mrbizhub04@asdk12.org]
Sent: Tuesday, October 18, 2016 12:25 PM
To: Harmon_Jim
Subject: Message from KMBT_283

October 18th, 2016

To: Mark Whisenhunt, Planner II, Mat Su Borough
Subject: Request for review and comments for a conditional use permit for an alcohol beverage dispensary (bar).
Parcel ID: 5428000T00A Tax Map: HO 13

To Whom It May Concern:

I continue to express my concern as a homeowner in the residential area of Rocky Lake Subdivision over the application for a conditional use permit for an alcohol beverage dispensary at the 907 Club.

I can site many personal reasons why I do not support this request and includes:

- increased human nuisances
- issues related to lighting in parking lot
- increased need for police enforcements
- Noise problems
- Significant safety issues for my child
- Increased traffic with potential drunk drivers
- Garbage problems
- Drainage issues (close to proximity of pristine lake)
- Potential litigation for mat-su borough
- Conflict of interest with residential community
- Dumpster/waste smell & odor
- Poor transition/buffer between commercial and residential lots
- Poor location for bar near residential and family area
- Long established residential community with bar having (-) impact
- Strong potential to have decrease in residential home values close to bar

In a previous letter in 2015 to Mark Whisenhunt I also referenced the following:

MSB 17.70.100 This permit request in review is **NOT** compatible with and will NOT preserve the character, integrity, or value of the surrounding area. Specifically impacting the Rocky Lake State Campground (49 acres and 11 campsites) and surrounding peaceful lake front homes and cabins. This Sate campground prohibits the use of alcoholic beverage and has specific quiet hours. Generators, stereos, or loud noises are prohibited. Likewise restrictions on Rocky Lake are enforced for NO Jet Skis allowed (noise and use restrictions).

MSB 17.70.100 (2)(G) The permit request is NOT compatible with the character of surrounding neighborhood on Rocky Lake road including both the peaceful lake

front homes/cabins and the Rocky Lake State Campground - "a chance to relax and enjoy Alaska at its best..." (biglakeparks.wix.com)

We own a home/ two parcels on Rocky Lake and **do NOT support** the permit in question.

I have worked in Alaska for over 24 years as a School Psychologist, and insightfully see the 907CLUB proposal as significantly impacting the character, integrity, and safety in the current proposed location: Parcel ID: 5428000T00A Tax Map: HO 13. The issues seen at past bars in the area such as "The Call Of The Wild" bar should provide a clear example of problematic issues. Locate the problematic issues next to peaceful, long established residential area, and you are clearly asking for problems.

Sincerely,

James Harmon
14905 Rocky Lake Rd.
PO Box 520527
Big Lake, Alaska 99652
(907) 354-8888

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Mark Whisenhunt

From: Mark Whisenhunt
Sent: Tuesday, October 18, 2016 3:35 PM
To: 'Karen Loeffler'
Subject: RE: 907 Club Application

Received. Thank you.

Respectfully,

Mark Whisenhunt
Planner II
Matanuska-Susitna Borough
Office: (907) 861-8527
Fax: (907) 861-7876
mark.whisenhunt@matsugov.us

From: Karen Loeffler [mailto:kloefflerski@gmail.com]
Sent: Tuesday, October 18, 2016 3:07 PM
To: Mark Whisenhunt
Subject: 907 Club Application

Mark Whisenhunt, Planner II, Mat Su Borough
Subject: Request for Review and Comments for conditional use permit for an alcohol beverage dispensary
Parcel ID 542800T00A

My name is Karen Loeffler, I am the owner of properly located at 14870 W. Rocky St.,
Big Lake, AK 99652

I write this to note my opposition to the Application for Conditional Use Permit of the 907 Club.

I am very concerned about an alcohol dispensary (bar) located adjacent to a quiet residential and recreational community and that such use would clearly detract from the character, safety and value of the community of those of us who would be affected by such a use.

Myself and my family enjoy our property for quiet family recreation. My property is located close to the state run campground, which does not permit alcohol and has a noise curfew.

Permitting a bar adjacent to the Rocky lake community would conflict with the residential nature of the community.

It would lead without doubt to issues of alcohol related crime and disturb the quiet family nature of the small campground.

With reduction in law enforcement services, and already difficult issues of break ins and crime, adding late hours and alcohol would clearly impact our enjoyment of our property.

Having a bar abutting long established residences and a well established community of families, many who have owned property on the lake for generations is a major disruption to longtime users.

Thank you for your consideration.

Karen Loeffler

Mark Whisenhunt

From: Claudia Henley <claudiahenley9@gmail.com>
Sent: Wednesday, October 19, 2016 3:38 PM
To: Mark Whisenhunt
Subject: Rocky Lake and the 907 Club

Dear Mark,

Thank you for helping us with this. My family has had a place on Rocky Lake since 1967. I was able to attend and speak at the first meeting, but was unable to make the most recent one. Please add my voice to those concerned that the four conditions be followed for the 907 Club:

1. No access to Rocky Lake Dr. from Marjorie's Manor Tract A

2. Establish and maintain a vegetative screening buffer on an 8' earthen berm surrounding the parking lot. The buffered berm shall be hydro-seeded with natural wild grass mix.

3. No outside band stand, outdoor concerts, or amplified audio performances

4. Meet the dark sky lighting standards. All lighting shall be downcast with half lens luminaires on the building and parking lot to limit illuminations to adjoining properties. No flashing lights to distract drivers or create a nuisance.

We would also like to suggest a closing time of 11:00pm.

I am concerned about traffic in the residential areas. Our cabin was vandalized recently and basically ruined. We are just heartsick about it. I'm also very concerned about the possible noise associated with a bar so close to residential areas. One of things that I worry about is that if the vegetative screening buffer with the trees is made and put in place, that Mr. Button will think then that he can crank up the music and be "in compliance." I doubt that the buffer would really keep the sound down enough. I also worry about open windows in the summer time.

Thank you again, Mark. This matters so much to so many people.

Claudia Henley
907-830-2733
claudiahenley9@gmail.com

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PLANNING COMMISSION RESOLUTION

By: Mark Whisenhunt
Introduced: October 17, 2016
Public Hearing: November 7, 2016
Action:

MATANUSKA-SUSITNA BOROUGH
PLANNING COMMISSION RESOLUTION NO. 16-37

A RESOLUTION OF THE MATANUSKA-SUSITNA BOROUGH PLANNING COMMISSION APPROVING A CONDITIONAL USE PERMIT FOR THE OPERATION OF AN ALCOHOLIC BEVERAGE DISPENSARY (BAR) AT THE 907 CLUB, LOCATED WITHIN TOWNSHIP 17 NORTH, RANGE 3 WEST, SECTION 21; TAX ID# 5428000T00A, SEWARD MERIDIAN.

WHEREAS, an application had been received from RMB LLC, dba. Nine Oh Seven, Corporation for a conditional use permit for the operation of an alcoholic beverage dispensary (bar) at the 907 Club, located within Township 17 North, Range 3 West, Section 21; Tax ID# 5428000T00A, Seward Meridian; and

WHEREAS, MSB 17.70.020(A)(1) requires a conditional use permit for the operation of an alcoholic beverage dispensary (bar); and

WHEREAS, unless this type of use is maintained under and in accordance with a lawfully issued permit, an alcoholic beverage dispensary (bar) is declared to be a public nuisance; and

WHEREAS, an operation of such a land use without a permit is prohibited; and

WHEREAS, Goal LU-1 of the Borough-Wide Comprehensive Plan (2005 Update) is to Protect and enhance the public safety, health, and welfare of Borough residents; and

WHEREAS, Policy LU1-1 Borough-Wide Comprehensive Plan (2005 Update) is to Provide for consistent, compatible, effective, and efficient development within the Borough; and

WHEREAS, Goal LU-2 of the Borough-Wide Comprehensive Plan (2005 Update) is to Protect residential neighborhoods and associated property values; and

WHEREAS, Policy LU2-1 of the Borough-Wide Comprehensive Plan (2005 Update) is to Develop and implement regulations that protect residential development by separating incompatible uses, while encouraging uses that support such residential uses including office, commercial and other mixed-use developments that are shown to have positive cumulative impacts to the neighborhood; and

WHEREAS, Goal LU-3 of the Borough-Wide Comprehensive Plan (2005 Update) is to Encourage commercial and industrial development that is compatible with residential development and local community desires; and

WHEREAS, Policy LU3-1 of the Borough-Wide Comprehensive Plan (2005 Update) is to Develop and implement regulations that provide for non-residential development; and

WHEREAS, the Big Lake Comprehensive Plan (2009) Guide Map shows this parcel within the *"Gateway Corridor"*, which is defined as *"mixed-use corridor"* that includes the first row of lots on either side of the road; and

WHEREAS, the comprehensive plan states the "Gateway Mixed Use Corridor" area is intended to balance two objectives: "*to allow for a range of uses and, at the same time, to ensure this corridor provides an attractive entry to Big Lake.*" Specific objectives for this area include: Allow a mix of uses, including commercial activities and residential uses; and discourage large scale, industrial uses; and

WHEREAS, the developed properties along South Big Lake Road are predominantly commercial, but some industrial and residential uses are also present; and

WHEREAS, the nearest operating alcoholic beverage dispensary in the Big Lake area is Floaters on Big Lake Road, about one quarter mile from this site; and

WHEREAS, the subject parcel was originally Lots 2, 3, & 4, of Block 1 of the "Rocky Big Lake Subdivision". The "Rocky Big Lake Subdivision" has since been re-subdivided and is now known as, Rocky Lake Subdivision, Rocky Big Lake Subdivision, and Marjorie's Manor. Covenants that apply to the subject property are recorded with the State of Alaska's Recorder's office, in Book 186 Page 928; and

WHEREAS, Rocky Lake Subdivision abuts the proposed conditional use; and

WHEREAS, the character of the Rocky Lake Area is known to be of a quiet and family-friendly atmosphere; and

WHEREAS, Alaska Administrative Code 11 AAC 20.922 - Use of Power Boats at Rocky Lake State Recreation Site, prohibits the use of jet skis, jet boats with inboard motors, and airboats; and

WHEREAS, Rocky Lake State Recreation Site is less than 600 feet from the proposed conditional use; and

WHEREAS, Rocky Lake State Recreation Site has quiet hours of 10:00PM to 6:00AM, daily; and

WHEREAS, the application material shows a 2,496 square foot bar with a 150 square foot enclosed smoking room, and an arctic entryway; and

WHEREAS, the application material states the proposed hours of operation are: restaurant/food service is 6:00 a.m. to 12:00 a.m. and liquor service is 10:00 a.m. to 2:00 a.m.; and

WHEREAS, the nearest developed residential lot abuts the subject parcel to the northeast; and

WHEREAS, MSB 8.52.010(A) declares: "The borough hereby finds and declares that noise, volume-enhanced sounds and their concomitant vibration are significant sources of environmental pollution which represent a present and increasing threat to public peace and to the health, safety, and welfare of the residents of the borough. Loud noise and amplified sounds have an adverse effect on the psychological and physiological well-being of persons."; and

WHEREAS, the proposed structure will have a log sided "cabin look"; and

WHEREAS, the applicant has signed an agreement with some neighboring property owners to further make the conditional use compatible with, preserve, and not materially detract from the value, character and integrity of the surrounding area by imposing the following four conditions:

1. No access to Rocky Lake Dr. from Marjorie's Manor Tract A.
2. Establish and maintain a vegetative screening buffer based on the existing 8' high earth berm which we are fine with. The buffer shall also include a continuous row trees to defer noise, 4'-6' tall, spaced 8' apart. Buffer berm shall be hydro-seeded with natural wild grass mix.
3. No outside band stand, outdoor concerts or amplified audio performances.
4. Meet the Dark Sky lighting standards. All lighting shall be downcast with half lens luminaires on the building and parking lot to limit illuminations to adjoining properties. No flashing lights to distract drivers or create a nuisance to neighbors; and

WHEREAS, according to the application material, a combination of foam insulation, sheetrock and a noise reduction

product known as Acoustica Barrier (DB-3, Model #DB348X96BX) will be used in the walls and ceiling to achieve a 90% reduction in noise; and

WHEREAS, according to the application material, triple paned windows will be installed in the proposed structure to achieve a 68% reduction in noise; and

WHEREAS, the nearest school is Big Lake Elementary which is about 4,200 feet from this site. State regulations preclude beverage dispensary licenses within 200 feet of a school; and

WHEREAS, the nearest church is about 1,200 feet from this site. State regulations preclude beverage dispensary licenses within 200 feet of a church; and

WHEREAS, the operator of the proposed use is required to operate in accordance with Alaska Statute, which includes but is not limited to, mandatory alcohol server education; and

WHEREAS, according to the application material, measures which include contacting law enforcement, will be taken to ensure individuals who may be impaired do not leave the premises operating a vehicle, ATV, snow-machine or by walking; and

WHEREAS, the subject property is 4.96-acres in size. The proposed conditional use will occupy approximately 1.85-acres on the east side of the property, which accesses South Rosalie Court; and

WHEREAS, a Matanuska-Susitna Borough driveway permit is required for access onto South Rosalie Court. The applicant has requested the Borough to conduct a final inspection for the constructed driveway; and

WHEREAS, according to the application material, an arctic entry will be constructed and its door will face east towards Rosalie Court to minimize noise spilling from the building; and

WHEREAS, according to the site plan dated July 15, 2016, an 8-foot tall wooden fence is to be constructed along the northeast property line that abuts a residential development; and

WHEREAS, the adjacent properties to the back (north and northwest) side of this lot are developed with residential homes; and

WHEREAS, the parking lot and driveway have been paved; and

WHEREAS, the operation must comply with the maximum permissible sound level limits allowed, per the requirements of MSB 8.52 - Noise, Amplified Sound and Vibration; and

WHEREAS, South Rosalie Court is not a Matanuska-Susitna Borough maintained road; and

WHEREAS, only two properties, including the proposed conditional use access onto South Rosalie Court; and

WHEREAS, according to a report dated April 30, 3014, by Alaska Rim Engineering, South Rosalie Court has been built to Matanuska-Susitna Borough standards; and

WHEREAS, ITE Trip Generation 7th Edition shows a "Drinking Place" of 2,400-square feet in size is expected to produce 37 trips per peak PM hour, which does not require a traffic impact analysis; and

WHEREAS, the Alaska Department of Transportation (ADOT) was solicited for comments. ADOT did not submit any comments for the proposed conditional use; and

WHEREAS, the borough does not have parking standards, however, according to the site plan dated July 15, 2016, 44 parking spaces and two handicap accessible spaces will be provided; and

WHEREAS, the building and parking lot have been designed by Brian McMillen, a registered professional architect in the state of Alaska; and

WHEREAS, the Alcoholic Beverage Control Board (ABC) has no record of violations by Robert Mark Button; and

WHEREAS, No information has been submitted to the borough indicating the applicant is untrustworthy or unfit to conduct business in the borough or that the applicant is a potential source of harm to the public; and

WHEREAS, the Planning Commission has reviewed this application with respect to standards set forth in MSB 17.70.100 and 17.70.110; and

Whereas, the Planning Commission conducted a public hearing on November 7, 2016 on this matter; and

NOW, THEREFORE, BE IT RESOLVED, that the Matanuska-Susitna Borough Planning Commission hereby adopts the aforementioned findings of fact and makes the following conclusions of law supporting approval of Planning Commission Resolution 16-37:

1. The conditional use is compatible with, will preserve, and will not materially detract from the value, character and integrity of the surrounding area (MSB 17.70.100(A)(1)(a)).
2. The proposed use with conditions, will not be harmful to the public health, safety, convenience and welfare (MSB 17.70.100(A)(1)(b)).
3. Sufficient setbacks, lot area, buffers or other safeguards have been provided (MSB 17.70.100(A)(1)(c)).
4. There will not be negative effects upon the properties in the area due to such factors as dust, noise, obtrusive advertising and glare (MSB 17.70.100(A)(2)(a)).

5. there should not be any negative effect on the safe, efficient flow of traffic on any highway, arterial, collector or street from which access to and from the establishment is obtained (MSB 17.70.100(A)(2)(b)).

6. Measures are in place to reduce any negative effect upon adjacent and nearby properties (MSB 17.70.100(A)(2)(c)).

7. Adequate parking is being provided (MSB 17.70.100(A)(2)(d)).

8. Access to the premise will not create an unreasonable traffic hazard (MSB 17.70.100(A)(2)(e)).

9. Traffic will not overtax existing road systems (MSB 17.70.100(A)(2)(f)).

10. The proposed conditional use is compatible with the character of the surrounding neighborhood (MSB 17.70.100(A)(2)(g)).

11. There is no evidence that the proposed conditional use will increase the crime rate in the area or increase alcohol-related accidents (MSB 17.70.110(B)(1)).

12. The applicant has not had a liquor license suspended or revoked in the 12 months preceding the application (MSB 17.70.110(B)(2)).

13. The applicant has demonstrated that he is trustworthy and fit to conduct business in the borough or that the

he is not a potential source of harm to the public (MSB 17.70.110(B)(3)).

NOW, THEREFORE, BE IT FURTHER RESOLVED, that the Planning Commission finds this application does meet the standards of MSB 17.70 and does hereby approve the conditional use permit for the operation of an alcoholic beverage dispensary (bar), with the following conditions:

1. The owner and/or operator shall comply with all other applicable federal, state, and local regulations.
2. All aspects of the operation shall comply with the description detailed in the application material and with the conditions of this permit; and an amendment to the Conditional Use Permit shall be required prior to any alteration or expansion of the conditional use.
3. The Matanuska-Susitna Borough driveway permit for access to 2541 S. Rosalie Court shall be finalized prior to operating the conditional use.
4. The applicant shall install indoor sound dampening panels in the bar structure, as detailed in the application. Proof of installation of the sound damping panels shall be provided to the Borough prior to operating.

5. The operation shall comply with the maximum permissible sound level limits allowed, per the requirements of MSB 8.52 - Noise, Amplified Sound and Vibration.
6. Patrons shall enter and exit the enclosed smoking room through the bar only.
7. All parking for the conditional use shall be on-site.
8. There shall be no outdoor amplified sound or entertainment of any kind.
9. Access related to this conditional use shall be made onto South Rosalie Court only. There shall be no access to Rocky Lake Dr. from Marjorie's Manor Tract A.
10. Signage and lighting shall be:
    a. Non-glare, located and shielded to direct the light towards the ground, in order to minimize light spillage onto adjacent properties and upward into the night sky.
    b. Lights in the parking lot and signage must be mounted no more than 20 feet above ground.
    c. Flashing lights are prohibited, with the exception of seasonal holiday lights used during the period directly associated with the holiday.

11. An earthen berm, at least eight feet in height, shall be constructed and maintained adjacent to the north and west sides of the parking lot. The berm shall be vegetated with a wild grass mix to prevent soil erosion. Atop the berm shall be a row of trees, planted approximately eight feet apart and shall be four to six feet in height at the time of planting. As suggested by the applicant the trees shall alternate between deciduous and conifer atop the berm. All vegetation including that shown on the site plan dated July 15, 2016, shall be planted by August 1, 2017.
12. Due to the proximity of the utility easement from the vegetated berm, the applicant shall obtain and provide to the Borough, non-objection letters from all applicable utility companies prior to operating.
13. A wooden fence, at least eight feet in height, shall be constructed and maintained in good repair along the northeast property line as shown on the site plan dated July 15, 2016.
14. In the case where one or more utility company objects to the earthen berm, a wooden fence at least eight feet in height shall be constructed and maintained adjacent to the north and west sides of the parking

lot. This fence shall connect to the wooden fence referenced in condition #13.

15. Prior to operating, the applicant shall submit an updated site plan, showing the location of the eight foot tall earthen berm identified in condition #11 or the fence identified in condition #14.

16. Hours of operation shall not exceed: 6:00 a.m. - 10:00 p.m., Sunday through Thursday; and 6:00 a.m. - 2:00 a.m., Friday and Saturday.

17. The operation shall provide parking lot security daily, starting at 10 p.m. until the premises are vacated. Security shall ensure patrons are not loitering or violating the Borough's noise ordinance.

ADOPTED by the Matanuska-Susitna Borough Planning Commission this ___ day of _____, 2016.

_____
JOHN KLAPPERICH, Chair

ATTEST

_____
MARY BRODIGAN, Planning Clerk

(SEAL)

YES:

NO:

PUBLIC HEARING

LEGISLATIVE

Resolution No. 16-40

City of Houston Comprehensive Plan Update
Amending MSB 15.24.030(5)

(Page 3,385 – 3,842)

PUBLIC HEARING

Staff Report

CITY OF HOUSTON

STAFF REPORT

DATE: Agenda of October 17, 2016

TO: Matanuska-Susitna Borough Planning Commission

THROUGH: Houston City Council

SUBJECT: **Ordinance 16-22:** An Ordinance of the Houston City Council repealing the 1999 City of Houston Comprehensive Plan as amended in 2003, and adopting the 2016 City of Houston Comprehensive Plan.

Attachments:
Ordinance 16-22
Public Notices

Summary statement:

Over the past two years, the City of Houston has worked with R & M Consultants, Inc.to revise the 1999 City of Houston Comprehensive Plan. Numerous public workshops and meetings were held to obtain input from the residents, Community Impact Assessment and Comprehensive Plan Update Steering Committee ("Committee"), Planning Commission, City Staff, and other interested parties. The final draft of the proposed 2016 City of Houston Comprehensive Plan ("Plan") is attached for the Matanuska-Susitna Borough's Planning Commission review and recommendation for adoption as an element of the MSB's Comprehensive Plan.

This Plan is a compilation of the input received from the public including residents and businesses, agencies, Committee, and Planning Commission including the following:

Steering Committee Meetings

The City of Houston's five member Steering Committee for the CIA and Comprehensive Plan Revision met seventeen times over the course of two years during plan development. All meetings were open to the public and posted to the City of Houston's website, where the agendas were posted at least one week prior to the meeting.

City of Houston Household Opinion Survey

As part of the Comprehensive Plan update and CIA, a community-wide survey was conducted in November 2014 to identify the community's future needs as well as evaluate the community's opinion on a range of City priorities to help inform the goals and policies of the Plan. The community survey was mailed to 1651 households (including renters and home owners) and seasonal or part-time residents. A follow up mailing was sent to the 1259 non-respondents of the first survey mailing in December 2014 to encourage participation.

Public Meetings

In addition to the Steering Committee's regular monthly meetings, community-wide public meetings and workshops provided a hands-on approach at the start of the project to identify and develop the future vision for the City of Houston. Substantial input from residents, business owners, property owners, and agency stakeholders such as the Alaska Department of Transportation and Public Facilities (DOT&PF) on September 18, 2014 helped inform the Vision, Goals, Objectives and Implementation Strategies of the Draft Comprehensive Plan. The project coordinated with City of Houston's annual Founders Day to provide a staffed Informational Booth on August 16, 2014 to notify residents in person about the CIA and Comprehensive Plan's kickoff to over 4000 attendees to the event. Subsequent public meetings coincided with major project milestones including Public Meeting 2 for the Community Impact Assessment on June 4, 2015. Public Meeting 3 provided the community an opportunity to review the Draft Comprehensive Plan and ask the project team questions on May 5, 2016.

City of Houston Planning Commission & City Council

Throughout the project, Steering Committee members and consultant staff presented periodic updates to the Planning Commission and City Council. After the Comprehensive Plan was drafted for a Public Hearing, two Planning and Zoning Commission meetings were held including the Draft Comprehensive Plan Introduction on June 30, 2016 and the Public Hearing on July 28, 2016. After the Planning and Zoning Commission recommended approval to City Council, an Introduction of the Draft Plan was held on August 11, 2016. The City Council held a public hearing on the Draft Comprehensive Plan on September 8, 2016.

A detailed list of the public notices and public outreach is an attachment to this Staff Report. The public involvement summaries and public materials can be found in the Comprehensive Plan's Appendix B.

This Plan includes goals, objectives, strategies and actions for:

- Growth and Economic Development;
- Land Use for Town Center, Residential and Commercial Development;
- Parks and Recreational Opportunities;
- Environmental Quality;
- Community Facilities;

- Transportation Facilities and Infrastructure; and
- Plan Implementation.

The Plan provides a cohesive vision for decisions specific to the City, based on its unique challenges and opportunities. The Plan will serve as a road map to meet future growth needs. It will also serve as the legal foundation for the City's Land Development Code. The Plan will help justify investments in capital improvements, involve residents with future planning efforts, and be useful in securing grant funding and partnerships.

Administrative recommendation: Approval and recommendation of City of Houston Comprehensive Plan for adoption by the Mat-Su Borough Assembly.

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Comp Plan

CITY OF HOUSTON COMPREHENSIVE PLAN

CITY OF HOUSTON COMPREHENSIVE PLAN

ADOPTED SEPTEMBER 8, 2016
HOUSTON CITY COUNCIL ORDINANCE 16-22

CITY OF HOUSTON
VIRGIE THOMPSON, MAYOR

PREPARED BY:
R&M CONSULTANTS, INC.
VAN LE, AICP, PROJECT MANAGER

CITY OF HOUSTON COMPREHENSIVE PLAN REVISION

MAYOR'S MESSAGE

Dear Citizens of Houston,

It is with great pride that I, along with the City Council and the Planning Commission, present the City of Houston this Comprehensive Plan.

The Comprehensive Plan highlights our resources and development opportunities, which include jobs, economic vitality and revitalization, educational opportunities, safety, security and preservation of Houston's unique character.

The Comprehensive Plan is a living and breathing document which represents the future for Houston. Through its goals, objectives and policies, the plan will serve as our roadmap for the future. The Comprehensive Plan recommends specific actions and projects: but, more importantly, it gives the community a standard measuring tool to help evaluate proposals and plans for development.

Having an updated comprehensive plan is critical to Houston's future success. On behalf of the City Council, I wish to extend our thanks to R&M Consultants, Inc., specifically the project manager Van Le, the Comprehensive Plan Steering Committee, the Planning Commission, staff and the citizens that participated in preparing this plan.

Sincerely,

Virgie Thompson
Mayor

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CHAPTER 1: INTRODUCTION

7

8 Need And Purpose For Revised Plan
8 Planning Context
Relationship To Other Plans: MSB, Zoning Regulations
9 What Is A Comprehensive Plan?
How Will This Plan Be Used?
How Will This Plan Be Implemented?
Plan Development Process

CHAPTER 2: COMMUNITY OVERVIEW

11

12 Location
12 History, Development Patterns, Timeline
14 Physical Setting
Soils
Waterbodies
Wetlands
Floodplains
16 Land Use
19 Land Ownership
21 Public Infrastructure
Parks and Recreation Facilities
Community Centers, Services and Libraries
23 Public Schools
Public Safety Facilities and Services
Utilities
24 Transportation System

CHAPTER 3: DEMOGRAPHIC OVERVIEW

27

28 Population
30 Median Age
Ethnicity and Community Make Up
Educational Attainment
31 Economy
Household Income
Employment Trends
Houston Businesses
32 Housing in Houston
35 Future Conditions and Land Use Needs
Population Growth and Projections
Future Housing Demand Projections

CHAPTER 7: TRANSPORTATION PLAN

62

63 Status Of The Transportation System
The Parks Highway
64 City Of Houston Road Network
Layout
Road Functional Classifications
Road Surface Conditions
Road Ownership And Responsibilities
Alaska Railroad
66 Pedestrian Pathways And Non-Motorized Use
66 Public Transportation
Freight
67 Relationship To Other Plans, Area Projects And Studies
Matanuska-Susitna Borough Long Range Transportation Plan (MSB LRTP)
69 Alaska Department Of Transportation And Public Facilities Parks Highway Vision, 2006
71 Travel Demand Modeling And Transportation Planning Assumptions
Knik Arm Bridge
73 Recommendations
Bypass
74 Interchange
75 Congestion Management
Access Management
76 Pedestrian Crossings
Port To Parks

nts

CHAPTER 4: COMMUNITY VALUE AND GOALS

40

41 Community Involvement
41 Community Assets
42 Constraints and Challenges
43 Opportunities
44 Community Values

CHAPTER 8: IMPLEMENTATION

86

87 Overview
Community Design Standards
Regulatory Controls - Title 10 Land Use Regulations
88 Funding Strategies
Capital Improvement Program (CIP)
Alaska Statewide Transportation Improvement Program (STIP)
Public Private Partnerships (3P)
89 Additional Funding Sources
90 Implementation Schedule
Immediate Time Frame (0-6 Months)
91 Short-Term (1-5 Years)
92 Mid-Term (5-10 Years)
Long-Range (10-20 Years)

CHAPTER 5: THE PLAN: COMMUNITY GUIDELINES FOR GROWTH

46

47 Vision and Charge
Growth and Economic Goal
Objectives
Policies
Strategies
48 Land Use Goal
Objectives
Policies
Strategies
49 Parks, Recreation and Open Space Goal
Objectives
Policies
Strategies
50 Environmental Goal
Objectives
Policies
Strategies
51 Community Facilities Goal
Objectives
Policies
Strategies
52 Transportation Goal
Objectives
Policies
Strategies

CHAPTER 6: LAND USE PLAN

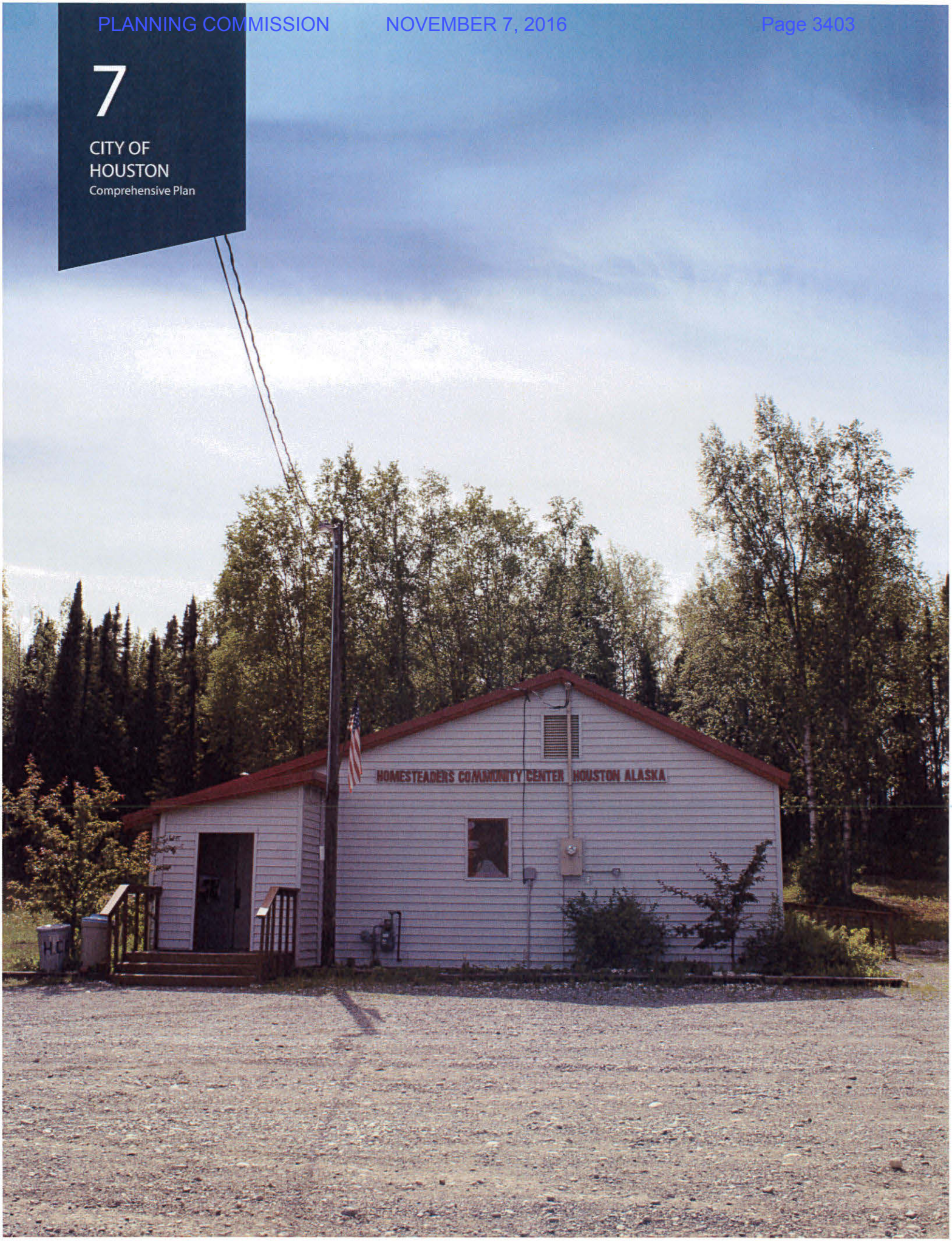
54

55 Relationship to Houston's Municipal Code Title 10 Land Use Regulations and Zoning Map
Amendments To The Land Use Plan
55 Land Use Classifications
Residential Classifications
57 Non-Residential Classifications

7

CITY OF HOUSTON

Comprehensive Plan



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CHAPTER 1: INTRODUCTION

Houston, Alaska is a growing rural residential community that has developed around the Parks Highway, a National Highway Systems Highway bisecting the community. A rural town setting within 15 minutes of urban amenities, Houston is at a crossroads for change and growth.

NEED AND PURPOSE FOR REVISED PLAN

In 2016, the City of Houston's Comprehensive Plan underwent a revision. Originally written in 1999 by the Matanuska- Susitna Borough and amended in 2003, the City of Houston now assumed the responsibility of revising its Comprehensive Plan. Comprehensive Plans are used as a tool to guide future growth, development, and change within a community. Emphasized by the experiences in other Matanuska-Susitna Borough communities, unplanned development creates numerous economic, social, and governmental problems. The City of Houston recognizes that these problems are largely preventable with proper planning and clear implementation strategies.

Population growth, with its increased demand for services, as well as major transportation infrastructure projects underway within or adjacent to the City of Houston, have prompted the city to determine and thus capitalize on future opportunities. Such possibilities will arise from changes in the community's infrastructure, economy and development. Since the adoption of the amended 2003 Plan, multiple new sets of census data have become available and a Community Impact Assessment is underway simultaneously with this effort. In addition, information on transportation infrastructure initiatives by the Alaska Department of Transportation & Public Facilities and Alaska Rail Road anticipated in the Houston area in the near future has become available. With significant development changes affecting the community's qualities of life anticipated, it has become crucial that the City of Houston revise the 2003 Comprehensive Plan.

The Comprehensive Plan Revision seeks to describe the community's vision as it responds to future growth and development changes. It provides direction for development decisions and future growth in Houston. The Plan Revision validates the community's core values. They include accommodating orderly growth; the need for enhanced education, health, and governmental services; promoting local employment and economic opportunity; and maintaining a high quality semi-rural residential environment.

PLANNING CONTEXT

RELATIONSHIP TO OTHER PLANS, MSB, ZONING REGULATIONS

Alaska Statute 29.40.020. requires the submission of a comprehensive plan for the systematic and organized development of first and second class boroughs or cities. Alaska Statute 29.40.030 outlines the requirements of a comprehensive plan.

Although the City of Houston is its own jurisdiction, this comprehensive plan is part of the overall Matanuska Susitna Borough Comprehensive Plan.

Cities in the Borough are responsible for the creation and updating of their individual comprehensive plans. The City of Houston's Land Use Regulations, Title 10 of the Municipal Code, is designed "to regulate the use of land and improvements, in accordance with the City of Houston Comprehensive Plan." The Comprehensive Plan provides guidelines for land use regulations and development in compliance with community defined goals. Together, the Land Use Regulations and the Comprehensive Plan provide the basis for consistent development and provide a tool to adhere to the community's vision of what Houston should be like 20 years forward. If subarea plans are developed and adopted in the future by the City of Houston, those subarea plans become part of this Comprehensive Plan.

WHAT IS A COMPREHENSIVE PLAN?

A Comprehensive Plan reflects a community's goals, objectives and policies for governing future land uses and its desired future. Comprehensive Plans provide the best prediction, based on existing conditions, of the future growth and development of a community through implementation of adopted policies and strategic actions. Comprehensive Plans typically plan for a 20-year future with provisions to check in and revise plans if new information arises, such as updated population and Census data. This Comprehensive Plan validates the community's core values, needs, and desires while providing a framework for development in the City of Houston through the year 2035.

HOW WILL THIS PLAN BE USED?

The Comprehensive Plan serves as a guiding document for policy makers, the city council, state, federal, and local agencies, and the general public in evaluating if regulatory actions, public investments, and land use changes meet the Plan's goals and objectives. As a guidance document, this Comprehensive Plan does not make decisions about individual properties or specific facilities and thus does not limit future decisions by making an overly detailed future vision.

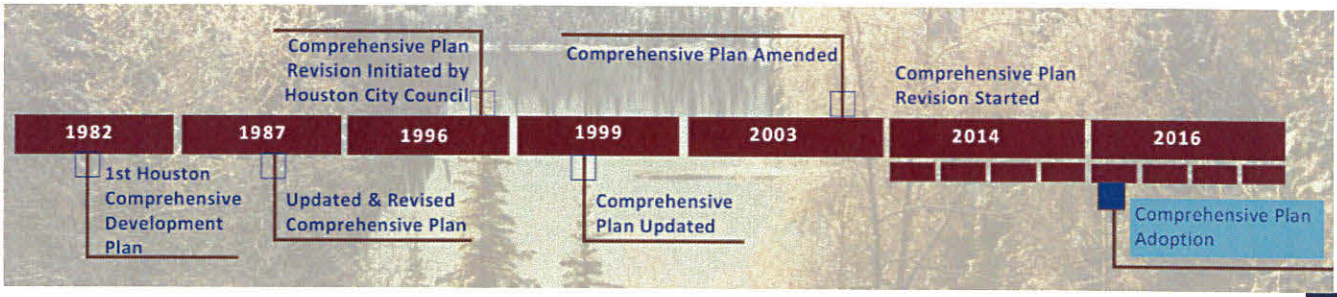
HOW WILL THIS PLAN BE IMPLEMENTED?

The Comprehensive Plan will be implemented through the policies and action strategies identified in Chapter 7 of the plan.

PLAN DEVELOPMENT PROCESS

The Comprehensive Plan Update occurred over a two year period and included multiple public involvement opportunities, technical studies, and continuous support from the Steering Committee. The process included:

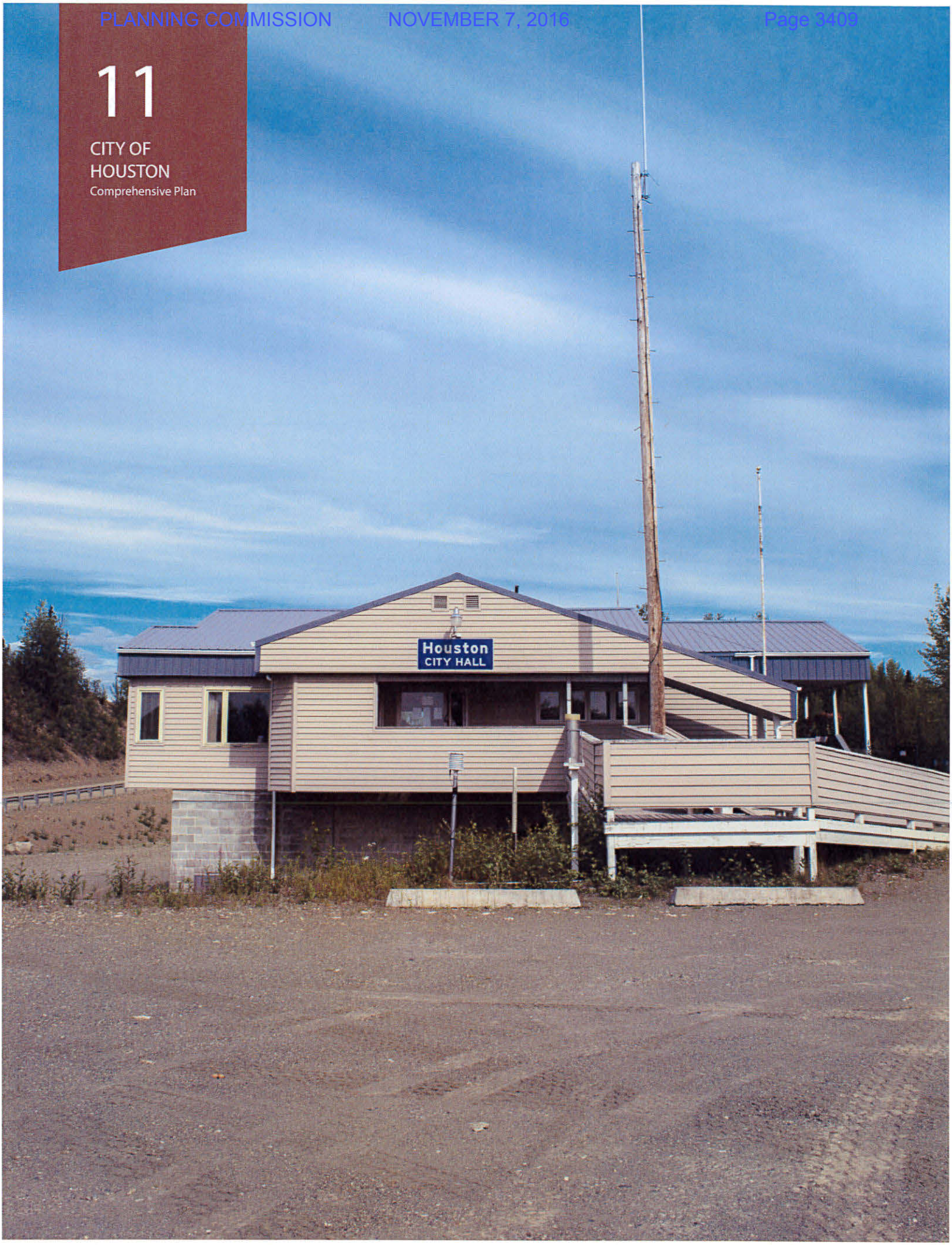
- Existing Conditions Inventory and Report
- 2003 Comprehensive Plan Reevaluation
- Public Outreach: Futures Workshop Community Household Survey
- Economic Analysis
- Community Impact Assessment
- Public Outreach: Community Impact Assessment Open House
- Land Use Assessment
- Draft Land Use and Transportation Plan
- Draft Comprehensive Plan
- Public Outreach: Comprehensive Plan Review Open House
- Final Comprehensive Plan Revision.



11

CITY OF HOUSTON

Comprehensive Plan



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CHAPTER 2: COMMUNITY OVERVIEW

13 CITY OF HOUSTON Comprehensive Plan

This chapter summarizes the physical environment within the City of Houston, including historical development, existing land use characteristics, public facilities, and transportation system.

LOCATION

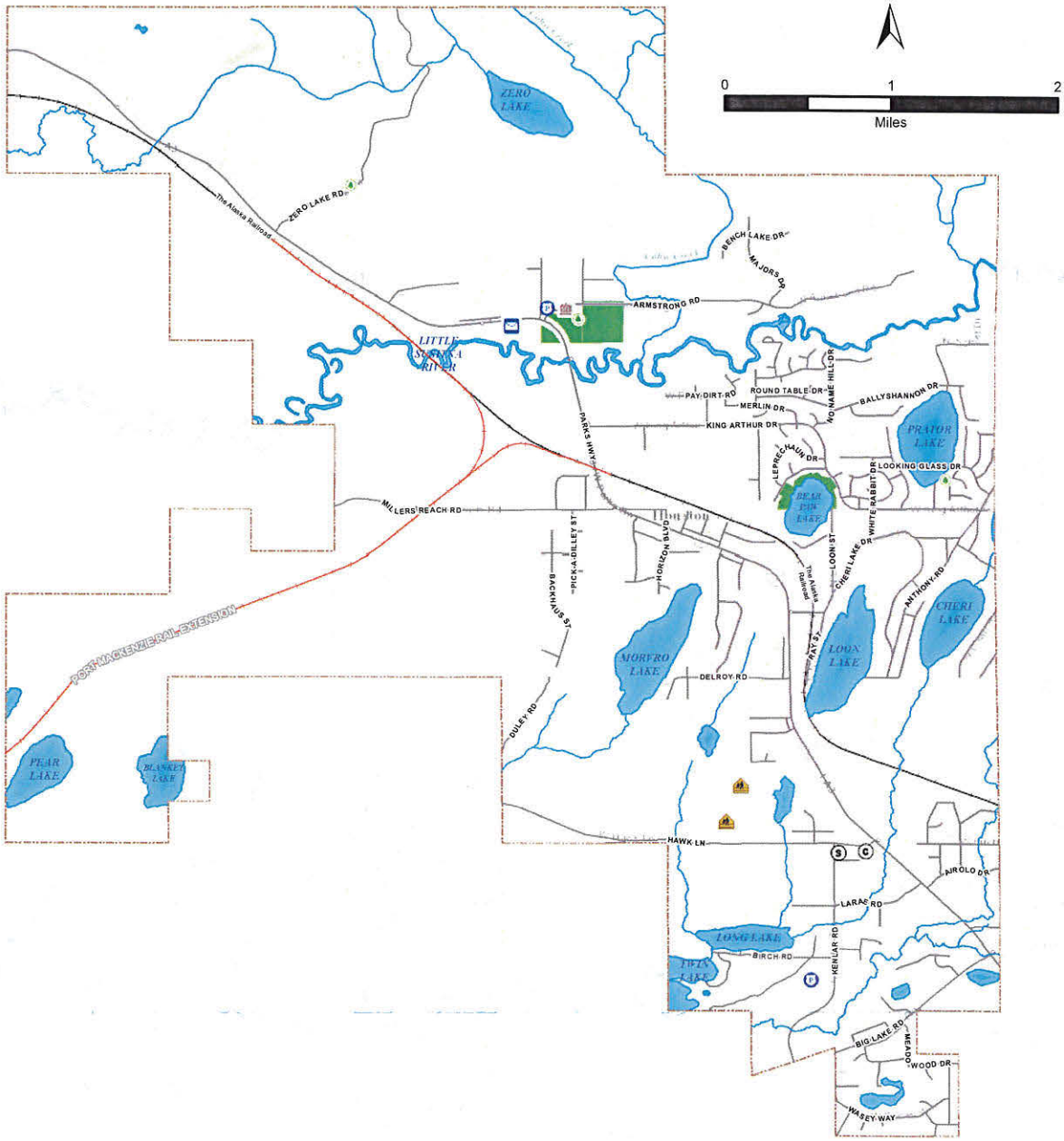
The City of Houston, Alaska is located in the Matanuska- Susitna Borough, approximately 57 road miles from Anchorage, Alaska's largest employment and population center. Located 7.5 miles northwest of Wasilla and adjacent to Big Lake, Houston is along the western edge of the most populous portion of the Matanuska-Susitna Borough. Houston's city limits encompass about 25.3 square miles, ranging from Mile 61 of the Parks Highway at the northern boundary to Mile 52 at the southern boundary. The center of the community lies near the junction of the Little Susitna River and Mile 57.2 of the Parks Highway. The commercial and residential development along the first mile of Big Lake Road lies within the Houston city limits.

The Alaska Railroad traverses the Parks Highway within the city limits. The Port MacKenzie Rail Extension runs from its junction with the main line south of the Little Susitna River in Houston and continues 32 miles southwest to the port at Point MacKenzie. Full air service is available at Anchorage International Airport. Other local air service is available at small Mat-Su airports and a local seaplane base on Morvro Lake. See Figure 1. Project Area.

HISTORY, DEVELOPMENT PATTERNS, TIMELINE

Houston, Alaska was first listed on a 1917 blueprint Alaska railroad map as "Houston Siding," named after Tennessee Congressman William Cannon Houston. The city's origins began with natural resource development and the Herning Trail. Now called the Willow Creek Sled Trail, it was first used to freight supplies to the Willow Creek Mining District, according to the State of Alaska's Community and Regional Affairs database. Several coal mines developed in the area in 1917-1918 and a railroad spur was built that supplied coal to Anchorage and the LaTouche Mining Company in Prince William Sound. The coal from Houston was heavily mined through World War II, after which mine operations shut down. In 1953-1954 gravel roads and power lines were extended west of Wasilla and Houston quickly settled. Houston incorporated as a third-class city in 1966 and was reclassified in 1973 to a second-class city. The City of Houston has historically grown and continues to be a residential community with a few commercial developments adjacent to the Parks Highway.

In June of 1982, the Matanuska-Susitna Borough Assembly, on behalf of the City of Houston, officially adopted the city's first Comprehensive Development Plan. The city updated and revised the comprehensive plan to reflect more accurately changing economic conditions in 1987, 1999, and the most recent amendment in 2003. In keeping with the community's commitment to prepare for changing opportunities in the community's infrastructure, economy, population, and development, the City of Houston initiated this revision in 2014.



LEGEND

- City Boundary
- Parcels
- Park
- Railroad
- Port MacKenzie Rail Extension
- City Hall
- Public Safety
- Post Office
- School
- Community Center
- Senior Center
- Recreational

CITY OF HOUSTON

COMMUNITY IMPACT ASSESSMENT AND COMPREHENSIVE PLAN REVSION

PROJECT AREA

JUNE 2016 FIGURE 1

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PHYSICAL SETTING

Houston's pastoral setting is against the backdrop of the Talkeetna Mountains with the Little Susitna River running east-west through the city boundaries. Lakes are scattered throughout the city, attracting many residents and non-residential recreational users.

SOILS

Soils in Houston generally range from well-drained, well-sorted gravel to hydric wetland soils. A number of small lakes dot the central and southern portions of the community limits and are bordered by glacial moraines consisting of non-sorted glacial till. Soils located south of the Little Susitna River and east of the Parks Highway are generally well drained sand and gravels of pitted outwash and till material. Larger intermittent areas of poorly drained soils and peat bogs occur to the west of the Parks Highway.

The northern topography is characterized by rolling hills and perched silty areas. These soils are fine grained and poorly draining. Development within the area is sparse with only a few gravel pits cut into glacial moraine and esker/kame complexes.

Soils in the central portion of Houston are suitable for cultivated crops and agricultural development. Portions of these areas are presently zoned for low density residential and agricultural use.

WATERBODIES

Approximately 864 acres, or 5%, of Houston consists of surface waters. The most notable is the Little Susitna River which crosses the Parks Highway in the middle of the community. This river originates in the Talkeetna Mountains in Hatcher Pass and flows southwest ultimately into Cook Inlet. The Little Susitna River, Coho Creek, and a number of contributing unnamed streams are listed in the Anadromous (salmon producing) Waters Catalog.

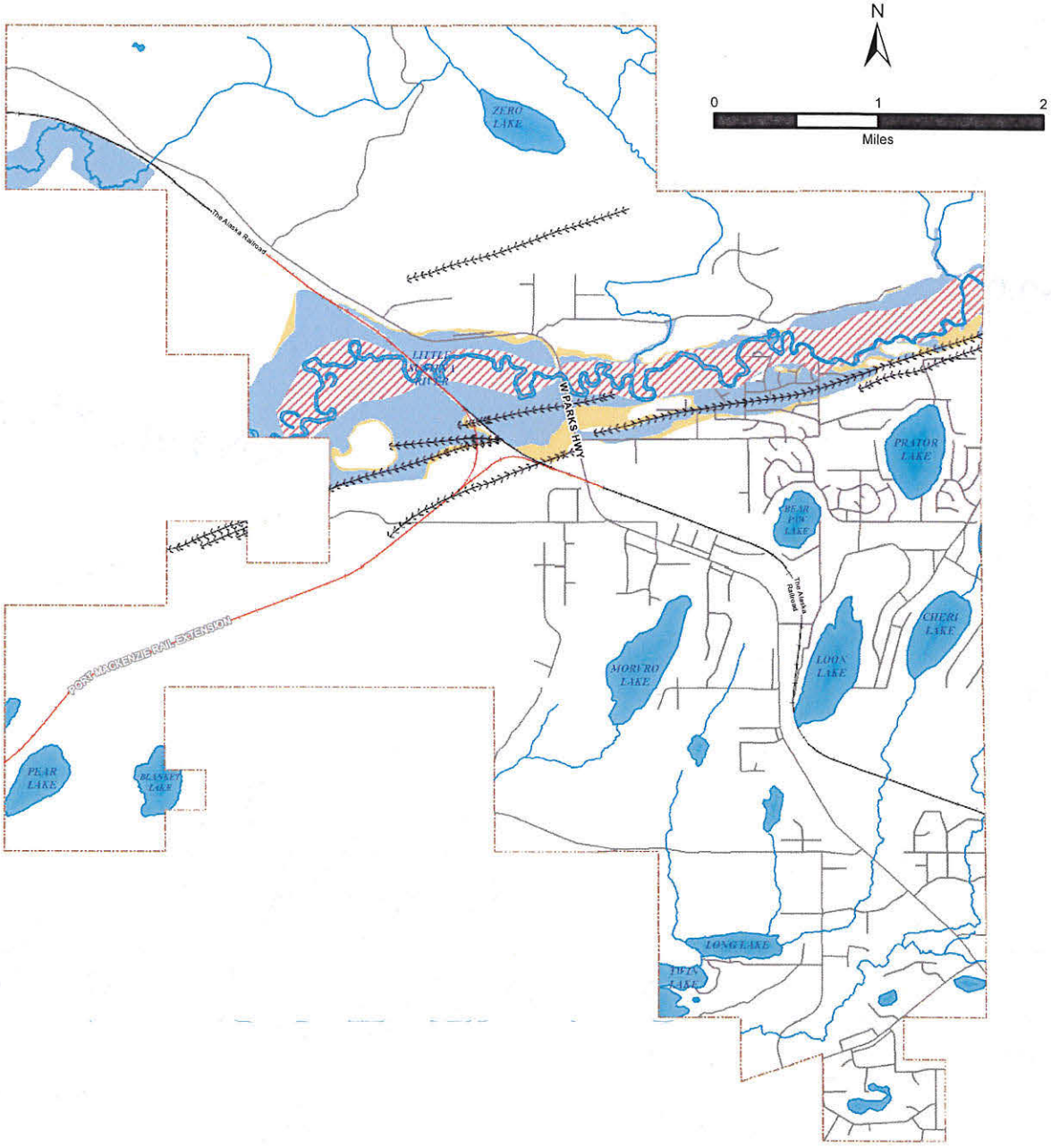
Several popular lakes exist within the City limits including Zero Lake, Bear Paw Lake, Prator Lake, Frog Lake, Cheri Lake, Loon Lake and Morvro Lake. Bear Paw, Prator, Morvro, and Loon Lakes are stocked annually with various fish species. There are no designated "Impaired Waterbodies" within the city of Houston.

WETLANDS

A number of riverine, lacustrine, and palustrine wetlands are present within Houston. Most wetlands are riparian buffers along the Little Susitna River, Coho Creek, and surrounding ponds. Several other wetlands are present in low lying areas between Zero Lake and the Little Susitna River.

FLOODPLAINS

The Federal Emergency Management Agency (FEMA) completed a Flood Insurance Study and remapped the Special Flood Hazard Areas for the Mat-Su Borough. The Borough adopted the new floodplain mapped in 2011 which shows the floodplain surrounding the Little Susitna River; see Figure 2 Flood Zones. A floodplain development permit from the Borough is required prior to building or development within a federally designated flood hazard area.



LEGEND

Flood Hazard Areas

- Floodway
- 1% Annual Chance of Flooding
- 0.2% Annual Chance of Flood hazord
- Area of Minimal or Undetermined Flood Hazard
- Castle Mountain Fault (Susitna Section)

CITY OF HOUSTON

COMMUNITY IMPACT ASSESSMENT AND COMPREHENSIVE PLAN REVSION

FLOOD ZONES AND FAULTS MAP

JUNE 2016 FIGURE 2

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LAND USE

Approximately 16,210 acres of land are within the City of Houston. The City has eleven distinct zoning districts that implement the policies of the Comprehensive Plan. The zoning districts are a part of Houston's Municipal Land Use Regulations. The table to the right summarizes the current zoning district area by type. See Figure 3 Existing Zoning.

Of the approximately 16,210 acres within the City of Houston, almost 80% or 12,961 acres of that total land is undeveloped. Approximately 15% of the total land in Houston is currently being used for residential purposes. The following table summarizes the area of existing land uses by type and Figure 4 Existing Land Use shows currently land use in Houston.

There are approximately 7,570 acres of land zoned for residential uses within the City of Houston. Currently, 15% of that zoned land is being used for residential purposes. The following table summarizes the vacant residentially zoned land by residential zoning district.

The few existing commercial land uses are mostly concentrated to the city's southern border where the Parks Highway and Big Lake Road intersect, which is congruent with existing zoning. Commercial development in this location reflects the greater area trend of development along the Parks Highway and the expansion north from Anchorage and Wasilla, which is anticipated to continue.

The Alaska Railroad extension from Port MacKenzie to the mainline through Houston has increased the amount of land used for transportation purposes and provides an opportunity for more transportation support uses to emerge in the future. This would be a new trend in Houston's land use which remains dominantly residential.

Zoning District	Approx. Area (acres)	Percent of Total Land
PLI – Public Lands and Institutions	3450	21.28%
R-1 - Single-family and Two-family Residential	3940	24.30%
MFR – Multifamily Residential	960	5.92%
RA 2.5 – Residential / Agriculture	190	1.17%
RA 5 – Low-Density Residential Agriculture	2480	15.30%
NC – Neighborhood Commercial District	0	0%
C – Commercial District	210	1.30%
LI – Light Industrial	1290	7.96%
HI – Heavy Industrial	1460	9.01%
H – Holding District	1270	7.83%
PH – Parks Highway District	960	5.92%

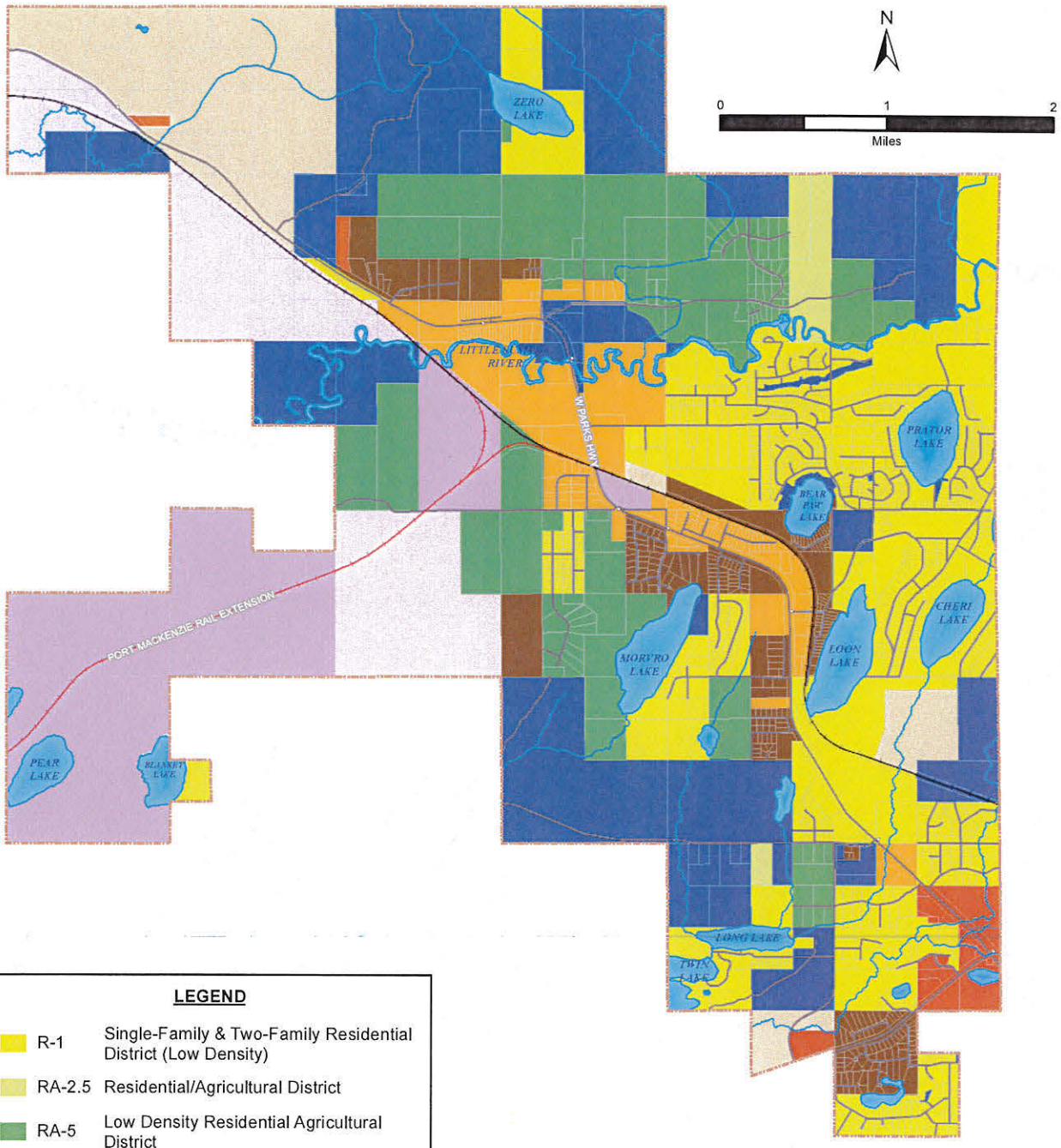
Source: City of Houston Zoning Map, November 2015

Zoning	Vacant (Acres)
R-1	2582
RA-2.5	55
RA-5	1690
MFR	416
Total	4327

Source: City of Houston Zoning Map, November 2015

Land Use	Area (acres)	% of Total
Churches	2	0.01%
Commercial – Heavy	12	0.07%
Commercial – Light	32	0.20%
Communications	10	0.06%
Duplex – Two-Family	11	0.07%
Education – Public	241	1.49%
Mobile Home	97	0.60%
Mobile Home Parks	1	0.01%
Multi Family	12	0.07%
Public Use	18	0.11%
Public Safety	93	0.57%
Recreation	3	0.02%
Residential	2435	15.02%
Residential Garage	261	1.61%
Residential W/ Commercial Use	10	0.06%
Transient Lodging	11	0.07%
Vacant	12961	79.96%
Total	16,210	100%

Source: City of Houston Land Use Map, per Mat-Su Borough Assessment Office



LEGEND

R-1	Single-Family & Two-Family Residential District (Low Density)
RA-2.5	Residential/Agricultural District
RA-5	Low Density Residential Agricultural District
MFR	Multi-Family Residential District (Medium Density)
C	Commercial
LI	Light Industrial District
HI	Heavy Industrial District
PLI	Public Lands and Institutions
H	Holding District
PH	Parks Highway District

CITY OF HOUSTON

COMMUNITY IMPACT ASSESSMENT AND COMPREHENSIVE PLAN REVSION

EXISTING ZONING

JUNE 2016 FIGURE 3

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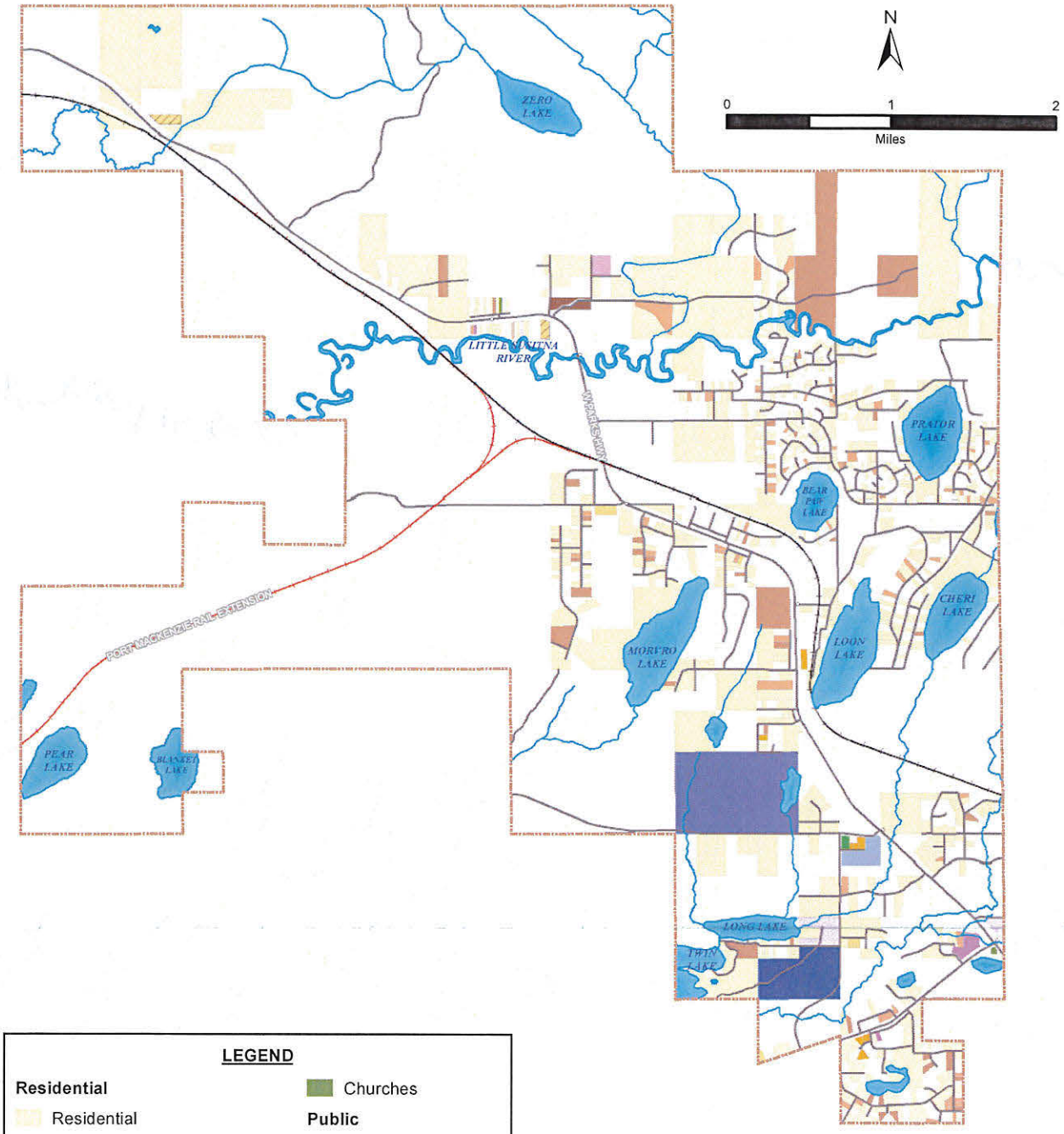

LEGEND

Residential
- Residential
- Duplex
- Multi Family
- Mobile Home
- Mobile Home Parks
- Residential Garage
- Residential W/ Commercial Use
- Transient Lodging

Community
- Recreation
- Churches

Public
- Public
- Education - Public
- Public Safety

Commercial
- Communications
- Commercial - Light
- Commercial - Heavy

Unclassified
- Vacant

Note: Land use designations based on the MSB GIS parcel dataset Building Use 1 attribute.

CITY OF HOUSTON

COMMUNITY IMPACT ASSESSMENT AND COMPREHENSIVE PLAN REVSION

EXISTING LAND USE

JUNE 2016 FIGURE 4

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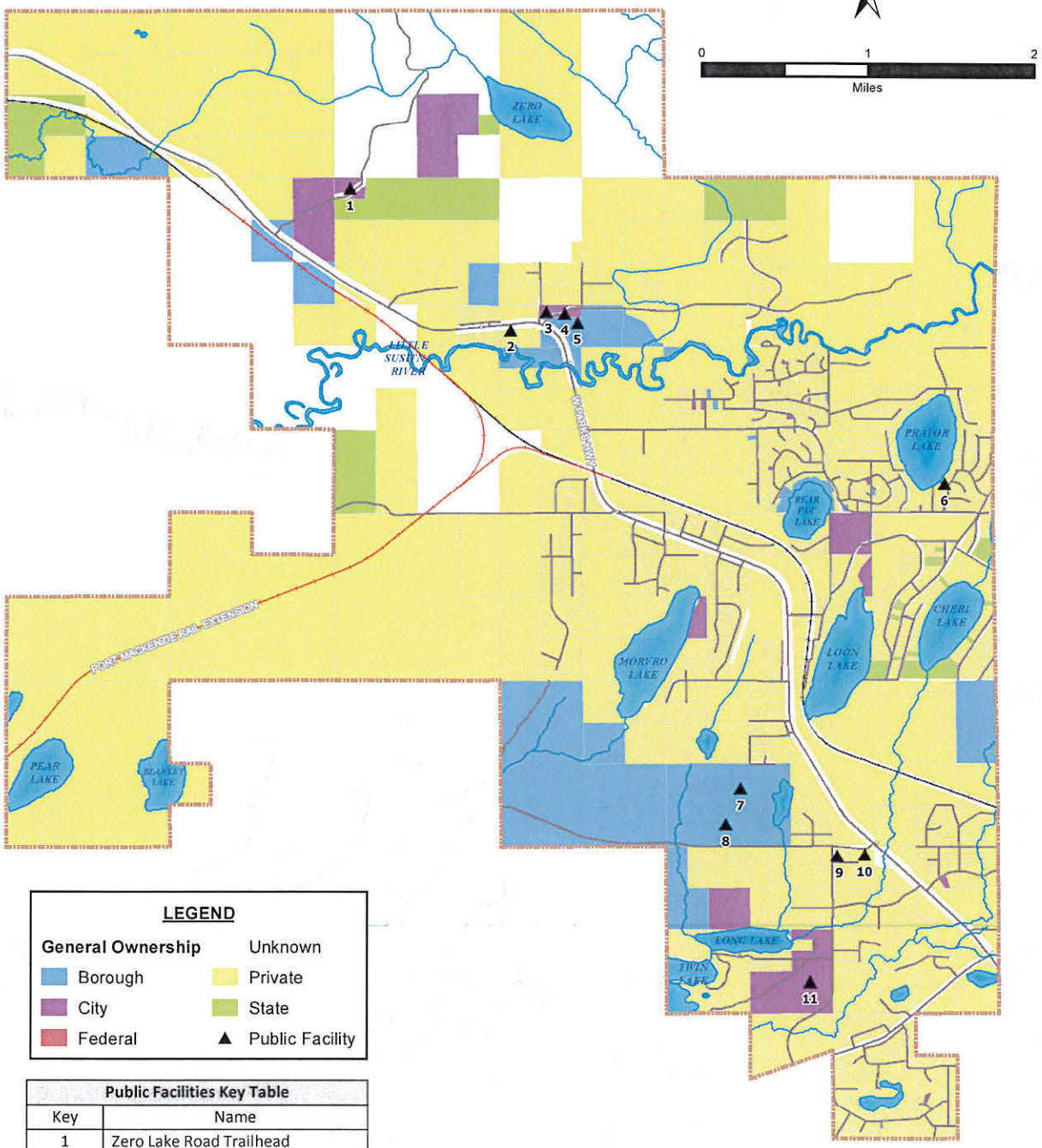
LAND OWNERSHIP

The Existing Land Ownership map depicts the landownership status for all parcels within the City of Houston's limits. The majority of land is privately owned, about 14,000 acres of the total 16,210 acres. Other large tract land owners include the City of Houston, 420 acres, and the Mat-Su Borough's 1,200 acres. The State of Alaska also owns about 470 acres of land in the city. See Figure 5 Existing Land Ownership.



LEGEND

General Ownership	Unknown
Borough	Private
City	State
Federal	▲ Public Facility

Public Facilities Key Table	
Key	Name
1	Zero Lake Road Trailhead
2	Houston US Post Office (CPU)
3	Houston PSB 9-1
4	Houston City Hall
5	Little Susitna River Campground
6	Prator Lake Park
7	Houston High School
8	Houston Middle School
9	Mid Valley Senior Center
10	Homesteaders Community Center
11	Houston PSB 9-2 & Water Supply

CITY OF HOUSTON

COMMUNITY IMPACT ASSESSMENT AND COMPREHENSIVE PLAN REVSION

LAND OWNERSHIP

JUNE 2016 FIGURE 5

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PUBLIC INFRASTRUCTURE

PARKS AND RECREATION FACILITIES

Like most of Alaska, access to parks and outdoor recreational facilities is essential to the quality of life for Houston residents and visitors. The Little Susitna River provides outdoor recreation in the form of camping, boating, and fishing. Many of the lakes in Houston are stocked by the Alaska Department of Fish and Game with various fish species for recreational purposes. The Little Susitna Campground is located on the east side of the Parks Highway at Mile57.3. The Campground is open 24 hours from Memorial Day to Labor Day weekends. The facility includes a day use area, pavilion, play grounds, camp sites equipped with fire pits and trash cans, rest rooms, two public water wells, and RV facilities. The City of Houston maintains a Public Use Facility opposite this campground, which provides additional access to the Little Susitna River.

The Riverside Camper Park is located in the core of Houston along the Parks Highway and adjacent to the Little Susitna River. This park provides shower and laundry facilities, electricity, and a grocery store.

The Houston/Willow Creek Sled Trailhead recreation area is located at Mile 59 of the Parks Highway off Zero Lake Road. This recreation area provides parking for approximately 60 vehicles with trailers and provides rest room facilities and trailhead access to the Hatcher Pass recreation area.

Most trails within the community are informal and do not have clearly dedicated public access. These trails are utilized as transportation corridors for snow machines, ATVs, dog sleds, bikers, horses, pedestrians, and skiers. The Haessler-Norris Trail System consists of 20 trails of various distances shown on a map published in April 2011 and created for the Willow Dog Mushers Association.

The Hatcher Pass/Independence Mine, Big Lake, the Susitna Flats State Game Refuge, the Mat-Su Visitor's Center, and Nancy Lake Recreation Areas are all located near the community of Houston. They offer various recreational opportunities to local residents as well as regional, out of state, and international tourists. See Figure 6 for existing Parks and Recreation Facilities.

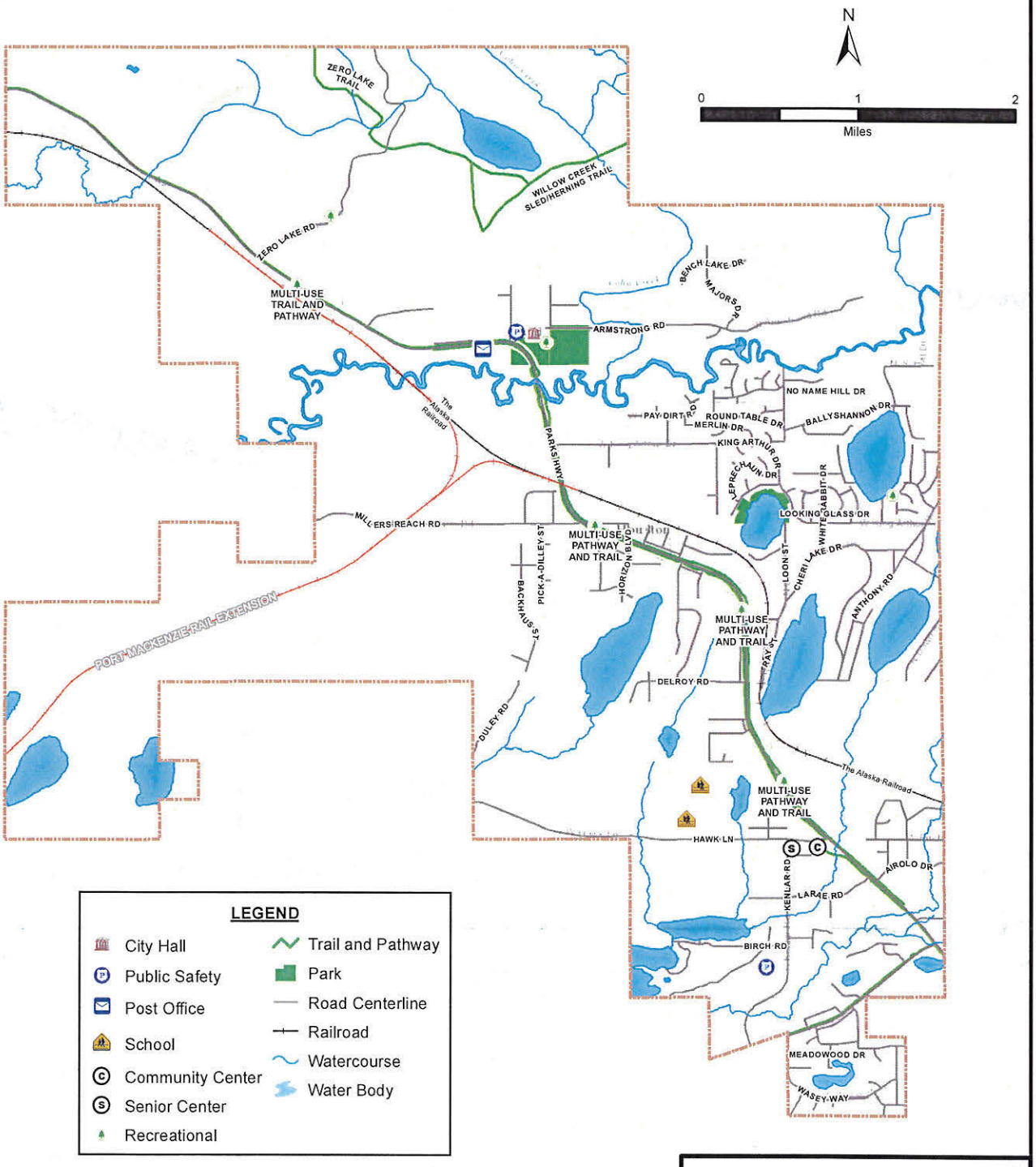
COMMUNITY CENTERS, SERVICES, AND LIBRARIES

The Homesteaders Community Center, located just west of Mile 53.5 of the Parks Highway on Community Drive, has provided a meeting place and fellowship for area residents since its inception in 1957. The nonprofit organization's members, who are local area residents, host social gatherings, holiday parties, and bingo. The building is rented for functions and on-site amenities include ball fields, a mail hall, kitchen facilities, restrooms, and a storage area.

Mid-Valley Seniors, Inc. is a nonprofit organization founded in 1983. The association provides fellowship and nutritional programs to member seniors in Big Lake, Houston, Meadow Lakes, and Willow areas. In 1987 the Mid-Valley Senior Center opened in Houston which includes a cafeteria, recreation room, and an office.

There are no public libraries in Houston, although the Mat-Su Borough does have libraries in the neighboring communities of Big Lake and Willow. There are libraries available to students at the Houston High School and Middle School. Public libraries are also located in Wasilla, Palmer, Sutton, Talkeetna, and Trapper Creek.

The Big Lake Country Club, founded in 2000, is a 24-hour services provider for developmentally delayed and emotionally challenged adults. The main campus is located in Houston and provides daily support, monitoring and supervision for adults in need. A fenced and secure facility, amenities include a group home and cabins, a game room, kitchen and meals, and a horse facility for therapeutic horseback riding.



CITY OF HOUSTON

COMMUNITY IMPACT ASSESSMENT AND COMPREHENSIVE PLAN REVSION

PARKS & RECREATION

FIGURE 6

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PUBLIC SCHOOLS

Houston is located within the Matanuska-Susitna Borough School District, which consists of 45 schools. There are no elementary schools within the municipal boundaries of Houston; Big Lake, Willow, and Meadow Lakes elementary schools serve the city's elementary school age children. Houston Middle/High School Complex located on Hawk Lane has students from grades six through twelve. Bus service is provided for all public schools in the Houston area.

PUBLIC SAFETY FACILITIES AND SERVICES

The City of Houston Emergency Services building is located at Mile 57.3 of the Parks Highway. The building houses the Houston Fire Department and unstaffed Police Department facilities. The Emergency Services building serves as Houston Fire Station 9-1 and a Fire Station 9-2 is located on Birch Road, north of Big Lake Road. Local law enforcement is being handled by the Alaska State Troopers. The fire department is supported by active volunteers who also provide emergency medical services.

UTILITIES

Most Houston residents have on-site well and septic systems for wastewater disposal. The majority of commercial properties have access to natural gas but many residential homes rely on heating oil, wood, and electricity for their primary space heating source instead of natural gas. As of 2016, gas lines extend down Hawk Lane to Houston High School and Middle School and from the west along King Arthur Drive.

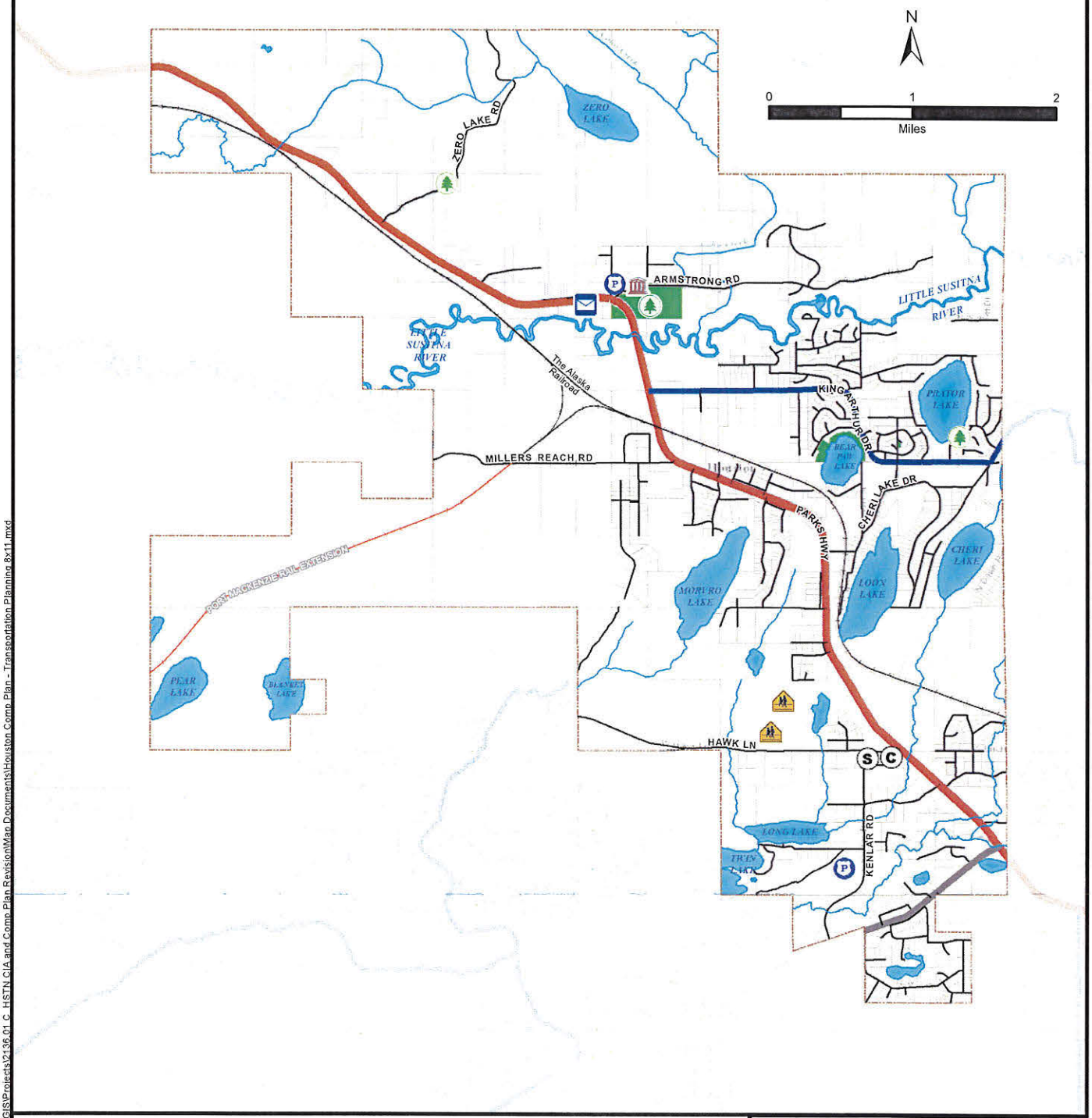
TRANSPORTATION SYSTEM

The City of Houston's transportation system is primarily a network of local roads branching east and west from the Parks Highway, which operates as a backbone for the regional transportation network (see Figure 7). The Parks Highway connects Anchorage to interior Alaska, making it the main route for shipping freight, recreational tourism, and general traffic through the City of Houston.

Freight is also transported along the Alaska Railroad, which generally parallels the Parks Highway corridor through the City of Houston's boundaries. A rail extension from the mainline in Houston to the port at Point MacKenzie is currently under construction, and will potentially increase the amount of future freight traffic traveling through Houston.

Most of Houston's existing local roads are unpaved with a gravel surface. Non-motorized transportation facilities in Houston include separated multi-use pathways along the Parks Highway, a multi-use pathway on the north side of Big Lake Road, and a designated Houston/ Willow Creek Sled Trailhead recreation area located off Zero Lake Road that provides access to Hatcher Pass. Unofficial ATV and snow machine pathways exist throughout the City.

Detailed information on the City of Houston's existing transportation system can be found in Chapter 7. Transportation Plan (page 61) of this Comprehensive Plan.



LEGEND

- City Boundary
- Parcels
- Park
- Railroad
- Port MacKenzie Rail Extension (Partially Complete)

Roads
- Interstate
- Minor Arterial
- Minor Collector
- Local road

- City Hall
- Public Safety
- Post Office
- School
- Community Center
- Senior Center
- Recreational

CITY OF HOUSTON

COMMUNITY IMPACT ASSESSMENT AND COMPREHENSIVE PLAN REVSION

TRANSPORTATION NETWORK

JUNE 2016 FIGURE 7

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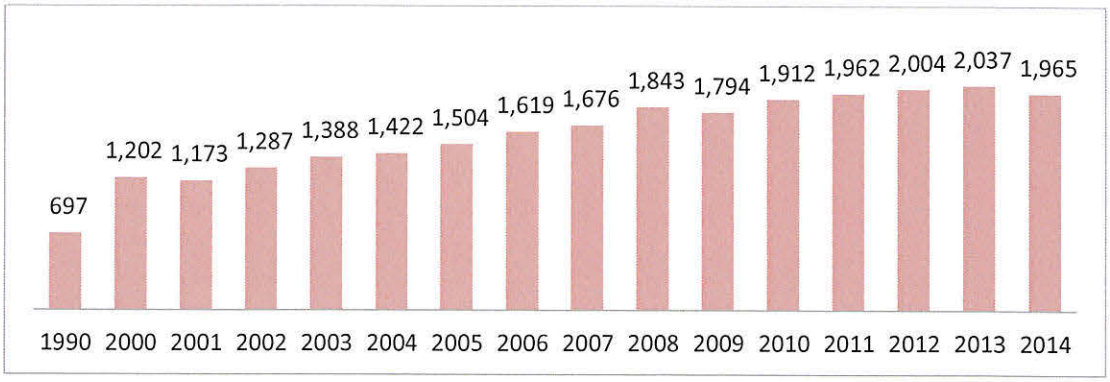
CHAPTER 3: DEMOGRAPHIC OVERVIEW

POPULATION

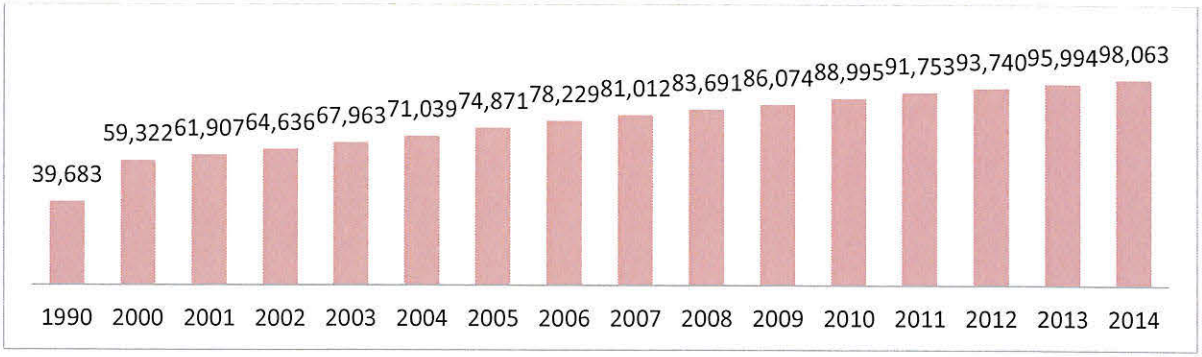
The City of Houston has experienced steady population growth over the past two decades. In 2014, Houston's population was estimated at 1,965 residents; nearly triple its 697 residents in 1990 (182 percent growth, see Figure 8). This rate of growth is higher than that of the entire Mat- Su Borough, which grew from 39,683 to 98,063 residents over the same time period (147 percent growth, see Figure 9). Part of this higher growth rate can be attributed to lower land costs, highway improvements that make commuting faster and safer, and the unique rural lifestyle Houston offers.

Figure 8 Houston Populations. 1990 and 2000-2014



Source: Alaska Department of Labor and Workforce Development (ADOLWD)

Figure 9 Mat-Su Borough Population, 1990 and 2000-2014



Source: ADOLWD

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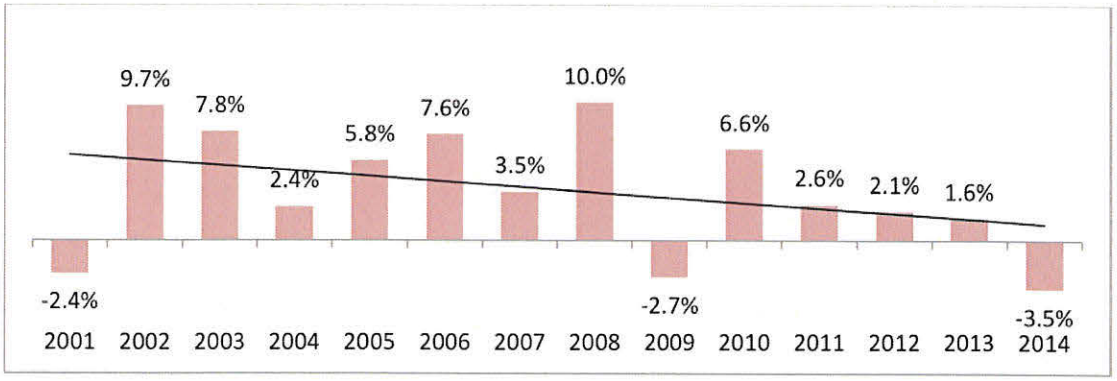
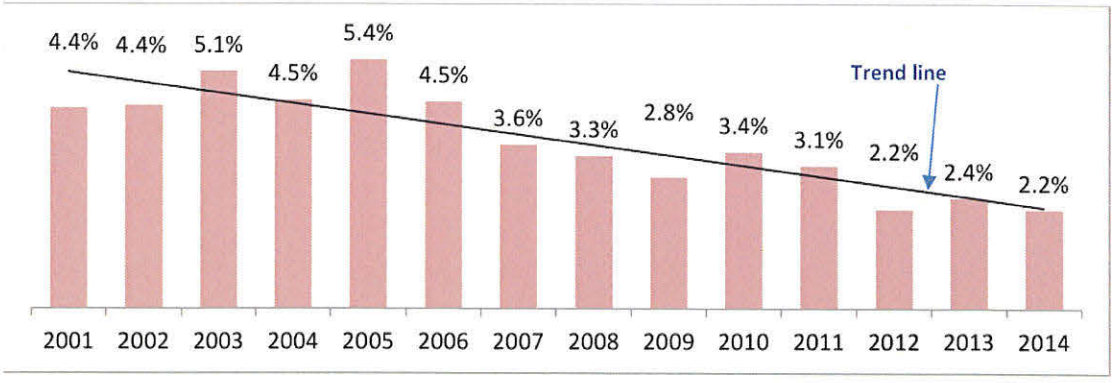
In recent years, population growth rates have slowed in both Houston and the Mat-Su Borough. As shown in Figure 10, Houston grew by 2.6% from 2010 to 2011, but experienced negative growth from 2013 and 2014. On average, Houston grew 0.7% annually since 2011. In comparison, the Borough's population grew 2.5% per year, on average, since 2011 (see Figure 11).

Figure 10 Houston Annual Population Growth Rate, 2001-2014



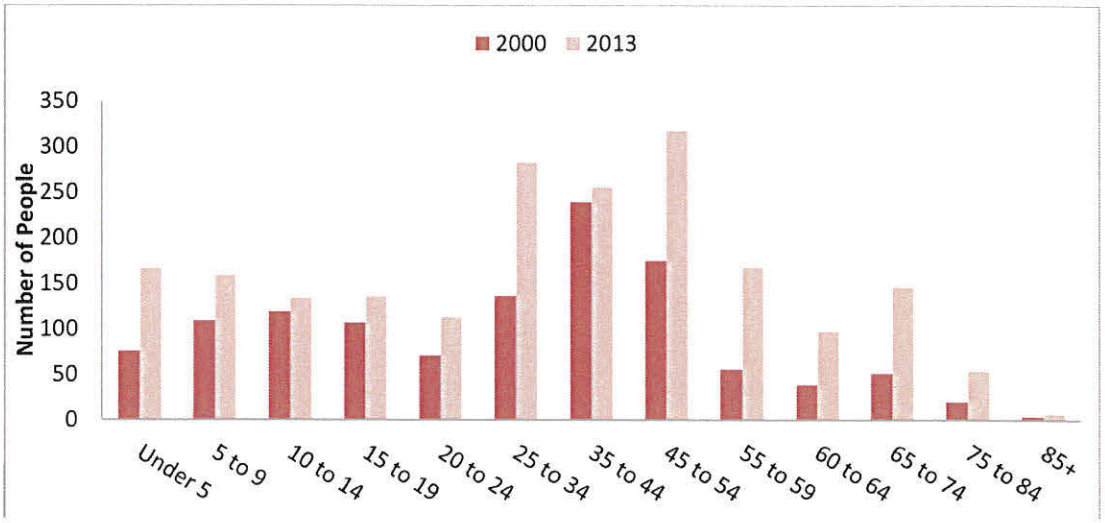
Source: ADOLWD

Figure 11 Mat-Su Borough Annual Population Growth Rate, 2001-2014



Source: ADOLWD

Figure 12 Houston Population by Age Category and Median Age, 2000 and 2013



MEDIAN AGE

The median age of Houston residents in 2013 was just over 36 years of age. That figure is slightly higher than the average of the Mat-Su Borough and the state of Alaska, which have median ages of 35 and 34 years respectively. The largest growth in population from 2000 to 2013 occurred in the age categories ranging from 25 to 34 and 45 to 54 (see Figure 12). This trend might be attributed to Houston's affordable land and housing, which attracts younger families into the area.

ETHNICITY AND COMMUNITY MAKE UP

The majority of Houston's residents, 87%, self-identify as White. About 4% of Houston residents identify themselves as American Indian and Alaska Native and the remaining 9% of Houston residents identify as multi-racial. These categories reflect the five year average distribution from 2009-2012, according to the US Census and American Community Survey.

EDUCATIONAL ATTAINMENT

According to the US Census and American Community Survey (ACS), approximately 90% of Houston's population had a high school degree or higher with 17% holding a bachelor's degree or higher. Educational attainment has increased since the 1990s. This change might have to do with improvements in the availability of educational facilities. Houston Middle School and Houston High School are located in separate buildings within Houston. Most elementary school age students currently bus to the nearby elementary schools, namely Big Lake Elementary and Willow Elementary School.

City of Houston	2000	2008-2012	2008-2012 Margin of Error
Median Household Income	$39,615	$59,583	+/- $11,475
Households with Public Assistance	58	101	+/- 39
Households in SNAP	-	118	+/- 38
Per Capita Income	$17,213	$25,876	+/- $3,318
Families Below Poverty Line	13.1%	11.6%	+/- 5.9%
Individuals Below Poverty Line	17.1%	15.8%	+/- 5.4%

Source: U.S. Census and American Community Survey

ECONOMY

HOUSEHOLD INCOME

The median household income in Houston is almost $60,000, less than the roughly $70,000 median in the Mat-Su Borough and Alaska. Per capita income averaged slightly more than $25,000, less than the $30,000 found in the Mat-Su Borough and $32,000 for Alaska.

Approximately 12 percent of families and 16 percent of individuals in Houston live below the federal poverty line. According to 2014 Federal guidelines for Alaska, a household of four making less than $29,440 or an individual with an income of less than $14,350 is considered living in poverty. There are approximately 101 households that receive public assistance and 118 households utilize the Supplemental Nutrition Assistance Program (SNAP).

EMPLOYMENT TRENDS

In 2012, the Alaska Department of Labor and Workforce Development estimated there were 768 employed residents (over age 16) living in Houston, with total annual wages of $26.5 million. Most workers were employed in the private sector (85 percent), followed by local government (11 percent), and state government (4 percent). The top industries in terms of employment included Trade (retail and wholesale), Transportation and Utilities (22 percent), Education and Health Services (16 percent), and Construction (13 percent).

In addition to data compiled by the State of Alaska, the American Community Survey (ACS) offers insight into employment in Houston. According to its data, there were 782 residents over the age of 16 employed, and 166 unemployed.

The unemployment rate is estimated to be 18 percent. Private wage and salary workers made up 80 percent of employed, followed by government workers (19 percent) and self-employed workers (7 percent).

Employment within the City of Houston is currently limited, with most opportunities in retail. The majority of employed residents travel outside the city limits to reach their workplace.

HOUSTON BUSINESSES

An estimated 19,000 vehicles per day travel on the Parks Highway through the City of Houston. This number tends to be higher in the summer and on the weekends. A number of businesses are sustained by this traffic as a percentage of these travelers stop for a meal, to rent a room, or purchase fireworks. The largest concentration of businesses selling fireworks in Alaska is located in Houston.

At this time, no large grocery store is located in Houston. Residents typically will go to Wasilla or Big Lake for their shopping needs. Medical services are limited in Houston with a few small clinics offering primary care services. The closest hospital is Mat-Su Regional Medical Center located in Wasilla, where there are also a full suite of dental, chiropractic, and other health services.

The summer brings an influx of anglers fishing the nearby Little Susitna River. Alaska Fish and Game estimated 4,538 anglers fished a total of 10,115 days in 2012 in the Little Susitna River. At least one guiding service is located in Houston and a range of other local businesses rely on these anglers who purchase ice, meals, and refreshments. Float trips on the Little Susitna River frequently start at the Parks Highway Bridge.

During the winter, proximity to Hatcher Pass and Nancy Lake Recreation Area attracts enthusiasts wanting to snowmachine, ski, ice fish, dog-mush, or enjoy other winter activities. Compared to the summer, traffic through the community is much less in the winter but local businesses are able to attract some customers.

HOUSTON EMPLOYMENT INDICATORS, 2000 AND 2008-2012 FIVE YEAR AVERAGE

	2000 (Number Employed)	2008-2012 (Number Employed)	2008-2012 Margin of Error
Population 16 years and older	881	1,487	+/-145
In labor force	549	948	+/-129
Employed	452	782	+/-114
Unemployed	97	166	+/-62
Unemployment – civilian labor force (%)	17.7	17.5	+/-5.8%
Not in labor force	332	539	+/-91
Class of worker			
Private wage and salary	325	579	+/-103
Government	70	152	+/-54
Self-employed	57	51	+/-23
Unpaid family worker	-	0	+/-10
Industry			
Retail trade	78	92	+/-32
Educational, health and social services	60	169	+/-51
Arts, entertainment, recreation, accommodation and food services	52	96	+/-44
Construction	50	87	+/-34
Agriculture, foresting, hunting and fishing, mining	49	70	+/-40
Transportation and warehousing, and utilities	34	87	+/-44
Professional, scientific, management, administrative, and waste management services	25	57	+/-32
Public administration	22	66	+/-38
Wholesale trade	19	10	+/-11
Manufacturing	15	21	+/-22
Information	13	7	+/-9
Finance, insurance, real estate, and rental and leasing	8	0	+/-10
Other services	27	20	+/-16

Source: ADOWL and U.S. Census American Community Survey

HOUSING IN HOUSTON

According to Mat-Su Borough and City of Houston data, there are 999 housing units in Houston. Single- family detached units make up 85 percent (846 units) of all housing units, with the remaining composed of 62 multi-family dwellings, 8 duplexes, and 85 mobile homes (see table to right).

This estimate is corroborated by the American Community Survey's 2009-2013 5-year estimate of 991 housing units in Houston. Of these units 72 percent (or 716 units) are considered occupied; and, of these units, 78 percent (561 units or 56 percent of all housing units) are owner-occupied.

According to the City of Houston Comprehensive Plan and Community Impact Assessment Household Survey conducted in November 2014, approximately 35 percent of local property owners do not reside in Houston. Presuming these nonresidents have a dwelling on their property, this would suggest approximately 350 homes in Houston are used as vacation/ recreation properties (or otherwise used only occasionally).

Housing data for Houston from the American Community Survey (2009-2013 5-year estimates) are provided in the table to the right. The data suggests approximately 28 percent of housing units are unoccupied. The majority of housing units (55 percent) were built since 1990, with construction peaking between 2000 and 2009 (32.3 percent of the housing units).

The median value of an owner-occupied unit in Houston is estimated at $177,300 (+/- $20,161 margin of error, see Table 8). Almost a third (30 percent) of these units are estimated to be valued at less than $100,000.

	Unit Count	Percent Units of Total
Total Housing Units	991	100%
Single-family Detached	846	85%
Mobile Home	85	9%
Multi-Family	62	6%
Duplex	8	1%

Source: City of Houston, MSB. Colums may not sum to 100% due to rounding

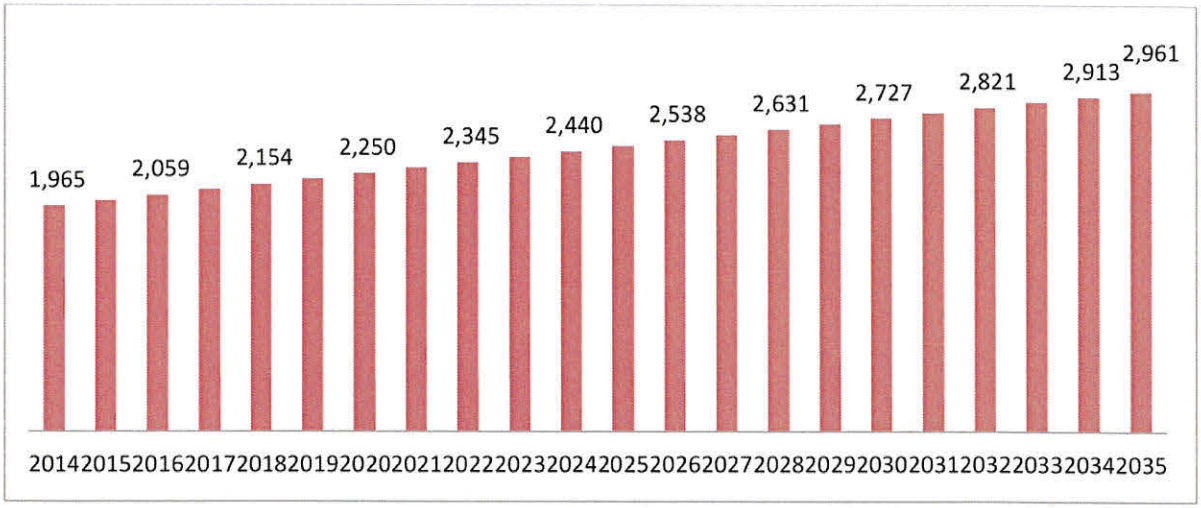
	Unit Count	Margin of Error	Percent Units of Total
Total Housing Units	991	+/- 36	100%
Occupied Housing Units	716	+/- 50	72.3%
Vacant Housing Units	275	+/- 51	27.7%
Homeowner vacancy rate	5.7%	+/- 2.9%	-
Rental Vacancy rate	9.9%	+/- 6.9%	-

Source: U.S. Census Bureau, American Community Survey, 2009-2013 Five-Year Estimate

	Housing Unit Count	Margin of Error	Percent of Total
Owner-Occupied Units	561	+/- 47	100%
Less than $50,000	92	+/-33	16.4%
$50,000 to $99,999	77	+/-28	13.7%
$100,000 to $149,999	47	+/-22	8.4%
$150,000 to $199,999	120	+/-40	21.4%
$200,000 to $299,999	143	+/-41	25.5%
$300,000 to $499,999	70	+/-28	12.5%
$500,000 to $999,999	12	+/-15	2.1%
$1,000,000 or more	0	+/-9	0.0%
Median (dollars)	**$177,300**	**+/-$20,161**	-

Source: U.S. Census Bureau, American Community Survey, 2009-2013 Five-Year Estimate

Figure 13 Projected Annual Average Growth Rates, Houston, 2014-2035, High Growth Scenario



FUTURE CONDITIONS AND LAND USE NEEDS

POPULATION GROWTH AND PROJECTIONS

Population growth in the Mat-Su is projected to slow from the current annual growth rate of slightly more than 3.6% to less than 2% by 2035. Since Houston is tied to the Mat-Su economy and has comparable demographics, it is projected that Houston's population growth will reflect that of the larger Mat-Su, growing approximately 2% over the current period to 2035. In determining this growth rate, three different growth scenarios were considered: low, medium, and high growth rate projections. The City of Houston chose to write this Comprehensive Plan Revision and Land Use Plan using the population projections of the high growth rate scenario. Planning for a high growth rate allows goals, objectives, policies and strategies to be set in place prior to an unexpected growth occurrence.

The High growth scenario assumes Houston matches the broader Mat-Su estimates for population growth as project by Alaska Department of Labor and Workforce Development (ADOLWD). Under this scenario, ADOLWD estimates that Houston's population will grow by 996 persons between 2014 and 2035. With this growth rate, Houston is projected to grow to about 3,000 residents in 2035, which is an increase of around 50% from current population levels (see Figure 13 and adjacent table).

Population projections for Houston are based on extending past trends into the future. This methodology differs from a forecast, which would account for economic and other factors with the potential to affect population change. Forces that may affect population growth in Houston over the next 20 years include the following:

- Economic conditions in Alaska - including factors such as oil prices, gas line development, and other events in the oil and gas industry (responsible for about a third of Alaska's economy). In general, increases in economic activity are accompanied by increases in population. Conversely, if economic activity contracts, population growth tends to slow or decline.

- Economic conditions in Anchorage- might affect Mat-Su's role as a "bedroom" community (a third of the Mat-Su Borough's labor force is employed in Anchorage). Job growth in Anchorage can have population effects in the Mat-Su Borough.

- Local (Mat-Su) economic conditions – To the extent the local economy grows (or declines) in response to local events, related or unrelated to statewide or national economic trends, Houston's population could be affected.

- The Condition of the U.S. economy – A weakening U.S. (Lower 48) economy can cause in-migration to Alaska, as the unemployed come to Alaska seeking work. Conversely, strong growth in the U.S. economy can lead to out-migration from Alaska.

- Housing costs – As long as housing prices are lower in the Mat-Su Borough compared to Anchorage and commuting costs remain stable, the Mat-Su Borough population will continue to have a large component of Anchorage workers and their households. A similar scenario has developed between Houston and Wasilla; with lower housing costs, some opt to live in Houston and commute to Wasilla (or Anchorage) for employment.

- Natural growth and other demographic trends – Birth and death rates, aging of the population, and other demographic forces may also affect local population trends.

It is beyond the scope of this Comprehensive Plan to consider all of these factors. However, statewide and local population projections, prepared by the Alaska Department of Labor and Workforce Development (ADOLWD) can be used as the basis for Houston-specific projections.

ADOLWD periodically prepares long-term population forecasts for Alaska overall and for local areas. The most recent projections, published in April 2014, indicate slow growth (0.8 percent annually) over the next 25 years for the state overall. The Mat-Su Borough is expected to continue experiencing the fastest rates of growth, at 1.9 percent annually (see Table below).

Years	Births	Deaths	Net Migration	Population Change	Annual Growth Rate
2014-2017	1,400	506	1,469	2,363	2.37%
2017-2022	1,591	621	1,476	2,446	2.19%
2022-2027	1,782	755	1,455	2,482	2.00%
2027-2032	1,962	909	1,419	2,472	1.81%
2032-2035	2,128	1,072	1,359	2,415	1.62%

Note: Average annual numbers are rounded to whole numbers. Source: ADOLWD

Local Area	Percent Population Growth	Annual Growth Rate
Anchorage	35%	1.0%
Mat-Su Borough	77%	1.9%
Kenai Peninsula Borough	15%	0.5%
Fairbanks North Star Borough	32%	0.9%
City & Borough of Juneua	2%	0.1%
Statewide	26%	0.8%

Source: ADOLWD

Houston Housing Demand Projections

Years	Low-Growth	Mid-Growth	High-Growth
2014	756	756	756
2017	772	791	811
2022	799	850	902
2027	828	909	994
2035	875	1,001	1,139
Growth 2014-2035	**+119**	**+246**	**+383**

Source: McDowell Group estimates

FUTURE HOUSING DEMAND PROJECTIONS

According to Mat-Su Borough and City of Houston data, there are 999 housing units in Houston. Single- family detached units make up 85 percent (846 units) of all housing units, with the remaining composed of 62 multi-family dwellings, 8 duplexes, and 85 mobile homes. The current amount of land zoned for residential development is considered for the total 'build out' capacity. Using minimum lot sizes stated in the City of Houston Municipal Code, Title 10 Land Use Regulations and the Housing Needs Analysis conducted by the McDowell Group, the amount of potential housing units and type of housing can be determined.

Housing demand will grow, or decline, with changes in population. However, demographic trends can also have specific impacts on housing demand.

Demographic factors affecting future housing demand in Houston include:

- Aging: The aging of Houston's population will result in changes in household characteristics and housing preferences. For example, U.S. Census data for Anchorage suggests that householders younger than 34 years and older than 64 are more likely to live in rental or multifamily units, and householders between age 35 and 64 are more likely to live in owner-occupied single-family detached housing.

- Household composition: Houston may be impacted by similar state and national trends in decreasing household size over time due to aging of the householders and smaller families. For example, as householders age, fewer households include children under the age of 18.

- Income Levels and Home Affordability: Income levels also affect demand for different types of housing. For example, families with lower incomes may prefer higher density housing (such as duplex, two-family townhouse, and some types of multifamily housing) and are more likely to be renters. Data from the American Community Survey (2009-2013 5-year estimates) estimate that home prices in Houston are 22 percent lower than Wasilla. Houston owner-occupied have a $177,300 median value compared to $227,800 in Wasilla. Lower housing costs make Houston an attractive place to live, including commuters to Wasilla.

While many factors can impact housing demand, including increased demand for vacation and recreational properties, shifts in population are the main driving force. Using low, mid, and high population growth scenarios, we can estimate the number of housing units needed in Houston to accommodate new demand.

Under a high growth scenario, 383 new occupied housing units will be required (see table to left). While some of this demand can be met by conversion of vacant housing units (currently estimated at 5.7%), new housing development will be needed.

According to the City of Houston and Mat-Su Borough GIS data, a total of 4,742 acres within Houston are vacant, buildable, and zoned for residential development. Based on population projections, this amount of vacant, residentially zoned land suggests an ample amount is available to address future housing demand and residential development for single-family and multi-family homes in Houston by 2035.

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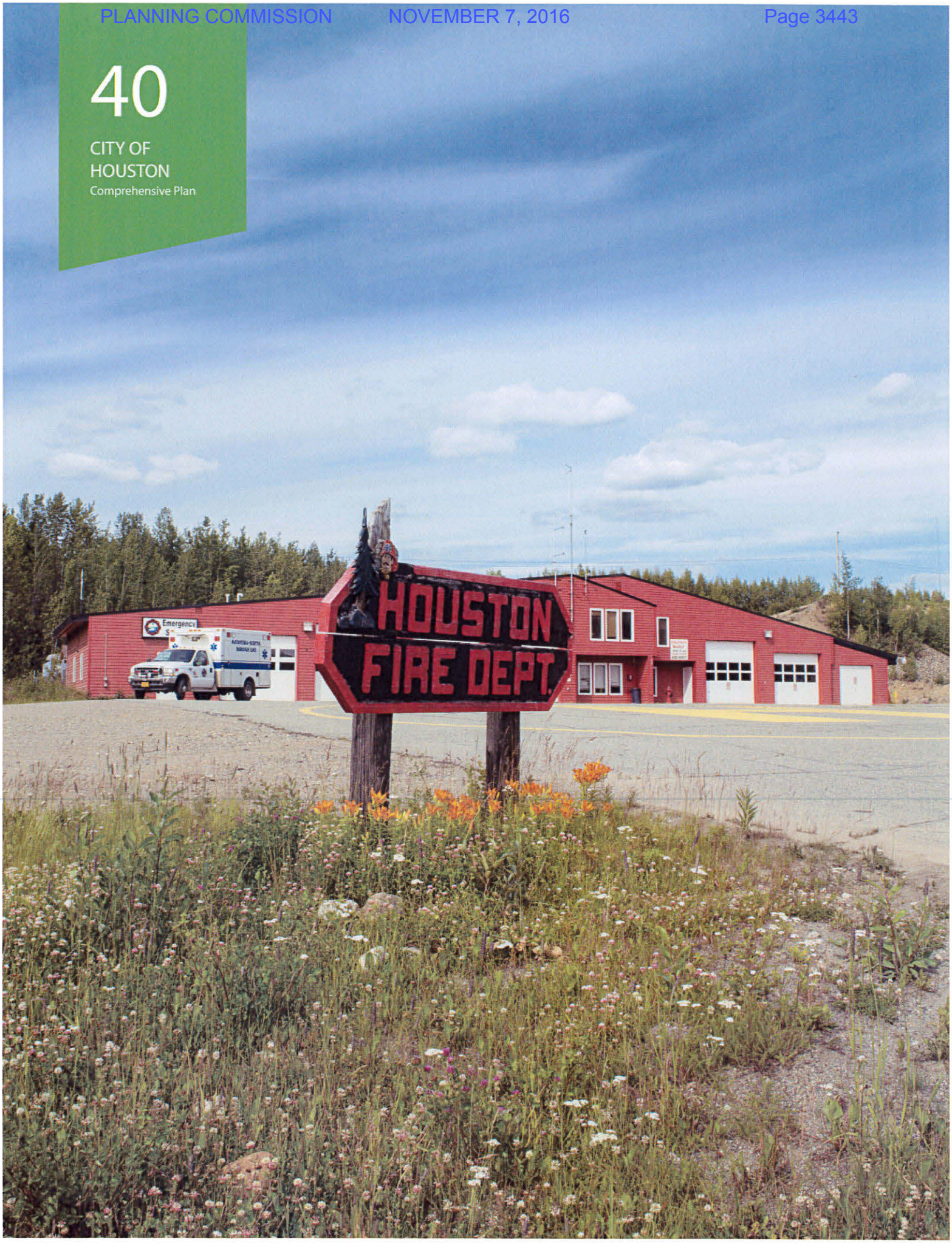
CITY OF HOUSTON
Comprehensive Plan



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CHAPTER 4: COMMUNITY VALUES AND GOALS

COMMUNITY INVOLVEMENT

Public involvement is essential to a successful planning process. The City of Houston Comprehensive Plan Revision placed significant emphasis on meaningful public engagement to ensure the Plan meets the needs and expectations of the community. The Plan was developed with guidance from the Steering Committee made up of City of Houston Planning and Zoning Commission and City Council members. The Steering Committee met monthly beginning in June 2014 to work on the plan. Members were responsible for ensuring balanced representation of the community at each stage of the planning process; provided perspective and insight on information gathered, drafted policies, and to served as a sounding board for the residents of Houston.

Multiple methods of public involvement were used during the plan development process including a mailed Household Opinion Survey, two public workshops, stakeholder interviews, a project website, and appearances at local community events. Valuable feedback was provided and received throughout the process (complete summaries can be found in APPENDIX B, Public Involvement Summary). Dominant themes emerged and were used to update the goals in the following chapter. The feedback also helped create objectives, policies and strategies to achieve those goals for the Houston community. The public involvement process provided insight to what Houston residents see as assets in their community, challenges and constraints within it, opportunities for the future, and the shared values of Houston residents.

COMMUNITY ASSETS

RURAL LIFESTYLE

Houston's rural setting provides quick access to wilderness and allows for a tight-knit community. There is a lack of pollution and development along with ample privacy that attracted many Houston residents to the area. A "homestead spirit" unique to Houston prevails in the area as residents maintain a rural lifestyle while being within reasonable driving distance to shopping, services, and healthcare in the Mat-Su Borough and Anchorage.

LAND AVAILABILITY

There are significant amounts of developable land available in Houston. These properties are considered relatively inexpensive, for both residential and commercial use, when compared to other places in the Mat-Su Borough or Anchorage. This availability and cost factor may be an advantage in attracting more business into Houston.

PARKS HIGHWAY ACCESS

The Parks Highway bisecting the City of Houston can be a significant benefit to the community, even with noted growing congestion. The small number of businesses located along the highway benefit from the vehicles traveling the Parks daily. Potential exists for greater economic opportunity emerging along the highway as well as from the Alaska Rail Road Corporation's extension from the main line in Houston to Port MacKenzie.

LAKES AND RECREATIONAL OPPORTUNITY

Residents and visitors can engage in a variety of summer and winter activities on Houston's six larger lakes and the Little Susitna River, including fishing in the summer and winter, canoeing and rafting. The Alaska Department of Fish and Game annually stock four lakes with salmon and trout. The Little Susitna River runs through Houston City limits and is perhaps the most significant tourism asset in the area. Salmon and trout fishing, rafting, camping, and wildlife viewing make the Little Su a destination. Winter multi-use trails in Houston are frequented by dog mushers, cross- country skiers, and snowmachiners.

Houston Household Opinion Survey, 2015

Please indicate your level of agreement regarding the following statements about the community of Houston...

	Strongly Agree	Agree	Disagree	Strongly Disagree	Unsure/ Don't know
Houston is a good place for outdoor recreation.	30%	53%	6%	3%	9%
Houston is a good place to enjoy a rural lifestyle.	25	58	5	3	8
Houston could use more community planning.	33	35	10	6	16
Houston is a good place for people to live affordably.	13	57	14	7	10
Houston is family-friendly.	9	56	16	4	16
Houston is a safe place to live.	9	55	15	7	14
Houston could use more landscaping of public spaces.	23	26	22	12	16

Note: Due to rounding, results may not add to 100 percent.

CONSTRAINTS AND CHALLENGES

LOW POPULATION DENSITY

The low number of residents in the city may be a challenging factor when it comes to the addition of public facilities and services as well as attracting new businesses to Houston. The predicted benefit or customer base may not support the costs it takes to start or implement new commercial businesses or public services. The low population density and relatively large lot sizes are also a limitation to utility development, thereby making the rural setting of Houston a challenge.

LACK OF LOCAL AMENITIES

The lack of amenities, such as a gas station, grocery store, medical clinic, and public transportation can be a challenge faced by residents of Houston. Currently, residents must travel to Willow, Talkeetna, Big Lake, Wasilla and Anchorage for such services and amenities. The few amenities correlates to a lack of local employment opportunities, which is a challenge for community growth and development. The lack of amenities were also some of the strongest needs stated by residents and may be a deterrent for new families and business to establish in Houston.

LOCAL ROAD CONDITIONS

Many residents have identified a need to improve road conditions and maintenance and consider road standards an important city challenge needing to be addressed. A lack of access or well-maintained transportation systems may be a constraint for businesses looking to develop in the city as well as for residents who may struggle to travel safely to and from their homes and around the community.

UTILITY DEVELOPMENT

Many residents indentify utility service extension, especially natural gas, as a community need. While the majority of commercial properties have access to natural gas; many residential homes rely on heating oil, wood, and electricity for their primary space heating source, which leads to higher heating costs. Costs for service extension to an individual property that is not currently serviced can be high. Therefore, the current energy costs may be a deterrent for new developments in Houston.

OPPORTUNITIES

TOURISM DEVELOPMENT

Residents and stakeholders have identified the opportunity for Houston to become a destination for recreation and tourism based on its existing assets. Houston has a unique identity with which to better establish itself so that the community is recognized for more than its recreational trailheads. With access to the Little Susitna River and the Hatcher Pass area, an abundance of lakes, winter multi-use trails and its convenient location off the Parks Highway, there is potential for greater tourism development.

TRANSPORTATION SYSTEM IMPROVEMENTS

If more local road improvements are made, such as increased road maintenance and paving, land without direct access to the Parks Highway may become more attractive for development. Better roadway conditions may also increase home values and allow for easier commutes. Multi-use pathways expansion, lighting improvements, and access to public transportation were also seen as beneficial improvements that would increase residents' quality of life.

Residents prefer a new road between Houston and Port MacKenzie. If built, it would support freight transportation and more efficiently connect Houston residents with a significant employer, the port. A new connection could also support economic development within Houston.

UTILITY EXPANSION

Improved access to natural gas could promote more business and residential growth by reducing energy costs.

TOWN CENTER DEVELOPMENT

Noting the proximity of the Little Susitna River, Houston could establish a destination point through the development of a town center offering community services, commercial businesses, and other amenities. This center would encourage community gathering and interaction, maintain Houston's character and family friendliness, and develop a center that may, as one stakeholder stated "make both sides of the river and railroad tracks feel like one community." Establishing a town center also encourages the preservation of the rural-residential character in other areas of Houston.

ECONOMIC DEVELOPMENT

Large areas of vacant land provide opportunities for new development, including commercial and industrial developments. If consistent with community character, goals, and objectives defined by the community, this type of development is encouraged and could provide great economic benefit and employment opportunities for Houston.

The Alaska Railroad's extension from the mainline in Houston to Port MacKenzie may provide opportunities for development in Houston. These possibiilties include an increase in the likelihood of manufacturing, mineral export, or transportation activity taking place in the city that could provide economic benefit and employment.

COMMUNITY VALUES

The following community values have been developed from information gathered at the Future's Community Visioning Workshop, responses to the Household Opinion Survey, and from Steering Committee members. The value statements represent issues, concerns, aspirations, and opinions of the majority of community members as they relate to the City of Houston.

COMMUNITY DEVELOPMENT:

The community of Houston wants to develop as a destination for tourism and recreation; while maintaining a family friendly community that will encompass a future town center, designated trails and community facilities.

TRANSPORTATION:

A need exists to increase safety, accessibility, and mobility through much of the city. The improvements would benefit all users, including pedestrians, bicyclists, and other non-motorized users, while maintaining the community character.

PLANNING:

As voiced by its residents, effective, implementable planning is a recognized need for successful growth, development, and overall health of the community.

HOUSING:

The availability of housing in Houston should be appealing for a wide range of incomes, while providing all residents with opportunities for satisfactory, safe living.

COMMUNITY FACILITIES AND SERVICES:

The City of Houston recognizes the need to expand its facilities and services in order to provide safe and satisfactory living for its residents, enhancing the city's autonomy, economy, and unique identity.

ECONOMIC DEVELOPMENT:

While maintaining the current tax structure, the City of Houston aims to develop economically by capitalizing on its current amenities and natural resources; allowing commercial and industrial development as long as it aligns with the community character and will benefit city residents.

HOUSTON
HIGH SCHOOL

CHAPTER 5: THE PLAN - COMMUNITY GUIDELINES FOR GROWTH

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VISION AND CHARGE

The community of Houston wants to develop as a destination for tourism and recreation, while maintaining a family friendly rural-residential community that will encompass a future town center, designated trails, and community facilities.

The Goals, Strategies and Policies of this chapter will help define the future growth and development of Houston for the 20 year life of this plan. They reflect the core values and future vision and aspirations of the community from the extensive community involvement effort during the plan development process.

GOALS describe in general terms a desired future condition that is consistent with community ideals and vision. Goals are typically timeless and have no specific date when they must be achieved.

OBJECTIVES are specific statements of particular ends as expressed in measurable terms that respond directly to Goals.

POLICIES are statements of principle or guidelines to direct actions in pursuit of Goals.
STRATEGIES are specific means and actions of achieving and accomplishing each Objective.

STRATEGIES are specific means and actions of achieving and accomplishing each Objective.

GROWTH AND ECONOMIC GOAL

To provide new opportunities for employment, community and commercial services and economic growth; allowing commercial and industrial development that is consistent with the community character to the benefit of Houston residents.

OBJECTIVES

- Encourage moderate economic growth which will provide a base in Houston adequate to foster employment opportunities with the City.
- Ensure that economic growth and development is consistent with the rural community character of Houston.
- Provide 10% increased local employment opportunities for residents by encouraging a balanced economic base.
- Encourage the development of local-serving and regional commercial enterprises to strengthen the community's economic base.
- Encourage continued growth of employment in the commercial core of Houston.
- Encourage the economically viable commercial tourism and recreation enterprises such as sports fisheries, campgrounds and year round recreational businesses.
- Encourage home-based businesses as forms of local economic development. They should be compatible with the surrounding neighborhood.

POLICIES

- Encourage the development of recreational tourism in Houston.
- Encourage the development of industrial enterprises associated with the Alaska Railroad main line and the Port MacKenzie Rail Extension.

STRATEGIES

- Develop a Business Plan for attracting anchor businesses to locate in Houston. Strategies could include financing and tax incentives.
- Work with State of Alaska and Travel Alaska Tourism Organization to develop a Marketing Plan for increasing recreational tourism in Houston.

LAND USE GOAL

To develop and maintain a responsive land use plan that supports the goals and objectives of the community including economic, environmental, and social community character.

OBJECTIVES

- Preserve and enhance the identity of established community areas.
- Promote growth and land uses that are compatible with the rural residential character of Houston.
- Ensure an efficient pattern of development that reflects the needs of the community and is consistent with community character.
- Encourage the construction of safe, sound housing.
- Encourage land use patterns and development that connect new public and private investments.
- Encourage new civic and commercial activity to help jumpstart new private investments.

POLICIES

- Ensure that zoning and platting decisions are guided by this Plan, specifically its maps, goals, policies, and strategies.
- Ensure future regulatory changes and planning actions complete appropriate public processes as well as maintain and protect the unique community character.
- Provide a balanced distribution of land uses to meet Houston's current and future needs.

STRATEGIES

- Update land use regulations to promote flexibility for marijuana businesses to locate in Houston in appropriate zoning districts.
- Update land use regulations to provide buffer and protection for established residential areas from incompatible uses in adjacent zoning districts.

PARKS, RECREATION, AND OPEN SPACE GOAL

To provide a wide range of year-round recreational opportunities for the community and its visitors.

OBJECTIVES

- Maintain existing trails, pathways, and recreational opportunities for area residents and visitors.
- Encourage the establishment of year-round recreational facilities.
- Develop and maintain neighborhood-scale recreational facilities and trail systems.
- Encourage Houston's recreation development as a tool for tourism and economic development.
- Maintain, supplement, and enhance new parks and open space for recreational use.

POLICIES

- Ensure that a range of recreational opportunities are available to residents of all ages, especially for Houston youth.
- If the opportunity exists, ensure that trails and parks are considered at the land development level to preserve access.

STRATEGIES

- Preserve and improve access to recreational opportunities, especially Houston's lakes and the Little Susitna River.
- Work with the Mat-Su Trails and Parks Foundation to find projects that would qualify for community grants leveraged with volunteer participation.
- Work with the State Historic Preservation Office to ensure that trails are mapped and preserved.

ENVIRONMENTAL GOAL

To maintain and protect the quality of the natural environment, especially drinking water and surface water in Houston.

OBJECTIVES

- Protect drinking water quality for residents.
- Protect and preserve salmon habitat and the environmental health of rivers and streams.

POLICIES

- Through land use and other regulatory controls, protect environmentally important areas including streams, rivers and lakes.
- Ensure that setbacks and buffers in development areas are maintained to protect residential wells for potable water and for the environmental health of natural areas.

STRATEGIES

- Continue to work with the salmon restoration group to support its efforts on the Little Susitna River.
- Provide development setback standards in land use regulations to ensure that new development is protected from flooding and other environmental hazards and to protect natural areas from off-site pollution.

COMMUNITY FACILITIES GOAL

To provide a safe and secure community for residents and to provide quality community services that enhance and improve residents' quality of life.

OBJECTIVES

- Provide effective levels of fire and emergency response services to Houston residents and the surrounding areas.
- Improve utility access for local residents.
- Expand utilities to facilitate more intensive land development where appropriate.
- Encourage non-profits to continue to provide community and social activities for residents.

POLICIES

- Ensure the proper design and installation of on-site water and wastewater facilities to protect property owners and the environment.
- Ensure that adequate school facilities are available when and where they are needed.
- Encourage learning of community residents through formal and informal educational opportunities.

STRATEGIES

- Coordinate citizen awareness and implementation of wildfire mitigation with Matanuska Susitna Borough and state forestry service programs.
- Explore raising revenue through a variety of taxes which could be used to finance utility expansion. Such financial possibilities could include bonding with the Alaska Municipal Bond Bank.
- Secure state funding to support utility expansion and development.
- Partner with tribal organizations for shared costs to expand utilities.
- Explore the feasibility of improvement districts that will help finance future utility expansion.
- Work with Mid-Valley Senior's Center and the Homesteader's Community Center to continue to be of community service to residents.
- Continue to work with the MSB School District to update student enrollment trends and projections.
- Coordinate with the MSB School District to determine site selection, capital improvements, and school bond measures for timely school facilities.
- Address school site selection and acquisition in the review of proposed development plans.
- Support a new elementary school to serve Houston.

TRANSPORTATION GOAL

To provide a safe, efficient, multi-modal transportation system that meets the needs of Houston residents and visitors.

OBJECTIVES

- Provide safe access to the Parks Highway and connecting road system.
- Ensure freight goods movement from the port to interior Alaska through Houston is safe and efficient.
- Encourage the development of alternate routes through Houston to serve goods and services movement from Port McKenzie to interior Alaska.
- Improve and expand non-motorized transportation facilities where possible.
- Expand system connectivity and emergency access.
- Provide additional traffic crossings across the Little Susitna River to promote public safety and convenience.

POLICIES

- Freight routes should be safe, effective, and minimize impacts on established neighborhoods.
- Support regional transportation developments that comply with the goals, objectives, and policies in this plan and that support positive development within Houston.

STRATEGIES

- Support the development of an alternative route to the Parks Highway from Port McKenzie to Houston parallel to the Point McKenzie railroad extension.
- Support the development of a Hawk Lane bike path.
- Work with the State of Alaska Department of Transportation & Public Facilities on Parks Highway planning, routing, and improvements by means of a Parks Highway Corridor Plan.

WELCOME TO
OUSTON

CHAPTER 6: LAND USE PLAN

The Land Use Plan identifies general land use classifications and the land use plan maps graphically illustrate the location and extent of each land use category in Houston. The land use plan map is a visual representation of long-term policies and is not a detailed blueprint for future development. Nor is the land use plan map a zoning map which establishes specific land uses on a lot by lot basis. The land use plan map, in concert with the Community Growth Guidelines, provides a policy guide and a legal basis for future zoning changes and other development decisions.

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RELATIONSHIP TO HOUSTON'S MUNICIPAL CODE TITLE 10 LAND USE REGULATIONS AND ZONING MAP

The City of Houston's Title 10 Land Use Regulations establishes rules regarding development and are applied as zoning districts in the Official Zoning Map. That map shows zoning district boundaries within the City of Houston's boundaries. Future amendments to Title 10 regulations, zoning changes, and other land use decisions are intended to conform to the Comprehensive Plan and Land Use Plan Map.

This plan makes policy recommendations for current and future land uses based on existing land use patterns and known development plans proposed by large landowners. Title 10 Land Use regulations implement the proposed land use designations through zoning districts.

AMENDMENTS TO THE LAND USE PLAN

The Land Use Plan is dynamic and may change as the community changes. Proposed amendments to the land use plan map may be reviewed concurrently with new development proposals. Amendments will require that conflicts between the proposal and the maps be resolved by examining the Goals, Objectives, and Strategies Chapter for guidance. Map amendments and changes are Comprehensive Plan amendments and should be consistent with the Plan's Goals, Objectives, and Strategies to meet future community projected growth.

LAND USE CLASSIFICATIONS

The Land Use Plan Map identifies different land use classifications to illustrate the location and extent of land use categories throughout Houston. The land use classification define the building intensity (density) for each area, based on existing, planned, and projected future development, population and employment.

Each land use classification includes a generalized description of the predominant uses, the intensity of each use, the essential physical characteristics of development, and locational criteria, where appropriate. The locational criteria should be applied in combination to each other and not necessarily individually nor should all criteria be achieved in each location.

RESIDENTIAL CLASSIFICATIONS

The residential classification identifies areas that are developed for residential purposes and are expected to remain residential for the 20 year horizon of the Houston Comprehensive Plan. The residential classifications also identify vacant land best suited for future residential development. The ranges of residential densities are generalized descriptions of the type of development appropriate for a broadly defined area. They are based on area-wide densities rather than specific densities for specific parcels.

The land use plan map depicts an intended overall distribution of population and housing units for contiguous areas of Houston. The land use plan map is not intended to be applied directly to determine the number of housing units permitted per lot or development site. Title 10 Land Use Regulations and Official Zoning Map will determine the allowed number of housing units on each lot or development area. The type of low density large lot residential development in Houston results from a combination of preferred lifestyle, lack of public infrastructure,such as public water and sewer and other public utilities, and distance from major urban centers.

RESIDENTIAL 5: 1 DWELLING UNIT PER 5 ACRE (DUA)

The Residential 5 classification provides for low-density single family and rural agricultural residences served by private wells and on-site septic systems. The predominant use consists of adetached house on lots of 5 acres or larger suited for agricultural uses.

RESIDENTIAL 2.5: 1 DWELLING UNIT PER 2.5 ACRE (DUA)

The Residential 2.5 classification provides for low- density single family and rural agricultural residences served by private wells and on-site septic systems. The predominant use consists of a detached house on lots of 2.5 acres or larger suited for agricultural uses.

RESIDENTIAL 1: 2 DWELLING UNITS PER ACRE (DUA)

The Residential 1 classification provides for large-lot single family and 2 family residences served by private wells and on-site septic systems. The predominant use consists of detached house on lots of one acre or larger.

LOCATIONAL CRITERIA

- Areas with an established large-lot rural development pattern;
- Vacant areas adjacent to established large-lot, rural development;
- Areas without public water and wastewater;
- Areas where environmental constraints preclude an intense site development;
- Access is from low traffic volume local streets.
- Direct access from the Parks Highway is discouraged for new development.

RESIDENTIAL MULTI-FAMILY: 3 OR MORE DWELLINGS PER ACRE

The Residential Multi-Family 3 or more dwellings per acre classification provides for a range of single and multi-family housing neighborhoods that offer a diversity of housing choices. Residential uses include duplexes, townhouses and low to medium density multi-family. The intended overall density is greater than 3 dwelling units per gross acre. If located within neighborhoods that includes nearby single family homes, the physical scale and appearance and street orientation of multi-family housing developments should be compatible.

LOCATIONAL CRITERIA

- Areas with a mix of single family and multi-family housing;
- Areas immediately adjacent to existing multi-family development;
- Areas without water and wastewater;
- Areas where environmental constraints preclude an intense site development; and
- Access is from low traffic volume local streets.

NON-RESIDENTIAL CLASSIFICATIONS

COMMERCIAL CORE – NEW

The Commercial Core classification is suitable for a wide range of retail and service uses. They include more intense commercial uses primarily for retail and service uses intended to meet the needs of highway users and local residents. This designation is also suitable for a broad range of professional businesses clustered in areas such as a shopping center that may be anchored by one or more large retail establishments. The Commercial Core Classification is also intended for lands that will be best suited for commercial core uses in the future.

LOCATIONAL CRITERIA

- Existing commercially developed area near the Big Lake Road and Parks Highway intersection; and
- Areas with access onto Big Lake Road within the City of Houston boundaries.

COMMERCIAL MIXED USE - NEW

The Commercial Mixed Classification provides flexibility for areas that are developed for commercial purposes that also have residential uses and are expected to remain commercial mixed use in the future. This designation is to identify key areas along a highway corridor which are highly visible or transitional in nature. Development in this area should occur in a manner that does not disrupt the function of the highway system. The Commercial Mixed Use Classification is also intended for lands that will be best suited for commercial mixed uses in the future.

This Comprehensive Plan supports and recommends a concentration of commercial uses at strategic locations where safe and compatible access are optimized. Commercial mixed use designations are currently clustered in nodes along the Parks Highway and along the eastside of the Parks Highway, north of the Little Susitna River recreation area and boat launch.

LOCATIONAL CRITERIA

- Existing commercially mixed use developed area along the Parks Highway north of Big Lake intersection; and
- Areas with safe and convenient access off a side street from the Parks Highway.

TOWN CENTER/CIVIC CENTER – NEW

The Town Center classification provides the focal point of civic, commercial, and recreation activity for Houston, integrating community serving retail, public services, and civic facilities. The town center allows and encourages community events close to the civic center of Houston, adding life and vitality to the center.

LOCATIONAL CRITERIA

- Existing commercially developed area near City Hall and Little Susitna Recreational Area; and
- Areas near the existing Fire Hall on Armstrong Road.

PARK AND NATURAL RESOURCE

The Parks and Open Space classification provides for active and passive recreation, conservation of natural areas, and trail corridors connecting to neighborhoods. Uses include neighborhood, community, regional and natural, open space use, greenbelts, and special purpose facilities. Such facilities might be developed recreational areas including sports complexes or interpretive centers that support parks and recreational functions. Park uses designated on the Land Use Plan Map are generally existing or known planned areas. As new open space and park use areas are acquired the Land Use Plan Map should be updated.

LOCATIONAL CRITERIA

- Areas designated or dedicated as park use or under management for parks and recreation uses with the City of Houston;
- Areas designated as open space or natural resource use area; and
- City or Borough owned lands of high natural value or environmentally sensitive and not suitable for development.

INDUSTRIAL

The Industrial classification describes and provides areas of existing and future industrial development. This designation is for areas already substantially developed for industrial use for the duration of the 20 year Plan.

The classification also applies to vacant land that is best suited to industrial development in the future. Limitations on industrial activities should apply near residential areas.

LOCATIONAL CRITERIA

- Areas with an established primarily industrial development pattern;
- Areas large enough for more intense industrial uses;
- Areas with access to truck routes without the need to travel through local or neighborhood streets and incompatible uses; and
- Areas with rail access to reduce total truck traffic volumes.

COMMUNITY FACILITY

The Community Facility classification is for developed active public and institutional use areas and undeveloped areas designated for future public and institutional use. Schools, community centers, fire stations, senior and cultural centers, cemeteries, and other public utility facilities designated on the Land Use Plan map are existing or known planned facilities. As new facilities are planned and developed, the Land Use Plan Map should be updated to reflect these changes.

TRANSPORTATION FACILITY - NEW

The Transportation Facility classification applies to areas with existing or known planned public facilities that are directly related to transportation by rail or air. This classification includes the Alaska Railroad land holdings and railroad utility corridors including the Port Mackenzie rail extension and roadway corridor, as carried forward from the 1982 City of Houston Comprehensive Plan.

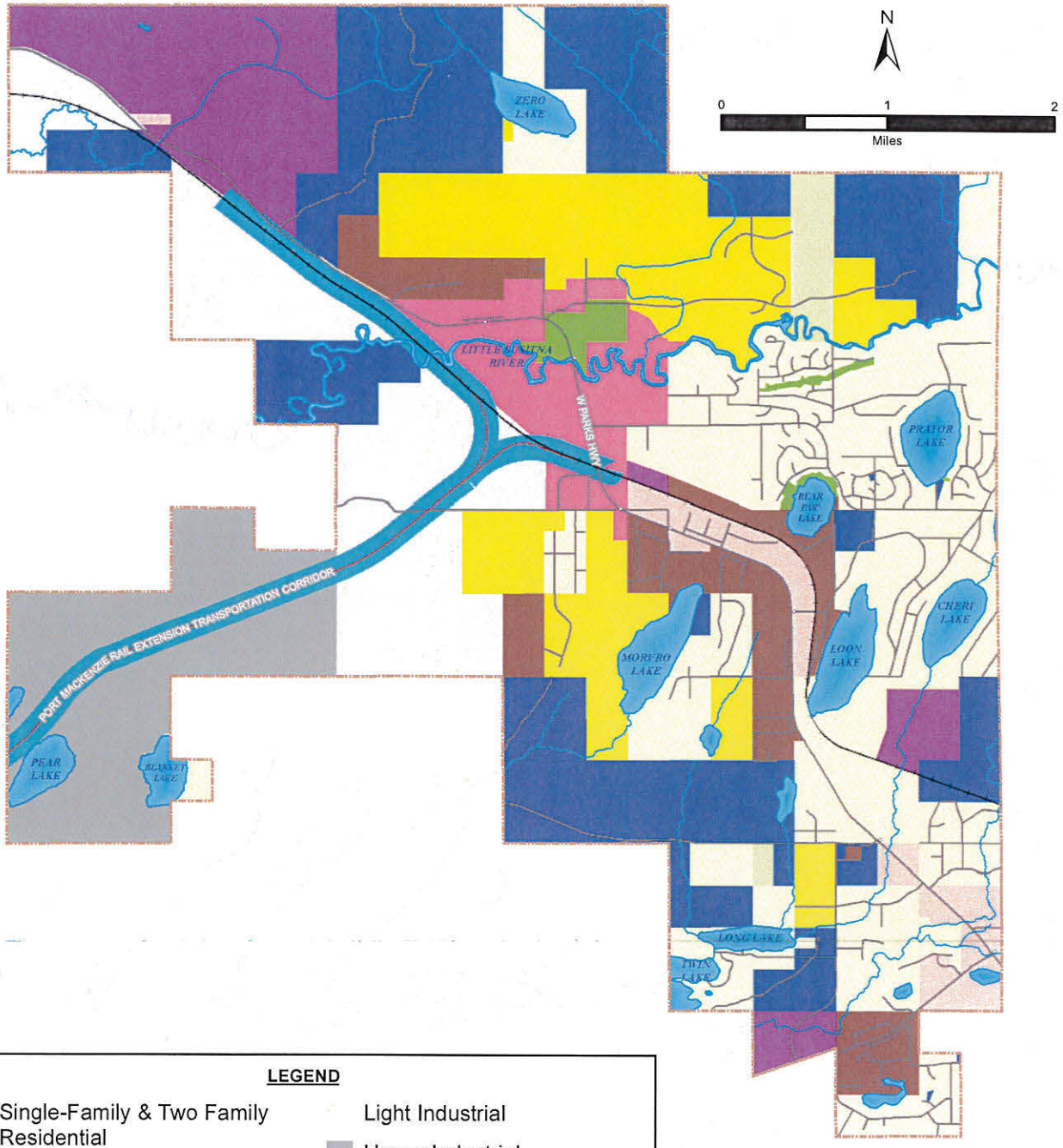
DEVELOPMENT RESERVE

The Development Reserve classification is applied to areas that are generally suitable for development but whose location and lack of facilities and lack of projected demand make near-term and intermediate term development uncertain. Residential large-lot development is allowed by right but a planning process with a proposed rezoning to an active zoning district should occur prior to development.

MAJOR ROADS AND STREETS

The Land Use Plan Map illustrates major roads using a black line symbol as a visual geographic reference. The Transportation Plan Map in coordination with the MSB's Long-Range Transportation Plan designates the existing and future transportation network.

See Figure 14 Land Use Plan Map.



LEGEND

- Single-Family & Two Family Residential
- Low Density Residential/Agricultural
- Residential/Agricultural
- Multi-Family Residential
- Commercial/Mixed Use
- Town Center
- Light Industrial
- Heavy Industrial
- Transportation Facility
- Public Lands and Institutions
- Parks and Recreation
- Development Reserve

CITY OF HOUSTON

COMMUNITY IMPACT ASSESSMENT AND COMPREHENSIVE PLAN REVSION

LAND USE PLAN

JUNE 2016 FIGURE 14

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CITY OF HOUSTON
LITTLE
SUSITNA
RIVER
CAMPGROUND

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CHAPTER 7: TRANSPORTATION PLAN

STATUS OF THE TRANSPORTATION SYSTEM

THE PARKS HIGHWAY

The City of Houston is approximately 7.5 miles west along the Parks Highway from the City limits of Wasilla, appromimately 50 road miles north of Anchorage, and approximately 300 miles south along the Parks Highway from the city limits of Fairbanks, Alaska. The Parks Highway is part of the Federal Highway's interstate road network. The eastern edge of the city limits of Houston includeds the intersection of Big Lake Road, with the first commercialized mile of Big Lake Road lying within the jurisdiction of Houston.

The Parks Highway is a 2-lane, undivided facility with 12 foot lanes, 8 foot paved shoulders and a 200 foot wide right-of-way measured from the highway centerline. Within Houston there are periodic passing lane sections for the northbound and southbound lanes, as well as a center two-way left turn lane. The Parks Highway's primary function is to serve statewide mobility for travel and freight transportation through the city limits of Houston for passage to Fairbanks and interior Alaska. Within the national network, the Parks Highway is the primary link between Anchorage, the Matanuska-Susitna Borough (MSB), and interior Alaska. Anchorage is the commercial hub of the state, and therefore freight and materials shipped via road to interior Alaska by road must pass through Houston on the Parks Highway. The Parks Highway is also a key element of the Houston road network, serving local traffic throughout the City of Houston.

The Parks Highway is an interstate highway classified as a Rural Interstate by the Alaska Department of Transportation and Public Facilities (DOT&PF), and is Route 3 of the National Highway System (NHS). As part of the NHS it has the function of providing mobility on a statewide level, in addition to its secondary function of local area service. The Parks Highway is owned by the State of Alaska and maintained by the DOT&PF.

CITY OF HOUSTON ROAD NETWORK LAYOUT

The City of Houston's road network branches east and west from the Parks Highway, which operates as a backbone for the regional network. The Parks Highway is the only arterial level roadway within the city limits. The remaining roads are either local roads providing access to the surrounding lots or collector roads that provide access to and from the Parks Highway.

A majority of the parcels within the city limits of Houston access the Parks Highway within the city limits of Houston. Alternative access out of the city is available to the west via Kiowa Street which leads to Big Lake and King Arthur Drive to the east which accesses the Meadow Lakes Loop and Pittman Road areas. Additionally, Big Lake Road leads west into Big Lake. There are currently no signalized intersections within the city, but one is proposed by the DOT&PF for the intersection of Big Lake Road and the Parks Highway.

ROAD FUNCTIONAL CLASSIFICATIONS

A functional classification system is a method of identifying the intended use of a road or corridor. It is an important planning level tool to facilitate clear communication about road networks between different agencies, designers, and the public. The function of a road typically falls somewhere between the conflicting purposes of mobility (high speed mobility through a region) and access (lower speed movements with frequent turns to adjacent parcels).

The DOT&PF manages road networks that fall within the City of Houston. Both the DOT&PF and the Mat-Su Borough individually identified functional classifications for roads that they own and maintain or that are adjacent to their roadways. See Figure 15, MSB Functional Classification System.

ROAD SURFACE CONDITIONS

There are approximately 45 miles of road within the Houston residential road network, not including the Parks Highway and Big Lake Road. Of these 45 miles of road, 90% (40 miles) of the roads are unpaved with a gravel surface. The remaining 5 miles of paved roadway account for most of the collector road network as defined by the MSB.

The paved road network includes all or segments of the following roads:

- Cheri Lake Drive
- Hawk Lane
- King Arthur Drive
- Miller's Reach Road
- Wasey Way
- White Rabbit Drive

Armstrong Road is identified by the MSB as a collector road and is currently unpaved beyond the first quarter mile. The first quarter mile of Armstrong Road serves the Little Susitna River Camp Ground, and the public safety building for Houston which houses one of two Fire Halls serving the north part of Houston. City Hall is also accessed from Armstrong Road.

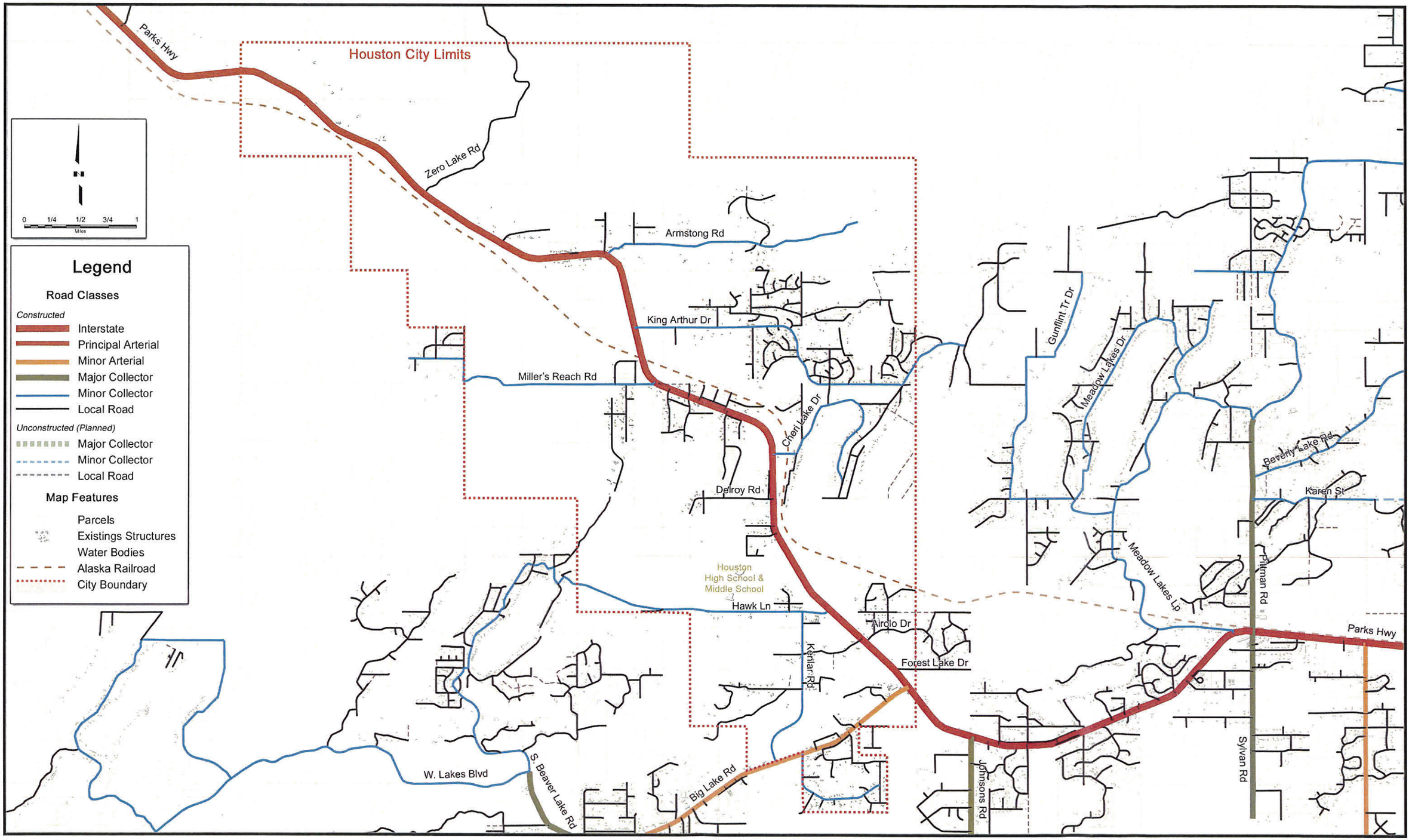
ROAD OWNERSHIP AND RESPONSIBILITIES

The road network in Houston is comprised of roads owned by the City, the DOT&PF as well as some roads qualifying for ownership and funding from the Bureau of Indian Affairs. Maintenance of the Parks Highway is done by DOT&PF but roadway ownership and responsibilities of all other roads fall under the City of Houston's Public Works Department.

ALASKA RAILROAD

The Alaska Railroad Corporation (ARRC) generally parallels the Parks Highway corridor throughout the limits of the City of Houston. To the southeast the railroad is on the north side of the highway. The Parks Highway crosses the railroad at a separated grade crossing at approximately milepost 56.5. The separated grade crossing includes a rail bridge that proceeds over the Parks Highway. On the northwest end of the city the rail corridor is on the south side of the highway.

A rail extension from the mainline in Houston to the port at Point MacKenzie is currently under construction. A "Y" junction at the mainline south of the Little Susitna River and the rail spur continuation southwest through the industrial zoned land in Houston has been built.


Houston City Limits
Parks Hwy
Zero Lake Rd
Armstong Rd
King Arthur Dr
Miller's Reach Rd
Chen Lake Dr
Delroy Rd
Houston High School & Middle School
Hawk Ln
Airolo Dr
Forest Lake Dr
Kenlar Rd
Gunflint Tr Dr
Meadow Lakes Dr
Meadow Lakes Lp
Beverly Lake Rd
Karen St
Pittman Rd
Parks Hwy
Sylvan Rd
Johnsons Rd
Big Lake Rd
S. Beaver Lake Rd
W. Lakes Blvd
0 1/4 1/2 3/4 1
Miles
Legend
Road Classes
Constructed
Interstate
Principal Arterial
Minor Arterial
Major Collector
Minor Collector
Local Road
Unconstructed (Planned)
Major Collector
Minor Collector
Local Road
Map Features
Parcels
Existings Structures
Water Bodies
Alaska Railroad
City Boundary

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PEDESTRIAN PATHWAYS AND NON-MOTORIZED USE

There is a separated pedestrian pathway on the south side of the Parks Highway that begins east of the Houston city limits and ends at Mile Post 58 within Houston. There is a second pathway on the north side of the Parks Highway that begins at the intersection of the Parks Highway and Cheri Lake Road and continues west beyond the city limits.

There is an established recreation area with a trailhead located at mile 59 of the Parks Highway off of Zero Lake Road. The Houston/Willow Creek Sled Trail provides access to Hatcher Pass recreation area year round and the Zero Lake Trailhead has parking for approximately 60 vehicles and trailers and provides restroom facilities.

The majority of trails in Houston are informal and are used for non-motorized and motorized use year-round, including snow machines, ATVs, dog sleds, bikers, pedestrians, and skiers.

PUBLIC TRANSPORTATION

Valley Mover provides public transit between the Mat-Su Valley and Anchorage with routes operating Monday–Friday multiple times a day. Valley Mover has two pick-up and drop-off locations within the City of Houston: one at the commercial center at Big Lake Road and the recently added Gorilla Fireworks parking lot location.

Mat-Su Community Transit (MASCOT) provides minimal services to residents in Houston. Two busses run a Meadow Lakes/Big Lake to Wasilla route Monday through Friday. The northernmost scheduled bus stop, or Big Lake route cutoff, is at the NAPA Auto Parts and commercial strip mall at the intersection of Big Lake Road and the Parks Highway which is serviced by one bus. MASCOT does provide "Route Deviation" bus service, at an additional fare, which allows for requested additional pickup and drop-off locations depending upon proximity to the route and time requested.

At this time Valley Mover and MASCOT do not have any short or long term plans to expand their services in Houston. Funding and ridership are the determining factors for major changes to the availability public transportation.

FREIGHT

The Parks Highway serves as a main transportation corridor for commercial freight from the greater Anchorage and Mat-Su area to Interior Alaska. According to the Alaska Department of Transportation and Public Facilities (DOT&PF), in 2013 commercial vehicle traffic made up an average of 16% of annual daily traffic along the Parks Highway through Willow. Peak commercial vehicle counts were greater than 22% of total traffic in September and October (Central Region 2013 Traffic Volume Report, DOT&PF). Considering the low number of freight and commercial destinations between Wasilla and north of Willow, it is reasonable to assume the commercial vehicle traffic recorded on the Parks Highway at Willow is a close reflection of freight traffic on the Parks Highway through the City of Houston.

The Alaska Railroad is the other leading mode for freight transportation. Opportunities for increased freight activity to the Port MacKenzie rail extension are anticipated in Houston due to the "Y" connection to the mainline. Improvement to the Parks Highway from Wasilla to Fairbanks may decrease travel times and continued development of Interior Alaska and the Borough may lead to increased traffic on the Parks Highway and increased use of the railroad.

RELATIONSHIP TO OTHER PLANS, AREA PROJECTS AND STUDIES

MATANUSKA-SUSITNA BOROUGH LONG RANGE TRANSPORTATION PLAN (MSB LRTP)

The Matanuska-Susitna Borough Long Range Transportation Plan (MSB LRTP) was completed in 2007 and is currently undergoing an update to create a transportation planning vision to year 2035. The adopted LRTP is part of the Borough-wide Comprehensive Plan which all adopted area and community comprehensive plans are a part of, including the adopted 2003 amended City of Houston Comprehensive Plan. The MSB LRTP identifies transportation goals and objectives which reflect the Borough-wide interests and desires for the future transportation system. The overall purpose and goal of the MSB LRTP is to develop an integrated roadway network that facilitates the efficient movement of people and goods within the central area.

Specific goals identified in the 2007 MSB LRTP relate directly to the City of Houston and its transportation and economic goals, as identified in this Comprehensive Plan. These goals and objectives from the MSB LRTP include:

- Provide a transportation system that enhances the local economy and quality of life;
    - Minimize neighborhood through-traffic movements;
    - Promote positive and attractive design of transportation facilities;
    - Develop a multi-modal transportation network; and
    - Encourage the paving of roads and the increased use of dust control materials;
- Develop an integrated roadway network that facilities the efficient movement of people and goods;
    - Minimizing travel time delays and congestion;
    - Minimize the number of access points on collector and arterial roads to maximize safety and road capacity; and
    - Protect the integrity and level of service on arterial and higher designated roads;

- Protect the through traffic function of highways and arterials;
- Provide a multi-modal transportation system that is safe, effective and meets the needs of all residents;
- Provide for the travel needs of mobility limited residents (young, old, low income, disabled);
    - Support the continued operation and expansion of local public transportation;
- And develop and operate a rail system to benefit Mat-Su's population and economy;
    - Extend a rail connection from the Alaska Railroad main line to Point MacKenzie; and
    - Continue to support economic development of communities along existing and future Alaska Railroad lines.

The MSB LRTP identifies anticipated future projects based on population growth, development, and the existing transportation system's capacities. This information is used to model and forecast estimated future traffic volumes throughout the borough road network. The completed 2007 LRTP extends through the planning year 2025. Assuming residential growth continues in the borough outside of Wasilla and Palmer, proposed future roads were identified with the recommendation that they be improved or completed when the nearby areas they serve are built out. Most of the identified improvements are also included in the Borough's Official Streets and Highways Plan (OS&HP).

The identified recommendations and improvements in the Houston area are mainly for the road system south of King Arthur Drive, where higher density population growth and travel is likely to occur.

Skyview Drive, east of Cheri Lake in Houston and south of Lake Lalen in Meadow Lakes, is a collector-level street recommended to be extended generally west and south of Cheri and Loon Lakes to the Parks Highway, providing a connection to Anthony Road (page 4-24, 2007 MSB LRTP). Big Lake Road from the Parks Highway to Northshore Drive is anticipated to need expansion from a 2-lane minor arterial to a 4-lane arterial by 2025 based on predicted increases in daily traffic volumes (page 4-14, 2007 MSB LRTP).

Rural area roads are not included in the transportation modeling process. Typically the need for new or improved rural roads is based on providing access to new neighborhoods and a second connection to larger developed areas for emergency access and convenience. Recommendations for rural road improvements in the LRTP are based on needs identified in Mat-Su community adopted comprehensive plans. The City of Houston's 1999 adopted plan stressed the need for emergency access routes and combination fire breaks.

Proposed emergency access routes and staging areas affecting the City of Houston include providing a connection between Millers Reach Road and the Beaver Lake area and connecting roads north of the Little Susitna River from Armstrong Road to Edgerton Parks Road.

ALASKA DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES PARKS HIGHWAY VISION, 2006

The Alaska Department of Transportation and Public Facilities developed a vision for the Parks Highway in 2006. The purpose of the Parks Highway Visioning Document is to establish, in general terms, the Department's future vision of the highway which will provide guidance to the decisions about forthcoming highway projects and is intended to serve as the conceptual basis for more detailed local and Department planning efforts in the future.

Overall the vision for the Parks Highway is as follows:

"A high degree of mobility for through trips while accommodating local access and slower travelers should be provided in a manner that is highly compatible with the communities and the environment along the corridor. The highway should be free-flowing with enough capacity and appropriate design standards to safely support travel at highway speeds. The long-term vision is for the highway to be upgraded to include freeway- style design characteristics, such as controlled access and interchanges at major connections. Local travel, within communities along the corridor, will be improved by developing local access road systems."

Using 2030 traffic projections and identified safety and economic needs, general future improvements for the Parks Highway from the Big Lake Junction through Willow were identified. Generally the recommendation is to upgrade this section of the Highway to four lanes with access roads in selected locations. The frontage and access roads may be connected to the highway via interchanges or at-grade signalized intersections in the interim.

Good access management is especially important in Houston where private land exists adjacent to the highway and development pressure has been increasing (Parks Highway Visioning Document, page ES-2). *"Future highway corridor planning efforts should evaluate, on a segment-by-segment basis, how to provide access to adjacent lands, and this should be the basis for an access management plan for the Parks Highway corridor."*

Projected traffic volumes were developed based on historical traffic trends, historical and projected population trends, past design designations, and regional travel models (see Travel Demand Modeling to follow). Average annual daily traffic volumes from the year 2000 were taken as current or existing volumes of traffic along the Parks Highway and used to predict anticipated traffic volumes in the year 2030. The Parks Highway segment from Big Lake Road to Willow is projected to be carrying 8,000 vehicles per day by 2030.

Through this comprehensive planning process, new traffic projections were calculated using updated data in the Travel Demand Model (see following page) for a horizon year of 2035. The new data predicts average annual daily traffic volumes up to three times as much as the 2006 Parks Highway Visioning Document predicted through the Houston segment of the Parks Highway. This increase is significant in terms of highway planning and suggests improvements to the Parks Highway are needed in the near future.

DOT&PF's Parks Highway Visioning Document also notes that if the Wasilla bypass is built, the need for Parks Highway expansion to four lanes through Houston could be needed sooner, due to increases in growth in Houston and Willow and decreased travel time to Wasilla and Anchorage.

Development of Port MacKenzie is anticipated with or without the construction of the Knik Arm Bridge, according to the Visioning Document.

"Ultimately, a new connection to the Parks Highway from the Knik Arm Crossing may be constructed.... The cities of Wasilla and Houston have zoning. Estimates about the timeframe for this connection range from 10 to 30 years. Most of the land for the route [highway corridor number 7 which follows the existing road alignment from the Parks through Big Lake Road down Burma Road, Ayrshire, and Point MacKenzie Roads] is still in public ownership. The road could intersect the Parks Highway near Millers Reach Road in Houston. This was the most cost effective of the routes studied in 1992. ARRC also may use this corridor. If this route becomes a reality, it could make a bypass at Houston a necessity, put Willow at an easy commuting distance of Anchorage, and increase the number of visitors to the south side of Denali National Park and other tourist and recreational attractions in the Susitna Valley."

The visioning document states the recommendation for a possible bypass at Houston becomes stronger if a Port-to-Parks roadway connection is built through Houston. The use of interchanges is strongly supported throughout the Visioning Document and therefore a Houston Bypass appears as a viable option. Otherwise good access management, the use of frontage roads, climbing and passing lanes, and widening to four lanes is predicted to adequately meet future traffic needs.

The Parks Highway is anticipated to expand to four lanes in 2030. There is enough roadside development, existing and anticipated, to warrant frontage roads in some sections of Houston. Construction of the Knik Arm Crossing could alter the traffic projections and change the long term needs of the Parks Highway through Houston. If constructed, the growth and traffic patterns within the borough south of the Parks Highway could change significantly, which may reduce the need for some highway improvements. That is because the provision of this alternate access route may increase the traffic volumes in other sections of the highway.

TRAVEL DEMAND MODELING AND TRANSPORTATION PLANNING ASSUMPTIONS

The Anchorage Metropolitan Area Transportation Solutions (AMATS) regularly updates and maintains a regional Travel Demand Model (TDM) which includes the Mat-Su Borough areas as well as the greater Anchorage metropolitan area.

In an effort to establish appropriate transportation goals, objectives, and policies, the average annual daily traffic (AADT) volumes have been projected for 2035 by AMATS using the Travel Demand Model (TDM). The TDM includes all planned and funded transportation projects to date (April 2015). The model used in this analysis was developed by the ADOT&PF in conjunction with the Municipality of Anchorage (MOA) and the Matanuska Susitna Borough. The extents of the model are the entire network of the MSB and MOA from north of Willow all the way to Girdwood and east as far as the community of Sutton on the Glen Highway. This model is the same one used to analyze the traffic impacts of the Knik Arm bridge project as well as the Highway-to-Highway project in downtown Anchorage, and various Wasilla Bypass alternative corridors.

The model generates traffic volumes based on socio-economic background data such as population, income level, employment in various work sectors, school enrollment, as well as a number of special generators such as hotels and airports. The results of the model were used as a baseline for some the recommendations to follow. Figure 16 presents a diagram of the City of Houston with several key 2035 AADTs taken from the TDM.

KNIK ARM BRIDGE

The Knik Arm Crossing is a proposed project to construct a toll bridge over Cook Inlet connecting downtown Anchorage to the Point MacKenzie area and provide an alternative route to the Mat-Su Borough. Project management was transferred from the state created Knik Arm Bridge & Toll Authority to the State of Alaska Department of Transportation & Public Facilities (DOT&PF) in 2014. Eleven years earlier the State Legislature decided to seriously pursue the development of the bridge following a 1984 Draft Environmental Impact Statement by the DOT&PF.

To date, more than $72.9 million in federal money has been spent on the Environmental Impact Statement and other preliminary work including right-of-way acquisitions. Full funding, through a loan with the federal Transportation Infrastructure Finance and Innovation Act (TIFIA), has not been acquired. The Knik Arm Bridge project will also need future funding grants from the state of Alaska to pursue limited right of way requirements.

The Knik Arm Bridge project is included in the AMATS Metropolitan Transportation Plan and regional Travel Demand Model as a constructed project by 2035. Construction of the Knik Arm Bridge could have impacts on traffic volumes experienced by the City of Houston in the future, but growth and increases in traffic along the Parks Highway especially is anticipated to still increase to levels where highway improvements would be recommended.

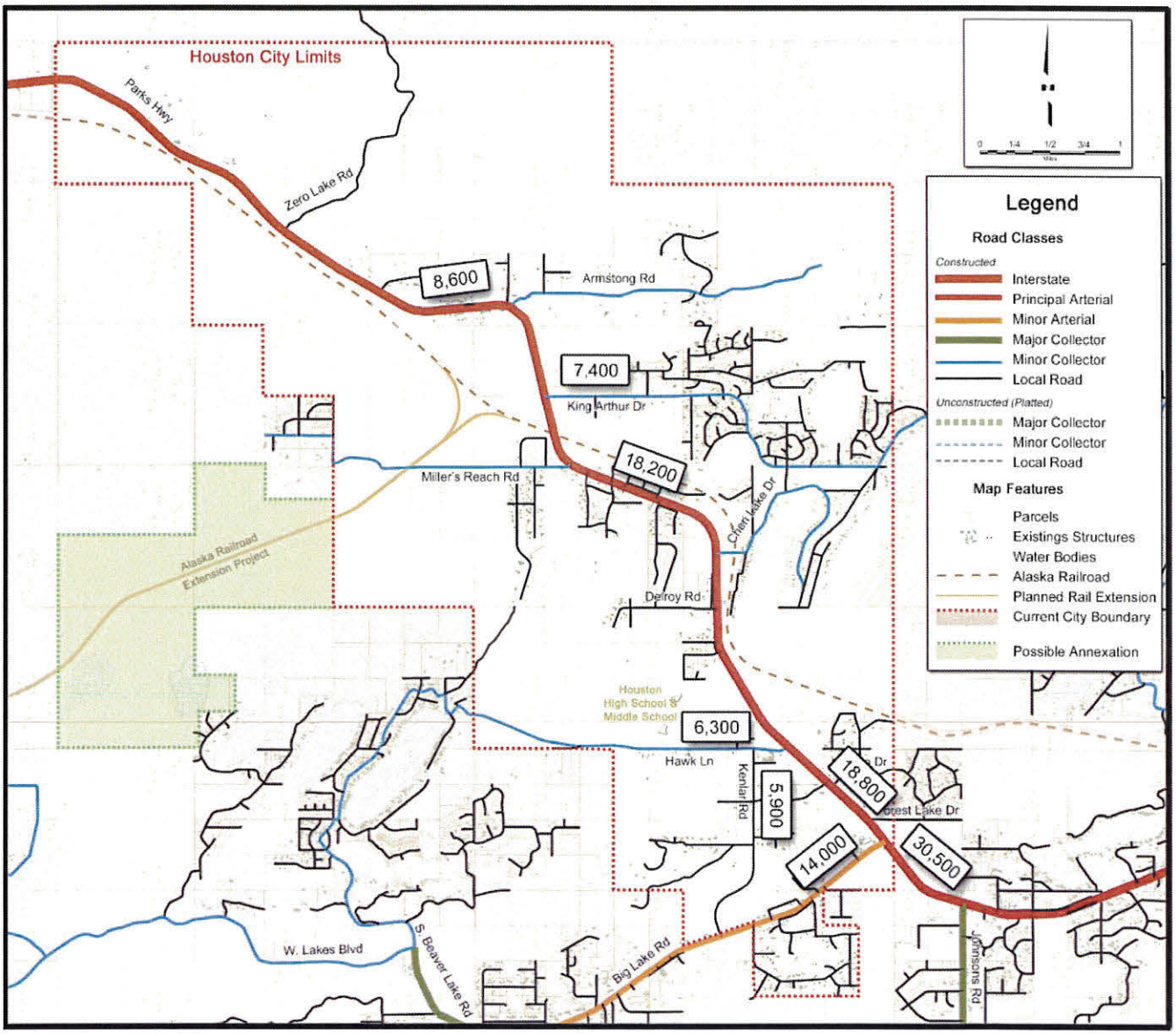


Figure 16. Projected 2035 Traffic Demand Volumes from ADOT&PF Travel Demand Model

RECOMMENDATIONS

All recommendations identified in this Transportation Plan element of the City of Houston's Comprehensive Plan support the following community values regarding transportation:

There is a need to increase safety, accessibility, and mobility through much of the city with improvements benefiting all users, including pedestrians, bicyclists, and other non-motorized users, while maintaining the community character.

The objectives, policies, and strategies identified to achieve the overall Transportation Goal were developed from the community's core values and identified in Chapter 5: Community Guidelines for Growth.

The following Transportation Plan Recommendations coincide with these goals and provide general traffic-related observations and recommendations for the City of Houston based on the analysis of existing conditions, other plans, and the projects generation by the ADOT&PF's Travel Demand Model.

THE PARKS HIGHWAY

The Parks Highway represents the backbone of the City of Houston's transportation infrastructure, not only for inter-community travel but also for access to outside services and employment centers. It is also of regional and statewide significance and therefore has a major impact on the residents of the City of Houston. Following are major Parks Highway recommendations.

BYPASS

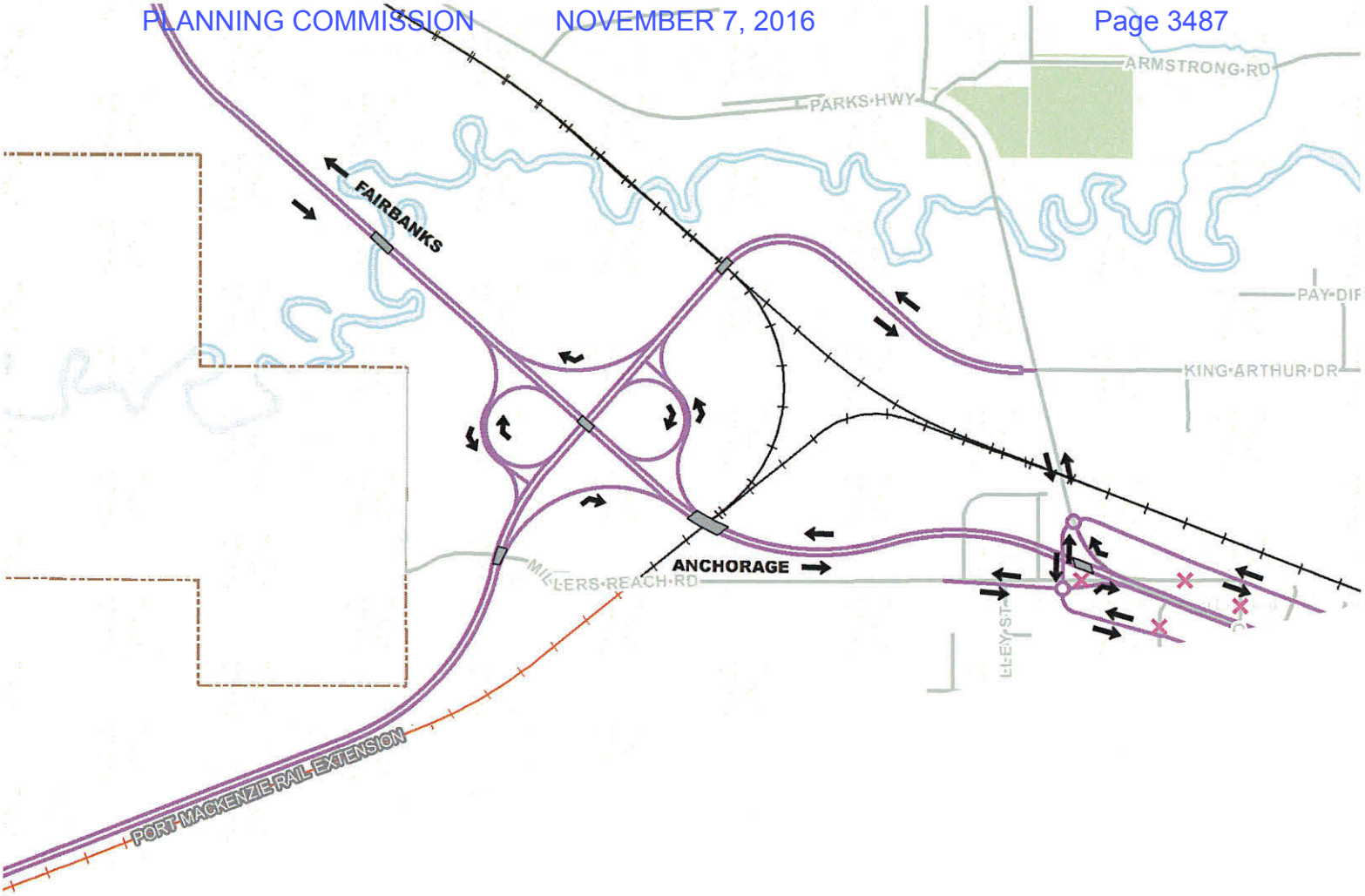
A Parks Highway bypass has been envisioned since at least the early 1980's. The bypass would occur between Mile 56 and Mile 60, and would parallel the Alaska Railroad tracks on the south or west side. This bypass would be integrated with the "Port-to-Parks" highway discussed later. A grade separated interchange would be constructed to facilitate uninterrupted traffic flow along the Parks Highway and (mostly) free flowing turning movements towards the port and town center. Several bridges would be required to cross the railroad tracks, the Little Susitna River, and existing roadways. This recommended project will benefit the community as follows:

TOWN CENTER DEVELOPMENT

Shifting higher-volume through traffic to the bypass will provide opportunities for a cohesive town center around major community assets, such as the Little Susitna River and existing businesses. However, relocating the highway away from existing businesses could have a negative impact in the form of fewer customers. This result could be mitigated with signage directing travelers to the town center businesses, as well as strategic on/off ramps at the existing Parks Highway at either end of the bypass. The development of streetside or other public parking venues in the Town Center is encouraged.

EFFICIENT AND SAFE FREIGHT MOVEMENT

Through traffic traveling on the bypass would do so at a higher speed (greater than 55 mph) without the inherent safety risks presented by multiple driveways/intersections. Also, depending on the final alignment of the bypass, up to three horizontal curves could be eliminated or flattened significantly.



INTERCHANGE

With the construction of the "Port-to-Parks" highway, Houston will be the site of a major highway convergence. In order to provide safe and efficient access, a grade separated interchange is envisioned in the undeveloped land bordered by the Little Susitna River on the north, railroad tracks to the east and south, and the city boundary to the west.

A partial cloverleaf was initially recommended, even though an eventual project will need to complete a detailed evaluation of available interchange types. The Parks Highway would be elevated, with bridges spanning new frontage roads near Millers Reach Road, the Port MacKenzie Rail Link, Little Susitna River, and the railroad mainline. Areas north of the railroad tracks would be linked to the interchange with a new road, including a grade separated railroad crossing.

Main access to the Parks Highway would be through the interchange, particularly for any traffic going south to Wasilla or beyond from the Houston Town Center area. Frontage roads and access management could be utilized at the south end of the bypass to consolidate and route access to and from the freeway. In addition, northbound 'old' Parks Highway travel would merge with the freeway at the north end of the bypass. Similarly, southbound freeway traffic would be allowed to exit onto the 'old' Parks Highway.

CONGESTION MANAGEMENT

Future capacity issues north of Big Lake Road are documented in both the Borough's 2007 LRTP (Figure 4-3 & 4-4) and the draft CIA (Appendix C, Section 4). These future traffic projections are in part influenced by projects such as the Knik Arm Bridge and Wasilla Bypass Road. Should the anticipated increases in traffic prove to be correct (more than double by 2035), the Parks Highway will need to be upgraded to a 4-lane divided highway between Big Lake Road and the northern boundary of Houston (and beyond).

This recommended project will benefit the project as follows:

- Efficient and Safe Freight Movement

Reducing congestion by adding lanes can reduce conflicts between slower moving trucks and faster moving cars. It also eliminates the need for passing vehicles to move into the opposing lane, increasing safety for all motorists. Finally, a divided highway, similar to what is currently being designed/ constructed between Miles 44 and 52, has the potential to greatly reduce severe crashes, such as head-on collisions.

ACCESS MANAGEMENT

Access management will likely become a growing concern as traffic volumes on the Parks Highway continue to increase. The Travel Demand Model (TDM) indicates that the majority of growth on the Parks Highway would be local to Houston, rather than being related to pass-through traffic continuing north toward Fairbanks. This likely development suggests that there will be a higher percentage of turning traffic on and off the highway.

One method of accommodating this increase in turning traffic is to encourage turns at safe, logical locations throughout the corridor. This means limiting the number of intersections with the Parks Highway and relocating trips to consolidated intersections through the use of parallel connections and frontage roads. Specifically, frontage roads are recommended in the existing commercial zone near Armstrong Road where linked parking lots currently operate as a de facto frontage road. A bypass, as discussed earlier, would also eliminate conflicts along this section of the Parks Highway.

If the traffic volumes do increase to the level indicated in the 2035 TDM, a 4-lane divided highway would likely be necessary with access points at a minimum of half mile increments. It is recommended that the City of Houston plan for these access points and encourage development patterns that would reduce the impact and cost of construction for a 4-lane divided highway.

The following access points to the Parks Highway have been identified for consolidation/rerouting or realignment:

1. W Larae Rd/Airolo Dr: Align intersections
2. Corn St: Close Highway access and route to Hawk Ln or Delroy Rd
3. Debra Jean Ln: Close Highway access and route to Hawk Ln or Delroy Rd
4. N Dana Ct to Railroad undercrossing: Close Highway access and provide frontage roads connecting to the repurposed Parks Highway (after the construction of the bypass). Highway access would be via the interchange for northbound traffic and a series of intersections for southbound traffic.

Strategic access control is necessary to preserve efficient movement along the Parks Highway and reduce conflict points.

PEDESTRIAN CROSSINGS

In connection with the consolidation of turning traffic, consideration should also be made concerning the desired location for pedestrian crossings of the Parks Highway. As residential development continues to grow north of the Parks Highway, along King Arthur Road and Armstrong Road, commercial development is expected to increase adjacent to the highway. The major commercial developments are currently on the south side of the highway, and new commercial development is likely to expand from this established location. This development creates a conflict as pedestrians make home based commercial trips which require crossing the Parks Highway.

Safer crossings could be encouraged through construction and proper maintenance of surrounding trail networks which would direct the flow of walking, biking, and motorized pedestrians to reduce speed areas of the Parks Highway or to access points that might be signalized in the future.

FREIGHT AND INDUSTRY

It is a goal of the City of Houston to develop economically. Fostering this type of growth, especially industrial development, requires a solid transportation network for moving freight in and out of the industrial zones. The City of Houston has several tracts of Industry zoned land without all-weather roads for freight access. Following are major freight related recommendations.

PORT TO PARKS

Also known as the "Port MacKenzie to Parks Highway Roadway Corridor", the "Port to Parks" project seeks to construct a more direct highway link between the growing Port MacKenzie and the Parks Highway. Several routes have been studied in the past; including some with impacts to City of Houston lands. It is recommended that an alignment paralleling the north side of the newly constructed railroad link be selected. A "Port to Parks" road through the City of Houston would benefit the community as follows:

- Industrial Development

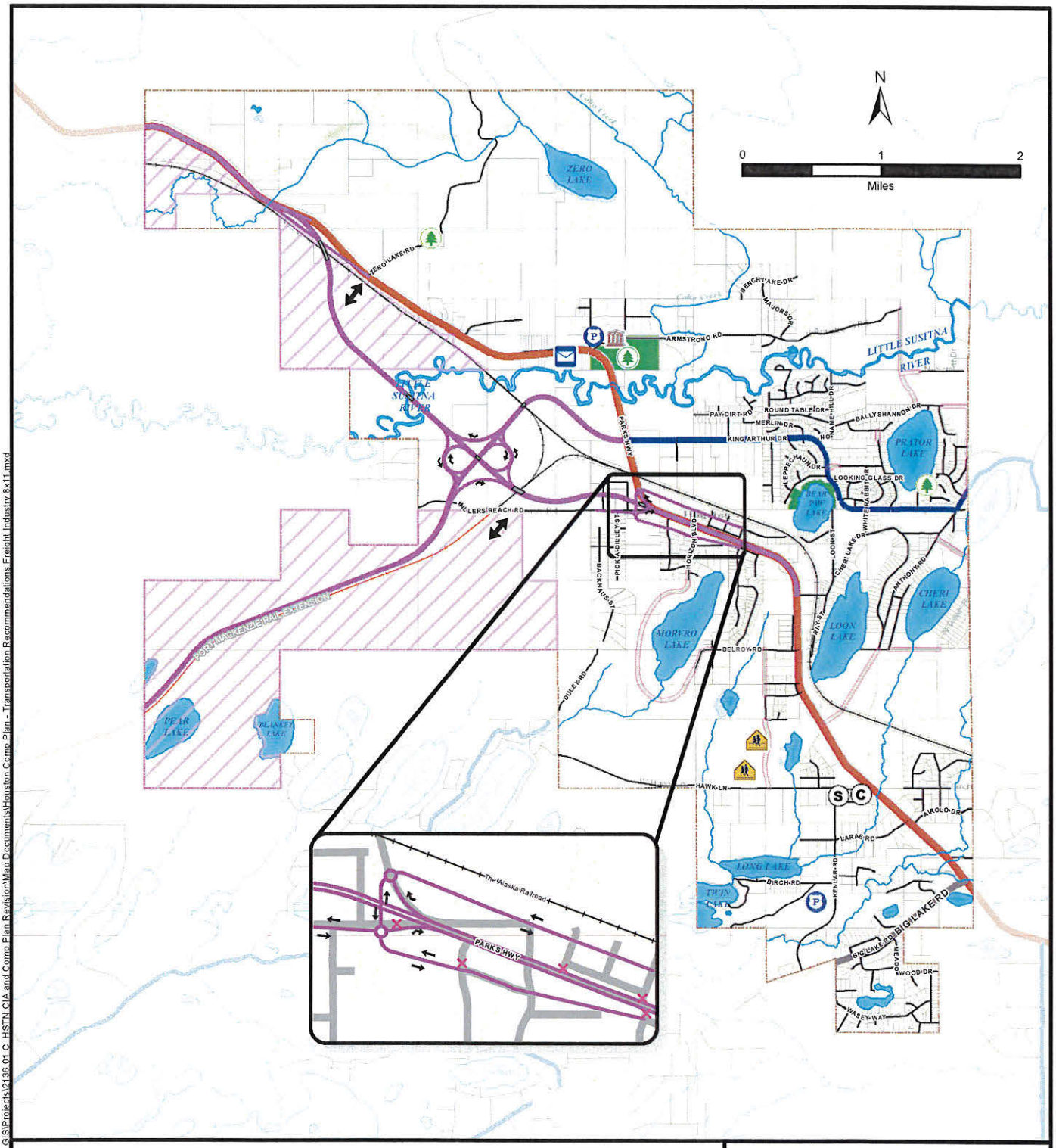
The recently annexed Knikatnu, Inc. land is zoned heavy industry, but is currently without surface access. A Port to Parks alignment paralleling the Port MacKenzie Rail Extension would provide flexible freight access to a portion of these lands, making it more attractive for businesses to invest. The utility grid will require upgrades to accommodate a growing industry. Providing road access to industrial areas is compatible with the City of Houston's objectives to foster employment opportunities and encourage regional commercial enterprises.

- Freight from Port to Interior Alaska

As operations at Port MacKenzie increase, so will the demand for multimodal access. The "Port to Parks" roadway provides an alternative to the railroad, which is preferred for smaller quantities of goods.

- Light Industry Access

Several tracts of land within the City of Houston's boundary are zoned as "LI", Light Industrial. The majority of this zoning district is not currently connected to the road system, particularly in the northwest portion of the city. In order to attract industrial development, roadways into these districts are recommended. This recommendation includes improvements to existing roadways, such as paving Miller's Reach Road.



LEGEND

- City Boundary
- Parcels
- Park
- Industrial Zoning
- Railroad
- Port MacKenzie Rail Extension (Partially Complete)
- New to Road Connectors

Roads

- Interstate
- Minor Arterial
- Minor Collector
- Local road
- Proposed Bridge
- Interchange and Port to Parks

- Reroute Access to Bypass
- Light Industry Access
- Interchange Traffic Flow
- City Hall
- Public Safety

- Post Office
- School
- Community Center
- Senior Center
- Recreational

CITY OF HOUSTON

COMMUNITY IMPACT ASSESSMENT AND COMPREHENSIVE PLAN REVSION

RECOMMENDATIONS FREIGHT\INDUSTRY

JUNE 2016 FIGURE 17

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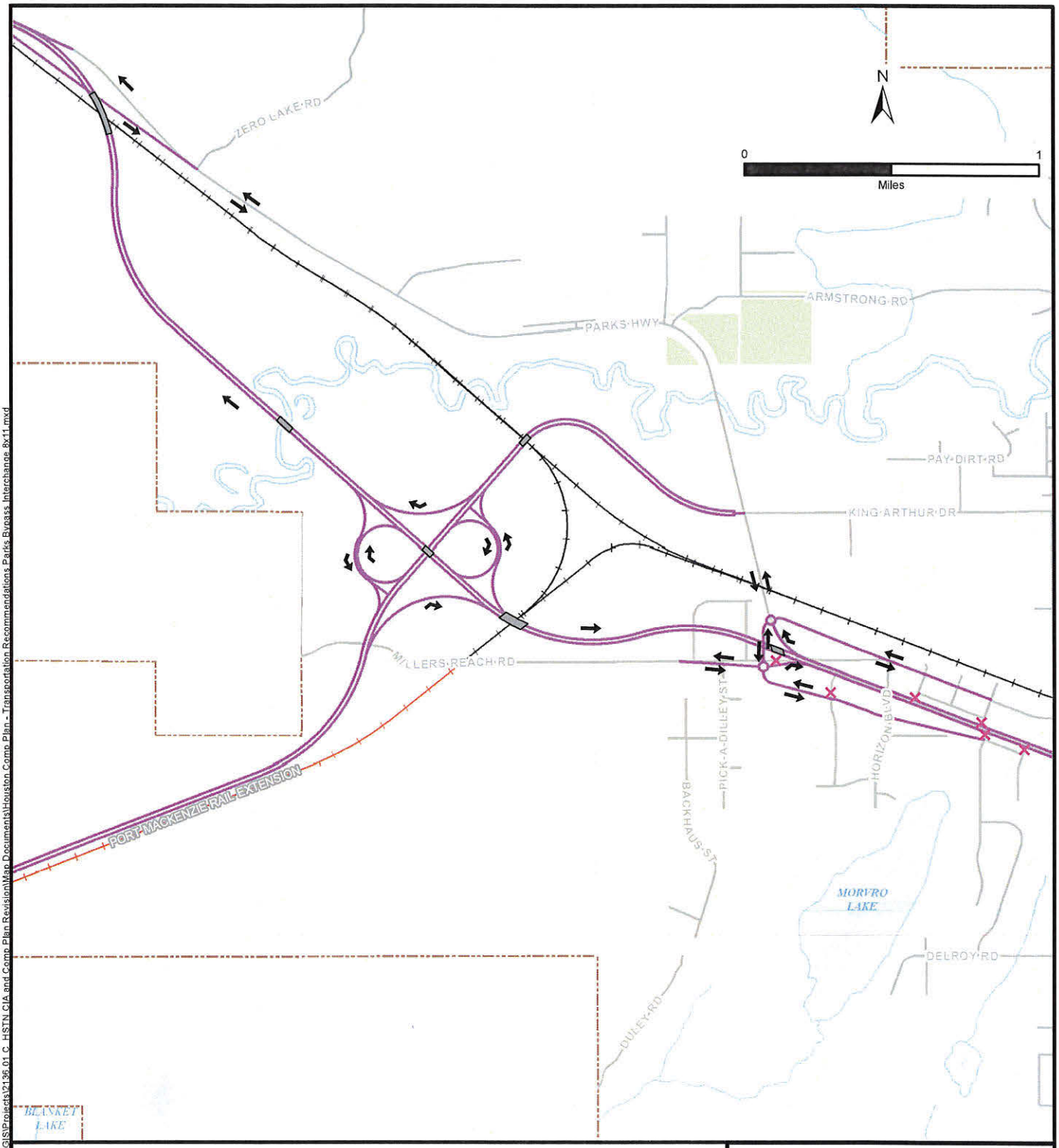

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LEGEND

- City Boundary
- Parcels
- Railroad
- Port MacKenzie Rail Extension (Partially Complete)
- Proposed Bridge
- Interchange and Port to Parks
- Interchange Traffic Flow

CITY OF HOUSTON

COMMUNITY IMPACT ASSESSMENT AND COMPREHENSIVE PLAN REVSION

RECOMMENDATIONS
PARKS HIGHWAY
BYPASS INTERCHANGE

JUNE 2016 FIGURE 18

LOCAL ROAD NETWORK

If the Parks Highway is considered the backbone of Houston's transportation network, then the local road network makes up the remainder of the skeleton. Residents have identified a need to improve the local road network, from upgrading the surface to providing new connections. Following are recommendations pertaining to the local road network.

- Neighborhood Connectivity

Many of Houston's local roadways lack adequate connectivity, meaning they dead-end or terminate at a lower classification roadway often leaving entire neighborhoods with only one ingress/egress. Not only is this problematic from an emergency response standpoint, but also tends to increase travel time and shifts traffic to lower classification roadways.

Recommended projects include:

1. West of Parks Highway: A secondary road link to the Beaver Lake area; access around the south side of Morvro Lake; and access to the Middle and High Schools from Delroy Road.

2. East of Parks Highway: Alternate Cheri Lake access; access to the east side of Cheri Lake; completion of a loop around Prator Lake; and a new bridge over the Little Susitna River to connect Armstrong Road to the Prator Lake area.

These projects are in alignment with the City's values, goals, and guidelines for growth as follows:

- Connectivity/Emergency Access
  The recommended projects provide alternate access for use during emergency situations as well as better circulation amidst the local road network (meaning less backtracking).

- Promote rural residential growth
  Providing new road connections opens up buildable lands for development, attracting people looking for the rural lifestyle.

FUNCTIONAL CLASSIFICATION

Current traffic volumes on roads outside the Parks Highway corridor are at the level of local roads regardless of their planned functional classification. Although several roads are currently classified as "Minor Collectors" by the Borough, they have not yet matured to the point where this function is critical to maintain. Volume projections indicate that in the future, a properly designed and well maintained collector road network will be essential.

RECOMMENDATIONS:

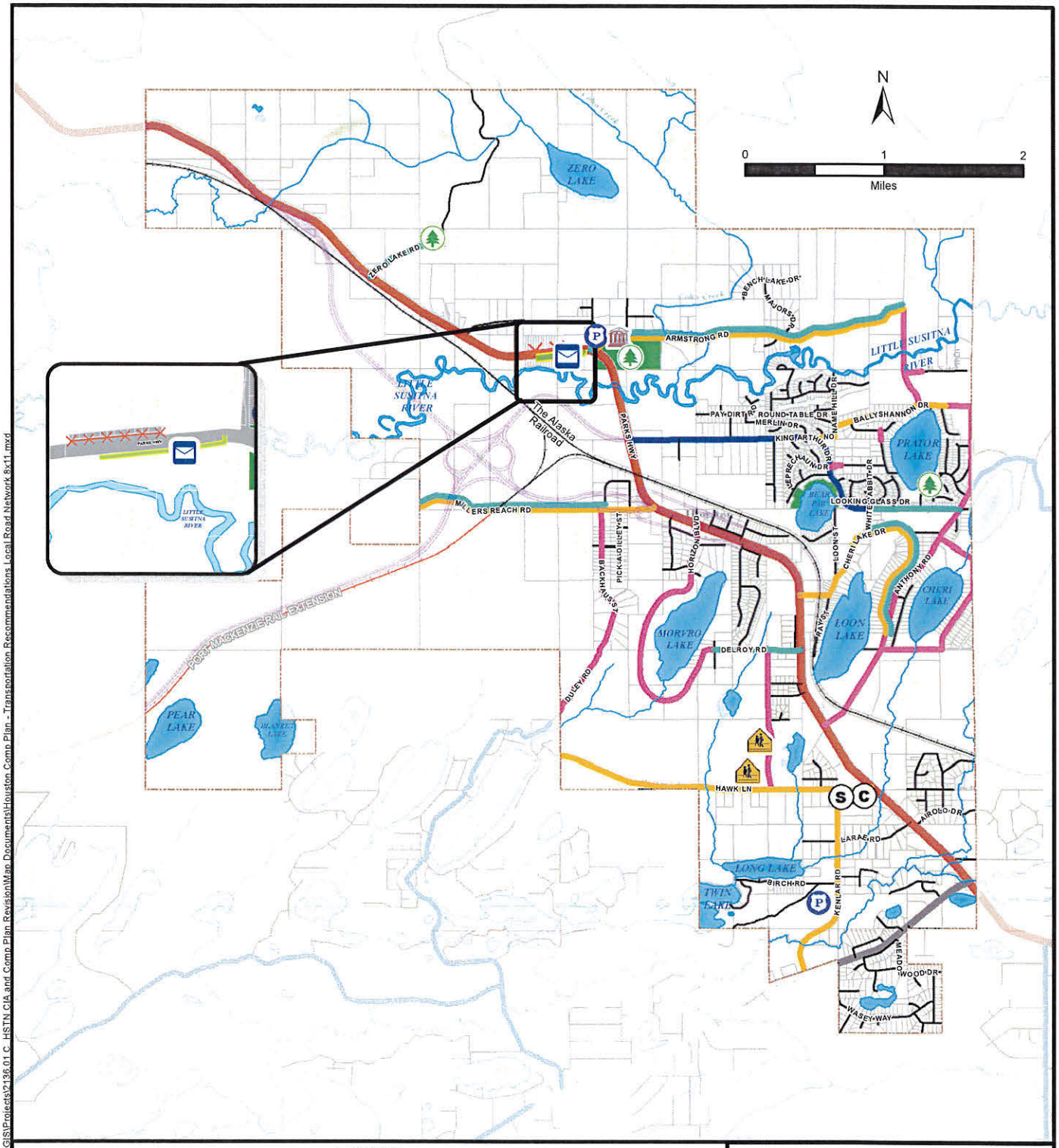
- The "minor collector" road network in the City of Houston should be preserved.
- Property driveways should access local roads when possible instead of collector roads to accommodate possible future turn lanes.
- Local roads accessing on opposite sides of a collector should be aligned directly across from each other to eliminate offset intersections.
- Consideration should be made to possible future right-of-way needs around minor collectors in case these roads ever need to be widened for turn lanes or pathways, particularly in areas around intersections.
- The frontage road paralleling the Parks Highway near the commercial core is located on the south side, not the north side as shown on the Borough's mapping.

ROAD SURFACE CONDITIONS

Only approximately 10% of Houston's roadways feature a paved surface. Recent projects, such as upgrades to Hawk Lane, represent a move in the right direction to pave all collector roadways. It is recommended that existing collectors, as well as any proposed ones, receive a paved surface. This paving will benefit the community as follows:

- Quality of Life

Improving roadway conditions will allow for easier commutes, shift maintenance funds to other priorities, and possibly raise home values. Roadside properties will enjoy the dust-free environment, adding to the enjoyment of outdoor activities.



LEGEND

- City Boundary
- Parcels
- Park

Roads
- Interstate
- Minor Arterial
- Minor Collector
- Local road
- Railroad
- Port MacKenzie Rail Extension (Partially Complete)
- New\Upgrade to Road Connectors
- Upgrade Classification to Minor Collector
- Upgrade to Pavement
- Mapping Error
- Mapping Correction
- City Hall
- Public Safety
- Post Office
- School
- Community Center
- Senior Center
- Recreational

CITY OF HOUSTON

COMMUNITY IMPACT ASSESSMENT AND COMPREHENSIVE PLAN REVSION

RECOMMENDATIONS LOCAL ROAD NETWORK

JUNE 2016 FIGURE 19

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NON-MOTORIZED USERS

Separated paved pathways exist along the Parks Highway and Big Lake Road. In addition, many less formal trails dot the landscape, used for hiking, cross country skiing, dog mushing, etc.

RECOMMENDATIONS:

- Existing formal pathways should remain and additional pathways be constructed along Hawk Lane (between the Parks Highway and the Middle/High Schools). The Hawk Lane pathway should extended from the school campus to Big Beaver Lake and connect with the Big Lake community trail system.
- Construct a formal pathway along Kenlar Road connecting the Hawk Lane pathway with the existing pathway adjacent to Big Lake Road.
- Construct a formal pathway along King Arthur Drive with connection to the existing pathway along the Parks Highway.
- Several segments of the Parks Highway feature a single pathway only. The missing links shall be constructed to provide continuous pathways on both sides along the entire Parks Highway, including the proposed bypass and the existing bridge over the Little Susitna River.
- A formal pathway along the Little Susitna River in the vicinity of the proposed Town Center would be a welcome addition for anyone wanting to use the recreation facilities.
- In all new construction and upgrade projects for interstate, arterial and collector roads, provision must be made to include adjacent pathways wherever feasible.

OFF-ROAD VEHICLES (ATVS, SNOWMACHINES)

City of Houston Municipal Code allows for the operation of off-road vehicles, including ATVs and snow machines on City streets and rights-of-way. It is evident by the vast number of informal ATV trails that this mode of transportation is widely used.

However, this causes several conflicts. First, informal trails have a tendency to migrate outside the ROW and onto private property. Secondly, repeated use during inclement weather can cause widespread rutting, which leads to unsightly roadside conditions. Lastly, uncontrolled trails can cause safety concerns at roadway intersections and create dust/visibility hazards.

RECOMMENDATIONS:

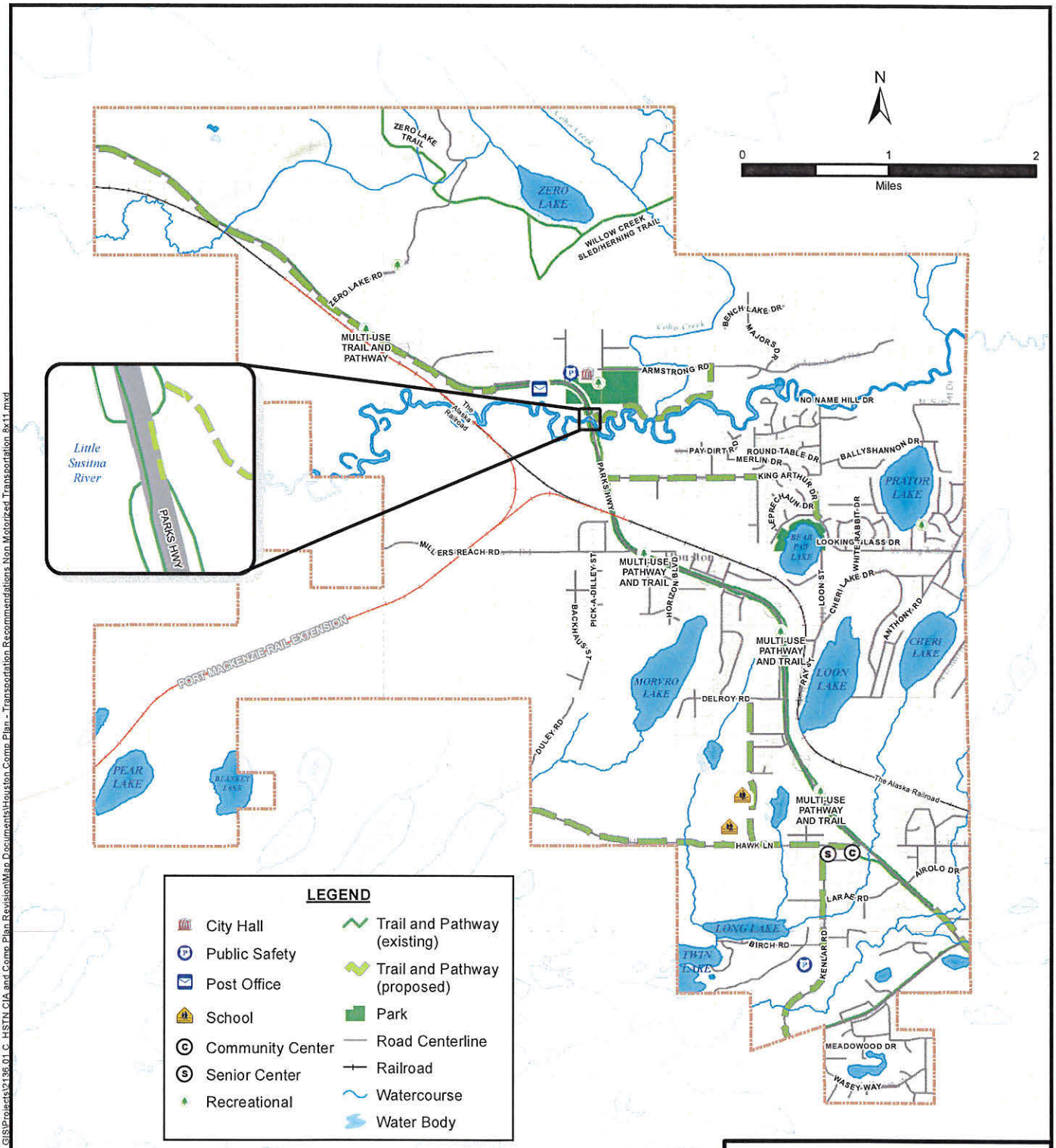
- Adopt a policy to incorporate off-road vehicle facilities including stabilized shoulders, flat-bottom gravel surfaced ditches, trail/road intersection considerations in the construction/ reconstruction of roadways within the City boundaries.
- Another alternative would be to provide designated ATV trails between major ATV destinations, such as frequently visited lakes.

PUBLIC TRANSPORTATION

Existing bus service extends into Houston only near the southern boundary. Planning for a potential future commuter rail corridor and possible locations for intermodal stations, including Houston and Willow, is currently in pre-development with the MSB.

RECOMMENDATIONS:

- Expand the bus service to other parts of Houston could be included in this plan should the community agree to a need.
- Consider the Senior Center on Hawk Lane as a potential candidate for future bus service.
- Site a formal, city owned Park-and-Ride lot for folks wanting to use the bus or carpool to commute to Wasilla or Anchorage.
- Support the development of a multi-agency coordinated plan for an Anchorage to MSB commuter rail corridor that meets Houston's future needs.



CITY OF HOUSTON

COMMUNITY IMPACT ASSESSMENT AND COMPREHENSIVE PLAN REVSION

RECOMMENDATIONS NON-MOTORIZED TRANSPORTATION

JUNE 2016 FIGURE 20

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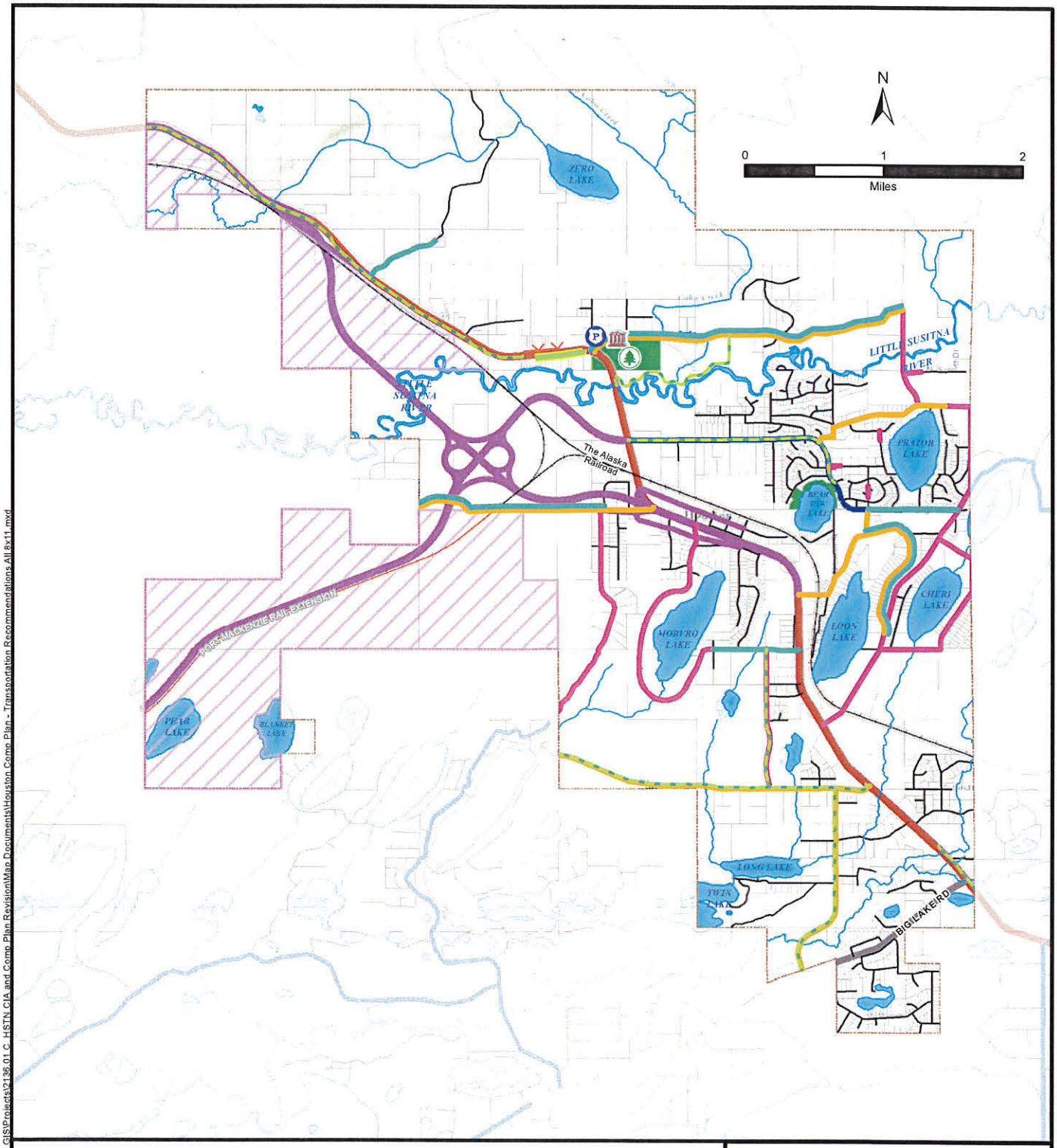

LEGEND

- Park
- Industrial Zoning
- Railroad
- Port MacKenzie Rail Extension (Partially Complete)

Roads

- Interstate
- Minor Arterial
- Minor Collector
- Local road
- Interchange and Port to Parks

- New\Upgrade to Road Connectors
- Upgrade Classification to Minor Collector
- Upgrade to Pavement
- Mapping Error
- Mapping Correction
- Trail and Pathway (proposed)

CITY OF HOUSTON

COMMUNITY IMPACT ASSESSMENT AND COMPREHENSIVE PLAN REVSION

TRANSPORTATION NETWORK RECOMMENDATIONS

JUNE 2016 FIGURE 21

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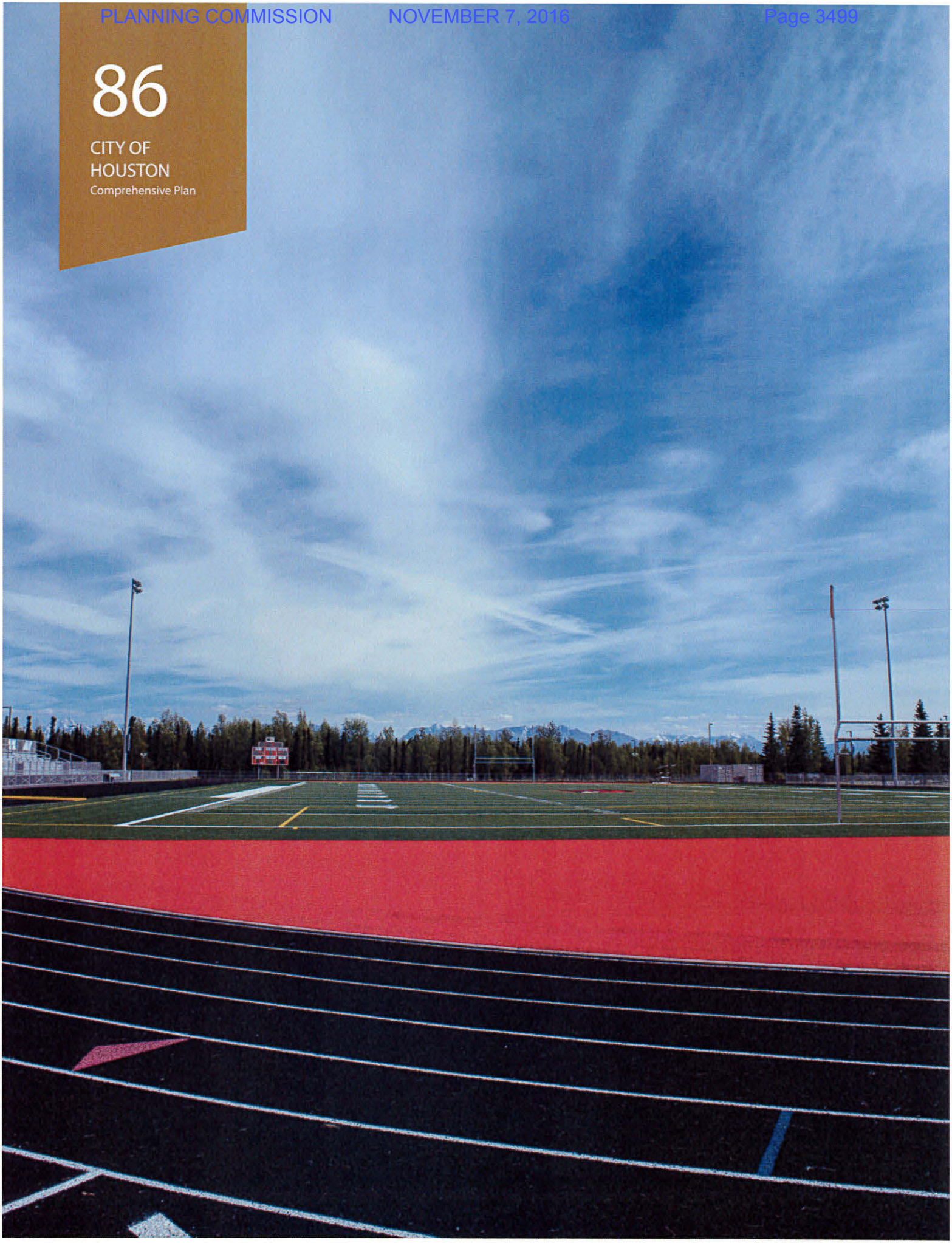
CITY OF HOUSTON
Comprehensive Plan



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CHAPTER 8: IMPLEMENTATION

OVERVIEW

The following implementation section describes the steps necessary to actualize the preferred alternative identified in this Comprehensive Plan. Implementation mechanisms for the Comprehensive Plan include regulatory controls, such as zoning, platting, and development standards from Title 10 Land Use Regulations and functional plans, such as the MSB Long Range Transportation Plan.

Timeframes are approximate and based on the information, knowledge and priorities of the Community and the City's ability to acquire funding over the 20 year horizon. As priorities change or funding becomes available, priorities may shift and change timeframes and should be reevaluated in response to changes in economic conditions, permit and regulatory requirements, and statewide economic climate.

COMMUNITY DESIGN STANDARDS

The community's desire for a more attractive built environment that is also compatible with a semi-rural and rural lifestyle and limited regulations should be balanced with broad design standards in the following areas:

- Streets and roadways;
- Landscaping;
- Public Facilities; and
- Residential development.

REGULATORY CONTROLS - TITLE 10 LAND USE REGULATIONS

The Comprehensive Plan will be implemented through site development standards as set forth in zoning and land use regulations in City of Houston's Municipal Code, Title 10.

FUNDING STRATEGIES

Funding development of park and recreation facilities can be challenging, especially with projected budget shortfalls identified for the State of Alaska and its communities beginning in 2016. National, state, local, public, and private funding sources are likely to be required to advance the implementation of this Comprehensive Plan. Funding sources available to implement these elements of this Comprehensive Plan are anticipated to be: Public-Private Partnerships, state and federal grants for community and transportation projects, city budget, and Capital Improvements Programs.

CAPITAL IMPROVEMENT PROGRAM (CIP)

The City of Houston and the Mat-Su Borough uses the Capital Improvement Program as an essential planning and budgeting instrument to identify desired public facilities and capital improvements over a six year cycle. Annual Capital Improvement Program priorities provide funding, cost and time frames for identified projects and are a useful mechanism to ensure long-term investment for a variety of project scales and types that can be funded by State grants.

ALASKA STATEWIDE TRANSPORTATION IMPROVEMENT PROGRAM (STIP)

The STIP is the state's four-year program for transportation system preservation and development. Interstate, state and some local highways, bridges, and public transportation are eligible to be included in the STIP. It covers all system improvements for which partial or full federal funding is approved. The City of Houston and the Mat-Su Borough use the STIP for planning and coordination with ADOT&PF, especially for changes to the Parks Highway.

ADDITIONAL FUNDING SOURCES:

PUBLIC PRIVATE PARTNERSHIPS (3P)

Implementation of the Houston Comprehensive Plan may require funding from non-governmental funding sources, or with assistance from volunteers, grants, or other programs and partnerships. Significant community development initiatives can be made possible by building local support in collaboration with community partners, such as tribal organizations with access to funding for development of transportation infrastructure and economic development through factories and assembly facilities that can employ local residents.

Funding for parks, trails and recreation tourism can be through the project nomination level with the Mat-Su Trails and Parks Foundation.

FEDERAL FUNDING

National programs for improving communities through non-motorized infrastructure improvements exist and may provide funding opportunities for components of the Comprehensive Plan.

BUREAU OF INDIAN AFFAIRS (BIA)

Where opportunities arise, federal BIA funding for roadways on tribal lands should be explored to provide improvements that will be mutually beneficial to the City of Houston and to tribal entities as well as provide economic expansion through local employment.

FHWA

The Fixing America's Surface Transportation (FAST) Act signed into law in December 2015 includes the consolidation of the Surface Transportation Program and Transportation Alternatives Program into a single, Surface Transportation Program Block Grant, increasing flexibility for state and local governments to administer funds. Details about how the Block Grant Program will be administered in Alaska are not yet available, but funds are likely to be made available for a variety of projects based on previous allocations of federal funds by the State.

IMPLEMENTATION SCHEDULE

IMMEDIATE TIME FRAME (0-6 MONTHS)

Priority	Action Item	Proposed Implementers
1	Plan Adoption	Planning and Zoning Commission (PZC), City Council, COH Staff
2	Initiate Parks Highway Corridor Plan MP 52-62	DOT&PF, City of Houston, City Council
3	Coordinate an updated Zoning Map with MSB.	COH, PZC, MSB.
4	Review and develop Marijuana Business policies for consideration in appropriate zoning districts for economic development and commercial business diversity.	COH, PZC, City Council.

SHORT TERM (1-5 YEARS)

Priority	Action Item	Proposed Implementers
1	Rezone areawide for implementation of Comprehensive Plan policies and to correct inconsistent zoning districts.	COH, PZC, City Council
2	Update Title 10 Land Use Regulations to reflect Adopted Plan.	COH, PZC, City Council
3	Update Title 10 Land Use Regulations to include design standards for landscaping and setbacks.	COH, PZC, City Council
4	Develop an Overlay District for the Town Center/Civic Center to encourage development of small shops, restaurants, art galleries, and a Riverwalk adjacent to the Little Susitna River.	COH, PZC, City Council, Houston Chamber of Commerce.
5	Explore BIA funding for road improvements on tribal lands for pilot projects.	COH, City Council, PZC, Knikatnu, Inc.
6	Determine the feasibility of developing a LED Assembly factory in Houston.	COH, City Council, PZC, Knikatnu, Inc.
7	Explore the feasibility of a Natural Gas Power Plant in Houston to support railbelt energy distribution.	COH, City Council, Houston Chamber of Commerce, MSB.
8	Market and brand Houston as a summer and winter recreation destination through brochures and trails maps.	COH, Houston Chamber of Commerce, MSB Convention and Visitor's Bureau, Mat-Su Trails and Parks Foundation.
9	Explore the feasibility of an Improvement District to fund the expansion of utilities to jumpstart growth.	COH, City Council, MSB.
10	Determine the feasibility of a wastewater treatment facility in Houston.	COH, MSB.
11	Continue fish restoration projects on the Little Susitna River for return of salmon to improve riparian ecology and to provide recreational benefits.	COH, Knik Tribal Council, Community Groups and Volunteers.
12	Explore partnerships to encourage Industrial Greenhouses as a source of local food and economic development.	COH, City Council, Houston Chamber of Commerce, MSB.
13	During development,ensure the trail system is preserved by obtaining trail easements where possible.	COH, MSB.

MID-RANGE (5-10 YEARS)

Priority	Action Item	Proposed Implementers
1	Prepare a small area plan for a Riverwalk in the Town Center at City Hall and Little Susitna Campground.	COH, PZC, City Council
2	Evaluate the feasibility of intermodal transfer facility at new ARRC extension	COH, ARRC, City Council
3	Evaluate the feasibility of a Parks Highway Bypass corridor through a highway engineering design study project to implement the transportation element.	COH, DOT, MSB.
4	Develop a marketing plan to attract a Grocery Store chain to Houston.	COH, City Council, Houston Chamber of Commerce.
5	Prepare a site selection for a new elementary school to ensure that adequate land is set aside in an appropriate location for future anticipated school enrollment projections.	COH, MSB School District, MSB, PZC, City Council.

LONG-RANGE (10-20 YEARS)

Priority	Action	Proposed Implementers
1	Evaluate the feasibility and funding of a Port to Parks roadway corridor parallel to the new ARRC extension.	COH, DOT&PF, MSB
2	Reevaluate the Comprehensive Plan at the 10 year mark or when a new Census is available to ensure Planning Assumptions are still relevant.	COH, PZC, City Council, MSB
3	Determine the feasibility of material sites of gravel or other mining/mineral resources to support the construction industry and boost economic development.	COH, City Council, Houston Chamber of Commerce, MSB.

APPENDICES

Appendix A. Existing Conditions Report
Appendix A - MSB Historic Volume Counts
Appendix B - Houston Road Inventory

Appendix B. Public Involvement Summary

Appendix C. Houston Household Opinion Survey Report

Appendix D. Community Impact Assessment and Appendices
Appendix A - Public Involvement Summary
Appendix B - Economic Development Opportunities: Perspectives of Community Stakeholders
Appendix C - Traffic Impacts of Major Planning Projects

Appendix E. Land Use Assessment

Appendix F. City of Houston Planning & Zoning Commission Resolution

Appendix G. City of Houston City Council Adoption Ordinance

Comp Plan Appendices

CITY OF HOUSTON COMPREHENSIVE PLAN

APPENDICES

APPENDIX A. Existing Conditions Report
APPENDIX B. Public Involvement Summary
APPENDIX C. Household Opinion Survey Report
APPENDIX D. Community Impact Assessment and Appendices
APPENDIX E. Land Use Assessment
APPENDIX F. City of Houston Planning & Zoning Commission Resolution
APPENDIX G. City of Houston City Council Adoption Ordinance

APPENDIX A.
EXISTING CONDITIONS REPORT

DRAFT Existing Conditions Report & Community Profile

City of Houston Community Impact Assessment & Comprehensive Plan Revision

Prepared by R&M Consultants, Inc. for the City of Houston

August 2014

Table of Contents

Table of Contents i
List of Figures ii
List of Tables iii
List of Appendices iii
History and Background 2
Location and Geography 2
Climate 3
Physical Characteristics 3
Soils 3
Topography 3
Vegetation 3
Waterbodies 4
Wetlands 4
Floodplains 5
Fish and Wildlife 5
Threatened and Endangered Species 5
Hazardous Waste and Contaminated Sites 5
Historic Properties and Cultural Resources 6
Agriculture 6
Parks and Recreation Facilities 7
Community and Culture 8
Community Centers, Services and Libraries 8
..... 8
Public Safety Facilities and Services 9
Land Use 10
placeholder 11
Zoning Districts 13
Land Ownership 17
Placeholder 18
Community Demographic Profile 19
Population Trends and Projections 19

AGE GROUPS AND MEDIAN AGE 20
Race 22
School Enrollment 23
Household Income 25
Employment Trends and Educational Attainment 26
Houston Businesses 29
City Services 31
Housing Trends, Characteristics and Future Housing Needs 31
Composition of Houston Business Licenses 32
Transportation Network 34
The Parks Highway 34
Classification and Function 34
Lane Configuration 34
City of Houston Road Network Layout 36
Little Susitna River 36
Road Functional Classifications 37
ADOT&PF Classifications 39
MSB Classifications 40
placeholder 41
Traffic Volumes 42
DOT&PF Volume Counts 42
MSB Volume Counts 42
Road Surface Conditions 43
Alaska Railroad 44
Speed Limits 45
Pedestrian Pathways 45
Road Inventory 45

List of Figures

Figure 1. Existing Land Use 11
Figure 2. Existing Zoning 16
Figure 3. General Land Ownership 18
Figure 4. Annual Population Growth Rate, Houston, 2001-2013 20

Figure 5. Houston Population, 1990 and 200-2013 20
Figure 6. Houston Population by Age Category and Median Age, 2000 and 2013 22
Figure 7. Parks Highway Lane Configurations 35
Figure 8. Alaska Railroad Separated Grade Crossing of the Parks Highway 37
Figure 9. Functional Classification: Mobility and Access Relationship 38
Figure 10. ADOT&PF Functional Classification System 39
Figure 11. MSB Functional Classifications System 41
Figure 12. Historical AADTs 43
Figure 13. Alaska Railroad Separated Grade Crossing of the Parks Highway 44
Figure 14. Cheri Lake Drive at-grade Railroad Crossing 45

List of Tables

Table 1. Vacant Land Suitability by Subarea 10
Table 2. Land Use by Housing Type 12
Table 3. Existing Zoning Districts 13
Table 4. Houston Population by Age Category and Median Age, 2000, 2010, and 2013 21
Table 5. Houston Race Categories, 2000, 2010, and 2008-2012 Five-Year Average 23
Table 6. Houston School Enrollment (Preschool through College), Population Age 3 Years and Over, 2000 and 2008-2012 Five-Year Average 24
Table 7. Big Lake Elementary, Willow Elementary School, Houston Middle School, and Houston High School Enrollment and Schools Personnel Count, 2013-2014 School Year 25
Table 8. Houston Household and Family Income Indicators, 2000 and 2008-2012 Five-Year Average 25
Table 9. Houston Worker Characteristics, 2012 27
Table 10. Houston Employment Indicators, 2000 and 2008-2012 Five-Year Average 28
Table 11. Houston Educational Attainment, Population 25 Years and Over, 2000 and 2008-2012 Five-Year Average 29
Table 12. Composition of Houston Businesses, 2014 30
Table 13. Houston Fire Department Response Information, 2007-2011 31
Table 14. Houston Housing Indicators, 2000, 2010, and 2008-2012 Five-Year Average 32
Table 15. Composition of Houston Businesses, 2014 32

List of Appendices

Appendix A - MSB Historic Volume Counts

Appendix B - Houston Road Inventory

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History and Background

According the State of Alaska's Community and Regional Affairs database, Houston, Alaska's origins began with natural resource development. Houston traces its roots back to the Herning Trail (now Willow Creek Sled Trail) for freighting supplies to the Willow Creek Mining District. "Houston" was named after Tennessee Congressman Houston and the first listing of it on a blueprint map was in 1917 on an Alaska Railroad map as "Houston Siding." Several coal mines were developed in the area during 1917-18 and a railroad spur was constructed to the Janios & Athens coal mine, which supplied coal to Anchorage and the LaTouche Mining Company in Prince William Sound. Houston coal was used extensively by the U.S. Navy up through World War II, when the mines shut down. In the mid-1920s, the Heaven brothers operated a mink farm at mile 59.6. In 1953-54, gravel roads and power lines were extended west of Wasilla, and Houston was quickly settled. In 1966, Houston incorporated as a third-class city; it was reclassified as a second-class city in 1973. In 1998, tests were conducted into the availability, quantity, and quality of natural gas and found huge deposits of coal-bed methane, but the wells were capped due to local restrictions and a lack of marketing.

Location and Geography

Houston is located within the Matanuska-Susitna Borough near the junction of the Little Susitna River and Mile 57.2 of the Parks Highway, 18 miles northwest of Wasilla and 57 road miles north of Anchorage. Houston's city limits encompass 23 square miles, ranging from Mile 61 of the Parks Highway at the northern boundary to Mile 52 at the southern boundary. The commercial and residential development along the first mile of Big Lake Road lies within the Houston city limits. Houston is located near the western edge of the most populous portion of the Matanuska-Susitna Borough. The Alaska Railroad traverses the Parks Highway within the city limits.

Full air service is available at Anchorage International Airport. Other local air service is available at Mat-Su's small airports. A local seaplane base exists on Morvro Lake.

Climate

January temperatures range from -33 to 33 °F; July temperatures range from 42 to 83 °F. The average annual rainfall is 15 inches, mostly from mid-July to early September, with 45 inches of snow. Winds are frequently lower than the Palmer/Wasilla area, with daily averages ranging from 0 to 6 mph.

Physical Characteristics

Soils

Soils in Houston generally range from well-drained, well-sorted gravel to hydric wetland soils. A number of small lakes dot the central and southern portions of the community limits and are bordered by glacial moraines consisting of non-sorted glacial till. In general, soils located south of the Little Susitna River and east of the Parks Highway are well drained sand and gravels of pitted outwash, and till material. Larger intermittent areas of poorly drained soils and peat bogs occur to the west of the Parks Highway.

The northern topography is characterized by rolling hills and perched silty areas; these soils are fine grained and poorly draining. Development within the area is sparse with only a few gravel pits cut in glacial moraine and esker/kame complexes. Soils in the central portion of Houston are suitable for cultivated crops agricultural development.

Soils in the central portion of Huston are suitable for agriculture. Portions of these areas are presently zoned for low density residential and agricultural use.

Topography

Houston is situated at 244 feet above sea level. The topography of Houston is generally developable; only a small portion of the total land area contains slopes in excess of 25 percent. Topography is variable with the elevation generally rising from south to north within the city limits. The northeastern portion of the City is on an elevated plateau that marks the beginning of the Talkeetna Mountain foothills. The topography south of the Little Susitna River is undulating with numerous lakes and glacial moraines. The western portion of the community is relatively flat and generally developable.

Vegetation

The vegetation within the Houston area is comprised of three broad vegetation categories: bottomland spruce-poplar forest, lowland spruce-hardwood forest, and low brush bog.

Vegetation types within these broad categories also vary. The bottomland spruce-poplar forest includes mixed forest, cottonwood, alder and willow. The lowland spruce-hardwood forest includes the birch forest found in the Houston area.

Vegetation species found in bottomland spruce-poplar forest includes white spruce, balsam poplar, black cottonwood, paper birch, quaking aspen, and black spruce. Typical understory include alder, willow, rose, labrador tea, several berry bushes, grasses, ferns and moss. These vegetation types are found on level to nearly level terrain - the cottonwood, alder and willow invade the flood plains and grow rapidly. These species are replaced by white spruce and aspen on some sites.

The lowland spruce-hardwood forest is dense to open lowland forest which includes pure stands of black spruce. It usually occurs in areas of shallow peat, glacial deposits, outwash plains and on north-facing slopes. The predominant vegetation species include black spruce, white spruce, paper birch, quaking aspen, balsam poplar and black cottonwood, with an understory of willow, dwarf arctic birch, and several berry bushes.

Low brush bog and muskeg areas are dominated by dwarf shrubs over mats of sedges, mosses and lichens. This vegetation type is found in wet, flat basins where conditions are too moist for tree growth. Dominant species include black spruce, Labrador tea, bog cranberry, willow, dwarf arctic birch, crowberry, and bog rosemary. A wide variety of grasses, mosses and lichen are also found in these regions.

Waterbodies

Approximately 1.20 square miles, or 5%, of Houston consists of surface waters. The most notable is the Little Susitna River which crosses the Parks Highway in the middle of the community. This river originates in the Talkeetna Mountains in Hatcher Pass and flows southwest ultimately into Cook Inlet. The Little Susitna River, Coho Creek, and a number of contributing unnamed streams are listed in the Anadromous Waters Catalog.

Several popular lakes exist within the City limits including Zero Lake, Bear Paw Lake, Prator Lake, Frog Lake, Cheri Lake, Loon Lake and Maruro Lake.

According to the Alaska's Final 2010 Integrated Water Quality Monitoring Report (July 15, 2010), there are no designated "Impaired Waterbodies" within the city of Huston.

Wetlands

A number of riverine, lacustrine, and palustrine wetlands are present within Houston. Most wetlands are riparian buffers along the Little Susistna River, Coho Creek and surrounding ponds. Several other wetlands are present in low laying areas between Zero Lake and the Little Susitna River.

Floodplains

The Federal Emergency Management Agency (FEMA) completed a Flood Insurance Study and remapped the Special Flood Hazard Areas for the MSB, inclusive of Houston. The MSB adopted the new floodplain mapping in Ordinance 11-018 on February 15, 2011. The flood insurance rate maps (FIRM) are now available in digital format from either the FEMA or MSB borough websites. The map panels that apply to Houston are: 7138E, 7139E, 7143E, 7144E, 7163E, 8001E, 8002E, 8006E, 8007E, and 8010E. The primary floodplain surrounds the Little Susitna River. A floodplain development permit from the MSB is required prior to building or development within a federally designated flood hazard area.

Fish and Wildlife

According to the Alaska Department of Fish and Game, the Little Susitna River provides habitat for all five species of Pacific salmon: king (Chinook), silver (coho), chum (dog), pink (humpy), and red (sockeye) – as well as rainbow trout, dolly varden, and arctic char. Coho Creek contains rearing juvenile chinook and coho salmon. Prator, Loon and Bear Paw Lakes are stalked with rainbow trout, with several other fish species present.

Many species of birds occur in the Houston area. All birds in the area, with the exception of grouse and ptarmigan, are protected under the Migratory Bird Treaty Act.

Threatened and Endangered Species

As of November 2012, no federally listed or proposed species or designated or proposed critical habit under the jurisdiction of the United States Fish and Wildlife Service occur in the Houston area. No new species have been added to the applicable federal lists.

Hazardous Waste and Contaminated Sites

There are five documented contaminated sites within the city of Houston according to the Alaska Department of Environmental Conservation (DEC) – Division of Spill Prevention and Response Contaminated Sites Program Database. Four of the five sites have achieved "Cleanup Complete" status, including sites at the Houston Fire Hall, two Alaska Railroad sites, and the City of Houston Landfall near MP 59 of the Parks Highway. Although the City of Houston's Landfill is no longer listed as a contaminated site, it is listed in DEC Brownfields Database as of 4/28/2005. One site remains "Open" and is located at a private residence on Meadowood Drive (*a stove was stolen from inside the residence, causing 175 gallons of fuel to spill inside the home and migrate into the soil below the home*). The open site was actively being monitored as of the last entry in the DEC database on 3/16/2011. Additionally, the potential for undocumented contamination always exists.

Historic Properties and Cultural Resources

According to the National Register of Historic Places (NR) maintained by the National Park Service and available to the public, there are no NR listed sites within the City of Houston. While there are no listed sites within city limits, there are likely eligible sites present. The Matanuska-Susitna Borough established a Historic Preservation Commission by Ordinance of the Assembly in April 1982. The Commission is certified to carry out the purposes of the National Historic Preservation Act of 1966 and will aid in identification, evaluation, registration and protection of sites within the Borough.

Agriculture

There are several areas within the City of Huston zoned as Low Density Residential Agricultural District (RA-5) and as Residential/Agricultural District (RA-2.5). Neither of these areas has been taken advantage of by any large-scale farms, but small homestead farms do exist. There is undeveloped potential for agriculture in Houston. Farming in other parts of the Matanuska-Susitna Borough has been very productive, including large farms in Knik and Palmer. Based on known soil data, soils present in parts of Houston are likely similar to those farmed in Knik approximately 15 miles to the southwest. The short growing season and long daylight hours are ideal for producing certain cold weather crops. Potatoes are the most common, but other fruits and vegetables including broccoli, cabbage, cauliflower, greens, onions, raspberries, peas and many others are grown. Many World Records for largest vegetable are held by farmers of the Matanuska-Susitna Borough including records for largest beet root, broccoli, cabbage, cantaloupe, carrot, celery, kale, kohlrabi, rutabaga, and turnip.

Popular demand for locally farmed produce has been increasing in recent years. The Houston Farmers Marker is held at the Meadowoods Mall on Big Lake Road from late-May through September on Fridays, Saturdays and Sundays. This is one of about 15 different weekly farmers markets held within the Matanuska-Susitna and Anchorage Boroughs.

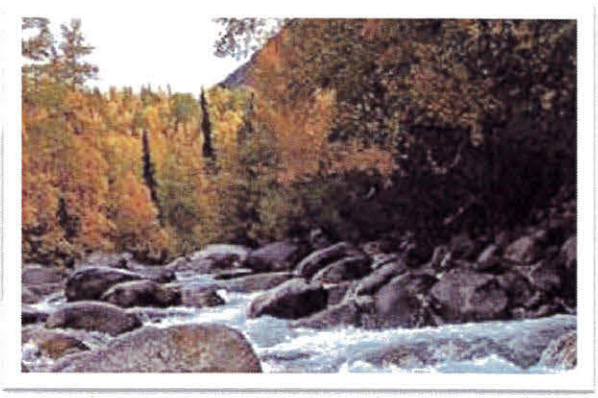
The Alaska Department of Natural Resources Division of Agriculture launched a statewide "Alaska Grown" agricultural products certification program in 1986. The program was designed to highlight and promote farm products in the marketplace and the "Alaska Grown" logo now appears not only on certified products, but also clothing and merchandise. The campaign has been highly successful in encouraging pride in and loyalty to Alaska grown products. The program has been extended to include a Restaurant Rewards Program, any enrolled food service will be reimbursed 20% for buying Alaska Grown Specialty Crops from Alaska Grown members. Funding for the program comes from the USDA Specialty Crop Block Grant for the reimbursement of specialty crops. There are currently no certified "Alaska Grown" producers in Houston; there are 87 in the South Central region of Alaska.

Parks and Recreation Facilities

Like most of Alaska, parks and outdoor recreational facilities is essential to the quality of community for Houston residents and visitors. The Little Susitna River provides outdoor recreation in the form of camping, boating, and fishing. The Little Susitna Campground is located on the east side of the Parks Highway at Mile 57.3. The campground is open 24 hours a day between Memorial Day and Labor Day weekends; the facility includes a day use area, pavilion, play grounds, camp sites equipped with fire pits and trash cans, rest rooms, two public water wells, and RV facilities. The City of Houston maintains a Public Use Facility opposite this campground and provides additional access to the Little Susitna River.

The Riverside Camper Park is located in the core of Houston adjacent along the Parks Highway and adjacent to the Little Susitna River. This park provides shower and laundry facilities, electricity and a grocery store.

The Houston/Willow Creek Sled Trailhead recreation area is located at mile 59 of the Parks Highway off Zero Lake Road. This recreation area provides parking for approximately 60 vehicles with trailers and provides rest room facilities and trailhead access to the Hatcher Pass recreation area.



The Alaska Department of Fish and Game stocks four local lakes with various fish species for recreational purposes. Bearpaw Lake is stocked with rainbow trout and coho salmon; Loon and Morvro Lakes are stocked with rainbow trout, and Prator Lake is stocked with arctic char.

Most trails within the community are informal and do not have clearly dedicated public access. These trails are utilized as transportation corridors for snow machines, ATVs, dog sleds, bikers, horses, pedestrians, and skiers. The Haessler-Norris Trail System consists of 20 trails of various distances; the published map was created for the Willow Dog Mushers Association in April 2011.

The Hatcher Pass/Independence Mine, Big Lake, the Susitna Flats State Game Refuge, the Mat-Su Visitor's Center, and Nancy Lake Recreation Areas are all located near the community of Houston and offer various recreational opportunities to local residents as well as regional, out of state, and international tourists.

Community and Culture

Houston is a rural-residential community that has experienced consistent growth over the past several decades. Houston's proximity to the commercial center of the Matanuska-Susitna Borough and its abundance of available land makes it a strategic location for residential, commercial and industrial development. Houston's "Lakes District" includes popular recreation sites such as the Little Su Campground, Long Lake, Cheri Lake, Prator Lake, Loon Lake, Woody Lake, Zero Lake, Bear Paw Lake, and Birch Lake. Community events such as the Pike Derby is held during the winter months, and Founder's Day, a community celebration, boasts live entertainment, vendors, activities for kids, and a fireworks display in mid-August. Trails for hiking and ATVs crisscross most of Houston and are popular in the winter months for dog sledders and snowmachiners. During the summer months, a water trail is popular in the Nancy Lakes region.

Community Centers, Services and Libraries

The Homesteaders Community Center, located just west of Mile 53.5 of the Parks Highway on Community Drive, has been providing a meeting place and fellowship for area residents since its inception in 1957. The nonprofit organization consists of over 50 members and membership is open to any resident for a minimal yearly fee. The group organized social gatherings, holiday parties and bingo (which is the organization's main source of funding). The building is also rented out for functions. Amenities include ball

fields, a 24 by 34 foot main hall, kitchen facilities, restrooms, and a storage area. The building is also made available for Mid-Valley Seniors, Inc. for meal service and for local Boy Scouts of America meetings.

Mid-Valley Seniors, Inc. is a nonprofit organization founded in 1983. The association provides fellowship and a nutritional program to member seniors in Big Lake, Houston, Meadow Lakes, and Willow areas. In 1987, the Mid-Valley Senior Center opened in Houston, which includes a cafeteria, recreation room, and office.

There are no public libraries in Houston, although the Mat-Su Borough does have libraries in neighboring communities. There are libraries available to students at the Houston High School and Middle School. Libraries are located in Big Lake, Sutton, Talkeetna, Trapper Creek and Willow.

The Big Lake Country Club, founded in 2000, is a 24-hour services provider for developmentally delayed and emotionally challenged adults. The main campus is located in Houston and provides daily support, monitoring and supervision for adults in need. Amenities include a fenced and secure facility, group home and cabins, a game room, kitchen and meals, and a horse facility for therapeutic horseback riding.

Public Safety Facilities and Services

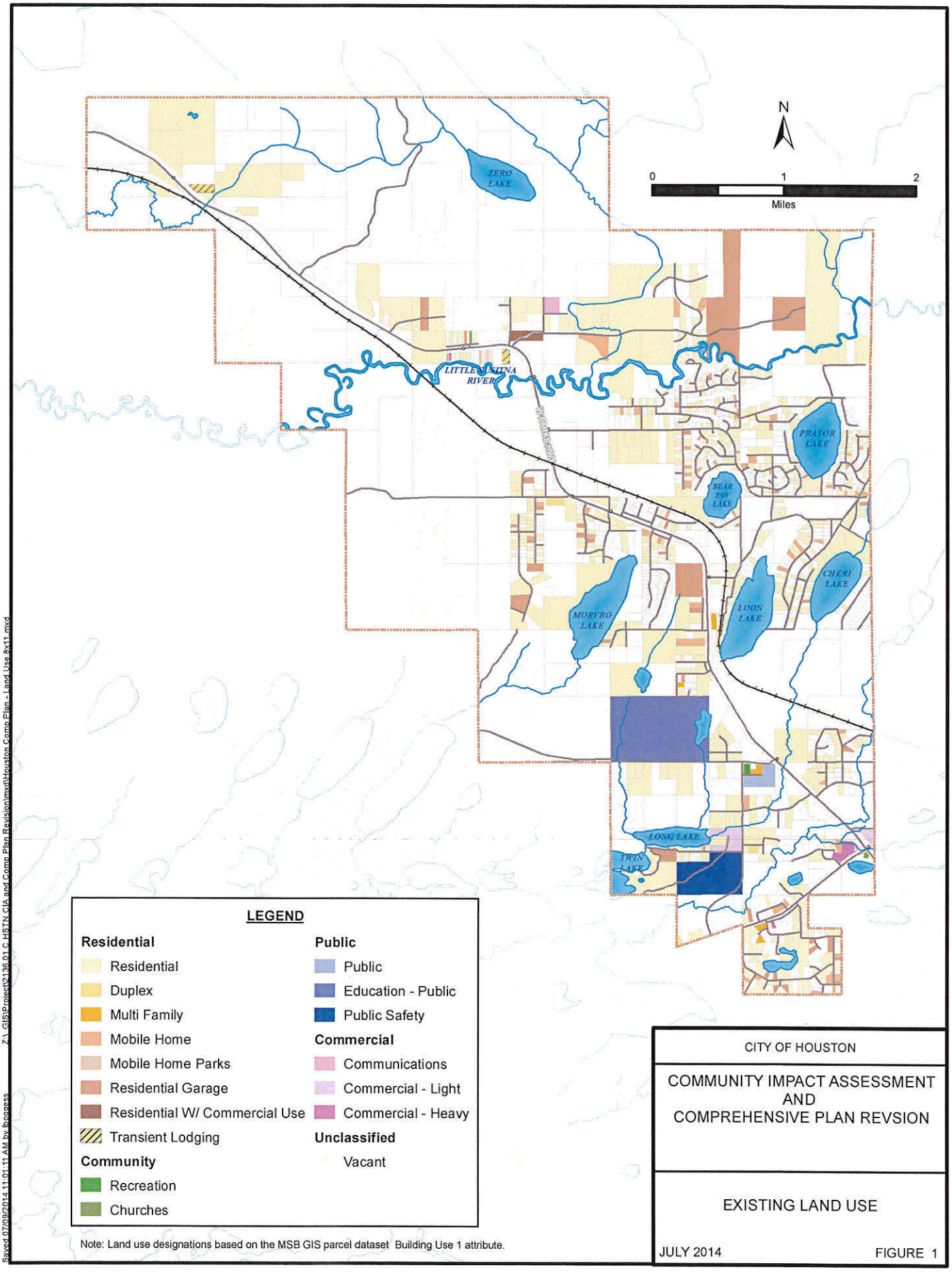
The City of Houston Emergency Services building is located at MP 57.3 of the Parks Highway. The building houses the Houston Fire Department and Police Department. The police facilities are presently unstaffed due to budget cuts. Local law enforcement is being handled by the Alaska State Troopers. In case of emergencies, the community is serviced by 911 and residents can call troopers in non-emergencies. According to the Mat-Su Borough Emergency Operations Plan (May 2010), the community has an active volunteer fire department with approximately 18 staff which also provide emergency medical services. The City has one fire engine, two tankers and one rescue truck.

Land Use

Currently there are 3,275 acres of developed land, making up 23% of the total 14, 175 acres of land area of Houston. Approximately 10, 900 acres or 77% of total land is undeveloped. Figure 1 graphically depicts existing land use including vacant land. Table 2 summarizes the vacant land suitability by type of land use.

Table 1. Vacant Land Suitability by Subarea

Land Use	Area (acres)	% Of Total
Churches	2	0.01%
Commercial – Heavy	12	0.08%
Commercial – Light	32	0.23%
Communications	10	0.07%
Duplex - 2Family	11	0.08%
Education – Public	241	1.70%
Mobile Home	97	0.68%
Mobile Home Parks	1	0.01%
Multi Family	12	0.08%
Public	18	0.13%
Public Safety	93	0.66%
Recreation	3	0.02%
Residential	2435	17.18%
Residential Garage	261	1.84%
Residential W/ Commercial Use	10	0.07%
Transient Lodging	11	0.08%
Vacant	10926	77.08%
Total	**14,175**	**100%**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LITTLE SUSITNA RIVER
PRATOR LAKE
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MORVRO LAKE
LONG LAKE
TWIN LAKE
LEGEND
Residential
Residential
Duplex
Multi Family
Mobile Home
Mobile Home Parks
Residential Garage
Residential W/ Commercial Use
Transient Lodging
Community
Recreation
Churches
Public
Public
Education - Public
Public Safety
Commercial
Communications
Commercial - Light
Commercial - Heavy
Unclassified
Vacant
Note: Land use designations based on the MSB GIS parcel dataset Building Use 1 attribute.
CITY OF HOUSTON
COMMUNITY IMPACT ASSESSMENT AND COMPREHENSIVE PLAN REVSION
EXISTING LAND USE
JULY 2014
FIGURE 1
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Table 2 below summarizes the type of land use by housing type as a percentage of total land area.

Table 2. Land Use by Housing Type

Land Use	Area (acres)	% Of Total
Residential - 2F Duplex	11	0.39%
Mobile Home	97	3.43%
Mobile Home Parks	1	0.04%
Residential (MF) Multi Family	12	0.42%
Residential (SF)	2435	86.13%
Residential Garage	261	9.23%
Residential W/ Commercial Use	10	0.35%
Total	**2827**	**100%**

Zoning Districts

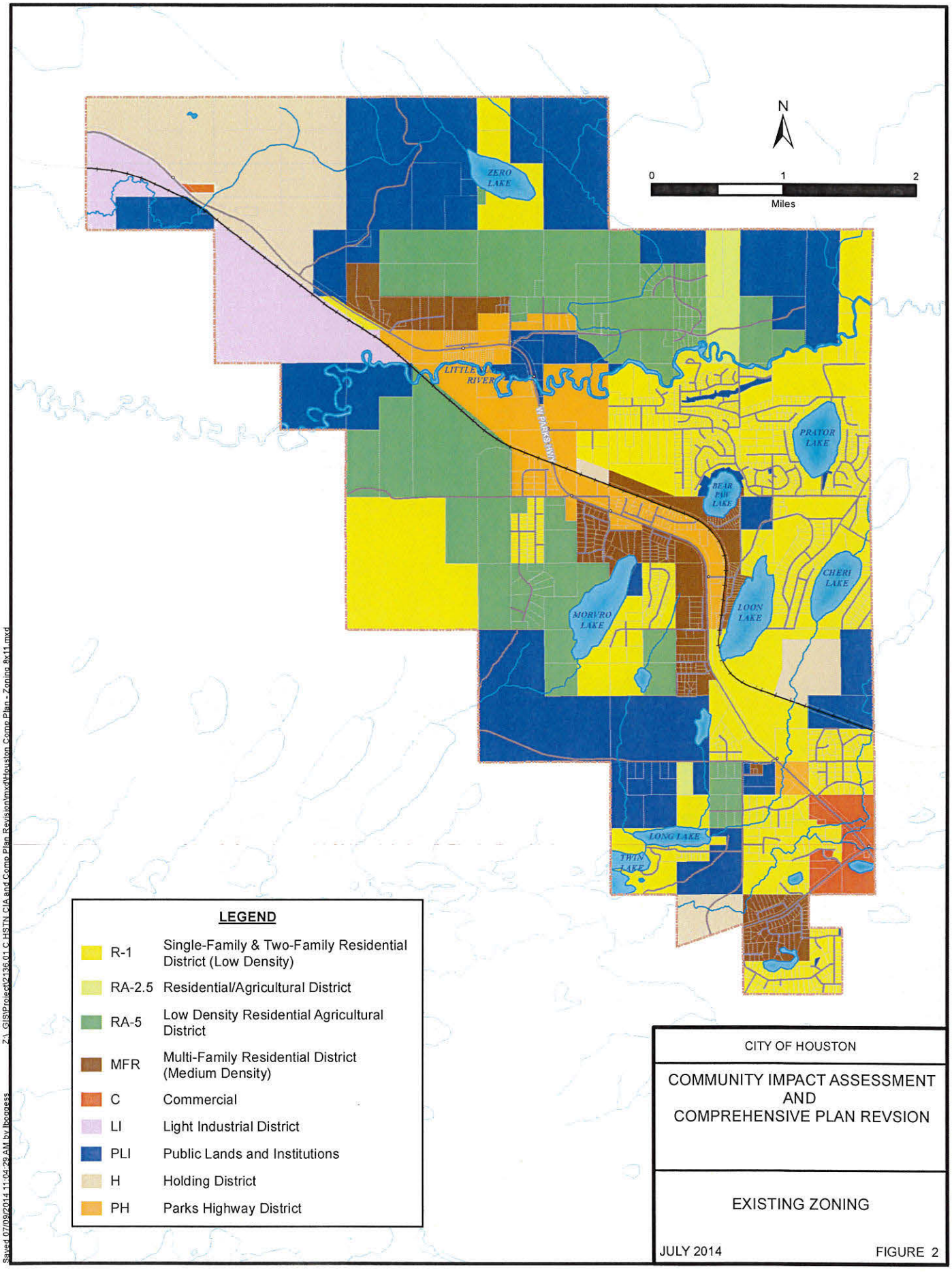
The City of Houston has 11 distinct Zoning Districts that implement the policies of the Comprehensive Plan. The Zoning Districts are a part of the City of Houston's Chapter 10 Municipal Land Use Regulations. Table 3 Existing Zoning Districts summarizes the City of Houston's zoning districts and their intent as a baseline for the Comprehensive Plan revision.

Table 3. Existing Zoning Districts

Zoning District	Zoning Designations	Intent
PLI	Public Lands and Institutions	Significant open lands and public park and recreation facilities and major public and institutional uses, including governmental office and public facilities.
R-1	Single-Family and Two-Family Residential District (low density)	Provide for low density, rural residential development with single-family and two-family dwellings and to provide for such community services and facilities that would serve the area populations while preserving the character of existing residential areas within the City of Houston.
MFR	Multifamily Residential District (medium density)	Allow these increased densities only where it is feasible to provide an increased level of community services, such as a community sewage disposal system or a community water system. This district is intended to act as a buffer area between the existing low density, rural residential areas of the community and the proposed higher intensity uses along the highways and near major intersections.
RA-2.5	Residential/Agriculture District	Provide for a low-density rural/agriculture single-family district identical to RA-5 in terms of permitted uses and structures, the only change being that lot sizes as small as two and one-half acres are allowed herein. The RA-2.5 district is intended to be located in areas either suited to agricultural uses and intended to be set aside for such uses on a long-term basis, or in areas where development trends and physical features indicate the appropriateness of a very low intensity of residential development. This small lot size may be justified when consistent with existing development and residential densities in the vicinity.
RA-5	Low-Density Residential Agricultural District	Provide for a very low-density rural/agriculture single-family district. The RA-5 district is intended to be located in areas either suited for agricultural uses and intended to be set aside for such uses on a long-term basis, or in areas where development trends and physical features indicate the appropriateness of a very

		low intensity of residential development. This larger lot size should be applied in such areas unless existing development and residential densities justify the two-and-one-half-acre minimum lot size allowed in the RA-2.5 district.
NC	Neighborhood Commercial District	Allow for the provision of goods and services on a retail basis within R-1, MFR, RA-2.5 and RA-5 districts in order to provide occupants of these residential districts with the convenience of neighborhood shopping. The NC neighborhood commercial district is intended to apply only to areas which are isolated from other commercial zones, are located on collector streets rather than local roads, but to which there is easy access for the surrounding residential district. This district is intended to be small and compact in design.
C	Commercial District	Provide a broad range of goods and services to meet the needs of the population of the City as well as the traveling public utilizing the Parks Highway.
LI	Light Industrial District	Provide area for light industrial uses, especially transportation related uses associated with the Parks Highway and the railroad corridor. Uses are intended to be low intensity industrial uses, and are not intended to have manufacturing or other uses which produce noise, smoke, glare, or other characteristics that could be detected from off site.
HI	Heavy Industrial District	Intended for industrial development, including heavy manufacturing, shipping terminals, natural resource extraction and other processes or operations which involve one or more of the following: employs large numbers of workers, heavy truck traffic, significant environmental effects or large-volume public water or sewer service or storage of hazardous materials under a conditional use permit. Commercial and retail uses are generally not allowed in the HI district.
H	Holding District	Certain undeveloped areas have yet to establish a clear land use trend. Because of a number of potential conflicting characteristics that may affect land use, the development plans for these areas deserve special attention. It is the intent of this district to designate those areas where future land use and development may be determined by a number of external factors which cannot be predicted at this time. provides for flexibility in land use regulations in areas where planning has been done, but where development trends will be established in the future. Development of these areas will be sensitive; it will affect immediate surrounding areas and the community as a whole by establishing

		long-term development trends. The areas designated "holding district" are areas in transition that will respond to changing community characteristics. As definite development trends are established through the procedures set forth in this district, the community should consider amending the designation of the holding district areas to more definitive land use districts.
PH	Parks Highway District	Encourage a moderate level of growth which will provide an economic base in Houston adequate to allow provisions of employment opportunities in the area and to avoid becoming dependent upon external governmental or economic factors and activities. It is also intended to maintain the qualities that make the George Parks Highway corridor an attractive community entry and community center. These qualities include buildings set back from the street, predominance of trees and other vegetation and building sizes and styles that reflect Houston's history and natural setting. It is intended to encourage this area to support a mixture of residential and commercial activities.


N
0
1
2
Miles
ZERO LAKE
LITTLE RIVER
N PARKS HWY
PRATOR LAKE
BEAR PAW LAKE
CHERI LAKE
LOON LAKE
MORVRO LAKE
LONG LAKE
THIN LAKE
LEGEND
R-1 Single-Family & Two-Family Residential District (Low Density)
RA-2.5 Residential/Agricultural District
RA-5 Low Density Residential Agricultural District
MFR Multi-Family Residential District (Medium Density)
C Commercial
LI Light Industrial District
PLI Public Lands and Institutions
H Holding District
PH Parks Highway District
CITY OF HOUSTON
COMMUNITY IMPACT ASSESSMENT AND COMPREHENSIVE PLAN REVSION
EXISTING ZONING
JULY 2014
FIGURE 2
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Land Ownership

Existing land ownership is depicted in Figure 3 and includes the landownership status for all parcels within the City of Houston's limits. The City of Houston owns approximately 422 acres. The majority of parcels is privately owned at 9068 acres and includes holdings from private residents, commercial and industrial businesses, and Native Corporations. Other large tract land owners include the Mat-Su Borough at 1206 acres. The State of Alaska owns 479 acres of land. Several large tracts of land have missing or inconclusive data that will need additional research.

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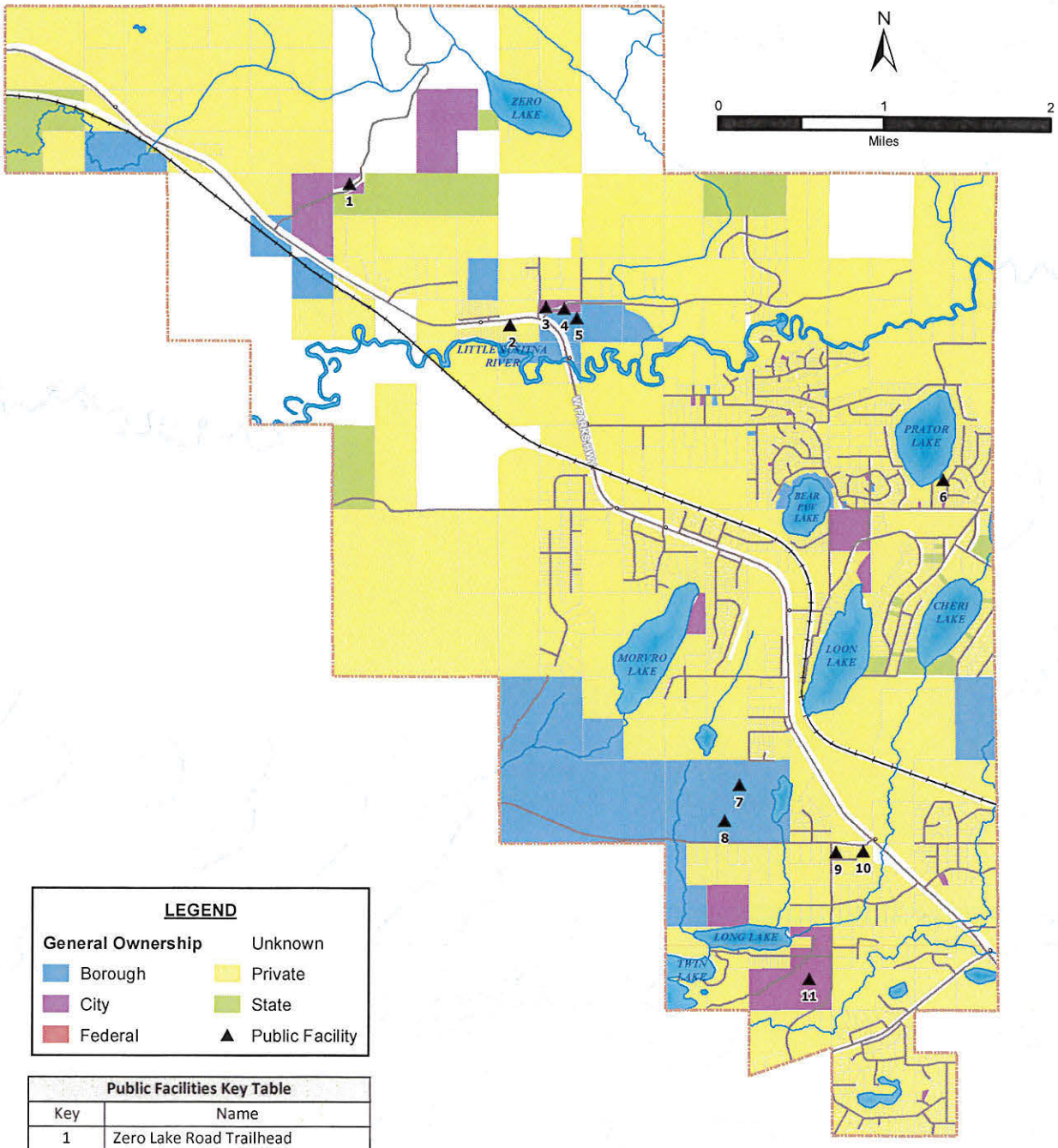

LEGEND

General Ownership		Unknown	
Borough		Private	
City		State	
Federal		▲	Public Facility

Public Facilities Key Table	
Key	Name
1	Zero Lake Road Trailhead
2	Houston US Post Office (CPU)
3	Houston PSB 9-1
4	Houston City Hall
5	Little Susitna River Campground
6	Prator Lake Park
7	Houston High School
8	Houston Middle School
9	Mid Valley Senior Center
10	Homesteaders Community Center
11	Houston PSB 9-2 & Water Supply

CITY OF HOUSTON

COMMUNITY IMPACT ASSESSMENT AND COMPREHENSIVE PLAN REVSION

EXISTING LAND OWNERSHIP

JULY 2014 FIGURE 3

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Community Demographic Profile

The following socioeconomic profile of Houston depicts population demographics, household characteristics, and labor force data to give a current overview of the town. Data was collected from several sources. Statewide, borough, and community population estimates, median age, age categories, and worker characteristics are from the Alaska Department of Labor and Workforce Development (ADOLWD). School enrollment data are from the Alaska Department of Education and Early Development (ADEED). All other data are from a combination of the U.S. Census Bureau and the American Community Survey (ACS). Data from the U.S. Census Bureau includes data from the 2000 and 2010 decennial censuses. Household characteristics include median household income, household and family size, poverty level, and housing units; and labor force data include number of workers, worker class, industry employment, and educational attainment. Alaska Business Licenses from the Alaska Department of Commerce, Community, and Economics Development (DCCED) was examined understand the types of businesses active in Houston.

The quality of data falls drastically for a community the size of Houston. With a population slightly over 2,000, socioeconomic data from the sample-based ACS for Houston is accompanied with an elevated margin of error. These margins are reported when available to assist in understanding the uncertainty inherent in these data.

Population Trends and Projections

Houston has experienced steady population increase over the past two decades. In 2013, Houston's estimated population was 2,039 residents; nearly triple its 697 residents in 1990. In comparison, the entire Mat-Su grew from 39,600 to more than 96,000 over the same period.

Houston is expected to match the broader Mat-Su in terms of population growth. ADOLWD projects population growth in the Mt-Su to slow from the current annual growth rate of slightly more than 3.6 percent over to less than 2 percent by 2035. Because of Houston's strong ties to the Mat-Su economy and similar demographics McDowell Group projects Houston's population growing at a similar rate—approximately 2 percent over the current period to 2035. This would result in Houston growing to slightly more than 3,100 residents in 2035, an increase of around 50 percent from current population levels.

Figure 4. Annual Population Growth Rate, Houston, 2001-2013

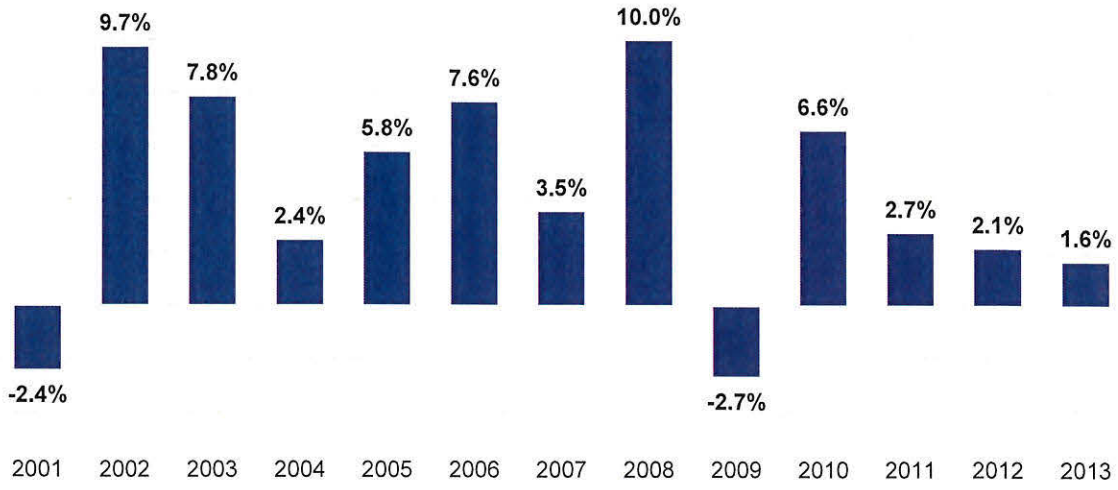
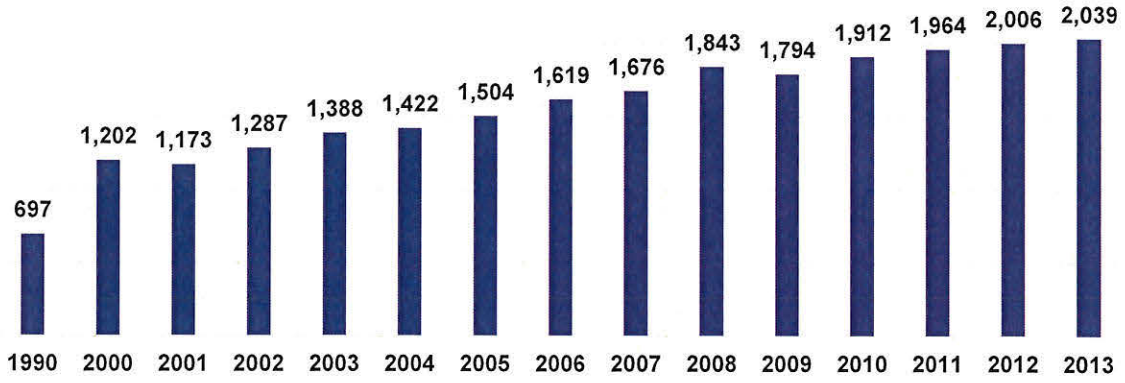


Figure 5. Houston Population, 1990 and 200-2013



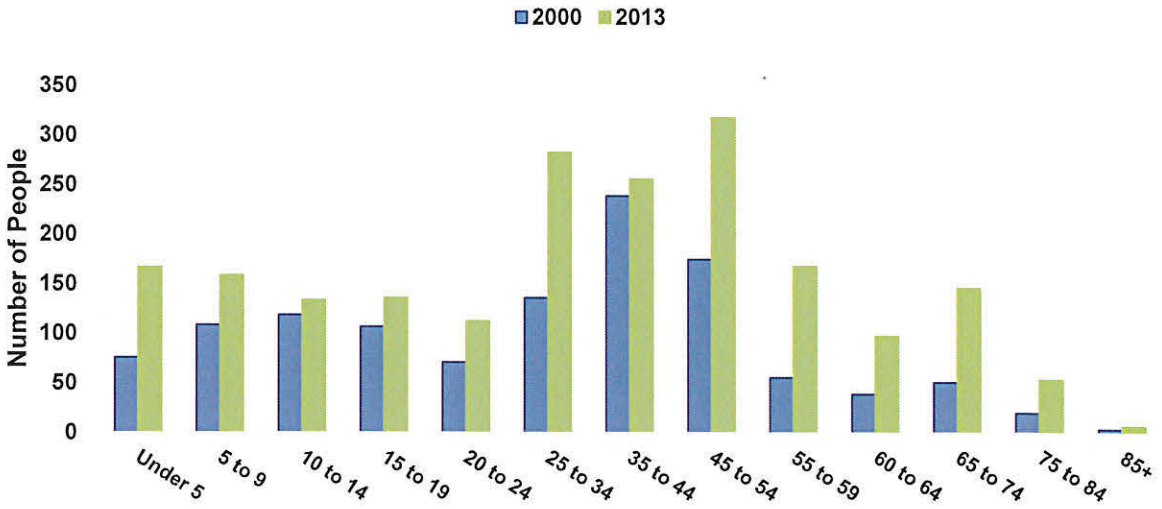
AGE GROUPS AND MEDIAN AGE

The median age of Houston residents in 2013 was just over 36 years, slightly higher than both the Alaska and Mat-Su Borough median age of 34 years and 35 years, respectively. The following table indicates that the fastest population growth rates over the past 13 years have been in the older age cohorts.

Table 4. Houston Population by Age Category and Median Age, 2000, 2010, and 2013

Age Category	2000	2010	2013
Under 5 years	76	157	167
5 to 9 years	109	125	159
10 to 14 years	119	144	134
15 to 19 years	107	154	136
20 to 24 years	71	125	113
25 to 34 years	136	241	283
35 to 44 years	239	252	256
45 to 54 years	175	343	318
55 to 59 years	56	120	168
60 to 64 years	39	87	98
65 to 74 years	51	122	146
75 to 84 years	20	36	54
85+ years	4	6	7
Median Age	**34.1 years**	**35.4 years**	**36.1 years**

Figure 6. Houston Population by Age Category and Median Age, 2000 and 2013



Race

Approximately 87 percent of Houston's population self-identifies as White. This compares to Alaska overall at 67 percent and Mat-Su Borough's 85 percent. More than 9 percent of Houston residents identify themselves as being multi-racial. American Indian and Alaska Native is the third largest group at 4 percent.

Table 5. Houston Race Categories, 2000, 2010, and 2008-2012 Five-Year Average

Race	2000	2010	2008–2012	2008–2012 Margin of Error
White	84%	82%	87%	+/-4%
Two or more races	6	8	9	+/-3
American Indian and Alaska Native	8	7	4	+/-2
Black or African American	<1	<1	<1	+/-<1
Asian	<1	<1	0	+/-1
Pacific Islander	<1	<1	0	+/-1
Other	<1	<1	<1	+/-1

Note: Due to rounding, some columns may not add to 100 percent.

Source: U.S. Census and American Community Survey.

School Enrollment

According to the ACS, from 2008-2012 an average of 465 students at all levels (preschool, Kindergarten, elementary, high school, and college) were enrolled in school. Comparing this with the 351 students identified in 2000, all levels of school enrollment has risen 32 percent over this period.

Table 6. Houston School Enrollment (Preschool through College), Population Age 3 Years and Over, 2000 and 2008-2012 Five-Year Average

	2000	2008–2012	2008–2012 Margin of Error
Preschool	9	21	+/-18
Kindergarten	21	7	+/-8
Elementary school (grades 1-8)	198	219	+/-84
High school (grades 9-12)	94	141	+/-49
College or graduate school	29	77	+/-36
Population 3+ years enrolled in school	**351**	**465**	**+/-102**

Two schools are located in separate buildings in Houston's city limits—Houston Middle School and Houston High School.

The current practice for elementary school age students is to bus them to nearby elementary schools, namely Big Lake Elementary and Willow Elementary School. In 1992, it was determined to be financially advantageous for the City of Houston if the Mat-Su Borough School District built an elementary school serving the larger regional student population. The City has retained the land and its designation as a future site for an elementary school.

The table below outlines enrollment for Big Lake Elementary, Willow Elementary School, Houston Middle School, and Houston High School. It should be noted that similar to how elementary-aged students attend schools outside of Houston, middle and high school-aged students from outside of Houston attend Houston Middle School and Houston High School. Therefore, the totals below do not reflect the number of school age children that only live in Houston.

Table 7. Big Lake Elementary, Willow Elementary School, Houston Middle School, and Houston High School Enrollment and Schools Personnel Count, 2013-2014 School Year

	Students	School Personnel
Big Lake Elementary	439	52
Willow Elementary School	130	24
Houston Middle School	388	32
Houston High School	381	34

Source: ADEED, Matsu Borough.

Household Income

The median household income in Houston is almost $60,000, less than the roughly $70,000 median in the Mat-Su Borough and Alaska. Per capita income averaged slightly more than $25,000, less than the $30,000 found in the Mat-Su Borough and $32,000 for Alaska.

Approximately 12 percent of families and 16 percent of individuals in Houston live below the federal poverty line. According to 2014 Federal guidelines for Alaska, a household of four making less than $29,440 or an individual with an income of less than $14,350 are considered living in poverty. There are approximately 101 households that receive public assistance and 118 households utilize the Supplemental Nutrition Assistance Program (SNAP).

Table 8. Houston Household and Family Income Indicators, 2000 and 2008-2012 Five-Year Average

	2000	2008–2012	2008–2012 Margin of Error
Median household income	$39,615	$59,583	+/-$11,475
Households with public assistance	58	101	+/-39
Households in SNAP	-	118	+/-38
Per capita income	$17,213	$25,876	+/-$3,318
Families below poverty line (%)	13.1	11.6	+/-5.9
Individuals below poverty line (%)	17.1	15.8	+/-5.4

Source: U.S. Census and American Community Survey.

Employment Trends and Educational Attainment

In 2012, ADOLWD estimated there were 768 employed residents (over age 16) in Houston, with total annual wages of $26.5 million. Most workers were employed in the private sector (85 percent), followed by local government (11 percent), and state government (4 percent).

The top three industries in terms of employment included Trade (retail and wholesale), Transportation, and Utilities (22 percent), Education and Health Services (16 percent), and Construction (13 percent).

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Table 9. Houston Worker Characteristics, 2012

	2012
Residents 16 years and over	1,435
Residents employed	768
Total wages	$26,502,620
Sectors employed in...	
Private	655
Local government	82
State government	31
Industries employed in...	
Trades, transportation, and utilities	167
Education and health services	125
Construction	96
Local government	82
Leisure and hospitality	70
Natural resources and mining	67
Professional and business services	63
State government	31
Manufacturing	23
Financial activities	15
Information	7
Other	22

Source: ADOLWD.

In addition to data compiled by the State of Alaska, the ACS offers insight into employment in Houston. According to these data, there were 782 residents over age 16 employed, and 166 unemployed. The unemployment rate is estimated to be 18 percent. Private wage and salary workers made up 80 percent of employed, followed by government workers (19 percent) and self-employed workers (7 percent). The industries with the highest level of employment were Retail Trade (17 percent), Educational, Health and Social Services (13 percent), Arts, Entertainment, Recreation, Accommodation and Food Services (11 percent); and Agriculture, Foresting, Hunting and Fishing, and Mining (11 percent).

Table 10. Houston Employment Indicators, 2000 and 2008-2012 Five-Year Average

	2000 (Number)	2008–2012 (Number)	2008–2012 Margin of Error (Number)
Population 16 years and older	881	1,487	+/-145
In labor force	549	948	+/-129
Employed	452	782	+/-114
Unemployed	97	166	+/-62
Unemployment - civilian labor force (%)	17.7	17.5	+/-5.8%
Not in labor force	332	539	+/-91
Class of worker			
Private wage and salary	325	579	+/-103
Government	70	152	+/-54
Self-employed	57	51	+/-23
Unpaid family worker	-	0	+/-10
Industry			
Retail trade	78	92	+/-32
Educational, health and social services	60	169	+/-51
Arts, entertainment, recreation, accommodation and food services	52	96	+/-44
Construction	50	87	+/-34
Agriculture, foresting, hunting and fishing, mining	49	70	+/-40
Transportation and warehousing, and utilities	34	87	+/-44
Professional, scientific, management, administrative, and waste management services	25	57	+/-32
Public administration	22	66	+/-38

	2000 (Number)	2008–2012 (Number)	2008–2012 Margin of Error (Number)
Wholesale trade	19	10	+/–11
Manufacturing	15	21	+/–22
Information	13	7	+/–9
Finance, insurance, real estate, and rental and leasing	8	0	+/–10
Other services	27	20	+/–16

Approximately 90 percent of the Houston population had a high school degree or higher, while 17 percent had a bachelor's degree or higher. Overall, educational attainment has increased since 2000.

Table 11. Houston Educational Attainment, Population 25 Years and Over, 2000 and 2008-2012 Five-Year Average

	2000	2008–2012	2008–2012 Margin of Error
High school, no diploma	16%	11%	+/–5%
High school diploma or GED	43	36	+/–6
Some college	26	31	+/–5
Associate's degree	6	5	+/–2
Bachelor's degree	8	9	+/–4
Graduate or professional degree	2	8	+/–4

Note: Columns may not add to 100 percent due to rounding.
Source: U.S. Census and American Community Survey.

Houston Businesses

There are 82 business licenses that list their physical address in Houston and are considered active. When filing for a business license, a company determines the NAICS code that best fits with the service they plan to offer.[1] While not completely accurate, this classification system offers some insight into the structure of a local private sector economy. A more detailed account of these businesses can be found in the Appendix.

[1] The North America Industrial Classification System (NAICS) is a taxonomy that categorizes businesses by sector of activity.

Table 12. Composition of Houston Businesses, 2014

2 Digit NAICS Code	Description	Number of Houston Businesses
11	Agriculture, Forestry, Fishing and Hunting	1
23	Construction	11
31	Manufacturing	4
42	Trade	15
48	Transportation and Warehousing	5
53	Real Estate, Rental and Leasing	5
54	Professional, Scientific and Technical Services	5
56	Administrative, Support, Waste Management and Remediation Services	6
61	Educational Services	1
62	Health Care and Social Assistance	3
71	Arts, Entertainment and Recreation	5
72	Accommodation and Food Services	4
81	Services	17
TOTAL		82

[1] The North America Industrial Classification System (NAICS) is a taxonomy that categorizes businesses by sector of activity.

An estimated 19,000 vehicles per day travel through the city of Houston on the Parks Highway. This number tends to be higher in the summer and on the weekends. A number of businesses are sustained by this traffic as a percentage of these travelers stop for a meal, to rent a room, or purchase fireworks. The largest concentration of businesses selling fireworks in Alaska is located in Houston.

At this time, no large grocery store is located in Houston. Residents typically will go to Wasilla or Big Lake for their shopping needs. Medical services are limited in Houston with a few small clinics offering primary care services. The closest hospital is Mat-Su Regional Medical Center located in Wasilla, where there are also a full suite of dental, chiropractic, and other health services.

The summer brings an influx of anglers fishing the nearby Little Susitna River. Alaska Fish and Game estimated 4,538 anglers fished a total of 10,115 days in 2012 in the Little Susitna River. At least one guiding service is located in Houston and a range of other local businesses rely on these anglers who purchase ice, meals, and refreshments. Float trips on the Little Susitna River frequently start at the Parks Highway Bridge.

During the winter, proximity to Hatcher Pass and Nancy Lake Recreation Area attracts enthusiasts wanting to snowmachine, ski, ice fish, dog-mush, or conduct other winter activities. Compared to the summer, traffic through the community is much less in the winter but local businesses are able to attract some customers.

City Services

The City of Houston offers fire and limited police services. The Houston Emergency Services building houses both the Houston Fire Department and Houston Police Department. At this time, no local police are active and law enforcement is handled by the Alaska State Troopers.

Table 13. Houston Fire Department Response Information, 2007-2011

	2007	2008	2009	2010	2011
Total Call Volume	77	111	235	261	329
Average Response Time in Minutes	8:56	6:57	4:49	2:52	2:57
Percent of Response Under 2 Minutes	22	32	32	56	58
Percent of Response Under 8 Minutes	53	69	85	93	93

Source: Houston Fire Department

The closest public libraries are located in Willow and Big Lake.

Housing Trends, Characteristics and Future Housing Needs

As population has increased in Houston, the number of housing units (single-housing units, apartments, duplexes, etc.) has risen. In 2012, an estimated 732 units were occupied with 245 vacant. Houston has a large number of relatively new housing units with 32 percent built after 2000. This is a reflection of the steady population growth the community has experienced and the availability of land to develop.

More than 50 percent of housing units are heated with fuel oil and 20 percent rely on wood as their primary heat source. Median rent in the community is $869; an amount less than the greater Mat-Su.

Table 14. Houston Housing Indicators, 2000, 2010, and 2008-2012 Five-Year Average

	2000	2010	2008-2012	2008-2012 Margin of Error
Total housing units	**581**	**973**	**977**	**+/-36**
Occupied housing units	445	731	732	+/-47
Owner-occupied	356	538	573	+/-53
Renter-occupied	89	193	159	+/-43
Vacant housing units	136	242	245	+/-41
Homeowner vacancy rate (%)	1.4	4.2	6.4	+/-3.5
Rental vacancy rate (%)	11.0	10.6	7.2	+/-7.8
Median value owner-occupied units	$91,400	-	$177,000	+/-$19,724

Source: U.S. Census and American Community Survey.

Composition of Houston Business Licenses

Table 15. Composition of Houston Businesses, 2014

6 Digit NAICS Code	Description	Number of Houston Businesses
113310	LOGGING	1
236115	NEW SINGLE-FAMILY HOUSING CONSTRUCTION (EXCEPT OPERATIVE BUILDERS)	2
236220	COMMERCIAL AND INSTITUTIONAL BUILDING CONSTRUCTION	1
238130	FRAMING CONTRACTORS	3
238160	ROOFING CONTRACTORS	1
238210	ELECTRICAL CONTRACTORS AND OTHER WIRING INSTALLATION CONTRACTORS	1
238310	DRYWALL AND INSULATION CONTRACTORS	2
238350	FINISH CARPENTRY CONTRACTORS	1

311942	SPICE AND EXTRACT MANUFACTURING	1
321113	SAWMILLS	2
339914	COSTUME JEWELRY AND NOVELTY MANUFACTURING	1
423110	AUTOMOBILE AND OTHER MOTOR VEHICLE MERCHANT WHOLESALERS	1
423330	ROOFING, SIDING, AND INSULATION MATERIAL MERCHANT WHOLESALERS	1
424310	PIECE GOODS, NOTIONS, AND OTHER DRY GOODS MERCHANT WHOLESALERS	1
441210	RECREATIONAL VEHICLE DEALERS	1
444220	NURSERY, GARDEN CENTER, AND FARM SUPPLY STORES	1
445110	SUPERMARKETS AND OTHER GROCERY (EXCEPT CONVENIENCE) STORES	1
451211	BOOK STORES	1
453220	GIFT, NOVELTY, AND SOUVENIR STORES	1
453998	ALL OTHER MISCELLANEOUS STORE RETAILERS (EXCEPT TOBACCO STORES)	7
454113	MAIL-ORDER HOUSES	1
484110	GENERAL FREIGHT TRUCKING, LOCAL	1
484220	SPECIALIZED FREIGHT (EXCEPT USED GOODS) TRUCKING, LOCAL	1
485310	TAXI SERVICE	1
488999	ALL OTHER SUPPORT ACTIVITIES FOR TRANSPORTATION	1
493110	GENERAL WAREHOUSING AND STORAGE	1
531110	LESSORS OF RESIDENTIAL BUILDINGS AND DWELLINGS	3
531390	OTHER ACTIVITIES RELATED TO REAL ESTATE	2
541310	ARCHITECTURAL SERVICES	1
541340	DRAFTING SERVICES	1
541690	OTHER SCIENTIFIC AND TECHNICAL CONSULTING SERVICES	1
541990	ALL OTHER PROFESSIONAL, SCIENTIFIC, AND TECHNICAL SERVICES	2
561499	ALL OTHER BUSINESS SUPPORT SERVICES	1
561720	JANITORIAL SERVICES	1
561790	OTHER SERVICES TO BUILDINGS AND DWELLINGS	3
562111	SOLID WASTE COLLECTION	1
611430	PROFESSIONAL AND MANAGEMENT DEVELOPMENT TRAINING	1
621610	HOME HEALTH CARE SERVICES	2
623311	CONTINUING CARE RETIREMENT COMMUNITIES	1
711510	INDEPENDENT ARTISTS, WRITERS, AND PERFORMERS	2
713990	ALL OTHER AMUSEMENT AND RECREATION INDUSTRIES	3
721211	RV (RECREATIONAL VEHICLE) PARKS AND CAMPGROUNDS	1
722110	FULL-SERVICE RESTAURANTS	4
811111	GENERAL AUTOMOTIVE REPAIR	1
811121	AUTOMOTIVE BODY, PAINT, AND INTERIOR REPAIR AND MAINTENANCE	1
811198	ALL OTHER AUTOMOTIVE REPAIR AND MAINTENANCE	1
811411	HOME AND GARDEN EQUIPMENT REPAIR AND MAINTENANCE	1
811420	REUPHOLSTERY AND FURNITURE REPAIR	1
811490	OTHER PERSONAL AND HOUSEHOLD GOODS REPAIR AND MAINTENANCE	1
812112	BEAUTY SALONS	2
812199	OTHER PERSONAL CARE SERVICES	1
812910	PET CARE (EXCEPT VETERINARY) SERVICES	1

812990	ALL OTHER PERSONAL SERVICES INCLUDING HANDYMAN	6
813110	RELIGIOUS ORGANIZATIONS	1
813312	ENVIRONMENT, CONSERVATION AND WILDLIFE ORGANIZATIONS	1

Transportation Network

This section summarizes the existing transportation network conditions within the City of Houston. The City of Houston is approximately 7.5 miles west along the Parks Highway from the City limits of Wasilla, and approximately 220 driving miles south along the Parks Highway from the city limits of Fairbanks Alaska. The Parks Highway is part of the Federal Highway's interstate road network. The eastern edge of the city limits of Houston contains the intersection of Big Lake Road, and the first commercialized mile of Big Lake Road is within the jurisdiction of Houston.

The Parks Highway

The Parks Highway's primary function is to serve statewide mobility for travel and freight transportation through the city limits of Houston for passage to Fairbanks and interior Alaska. Within the national network, the Parks Highway is the primary link between Anchorage, the Matanuska-Susitna Borough (MSB), and interior Alaska. Anchorage is the commercial hub of the state, and therefore freight and materials shipped to interior Alaska by road must pass through the city of Houston on the Parks Highway. The Parks Highway is also a key element of the Houston Road network, serving local traffic throughout the City of Houston.

Classification and Function

The Parks Highway is an interstate highway classified as a Rural Interstate by the Alaska Department of Transportation and Public Facilities (ADOT&PF), and is Route 3 of the National Highway System (NHS). As part of the NHS it has the function of providing mobility on a statewide level, in addition to its secondary function of local area service. The Parks Highway is owned by the State of Alaska and maintained by the ADOT&PF.

Lane Configuration

The Parks Highway is a 2-lane, undivided facility with 12 foot lanes and 8 foot paved shoulders. Within Houston there are periodic passing lane sections for the northbound and southbound lanes, as well as a center two-way left turn lane (CTWLTL). Figure 7 shows the location of the changes in lane configuration.

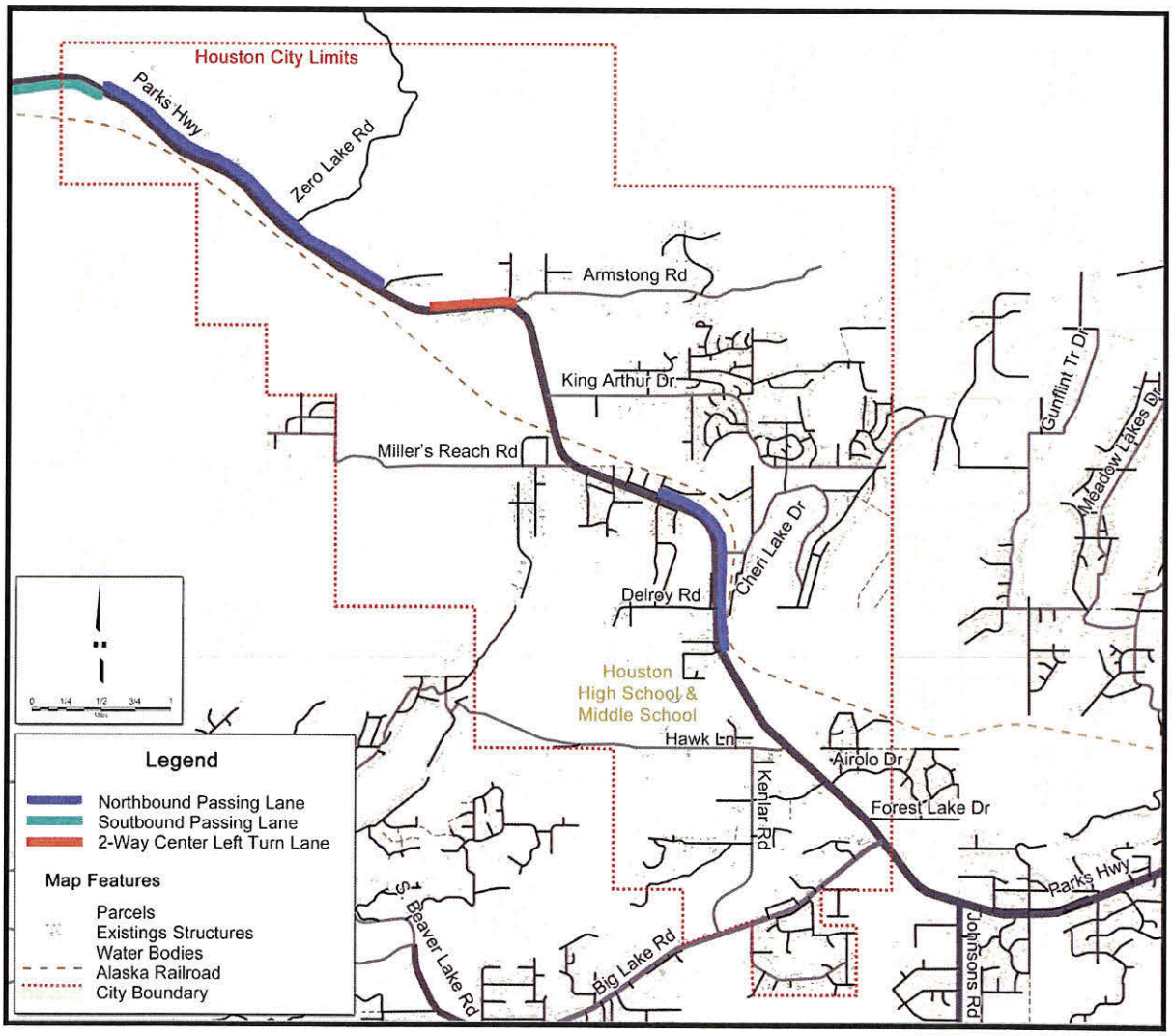
The intersection of The Parks Highway and Big Lake Road is a T-Intersection. The Parks Highway approaches have both a southbound right turn lane and a northbound left turn lane, in addition to their single through lanes. Big Lake Road has a left turn lane, and a separate right turn lane. The right turn lane off of Big Lake Road onto the Parks Highway enters its own added southbound

lane that continues south out of Houston's city limits and merges with the through lane at Johnson's Road.

The intersection of the Parks Highway and Cheri Lake Road has both a northbound right turn lane and a south bound left turn lane onto Cheri Lake Road.

The northbound approach to the intersection of Armstrong Road develops a left turn lane within the median which services access to a frontage road leading to various storefronts parallel to the Parks Highway. North of this intersection is the start of the 3,000 foot long CTWLTL shown in Figure 7.

Figure 7. Parks Highway Lane Configurations



City of Houston Road Network Layout

The City of Houston's road network branches east and west from the Parks Highway, which operates as a backbone for the regional network. The Parks Highway is the only arterial level roadway within the city limits. The remaining roads are either local roads providing access to the surrounding lots, or collector roads that provide access to and from the Parks Highway.

A majority of the parcels within the city limits of Houston access the Parks Highway within the city limits of Houston. Alternative access out of the city is available to the west via Kiowa Street which leads to Big Lake and King Arthur Drive to the east which accesses the Meadow Lakes Loop and Pittman Road areas. Additionally, Big Lake Road leads west into Big Lake.

There are currently no signalized intersections within the city.

Little Susitna River

The Parks Highway crosses the Little Susitna River at approximately MP 57. On the south side of the river crossing there is a parking area on either side of the Parks Highway. This parking area provides river access and connects to the separated pathways that are on both sides of the Parks Highway. The parking areas provide ten marked parking spaces per side with additional pull offs for RVs and trailer equipped trucks. Figure 8 shows a map of the Little Susitna River crossing and the nearby parking area.

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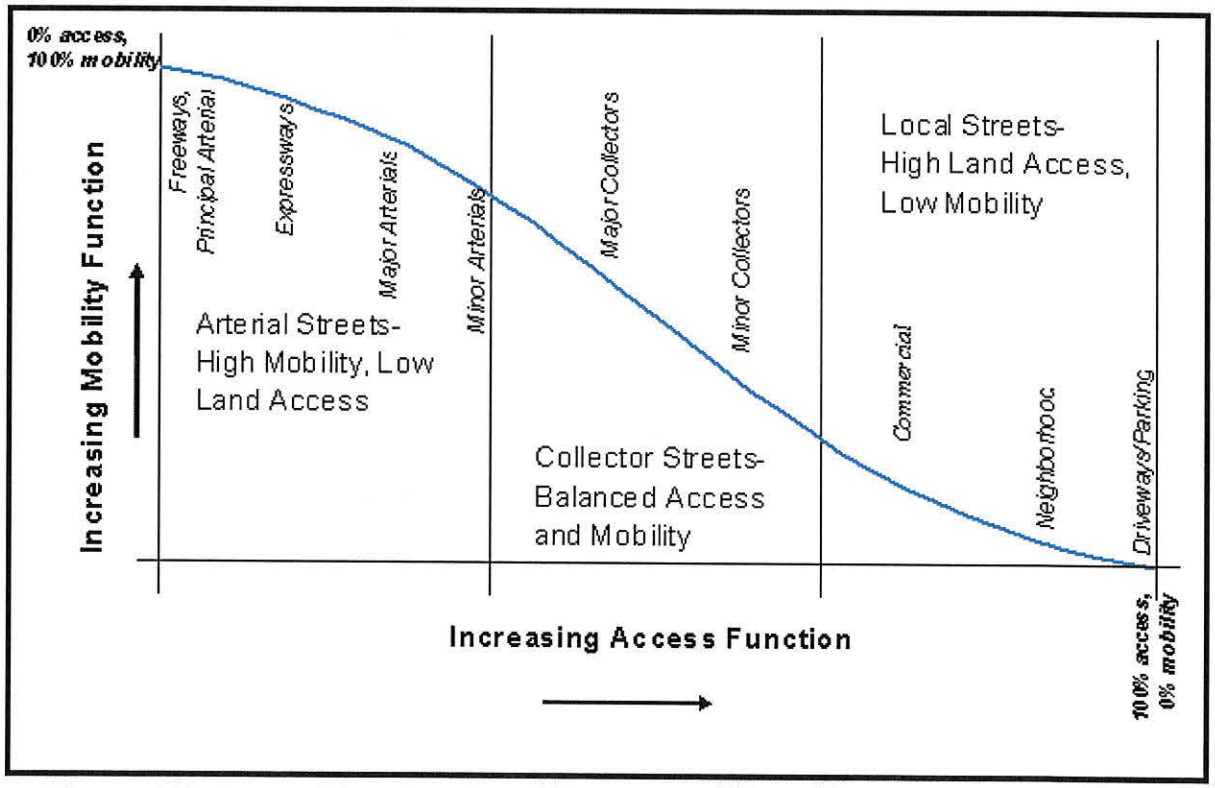
Figure 8. Alaska Railroad Separated Grade Crossing of the Parks Highway

Road Functional Classifications

A functional classification system is a method of identifying the intended use of a road or corridor. It is an important planning level tool to facilitate clear communication about road networks between different agencies, designers and the public.

The function of a road typically falls somewhere between the conflicting purposes of mobility (high speed mobility through a region) and access (lower speed movements with frequent turns to adjacent parcels). Figure 9, illustrates the mobility and access balance for each functional class.

Figure 9. Functional Classification: Mobility and Access Relationship

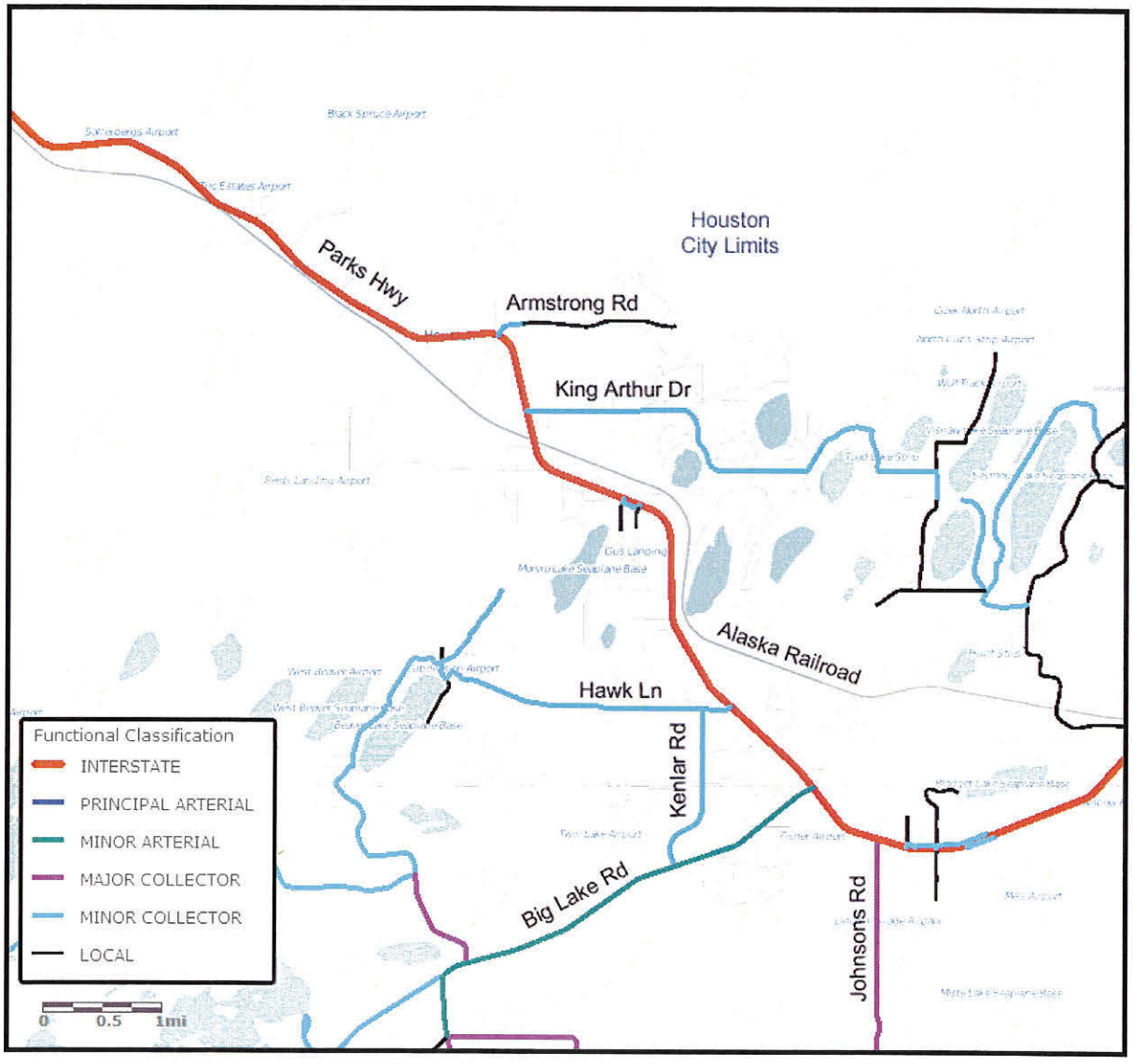


Both ADOT&PF and the MSB manage road networks that fall within the City of Houston. Each of these agencies individually identifies functional classifications for roads that they own and maintain or that are adjacent to their roadways.

ADOT&PF Classifications

ADOT&PF publishes functional classifications in a Geographic Information Systems (GIS) database. The current system was updated as part of a 2011 Functional Classification Update project following the 2010 census. Figure 10 shows the functional classifications identified in the 2011 study by ADOT&PF.

Figure 10. ADOT&PF Functional Classification System



Source: ADOT&PF 2011 Functional Classification System Update GIS viewer

MSB Classifications

The Borough maintains a database of roads within the MSB which includes functional classification definitions. A current study of this database is in the process of reapplying functional classification criteria to update the definition of road classes on the collector and local road level. Figure 11 shows the functional classifications currently identified in the MSB system.

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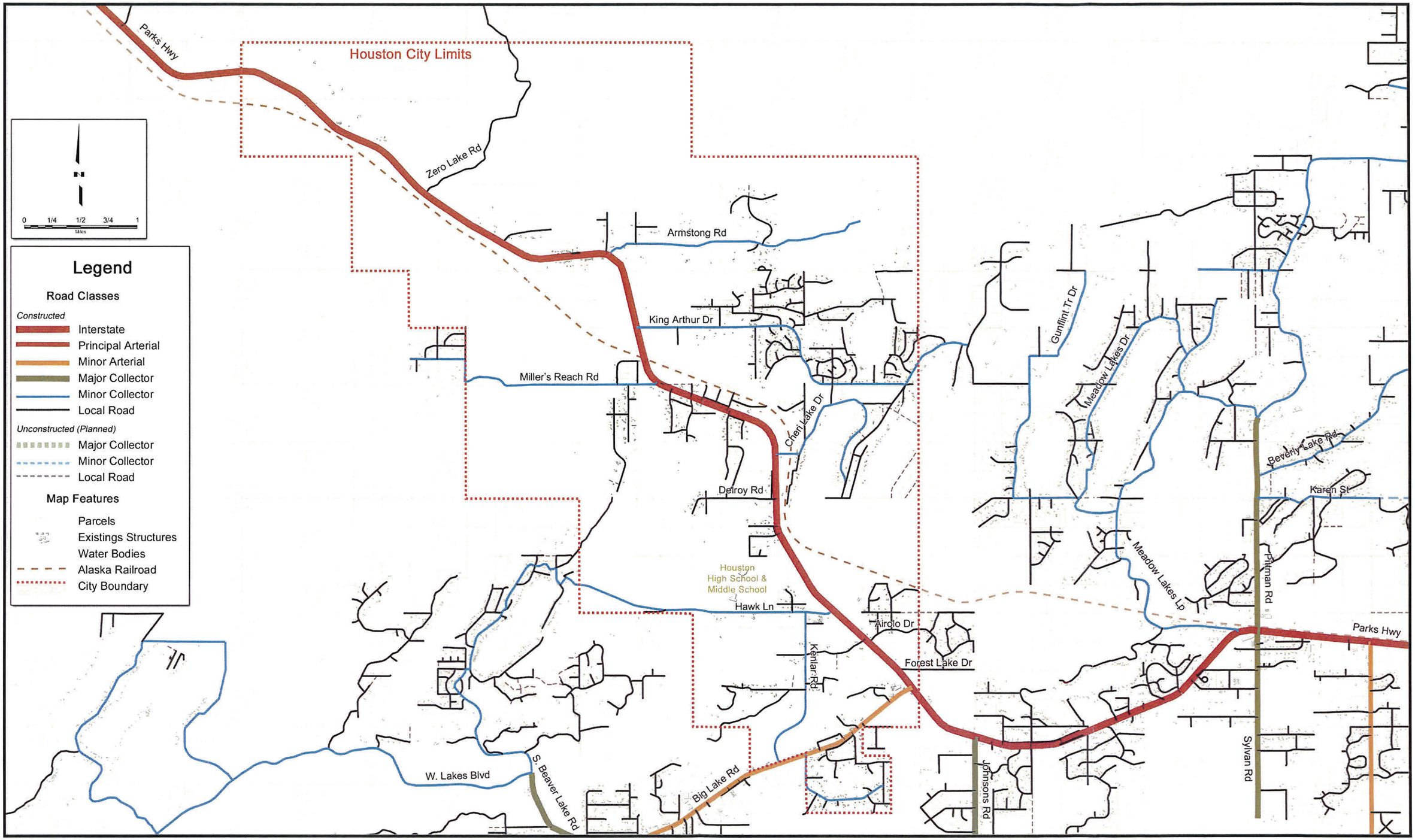

Figure 11. MSB Functional Classification System

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Traffic Volumes

Historical traffic volume estimates on road segments within the limits of Houston are collected by both the ADOT&PF and the MSB, for different roads depending on ownership. These agencies each count traffic in the summer months and then convert the data into an estimated average annual daily traffic (AADT) value.

DOT&PF Volume Counts

Historical AADTs as shown in Figure 12, presents data showing the calculated growth rate history between the oldest recorded AADTs (1996) and the most recent (2012).

Note that, historically, the Parks Highway traffic volumes are almost evenly split between Big Lake Road and the Parks Highway, as traffic proceeds north in the direction of Houston. However, the growth on the Parks Highway heading into Houston and beyond is significantly greater than the growth on Big Lake Road.

MSB Volume Counts

Traffic levels on several major cross streets within the city of Houston have been observed by the MSB and published in annual reports. However, due to staff and funding every link is not counted every year. Estimated AADT for observed years, per road can be found in Appendix A.

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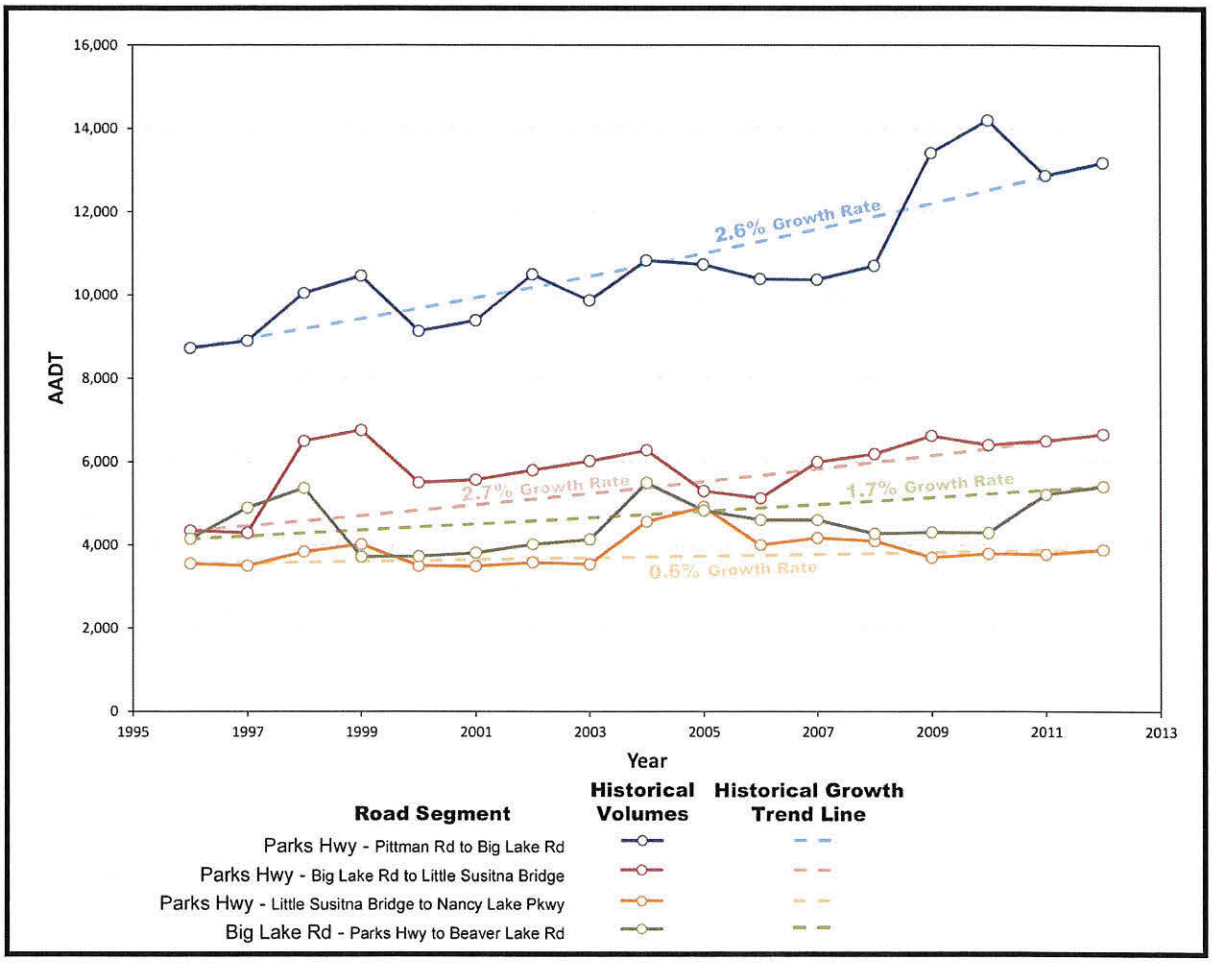
Figure 12. Historical AADTs



Road Surface Conditions

There are approximately 45 miles of road within the Houston residential road network, not including the Parks Highway and Big Lake Road. Of these 45 miles of road, 90% (40 miles) of the roads are unpaved with a 3" gravel surface. The remaining 5 miles of paved roadway account for most of the collector road network as defined by the MSB.

The paved road network includes all, or segments of the following roads:

- Cheri Lake Drive
- Hawk Lane
- King Arthur Drive
- Miller's Reach Road
- Wasey Way

- White Rabbit Drive

Armstrong Road is identified by the MSB as a collector road and is currently unpaved beyond the first quarter mile. The first quarter mile of Armstrong Road serves the Little Susitna River Camp Ground, and the public safety building for Houston which houses both the city Police and Fire Departments. City Hall is also accessed from Armstrong Road.

Alaska Railroad

The Alaska Railroad generally parallels the Parks Highway corridor throughout the limits of the City of Houston. To the southeast the railroad is on the north side of the highway. The Parks Highway crosses the railroad at a separated grade crossing at approximately milepost 56.5. The separated grade crossing includes a rail bridge that proceeds over the Parks Highway. On the northwest end of the city the rail corridor is on the south side of the highway. Figure 12 shows the separated grade rail crossing of the Parks Highway.

There is an at-grade crossing of the railroad on Cheri Lake Drive approximately 750 feet east of the intersection of Cheri Lake Drive and the Parks Highway. This crossing is equipped with gates, crossbucks, advanced warning flashers, and stop bars. There are no other crossings of the Alaska Railroad within the limits of Houston. Figure 13 shows the current configuration of the at-grade crossing of Cheri Lake Drive and the Alaska Railroad.

Figure 13. Alaska Railroad Separated Grade Crossing of the Parks Highway

Figure 14. Cheri Lake Drive at-grade Railroad Crossing

Speed Limits

The Parks Hwy and Big Lake Rd are currently posted at 55 mph, with a reduction to 45 mph in a 1.25 mile section of the Parks Hwy. This section of road begins just south of the parking area at the Little Susitna Bridge and continues northbound until MP 58, just beyond the CTWLTL section.

Hawk Lane, King Arthur Drive, and Kenlar Road are all posted at 35mph. All other roads within the City of Houston are posted at 25mph.

Pedestrian Pathways

There is a separated pedestrian pathway on the south side of the Parks Highway that begins east of the Houston city limits and ends at mp 58 within Houston. There is a second pathway on the north side of the Parks Highway that begins at the intersection of the Parks Highway and Cheri Lake Road and continues west beyond the city limits.

Road Inventory

The road inventory for all named roads within the City of Houston can be found in Appendix B.

APPENDIX A

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Parks Highway (CDS Route 170000)																	
Segment	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Pittman Road **to** Big Lake Road	8,730	8,900	10,050	10,470	9,138	9,390	10,503	9,871	10,842	10,742	10,393	10,380	10,710	13,415	14,199	12,870	13,180
Big Lake Road **to** Little Susitna River Bridge	4,350	4,300	6,501	6,760	5,504	5,573	5,800	6,020	6,280	5,300	5,130	5,997	6,190	6,624	6,402	6,500	6,660
Little Susitna River Bridge **to** Nancy Lake Parkway	3,550	3,500	3,840	4,020	3,498	3,490	3,580	3,540	4,568	4,918	4,003	4,180	4,100	3,695	3,790	3,770	3,885

Source: Alaska Department of Transportation Volume Reports

Historical Traffic Volume Counts: Parks Highway

Big Lake Road (CDS Route 170073)																	
Segment	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Parks Hwy **to** Beaver Lake Rd	4,154	4,900	5,375	3,719	3,730	3,810	4,019	4,140	5,502	4,836	4,610	4,610	4,278	4,310	4,300	5,218	5,410

Source: Alaska Department of Transportation Volume Reports

Historical Traffic Volume Counts: Big Lake Road

Airolo Drive															
Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
AADT	107	113						309	284		302			286	

Source: Matanuska-Susitna Borough Volume Reports
Table 1 - Historical Traffic Volume Counts: Airolo Drive

Forest Lake Drive															
Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
AADT	162	179				244	257		311		394				

Source: Matanuska-Susitna Borough Volume Reports
Table 2 - Historical Traffic Volume Counts: Forest Lake Drive

Hawk Lane															
Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
AADT		792												831	

Source: Matanuska-Susitna Borough Volume Reports
Table 3 - Historical Traffic Volume Counts: Hawk Lane

Kenlar Road															
Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
AADT		262					399								

Source: Matanuska-Susitna Borough Volume Reports
Table 4 - Historical Traffic Volume Counts: Kenlar Road

King Arthur Drive															
Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
AADT	569	584						674				720	636		654

Source: Matanuska-Susitna Borough Volume Reports
Historical Traffic Volume Counts: King Arthur Drive

Miller's Reach Road														
Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
AADT														329	488

Source: Matanuska-Susitna Borough Volume Reports

Table 5 - Historical Traffic Volume Counts: Miller's Reach Road

Wasey Way															
Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
AADT	277	273					343		389		396				

Source: Matanuska-Susitna Borough Volume Reports

Historical Traffic Volume Counts: Wasey Way

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APPENDIX B

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Road Name	MSB Route Number	ADOT&PF Route Number	Length (mi)	Speed Limit	MSB Functional Class	ADOT&PF Functional Class
Big Lake Road	4804	170073	1.18	55 mph	Minor Arterial	Minor Arterial
Parks Hwy	2132	170000	5.42	45 - 55 mph	Interstate	Interstate
Adrian Place	41		0.14	25 mph	Local Road	Local Road
Airolo Drive	50		0.46	25 mph	Local Road	Local Road
Anastasia Avenue	99		0.80	25 mph	Local Road	Local Road
Anning Drive	3856		0.12	25 mph	Local Road	Local Road
Anthony Road	111		1.16	25 mph	Local Road	Local Road
Armstrong Road	125		1.51	25 mph	Minor Collector	Minor Collector, Local Road
Aspen Cove Drive	135		0.19	25 mph	Local Road	Local Road
Backhaus Street	4596		0.86	25 mph	Local Road	Local Road
Ballyshannon Drive	170		0.84	25 mph	Local Road	Local Road
Bench Lake Drive	226		0.50	25 mph	Local Road	Local Road
Birch Harbor Road	269		0.36	25 mph	Local Road	Local Road
Birch Road	271		0.76	25 mph	Local Road	Local Road
Birchwood Lane	276		0.45	25 mph	Local Road	Local Road
Black Knight Drive	283		0.23	25 mph	Local Road	Local Road
Brian Circle	357		0.09	25 mph	Local Road	Local Road
Britt Avenue	4594		0.06	25 mph	Local Road	Local Road
Brittany Drive	4691		0.20	25 mph	Local Road	Local Road
Brittany Lou Avenue	4595		0.19	25 mph	Local Road	Local Road
Bruce Way	379		0.28	25 mph	Local Road	Local Road
Bryan Street	384		0.19	25 mph	Local Road	Local Road
Calonder Way	4603		0.25	25 mph	Local Road	Local Road
Cannon Drive	434		0.26	25 mph	Local Road	Local Road
Castle Drive	479		0.16	25 mph	Local Road	Local Road
Cattail Circle	490		0.08	25 mph	Local Road	Local Road

PLANNING COMMISSION NOVEMBER 7, 2016 Page 3577

Road Name	MSB Route Number	ADOT&PF Route Number	Length (mi)	Speed Limit	MSB Functional Class	ADOT&PF Functional Class
Cheri Lake Drive	4773		1.78	25 mph	Minor Collector	Local Road
Cheshire Circle	524		0.03	25 mph	Local Road	Local Road
Claudia Court	570		0.09	25 mph	Local Road	Local Road
Claudia Road	571		0.38	25 mph	Local Road	Local Road
Cole Circle	5444		0.15	25 mph	Local Road	Local Road
Commerce Street	3504		0.09	25 mph	Local Road	Local Road
Commercial Park Drive	3858		0.19	25 mph	Local Road	Local Road
Corn Street	3505		0.25	25 mph	Local Road	Local Road
Dana Court	706	170147	0.15	25 mph	Local Road	Minor Collector
Dawn Road	726		0.48	25 mph	Local Road	Local Road
Debra Jean Lane	731		0.25	25 mph	Local Road	Local Road
Delroy Road	741		0.80	25 mph	Local Road	Local Road
Denlow Drive	753		0.24	25 mph	Local Road	Local Road
Derrick Avenue	4400		0.24	25 mph	Local Road	Local Road
Diana Way	764		0.06	25 mph	Local Road	Local Road
Dodge Drive	780		0.25	25 mph	Local Road	Local Road
Donnybrook Drive	797		0.40	25 mph	Local Road	Local Road
Drawbridge Circle	819		0.07	25 mph	Local Road	Local Road
Duke Drive	830		0.21	25 mph	Local Road	Local Road
Duley Road	3530		0.53	25 mph	Local Road	Local Road
Durado Drive	835	170102	0.14	25 mph	Local Road	Minor Collector
Dutchess Circle	836		0.13	25 mph	Local Road	Local Road
Easy Street	865		0.31	25 mph	Local Road	Local Road
Elf Circle	889		0.04	25 mph	Local Road	Local Road
Emerald Isle Circle	902		0.08	25 mph	Local Road	Local Road
Enchanted Circle	908		0.25	25 mph	Local Road	Local Road

PLANNING COMMISSION NOVEMBER 7, 2016

Road Name	MSB Route Number	ADOT&PF Route Number	Length (mi)	Speed Limit	MSB Functional Class	ADOT&PF Functional Class
Friar Tuck Circle	1062		0.13	25 mph	Local Road	Local Road
Frog Circle	5016		0.07	25 mph	Local Road	Local Road
Gallagher Circle	3825		0.14	25 mph	Local Road	Local Road
Gaunt Lane	1091	170105	0.23	25 mph	Local Road	Minor Collector
Gina Circle	1112		0.04	25 mph	Local Road	Local Road
Hawk Lane	4190	170109	2.25	35 mph	Minor Collector	Minor Collector
Heath Drive	1246		0.42	25 mph	Local Road	Local Road
Hidden Drive	1278		0.26	25 mph	Local Road	Local Road
Hobbit Road	1300		0.11	25 mph	Local Road	Local Road
Horizon Boulevard	1323		0.37	25 mph	Local Road	Local Road
Horizon Way	1325		0.20	25 mph	Local Road	Local Road
Hubner Circle	5962		0.06	25 mph	Local Road	Local Road
Janet Road	1401		0.22	25 mph	Local Road	Local Road
Jeffrey Lane	1411		0.19	25 mph	Local Road	Local Road
Jerry Circle	1420		0.08	25 mph	Local Road	Local Road
John Circle	4881		0.03	25 mph	Local Road	Local Road
Johnathon Circle	5409		0.25	25 mph	Local Road	Local Road
Kar Drive	1464		0.11	25 mph	Local Road	Local Road
Karami Lane	1465		0.30	25 mph	Local Road	Local Road
Karen Avenue	1467		0.25	25 mph	Local Road	Local Road
Kathy Lane	1482		0.09	25 mph	Local Road	Local Road
Kenlar Road	1496	170145	1.42	35 mph	Minor Collector	Minor Collector
King Arthur Circle	1522		0.03	25 mph	Local Road	Local Road
King Arthur Drive	4772	170108	2.91	35 mph	Minor Collector	Minor Collector
King David Street	5428		0.25	25 mph	Local Road	Local Road
King John Drive	1526		0.19	25 mph	Local Road	Local Road

PLANNING COMMISSION NOVEMBER 7, 2016 Page 3579

Road Name	MSB Route Number	ADOT&PF Route Number	Length (mi)	Speed Limit	MSB Functional Class	ADOT&PF Functional Class
Kreja Circle	5261		0.12	25 mph	Local Road	Local Road
Lake Horizon Circle	1586		0.07	25 mph	Local Road	Local Road
Lakeway Loop	4775		0.34	25 mph	Local Road	Local Road
Larae Road	1578		0.54	25 mph	Local Road	Local Road
Leprechaun Drive	1654		0.32	25 mph	Local Road	Local Road
Little John Drive	1688		0.74	25 mph	Local Road	Local Road
Little Meadow Creek Road	4690		0.37	25 mph	Local Road	Local Road
Little Millers Road	6375		0.13	25 mph	Local Road	Local Road
Longbow Circle	1717		0.09	25 mph	Local Road	Local Road
Looking Glass Drive	1723		0.68	25 mph	Local Road	Local Road
Loon Boulevard	4557		0.35	25 mph	Local Road	Local Road
Loon Street	1728		0.44	25 mph	Local Road	Local Road
Louise Lane	1739		0.19	25 mph	Local Road	Local Road
Mad Hatter Street	1771		0.07	25 mph	Local Road	Local Road
Maid Marian Drive	1776		0.12	25 mph	Local Road	Local Road
Majors Drive	1781		0.65	25 mph	Local Road	Local Road
Marginal Access Road	4771		0.25	25 mph	Local Road	Local Road
Marian Circle	1802		0.03	25 mph	Local Road	Local Road
Meadowood Drive	1869		0.58	25 mph	Local Road	Local Road
Melissa Circle	1878		0.06	25 mph	Local Road	Local Road
Merlin Drive	1887		0.54	25 mph	Local Road	Local Road
Meti Avenue	4593		0.06	25 mph	Local Road	Local Road
Mid Valley Way	4506		0.13	25 mph	Local Road	Local Road
Miller Circle	6376		0.03	25 mph	Local Road	Local Road
Miller's Reach Road	1909		1.50	25 mph	Minor Collector	Local Road
Miller'S Ridge Road	6103		0.08	25 mph	Local Road	Local Road

PLANNING COMMISSION NOVEMBER 7, 2016 Page 3580

Road Name	MSB Route Number	ADOT&PF Route Number	Length (mi)	Speed Limit	MSB Functional Class	ADOT&PF Functional Class
Moat Circle	1921		0.05	25 mph	Local Road	Local Road
Nichols Drive	2009		0.21	25 mph	Local Road	Local Road
No Name Hill Drive	4632		0.24	25 mph	Local Road	Local Road
Nottingham Circle	2048		0.08	25 mph	Local Road	Local Road
O'Keefe Court	4624		0.04	25 mph	Local Road	Local Road
O'Megan Circle	5461		0.12	25 mph	Local Road	Local Road
One Horse Lane	5628		0.22	25 mph	Local Road	Local Road
Owlhaven Drive	2104		0.08	25 mph	Local Road	Local Road
Pay Dirt Road	2146		0.25	25 mph	Local Road	Local Road
Pepper Street	3506		0.17	25 mph	Local Road	Local Road
Phyllis Lane	2177		0.16	25 mph	Local Road	Local Road
Pick-A-Dilley Street	4586		0.48	25 mph	Local Road	Local Road
Pinecrest Circle	2187		0.09	25 mph	Local Road	Local Road
Prince Charming Drive	2236		0.28	25 mph	Local Road	Local Road
Princess Circle	2238		0.11	25 mph	Local Road	Local Road
Princess Kylie Drive	6326		0.28	25 mph	Local Road	Local Road
Queen Of Drive	2272		0.09	25 mph	Local Road	Local Road
Railside Drive	3857		0.39	25 mph	Local Road	Local Road
Rainbow Circle	2279		0.13	25 mph	Local Road	Local Road
Rainee Street	2287		0.17	25 mph	Local Road	Local Road
Ray Street	2307		0.33	25 mph	Local Road	Local Road
Rel Street	2330		0.13	25 mph	Local Road	Local Road
Rex Street	2340		0.10	25 mph	Local Road	Local Road
Rippy Road	2365		0.13	25 mph	Local Road	Local Road
Robin Hood Drive	2383		0.22	25 mph	Local Road	Local Road
Ross Street	2417		0.10	25 mph	Local Road	Local Road

PLANNING COMMISSION NOVEMBER 7, 2016 Page 3581

Road Name	MSB Route Number	ADOT&PF Route Number	Length (mi)	Speed Limit	MSB Functional Class	ADOT&PF Functional Class
Round Table Drive	2419		0.55	25 mph	Local Road	Local Road
Schutt Drive	4995		0.44	25 mph	Local Road	Local Road
Sherwood Forest Park Circle	4880		0.03	25 mph	Local Road	Local Road
Sluice Box Drive	2578		0.06	25 mph	Local Road	Local Road
Spruce Haven Drive	2673		0.20	25 mph	Local Road	Local Road
Spruce Street	5001		0.03	25 mph	Local Road	Local Road
Squire Drive	2679		0.22	25 mph	Local Road	Local Road
Stetson Circle	4382		0.05	25 mph	Local Road	Local Road
Susan Lane	2746		0.07	25 mph	Local Road	Local Road
Susitna Way	2756		0.12	25 mph	Local Road	Local Road
Swingle Road	3533		0.23	25 mph	Local Road	Local Road
Tara Street	4398		0.21	25 mph	Local Road	Local Road
Tea Party Drive	2802		0.12	25 mph	Local Road	Local Road
Telsitna Street	4063		0.34	25 mph	Local Road	Local Road
Twiddle Dee Circle	2911		0.06	25 mph	Local Road	Local Road
Valois Drive	2944		0.24	25 mph	Local Road	Local Road
Wasey Circle	4909		0.14	25 mph	Local Road	Local Road
Wasey Way	3000		1.00	25 mph	Minor Collector	Local Road
Westen Drive	3046		0.31	25 mph	Local Road	Local Road
White Knight Drive	3056		0.54	25 mph	Local Road	Local Road
White Rabbit Circle	3057		0.03	25 mph	Local Road	Local Road
White Rabbit Drive	5011		0.47	25 mph	Local Road	Local Road
White Stag Circle	3058		0.11	25 mph	Local Road	Local Road
Wild Rose Drive	3216		0.13	25 mph	Local Road	Local Road
Wilderness Court	3069		0.10	25 mph	Local Road	Local Road
Wilhelm Street	3077		0.41	25 mph	Local Road	Local Road

PLANNING COMMISSION NOVEMBER 7, 2016 Page 3582

Road Name	MSB Route Number	ADOT&PF Route Number	Length (mi)	Speed Limit	MSB Functional Class	ADOT&PF Functional Class
Wilson Road	3553		0.19	25 mph	Local Road	Local Road
Winfield Way	3109		0.27	25 mph	Local Road	Local Road
Winterhaven Drive	3113		0.36	25 mph	Local Road	Local Road
Wonderland Circle	3132		0.07	25 mph	Local Road	Local Road
Wonderland Drive	3133		0.40	25 mph	Local Road	Local Road
Woody Lake Drive	4774		0.60	25 mph	Local Road	Local Road
Yellow Cub Drive	3763		0.13	25 mph	Local Road	Local Road
Zero Lake Road	4879		0.42	25 mph	Local Road	Local Road

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PLANNING COMMISSION NOVEMBER 7, 2016

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APPENDIX B.
PUBLIC INVOLVEMENT SUMMARY

R&M CONSULTANTS, INC.
9101 Vanguard Drive • Anchorage, AK 99507 • 907.522.1707
3504 Industrial Avenue #102 • Fairbanks, AK 99701 • 907.452.5270
9737 Mud Bay Road #301 • Ketchikan, AK 99901 • 907.220.9424

Meeting Record

Project Number: 2136.01 (R&M)

Project Title: City of Houston CIA and Comprehensive Plan Revision

Subject: Future's Workshop and Open House #1

Author: Taryn Oleson

Site Visit Location: City of Houston Fire Station

Meeting Date: Thursday, September 18, 2014

Distribution Date: September 3, 2014

Attendees:

Van Le, AICP	Planning & Public Involvement Coordinator	R&M Consultants, Inc.
Taryn Oleson	Public Involvement Coordinator	R&M Consultants, Inc.
Kristi McLean	CIA Lead	R&M Consultants, Inc.
Virgie Thompson	Mayor	City of Houston
Len Anderson	Steering Committee	City of Houston
Ron Jones	Steering Committee	City of Houston
Christopher Johnson	Steering Committee	City of Houston
Rebecca Rein	Steering Committee	City of Houston
Gina Jorgensen	Steering Committee	City of Houston
Lance Wilson	Steering Committee	City of Houston
Donna Logan	Economist	McDowell Group
Allen Kemplen, AICP-CTP	Mat-Su Area Planner	AK State DOT

35 attendees signed in on the sign in sheet, including some project team members and Steering Committee members. At least two additional residences who were in attendance did not sign in.

The objective of this open house was to "Establish a Community Vision to be used as a guiding principle for the Community Impact Assessment and Comprehensive Plan." The use of a Future's Workshop is considered to be best practices for community visioning, as a way to begin a Comprehensive Plan Update. This visioning session was successful in gauging

community ideals and ideal futures, but a single vision statement was not generated in consensus by the resident attendees.

The meeting started at 4:30 PM at the Houston Fire Station.
As attendees entered the Future's Workshop, they were greeted and asked to fill out the sign in sheet. A City of Houston Fact Sheet was available as a handout, agendas were posted throughout the meeting space, and cookies and refreshments were served.

In the truck bay, half the space was used for display of the following maps: three historic maps from the 1979 Plan, existing zoning, existing land use, existing land use by zoning, existing land ownership, and the project area (City of Houston boundaries). Also on display were three posters showing aspects of the City of Houston's history, including the planning timeline and photographs of community members and events. Attendees were encouraged to examine the displays so as to better understand their City's past and present conditions.

At 5:00 PM all attendees were gathered into the main room and seated at seven small tables of 4-7 people for the small breakout session entitled "Creating ideal futures". Each table was hosted by a pre-designated facilitator and had at least 5 blank City of Houston Mind Maps which were used as a tool for note-taking and idea generation. Van Le and Taryn Oleson presented the purpose of the meeting and the small group task.

Over the next hour and fifteen minutes, small groups discussed what the City of Houston should be like 20 years from now. The small group session was not limited in scope and all relevant ideas were recorded in each group by the facilitator. Instructions were provided to the facilitators three days prior to the meeting, and again during the meeting, which included suggested questions to consider posing if conversation stifled. The small group session was scheduled to be last about a half hour, but was allowed to continue due to highly active participation by the attendees.

At 5:50 PM pizza was delivered and served. Small groups continued to work through the meal until Van and Taryn cut the conversation to reconvene as a large group for the second session.

Tasked with finding "Common Ground on the Future," small groups took turns sharing an emerging theme developed by the group. Each theme was then recorded on one of six large City of Houston Mind Map, which Van and Taryn were writing on at the front of the room. Five of the six Mind Maps had pre-determined categorical titles: Transportation, Housing, Community Character, Community Facilities and Services, and Economic Development. The sixth Mind Map was given the title 'Planning' after multiple themes were presented within this category.
Though overall successful, groups struggled to prioritize themes, ideas, or aspects of the future they felt were most important. It was also difficult for groups to limit their turn to sharing to only one of those items on their list at a time.

Establishing consensus was the overarching goal of the whole group session. While there was discussion and disagreement on specifics of certain contributed themes, the overall intent of the theme was agreed upon more often than not.

All Mind Maps, produced by both small group and whole group sessions, were collected and are available in hard copy and digital formats.

The Future's workshop concluded at 7:30 PM.

Draft Summary Statements have been developed by Taryn Oleson of R&M post-workshop from the whole group Mind Maps and are as follows;

- Transportation: There is a need to increase safety, accessibility, and mobility through much of the City and improvements shall be beneficial to all users including pedestrians, bicyclists, and other non-motorized uses such as dog sleds, while maintaining community character.

- Housing: Housing in the City of Houston should be available to a wide range of incomes, while providing opportunities for satisfactory, safe living for all residents, including the elderly.

- Planning: Effective, implementable planning is a recognized need for successful growth, development, and overall health of the community, as defined by its residents.

- Community Character: To be developed by Steering Committee

- Economic Development: While maintaining the current tax structure, the City of Houston aims to develop economically by capitalizing on its current amenities and natural resources; allowing commercial and light industrial development as long as it aligns with the community character and will be to the benefit of City residents.

- Community Facilities and Services: The City of Houston recognizes the need to expand its facilities and services in order to provide safe and satisfactory living for its residents, while enhancing the City's autonomy, economy, and unique identity.

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City of Houston at a Glance

Demographics

- Rural-residential community experiencing consistent growth;
- 2013 estimated population of 2,039 residents
- Median age is 36; older age groups experiencing the fastest growth rate
- Estimated growth rate of 2% - population of 3,100+ residents in 2035
- Median household income almost $60,000;
- About 12% of families and 16% of individuals are below federal poverty line

Economic Development

- 82 active business licenses have physical addresses in City
- Top three business types; Services, Trade, and Construction
- Private sector employment is 85% with Trade (retail and wholesale), Transportation and Utilities, and Education and Health services being the top employment industries
- Unemployment rate is about 18%

Education

- Houston High school of the Mat-Su Borough School District
- Land designated for a future elementary school
- Approximately 90% of residents has a high school

Land Use

- City limits encompass 23 square miles
- 77% of land is vacant - 18% is residential
- Minor homestead agricultural activity but several areas are zoned for mixed agriculture (RA-
- Major Parks and Recreation facilities; Little Susitna Campground, Riverside Camper Park, Houston/ Willow Creek Sled Trailhead rec. area, and Haessler-Norris Trail System

Community Services

- City Fire Department, law enforcement by Alaska State Troopers
- Homesteaders Community Center and Mid-Valley Senior, Inc. provide fellowship and services
- No large grocery store or medical facilities exist within the City; Wasilla and Big Lake are the closest providers

The City of Houston is conducting a Community Impact Assessment (CIA) and revising its Comprehensive Plan to guide future growth. Since the Comprehensive Plan was updated in 2003, population growth, transportation infrastructure projects and industrial development are on the rise. Participate in developing the plan for the future and prepare for growth and development while preserving community values.

Several major, regional-serving projects are currently underway that will require close coordination with the CIA and Plan including:

- Port MacKenzie Rail Extension
- Port MacKenzie to Parks Highway Connection
- Future Parks Highway segment upgrades
- Parks Highway Alternative Corridor Plan
- The annexation of Native corporation-owned land into City of Houston's boundaries

Visit the Project Website:
www.HoustonAKCompPlan.com
to sign up for updates

For More Information Please Contact:
Van Le, AICP, Project Manager
R&M Consultants, Inc.

E-mail:
comments@rmconsult.com
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CITY OF HOUSTON
COMMUNITY IMPACT ASSESSMENT

City of Houston Future's Workshop 9/18/14 Mind Maps Summary

Whole Group Session – Sharing common themes and findings

Community Character:

- Houston as a destination for tourism and recreation
- Have a unique identity or theme for us to be recognized by- distinguish Houston Alaska from the rest of the country and state
- Preservation of residential character – keeping "Houston Houston" with larger parcels for housing and minimal light pollution and noise
- Own a recreational identity; more than just trail heads
- Design standards for development
- Establish a Town Center keeping to the Houston feel
- Preservation of existing trails and ecology
- Involving community in the development and construction of community facilities
- Maintaining the quiet dark character – open for growth but keep it rural
- Community needs to be proactive
- Family friendly
- Make both sides of the river and railroad tracks feel like one community
- Wide reaching community government and development- increased involvement

Transportation:

- Train station in the City
- More connectivity – more emergency access
- Town center that is accessible and multiuse
- Multiuse pathways
- Better signage
- Main road be protected – increased vegetation
- Maintain multiuse trails
- Improved lighting and roadways
- Eventually expand availability of utilities and services
- Safety on the Parks corridor
- Development of King Arthur Rd.
- Hawk lane bike path – improvement of pedestrian safety via pathways and lighting

City of Houston Future's Workshop 9/18/14 Mind Maps Summary

- Industrial development along the rail lanes- light industrial
- Increase vegetative buffers in roadways
- Main artery needs proper planning for controlled access and the expansion of the Parks highway and the secondary roadways – *proper planning for corridor*
- *Port to Parks*
- Bus stop marker, signage, and lighting
- Park and ride with Valley-movers throughout Mat-Su and Anchorage Bowl

Planning

- More staffing for City, Fire department should not be responsible for all emergency and police services
- Evolve into a 1st class city
- Corridor study
- Planning land use (one comment on no zoning restrictions)
- Water resource planning –special attention to the flood planes
- Development suitability study
- MSB build out- match with community growth
- Program to reduce junk cars
- Transfer centers
- Incentive for people to come here – education, recreation facilities, design
- Encourage subdivision with more high income development

Housing

- Incentivize Dr. and medical facilities to move here
    - Assisted care facilities
- Plan for multi-family and senior housing with the aging population
- Conveniences for high end houses for a higher tax base – designate areas for high end housing

Community Facilities and Services

- Education – elementary school

City of Houston Future's Workshop 9/18/14 Mind Maps Summary

- Town Center with; pedestrian friendly facilities, landscaping, panels and walk theme, restaurants, mixed use, near river or railroad, building codes (Form based codes)
- Youth summer programs
- Opportunities for post-secondary education/carter school
- Public safety; EMS expansion, year round water flow for fire
- Flood control response planning
- Community watch
- Recreation; trails, multiuse, designated facilities for recreation (rinks, pools, ball courts), preservation of natural areas, facility maintenance for motorized and non-motorized users including horses and dogs
- Animal shelter
- Utility expansion dependent on road alignment ; natural gas, coal, alternative energy
- Recreation destination; use Little Su for business services (tourism)
- Cemetery
- Veterinary clinic
- Daycare
- Business districts; planned, designed, and built
- Pharmacy
- Dentist
- Medical facilities
- Assisted care facilities
- Gas station and goods services
- Grocery store or food shops

Economic Development

- Keep tax base
- Local jobs
- Riverwalk
- Community identity for economic development (using it to draw in visitors and residents)
- Centralized for recreation for Hatcher Pass, Deskha, etc. – capitalize on natural location
- Facilities at King Arthur; Laundromat, shower, gym, meeting place
- Daycare
- Natural resource development; coal mines, power plant, city owned utility

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June 4, 2015 Community Impact Assessment & Comp. Plan Review Open House 2 – CIA

Project: City of Houston Community Impact Assessment & Comprehensive Plan Revision

Project No: R&M 2136.01

Purpose: Open House for public to review and comment on draft CIA findings

Date: Thursday, June 4th, 2015

Time: 4:30PM – 6:30PM

Location: City of Houston Fire Station

Meeting Attendance: 28 members of the public and Steering Committee member were present

Project Team in Attendance:

R&M Consultants

Van Le, AICP Project Manager

Taryn Oleson Planner & PI Coordinator

Kristi McLean Environmental Specialist, CIA Lead

City of Houston Steering Committee Members

Mayor Virgie Thompson

Lance Wilson, Deputy Mayor

Len Anderson, Chair Steering Committee

Ron Jones

Chris Johnson

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MEETING SUMMARY

As the public entered the Fire Station, they were greeted by a member of the R&M project team who provided a breif explination on what the CIA is and the purpose of the open house. Attendees signed in, picked up a Fact Sheet on the transportation alternatives assessed in the CIA, and helped themselves to snacks and refreshments. In the truck hull of the Fire Station a variety of boards were on display.

The maps on display were the focus of the open house. Three graphics on large 34x44'' boards depicted the potential impacts identified in the CIA to this point. Each graphic showed impacts for one of three impact categories; Transportation, Land Use, and Economic impacts. Impacts were shown geographically on a map of the City of Houston. In addition to the three main boards, a copy of each graphic was printed on the same large size paper and places on tables for attendees to write directly on. See Attachment A. Supporting the three City of Houston CIA graphics were maps of the existing conditions within Houston, including zoning, land use, land use by zoning. A board showing the Transportation Plan map from the adopted City of Houston 1982 Comprehensive Plan was also on display for refernce.

Members of the public were encouraged to read the three CIA maps and provide any comments, concerns, or opinions regarding the information shared. Markers and pens were provided on each table with a CIA map on it and any feedback provided by attendees could be written directly on the map. Comment forms were provided throughout the Open House space to allow written comments to be recorded.

Members of the project team and the Steering Committee engeged in conversations with the public about the process and the goals of performing a CIA. Generally, the public in attendance concurred with the impacts identified. Little new information emerged during the open house; most discussion focused around the opportunities that could emerge due to some of the impacts identified. The Economic Impacts map yeilded discussion around the potential development that could occur around the new Port-MacKenzie Rail Extension , including zoinng the new areas for industrial development and Knikatnu Inc developing an LED Assembly Facility south of Millers Reach Road. The information and opinions gathered on the impacts identified in the CIA will be incorporated into the CIA report.

Additional comments not directly related to the CIA impacts were largely related to the development of parks and establishment of more services and amentities, such as a gas station and grocery store, in the area. This information will be incorporated into the Comprehensive Plan Revion effort.

The public was made aware of the open house through direct postcard mailings, an e-notification remainder, and information posted to both the project website as well as the City of Houston's website. The draft CIA will be made available for review by the public via the project website once it has been approved for release by the Steering Committee.

Community Impact Assessment

INFO SHEET

PLANNING COMMISSION

NOVEMBER 7, 2016

What is a CIA and why is the City of Houston conducting one?

A Community Impact Assessment (CIA) is an evaluation of potential impacts transportation projects could have on the community of Houston. Each project analyzed has the potential to impact the socioeconomics, physical environment, and future growth and development in Houston. The CIA will serve as a planning tool and reference for the City and the Mat-Su Borough by ensuring the needs, opinions, vision and goals of the community are acknowledged and documented to help guide compatible growth and development within and around Houston. The CIA is being conducted concurrently in support of the City's Comprehensive Plan Update.

TRANSPORTATION PROJECTS ANALYZED

Parks Highway Upgrade MP 44-52 Phase 3 Pittman Road to Big Lake Road

PLANNED - AKDOT&PF

- Proposed signalized intersection at Parks Hwy and Big Lake Road and at S. Johnson Road in Wasilla
- Pedestrian improvements include realignment of the pathway along Parks Hwy and Big Lake Rd; a pedestrian island and crosswalk at the intersection of Big Lake Rd and Parks Hwy
- Proposed four-lane divided Hwy from MP 44 in Wasilla returning to a two-lane Hwy after Forrest Lake Drive in Houston
- Proposed lighting at the intersection of Big Lake Road and the Parks Hwy; along the Parks Hwy
- Proposed access and driveway consolidation
- Construction planned for 2017-2018

Port MacKenzie Rail Extension

PLANNED AND IN CONSTRUCTION - ARRC & MSB

- 32-mile extension of the ARRC system to connect Port MacKenzie to the mainline along Parks Hwy
- Extension passes Houston Lake Loop Trail and Horseshoe Lake with connection to the mainline north of Miller's Reach Road
- Grade-separated crossings planned at officially recognized trails and roads
- No support facilities planned as part of the extension

Port MacKenzie to Parks Highway Roadway Corridor

CONCEPTUAL PROJECT

- Road alignment reflects concept shown in the adopted 1982 City of Houston Comprehensive Plan, Transportation Plan Map
- Road alignment parallels the Port MacKenzie Rail Extension alignment
- Conceptual corridor is 800' wide centered on the Rail Extension alignment, designed for a 2-lane 65 mph Hwy
- Anticipated primary use for freight and truck traffic to and from the Port

FOR MORE INFORMATION PLEASE CONTACT

PROJECT MANAGER: VAN LE, AICP | R&M Consultants, Inc. | vle@RMConsult.com | 907.646.9659

PLANNER & PUBLIC INVOLVEMENT COORDINATOR: TARYN OLESON | R&M Consultants, Inc. | Comments@RMConsult.com | 907.646.9645

VISIT THE PROJECT WEBSITE: WWW.HOUSTONAKCOMPPLAN.COM

May 5, 2016 Community Impact Assessment & Comprehensive Plan Revision: Open House #3 – Draft Comprehensive Plan Review

Project:	City of Houston Community Impact Assessment & Comprehensive Plan Revision
Purpose:	Open House for public to review and comment on Draft Comprehensive Plan
Date:	Thursday May 5th, 2016
Time:	5:00 PM- 7:00 PM
Location:	City of Houston Fire Station
Meeting Attendance:	14 members of the public and Steering Committee member were present
Outreach:	The public was made aware of the open house through postcards distributed at frequented locations throughout the City, an e-mailed invitation, and information posted to both the project website as well as the City of Houston's website. The Draft Comprehensive Plan Revision is available for public review on the project website.

Project Team in Attendance:

R&M Consultants

Van Le, AICP	Project Manager
Taryn Oleson	Planner & PI Coordinator
Lance DeBernardi, PE	Senior Transportation Engineer

City of Houston Steering Committee Members

Mayor Virgie Thompson

Lance Wilson, Deputy Mayor

Len Anderson, Chair Steering Committee

Ron Jones

Chris Johnson

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MEETING SUMMARY

As the public entered the Fire Station, they were greeted by a member of the R&M project team who provided a brief explaination on the purpose of the open house and the materials on the table. Attendees signed in, picked up a Comprehensive Plan Summary Handout, a copy of the draft Comprehensive Plan and helped themselves to snacks and refreshments. Draft Comprehensive Plan boards were on display on easels in the truck bay of the Fire Station.

The maps on display were the focus of the open house. Four maps highlighted the significant changes proposed in the Draft Comprehensive Plan Revision. The maps included:

- Draft Land Use Plan Map
- Draft transportation recommendations for Freight and Industry, Local Road Network, and Parks Highway.
- Four boards of proposed improvements
- Copies of the graphics were printed on the same large size paper and places on tables for attendees to write comments on. See Attachment A.

Supporting the four draft Comprehensive Plan Revision graphics were maps of the existing zoning and land use conditions within Houston as well as the Transportation Plan map from the adopted City of Houston 1982 Comprehensive Plan was for refernce.

Members of the public were encouraged to examine the maps, specifically on the proposed Land Use Plan and Transportation Plan Maps, and provide any comments, concerns, or opinions regarding the information shared. Markers and pens were provided on each table with comment forms and a copy of a transportation plan map on it. Attendees could provide feedback by written directly on the map or filling out a comment form. Comment forms were also provided at the sign-in table as well as throughout the Open House space.

Members of the project team and the Steering Committee engaged in conversations with the public about the process, goals of the Revision, and the Land Use Plan and Transportation recommendations.

Public Comments

The most discussed topics included the proposed Parks Highway Byass and interchange with a future Port MacKenzie to Parks Highway, specifically how that would affect the development of Houston's economy and future Town Center. A resident and local buisess owner provided comments about two major items for further consideration in the Draft Comprehensive Plan:

- **Proposed Parks Highway bypass**: *A bypass to foster development of a Town Center may not work because Houston is dependent on Parks Highway travelers to support local businesses. A bypass will noly ensure that travelers keep going to Wasilla or Willow instead of stopping even though the plan is to all the Town Center to develop before the bylass is built in the next 20+ years.*
- **Parks Highway Design**: *Would like the Comprehensive Plan Revision to include a policy that will require DOT to build the Parks Highway into a 5 lane with center turn lane, with direct access to properties adjacent to the Pakrs Highway, versus a 4 lane divided highway with consolidated access. Gas station companies such as Tesoro are consdering building a station in Houston near the Big Lake intersection or what is being called the future Commercial Center, and consolidated access on a divided highway will remove this potential.*

The Steering Committee and Project Team will take the comments into consideration at the next Steering Committee meeting and may edit the Draft Comprehensive Plan accordingly.

Attachments:

- Draft Comprehensive Plan Info Sheet
- Draft Comprehensive Plan Open House Comment Form
- Postcard Open House Notice

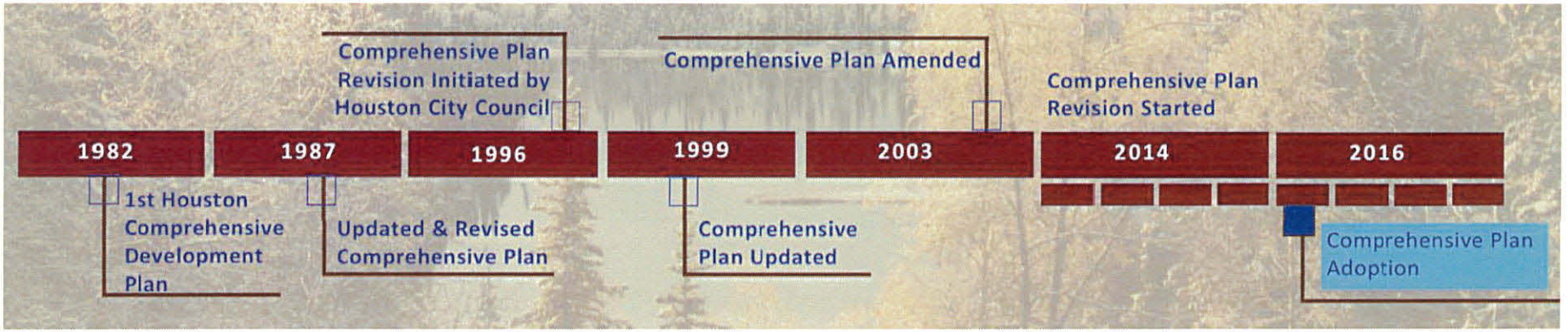
WELCOME TO HOUSTON

May 5, 2016 Open House

Community Impact Assessment & Comprehensive Plan Revision

Draft Comprehensive Plan Info

What is a Comprehensive Plan and why is the City of Houston revising its Plan?



A Comprehensive Plan is a community's blueprint for future growth, development and change. Houston's Comprehensive Plan will serve as a planning tool and reference for the City and the Mat-Su Borough by ensuring the needs, opinions, vision and goals of the community are acknowledged and well documented to help guide compatible growth and development within and around Houston.

This Draft Plan is based on updated census, population and land use data. This Plan is an articulation of the community's core values based on a community wide survey and business and community stakeholder interviews conducted in 2015 and two public workshops in 2014 and 2015.

The Draft City of Houston's Comprehensive Plan revision reflects the goals, objectives and policies for Houston to govern future land uses and a desired future for the next 20 years through the year 2035.

The Draft Comprehensive Plan is available on the project website: **www.HoustonAKCompPlan.com**

Land Use Recommendations Summary

(See Land Use Plan Map)

New Land Use Districts

- Town Center/Civic Center (*City Hall & Little Su Campground*)
- Commercial Core (*Parks Hwy & Big Lake Intersection*)
- Commercial Mixed Use (*North of Parks Hwy & Big Lake Intersection*)
- Transportation Facility (*Parks Highway & ARRC*)
- Development Reserve
- Parks and Natural Resource

New Zoning Districts

- Town Center
- Development Reserve (formerly Holding District)
- Parks and Natural Resource

Transportation Recommendations Summary

(See Transportation Plan Maps)

Parks Highway Bypass

- Facilitates the development and growth of a Town Center at City Hall and the Little Su Campground area
- Provides efficient and safe freight movement
- Access management & consolidation for Parks Highway movement

Port MacKenzie to Parks Highway Roadway Corridor

- Road alignment parallels the Port MacKenzie Rail Extension alignment & reflects concept in Adopted 1982 City of Houston Transportation Plan Map

Parks Highway/Port McKenzie Interchange

- Connects Parks Highway, Proposed Parks Highway Bypass and future Port to Parks corridor

Local Roads Network

- Improved neighborhood connectivity
- Improved emergency response and access

APPENDIX C.
HOUSTON HOUSEHOLD OPINION SURVEY REPORT

City of Houston Comprehensive Plan and Community Impact Assessment: Household Survey Results

Prepared for:

CITY OF HOUSTON, ALASKA
SINCE 1966
Where the real Alaska begins

Prepared by:

McDowell GROUP
Juneau • Anchorage

February 2015

Table of Contents

Executive Summary **1**
Methodology **4**
Residency Status **5**
Residency 5
Houston Resident Length in Community 5
Home Ownership 5
Perceptions of Community Life **7**
Rating of Quality of Life 7
Level of Agreement with Statements about Community Life 8
Transportation Issues **10**
Level of Importance 10
Highest Transportation-Related Priority 12
Recreation Issues **13**
Level of Importance 13
Highest Recreation-Related Priority 14
Environmental Issues **15**
Level of Support 15
Economic Development Initiatives **16**
Level of Importance 16
Highest Economic Development Priority 17
City Services **19**
Level of Importance 19
Willingness to Pay for City Services or Facilities 20
Private Property Regulation **22**
Perceptions on Land Use Regulations 22
Respondent Demographics **23**
Age and Gender 23
Houston Resident Household Characteristics 24
Household Income 25
Educational Attainment 25

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Executive Summary

The City of Houston contracted with R&M Consultants to help update its Comprehensive Plan and Community Impact Assessment. As part of this effort, R&M Consultants' subcontractor, McDowell Group, an Alaska research and consulting firm, conducted a mail survey (with an online option) of both City of Houston residents and nonresident property owners. The purpose of the survey was to gather input from City residents and property owners on a variety of comprehensive planning issues, such as transportation and recreation needs. The survey also asked residents about environmental issues, economic development, city services, and other aspects of their community. Key findings are summarized below.

Quality of Life

Respondents rated quality of life in Houston an average of 6.9 on a scale of one-to-ten (with 10 being "high"). Just over four in ten respondents (42 percent) said their quality of life was high (rating of 8, 9, or 10 combined).

- More than eight of ten respondents (83 percent) agreed or strongly agreed with the statements that Houston is a good place to live with respect to outdoor recreation and enjoying a rural lifestyle.
- More than two-thirds of respondents (68 percent) agreed or strongly agreed that Houston could use more community planning.
- Houston residents were more likely to agree or strongly agree that Houston is a safe place to live compared to nonresident property owners, 64 percent versus 39 percent. Approximately two respondents in ten disagreed or strongly disagreed that Houston is safe (22 percent).

Transportation-Related Projects

Improved roads and road maintenance are the most widely held transportation concerns in Houston and are considered very important by 62 percent of respondents.

- Younger respondents were more likely than older respondents to rate a new road between Houston and Port MacKenzie very important (38 percent versus 23 percent), and more of them said a Hawk Lane bike path is very important (41 percent versus 24 percent).

Recreation-Related Projects

The top recreation issues for most respondents are creation of recreation programs for youth and maintenance of existing trails and pathways, which both were rated important or very important by 76 percent of respondents.

Houston residents were more likely than nonresident property owners to:

- Rate the creation of recreation programs for youth very important (33 percent versus 24 percent).
- Rate the creation or expansion of an indoor recreation facility very important (32 percent versus 22 percent).

- Rate more motorized trails and pathways very important (36 versus 17 percent).
- Rate non-motorized trails and pathways not important (40 percent versus 27 percent).

Support for Environmental-Related Issues

When asked about their level of support for three environmental-related issues, more than two-thirds of respondents (69 percent) said they are very supportive of protecting drinking water quality, while 29 percent are very supportive of stricter enforcement of flood plan development regulations, and 27 percent are very supportive of stricter regulation of land near rivers, lakes, and streams.

Economic Development Initiatives

When asked the importance of seven economic development initiatives, more than half of respondents (52 percent) said supporting extension of utility services is very important, followed by recruiting new business (42 percent), and supporting natural resource development (35 percent).

- Attracting industrial development along the railroad tracks, attracting more tourism, developing a tourism attraction along the Little Susitna River, developing a "town center" with pedestrian-friend facilities, and recruiting new business all have somewhat less support among residents than among nonresident property owners.

City Services

Eight in ten respondents said continuing to provide fire and emergency services and road maintenance are very important, while 43 percent and 36 percent respectively rated community planning and animal control and shelter very important. All four services were considered very important by more than one-third of respondents.

- Residents were more likely to rate nearly all of the city services very important compared to nonresidents, with the exception of animal control and shelter.

Willingness to Pay for New or Improved City Services or Facilities

Approximately one-third of respondents said they are very willing to pay for improved city fire and emergency response and improved road maintenance through increased property taxes. Only 6 percent of respondents were very willing to pay for cemetery development and maintenance, and 58 percent were not willing to pay for this service at all.

- Men were more likely than women to say they are not willing to pay for city services through increased taxes.

Land Use Regulation

Four in ten respondents said there is just enough regulation of private-property land use, two in ten said there is too much regulation, and an equal number said there is too little regulation.

- Men were more likely to say there is too much private property regulation compared to women, 26 percent versus 11 percent.

Respondent Demographics

- Nearly two-thirds of respondents (65 percent) lived in Houston at least nine months during the past year. The average number of years a Houston resident respondent had lived in the community was 13.3 years.
- Only 4 percent of the Houston residents who responded are renters.
- Fifty-nine percent of respondents were male, and 41 percent were female. The average age of all respondents was 56.7 years.
- Average Houston resident household size for all respondents was 2.6 people. The average number of children in Houston households with children was 2.1 children.
- The median annual household income for all respondents was $63,000.

Methodology

The City of Houston contracted with R&M Consultants to update its Comprehensive Plan (completed in 1999 and amended in 2003), as well as conduct a Community Impact Assessment. As part of that process, R&M Consultants subcontracted with McDowell Group, an Alaska research and consulting firm, to conduct a community household survey. The purpose of the survey was to gather opinions of Houston property owners (including non-Houston residents) and residents about the city's priorities for the next 20 years. The survey enhances community engagement and survey results will inform the planning process.

McDowell Group met with the City of Houston Comprehensive Impact Assessment and Comprehensive Plan Revision Steering Committee in August and October committee meetings to discuss survey content, as well as review of and pre-test the survey instrument. McDowell Group also attended the September 18 "Future's Workshop" held in Houston to hear community concerns and issues that were also considered for incorporation into the survey design.

On November 7, 2014, a postcard was mailed to 1,651 Houston resident households (including renters and home owners), and property owners. The purpose of the postcard was to provide advance notice of the survey. There were 209 returned post cards with bad addresses. These addresses were removed from the sample (new total of 1,442). The survey was mailed on November 12, 2014. Households were given the option to complete the survey by mail or go online to a secure website, enter their assigned password, and complete the survey. On November 21, another postcard was mailed to the thank residents who had completed the survey and encourage those that had not to do so at their earliest convenience. On December 5, a second survey was sent to 1,259 nonrespondents of the first survey mailing. Responses were accepted until January 15, 2015. A total of 365 surveys were completed for a response rate of 25.3 percent.

A self-reported survey has the potential for self-selection bias. While the survey results may be representative, if this was a statistically random survey (such as a telephone administered survey), all responses would have a potential margin of error at the 95 percent confidence interval of +/-5.0 percent. In addition to reporting totals for all questions, this report identifies potentially statistically significant differences in responses for the following major subgroups:

- **Residency** – Residents of Houston and individuals who own property in Houston but whose primary residence is elsewhere (termed "nonresidents).
- **Age** – For sub-group analysis by age groups, "young" respondents are defined as those who indicated they were under 35 years old, "middle age" respondents are defined as 35 to 54 years old, and "older" respondents are defined as those who are 55+ years old.
- **Gender** – Male and female.

A total of 170 respondents (47 percent) provided verbatim responses to an open-ended statement, "*Please feel free to comment about any other planning issues you feel are important for the City of Houston to consider as it develops its new Comprehensive Plan and Community Impact Assessment.*" These comments are sorted by general theme and are found under separate cover, *Appendix – Verbatim Comments.*

Residency Status

Residency

Nearly two-thirds of respondents (65 percent) lived in Houston at least nine months during the past year.

Did you live in Houston for more than 9 months in the past year?

	All Responses n=357	Houston Residents n=233	Nonresident Property Owners n=124
Yes	65%	100%	-
No	35	-	100%

Houston Resident Length in Community

Houston resident respondents were evenly distributed by length of residency and lived an average of 13.3 years in Houston.

How many years have you lived Houston?

n=228	Houston Residents
1 to 5 years	24%
6 to 10 years	32
11 to 20 years	23
21+ years	21
Average (Years)	**13.3 years**

Home Ownership

Only 4 percent of the Houston resident respondents are renters.[1]

Do you own or rent your Houston residence or property?

n=228	Houston Residents
Own	94%
Rent	4
Some other arrangement	3

Note: Due to rounding, results may not add to 100 percent.

[1] In comparison, the U.S. Census American Community Survey 2009-2013 Five-Year Average for Houston was 17 percent rental units of all housing units.

Of the nonresident property owners, 94 percent said they do not rent their Houston property to others.

Do you rent your Houston property to others?

n=113	Nonresident Property Owners
Yes	6%
No	94

Perceptions of Community Life

Rating of Quality of Life

All respondents were asked to rate their quality of life in Houston on a scale from 1 (very poor) to 10 (very good). Eighteen percent of respondents chose to not answer the question because they did not live in Houston. Of the remaining respondents, four in ten respondents (42 percent) reported their quality of life as high (8, 9, 10 combined), and 51 percent rated it medium (4, 5, 6, 7 combined). Only 7 percent of respondents said their quality of life is low (1, 2, 3 combined). The average response for quality of life was 6.9.

Young respondents were more likely to rate their quality of life as high (52 percent 8, 9, 10 combined) compared to middle age (39 percent 8, 9, 10 combined) and older respondents (41 percent 8, 9, 10 combined).

Quality of Life Rating (1 to 10)

n=344	Percent of Total
High rating (8, 9, 10 combined)	**42%**
10 – Very good	16%
9	9
8	18
Medium rating (4, 5, 6, 7 combined)	**51%**
7	20%
6	11
5	15
4	4
Low rating (1, 2, 3 combined)	**7%**
3	2%
2	4
1 – Poor	1
Average rating	**6.9**

Note: Due to rounding, results may not add to 100 percent.

Level of Agreement with Statements about Community Life

Most respondents agreed or strongly agreed that Houston is a good place to live with respect to outdoor recreation (83 percent) and enjoying a rural lifestyle (83 percent). Approximately two in ten disagreed or strongly disagreed that Houston is affordable (21 percent), safe (22 percent), or family friendly (20 percent), however.

More than two-thirds (68 percent) agreed or strongly agreed Houston could use more community planning, and 49 percent agreed or strongly agreed the community could use more landscaping of public spaces.

Please indicate your level of agreement regarding the following statements about the community of Houston…

	Strongly Agree	Agree	Disagree	Strongly Disagree	Unsure/ Don't know
Houston is a good place for outdoor recreation.	30%	53%	6%	3%	9%
Houston is a good place to enjoy a rural lifestyle.	25	58	5	3	8
Houston could use more community planning.	33	35	10	6	16
Houston is a good place for people to live affordably.	13	57	14	7	10
Houston is family-friendly.	9	56	16	4	16
Houston is a safe place to live.	9	55	15	7	14
Houston could use more landscaping of public spaces.	23	26	22	12	16

Note: Due to rounding, results may not add to 100 percent.

Differences Between Houston Residents and Nonresident Property Owners

There were several statistically significant differences between Houston residents and nonresident property owners on the above statements about community life.

- Houston residents were *more* likely to agree Houston is a safe place to live compared to nonresident property owners (64 percent versus 39 percent, respectively).
- Residents were *more* likely to disagree Houston is family-friendly than nonresidents (21 percent versus 7 percent, respectively).
    - Likewise, young respondents were *more* likely to disagree Houston is family-friend (31 percent) compared to middle age and older respondents (both 15 percent).
- Residents were *more* likely to strongly agree Houston is a good place to enjoy a rural lifestyle compared to nonresidents (30 percent versus 18 percent, respectively).

- Residents were *more* likely to disagree and strongly disagree Houston is a good place for people to live affordably (17 and 9 percent, respectively), compared to nonresidents (6 and 1 percent, respectively).
- Residents were *more* likely to agree and strongly agree Houston could use more community planning (37 and 40 percent, respectively), compared to nonresidents (24 and 25 percent, respectively).
- Residents were *more* likely to agree Houston could use more landscaping of public spaces than nonresidents (30 percent versus 20 percent, respectively).

Transportation Issues

Level of Importance

Of the nine transportation issues presented in the survey, more respondents considered improved road maintenance very important (62 percent) than any other. Paved roads (38 percent) and more road lighting (36 percent) received the next highest percentages of "very important" ratings. All nine issues were considered very important by at least 20 percent of respondents.

Please indicate how important it is for the City of Houston to support each of the following transportation-related projects...

	Very Important	Somewhat important	Not important	Unsure/ Don't know
Improved road maintenance	62%	27%	5%	6%
More paved roads	38	33	23	6
Improved lighting on road	36	34	23	7
New road between Houston and Port Mackenzie	28	30	30	13
Development of a Hawk Lane bike path	26	29	32	12
Improved street/road signage	25	42	25	8
Public transportation (bus service) between Houston and other parts of the Mat-Su Borough	24	35	31	10
New Alaska Railroad depot/train stop	23	35	30	12
Development of a "Park and Ride" lot for commuters	22	36	32	11

Note: Due to rounding, results may not add to 100 percent.

Differences Between Houston Residents and Nonresident Property Owners

Many of the statistically significant differences between Houston residents and nonresident property owners were related to Houston's roads. The "very important" percentages of the various road issues for residents and nonresidents are as follows:

- Improved road maintenance: 70 percent of residents versus 48 percent of nonresidents.
- More paved roads: 45 percent of residents versus 26 percent of nonresidents.
- Improved road lighting: 38 percent of residents versus 29 percent of nonresidents.

Residents were *more* likely to consider improved street/road signage as not important compared to nonresidents (29 percent versus 19 percent, respectively). Other differences between residents and nonresidents include the following:

- Residents were *more* likely to say public transportation between Houston and the Mat-Su Borough is very important or somewhat important (27 and 38 percent, respectively), compared to nonresidents (16 and 28 percent, respectively).
    - However, residents were *more* likely to say a new Alaska Railroad depot/train stop is not important compared to nonresidents (33 percent versus 23 percent, respectively).
    - Residents also were *more* likely to say development of a "Park and Ride" lot for commuters is not important compared to nonresidents (37 percent versus 24 percent, respectively).
- Residents were *more* likely to say development of a Hawk Lane bike path is very important compared to nonresidents (30 percent versus 19 percent, respectively).

Other Differences

Men were *more* likely than women to say various transportation-related issues were not important. The "not important" percentages of men and women are shown below:

- Improved road lighting: 28 percent not important for men versus 16 percent for women.
- Public transportation between Houston and the Mat-Su Borough: 38 percent of men versus 23 percent of women.
- New Alaska Railroad depot/train station: 34 percent of men versus 23 percent of women.
- Development of Hawk Lane bike path: 40 percent of men versus 22 percent of women.
    - Women were *more* likely to rate a Hawk Lane bike path very important compared to men: 36 percent versus 20 percent, respectively.

There were also statistically significant differences among age groups:

- Young and middle age respondents were *more* likely to rate a new road between Houston and Port MacKenzie as very important compared to older respondents (38 and 34 percent, respectively, versus 23 percent).
- Young respondents were *more* likely to rate the development of a Hawk Lane bike path very important compared to older respondents (41 percent versus 24 percent, respectively).
- Young respondents were *more* likely to rate more paved roads not important (38 percent) compared to middle age and older respondents (both 21 percent).
- Young respondents were *more* likely to rate improved road/street signage not important (48 percent) compared to middle age (27 percent) and older respondents (22 percent).

Highest Transportation-Related Priority

When respondents were asked to identify the single most important priority among the transportation issues listed, improved road maintenance again rose to the top, with 37 percent of respondents saying it is most important. More paved roads and a new road between Houston and Port MacKenzie were considered most important among those on the list by 15 percent and 12 percent of respondents, respectively.

Of the transportation-related projects listed, which one should be the most important priority for the City?

n=335	Percent of Total
Improved road maintenance	37%
More paved roads	15
New road between Houston and Port MacKenzie	12
Improved lighting on road	7
Public transportation (bus service) between Houston and other parts of the Mat-Su Borough	7
Development of a Hawk Lane bike path	6
New Alaska Railroad depot/train stop	4
Development of a "Park and Ride" lot for commuters	3
Improved street/road signage	1
Unsure/Don't know	10

Note: Due to rounding, results may not add to 100 percent.

Answers given for "the most important transportation project" did not vary significantly by subgroups.

Level of Importance

Respondents were asked the importance of seven recreation-related projects/issues in Houston. The percentage of "very important" ratings for the top five recreation issues are all similar (within the statistical margin of error). Combining "very important" and "somewhat important" categories suggests the top issues for recreation are creation of recreation programs for youth and maintenance of existing trails and pathways, which both had a combined rating of 76 percent.

Please indicate how important it is for the City of Houston to support each of the following recreation-related projects…

	Very Important	Somewhat important	Not important	Unsure/ Don't know
Creation of recreation programs for youth	30%	46%	17%	8%
Maintenance of existing trails and pathways	29	47	16	7
More motorized trails and pathways	29	33	30	8
Creation or expansion of indoor recreation facilities, such as an ice rink, swimming pool, or running track	29	32	31	7
Improved public access to lakes	27	43	23	6
More non-motorized trails and pathways	22	34	35	9
Creation of new parks with playground	19	44	30	7

Note: Due to rounding, results may not add to 100 percent.

Differences Between Houston Residents and Nonresident Property Owners

The following are the statistically significant differences between Houston resident respondents and nonresident property owners on recreation-related issues.

- Residents were *more* likely to rate the creation of recreation programs for youth as very important compared to nonresidents (33 percent versus 24 percent, respectively).
- Residents were also *more* likely to rate the creation or expansion of an indoor recreation facility very important compared to nonresidents (32 percent versus 22 percent, respectively).
- Residents were *more* likely to rate the maintenance of existing of trails and pathways not important compared to nonresidents (19 percent versus 12 percent, respectively).
    - However, residents were *more* likely to rate more motorized trails and pathways as very important compared to nonresidents (36 and 17 percent, respectively), and they were *more* likely to rate non-motorized trails and pathways not important (40 percent and 27 percent, respectively).

Other Differences

- Female respondents were *more* likely to rate the creation of new parks with playgrounds very important compared to men (25 percent versus 14 percent, respectively).
- Women were *more* likely to rate maintenance of existing trails and pathways very important compared to men (37 percent versus 24 percent, respectively).
- Men were *more* likely to say more non-motorized trails and pathways were not important compared to women (44 percent versus 24 percent, respectively).
- Middle age respondents were *more* likely to say more motorized trails and pathways were very important compared to older respondents (39 percent versus 25 percent, respectively).
- Young respondents were *more* likely to rate the expansion of indoor recreation facilities very important compared to older respondents (45 percent versus 26 percent, respectively).

Highest Recreation-Related Priority

The four top issues for "most important priority" among the recreation issues listed were creation of recreation youth programs (16 percent), improved public access to lakes (16 percent), creation or expansion of indoor recreation facilities (15 percent), and more motorized trails and pathways (14 percent).

Of the recreation-related projects listed, which one should be the most important priority for the City?

n=335	Percent of Total
Creation of recreation programs for youth	16%
Improved public access to lakes	16
Creation or expansion of indoor recreation facilities, such as an ice rink, swimming pool, or running track	15
More motorized trails and pathways	14
Maintenance of existing trails and pathways	11
More non-motorized trails and pathways	9
Creation of new parks with playground	7
Unsure/Don't know	13

Note: Due to rounding, results may not add to 100 percent.

Differences Between Houston Residents and Nonresident Property Owners

Residents were *more* likely than nonresidents to say more motorized trails and pathways and the creation or expansion of indoor recreation facilities are the most important recreation projects, 18 percent resident versus 8 percent nonresident for trails and pathways, and 17 percent resident versus 10 percent nonresident for indoor facilities. There was no statistically significant difference between residents and nonresidents in their responses to the other recreation options.

Environmental Issues

Level of Support

Respondents were asked about their support of three environmental-related issues. More than two-thirds of respondents (69 percent) were very supportive of the protection of drinking water quality, more than twice the "very supportive" percentages for stricter enforcement of flood plan development regulations (29 percent) and stricter regulation of land near rivers, lakes, and streams (27 percent).

Please indicate how supportive you are for the City of Houston to strengthen each of the following environmental-related issues...

	Very supportive	Somewhat supportive	Not supportive	Unsure/ Don't know
Protection of drinking water quality	69%	20%	6%	5%
Stricter enforcement of flood plain development regulations	29	36	25	11
Stricter regulation of land near rivers, lakes, and streams	27	37	27	9

Note: Due to rounding, results may not add to 100 percent.

Differences Between Houston Residents and Nonresident Property Owners

With respect to environmental issues,

- More residents were very supportive of the protection of drinking water quality than nonresident property owners (78 percent versus 52 percent, respectively).
- Residents were *more* likely to be very supportive of flood plain development regulations compared to nonresidents (33 percent versus 21 percent, respectively).

Other Differences

- More men said they were not supportive of stricter regulation of land near water sources than women (33 percent versus 19 percent, respectively), and stricter enforcement of flood plain development (29 percent versus 19 percent, respectively).
- More women were very supportive of drinking water quality compared to men (76 percent versus 66 percent, respectively).

Economic Development Initiatives

Level of Importance

When asked the importance of seven economic development initiatives, more than half of respondents (52 percent) said supporting extension of utility services is very important, followed by recruiting new business (42 percent), and supporting natural resource development (35 percent). All issues were considered very important by at least one-quarter of respondents; however, developing a "town center," developing a tourism attraction, attracting more tourism, and attracting more industrial development were all described as not important by more than one-quarter of respondents as well.

Please indicate how important it is for the City of Houston to support new development or expansion in each of the following areas of economic development…

	Very Important	Somewhat important	Not important	Unsure/ Don't know
Supporting extension of utility services	52%	30%	12%	6%
Recruiting new business	42	40	13	5
Supporting natural resources development in the area	35	34	22	8
Developing a "town center" with pedestrian-friendly facilities	31	33	28	8
Developing a tourism attraction along the Little Susitna River	29	33	31	8
Attracting more tourism development	27	39	29	6
Attracting industrial development along the railroad tracks	26	39	26	9

Note: Due to rounding, results may not add to 100 percent.

Differences Between Houston Residents and Nonresident Property Owners

Residents are *more* likely to rate several of the economic development issues not important compared to nonresidents:

- Attracting industrial development along the railroad tracks: 31 percent of residents versus 17 percent of nonresidents rated it not important.
- Attracting more tourism development: 35 percent of residents versus 16 percent of nonresidents rated it not important.
- Developing a tourism attraction along the Little Susitna River: 36 percent of residents versus 21 percent of nonresidents.

- Developing a "town center" with pedestrian-friend facilities: 32 percent of residents versus 20 percent of nonresidents.
- Recruiting new business: 15 percent of residents versus 8 percent of nonresidents.

Residents are *more* likely to say the extension of utility services is very important compared to nonresidents, 55 percent of residents compared to 44 percent of nonresidents.

Other Differences

- Young respondents were *more* likely to say recruiting new business is very important compared to middle age and older respondents (62 percent versus 44 and 38 percent, respectively).
- Young respondents were *more* likely to say supporting natural resource development is very important compared to older respondents (56 percent versus 31 percent).
- Middle age respondents were *more* likely to say supporting the extension of utility services is very important compared to older respondents (64 percent and 46 percent, respectively).
- Male respondents were *more* likely than women to say attracting more tourism development is not important (32 percent versus 23 percent, respectively) and developing a tourism attraction along the Little Susitna River is not important (35 percent versus 22 percent, respectively).

Highest Economic Development Priority

When asked to identify the single most important priority among the economic development initiatives, 30 percent of respondents said supporting extension of utility services is most important. Recruiting new businesses and developing a "town center" followed, with 16 percent and 12 percent of respondents respectively.

Of the economic development projects listed, which one should be the most important priority for the City?

n=345	Percent of Total
Supporting extension of utility services	30%
Recruiting new business	16
Developing a "town center" with pedestrian-friendly facilities	12
Attracting industrial development along the railroad tracks	10
Supporting natural resources development in the area	9
Developing a tourism attraction along the Little Susitna River	6
Attracting more tourism development	6
Unsure/Don't Know	12

Note: Due to rounding, results may not add to 100 percent.

Differences Between Houston Residents and Nonresident Property Owners

- Residents were more likely than nonresidents to say supporting extension of utility services is the most important economic development initiative (34 percent versus 21 percent, respectively).

There was no other statistically significant difference in responses between residents and nonresidents, or by age or gender.

Level of Importance

When asked the importance of four city services, eight in ten respondents said continuing to provide fire and emergency services and road maintenance are very important (80 percent and 79 percent, respectively). All four services were considered very important by more than one-third of respondents.

Please indicate how important it is for the City of Houston to continue providing the following services…

	Very Important	Somewhat important	Not important	Unsure/ Don't know
Fire and emergency services	80%	16%	1%	4%
Road maintenance	79	16	2	4
Community planning	43	38	12	7
Animal control and shelter	36	38	20	6

Note: Due to rounding, results may not add to 100 percent.

Differences Between Houston Residents and Nonresident Property Owners

Residents were *more* likely to rate nearly all of the city services very important compared to nonresidents. The "*very important*" percentages of residents and nonresidents are shown below for the various services:

- Road maintenance: 84 percent of residents rated it *very important* versus 67 percent of nonresidents.
- Fire and emergency services: 84 percent of residents versus 72 percent of nonresidents.
- Community planning: 46 percent of residents versus 36 percent of nonresidents.

On the remaining city service, residents were *more* likely to consider animal control and shelter not important compared to nonresidents (22 percent versus 13 percent, respectively).

- Male respondents were also *more* likely to consider animal control and shelter as not important compared to female respondents (26 percent versus 10 percent, respectively).

Willingness to Pay for City Services or Facilities

Approximately one-third of respondents said they were very willing to pay for improved city fire and emergency response (35 percent) and improved road maintenance (34 percent) through increased property taxes. Only 6 percent of respondents were very willing to pay for cemetery development and maintenance, and 58 percent were not willing to pay for this service at all.

Please indicate how willing you are to pay for the following suggested new or improved City of Houston services or facilities through increased property taxes…

	Very willing	Somewhat willing	Not willing	Unsure/ Don't know
Improved city fire and emergency services	35%	44%	17%	4%
Improved road maintenance	34	40	21	5
Funding of Public Safety Officers	26	29	40	6
Cemetery development and maintenance	6	24	58	12

Note: Due to rounding, results may not add to 100 percent.

Differences Between Houston Residents and Nonresident Property Owners

Residents were *more* likely to say they are not willing to pay for funding for public safety officers through increased property taxes than nonresidents (45 percent versus 30 percent, respectively), and not willing to pay for cemetery development and maintenance (63 percent versus 48 percent, respectively).

Other Differences

Men were *more* likely than women to say they are not willing to pay for all the city services through increased taxes. The "*not willing*" percentages of male respondents and female respondents are shown below:

- Funding of public safety officers: 46 percent of men said they are not willing versus 31 percent of women.
- Improved city fire and emergency services: 22 percent of men versus 9 percent of women.
    - *Conversely*, women were *more* likely to say they are very willing to pay for this improved fire and emergency services than men (43 percent versus 31 percent, respectively).
- Cemetery development and maintenance: 63 percent of men versus 50 percent of women.
- Improved road maintenance: 24 percent of men versus 17 percent of women.
    - *Conversely*, women were *more* likely to say they are very willing to pay for improved road maintenance than men (41 percent versus 28 percent, respectively).

Solid Waste Fee

Respondents were evenly split between very willing (28 percent), somewhat willing (30 percent), and not willing (30 percent) to pay a fee for using a solid waste transfer station.

Please indicate how willing you are to pay a fee to drop off your garbage at a solid waste transfer station in Houston…

n=345	Very willing	Somewhat willing	Not willing	Unsure/ Don't know
Solid waste drop off fee	28%	30%	30%	12%

Differences Between Houston Residents and Nonresident Property Owners

Residents were *more* willing to pay a garbage drop off fee than nonresidents, 31 percent said they are very willing versus 22 percent, respectively.

Private Property Regulation

Perceptions on Land Use Regulations

Approximately four in ten respondents said there is just enough regulation of private-property land use, slightly more than two in ten said there is too much regulation, and about another two in ten said there is too little regulation. The remaining one-fifth of respondents were unsure/do not know.

In Houston, do you feel there is too much, too little, or just enough private property regulation?

n=356	Percent of Total
Too much regulation	21%
Too little regulation	19
Just enough regulation	41
Unsure/Don't Know	20

Note: Due to rounding, results may not add to 100 percent.

Differences Between Houston Residents and Nonresident Property Owners

- Twenty-four percent of residents said there is too much regulation compared to 14 percent of nonresidents, while 45 percent of residents said there is just enough regulation compared to 33 percent of nonresidents.
- Men were *more* likely to say there is too much private property regulation compared to women (26 percent versus 11 percent).

Respondent Demographics

This section provides a demographic profile of survey respondents, including age, gender, household size and characteristics, and educational attainment. Demographic data is presented for the total sample, as well as for Houston residents and nonresident property owners.

Age and Gender

Fifty-nine percent of respondents were male, and 41 percent were female.[2] The average age of all respondents was 56.7 years. Houston resident respondents had an average age of 54.8 years, and the average age of nonresident property owners was 60.2 years.

Age and Gender

	All Responses	Houston Residents	Nonresident Property Owners
Age	**n=343**	**n=223**	**n=114**
Less than 25 years	1%	1%	1%
25 to 34 years	8	11	2
35 to 44 years	8	8	7
45 to 54 years	24	23	24
55 to 64 years	32	33	31
65+ years	28	24	36
Average age	**56.7 years**	**54.8 years**	**60.2 years**
Gender	**n=356**	**n=229**	**n=121**
Male	59%	59%	59%
Female	41	41	41

Note: Due to rounding, results may not add to 100 percent.

[2] In comparison, the U.S. Census American Community Survey 2009-2013 Five-Year Average gender breakout for Houston was 51 percent male and 49 percent female.

Houston Resident Household Characteristics

Average household size for Houston resident respondents was 2.6 people.[3] For households with children under age 18, the average number of children in the household was 2.1.

Household Size and Children in the Houston Household

	Houston Residents
Household Size	**n=223**
0	0%
1	17
2	47
3	12
4+	22
Average household size	**2.6 people**
Children in Household**	**n=229**
0	69%
1	12
2	9
3	5
4+	3
Average # children for households with children	**2.1 children**
Average # children for all households	**0.6 children**

Note: Due to rounding, results may not add to 100 percent.

[3] In comparison, the U.S. Census American Community Survey 2009-2013 Five-Year Average average household size for Houston was 2.61 (+/-0.35).

Household Income

The median household income for all respondents was $63,000, and that did not vary among residents and nonresidents.[4]

Annual Household Income (Self-Reported)

	All Responses n=312	Houston Residents n=207	Nonresident Property Owners n=100
Less than $15,000	7%	7%	6%
$15,001 to $25,000	8	9	6
$25,001 to $35,000	9	12	4
$35,001 to $50,000	13	15	8
$50,001 to $75,000	23	21	27
$75,001 to $100,000	17	17	17
Over $100,000	23	18	32
Median household income	**$63,000**	**$63,000**	**$63,000**

Note: Due to rounding, results may not add to 100 percent.

Educational Attainment

The educational attainment of Houston resident respondents and nonresident property-owner respondents are similar in most respects. Nonresident property owners were slightly more likely to have a bachelor's degree than Houston residents (29 percent versus 18 percent, respectively).

Educational Attainment

	All Responses n=352	Houston Residents n=228	Nonresident Property Owners n=119
Less than high school degree	3%	3%	3%
High school diploma/GED	16	18	13
Vocational/technical certificate	9	11	6
Some college	28	28	28
Associate's degree	9	10	7
Bachelor's degree	22	18	29
Master's degree	12	11	12
Doctorate	1	1	3

Note: Due to rounding, results may not add to 100 percent.

[4] In comparison, the U.S. Census American Community Survey 2009-2013 Five-Year Average median household income for Houston was $51,974 (+/-$8,656).

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APPENDIX D.
COMMUNITY IMPACT ASSESSMENT & APPENDICES

City of Houston

Community Impact Assessment

Final Report

Prepared by R&M Consultants, Inc. for the City of Houston

October, 2015

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DRAFT

CITY OF HOUSTON COMMUNITY IMPACT ASSESSMENT

EXECUTIVE SUMMARY

The City of Houston is conducting a Community Impact Assessment in conjunction to the update of the city's Comprehensive Plan. The Matanuska-Susitna Borough wrote the city's Comprehensive Plan in 1999 and its amendment in 2003, and this is the first Community Impact Assessment (CIA) and Comprehensive Plan revision conducted by the City of Houston. Recent increases in population growth, demand for services, as well as major transportation infrastructure projects underway within or adjacent to the City of Houston have prompted the City to prepare and plan for the opportunities for change in the community's infrastructure, economy, and development. The following CIA will assist the planning process by analyzing potential impacts major transportation projects may have on the City of Houston and its quality of life. The evaluation will allow the city and its residents to prepare for positive impacts and mitigate any negative potential impacts within their community and assist Houston in maintaining its unique community character.

The process used to develop the CIA is based on the process defined in the US Department of Transportation Federal Highway Administration's (FHWA) "Community Impact Assessment; A Quick Reference for Transportation." The study area assessed is the City of Houston as defined by its existing boundaries, including the newly annexed Knikatnu Inc. land. A community profile and the existing conditions report on Houston are used as a baseline for considering impacts. Analysis of the relationship between the proposed transportation projects and the City of Houston consists of identifying and investigating impacts through eleven impact categories.

Categories used to assess impacts of the transportation projects include:

- social and psychological aspects;
- physical aspects;
- visual environment;
- land use;
- economic conditions;
- traffic and circulation;
- mobility and access;
- provision of public services;
- safety, displacement; and
- environmental justice.

Each category is assessed for direct (temporary and long-term), indirect, and cumulative impacts for each alternative and community goals and values identified through various public involvement outreach methods, including open houses and interviews, were considered whenever possible.

Four transportation alternatives are assessed in this CIA including a No Build Alternative. The No Build scenario, Alternative One in the CIA, is evaluated for the direct and indirect impacts that are incurred without action or development and serves as a standard with which to compare impacts of action alternatives to. The second project assessed is the Parks Highway Milepost 44-52

Upgrade. While the majority of the proposed upgrades are occurring outside City boundaries, the terminus of the project is at Big Lake Road where an intersection traffic light is proposed, is within City boundaries and has the potential to impact land use, traffic and circulation, economic conditions and more within Houston.

Alternative three in the CIA is the Port MacKenzie Rail Extension. Segments of the rail extension are currently in the construction phase and will connect Port MacKenzie to the ARRC mainline north of Miller's Reach Road in Houston upon its completion. Newly annexed Knikatnu Inc. land into Houston is crossed by the rail extension. Currently, the ARRC does not intend to develop any additional facilities in Houston other than the rail line, though it was expressed by ARRC that the idea of a loading facility would be entertained if private development initiated the establishment of such a facility. The fourth alternative analyzed in this CIA is a Port MacKenzie to Parks Highway Roadway Corridor. This alternative is conceptual but has been considered since the planning phases of the Port MacKenzie rail extension. The roadway corridor analyzed parallels the rail extension and is based on historical studies supporting the rail extensions development and the City of Houston's 1982 Transportation Plan Map.

The transportation alternatives were chosen for assessment based on their potential to have significant impacts on the City of Houston, both positive and negative. After analyzing each alternative using the FHWA based methodology, minimal to null impacts were identified at large for the City of Houston. The Rail Extension and the conceptual roadway corridor from Port MacKenzie to the Parks Highway would have minimal impacts for the City of Houston. This is largely because the rail extension and roadway corridor would be constructed on currently vacant land, resulting in minimal change. Additional facilities supporting economic growth and development are not a part of the rail extension. Services and amenities necessary for the local economy to benefit from increased traffic along the Parks Highway as a result of the Port-to-Parks roadway are not yet established. While the Parks Highway MP 44-52 Upgrade is proposed to improve travel time throughout that corridor, it does not have any cumulative impacts to the land use or development within Houston, according to FHWA guidelines. Significant adverse impacts were not identified for any of the alternatives.

Despite a lack of short-term direct impacts, members of the community and identified stakeholders believe the City of Houston is poised for expansion and has the right attributes to turn the community into a place that would attract residents, new business, and visitors. While the alternatives assessed may not directly produce a significant change in the community, the long-term cumulative impacts have the potential to be significant. Changes in land use and traffic volumes may encourage new business development, bring more residents and the Rail Extension could provide a more attractive market for industrial and natural resource development. Houston is becoming a key connection point for material goods as well as people traveling between Interior and Southcentral Alaska and that provides greater growth potential for the City. If new developments or information emerge pertaining to the alternatives assessed in this CIA, additional analysis will be conducted in order to provide the most reasonably to-date analysis on anticipated impacts for the City of Houston.

Table of Contents

1. INTRODUCTION 4
1.1 Relationship to the Comprehensive Plan 4
1.2 Process Used in this Study 5
1.3 Study Area 5

2. COMMUNITY PROFILE 2
2.1 Community History and Background 2
2.2 Physical Environment 2
2.3 Population and Demographics 3
2.4 Economics 6
2.5 Physical and Social Community Characteristics 8
2.6 Planned and Neighboring Community Development 16

3. TRANSPORTATION ALTERNATIVES 17
3.1 Alternative 1: No Build Alternative 17
3.2 Alternative 2: Parks Highway MP 44-52 Upgrade (Lucus Road through Big Lake Road) 18
3.3 Alternative 3: Port MacKenzie Rail Extension 20
3.4 Alternative 4: Port MacKenzie to Parks Highway Roadway Corridor 23

4. ALTERNATIVES ANALYSIS METHODOLOGY 28
4.1 The No Build Alternative 28
4.2 Impact Categories 28
4.3 Assessing Impact Categories 29
4.4 Public Involvement 31
4.5 Regulatory Framework 31
4.6 Direct Impacts (Temporary and Long-term) 31
4.7 Indirect Impacts 32
4.8 Cumulative Impacts 32

5. ALTERNATIVES ANALYSIS: 33
5.1 Alternative 1: No Build Alternative 33
5.2 Alternative 2: Parks Highway MP 44-52 Upgrade 35
5.3 Alternative 3: Port MacKenzie Rail Extension 39
5.4 Alternative 4: Port Mackenzie to Parks Highway Roadway Corridor 44

6. OPPORTUNITIES, LIMITATIONS AND MITIGATIONS IDENTIFIED: 49

7. SUMMARY: 51

8. FUTURE IMPACTS ASSESSMENT RECOMMENDATIONS: 52

9. REFERENCES: 53

Table of Figures

Figure 1 Study Area with Knikatnu Annex 1
Figure 2. Houston Population, 1990 and 2000-2013 4
Figure 3. Houston Population by Age Category and Median Age, 2000 and 2013 4
Figure 4. Current Land Use 13
Figure 5. Current Zoning 15
Figure 6. Parks Highway Upgrade MP 44-52 Project Area 19
Figure 7. Port MacKenzie Rail Extension in Houston 21
Figure 8. Port MacKenzie Rail Extension Project, sourced from portmacrail.com 22
Figure 9. 2003 Rail Corridor Study Alternatives 24
Figure 10. Port MacKenzie to Parks Highway Roadway Corridor 26
Figure 11. City of Houston 1982 Transportation Plan Map 27
Figure 12. Port MacKenzie to Parks Highway Roadway Corridor Traffic Shift 47

Appendices

Appendix A. Public Involvement Summary 61
Appendix B. Economic Development Opportunities: Perspectives of Community Stakeholders 68
Appendix C. Traffic Impacts of Major Planning Projects 87

DRAFT

1. INTRODUCTION

The City of Houston is conducting a Community Impact Assessment (CIA) to evaluate potential effects transportation projects could have on the community of Houston and its quality of life. The CIA will serve as a planning tool and reference for the City of Houston and the Matanuska-Susitna Borough by ensuring the needs, opinions, vision, and goals of the community are acknowledged and well documented to help guide compatible growth and development within and around Houston.

Transportation projects, hereafter referred to as alternatives, assessed in this CIA are: the Parks Highway Milepost (MP) 44-52 Upgrade project, the planned rail extension from Port Mackenzie to the existing Alaska Railroad mainline at Houston, and a conceptual roadway connection from Point MacKenzie Road to the Parks Highway at Houston.

Houston is a growing rural residential community which has developed around the Parks Highway, a National Highway Systems Highway bisecting the community. Each alternative has the potential to significantly impact the socioeconomics, physical environment, and future growth and development of Houston. The CIA will identify potential impacts and recommend mitigation to impacts that conflict with the needs and goals of the community. The documented findings will provide usable information for future development decisions-making processes that will help the community maintain its high quality rural residential living environment, and provide a useful tool for accommodating orderly growth.

1.1 Relationship to the Comprehensive Plan

In conjunction to the CIA, the City of Houston is in the process of updating its Comprehensive Plan and is conducting a Parks Highway Corridor Study in partnership with the Alaska Department of Transportation. Comprehensive Plans are a tool to plan for future growth, development, and constant change within a community. This CIA will support an effective comprehensive plan by providing city decision makers with information on potential positive and negative impacts major transportation projects could have on the city, assisting the development of effective policies that reflect the community's best interests.

Houston's natural resources provide countless recreational opportunities and attractions. Houston is defined by its rural-residential character and its abundance of available land, popular recreation sites within its "Lakes District", and proximity to the Mat-Su commercial center. There is potential for residential, commercial, and industrial development within Houston and residents are requesting an increase in services and amenities. Planning for development that aligns with the community's rural-residential character and improves residents' quality of life is the goal of the Comprehensive Plan update and the CIA.

1.2 Process Used in this Study

The process used to develop the City of Houston's Community Impact Assessment (CIA) is based on the process defined in the US Department of Transportation Federal Highway Administration's (FHWA) "Community Impact Assessment; A Quick Reference for Transportation". Generally, the process consists of defining the project area, developing a community profile of existing conditions, identifying alternatives, analyzing the impacts for each alternative, identifying solutions for any adverse impacts and documenting the findings.

Transportation alternatives were identified through research of current and planned major transportation infrastructure projects within or around Houston. They were selected for analysis based on their potential to have significant impacts on Houston and their proximity to the city. Impacts analyzed include changes in:

- social and psychological characteristics of the community;
- physical aspects;
- visual environment;
- land use;
- economic conditions;
- mobility;
- access;
- traffic and circulation;
- provision of public services; and
- safety.

The CIA will also analyze any environmental justice (EO 12898) concerns and the potential displacement of residents, businesses or facilities. Environmental justice is the fair and equal treatment and meaningful involvement of all peoples regardless of whom they are or where they come from with respect to development, implementation, and enforcement of policies, laws and regulations.

The public plays a crucial role throughout the process by serving as a dynamic source of information. Public involvement for the CIA included meetings with the City of Houston CIA and Comprehensive Plan Revision Steering Committee, public meetings and open houses, newsletters, and a project website. Interviews were conducted as part of the economic analysis for the CIA and Comprehensive Plan Revision and key stakeholders were actively involved in the assessment review process. *See Appendix A for Public Involvement materials.*

1.3 Study Area

The area of study for the Community Impact Assessment is the City of Houston as defined by its existing boundaries, from milepost 52 of the Parks Highway to milepost 62, and includes the newly annexed 1,555 acres of Knikatnu, Inc. land. See Figure 1 City of Houston. The annexation was approved by the Local Boundary Commission on April 15, 2015.

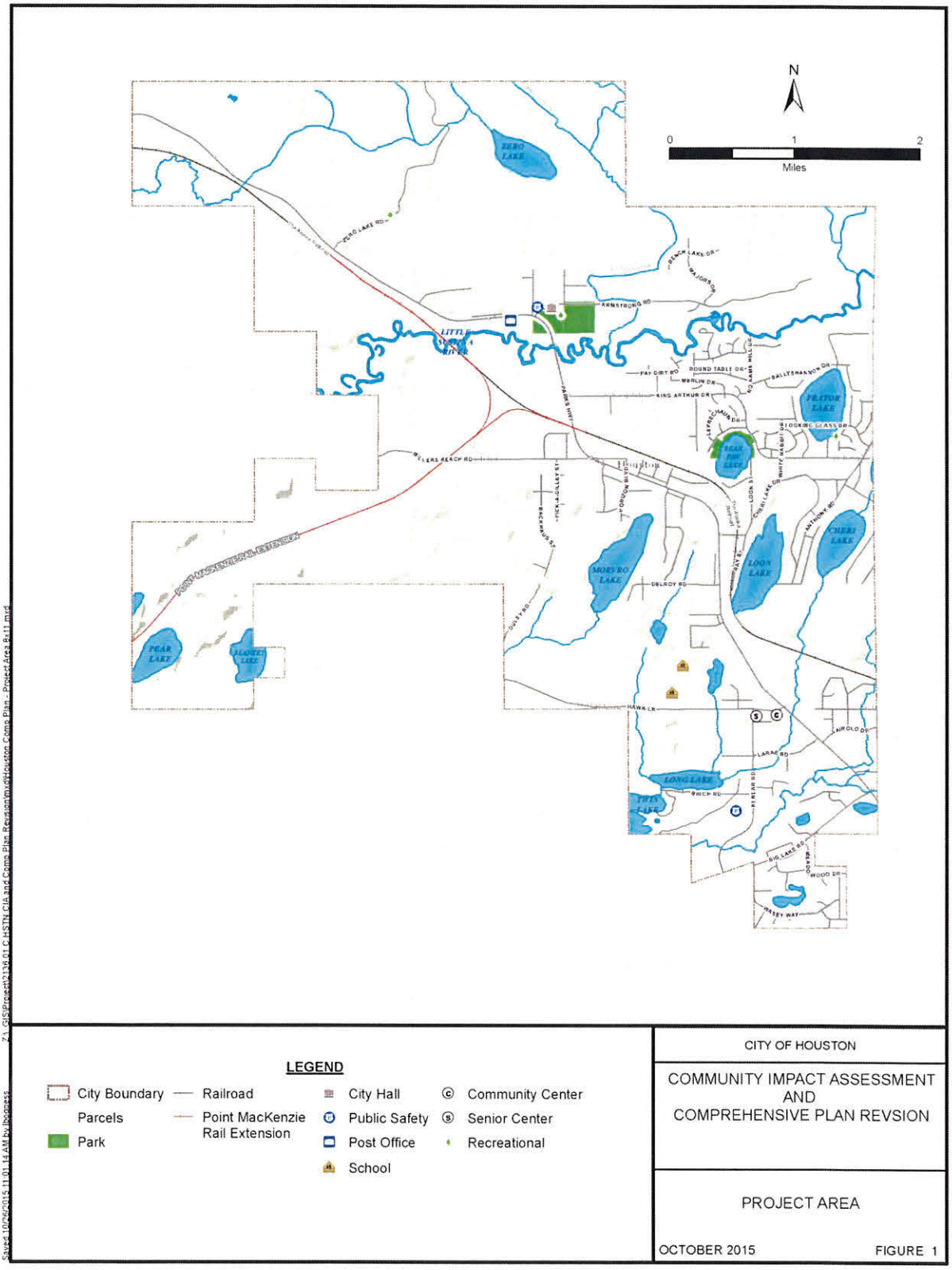


Figure 1 Study Area

2. COMMUNITY PROFILE

The community profile establishes an understanding of the City of Houston's history, existing conditions, anticipated conditions, and of the values residents of the community hold. An understanding of these community elements provides the basis for determining potential affects any given transportation action may have on the City of Houston.

2.1 Community History and Background

Houston, Alaska was first listed on a 1917 blueprint Alaska Railroad map as "Houston Siding," named after Tennessee Congressman William Cannon Houston. The City's origins began with natural resource development and the Herning Trail (now Willow Creek Sled Trail) for freighting supplies to the Willow Creek Mining District, according to the State of Alaska's Community and Regional Affairs database. Several coal mines were developed in the area in 1917-1918 and a railroad spur was constructed that supplied coal to Anchorage and the LaTouche Mining Company in Prince William Sound. The coal from Houston was heavily mined through World War II, after which the mine operations shut down. In 1953-1954 gravel roads and power lines were extended west of Wasilla, and Houston quickly settled. Houston incorporated as a third-class city in 1966 and was reclassified in 1973 to a second-class city.

2.2 Physical Environment

Soils

Soils in Houston generally range from well-drained, well-sorted gravel to hydric wetland soils. A number of small lakes dot the central and southern portions of the community limits and are bordered by glacial moraines consisting of non-sorted glacial till. In general, soils located south of the Little Susitna River and east of the Parks Highway are well drained sand and gravels of pitted outwash and till material. Larger intermittent areas of poorly drained soils and peat bogs occur to the west of the Parks Highway.

The northern topography is characterized by rolling hills and perched silty areas. These soils are fine grained and poorly draining. Development within the area is sparse with only a few gravel pits cut in glacial moraine and esker/kame complexes

Soils in the central portion of Houston are suitable for cultivated crops and agricultural development. Portions of these areas are presently zoned for low density residential and agricultural use.

Waterbodies

Approximately 864 acres, or 5%, of Houston consists of surface waters. The most notable is the Little Susitna River which crosses the Parks Highway in the middle of the community. This river originates in the Talkeetna Mountains in Hatcher Pass and flows southwest ultimately into Cook Inlet. The Little Susitna River, Coho Creek, and a number of contributing unnamed streams are listed in the Anadromous Waters Catalog.

Several popular lakes exist within the City limits including Zero Lake, Bear Paw Lake, Prator Lake, Frog Lake, Cheri Lake, Loon Lake and Morvro Lake. Bear Paw, Prator, Morvro, and Loon Lake are stocked annually with various fish species.

According to "Alaska's Final 2010 Integrated Water Quality Monitoring Report" (July 15, 2010), there are no designated "Impaired Waterbodies" within the city of Houston.

Wetlands

A number of riverine, lacustrine, and palustrine wetlands are present within Houston. Most wetlands are riparian buffers along the Little Susitna River, Coho Creek and surrounding ponds. Several other wetlands are present in low lying areas between Zero Lake and the Little Susitna River.

Floodplains

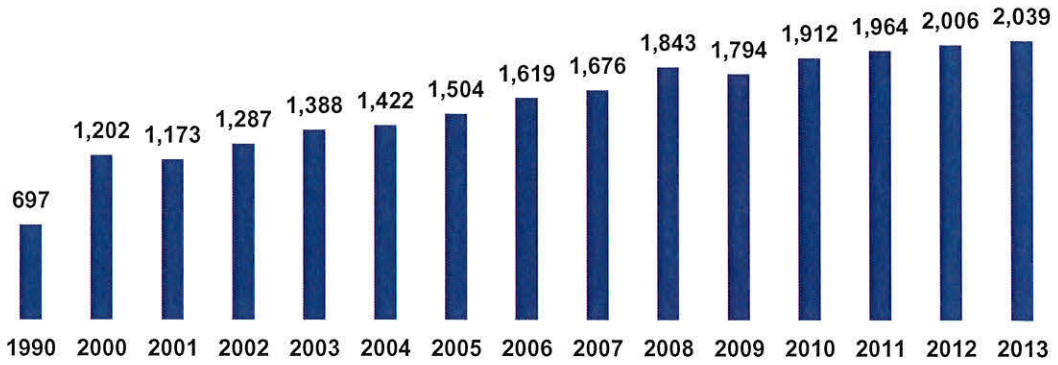
The Federal Emergency Management Agency (FEMA) completed a Flood Insurance Study and remapped the Special Flood Hazard Areas for the Mat-Su Borough. The Borough adopted the new floodplain mapping in 2011. The primary floodplain surrounds the Little Susitna River. A floodplain development permit form the Borough is required prior to building or development within a federally designated flood hazard area.

2.3 Population and Demographics

Trends in Population Growth and Demographics:

Houston has experienced steady population growth over the past two decades; its 2013 population of 2,039 is almost triple that of 1990 which had 697 residents (see figure 2). This growth rate is higher than that of the entire Mat- Su Borough, which grew 2.4 times in size from 1990 to 2013.

Figure 2. Houston Population, 1990 and 2000-2013

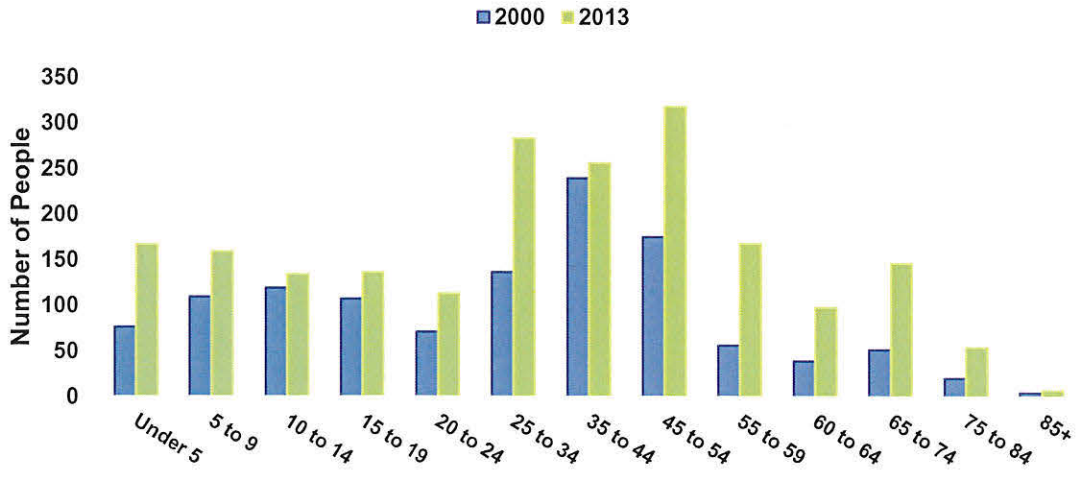


Population growth in the Mat-Su is projected to slow from the current annual growth rate of 3.6% to less than 2% by the year 2035. Since Houston is tied to the Mat-Su economy and has comparable demographics, McDowell Group projects that Houston's population growth will reflect that of the larger Mat-Su, growing approximately 2% over the current period to 2035. With this growth rate, the City of Houston would grow by about 50% of its current population level to slightly more than 3,100 residents in 2035.

Age

The median age of Houston residents in 2013 was just over 36 years of age. This is slightly higher than the average age for the Mat-Su Borough and Alaska, which have median ages of 35 and 34 years respectively. The majority of the population growth has occurred in the older age cohorts.

Figure 3. Houston Population by Age Category and Median Age, 2000 and 2013



Race

The majority of Houston's residents, 87%, self-identify as White. About 4% of Houston residents identify themselves as American Indian and Alaska Native and the remaining 9% of Houston residents identify as multi-racial. These categories reflect the five year average distribution from 2009-2012.

Household Income

The median household income in the City of Houston is almost $60,000, which is about $10,000 less than the median household income in the Mat-Su Borough and the state. Per capita income averaged slightly more than $25,000, less than the $30,000 found in the Mat-Su Borough and $32,000 for Alaska.

Approximately 12 percent of families and 16 percent of individuals in Houston live below the federal poverty line. According to 2014 Federal guidelines for Alaska, a household of four making less than $29,440 or an individual with an income of less than $14,350 are considered living in poverty. There are approximately 101 households that receive public assistance and 118 households utilize the Supplemental Nutrition Assistance Program (SNAP).

Educational Attainment

Availability of Facilities: Two schools are located in separate buildings within Houston: Houston Middle School and Houston High School. Elementary school age students currently take a bus to the nearby elementary schools, namely Big Lake Elementary and Willow Elementary School.

According to the U.S. Census and American Community Survey, approximately 90% of Houston's population had a high school degree or higher with 17% holding a bachelor's degree or higher. Educational attainment has increased since the 1990s, see Table 1.

The Household Opinion Survey conducted by the McDowell Group for the City of Houston Comprehensive Plan and CIA in 2014 suggests that 18% of Houston residents have a bachelor's degree.

Table 1. Houston Educational Attainment, Population 25 Years and Over, 2000 and 2008-2012 Five- Year Average

	2000	2008-2012	2008-2012 Margin of Error
High school, no diploma	16%	11%	+/-5%
High school diploma or GED		36	+/-6
Some college		31	+/-5
Associate's degree		5	+/-2
Bachelor's degree		9	+/-4
Graduate or professional degree		8	+/-4

Note: Columns may not add to 100 percent due to rounding.
Source: U.S. Census and American Community Survey.

Employment

In 2012, Alaska Department of Labor and Workforce Development (ADOLWD) estimated there were 768 residents over age 16 employed in Houston, with total annual wages of $26.5 million. Most workers were employed in the private sector (85 percent), followed by local government (11 percent), and state government (4 percent). The top four industries in terms of employment included Trade (retail and wholesale), Transportation and Utilities (22 percent), Education and Health Services (16 percent), and Construction (13 percent).

In addition to data compiled by the State of Alaska, the American Community Survey offers insight into employment in Houston. According to these data, 782 residents over age 16 were employed and 166 unemployed. The unemployment rate is estimated to be 18 percent. Private wage and salary workers made up 80 percent of employed, followed by government workers (19 percent) and self-employed workers (7 percent). The industries with the highest level of employment were Retail Trade (17 percent), Educational, Health and Social Services (13 percent), Arts, Entertainment, Recreation, Accommodation and Food Services (11 percent); and Agriculture, Foresting, Hunting and Fishing, and Mining (11 percent). Many residents are employed outside of Houston.

Disabled Groups

According to the American Community Survey, about 12% of the civilian population in the Mat-Su Borough is estimated to have a disability. It is assumed that Houston generally reflects the greater Mat-Su in this trend. Services for disabled groups are extremely limited with the City with most persons receiving care in Wasilla or Anchorage.

Alaska Native Entities

Knikatnu, Inc. and Cook Inlet Region, Inc. are adjacent land owners to the City of Houston. Some properties owned by CIRI and Knikatnu are within the City of Houston boundaries and the roadways on those properties are managed and owned by the City but are listed within the BIA TTP inventory.

2.4 Economics

Economic Base

The economic base for the City of Houston is made up of local tax revenues including sales tax, property tax, and motor vehicle tax, licenses and permits, service fees, and income from outside sources. Collectively the City of Houston has an annual budget of less than one million dollars. Houston's largest expenses are for road service and maintenance and providing fire services.

Seasonal tourism and travel along the Parks Highway provides increased revenue opportunities for the City of Houston. Increasing recreational tourism has been identified as a method of establishing a larger economic base, along with commercial and industrial development along transportation corridors.

Taxes

The City of Houston generates income from local sales taxes, property taxes, and motor vehicle taxes. The current sales tax rate is 2% and the City has budgeted for anticipated revenue of $151,500 in sales tax for the fiscal year 2015. Property taxes are anticipated to provide $361,607 in income to the City for the same fiscal year. Overall, the tax base in Houston is proposed to provide $526,007 in revenues to the City. Residents have stated that an appeal of Houston is its affordable property values; allowing first time homeowners and young families the opportunity to invest.

Houston Businesses

There are 82 business licenses that list their physical address in Houston and are considered active. When filing for a business license, a company determines the North American Industrial Classification System code that best fits with the service they plan to offer. While not completely accurate, this classification system offers some insight into the structure of a local private sector economy. See Table 2 for the composition of businesses in Houston by business type.

Table 2. Composition of Houston Businesses, 2014

2 Digit NAICS Code	Description	Number of Houston Businesses
11	Agriculture, Forestry, Fishing and Hunting	1
23	Construction	11
31	Manufacturing	4
42	Trade	15
48	Transportation and Warehousing	5
53	Real Estate, Rental and Leasing	5
54	Professional, Scientific and Technical Services	5
56	Administrative, Support, Waste Management and Remediation Services	6
61	Educational Services	1
62	Health Care and Social Assistance	3
71	Arts, Entertainment and Recreation	5
72	Accommodation and Food Services	4
81	Services	17
TOTAL		82

The North America Industrial Classification System (NAICS) is a taxonomy that categorizes businesses by sector of activity.

During the summer months, traffic through Houston tends to increase. A number of businesses are sustained by this traffic because some travelers stopped to eat a meal, to rent RV space, or purchase fireworks. The City of Houston has the largest concentration of businesses selling fireworks in Alaska. The Little Susitna River is an attraction for anglers as well as river adventurers during the summer months.

At this time, there is no grocery store in Houston: typically residents will travel to Wasilla or Big Lake for their shopping needs. No medical clinics or facilities are in operation within Houston. The closest hospital is Mat-Su Regional Medical Center in Wasilla, along with a full suite of dental, chiropractic and other health services. Currently no gas stations exist within the Houston City limits.

2.5 Physical and Social Community Characteristics

Community Values and Issues (from the 2003 Comprehensive Plan Update, Futures Workshop, Household Opinion Survey and Existing Conditions Report)

The City of Houston is a rural-residential community. Its abundance of available land, popular recreation sites within the "Lakes District" of Houston, and proximity to the commercial center of the Mat-Su Borough has made it a desirable area which has experienced consistent growth. There is potential for residential, commercial, and industrial development within Houston and residents are open to limited development of amenities to enhance their quality of life as long as the city maintains the rural-residential character and preserves the recreational opportunities and ecology within Houston. Finding a balance between development for amenities such as a medical facility, pharmacy, daycare provider, or grocery store and maintaining the current community character is a top priority for the City moving forward.

The City of Houston values its unique identity, independence, rural and recreational lifestyle, affordability, and family-friendliness.

Community Goals (from the 2003 Comprehensive Plan Update)

The goals and objectives of the community play a vital role in assessing the impacts of each alternative. The goals and objectives of the community, as stated in the amended City of Houston Comprehensive Plan (Mat-Su Borough 2003), are as follows:

Primary Goal:
To maintain the high quality residential living environment that currently exists in Houston and to continue to take advantage of the characteristics of the community's rural setting. The community should work toward encouraging a moderate level of growth which will provide an economic

base in Houston adequate to allow provision of employment opportunities in the area and to avoid becoming dependent upon external governmental or economic factors and activities.

Economic Goal:
To help develop a broadly-based economy that is responsive to the requirements of the community by providing opportunities for employment, commercial service and economic growth while maintaining an economical, aesthetically high standard of living not in conflict with established residential, commercial and industrial development goals.

Land Use Goal:
To develop a realistic and responsive land-use plan for Houston, based upon the goals and objectives of the community as well as the economic, environmental and social characteristics of the area.

Recreational Goal:
To provide a broad spectrum of recreational opportunities for all segments of the community and for visitors who come to the community for recreational purposes, while at the same time develop and maintain a neighborhood-scale recreational facilities system.

Governmental Organization Goals:
To assure that the local, borough, state and federal government agencies with jurisdiction in and around Houston are directed in a positive, creative and responsive manner when providing governmental services and facilities needed by the residents of Houston, as well as to ensure responsiveness to public concerns by providing for citizen participation in the planning process at all levels of government.

Environmental Goal:
To work actively toward ensuring that the natural environment of Houston, including but not limited to air and water quality, fish and wildlife habitat and natural vegetation, is enhanced and maintained by encouraging land uses and development that are consistent with the natural characteristics of the community.

Public Services Goal:
To take whatever actions are necessary to provide or encourage the provision of a broad variety of community services within the community on a quality rather than a quantity basis that will improve and enhance the already desirable living environment.

Historic Properties and Cultural Resources

According to the National Register of Historic Places (NR) maintained by the National Park Service and available to the public, there are no NR listed sites within the City of Houston. While there are no listed sites within city limits, there could be eligible sites present. The Matanuska-Susitna Borough established a Historic Preservation Commission by Ordinance of the Assembly in April 1982. The Commission is certified to carry out the purposes of the National Historic Preservation Act of 1966 and will aid in identification, evaluation, registration and protection of sites within the Borough.

Public Services

The City of Houston offers fire and road services. The Houston Emergency Services building houses the Fire Department, see Table 3 for response times of the Houston Fire Department. The City is in the process of constructing a new Fire Station 9-2 to support the function of the existing Interim Fire Station 9-2. At this time, no local police are active and law enforcement is handled by the Alaska State Troopers. The closest public libraries are located in Willow and Big Lake.

Table 3. Houston Fire Department Response Information 2007-2011

	2007	2008	2009	2010	2011
Total Call Volume	77	111	235	261	329
Average Response Time in Minutes	8:56	6:57	4:49	2:52	2:57
Percent of Response Under 2 Minutes	22	32	32	56	58
Percent of Response Under 8 Minutes	53	69	85	93	93

Source: Houston Fire Department

Public educational facilities within Houston include Houston High School and Houston Middle School. Currently elementary students attend schools in Big Lake or Willow.

Community Facilities

The Homesteaders Community Center provides a meeting place for the public and fellowship for area residents. The nonprofit organization, which started the Community Center in 1957, has over 50 members and is open to anyone in the community. The group organized social gatherings and holiday parties and also rents out the center for functions. The building is made available for the Mid-Valley Seniors, Inc. which provides fellowship, nutritional programs, and meal services to member seniors in the Big Lake, Houston, Meadow Lakes, and Willow areas.

There are no public libraries in Houston, but there are libraries available to students at the Houston High School and Middle School. The Big Lake Country Club, founded in 2000, is a 24 hour services provider for developmentally delayed and emotionally challenged adults. The Country Club's main campus is in Houston and provides daily support, monitoring, and supervision for adults in need.

Parks and Recreational Facilities

The Little Susitna River provides outdoor recreation in the form of camping, boating, and fishing. On the east side of the Parks Highway, the City of Houston operates the Little Susitna Campground which is open 24 hours a day from Memorial Day to Labor Day weekends. The Campground provides a day use area, pavilion, playgrounds, defined camp sports, fire pits, restrooms, trash disposal and an RV pump station. The City also maintains a public day-use facility on the west side of the Parks Highway with access to the Little Susitna River that includes a

parking area suitable for boat trailers, restrooms and trash receptacles. The Riverside Camper Park is located in the core of Houston, adjacent to the Parks Highway and the Little Susitna River. This Camper Park provides shower and laundry facilities, electricity and a small concession store.

The Houston/Willow Creek Sled Trailhead and recreation area is located at mile 59 of the Parks Highway off Zero Lake Road, providing both day-use and overnight spaces for approximately 60 vehicles or RVs with trailers, picnic tables, BBQ grills, restrooms and trash disposal. There are permanent map signs for two trailheads that lead into Hatcher Pass recreation area.

Five local lakes are stocked with various fish species for recreational purposes, providing even more opportunity for anglers to enjoy Houston. Most trails within the community are informal and do not have clearly dedicated public access. Trails are utilized as transportation corridors for snow machines, ATVs, dog sleds, bikers, horses, pedestrians, and skiers. The Haessler-Norris Trail System is made up of 20 trails of various distances and a published map of this trail system was created for the Willow Dog Mushers Association in 2011.

The Hatcher Pass/Independence Mine, Big Lake, the Susitna Flats State Game Refuge, the Mat-Su Visitor's Center, and Nancy Lake Recreation Areas are all located near the community of Houston and offer various recreational opportunities to local residents as well as regional, out of state, and international tourists.

Infrastructure

There is no public utility system within Houston. Most homes and businesses have private wells and septic systems and some residents do not have indoor plumbing. Electricity is available through Matanuska Electric Association in most of Houston. Natural gas is available in several areas of the City, including areas as far northwest as the north end of Prator Lake on Ballyshonnon Drive, but has been identified by residents of Houston as a service they would like to see expanded. Increased accessibility to internet services has been identified by residents as well.

Transportation

The Parks Highway runs through the City of Houston from the southeast boundary to the northwest, bisecting the community. The Parks Highway serves statewide mobility for travel and freight transportation through the city limits of Houston for passage to Fairbanks and interior Alaska. The Alaska Railroad main line also runs through Houston in a route similar to the Parks Highway corridor.

The City of Houston's road network contains about 45 miles of road branching east and west from the Parks Highway, which operates as a backbone for the regional network. The Parks Highway is the only arterial level roadway within the city limits. The remaining roads are either local roads providing access to the surrounding lots or collector roads that provide access to and from the Parks Highway. The majority of roadway network in Houston has a gravel surface with only 10% of the roadways (mainly collector roads) being paved.

A majority of the parcels within the city limits of Houston access the Parks Highway within the city limits of Houston. Alternative access out of the city is available to the west via Kiowa Street which leads to Big Lake and King Arthur Drive to the east which accesses the Meadow Lakes Loop and Pittman Road areas. Additionally, Big Lake Road leads west into Big Lake. There are currently no signalized intersections within the city.

Public transportation services are limited in Houston to a single stop at Gorilla Fireworks for commuters heading south to Wasilla or on to Anchorage. This service began in August of 2014.

Land Use

Currently there are about 3,275 acres of developed land, making up 20% of the total 16,210 acres of land area of Houston. Approximately 12,961 acres or 80% of total land is undeveloped. Figure 4 graphically depicts existing land use including vacant land. The majority of Houston's land is privately owned and other large tract land owners include the City of Houston, the Mat-Su Borough and the State of Alaska. The Alaska Rail Road's rail line, including the Rail Extension from Port MacKenzie to Houston, will be using approximately 161 acres in the City of Houston once the Extension is constructed. This acreage does not include any support facilities such as maintenance buildings or access roads which may be built.

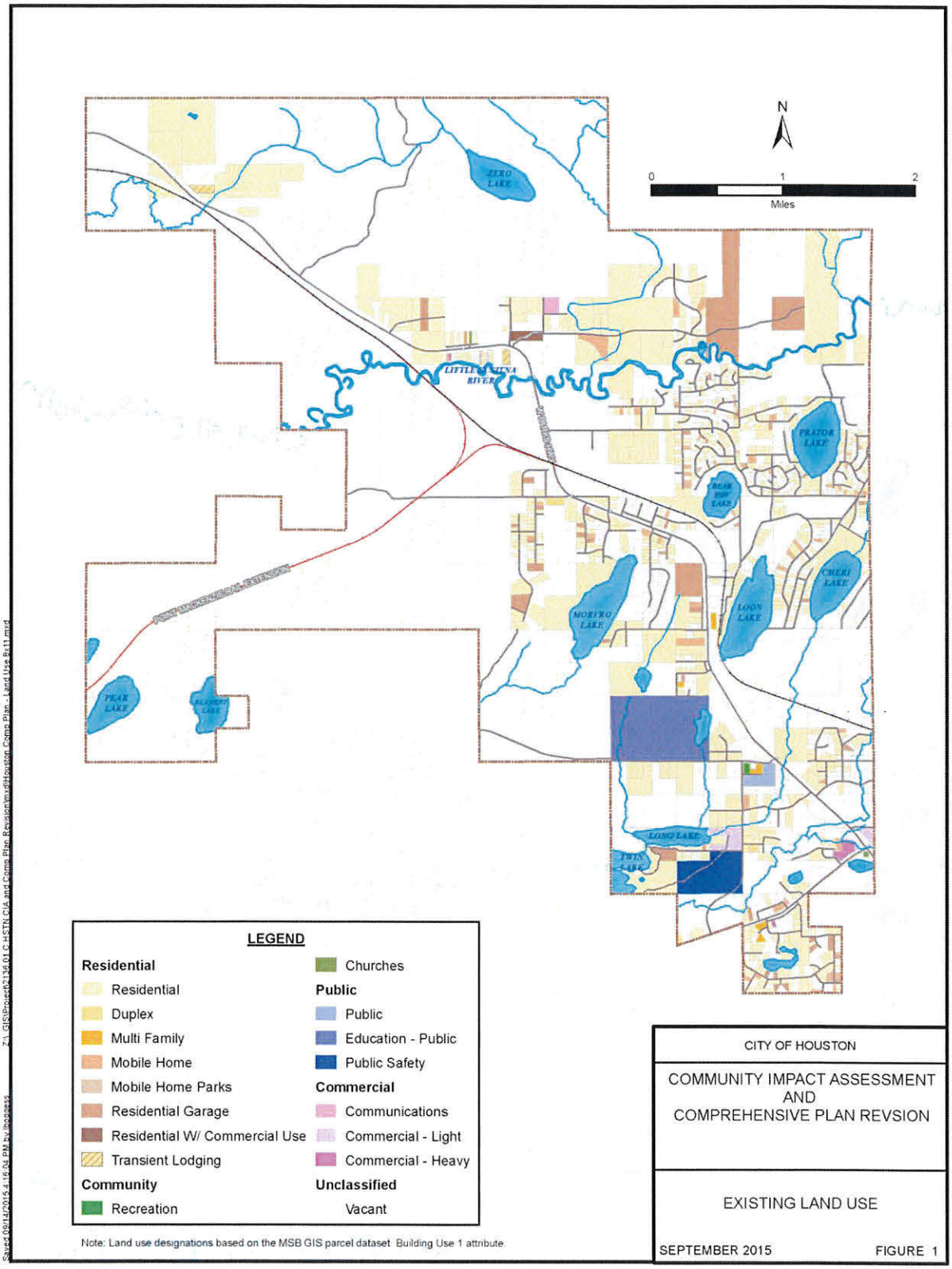


Figure 4. Current Land Use

Zoning Districts

The City of Houston has 11 distinct Zoning Districts that implement the policies of the Comprehensive Plan. The Zoning Districts are a part of the City of Houston's Municipal Land Use Regulations. Table 4 Existing Zoning Districts summarizes the City of Houston's zoning districts and their intent as a baseline for the Comprehensive Plan revision. Figure 5 shows the existing zoning for the City of Houston.

Table 4. Existing Zoning Districts

Zoning District	Zoning Designations
PLI	Public Lands and Institutions
R-1	Single-Family and Two-Family Residential District (low density)
MFR	Multifamily Residential District (medium density)
RA-2.5	Residential/Agriculture District
RA-5	Low-Density Residential Agricultural District
NC	Neighborhood Commercial District
C	Commercial District
LI	Light Industrial District
HI	Heavy Industrial District
H	Holding District
PH	Parks Highway District

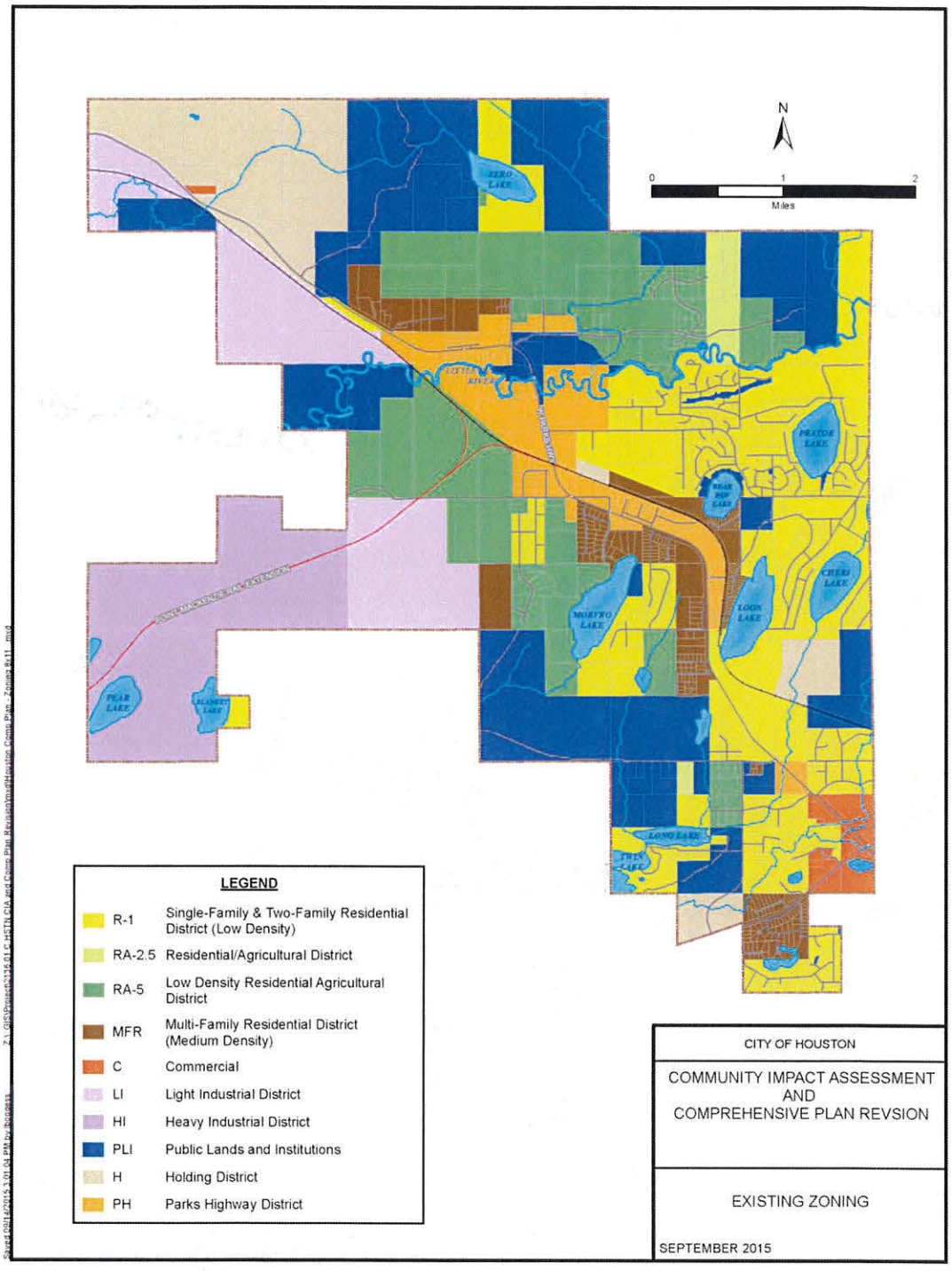


Figure 5. Current Zoning

2.6 Planned and Neighboring Community Development

Planned and Approved Future Development

The City of Houston recently received approval to have a 1,555-acre (2.4 sq. mi.) undeveloped, unincorporated parcel of land owned by Knikatnu Inc., a Wasilla-based Alaska Native village corporation, annexed into the City of Houston. The parcel adjoins other Knikatnu land that is within the existing City of Houston boundaries and road access is from Houston. Currently there are roads which are included in the Bureau of Indian Affairs (BIA) Tribal Transportation Program (TTP) inventory and are owned by the City of Houston. The City of Houston is in the process of designing and constructing a new Fire Station 9-2 to be located at 12176 W. Birch Road to replace the current interim Fire Station 9-2. The new station is intended to be safe, efficient, and provide a comfortable environment for emergency responders to work, train and stay.

Neighboring Community Activities

Wasilla is experiencing growth comparable to that of Houston and is continuing to develop along the Parks Highway. Roadways are being upgraded throughout the commercial district and safety improvements to the Parks Highway have been an Alaska DOT&PF priority for the area. The Alaska DOT&PF are working in partnership with the City of Wasilla and the Mat-Su Borough to conduct a study identifying alternative Parks Highway routes to move through traffic around Wasilla instead of through the City's core. The City of Wasilla is also working to implement the *Wasilla Downtown Area Plan* and is currently going through the approval process for the proposed Downtown Overlay District.

Big Lake is currently petitioning the Local Boundary Commission to incorporate into a second class city. In 2014, Big Lake completed a Community Impact Assessment which considered impacts to Big Lake that could result from different highway routes connecting the Port MacKenzie to the Parks Highway, at full build out of Port MacKenzie.

3. TRANSPORTATION ALTERNATIVES

The following transportation projects or plans are being assessed through the City of Houston's Community Impact Assessment. The alternatives have been chosen for the assessment based on their location within or adjacent to the City of Houston boundaries and the potential impacts that could occur to the community if or when these alternatives are implemented.

3.1 Alternative 1: No Build Alternative

The No Build Alternative assesses the existing conditions within the community and the potential impacts no development or action will have for the City of Houston. By preforming an impact analysis on the anticipated future without a major transportation action, a baseline is established to which impact analyses of other alternatives can adequately be compared. Although a No Build scenario is not a possible alternative for the community at this time due to proposed project already underway or in construction, the No Build alternative provides an informative summary of baseline conditions associated with no development.

3.2 Alternative 2: Parks Highway MP 44-52 Upgrade (Lucus Road through Big Lake Road)

The Parks Highway, from Lucus Road to Big Lake road is being upgraded by the Alaska Department of Transportation and Public Facilities (DOT&PF) to improve safety and congestion along the roadway. The project has been phased into three segments, the third of which begins at Pittman Road and ends at Big Lake Road, where the City of Houston boundary is, see Figure 6 Parks Highway Upgrade MP 44-54 Lucus Road to Big Lake Road.

Phase 3 is currently moving towards Final Design and Right of Way acquisitions, with construction anticipated for 2017-2018. All information on the project is sourced from the 2013 Design Plans made publically available. Proposed improvements for Phase 3, Pittman Road to Big Lake Road include:

- Stop light controlled intersection with the Parks Highway at Big Lake Road including a crosswalk and pedestrian island;
- Four-lane divided highway which returns to a two-lane highway after Forest Lake Drive;
- New lighting is proposed down a portion of Big Lake Road and on the Parks Highway;
- Pedestrian pathway is to be realigned along the Parks Hwy and Big Lake Road;
- Driveway consolidation throughout project corridor;
- Stoplight controlled intersection at the Parks Highway and S Johnson Road (outside of Houston city limits);
- Add a S Johnsons Frontage road (outside of Houston city limits);
- Continue Winter Way west towards the Parks Highway (outside of Houston city limits); and
- Extend Margin Way to Spring Drive (outside of Houston city limits).

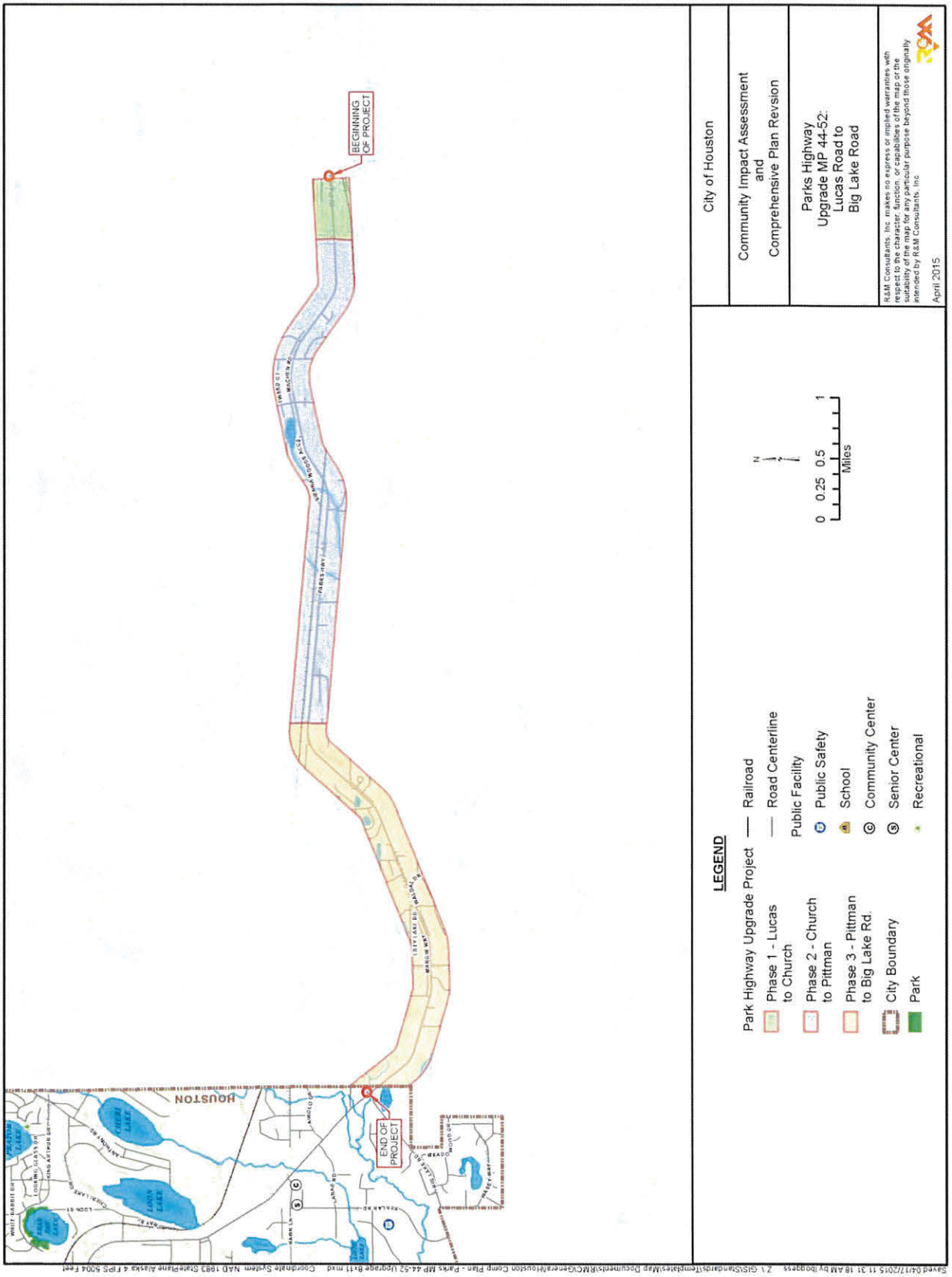


Figure 6. Parks Highway Upgrade MP 44-52 Project Area

3.3 Alternative 3: Port MacKenzie Rail Extension

The Port Mackenzie Rail Extension is a 32-mile extension of the ARRC system that travels from the Port facility north and connects to the mainline in the City of Houston. The Rail Extension will connect with ARRC mainline north of Miller's Reach Road, cross Miller's Reach Road and continue southwest through the annexed area of Knikatnu Inc. land, see Figure 7. The Matanuska-Susitna Borough is the co-manager of the rail extension and the operator of Port MacKenzie. Port MacKenzie is a deep-water port with the capacity to handle bulk commodities and is closer to Interior Alaska than the Port of Anchorage. The rail extension will provide for more efficient movement of freight that is currently moved by a combination of rail and truck and has the potential to make the development of Interior Alaska's natural resources more economically feasible.

The Port MacKenzie Rail Extension route was developed from the 2003 Matanuska-Susitna Borough Rail Corridor Study, the 2007 Port MacKenzie Rail Corridor Study, and the 2011 Environmental Impact Statement which recommended the proposed route for the Rail Extension.

Construction of the Extension began in 2013 and in 2014 the embankment was complete and rail was installed for Section 6 of the Extension, from Miller's Reach Road to the ARRC mainline, see Figure 8. Segment 5 of the Rail Extension, beginning north of Muleshoe Lake and connecting to Segment 6 at Miller's Reach Road, passes Houston Lake Loop Trail, Horseshoe Lake and a private access road. This segment is fully funded and embankment construction is anticipated to be completed in the fall of 2015.

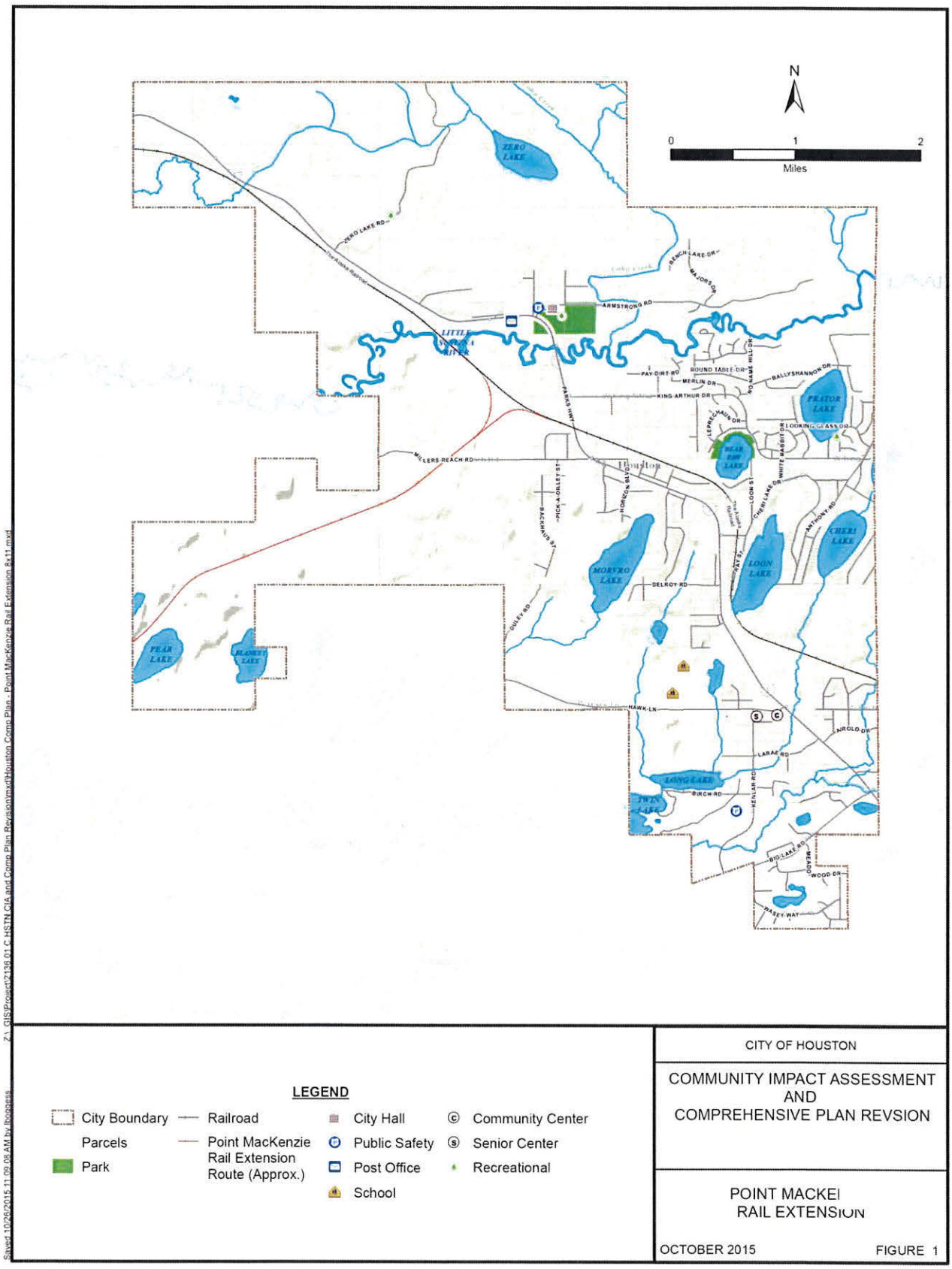


Figure 7. Port MacKenzie Rail Extension in Houston

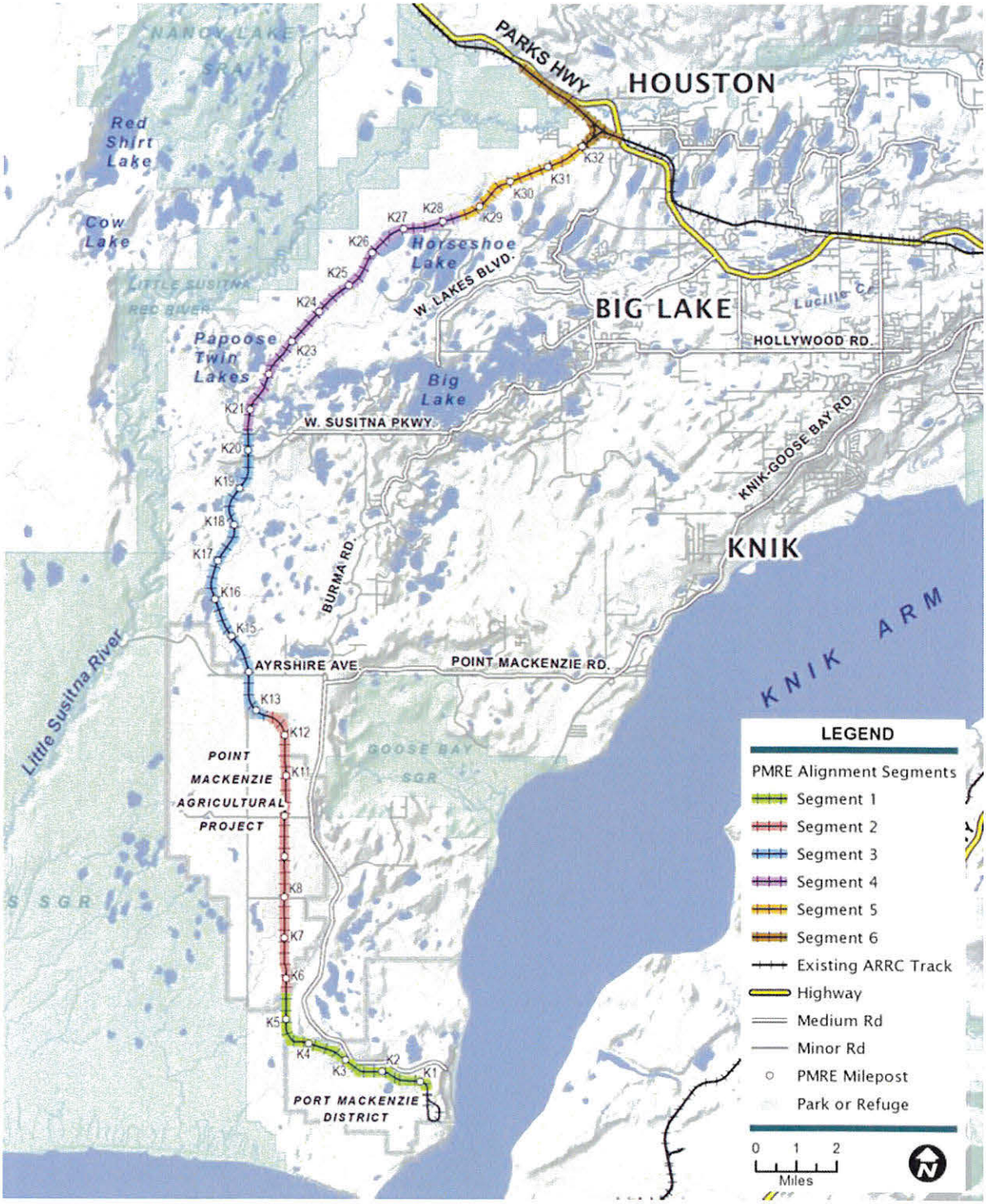


Figure 8. Port MacKenzie Rail Extension Project, sourced from portmacrail.com

3.4 Alternative 4: Port MacKenzie to Parks Highway Roadway Corridor

Introduction and Background

Port MacKenzie is a growing facility and economic asset to the Mat-Su Borough, Anchorage Municipality, and the state of Alaska. Surface transportation access is essential for the port's success and a rail line extension from Point MacKenzie to the Alaska Railroad's (ARR) mainline is being developed. The rail extension's terminus with the ARR mainline is in the City of Houston. A roadway corridor from Port MacKenzie to the Parks Highway has not yet been decided and the City of Houston's CIA will assess a roadway alternative included in past corridor studies which falls within city boundaries.

Sources of historical routes for the Port to Parks Roadway Alternatives include:

- Matanuska-Susitna Borough (MSB) Long Range Transportation Plan 2007 Update
- Port MacKenzie Rail Corridor Study (ARRC 2007)
- Matanuska- Susitna Borough Rail Corridor Study (Tryck Nyman Hayes, 2003)
- City of Houston Comprehensive Plan
- 2010 Big Lake Community Council Transportation Projects Location Map

The 2003 Rail Corridor Study analyzed corridors for a new roadway and railway. The study recommended Corridor 3 for the railway, which terminated in Willow, and Corridor 7 for the roadway, which terminated at the Parks Highway via South Big Lake Road, see Figure 9. For the description of the study area and route options analyzed, see pages 9-17 of the Matanuska-Susitna Borough Rail Corridor Study 2003, prepared by Tryck Nyman Hayes, Inc.

Corridor 3 (rail) to Willow was recommended for the Port MacKenzie Rail Extension but the alternatives developed in 2007 Rail Corridor Study recommended a Houston South route. The 2007 Houston South route is currently being developed as the ARRC Rail Extension. The Rail Extension has begun construction but some segments of the project have not been established due to pending easements and additional funding (see Figure 8).

In 2014 the community of Big Lake completed a Community Impact Assessment analyzing possible route alternatives for the Port to Parks roadway connection. The 2014 Big Lake Assessment routes are similar to the corridor alternatives studied in the Matanuska-Susitna Borough Rail Corridor Study (2003) that studied roadway and railway corridor alternatives. The Big Lake CIA chose an alternative which used Knik Goose Bay Road as a connecting point to the Parks Highway as the baseline alternative in its study for comparisons because that was the route previously studied by DOT&PF in 2007.

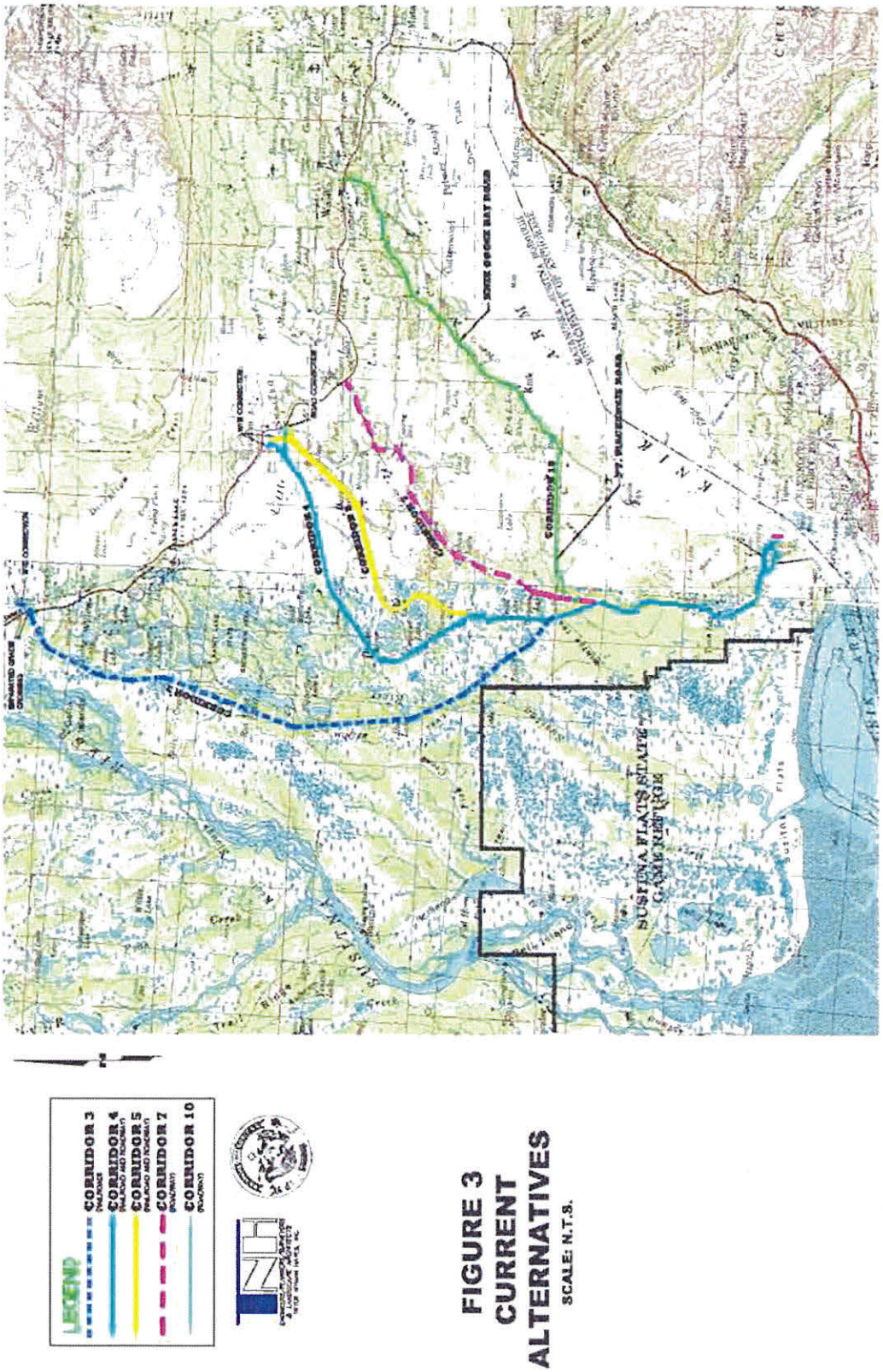


Figure 9. 2003 Rail Corridor Study Alternatives

Highway Corridors to be assessed in the City of Houston's CIA

The City of Houston's CIA will analyze a roadway corridor route, adjusted to known transportation projects, based on the 2003 Rail Corridor Study and the Port MacKenzie Rail Extension, see Figure 10. The Port to Parks roadway alternative also includes the elements shown on the Transportation Element Map in the City of Houston's Comprehensive Development Plan in 1982 (see Figure 11), excluding the Parks Highway Bypass. The Parks Highway Corridor Bypass shown in the 1982 Transportation Plan Map will not be included in the Port to Parks Roadway Corridor assessment, but will be a part of the Parks Highway Corridor Study that will occur in concurrence with this effort.

The City of Houston's CIA will assess a roadway route following the determined Port MacKenzie Rail Extension from Point MacKenzie to Houston. This route was reflected in Alternative 2 of the Big Lake CIA. The roadway alternative, which would parallel the rail line, incorporates the route elements shown in the City of Houston's 1982 Transportation Element Map. The road section is planned and modeled as a two-lane undivided road with a design speed of 65 mph in accordance with assumptions in the 2003 and 2007 planning studies. The City of Houston recently annexed 1,500 acres of Knikatnu. Inc. land into the City and zoned the properties to accommodate railroad reliant development at the request of the landowner. This roadway alternative would pass through that land. Houston could be impacted by the development of the rail extension and by the potential development of the roadway corridor which connects to the Parks Highway within its boundaries. As the ARRC constructs the rail extension, right-of-way will be established making a parallel roadway a logical choice for the Port MacKenzie to Parks Highway roadway corridor.

The City of Houston's CIA is not assessing the other corridors analyzed in the Big Lake CIA because they are outside of the determined study area and the impacts to wetlands and existing trail networks make them unreasonable for further study. The development of Alternative 7 of the 2003 Rail Corridor Study and comparable Alternative 3 of the Big Lake CIA, which uses Big Lake Road as the connection to the Parks Highway, would have little impacts upon the City of Houston as this roadway currently exists. The only anticipated change is the project travel on this roadway which will be included in this CIA through the traffic analysis.

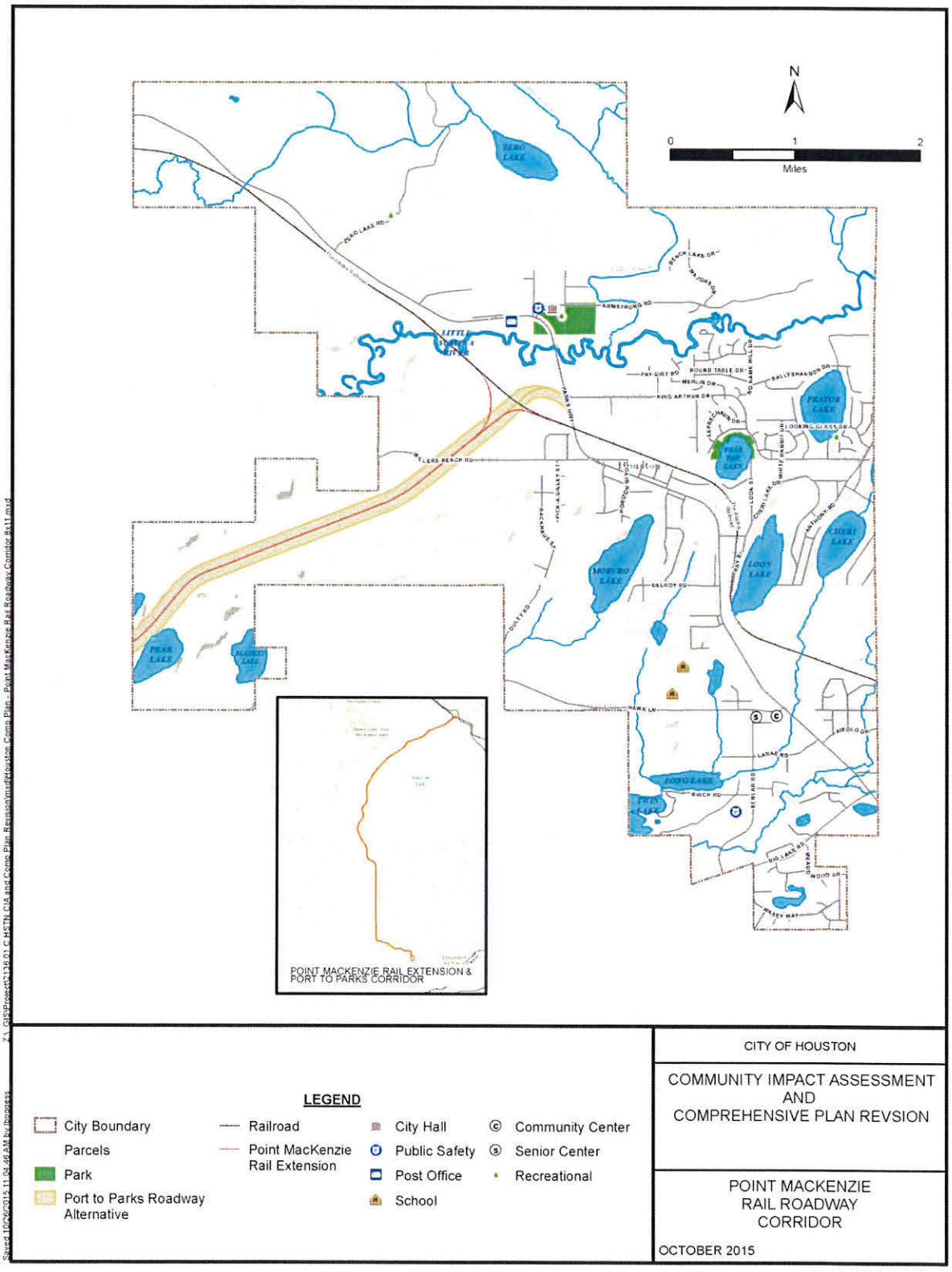


Figure 10. Port MacKenzie to Parks Highway Roadway Corridor

City of Houston 1982 Plan Map

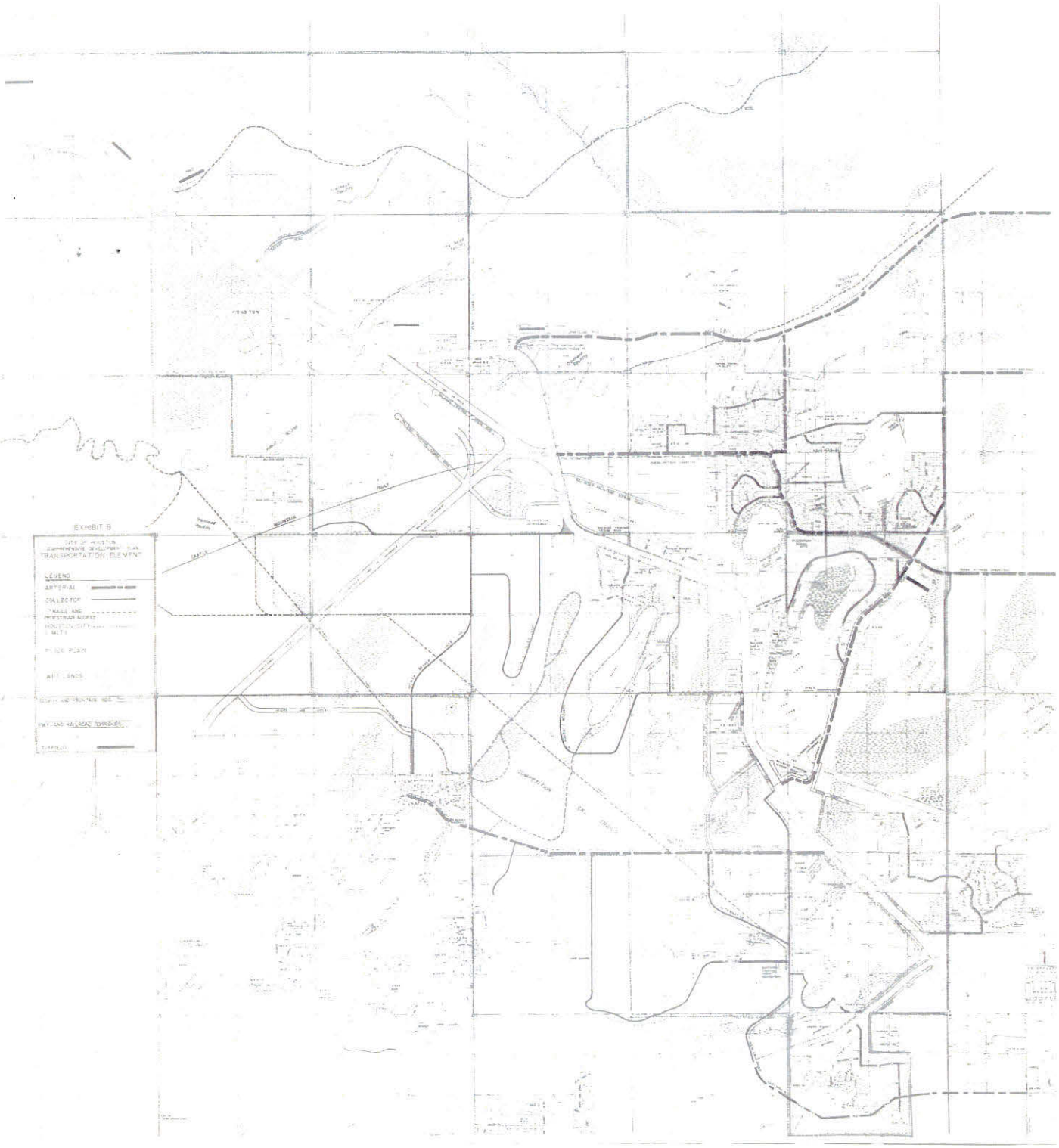


Figure 11. City of Houston 1982 Transportation Plan Map

4. ALTERNATIVES ANALYSIS METHODOLOGY

The Alternatives Analysis Section of this document will explore and document the relationship between the proposed transportation projects and the City of Houston. This section will identify and investigate impacts of the proposed transportation projects through ten different impact categories.

Community impact assessment, like the National Environmental Policy Act (NEPA) process, includes analysis of direct (temporary and long-term), indirect and cumulative impacts per 40 CFR §§ 1508.7 and 1508.8. The community impact assessment is an integral part of the transportation development process and combined with other relevant environmental studies help shape project decisions and outcomes under NEPA. Direct, indirect, and cumulative impacts will be addressed for each impact category.

4.1 The No Build Alternative

The positive and negative impacts of a no-build alternative have also been assessed and presented in this section. The No Build Alternative analyzed in this section is technically not feasible as portions of both the Parks Highway MP 44-52 Upgrade and the Port MacKenzie Rail Extension are in the final design or preliminary construction phase. However, for purposes of this Community Impact Assessment, a No Build scenario is evaluated for direct and indirect impacts to capture the types of positive and negative impacts that are incurred without action or development.

4.2 Impact Categories

Ten impact categories identified in the FHWA Community Impact Assessment reference guide (FFHWA 1996) were included in this study, see Table 5 below.

Table 5. Impact Categories Used in Alternatives Assessment

Social and Psychological Aspects	Mobility and Access
Physical Aspects	Provision of Public Services
Visual Environment	Safety
Land Use	Displacement
Economic Conditions	Environmental Justice

This CIA will also be assessing Traffic and Circulation impacts in the alternative assessments. Each impact category has been assessed for direct (temporary and long-term), indirect and cumulative impacts for each alternative including a no-build alternative. Both positive and negative impacts have been included. Community goals and values identified through public involvement and community outreach were considered whenever possible.

4.3 Assessing Impact Categories

A comprehensive approach identified and investigated anticipated project impacts. Relevant data gathered during the existing conditions identification process supports the analysis of the potential project impacts on the community of Houston. As the following sections outline, the potential impacts are based on the likelihood, severity, scale, and length of the impacts. Impact determinations are based on community input, best professional judgment, and by analyzing impacts upon other communities with similarities of size and/or location. Data gathering techniques included research, modeling, mapping, interviews with community stakeholders, public involvement, and household surveys. This methodology assessed the potential impacts for the three build and one no build alternatives to Houston. The FHWA guide provides the framework for identifying effects within each impact category.

1. Social and Psychological Aspects

Impacts examined include changes in population or the redistribution of the population, if the alternative would isolate certain people and if the project could cause a change in community values. This section also considers community cohesion and interaction and assess if the alternative would impact social relationships and patterns or alter the quality of life perceived by residents of the community.

2. Physical Aspects

Assessing impacts on physical aspects includes the examination of noise or vibration, walls, barriers or fencing, or other physical intrusions such as an increase in dust or odor that would result from the transportation alternative.

3. Visual Environment

Impacts are assessed for this category based on the aesthetics of the community and if there will be a change in the character of those aesthetics. It also considers the alternative's compatibility with community plans, goals and design standards.

4. Land Use

Impacts to land use include any changes in land use patterns such as loss of agricultural land use areas, changes in areas open for development and changes in density of an area. Land use assessment also considers the consistency of the alternative with local land use plans and zoning.

5. Economic Impacts Analysis

Impacts to economic conditions include the alternative's ability to encourage or discourage businesses to move to the area, the relocation of businesses within the community or to move outside the area, the visibility of businesses, alterations in the tax base or property values, and short term effects such as economic changers like job creation and loss during construction activities.

Working closely with the City of Houston Community Impact Assessment and Comprehensive Plan Revision Steering Committee, McDowell Group developed a list of contacts that represented a cross-section of business and community groups and interests related to Houston, including tribal organizations, nonprofits, business leaders, school district officials, utility representatives, and others and conducted interviews with those identified. *See Appendix B Economic Development Opportunities: Perspectives of Community Stakeholders.* An interview protocol was designed and adjusted to best capture the interests, experience, and expertise of individual stakeholders. They were asked about the potential of various infrastructure and business opportunities to create employment, generate city revenue, improve community assets, and how Houston's vision responds to growth and change.

Further analysis will be conducted as more information on conceptual projects and events become available.

6. Traffic and Circulation Impacts

Kinney Engineering projected average annual daily traffic (AADT) volumes for the horizon year 2035 using an area travel demand model (TDM), which includes all current planned and funded transportation projects. The models used in this analysis were developed by the Alaska Department of Transportation and Public Facilities (ADOT&PF) in conjunction with the Municipality of Anchorage (MOA) and the Matanuska Susitna Borough (MSB). The extents of the model include the entire network of the MSB and MOA from north of Willow all the way to Girdwood and east as far as the community of Sutton on the Glenn Highway. This model has been used to analyze the traffic impacts of the proposed Knik Arm bridge project as well as the Highway-to-Highway project in downtown Anchorage and various Wasilla Bypass alternative corridors.

The model generates traffic volumes based on socio-economic background data, such as population, income level, employment in various work sectors, and school enrollment, as well as a number of special generators such as hotels and airports. The results of the model were used as a baseline for recommendations and for judging project impacts. Since this baseline includes all current planned and funded transportation projects, excluding the Port MacKenzie to Parks Highway Roadway Corridor, the model's traffic volumes can be considered cumulative. *See Appendix C Traffic Impacts of Major Planning Projects*

7. Mobility and Access

Assessing impacts to mobility and access include examination of pedestrian and bicycle access and how the alternative affects non-motorized access to destinations such as businesses, public services and schools. It also considers shifts in traffic, public transportation, and vehicular access and parking.

8. Provision of Public Services

Impacts to the provision of public services include changes in the use of public facilities, displacement of public facilities, or the introduction to new facilities.

9. Traffic Safety

Impacts to safety are assessed by the ability of the proposed action to affect the likelihood of accidents for non-motorized and motorized travel, changes in the nature and frequency of crime in the community, as well as changes in emergency response time.

4.4 Public Involvement

Throughout the CIA and Comprehensive Plan Revision process, numerous outreach and public involvement activities were conducted. Feedback and input from Houston residents is essential for a complete comprehensive plan or CIA. Public Involvement techniques used to support the CIA and Comprehensive Plan Update include:

- Steering Committee – Community members serving as the planning advisory committee to the CIA and comprehensive plan revision process.
- Project Website
- E-newsletter updates
- Open Houses and Workshop
- Household Opinion Survey sent to all residents and property owners
- Stakeholder interviews

A CIA specific Open House was held on June 4th, 2015. Members of the public reviewed three graphics depicting the impacts identified in the CIA. Each graphic showed the impacts identified for the alternatives assessed for one of three impact categories: Transportation, Land Use, and Economic Impacts. Copies of each graphic were on tables for members of the public to write their feedback directly onto. Attendees were asked to provide the project team with any information they felt was missing from the impact analysis and if there were additional impacts they foresaw that were not shown on the maps (See Figures 13, 14, and 15).

After the CIA Open House, the project website and Steering Committee meetings continued to support the development of the final CIA and public feedback on the CIA was accepted at any time during the process. The summary of the CIA Open House can be found in Appendix A.

4.5 Regulatory Framework

Several laws, regulations and Executive Orders apply to the CIA process; these include the National Environmental Policy Act (NEPA), Title VI of the Civil Rights Act, Executive Order 12898 (Environmental Justice), Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, and The Americans with Disabilities Act (ADA) of 1990.

4.6 Direct Impacts (Temporary and Long-term)

NEPA defines direct effects as those caused by the action and occur at the same time and place. Direct impacts to each impact category will be assessed for each alternative including the no-

build alternative. Assessment will include both positive and negative temporary and long-term impacts.

4.7 Indirect Impacts

NEPA defines indirect effects as those caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include growth-related effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and other related effects.

4.8 Cumulative Impacts

Cumulative impacts are the impacts that result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of the agency or parties responsible for the action (40 CFR 1508.7). Cumulative impacts can result from individually minor but collectively substantial actions occurring over a period of time within the potentially affected area.

For the purpose of the cumulative impacts analysis, the following projects will be considered:

- Any identifiable existing infrastructure
- All projects in the final design or construction phase including:
    - Parks Highway MP 44-52 Upgrade (Lucus Road to Big Lake Road)
    - Port MacKenzie Rail Extension
- Projects in the conceptual or preliminary design phase:
    - Port MacKenzie to Parks Highway Roadway Corridor

5. ALTERNATIVES ANALYSIS:

This section summarized the socioeconomic impacts for the alternatives studied in the CIA.

5.1 Alternative 1: No Build Alternative

NEPA requires the comparison of impacts associated with proposed alternatives against anticipated effects of the No Build scenario. Thus the No Build Alternative serves as a baseline to compare the impacts of the proposed or anticipated alternatives. Although the No Build Alternative is not a possible option at this time with portions of proposed projects already underway, this brief impacts analysis provides an informative summary of baseline conditions and the often overlooked positive and negative impacts associated with no development.

Social and Psychological Aspects, Displacement, Environmental Justice

The No Build Alternative would have minimal impacts on the social and psychological aspects of the community structure. Without the construction of new transportation projects, the City of Houston would not incur the typical positive and negative impacts associated with such projects. Population would likely not increase as transportation in and out of the community would not be altered under the No-Build. Without a notable increase in population, community characteristics such as cohesion and interaction, social values, and quality of life would also remain the same. There would be no direct or indirect impacts to neighborhoods as the No Build Alternative does not require residential, business, or farm displacement. The No Build Alternative complies with executive order 12898 regarding Environmental Justice, as this alternative would not result in a disproportionately high and adverse human health and environmental effect on minority and low-income populations.

Physical Aspects

There would be no new impacts to the physical aspects of the community structure. No sound barriers or walls are currently needed within the community as there would be no elevation in noise sources or receivers. Other physical changes such as dust, odor, or shadow effect are not anticipated.

Visual Environment

There would be no new impacts to the visual and aesthetic character of the community.

Land Use

Under the No Build alternative, there would be no direct or indirect impacts to current land-use patterns such as loss of farmland or density of development. The community has been developing community goals to guide future planning efforts (see Community Profile, Physical and Social Community Characteristis). Although the No Build Alternative would not prohibit the achievement of Houston's Primary Goal, it would not facilitate a "moderate level of growth." As a result, the

No Build alternative does not comply with the community's established goals and therefore could have negative impacts on the community.

Economic Impacts Analysis

The No Build Alternative would have minimal to no impacts on the economic condition in the City of Houston. Assuming the steady population growth the City has been experiencing continues, proportional increases in the tax base are expected.

Mobility and Access

There would be no impact to mobility and access within the City of Houston. Pedestrian and bicycle access and facilities would not be improved upon or negatively affected by development. Public transportation services and facilities as well as vehicular access would not be affected under the No Build Alternative.

Traffic and Circulation Impacts

There would be minor impacts to traffic and circulation under the No Build alternative. There will be continued increase in traffic volumes in relation to the community's steady population increase. Traffic counts recorded by the Alaska Department of Transportation and Public Facilities (ADOT&PF) and the Matanuska Susitna Borough from 1997 to 2012 reflect a growth trend in traffic volumes of 2.6% along the Parks Highway from Pittman Road to Big Lake Road, a 2.7% increase in volume on the Parks Highway from Big lake Road to Little Susitna Bridge, and a 0.6% increase from Little Susitna Bridge to Nancy Lake Parkway along the Parks Highway. Under the No Build alternative these trends are expected to continue.

Provision of Public Services

The population of Houston is such that public facilities such as schools and recreational facilities are not currently overcrowded. The No Build alternative would therefore not have an effect on public facilities within the community.

Safety

The No Build alternative would not consider new transportation projects and the associated safety concerns with new road and railway corridors.

5.2 Alternative 2: Parks Highway MP 44-52 Upgrade

Social and Psychological Aspects, Displacement, Environmental Justice

Direct and Indirect Impacts
This alternative would have negligible impacts on the social and psychological aspects of the community structure as the proposed road upgrades would occur primarily outside Houston's city limits. This alternative improves an existing highway facility and is not anticipated to result in a notable increase in population, or community characteristics such as cohesion and interaction; social values, and quality of life are also not anticipated to be negatively impacted by this alternative. There would be no direct or indirect impacts to neighborhoods, as this alternative does not require residential, business, or farm displacement. This alternative is consistent with EO 12898 Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations. As is documented in this section, this alternative would have no high and adverse impact to any impact category; therefore no disproportionately high and adverse human health or environmental effects on minority and low-income populations are expected. Potential impacts from the alternative would have the same social effects regardless of race or income level; therefore minority or low-income populations would not be disproportionately affected, see Community Profile, Population and Demographics.

Cumulative Impacts
This alternative would have no adverse cumulative social and psychological impacts or result in cumulative effects to minority or low-income populations when considering past, present, and reasonably foreseeable future actions.

Physical Aspects

Direct and Indirect Impacts
This alternative would have minimal impacts to the physical aspects of the community structure. A new traffic signal would be installed at the intersection of the Parks Highway with Big Lake Road which could have minor noise, dust, or odor associated with idling traffic at this intersection. The impacts are anticipated to be minor as the project will upgrade the condition of the roadway and make safety and traffic efficiency improvements without projected increases in traffic volumes.

Cumulative Impacts
The minor direct and indirect impacts would only result in temporary, highly localized effects to air quality and the noise environment of Houston; therefore the cumulative impacts resulting from previous, current, and other reasonably foreseeable projects would not be significant.

Visual Environment

Direct and Indirect Impacts
The Parks Highway MP 44-52 Upgrade would have minor impacts to the visual and aesthetic character of the community. The new signalized intersection would be the first within the community of Houston and some residents may find this addition an adverse visual effect. Although this alternative has the potential for minor visual effects, the location is near the city limits at a heavily trafficked intersection where such modern traffic signals are appropriate.

Cumulative Impacts
The incremental contribution to cumulative visual effects from this alternative would be negligible. The proposed new infrastructure would be consistent with the existing highway corridor and would not contribute to new effects when considering other past, present and reasonably foreseeable actions.

Land Use

Direct and Indirect Impacts
Proposed improvements associated with this project would result in minor land use impacts. The intersection improvements will require temporary and permanent right-of-way acquisitions and/or easements from private property owners to accommodate cut/fill slopes. Changes at the intersection may require the reconfiguration and possible realignment of parking and vehicular access on adjacent properties. Direct or indirect impacts to farmland or density of development are not anticipated. This alternative is consistent with the community's goals and plans.

Members of the public in attendance at the CIA Open House concurred with the anticipated land use impacts.

Cumulative Impacts
The Parks Highway MP 44-52 Upgrade would have minor cumulative impacts on land use compatibility when considering past, present, and reasonably foreseeable future actions.

Economic Impacts Analysis

Direct and Indirect Impacts
The Parks Highway Upgrade will have minimal impacts on the economic conditions in Houston. With the Parks Highway bisecting the City of Houston, its effect was a common theme heard throughout stakeholder interviews; most residents view the Parks Highway as a potential economic benefit, even with growing congestion. Significant increases in traffic in recent years, resulting in longer commute times to Wasilla or Anchorage, was noted by a few residents. This alternative is designed to alleviate some of that congestion. However, even with the economic potential residents see the Parks Highway having and the proposed traffic improvements to MP 44-52, there are no current plans for development along this section of the Parks Highway, resulting in minimal impacts to the existing conditions. *See Appendix B Economic Development Opportunities: Perspectives of Community Stakeholders.*

Cumulative Impacts
This alternative will have minor direct and indirect impacts for Houston's economic condition, and there will be minor cumulative impacts considering the historic and current trends and reasonably foreseeable future actions. If speculated opportunities for development evolve into more concrete plans, the economic analysis will be updated.

Mobility and Access

Direct and Indirect Impacts
There would be negligible impacts to mobility and access within the City of Houston. Pedestrian and bicycle access and facilities would not be improved upon or negatively affected by

development. However, a positive impact on mobility and access may be realized after construction of the Big Lake Road and Parks Highway intersection and associated pedestrian island and crosswalk. Potential impacts to vehicular traffic and safety for non-motorists is expanded upon below (Traffic and Circulation Impacts). Public transportation services and facilities as well as vehicular access would not be affected under this alternative.

Cumulative Impacts

The Parks Highway MP 44-52 Upgrade would have no cumulative impacts on mobility and access within the community of Houston when considering past, present, and reasonably foreseeable future actions.

Traffic and Circulation Impacts

Direct and Indirect Impacts

The Parks Highway MP 44-52 Upgrade will alleviate congestion by increasing estimated segment Average Annual Daily Traffic (AADT) capacity, resulting in faster and more consistent trips between Houston and the city of Wasilla. This could impact economic development in both communities. Additionally, the project would include frontage roads and additional intersection signals, which would also affect economic development along the corridor. Due to the scheduled completion date of this project, it is already included in the base traffic volume forecast for the horizon year 2035; *see Appendix C Traffic Impacts of Major Planning Projects.*

Cumulative Impacts

Likely effects of this alternative include an increase in the number of recreational trips to the City of Houston from Wasilla and surrounding communities; however, local traffic growth as a result of population increase is expected to continue at a steady pace. Increases in population growth and traffic through Houston may impact economic development and land use.

The Travel Demand Model projected traffic volumes for cumulative impacts as it included currently planned and future projects, including this alternative. One key impact and concern which arose from this analysis is the potential traffic volumes between Big Lake Road and King Arthur Road for the Future Planning year of 2035. The travel demand model used in this analysis indicates that the volumes north of Big Lake will grow to about 18,500 AADT in the future planning year. Currently these road segments carry 7,000 AADT. This increase is partial a result of the inclusion of a constructed Knik Arm Bridge and the Wasilla Bypass Road alternatives which would pull additional traffic from Anchorage and Wasilla to attractions in Houston and north on the Parks.

The approximate capacity of the Parks Highway through Houston is 16,500 AADT to achieve a level of service of "D", which is the limit of what is recommended by the American Association of State Highway and Transportation Officials. The projected volumes would be at or above this approximate capacity threshold, which suggests that if growth occurs in accordance with the TDM it will likely result in congestion on the Parks Highway between Big Lake Road and King Arthur Road.

Note that this scenario is currently taking place further east on the Parks Highway between Vine Street and Pittman Road, where the current road design and traffic volumes are similar to what is projected in 2035 between Big Lake Road and King Arthur. This indicates that if traffic growth

matches the modeled trends, there may possibly be issues of congestion and severe crashes similar to what is currently being seen in the Parks Highway MP 44-52 4-lane divided upgrade project. *See Appendix C Traffic Impacts of Major Planning Projects*

Provision of Public Services

Direct and Indirect Impacts

Public facilities such as schools and recreational facilities, are not currently at capacity or over capacity given the relatively low population of Houston. There are currently no public water or wastewater services in Houston and the Parks Highway Upgrade does not impact the demand for public utility services. The construction of the proposed new Fire Station 9-2 will not be impacted by this transportation alternative. The Parks Highway Upgrade would therefore not have an effect on public facility density within the community.

Cumulative Impacts

This alternative would have no cumulative impacts on public facilities within the community of Houston when considering past, present, and reasonably foreseeable future actions.

Safety

Direct and Indirect Impacts

The safety improvements associated with this alternative along with the new traffic signal and crossing facilities would have a direct positive impact on the safety of pedestrians, bicycles, and motorized traffic. With proper signal timing, emergency vehicles passing through this intersection may be able to respond quicker to emergencies resulting in additional positive impacts.

Cumulative Impacts

This alternative would not contribute cumulatively to safety impacts within the community of Houston when considering past, present, and reasonably foreseeable future actions.

5.3 Alternative 3: Port MacKenzie Rail Extension

Social and Psychological Aspects, Displacement, Environmental Justice

Direct and Indirect Impacts

This alternative would have minor impacts on the social and psychological aspects of the community structure as the proposed railroad extension would traverse through previously undeveloped areas between two existing residential neighborhoods. The railroad addition could affect community characteristics such as cohesion and interaction, social values, and quality of life for rural residences in the vicinity. Direct impacts to neighborhoods are anticipated to be minor as this alternative does not require residential or business relocations within Houston's city limits. Displacement of farm land required for construction of this alternative are also considered to be minor given the availability of land allowing agricultural development outside of this project area, yet still within the community of Houston.

This alternative is consistent with Executive Order (EO) 12898 Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations. As is documented in this section, this alternative would have no high and adverse impact to any impact category; therefore no disproportionately high and adverse human health or environmental effects on minority and low-income populations are expected. Potential impacts from the alternative would have the same social effects regardless of race or income level; therefore, minority or low-income populations would not be disproportionately affected (refer to Population and Demographics Section).

Cumulative Impacts

For the City of Houston, the railroad extension would have a minor contribution to cumulative social and psychological impacts based on past, present, and reasonably foreseeable actions. This alternative would have no adverse cumulative effects to minority or low-income populations when considering past, present, and reasonably foreseeable future actions.

Physical Aspects

Direct and Indirect Impacts

This alternative would result in minor impacts to the physical aspects of the community. This alternative would have minor long and short-term noise and air quality (dust) impacts associated with increased train traffic at this new intersection. A sound barrier is not proposed as part of the railway connection as the noise analysis prepared to support the project specific EIS determined that noise and vibration impacts were not substantial enough to necessitate mitigation in the form of noise walls/barriers (EIS Source). No other physical intrusions or shadowing effects are anticipated. Temporary noise impacts during construction would be associated with the use of heavy construction equipment and potentially due to pile driving during the new rail bridge construction.

Cumulative Impacts

The minor direct and indirect impacts would not result in anything other than temporary, highly localized effects to air quality and the noise environment of Houston but would not constitute physical alterations to the community; therefore the cumulative impacts resulting from previous, current, and other reasonably foreseeable projects would not be significant.

Visual Environment

Direct and Indirect Impacts
This alternative would result in minor impacts to the visual environment of the community. The construction of a new rail track intersection within the city limits would constitute a visual change but the connection is to an existing rail track and would be compatible with current transportation based land use. This alternative does not include construction of any associated appurtenances, whistle stop locations, or railroad support facilities. The new railway bridge over the Little Susitna River has been constructed adjacent to the existing railway bridge to minimize visual impacts. This alternative would involve construction within previously undeveloped areas and could have minor visual impacts to existing recreational users (hikers, hunters, snow machining, etc.) at grade-separated crossings.

Cumulative Impacts
The minor or negligible direct and indirect impacts incurred by this project, would not incrementally contribute to cumulative visual effects when considering other past, present and reasonably foreseeable projects.

Land Use

The Rail Extension will be built on land that is currently unclassified vacant land near the connection to the ARRC mainline, zoned as RA-5 Low Density Residential Agricultural District, and will go through a privately owned vacant R-1 Single-Family and Two-family Residential District (Low Density) area before continuing south into Knikatnu, Inc. land annexed into the City of Houston.

Direct and Indirect Impacts
The 2011 EIS evaluated anticipated land use impacts for a number of potential alternative route and alignment combinations. A five mile radius from the proposed project Right-of-Way was evaluated for consistency with existing land use objectives. The segments passing through Houston city limits may incur the following land use impacts: "The need to acquire land within the proposed rail line ROW from existing land owners; the conversion of lands within the rail line ROW, including agricultural lands, to rail line use; and the restriction of access within the ROW without an ARRC entry permit." (Cite EIS). Given the small number of residential displacements, difficulty in identifying and providing comparable nearby housing would not be expected. In accordance with Section 4(f) of the Department of Transportation Act, ROW acquisitions and/or easements would not occur on any 4(f) resources identified within Houston (EIS). These resources would include public parks, recreational areas, wildlife and waterfowl refuges, or public and private historical sites. Construction of this alignment would provide opportunity for future moderate growth and economic development for the City and is therefore compatible with the community goals outlined in section 2.5 *Physical and Social Community Characteristics* as part of Houston's Comprehensive Plan Update. This alternative would incur moderate impacts to land use as most of the acreage required for this project will need to be acquired and converted.

Cumulative Impacts
The railroad extension would have a moderate contribution to cumulative land use impacts based on past, present, and reasonably foreseeable actions. Construction of this railroad extension directly contributes to the potential impacts associated with the Port MacKenzie to Parks Highway

roadway corridor (Alternative 4). Although the roadway corridor is still conceptual from a design perspective, the establishment and construction a road from the Port to the Parks has been included in community and borough planning documents for decades and would have potential impacts on land use (see section 3.4 Alternative 4: Port MacKenzie to Parks Highway Roadway Corridor).

Economic Impacts Analysis

Direct and Indirect Impacts

The Rail Extension is viewed by many in the community as an opportunity for Houston. This extension could decrease transportation costs between Southcentral and Interior Alaska, in turn encouraging development of natural resources and similar activities in the area. A 2007 report commissioned by the Mat-Su Borough that examined the benefits of a similar rail extension concluded:

The quantifiable benefits from the Port MacKenzie to Willow rail link with respect to resource development can be divided into the following two major categories:

- *Benefits in the form of rail freight savings derived from the reduced haulage distances from natural resource production sites to tidewater at Port MacKenzie relative to the Ports of Anchorage, Whittier, and Seward.*
- *Benefits to the Rail Belt communities in the form of enhanced economic diversification and economic development as a consequent of increases in natural resource production.*

Interviewees for this CIA study saw great potential in having the connection between the new and existing rail line located in Houston as the extension is viewed as a factor increasing the likelihood of manufacturing, resource export, or transportation activity taking place in Houston.

While many interviewees were optimistic about the long-term effects of the rail extension, ARRC indicated there are few marketable ideas in the short to near-term that would warrant additional investment. "There really needs to be a reason for us to build anything beyond just the new tracks," an ARRC representative said. "If it is clear a loading facility or other infrastructure is needed in the future, we will deal with that then. Until that happens, we see minimal impact on Houston and its economy." *See Appendix B Economic Development Opportunities: Perspectives of Community Stakeholders.*

Cumulative Impacts

This alternative would have minor impacts to the economic conditions in Houston given the past, present, and reasonably foreseeable future actions. If private sector development which would use the rail line, such as freight loading-off loading facility, expressed intent to establish in Houston, then cumulative economic impacts could be analyzed further.

At the public open house, there was discussion on the potential development that could occur around the new Port-MacKenzie Rail Extension, including zoinng parts of the annexed area for industrial development and Knikatnu Inc developing an LED Assembly Facility south of Millers Reach Road. This type of activitiy would prompt more long-term economic development. Based on discussions at the public meeting and the conducted interviews, the potential future economic impacts driven by the Rail Extension would allign with the goals and opinions of the community, so long as this development allows the rest of the community to retain its rural residential character.

Mobility and Access

Direct and Indirect Impacts

Mobility and access would remain largely unchanged as a result of the railroad extension. There are no proposed pedestrian, commuter, or recreational aspects to this alternative; as such, potential positive impacts to public transportation and non-motorist access are not anticipated. As no support facilities are proposed, there are no anticipated parking impacts. Grade-separated crossings are proposed as needed to avoid negative impacts to vehicular access through Houston. ARRC does not propose to provide crossings for all unofficial trails and therefore the rail line would block some trails and associated recreational access to these areas. Anticipated adverse impacts to mobility and access are anticipated to be minor.

Cumulative Impacts

This alternative would have only minor direct and/or indirect land use impacts and would therefore not contribute to cumulative impacts on mobility and access within the community of Houston when considering past, present, and reasonably foreseeable future actions.

Traffic and Circulation Impacts

Direct and Indirect Impacts

The Alaska Railroad does not currently have any plans to construct facilities or base any operations at the new railroad junction In Houston. Therefore direct socioeconomic impacts and traffic impacts due to the rail line project alone are considered to be minimal and traffic and circulation would remain largely unchanged as a result of the Rail Extension. However, the ARR has expressed a willingness to accommodate loading facilities at the junction for private development. This may have a considerable impact on the percentage of trucks and freight in the local road network. Private development to support this type of activity is not foreseen in the near future. *See Appendix C Traffic Impacts of Major Planning Projects.* If economic conditions were to change, the rail junction could be considered for a loading site for material currently being driven by truck north from Big Lake to Fairbanks. Therefore, trips that currently exist from the travel lanes on the Parks Highway and Big Lake Road would now be turning in and out of a railroad access point at or near Millers Reach Road. Accommodations for these truck traffic maneuvers would include turn lane construction and providing adequate sight distance for trucks leaving the access road.

Cumulative Impacts

This alternative would have only minor impacts to traffic and circulation considering the past, present, and reasonably foreseeable future actions. This transportation alternative was included in the TDM for the horizon year 2035 and so is reflected in the baseline traffic volume projection discussed in the Alternative 2: Parks Highway MP 44-52 Upgrade Traffic and Circulation analysis. *See Appendix B Traffic Impacts of Major Planning Projects.* If the ARR Extension were to serve loading facilities within Houston, land use, economic development, and the transportation network may be affected.

Provision of Public Services

Direct and Indirect Impacts

Public facilities such as schools and recreational facilities are not currently at capacity or over capacity given the relatively low population of Houston. There are currently no public water or wastewater facilities in Houston and no public facilities are proposed for construction within Houston as part of the railway extension; therefore, an effect on public facility density within the community is not expected.

Cumulative Impacts

This alternative would have no cumulative impacts on public facilities within the community of Houston when considering past, present, and reasonably foreseeable future actions.

Safety

Direct and Indirect Impacts

Safety measures for this alternative have been incorporated into the design of the rail alignment and road/trail intersection lighting and signals. Most importantly, grade-separated crossings have been designed for roads and designated multi-use trails that intersect the new alignment. This alternative would have no direct or indirect impacts to criminal activity or emergency response within the community.

Cumulative Impacts

This alternative would not contribute cumulatively to safety impacts within the community of Houston when considering past, present, and reasonably foreseeable future actions.

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5.4 Alternative 4: Port Mackenzie to Parks Highway Roadway Corridor

Social and Psychological Aspects, Displacement, Environmental Justice

Direct and Indirect Impacts

This alternative would have minor impacts on the social and psychological aspects of the community structure similar to the proposed railroad extension (Alternative 2). However, social impacts associated with construction of a new transportation corridor through previously undeveloped areas between two existing residential neighborhoods would have already been incurred under Alternative 2. Construction of the roadway corridor within the ARRC ROW would substantially reduce the degree of adverse effect on the community of Houston. The expansion of the transportation corridor to include a roadway within the vicinity of these rural residences could affect community characteristics such as cohesion and interaction, social values, and quality of life. Direct impacts to neighborhoods are anticipated to be minor as this alternative does not require residential or business relocations within Houston's city limits and construction would occur within an existing transportation corridor. Additional displacement of farm land required is not anticipated.

This alternative is consistent with EO 12898 Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations. As is documented in this section, this alternative would have no high and adverse impact to any impact category; therefore no disproportionately high and adverse human health or environmental effect on minority and low-income populations are to be expected. Potential impacts from the alternative would have the same social effects regardless of race or income level; therefore minority or low-income populations would not be disproportionately affected (refer to Population and Demographics Section).

Cumulative Impacts

Construction of this railroad extension directly contributes to the potential impacts associated with the railroad corridor (Alternative 2). For this alternative, the railroad extension would contribute to minor cumulative social and psychological impacts based on past, present, and reasonably foreseeable actions.

This alternative would have no adverse cumulative effects to minority or low-income populations when considering past, present, and reasonably foreseeable future actions.

Physical Aspects

Direct and Indirect Impacts

This alternative would result in minor impacts to the physical character of the community associated with increased vehicular traffic along the road corridor. A sound barrier will likely not be proposed to mitigate the road corridor noise impacts as it was not required for the railroad extension. No other physical intrusions or shadowing effects would result from construction of the road corridor itself. Temporary and minor noise impacts associated with the use of heavy equipment and air quality (dust) impacts during construction are anticipated. Assuming the road will be paved, no long-term air-quality issues associated with dust are expected and no other physical intrusions have been identified.

Cumulative Impacts

The anticipated minor impacts could contribute to minor cumulative impacts resulting from previous, current, and other reasonably foreseeable projects. Construction of the roadway corridor would change the physical aspect of this transportation corridor when considering the past construction of the railroad extension and the likely development of commercial, residential, industrial or recreational facilities along the corridor.

Visual Environment

Direct and Indirect Impacts

This alternative would result in minor impacts to the visual environment of the community. The construction of a road paralleling the new rail track would constitute a visual change, but the initial construction of the rail track would incur a majority of these impacts to the visual setting. This alternative does not include construction of any associated appurtenances, whistle stop locations, or railroad support facilities or any other secondary development. The new road corridor is proposed within the ARR ROW to minimize social and environmental impacts in general, including visual. This alternative would involve construction within previously undeveloped areas and could have minor visual impacts to recreational users (hikers, hunters, snow machining, etc.).

Cumulative Impacts

The minor direct and indirect impacts incurred by this project could have a minor contribution to cumulative visual effects when considering other past, present and reasonably foreseeable projects. Construction of this roadway corridor would further change the visual setting of this previously undeveloped area of Houston. The potential for additional development is possible, but is not considered in this cumulative impacts assessment as there are currently no funded projects of this nature.

Land Use

Direct and Indirect Impacts

Anticipated land use impacts for a number of potential railroad alternative route and alignment combinations were identified in the Rail Extension's environmental document. The adverse impacts that were identified in the EIS would be directly related to construction of the railroad and acquiring the necessary ROW. As a result, associated direct and indirect land use impacts resulting from construction of the roadway within the ARR ROW would result in negligible impacts. Construction of this roadway would provide opportunity for future moderate growth and economic development for the City and is therefore compatible with the community goals, outlined in section 2.5 *Physical and Social Community Characteristics*, as part of Houston's Comprehensive Plan Update. The potential for moderate growth and development was reviewed by members of the public at the CIA Open House and encouraged the potential controlled moderate growth.

Cumulative Impacts

Construction of this railroad corridor directly contributes to the anticipated impacts incurred by the railroad extension project (Alternative 2). This alternative would incur minor cumulative impacts to land use when considering past, present, and reasonably foreseeable future.

Economic Impacts Analysis

Direct and Indirect Impacts

The establishment of a roadway from Port MacKenzie to the Parks Highway in Houston would have minor impacts on the economic conditions in Houston. While more traffic may be traveling through the community, current lacks of services and amenities such as a gas station, grocery store, or other attractions limit the additional traffic's contribution to the local economy.

Cumulative Impacts

Because this alternative would only have minor direct and indirect impacts, cumulative impacts on the City's economic condition would also be minimal considering the past, present, and reasonably foreseeable future actions within Houston. If plans for development (including natural resource development, natural gas expansion or transportation, or business development) became more concrete initiatives, then further economic analysis could be conducted.

Mobility and Access

Direct and Indirect Impacts

The potential impacts to mobility and non-motorized access are unknown at this time. There is no current project design and the inclusion of multi-use pathways or trail systems is not currently known. Construction of the roadway corridor would provide additional access to Port MacKenzie facilities and thus could have a positive impact on commute traffic and possibly public transportation if such facilities such as bus service are provided for during the design. As no support facilities are proposed, there are no anticipated parking impacts.

Cumulative Impacts

This alternative would have only minor direct and/or indirect impacts and would therefore not contribute to cumulative impacts on mobility and access within the community of Houston when considering past, present, and reasonably foreseeable future actions.

Traffic and Circulation Impacts

Direct and Indirect Impacts

The traffic impacts would not be highly significant when compared to the current system. The existing distance from Millers Reach Road to the intersection of Purinton and Burma is approximately 15 miles via Big Lake Road. The alternative corridor between these same two points would be approximately 16 miles. Therefore, the benefit for travel would be exclusively based on the fact that the new route would have a design speed of 65 mph, compared to Big Lake Road which is currently posted at 55 mph, and the reduced turbulence of adjacent access along Big Lake Road and the avoidance of existing and future traffic signals or roundabouts in Big Lake. See Figure 12 below.

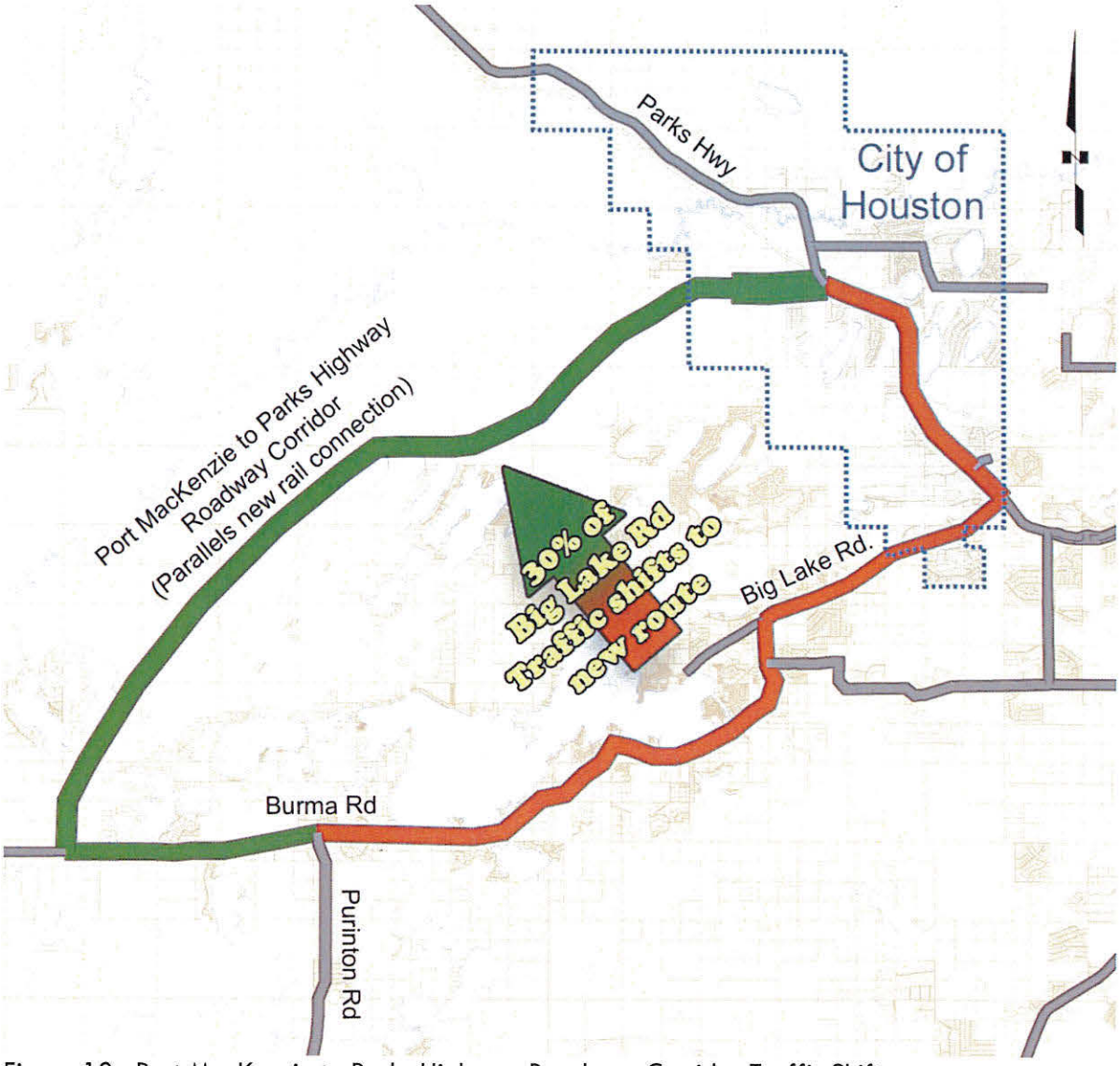

Figure 12. Port MacKenzie to Parks Highway Roadway Corridor Traffic Shift

Likely effects of a new and improved route between Port MacKenzie and Houston include a shift of traffic volumes from Big Lake to Houston of about 4,000 vehicles per day, which is approximately 30% of the daily traffic on Big Lake Road. A large percentage of the heavy 10 vehicle trips on Big Lake Road would be included in this shifted traffic, particularly after the construction of the proposed Knik Arm Bridge. The decrease in travel time using the new route, if the travel speed is 65 mph, is approximately 5 minutes, considering side street friction and intersection delay due to signals and roundabouts. *See Appendix C Traffic Impacts of Major Planning Projects*

Cumulative Impacts
This alternative could result in changes in economic development and land use based on the projected travel along the corridor. Increased traffic volumes through Houston may allow for greater interest in development along the corridor and Parks Highway.

Provision of Public Services

Direct and Indirect Impacts
Public facilities such as schools and recreational facilities are not currently at capacity or over capacity given the relatively low population of Houston. The change in demand for additional public services is minimal or null as a result of the roadway corridor. There is no existing public water or wastewater service in Houston and no public facilities are proposed for construction within Houston as part of this alternative; therefore no effect on public facility density within the community is anticipated. At this point, the roadway corridor would be providing access to industrial facilities at Port MacKenzie; therefore, impacts to public facilities in Houston are not anticipated.

Cumulative Impacts
This alternative would have no cumulative impacts on public facilities within the community of Houston when considering past, present, and reasonably foreseeable future actions.

Safety

Direct and Indirect Impacts
Impacts to transportation safety for this alternative are anticipated to be minor. Although safety measures have been incorporated into the design of the railroad corridor (i.e. road/trail crossing indicators and grade-separated crossings), the potential conflict between roadway users and the railroad is possible. Emergency vehicles requiring access to Port MacKenzie may be able to respond quicker to emergencies resulting in additional positive impacts. This alternative is not expected to have any direct or indirect impacts to criminal activity within the community.

Cumulative Impacts
This alternative would not contribute cumulatively to safety impacts within the community of Houston when considering past, present, and reasonably foreseeable future actions.

6. Opportunities, Limitations and Mitigations Identified:

The City of Houston's rural setting and character is perceived as both an opportunity and a limitation when considering future development of the community. There is ample land availability that could support industrial, commercial, and residential of development. The existing Parks Highway, which bisects the community, as well as the construction of the Rail Extension could further encourage development in Houston. The Extension is viewed as a catalyst for increasing the likelihood of manufacturing, mineral export, or transportation activity taking place in Houston due to its location between the Interior and Southcentral Alaska (see Appendix B). In the short-term, though, the lack of any clear reason or need for Alaska Railroad to invest in infrastructure other than the tracks, such as a loading facility which would support the transportation of any natural resource production, will limit any such development.

Port MacKenzie currently offers minimal infrastructure and associated economic activity, but combined with investment in rail access, a possible gas pipeline, and additional private investment, the Port is viewed as a factor positively impacting the entire region. There is opportunity for the City of Houston to capitalize on growing activity at Port MacKenzie. Possibilities include the potential to host an export facility for coal, gravel, timber, and other natural resources or serve as a staging area for movement of construction materials for oil and natural gas or other major infrastructure projects. These opportunities could become more likely with the completion of the Rail Extension or the construction of a Port MacKenzie to Parks Highway Roadway Corridor in Houston. The key for activities like this to develop in Houston will be action initiation and investment by the private sector.

The increasing traffic volumes on the Parks Highway may provide an opportunity for development along the Highway corridor and if the Port to Parks Roadway Corridor were to be constructed in Houston, use of the Parks Highway would continue to increase. The tourism industry in Houston could benefit from increases in traffic and capitalize on the Little Susitna River which runs through the Houston City limits, as well as summer use of the lakes for fishing and recreation and the multi-use trails in the winter. Two limiting factors for growth of tourism around the Little Susitna River, however, are access and reduced salmon runs. There currently is no formal boat launch and so boaters use a number of ad-hoc launches along the Parks Highway. Continuing reductions in salmon numbers limits the amount of potential tourism by fishermen, who are the main users of the Little Susitna River.

While land may be plentiful and potential for growth seemingly high, a limitation in development is the low penetration of utilities throughout the community. While there are opportunities to develop relatively large lots that offer privacy, the cost of extending natural gas and electricity utilities can be prohibitive. Population density is the most significant factor reducing availability of natural gas in Houston, especially for residential customers. For this reason, natural gas is unavailable to many residential homes, underlying the reliance on expensive heating oil or wood-burning stoves, which could continue to limit development.

The City of Houston could consider a few approaches if the expansion of utilities became a community priority, including (See Appendix B, Economic Opportunities Report):

- Local Taxation
- Bonding
- State Funding
- Partnering with a Native Organization
- Improvement Districts

Opportunities for new businesses to develop in Houston are supported by the need for amenities such as a gas station or grocery store within the community, the availability of land, increasing traffic along the Parks Highway, and the Park Highway upgrades. The limitations for commercial development reflect similar limitations encountered by industrial and residential development; limited access to utilities, high energy costs, and a small low-density population. However, with the Parks Highway MP 44-52 Upgrade improving access and safety at the intersection of Big Lake Road and the Parks Highway, the potential for new businesses to develop around that location might increase.

During discussions with stakeholders in April, 2015, a number of individuals noted the possibility of Houston becoming a center for both retail marijuana sales and wholesale growing and processing facilities. With the passage of a ballot measure in the fall of 2014 legalizing marijuana in the state and municipalities like Anchorage and Wasilla starting to restrict the use and sale of marijuana, stakeholders thought Houston would benefit if it could position itself as the market for marijuana. While some viewed marijuana as a benefit to the community, a small number of interviewees disapproved of the encouragement of legal marijuana-related activities in Houston. Pointing to the possible social costs of drug use, these stakeholders said they would support restrictions on the local sale and growing of marijuana. On October 6, 2015 Houston voters failed a measure to prohibit commercial marijuana facilities.

When any new development or major action is taken within the City of Houston, the consideration of the action's consistency with community character is essential. The City's Comprehensive Plan outlines goals and policies which are designed to maintain community character and guide desired development with the City. Mitigation between economic development and the maintenance of community character as defined by the policies and goals in the Comprehensive Plan will be essential for successful development within the City of Houston.

7. SUMMARY:

The CIA assessed potential impacts three transportation projects could have on the City of Houston. The Parks Highway MP 44-52 Upgrade will result in minimal short-term direct impacts to the city. Changes in intersection alignment, property access, and vehicle and pedestrian safety and facilities may result in slight land use changes or development of land around the intersection of Big Lake Road and the Parks Highway in the future. Cumulative impacts to the City of Houston due to the Upgrade will be minimal.

The construction of the Rail Extension from Port MacKenzie to the main line in Houston will have moderate land use impacts for the City of Houston, but minimal short-term direct impacts for all other impact categories. The conversion of vacant land to railroad use will not have significant impacts on residents or use of the vacant land, but has the potential to support the changes of land use around the new Rail Extension in the future to non-residential types of development. Long-term cumulative impacts from the Rail Extension could include development that supports industrial activities, commercial development, and support additional transportation facilities such as roadways. Industrial and natural resource development around the new rail junction could have impacts to Houston's economy, but due to the lack of reasonably foreseeable future actions which could be analyzed the impacts are not able to be identified.

The conceptual Port MacKenzie to Parks Highway Roadway Corridor, connecting to the Parks Highway in Houston near the new rail junction, would have moderate direct traffic impacts for the City of Houston. If the conceptual project were to be built, the projected traffic volumes would shift about 30% of anticipated traffic on Burma Road and Big Lake Road to the new corridor. This traffic would then continue along the Parks Highway through Houston. Direct short-term impacts, other than that to traffic, would be minimal. However, cumulative future impacts could include changes in land use from vacant to that which would support development along the roadway corridor, as well as the more heavily trafficked Parks Highway. Development and higher traffic volumes may initiate changes in Houston's economy.

Many individuals stated during interviews, the CIA open house, and through the household survey that they felt Houston was poised for expansion and had the right attributes to turn the community into a place that would attract residents, new business, and visitors. Most saw Houston being perfectly situated to benefit from a variety of large infrastructure projects such as the development of Port MacKenzie and the accompanying Rail Extension, improvements to the Parks Highway, interim solutions to provide the Interior with natural gas, and the eventual final goal of construction of a natural gas pipeline from the North Slope. While the ideas and long-term visions are numerous, concrete initiatives have not been developed beyond speculation. A possible slowed growth of Houston could include the limited access to natural gas, a relatively small low-density population, growing congestion on the Parks Highway, difficulties in attracting tourism and new businesses to the area, and the possibility that nearby large infrastructure projects may have minimal effect on the city's economy.

Although the alternatives assessed may not directly produce a significant change in the community, the long-term cumulative impacts could be significant. Houston has the potential to emerge as a key connection point for material goods as well as people traveling between Interior and Southcentral Alaska, all of which provides greater growth potential for the City. It should be expected that the City will continue to experience steady population growth and see an increase in the potential for economic development. Maintenance of Houston's unique community character will need to be a priority when considering development actions as well as compliance with the city's goals and policies as defined by its Comprehensive Plan.

8. Future Impacts Assessment Recommendations:

If a significant action was taken by a public or private entity, such as the construction of the Port MacKenzie to Parks Highway Roadway Corridor in Houston or development of a large industrial facility, it is recommended that the City of Houston conduct an economic analysis and potential update of the Community Impact Assessment. A significant industrial development within the City could produce changes in employment availability, transportation routes and modes frequently used, and land use. Because of this possibility, an update to the CIA would be recommended in order to more adequately support future planning processes undertaken by the City of Houston.

9. REFERENCES:

Federal Highway Administration, U.S. Department of Transportation (FHWA 1996). Community Impacts Assessment – A Quick Reference for Transportation. Publication No. FHWA-PD-96-036. September 1996.

Surface Transportation Board, Final Environmental Impact Statement, Alaska Railroad Corporation Construction and Operation of a Rail Line Extension to Port MacKenzie, Alaska. Docket No. FD 35095. March 2011.

APPENDIX A: PUBLIC INVOLVEMENT SUMMARY

June 4, 2015 Community Impact Assessment & Comp. Plan Review Open House 2 – CIA

Project: City of Houston Community Impact Assessment & Comprehensive Plan Revision

Project No: R&M 2136.01

Purpose: Open House for public to review and comment on draft CIA findings

Date: Thursday, June 4th, 2015

Time: 4:30PM – 6:30PM

Location: City of Houston Fire Station

Meeting Attendance: 28 members of the public and Steering Committee member were present

Project Team in Attendance:

R&M Consultants

Van Le, AICP Project Manager

Taryn Oleson Planner & PI Coordinator

Kristi McLean Environmental Specialist, CIA Lead

City of Houston Steering Committee Members

Mayor Virgie Thompson

Lance Wilson, Deputy Mayor

Len Anderson, Chair Steering Committee

Ron Jones

Chris Johnson

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MEETING SUMMARY

As the public entered the Fire Station, they were greeted by a member of the R&M project team who provided a breif explination on what the CIA is and the purpose of the open house. Attendees signed in, picked up a Fact Sheet on the transportation alternatives assessed in the CIA, and helped themselves to snacks and refreshments. In the truck hull of the Fire Station a variety of boards were on display.

The maps on display were the focus of the open house. Three graphics on large 34x44'' boards depicted the potential impacts identified in the CIA to this point. Each graphic showed impacts for one of three impact categories; Transportation, Land Use, and Economic impacts. Impacts were shown geographically on a map of the City of Houston. In addition to the three main boards, a copy of each graphic was printed on the same large size paper and places on tables for attendees to write directly on. See Attachment A. Supporting the three City of Houston CIA graphics were maps of the existing conditions within Houston, including zoning, land use, land use by zoning. A board showing the Transportation Plan map from the adopted City of Houston 1982 Comprehensive Plan was also on display for refernce.

Members of the public were encouraged to read the three CIA maps and provide any comments, concerns, or opinions regarding the information shared. Markers and pens were provided on each table with a CIA map on it and any feedback provided by attendees could be written directly on the map. Comment forms were provided throughout the Open House space to allow written comments to be recorded.

Members of the project team and the Steering Committee engeged in conversations with the public about the process and the goals of performing a CIA. Generally, the public in attendance concurred with the impacts identified. Little new information emerged during the open house; most discussion focused around the opportunities that could emerge due to some of the impacts identified. The Economic Impacts map yeilded discussion around the potential development that could occur around the new Port-MacKenzie Rail Extension , including zoinng the new areas for industrial development and Knikatnu Inc developing an LED Assembly Facility south of Millers Reach Road. The information and opinions gathered on the impacts identified in the CIA will be incorporated into the CIA report.

Additional comments not directly related to the CIA impacts were largely related to the development of parks and establishment of more services and amentities, such as a gas station and grocery store, in the area. This information will be incorporated into the Comprehensive Plan Revion effort.

The public was made aware of the open house through direct postcard mailings, an e-notification remainder, and information posted to both the project website as well as the City of Houston's website. The draft CIA will be made available for review by the public via the project website once it has been approved for release by the Steering Committee.

Community Impact Assessment

INFO SHEET

PLANNING COMMISSION

NOVEMBER 7, 2016

What is a CIA and why is the City of Houston conducting one?

A Community Impact Assessment (CIA) is an evaluation of potential impacts transportation projects could have on the community of Houston. Each project analyzed has the potential to impact the socioeconomics, physical environment, and future growth and development in Houston. The CIA will serve as a planning tool and reference for the City and the Mat-Su Borough by ensuring the needs, opinions, vision and goals of the community are acknowledged and documented to help guide compatible growth and development within and around Houston. The CIA is being conducted concurrently in support of the City's Comprehensive Plan Update.

TRANSPORTATION PROJECTS ANALYZED

Parks Highway Upgrade MP 44-52 Phase 3 Pittman Road to Big Lake Road

PLANNED - AKDOT&PF

- Proposed signalized intersection at Parks Hwy and Big Lake Road and at S. Johnson Road in Wasilla
- Pedestrian improvements include realignment of the pathway along Parks Hwy and Big Lake Rd; a pedestrian island and crosswalk at the intersection of Big Lake Rd and Parks Hwy
- Proposed four-lane divided Hwy from MP 44 in Wasilla returning to a two-lane Hwy after Forrest Lake Drive in Houston
- Proposed lighting at the intersection of Big Lake Road and the Parks Hwy; along the Parks Hwy
- Proposed access and driveway consolidation
- Construction planned for 2017-2018

Port MacKenzie Rail Extension

PLANNED AND IN CONSTRUCTION - ARRC & MSB

- 32-mile extension of the ARRC system to connect Port MacKenzie to the mainline along Parks Hwy
- Extension passes Houston Lake Loop Trail and Horseshoe Lake with connection to the mainline north of Miller's Reach Road
- Grade-separated crossings planned at officially recognized trails and roads
- No support facilities planned as part of the extension

Port MacKenzie to Parks Highway Roadway Corridor

CONCEPTUAL PROJECT

- Road alignment reflects concept shown in the adopted 1982 City of Houston Comprehensive Plan, Transportation Plan Map
- Road alignment parallels the Port MacKenzie Rail Extension alignment
- Conceptual corridor is 800' wide centered on the Rail Extension alignment, designed for a 2-lane 65 mph Hwy
- Anticipated primary use for freight and truck traffic to and from the Port

FOR MORE INFORMATION PLEASE CONTACT

PROJECT MANAGER: VAN LE, AICP | R&M Consultants, Inc. | vle@RMConsult.com | 907.646.9659

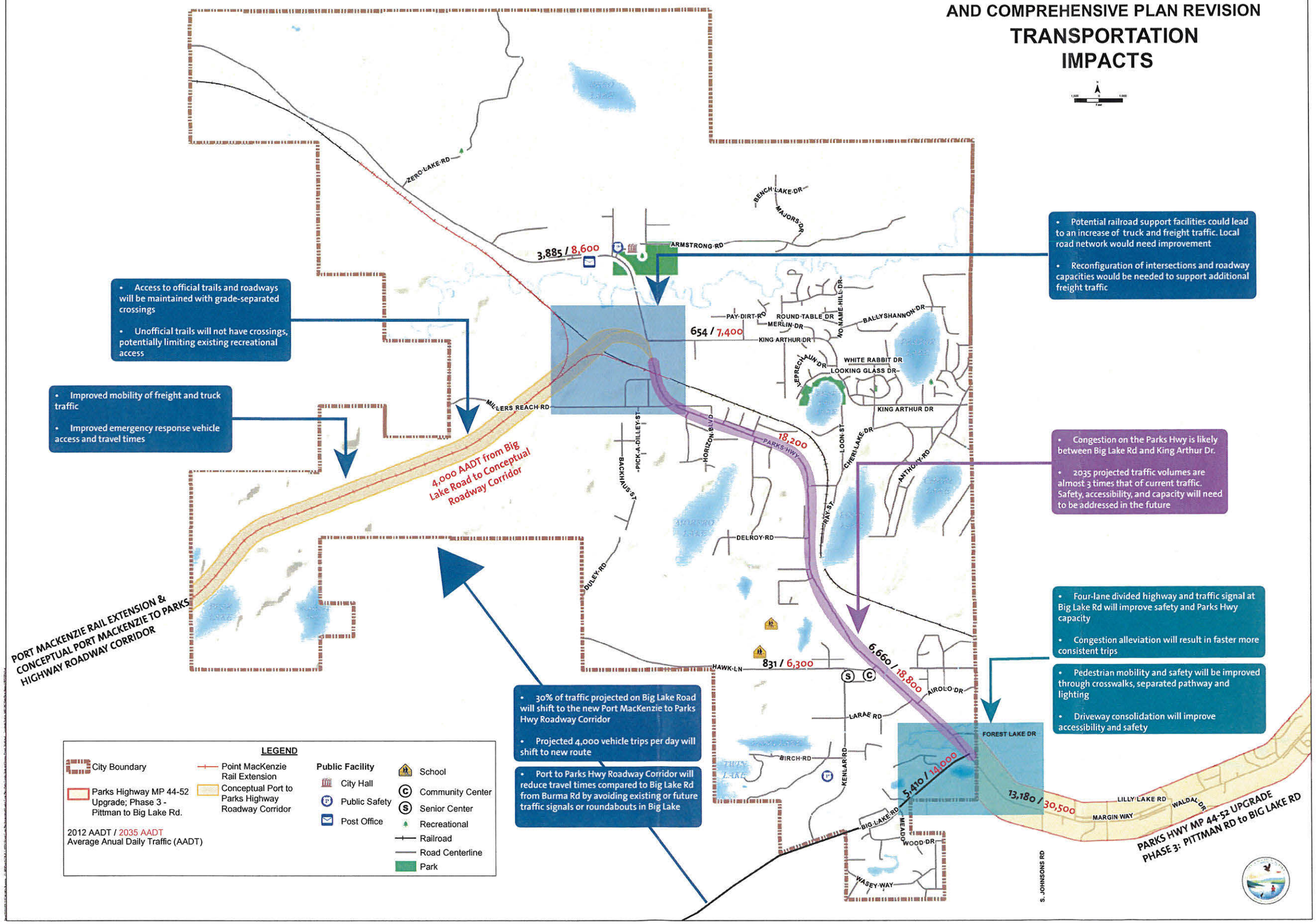
PLANNER & PUBLIC INVOLVEMENT COORDINATOR: TARYN OLESON | R&M Consultants, Inc. | Comments@RMConsult.com | 907.646.9645

VISIT THE PROJECT WEBSITE: WWW.HOUSTONAKCOMPPLAN.COM

City of Houston

COMMUNITY IMPACT ASSESSMENT AND COMPREHENSIVE PLAN REVISION

TRANSPORTATION IMPACTS



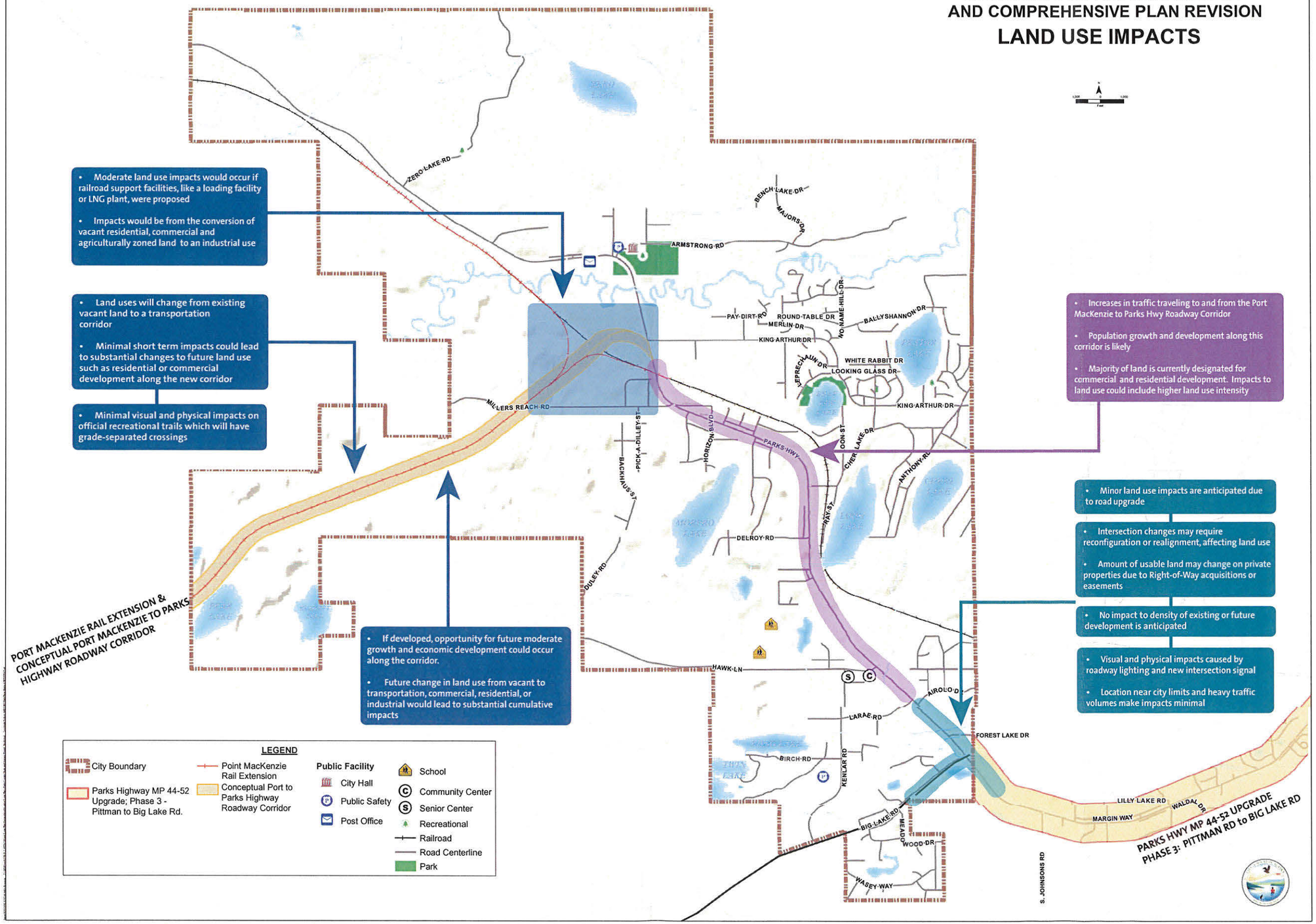
MAY 2015

FIGURE 1

City of Houston

COMMUNITY IMPACT ASSESSMENT AND COMPREHENSIVE PLAN REVISION

LAND USE IMPACTS



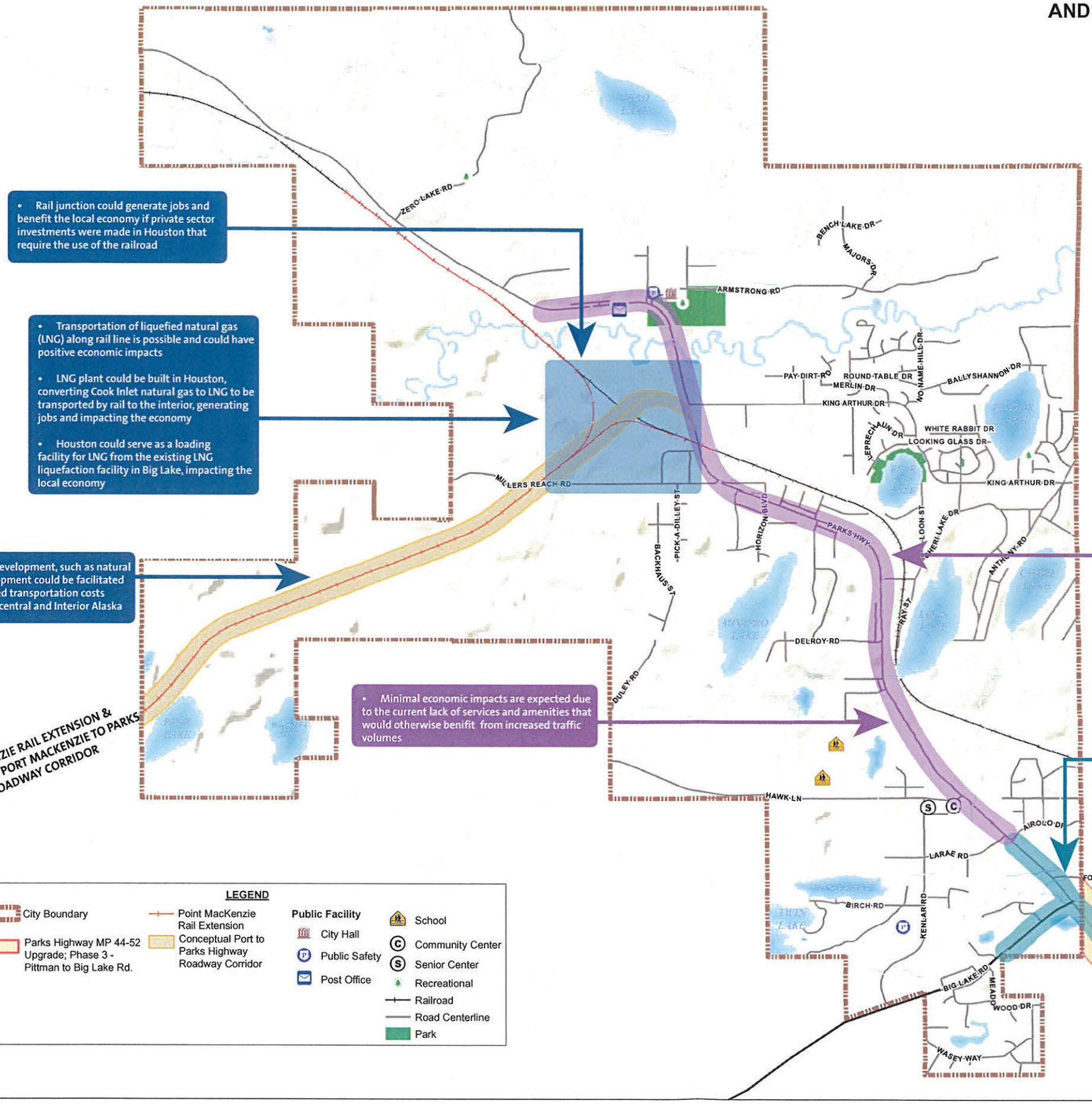
MAY 2015

FIGURE 2

City of Houston

COMMUNITY IMPACT ASSESSMENT AND COMPREHENSIVE PLAN REVISION

ECONOMIC IMPACTS



- Rail junction could generate jobs and benefit the local economy if private sector investments were made in Houston that require the use of the railroad
- Transportation of liquefied natural gas (LNG) along rail line is possible and could have positive economic impacts
- LNG plant could be built in Houston, converting Cook Inlet natural gas to LNG to be transported by rail to the interior, generating jobs and impacting the economy
- Houston could serve as a loading facility for LNG from the existing LNG liquefaction facility in Big Lake, impacting the local economy
- Economic development, such as natural resource development could be facilitated due to decreased transportation costs between Southcentral and Interior Alaska

PORT MACKENZIE RAIL EXTENSION & CONCEPTUAL PORT MACKENZIE TO PARKS HIGHWAY ROADWAY CORRIDOR

- Minimal economic impacts are expected due to the current lack of services and amenities that would otherwise benifit from increased traffic volumes
- Utility expansion might increase economic development opportunities due to the availability of land and natural gas
- Utility expansion is currently limited by low population density, especially for residential customers where expansion is not feasible if costs cannot be shared
- If utility expansion becomes a community priority the City could consider the following strategies: local taxation, bonding, state funding, partnering with tribal organizations and the designation of improvement districts
- Potential for economic development along the Parks Hwy due to increases in traffic volumes and population growth
- Development ideas are conceptual; until there are development plans, actual economic impacts are minimal
- Minimal direct and indirect impacts to economic development in Houston
- Potential for economic development due to improved intersection and access management which may attract more businesses to this location
- Development ideas are conceptual; until there are development plans, actual economic impacts are minimal

PARKS HWY MP 44-52 UPGRADE
PHASE 3: PITTMAN RD to BIG LAKE RD

LEGEND

- City Boundary
- Parks Highway MP 44-52 Upgrade; Phase 3 - Pittman to Big Lake Rd.
- Point MacKenzie Rail Extension
- Conceptual Port to Parks Highway Roadway Corridor

Public Facility

- City Hall
- Public Safety
- Post Office
- School
- Community Center
- Senior Center
- Recreational
- Railroad
- Road Centerline
- Park

MAY 2015

FIGURE 3

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APPENDIX B: ECONOMIC DEVELOPMENT OPPORTUNITIES: PERSPECTIVES OF COMMUNITY STAKEHOLDERS

City of Houston Economic Development Opportunities: Perspectives of Community Stakeholders

Draft Report

Prepared for:

City of Houston

Prepared by:

McDowell GROUP

Juneau • Anchorage

April 2015

Table of Contents

Introduction **1**
Methodology 1
Perceived Community Strengths and Weaknesses **2**
Rural Lifestyle 2
Land Availability 2
Local Government Leadership 3
Parks Highway Access 4
Improved Fire Safety 4
Lack of Local Amenities 4
Tourism Development **5**
Little Susitna River 5
Other Attractions 5
Utility Development **7**
Natural Gas 7
Electricity 8
Strategies for Supporting Utility Expansion 8
Port MacKenzie Impacts **10**
Rail Extension Impacts **11**
Other Concepts **13**
Energy 13
Conclusion **16**

Introduction

The process to update the City of Houston's Comprehensive Plan is currently underway. Additionally, a Community Impact Assessment is being conducted to evaluate the economic growth potential of several infrastructure projects in progress within or adjacent to the city's boundaries. Examples of these projects include the Port MacKenzie Rail Extension, the Parks Highway MP44-52 upgrade, future Parks Highway segment upgrades, Parks Highway Alternative Corridor, and the annexation of Knikatnu-owned land into City of Houston's boundaries. As part of this assessment, stakeholders with an interest in economic, business, and industrial development in Houston were interviewed. They were asked about the potential of various infrastructure and business opportunities to create employment, generate City revenue, improve community assets, and Houston's vision to respond to growth and change.

Methodology

Working closely with the City of Houston Comprehensive Impact Assessment and Comprehensive Plan Revision Steering Committee, McDowell Group developed a list of contacts that represented a cross-section of business and community groups and interests related to Houston, including tribal organizations, nonprofits, business leaders, school district officials, utility representatives, and others. Below is a list of the 19 stakeholders interviewed. An interview protocol was designed and adjusted to best capture the interests, experience, and expertise of individual stakeholders.

Name	Title	Organization/Affiliation
Lisa Byrd	Site Manager	Mid-Valley Senior Housing
Rick Dilley	Owner	Cozy Coal
Julie Estay	Director of Public Relations	Matanuska Electric Association
Gary Fandrei	Executive Director	Cook Inlet Aquaculture Association
Robert Hall	Owner	Gorilla Fireworks
Tom Harris	Chief Executive Officer	Knikatnu, Inc.
Thomas Hood	Fire Chief	Houston Fire Department
Jimmy Hudson	Facility Manager	Spenard Builders Supply
Marty Metiva	Executive Director	Mat-Su Resources Conservation and Development
Deven Mitchell	Executive Director	Municipal Bond Bank
Richard Porter	Executive Director	Knik Tribal Council
Roger Purcell	Past Houston Mayor/General Manager	A to Z Realty
Chad Rice	Teacher	Houston High School
Kevin Shumway	Pastor/Fire Department Chaplin	Hilltop Assembly of God/Houston Fire Department
Tim Sullivan	External Affairs Manager	Alaska Railroad Corporation
Marc Van Dongen	Port Director	Port MacKenzie
Marsha VonEhr	Document Specialist	Mat-Su Borough
Dee Williams	Network Account Executive	Matanuska Telephone Association
Bruce Zmuda	Marketing Representative	Enstar

Perceived Community Strengths and Weaknesses

What are the City of Houston's strengths and weaknesses?

Stakeholders were each asked what they believed were Houston's core community strengths and weaknesses to attract economic and business development opportunities. Some community attributes were considered both an advantage and a disadvantage when considering opportunities for growth.

Rural Lifestyle

Houston's rural setting emerged as both a strength and weakness. Quick access to the wilderness, a tight-knit community, lack of pollution and development, and privacy were a few factors mentioned as strengths. Stakeholders spoke of a "homestead spirit" prevalent in the area. "There is an attitude in Houston," one resident noted, "that if you are not bothering anyone, you should be left alone." "Last year, our neighbor bought a piece of land and is building a home out-of-pocket," a stakeholder stated, adding "This can be great for a young family that might not be able to get financing. And this contributes to the do-it-yourself attitude of Houston."

While these factors were noted as positive attributes, the same may also detract from residents' satisfaction with Houston's quality of life. As noted by several stakeholders, the "hands-off" attitude has resulted in homes of varying degrees of completion, properties full of old cars and trash, dogs being allowed to run around, and a general lack of consideration for other residents. Yet, some stakeholders noted they see improvement over time: "In the 15 years I have been in Houston, I have seen slow improvement. People seem to be taking better care of their homes and are just having more consideration for others in the community."

The benefit of being able to maintain a rural lifestyle while having access to shopping, services, and healthcare in the Mat-Su Borough and Anchorage was noted by a number of stakeholders. At the same time, some felt the distance from these amenities and services was limiting, especially for employment opportunities. "There are not many jobs locally," a resident said, adding "Many people have to drive into Wasilla to get a decent job, a round-trip commute that can easily be an hour."

Land Availability

Many stakeholders recognized there are significant amounts of developable land available in Houston while others noted the counter-effects of low population density. Both residential and commercial land in Houston is considered relatively inexpensive when compared to other places in the Mat-Su Borough or Anchorage. "This really is an advantage for us," said one interviewee, "we have the ability to grow and maybe attract businesses

because of the room available in Houston. We already see some manufacturing in Big Lake. Maybe Houston can do the same thing."

The supply of land for residential development also appears to be sufficient and affordable. "While residential land prices have increased recently, our prices are still pretty low compared to other areas in the Borough," a stakeholder familiar with the local real estate market stated.

While land may be plentiful, the downside is the low penetration of utilities throughout the community. While there are opportunities to develop relatively large lots that offer privacy, the cost of extending natural gas and electricity utilities can be prohibitive. For this reason, natural gas is unavailable to many residential homes, underlying the reliance on expensive heating oil or wood-burning stoves.

Local Government Leadership

Viewpoints about city government were polarizing. Supporters cited stability, pragmatism, low taxes, and a willingness to hear new ideas, and new and enforced codes and zoning laws to improve the aesthetics of the community and manage growth. Critics felt City leaders was short-sighted; they also wanted to see a local police force funded.

The proposed annexation of land owned by Knikatnu Inc., an Alaska Native village corporation, into the City of Houston is due, in part, to favorable attitude of City leaders. A Knikatnu representative felt they would be treated fairly by the City, saying "We view the City of Houston as a stable local government that will provide value to our organization as we plan for future development."

Local Road Conditions

The condition of local roads was a concern expressed by several stakeholders. With many of Houston's residential areas accessed on dirt roads, some felt the low quality of the roads was slowing residential growth. "People don't want to drive miles and miles on a bumpy, washed-out dirt road. There is good quality residential land that could be developed if it was not for some of the bad roads in Houston," said an interviewee.

One stakeholder in particular thought the City should be more forceful with the Mat-Su Borough on the issue of road maintenance. "Years ago, the Borough built roads in Houston that simply cannot be maintained properly. Now we have to deal with the Borough's bad decisions. I think the City should send the Borough a bill for all our road problems."

While many roads are currently dirt, the recent paving of some local roads, particularly Hawk Lane, was noted as a positive development. "I'm lucky to be able to drive nearly all the way to my house," said one stakeholder. "I hope we see more paving done in Houston as it helps increase home values and allows for easier commutes."

Parks Highway Access

With the Parks Highway bisecting the City of Houston, its effect was a common theme heard. Most individuals thought the Highway was a significant benefit to the community, even with growing congestion.

A number of interviewees mentioned they thought Houston could take better advantage of the many vehicles traveling through Houston. "Houston has two rivers—the Little Susitna and the Parks Highway, which is a river of money; we just need to get a few dollars from every vehicle and we will be doing fine," stated one local business leader. "With thousands of vehicles traveling through Houston every day on the Highway, the small number of businesses along the highway benefit from purchases of snacks, meals, and other supplies."

Several stakeholders mentioned a significant increase in traffic in recent years, resulting in longer commute times to Wasilla or Anchorage, and more potential for traffic accidents. "Today, if you do not time a run into Wasilla correctly you could be stuck in traffic on the Parks for 20 minutes or more," mentioned one resident. "This is not something we dealt with in the past. And with all the traffic on the highway we need to be careful when we are just going to a friend's house. Transitioning from a slow dirt road to a highway with people driving 70 miles per hour can be dangerous."

Improved Fire Safety

A few interviewees pointed to the leadership of the fire department, a new fire station, better training, and improved equipment as factors as major steps to improve community safety, leading to a decrease in the cost of fire insurance paid by homeowners and businesses.

Lack of Local Amenities

The lack of amenities, such as a gas station, grocery store, medical clinic, and public transportation were mentioned as weaknesses faced by the residents of Houston. Interviewees noted it would be preferable to support local businesses and organizations instead of traveling to Willow, Talkeetna, Big Lake, and Wasilla. "There is plenty of demand for a gas station or small grocery store but everyone drives out of Houston for basically all their needs," said one stakeholder, adding "If we could start supporting Houston businesses, we might be able to grow our economy."

What does Houston currently have that attracts tourists? What should be developed to increase tourism?"

Little Susitna River

The Little Susitna River (Little Su) runs through Houston City limits and is perhaps the most significant tourism asset in the area, according to most stakeholders. Salmon and trout fishing, rafting, camping, and wildlife viewing make the Little Su a visitor destination. While most activity takes place in the summer, snowmachining, cross-country skiing, and snowshoeing were mentioned as winter-time activities available on the Little Su.

Two limiting factors for growth, however, are access and reduced salmon runs. A number of interviewees mentioned there is no formal boat launch; boaters currently use a number of ad-hoc launches along the Parks Highway. A common one- or two-day trip is to put-in at Houston and take-out at Burma Landing. Reduced salmon runs on the Little Su have resulted in reduced fishing originating in Houston. An interviewee that had lived in the area 30 years noted there are fewer guides offering their services on the Little Su: "Back in the 80s and 90s, there were at least ten guides working on the Little Susitna. Today there are maybe one or two. In my view, this is a result of lower salmon runs."

Other Attractions

In addition to the Little Su, interviewees noted a variety of other tourism activities and assets Houston has to offer:

Lakes

Visitors can engage in a variety of activities on Houston's six larger lakes, including fishing in the summer and winter and canoeing or rafting. Three lakes are stocked annually by Alaska Department of Fish & Game with chinook and coho salmon, and rainbow trout. Limited public access to lakes may be preventing visitors from frequenting these water bodies at a higher rate.

Winter Multi-use Trails

Houston offers access to trails frequented by dogmushers, cross-country skiers, and snowmachiners. Interviewees noted that Houston's proximity to the Talkeetna Mountains make the area a good staging area. "We are 30 minutes away from world-class snowmachining and backcountry skiing," mentioned a stakeholder who was hoping to build some cabins to cater to winter tourists.

Town Center

The concept of a developed town center was raised by a few stakeholders. Noting the proximity of the Little Su, some thought Houston could become a "destination" through development of waterside boardwalks, small shops, restaurants, and art galleries. "The setting is perfect," one individual noted. "People could come out from Wasilla, Palmer, or Anchorage to have a relaxing evening along the Little Susitna."

The possibility of music and art festivals, a brewery, or even a convention center being built in Houston were also mentioned.

Is access to utilities an issue for Houston residents and businesses?

Natural Gas

Stakeholders indicated lack of access to natural gas has led to higher heating costs and stifled economic development for Houston and its residents. While stakeholders report the majority of commercial properties have access to natural gas, many residential homes rely on heating oil (51 percent), wood (23 percent), and electricity (9 percent) for their primary space heating source instead of natural gas (14 percent) (*see table below*). This contrasts with Wasilla and the rest of Mat-Su Valley where 90 percent and 70 percent of homes use natural gas, respectively. Natural gas is traditionally a cheaper energy source than heating oil or electricity.

Primary Source of Space Heating by Source, 2013

	City of Houston	City of Wasilla	Mat-Su Borough
Heating Oil	51%	5%	15%
Wood	23	1	7
Natural Gas	14	90	70
Electricity	9	5	6
Other	4	<1	2
Total	**100%**	**100%**	**100%**

Source: United States Census Bureau, American Community Survey 5-Year Estimates, 2014.
Note: Some columns may not sum due to rounding.

Many stakeholders expressed improved access to natural gas would allow for more business and residential growth by reducing energy costs. This perspective was summed up by an interviewee: "If we could combine the land we have that is available with natural gas, businesses in Wasilla or even Anchorage might move out here. It really comes down to lower costs; if people can save money, they will come out here."

Other interviewees spoke about the impact natural gas could have on space-heating costs at the residential level. "Houston can be cold in the winter," a resident said. "It is not uncommon for us to experience weeks of below zero [temperatures]. Many of us use heating oil and supplement our energy needs with wood. If we could access natural gas, a fuel that could be more than 30 percent cheaper, this would be huge for the community."

A representative from Enstar, the natural gas utility serving the area, stated population density was the most significant factor reducing availability of natural gas in Houston, especially for residential customers. Houston's relatively large lot sizes, dispersed residential zoning, and lack of anchor tenants contribute to the situation.

For many homeowners, transitioning to natural gas is cost-prohibitive if the installation costs cannot be shared with others. Enstar can credit a percent of future annual revenue from the customer, typically $600 for a residential home. The cost of extending natural gas lines to a home begins at $22.56 per foot and rises quickly when streams need to be crossed or larger pipe is needed.

Enstar reports they have been slowly expanding natural gas distribution lines in Houston. Currently, lines extend down Hawk Lane to Houston High School and Middle School, and from the west along King Arthur Drive. According the Enstar, continued expansion is expected to be slow.

Electricity

An Matanuska Electric Association (MEA) representative reported the same factors limiting the expansion of natural gas also apply to electricity: low population density, difficulty in obtaining right of way easements, customers not wanting trees cut down, road alignment, and the cost of running power lines being the most significant.

The cost to extend power lines are approximately $30 per foot or $160,000 per mile, with costs rising as more poles are needed. For the average homeowner, this makes connecting to the electric grid cost-prohibitive and results in the use of generators or other means to generate electricity.

Strategies for Supporting Utility Expansion

Interviewees noted a variety of approaches the City of Houston could consider if expansion of utilities becomes a community priority, including:

Local Taxation

The City of Houston has authority to raise revenue through a variety of taxes which could be used to help finance expansion of utilities.

Bonding

Revenue could be leveraged through bonding with the Alaska Municipal Bond Bank, a public corporation that helps provide communities with more favorable interest rates than they might be able to obtain on their own.

State Funding

Precedent exists for state funding to support development of utilities. Current examples include the expansion of natural gas distribution in Homer and Fairbanks.

Partnering with a Tribal Organization

The City of Houston may be able to partner with local tribal organizations to encourage expansion of utilities. The Knik Tribal Council (KTC) and the City of Houston have entered into a pilot project that would transfer responsibility of maintenance for some roads to KTC. Because KTC is a federally recognized tribe, they qualify for programs and funding unique to tribal entities. In addition to road maintenance, KTC also intends to provide 76 LED streetlights near Houston High School and Middle School as a demonstration of this partnership. This model of cooperation between the City of Houston and KTC, a number of interviewees mentioned, could be an additional strategy to increase utility expansion in the area.

Improvement Districts

Designation of an "improvement district" would allow Houston to pay for the cost of utilities expansion and effectively finance this expense through a special assessment paid by residents over time.[1] The City of Homer used this approach to increase access to natural gas by charging property owners a fixed amount upfront or financing the development expense at approximately 4 percent over ten years.

Discussions with the Mat-Su Borough reveal this is a common strategy for a wide variety of infrastructure projects. There are currently 68 improvement districts throughout the Borough. Two main types of improvement districts are used:

- *Contiguous improvement district* that requires at least 50 percent of a group of homeowners in a defined area to support an infrastructure project for it to be approved.

- *Non-contiguous improvement district* that only includes homeowners that support the project in question.

A representative from the Mat-Su Borough reported the former type of improvement district may be appropriate for Houston's unique situation.

[1] Section 4.18.010 of the Houston Municipal Code authorizes improvement districts.

Port MacKenzie Impacts

How will growth at Port MacKenzie impact Houston?

Port MacKenzie, located 42 road-miles from Houston, has the potential to impact Houston development. The Port is located on the west side of Cook Inlet, 3.5 miles from downtown Anchorage. Among other ideas, the Port could host a rail-loading or LNG export facility; facilitate export of coal, gravel, timber, and other natural resources; or serve as a staging area for movement of construction materials for oil and gas projects, or other major infrastructure projects (such as the Susitna-Watana Hydroelectric Project).

While the Port currently offers minimal infrastructure and associated economic activity, stakeholders were cautiously optimistic about future development and what it could mean for Houston and its residents. Many viewed the Port as one part of the broad development trajectory the area is on. Combined with investment in rail access, a possible gas pipeline, and additional private investment, the Port is viewed as a positive factor impacting the entire region.

How will the rail extension from existing rail lines to Port MacKenzie impact Houston?

The 32-mile construction of a rail extending from Port MacKenzie to existing rail in Houston is viewed by many as an opportunity for the area. This extension could decrease transportation costs between Southcentral and the Interior of Alaska, in turn encouraging development of mineral resources and other projects. A report commissioned by the Mat-Su Borough that examined the benefits of a similar rail extension concluded:

> *The quantifiable benefits from the Port MacKenzie to Willow rail link with respect to resource development can be divided into the following two major categories:*
>
> - *Benefits in the form of rail freight savings derived from the reduced haulage distances from natural resource production sites to tidewater at Port MacKenzie relative to the Ports of Anchorage, Whittier, and Seward.*
>
> - *Benefits to the Rail Belt communities in the form of enhanced economic diversification and economic development as a consequent of increases in natural resource production.* [2]

Interviewees saw great potential in having the "Y" (the connection between the new and existing rail lines) located in Houston. The extension was viewed as a factor increasing the likelihood of manufacturing, mineral export, or transportation activity taking place in Houston.

"Here we are," a local business owner stated, "located at the cross roads of the Alaska Railroad. We have land, access to natural gas is improving, some existing manufacturing, and are positioned between the Interior and Southcentral. It is sure to benefit the area." Other individuals echoed this perspective, pointing to resources locally such as coal, gravel, or timber that could be developed as a result of easier access to rail transportation.

Another stakeholder said Houston would need to be conscious of what is being moved through Houston as a result of the rail extension. "We don't want to be in a situation where the railroad is moving dangerous cargo through our City without the fire department being prepared for an accident." Asked about these concerns, a representative of the Alaska Railroad Corporation (ARRC) stated they regularly engage with local governments and first responders when moving new types of cargo through an area. The representative also noted ARRC has a long history of moving volatile cargo such as refined petroleum products and a variety of chemicals.

[2] Metz, Paul A., Economic Analysis of Rail Link, Port MacKenzie to Willow, Alaska, Prepared for the Matanuska Susitna Borough, 2007.

While many interviewees were optimistic about the long-term effects of the rail extension, ARRC indicated there are few marketable ideas in the short- to near-term that would warrant additional investment. "There really needs to be a reason for us to build anything beyond just the new tracks," an ARRC representative said. "If it is clear a loading facility or other infrastructure is needed in the future, we will deal with that then. Until that happens, we see minimal impact on Houston and its economy."

What other concepts have implications for economic development for Houston?

Energy

Several ideas or concepts involving or requiring natural gas were offered. One of the main assumptions accompanying these ideas was that more natural gas in Houston, whether by a pipeline from the North Slope or if existing utilities are expanded, would reduce the price of energy. Once the cost of energy was reduced, many interviewees stated, projects and ideas previously cost-prohibitive could move forward. The concept of "cheap energy" was mentioned a number of times while discussing potential projects that could impact Houston. The following is a brief overview of the natural gas-related ideas mentioned.

Natural Gas By Rail

While the Federal Railroad Administration currently restricts the movement of liquefied natural gas (LNG) by rail, ARRC has applied for permission and reports they are confident approval will be granted. Interviewees pointed to two ideas which would transport LNG to the Interior using rail and potential could impact Houston:

- An LNG plant could be built in Houston to convert Cook Inlet natural gas to LNG that would be transported by rail to the Interior. While a number of locations are being considered, ARRC points to three main reasons Houston is a preferred location: (1) Houston is optimally located between the Interior and Southcentral; (2) 10,000 feet of track space is already available; and (3) rail near Houston would require minimal site preparation to support loading and unloading of LNG containers.[3]
- Instead of constructing a new liquefaction plant in Houston, containers could be filled at the existing LNG liquefaction facility in Big Lake and transshipped by truck onto northbound rail cars in Houston. This concept would require minimal capital investment for ARRC and would be considered an interim solution for Fairbanks in its early stages of natural gas expansion.

Natural Gas Power Plant

The possibility of a natural gas-fired power plant being built in Houston was mentioned by a few stakeholders. Three factors supporting this perspective were raised: (1) the City's location along the Railbelt would allow a local power plant to provide electricity both to the Interior and Southcentral; (2) land is available; and (3) natural gas is nearby.

[3] http://www.akrdc.org/membership/events/breakfast/1415/wade.pdf

Industrial Greenhouses

An idea that necessitates access to "cheap energy" includes industrial greenhouses, according to one interviewee. "We ship virtually all our food up to Alaska. Maybe we should focus on building greenhouses and try to be more self-sufficient…Natural gas would be used to provide heat and existing agricultural zoning in Houston could be used," mentioned the stakeholder.

Septage Plant

The possibility of a wastewater treatment site in Houston was proposed to provide local economic activity and solve the existing septage problems faced by the Mat-Su Valley.[4] Septage from residential homes in the Mat-Su Valley is currently trucked to Anchorage where it undergoes treatment before discharge into Cook Inlet. This practice is expected to end in the near-term because of Anchorage's lack of capacity to process the waste. Some stakeholders supported development of a facility in Houston to not only benefit Houston residents, but the broader Mat-Su Valley as well.

A couple stakeholders mentioned Houston's septage treatment plant built in the 80s. After five years of operation, the facility closed due to groundwater concerns. While this precedent could mean Houston is a possible candidate for a facility, the Mat-Su Borough has already identified a location near the Borough landfill for a new treatment plant.[5]

Mining/Mineral Resources

Houston's legacy as a mining town was mentioned by a small but passionate number of stakeholders. Both the nearby coal that was mined until the mid-20th Century and extensive gravel resources were noted as opportunities to be developed. "We could start mining coal and export it through Port MacKenzie. This would represent the closet coal mine to the export facility." One contact added, "And there is enough coal that we could build a coal power plant and sell power to the Railbelt."

Gravel was also mentioned as a valuable resource that could be developed. One stakeholder stated, "With all the road construction that is going on in the proximity of Houston, we should be selling our gravel to all these projects."

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[4] Septage is the liquid and solid material that comes from septic tanks.
[5] http://www.frontiersman.com/news/soil-testing-narrows-septage-sites/article_de608c9c-db3f-11e4-8f71-676ca4d023d7.html?mode=story

Retail

A desire for more local retail businesses, specifically a grocery store and gas station, was expressed by interviewees. While no formal plans to locate a grocery store in or close to Houston were identified, two interviewees mentioned they had heard rumors that a gas station is being considered. Two locations were noted as possibilities: the Big Lake Road and Parks Highway intersection, and the gravel pit area across the Parks Highway from Millers Market.

One of the main issues slowing the development of a gas station in Houston, one stakeholder reports, was the 2 percent sales tax that would be paid on gas and diesel. "People are very price sensitive to the cost of gasoline and diesel. If they can save a few cents per gallon, they may avoid a gas station that has to pay a tax." This same stakeholder suggested the City to change the municipal code to exclude gasoline sales from the sales tax.

Marijuana Businesses

With the passage of a ballot measure in the fall of 2014 legalizing marijuana in Alaska, a number of individuals noted the possibility of Houston becoming a center of both retail marijuana sales and wholesale growing and processing facilities. With municipalities, such as Wasilla and Anchorage, restricting the use and sale of marijuana, stakeholders thought Houston would benefit if it could position itself as the "go-to" spot for marijuana.

The City was approached in early 2015 by a two marijuana-related companies: one wanting to open a grow facility and another business interested in developing a testing facility. With regulations still being crafted at the state government level, Houston has been hesitant to permit any marijuana-related commerce.

While some viewed marijuana as a benefit to the community, a small number of interviewees thought the City should not encourage legal marijuana-related activity in Houston. Pointing to the possible social costs of drug use, these stakeholders said they would support restrictions on the sale and growing of marijuana locally.

Fish Restoration

Efforts are underway to increase the annual salmon return on the Little Susitna River. Using a technique called moist air incubation, a number of organizations including the Knik Tribal Council and past Mayor of Houston Roger Purcell, are hoping revitalized salmon runs would benefit local residents and help support fishing-related tourism in the area.

LED Assembly Facility

Knikatnu, Inc. has been exploring the possibility of assembling light-emitting diode (LED) streetlights in Houston. The group owns land in Houston and would build a new facility. "This is the type of low-impact development we would like to see on our land," a Knikatnu representative stated. "The LED facility is in very early stages of planning." The facility would import LEDs and assemble them for use lighting Alaska roads.

Conclusion

After completion of 19 executive interviews with a variety of Houston stakeholders, McDowell's research team noted the optimism expressed by nearly all contacted. Many individuals said they felt Houston was poised for expansion and had the right attributes to turn the community into a place that would attract residents, new businesses, and visitors. Many saw Houston being perfectly situated to benefit from a variety of large infrastructure projects such as development of Port MacKenzie and the accompanying rail extension, improvements to the Parks Highway, interim solutions to provide the Interior with natural gas, and the eventual construction of a natural gas pipeline from the North Slope. While ideas were plenty, concrete initiatives had not been developed beyond speculation.

While many stakeholders were optimistic, issues that could slow the growth of Houston were also raised. These included limited access to natural gas, a relatively small population, congestion on the Parks Highway, difficulties in attracting tourism and new businesses to the area, and the possibility that nearby large infrastructure projects may actually have minimal effect.

APPENDIX C: TRAFFIC IMPACTS OF MAJOR PLANNING PROJECTS

City of Houston

Traffic Impacts of Major Planning Projects

~ Draft ~

August 2015

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Contents

1 Introduction 2
2 General Growth and Development 2
3 Base Level Traffic Volumes 3
4 Performance Estimates 4
5 Future Projects 5
5.1 Project 1 – Parks Highway MP 44-52 Upgrade Phase 3 5
5.2 Project 2 – Port MacKenzie to Parks Highway Roadway Corridor 6
5.3 Project 3 – Port MacKenzie Rail Extension 10
6 Recommendations 10
6.1 Functional Classifications 10
6.2 Access Management 11
6.3 Pedestrian Crossings 11

1 Introduction

There are several projects planned or considered for construction in and around the City of Houston which could change the flow of traffic through the existing and future roadway network. Additionally, as traffic levels increase on the existing network, proactive improvements and alternatives may need to be considered in order to accommodate future demand.

In this report, Kinney Engineering, LLC (KE) presents an analysis of the traffic impacts of these projects and makes recommendations for future road infrastructure improvements and alternatives.

2 General Growth and Development

The City of Houston is on the far western edge of an urban/suburban core area of the Matanuska Susitna Borough. Growth and development within the City of Houston is expected to continue at a steady pace through the horizon year of 2035 as the Wasilla and Meadow Lakes area population densities increase and push the extents of the suburban density zone farther towards Houston and Big Lake. Growth is specifically expected to occur in the areas north of the Parks Highway, particularly on King Arthur Road and Armstrong Road, and especially on lakefront and riverfront properties.

Industrial development is possible in the area of the Big Lake Road and Parks Highway intersection and on Miller's Reach Road in the direction of a new future rail connection.

Commercial growth is most likely along the Parks Highway corridor. Near the intersections of Armstrong Road and King Arthur Road with the Parks Highway, commercial growth will target the increased residential traffic served by these roadways.

3 Base Level Traffic Volumes

KE projected average annual daily traffic (AADT) volumes for 2035 using an area travel demand model (TDM) which includes all current planned and funded transportation projects. The models used in this analysis were developed by the Alaska Department of Transportation and Public Facilities (ADOT&PF) in conjunction with the Municipality of Anchorage (MOA) and the Matanuska Susitna Borough (MSB). The extents of the model include the entire network of the MSB and MOA from north of Willow all the way to Girdwood and east as far as the community of Sutton on the Glenn Highway. This model has been used to analyze the traffic impacts of the Knik Arm bridge project as well as the Highway-to-Highway project in downtown Anchorage and various Wasilla Bypass alternative corridors.

The model generates traffic volumes based on socio-economic background data such as population, income level, employment in various work sectors, and school enrollment, as well as a number of special generators such as hotels and airports.

The results of the model were used as a baseline for recommendations and for judging project impacts.

Figure 1 on page 4 presents a diagram of the City of Houston with 2035 AADTs for key roadways taken from the TDM.

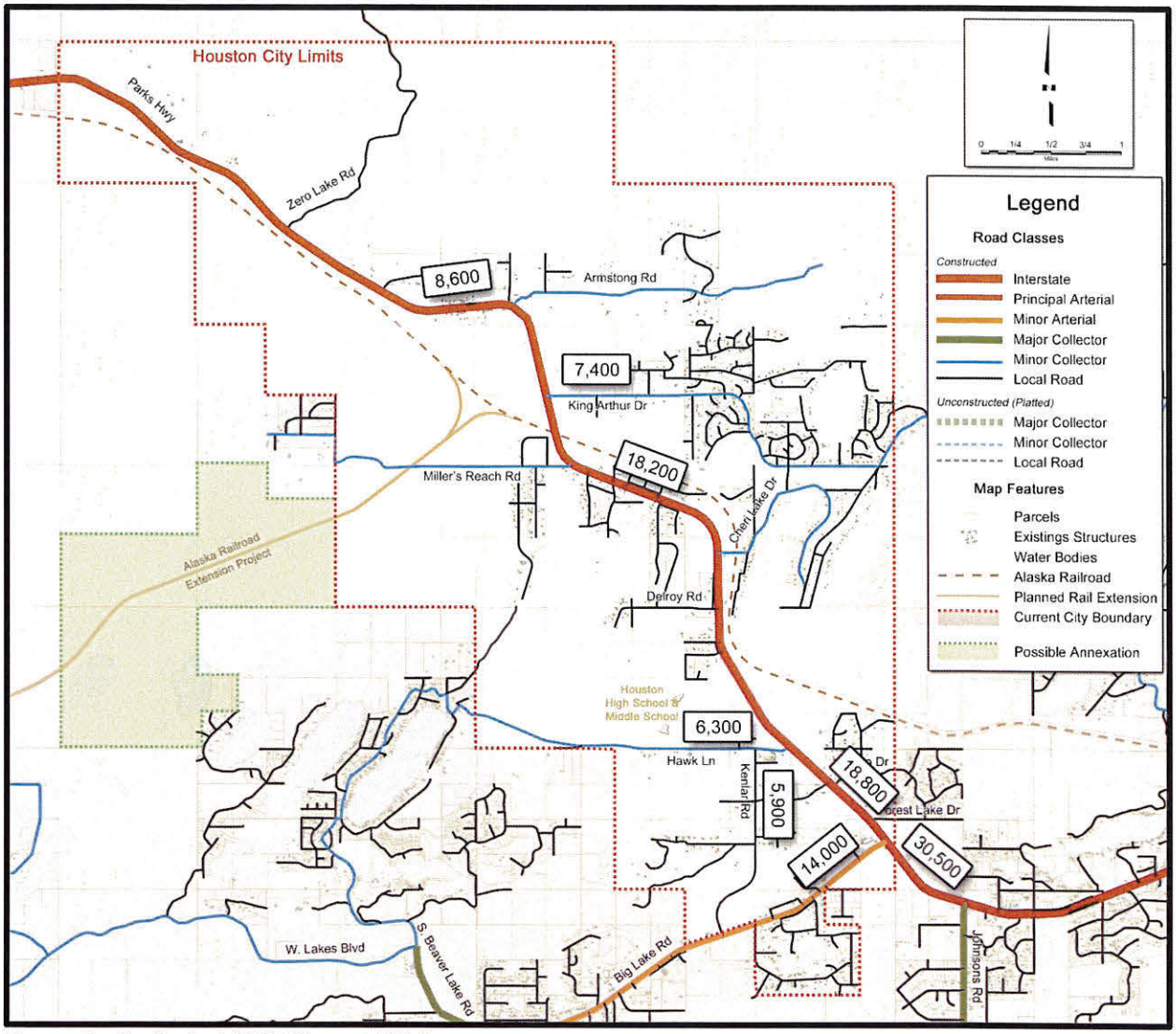


Figure 1 - Projected 2035 Demand Volumes

Note that the above figure shows a planned extension of the Alaska Railroad (ARR) which would link to the existing rail line within Houston city limits.

4 Performance Estimates

One key concern which has arisen from this analysis is the potential 2035 traffic volumes between Big Lake Road and King Arthur Road. These volumes were presented earlier in Figure 1 above. The travel demand model used in this analysis indicates that the volumes north of Big Lake will grow to about 18,500 AADT in the horizon year. Currently these road segments carry 7,000 AADT. This increase is partially a result of the inclusion of the proposed Knik Arm Bridge and Wasilla Bypass Road alternatives in the TDM which would pull additional traffic from Anchorage and Wasilla to attractions in Houston and north on the Parks.

KE used planning level screening analysis to estimate the performance of the existing Parks Highway in this area (a 2-lane undivided rural road). The approximate capacity of the Parks Highway through Houston is 16,500 AADT to achieve a level of service of "D", which is the limit of what is recommended by the American Association of State Highway and Transportation Officials. The projected volumes would be at or above this approximate capacity threshold, which suggests that if growth occurs in accordance with the TDM it will likely result in congestion on the Parks Highway between Big Lake Road and King Arthur Road.

Note these projected volumes are equivalent to the traffic volumes currently traveling along segments farther east on the Parks Highway (such as between Vine Street and Pittman Road). As traffic volumes grow over time, congestion and safety concerns similar to current conditions on the Parks Highway MP 44-52 are likely.

5 Future Projects

Several planned and future capital projects are included in the scope of this study. These projects include the Parks Highway MP 44-52 Upgrade, the Alaska Railroad Port MacKenzie Rail Extension, and a Port MacKenzie to Parks Highway roadway corridor.

The scope of this study includes the recent annexation of Knikatnu/CIRI lands into the City of Houston along the route of the planned rail extension, as shown in green in Figure 1.

5.1 Project 1 – Parks Highway MP 44-52 Upgrade Phase 3

The Parks Highway MP 44-52 Upgrade Phase 3 project is the third and final phase of an ADOT&PF central region project that is currently in final design with planned construction completion in 2017. The entire project extends from Lucus Road to Big Lake Road. Phase 3 of the project is the section from Pittman Road to Big Lake Road, entering the city limits of Houston.

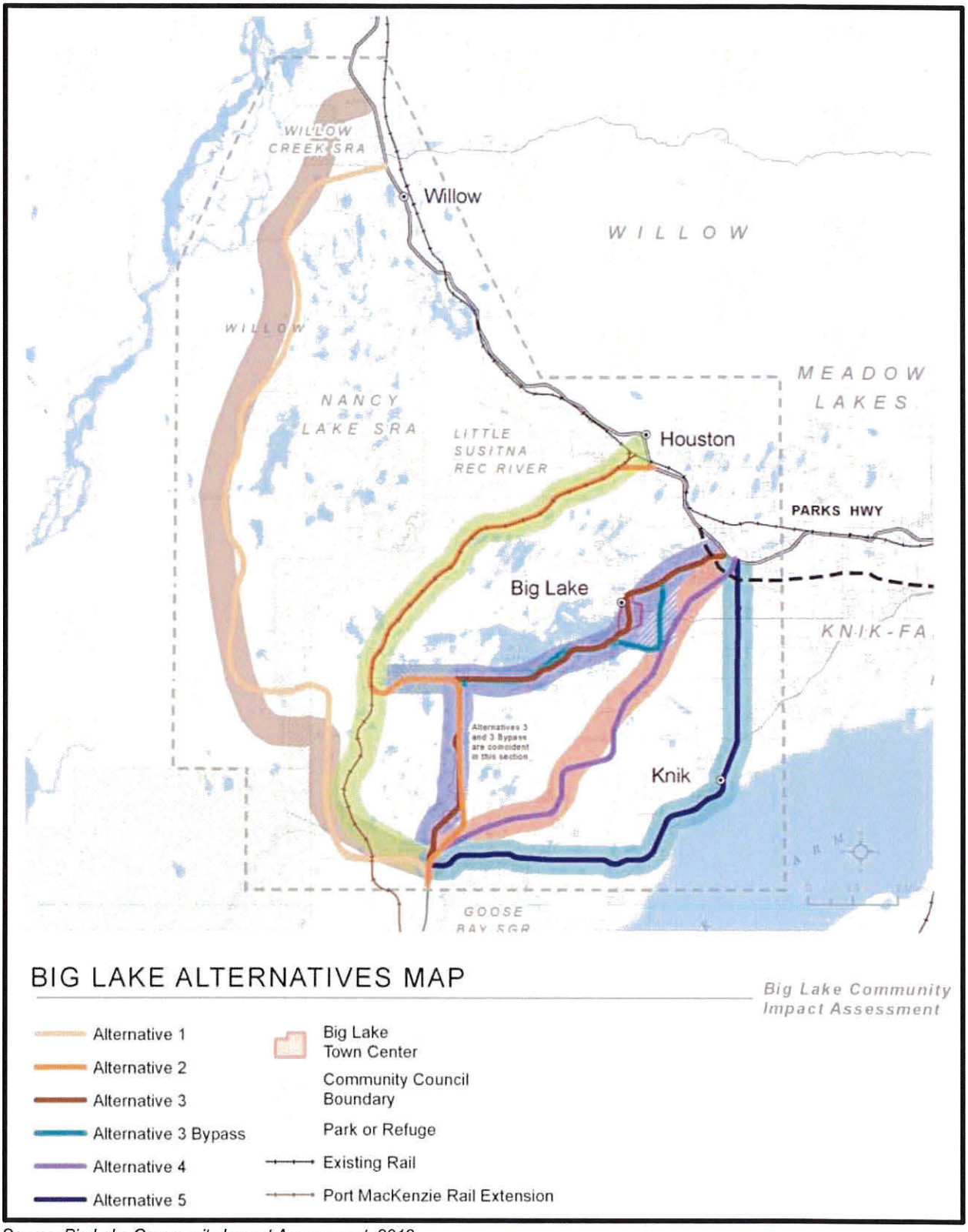
The project will expand the existing 2-lane Parks Highway facility to a full 4-lane divided facility from Wasilla west to Big Lake Road. The main goal of the project is to improve safety along the corridor which historically has had a high rate of severe crashes. The project would also alleviate congestion by increasing estimated segment AADT capacity from approximately 16,500 to 33,000 vehicles per day (vpd). This would result in faster and more consistent trips between Houston or Big Lake and the city of Wasilla, which would impact the economic development in these communities. Additionally, the project would include frontage roads and additional signals, which could also affect the economic development along the corridor.

Due to the scheduled completion date of this project, it is already included in the base traffic volume forecast.

Likely effects of the Parks Highway upgrade include an increase in the number of recreational trips to the City of Houston from Wasilla and surrounding communities; however, local traffic growth as a result of population increases is expected to continue at a steady pace.

5.2 Project 2 – Port MacKenzie to Parks Highway Roadway Corridor

This proposed project would construct a more direct route from Point MacKenzie to the Parks Highway. Various routes have been considered in conjunction with the 2003 Matanuska Susitna Borough Rail Corridor Study, the 2007 Port MacKenzie Rail Corridor Study and the Big Lake Community Impact Assessment in 2013. Figure 2 on page 7 shows the alternatives studied in the more recent Big Lake study, conducted by the Matanuska Susitna Borough.



Source: Big Lake Community Impact Assessment, 2013

Figure 2 - Port Mackenzie to Parks Highway Road Alternatives Map

The only alternative that falls within the City of Houston is Alternative 2 which would run north from the port along the section line currently occupied by Purinton Road until it reaches Burma Road. At this point it would travel west on Burma and intersect the railroad extension and would parallel the railroad tracks north to Houston. It would access the Parks Highway at or around the Millers Reach Road intersection.

The expected traffic impacts were assessed using two different versions of the travel demand model. One with the currently planned road network and a second with the alternative road segments included. The road section is modeled as a 2-lane undivided road with a design speed of 65 mph in accordance with assumptions in the planning studies.

Figure 3 on page 9 shows a general diagram of the positive and negative AADT impacts of the alternative route.

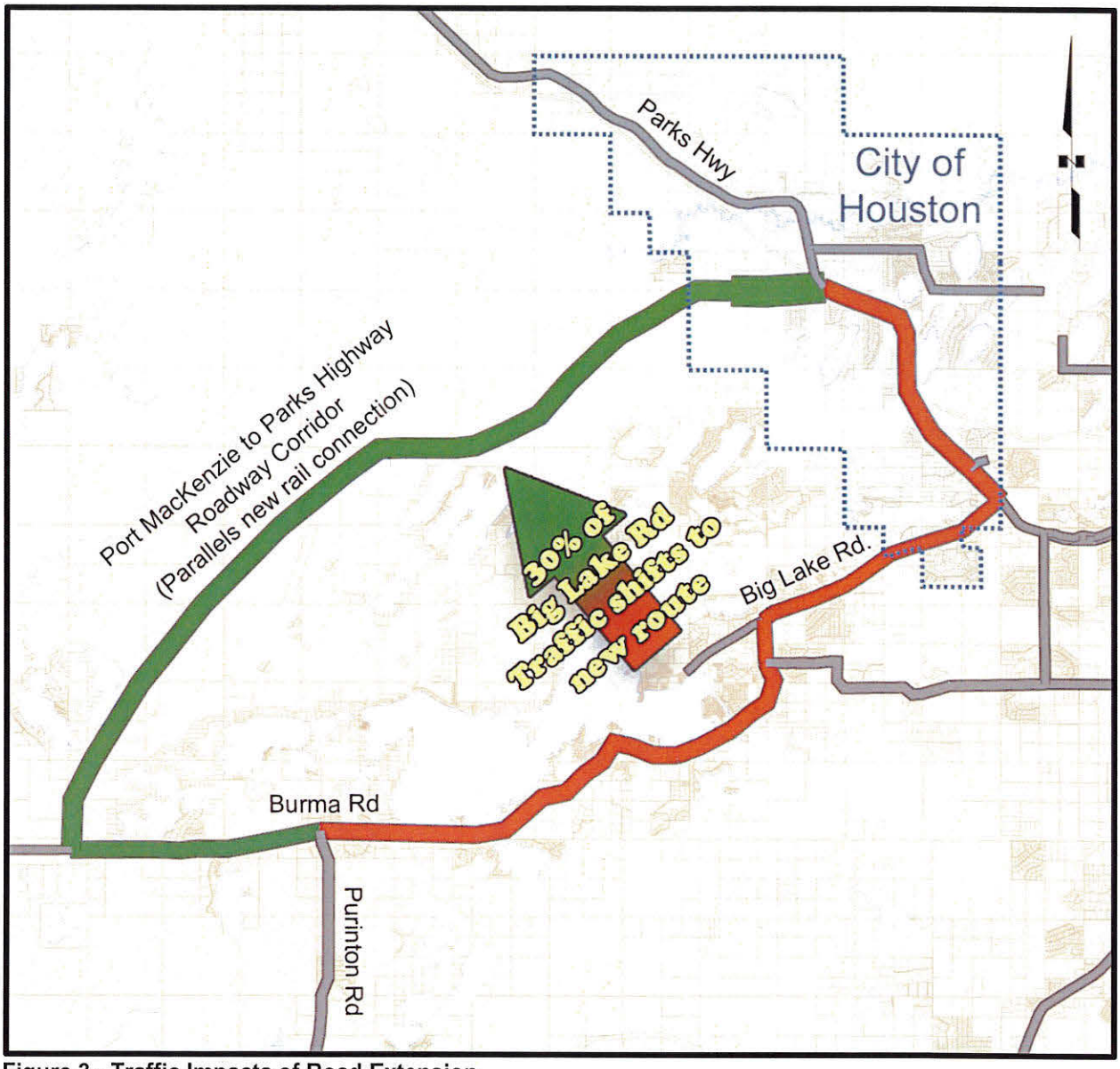


Figure 3 - Traffic Impacts of Road Extension

Note that the traffic impacts would not be highly significant when compared to the current system. The existing distance from Millers Reach Road to the intersection of Purinton and Burma is approximately 15 miles via Big Lake Road. The alternative corridor between these same two points would be approximately 16 miles. Therefore, the benefit for travel would be exclusively based on the fact that the new route would have a design speed of 65 mph, compared to Big Lake Road which is currently posted at 55 mph, the reduced turbulence of adjacent access along Big Lake Road, and the avoidance of existing and future traffic signals or roundabouts in Big Lake.

Likely effects of a new and improved route between Port MacKenzie and Houston include a shift of traffic volumes from Big Lake to Houston of about 4,000 vehicles per day, which is approximately 30% of projected daily traffic on Big Lake Road. A large percentage of

the heavy vehicle trips on Big Lake Road would be included in this shifted traffic, particularly after the construction of the Knik Arm Bridge. The decrease in travel time using the new route, if the travel speed is 65 mph, is approximately 5 minutes, considering side street friction and intersection delay due to signals and roundabouts.

5.3 Project 3 – Port MacKenzie Rail Extension

The Alaska Railroad has begun construction on a 32-mile rail line from Port MacKenzie to connect with the existing ARR line within the City of Houston. The location of the planned rail line was shown previously in Figure 1 on page 4.

The ARR does not currently have any plans to construct facilities or base any operations at the new railroad junction in Houston. Therefore direct socioeconomic impacts (and therefore traffic impacts) due to the rail line project alone are considered to be minimal.

The ARR has expressed willingness to accommodate loading facilities at the junction for private development. The potential passenger car traffic associated with operations such as this would be minimal compared to overall traffic. However, this may have a considerable impact on the percentage of trucks in the local road network.

One scenario currently being considered would use the rail junction as a loading site for material currently being driven by truck north from Big Lake to Fairbanks. Therefore, trips that currently exist on Big Lake Road and the Parks Highway through Houston, would now be turning in and out of a railroad access point at or near Millers Reach Road. Likely accommodations for these truck traffic maneuvers would involve constructing turn lanes to remove the trucks from the travel lanes on the Parks Highway and providing adequate sight distance for trucks leaving the access road to enter the Parks Highway. The existing intersection of Millers Reach Road and the Parks Highway does not meet these characteristics, as it is on the outside of a curve and has no additional turn lanes.

6 Recommendations

The following are general traffic-related observations and recommendations for the City of Houston.

6.1 Functional Classifications

The current traffic volumes on roads outside the Parks Highway corridor are currently at the level of local roads regardless of their planned functional classification. Although several roads are currently classified as “Minor Collectors” they have not yet matured to the point where this function is critical to maintain. Volume projections indicate that in the future, a properly designed and well maintained collector road network will be essential. The current functional classifications of roads were shown previously in Figure 1 on page 4.

It is recommended that the “minor collector” road network in the City of Houston should be preserved. Property driveways should access local roads when possible instead of collector roads and new local roads should be constructed with adequate spacing from adjacent roads to accommodate possible future turn lanes. Additionally, local roads accessing on opposite sides of a collector should be aligned directly across from each other to eliminate offset

intersections. Consideration should be made to possible future right-of-way needs around minor collectors in case these roads ever need to be widened for turn lanes or pathways, particularly in areas around intersections.

6.2 Access Management

Access management will likely become a growing concern as traffic volumes on the Parks Highway continue to increase. The TDM indicates that the majority of growth on the Parks Highway would be local to Houston, rather than being related to pass-through traffic continuing north toward Fairbanks. This suggests that there will be a higher percentage of turning traffic on and off the highway.

One method of accommodating this increase in turning traffic is to encourage turns at safe, logical locations throughout the corridor. This means limiting the number of intersections with the Parks Highway, and relocating trips to consolidated intersections through the use of parallel connections and frontage roads. Specifically, frontage roads are recommended in the existing commercial zone south of Armstrong Road where linked parking lots currently operate as a de facto frontage road.

If the traffic volumes do increase to the level indicated in the 2035 model, a 4-lane divided highway would likely be necessary with access points at a minimum of ½ mile increments. It is recommended that the City of Houston plan for these access points, encouraging development patterns that would reduce the impact and cost of construction for a 4-lane divided highway.

6.3 Pedestrian Crossings

In connection with the consolidation of turning traffic, consideration should also be made concerning the desired location for pedestrian crossings of the Parks Highway. As residential development continues to grow north of the Parks Highway, along King Arthur Road and Armstrong Road, commercial development is expected to increase adjacent to the highway. The major commercial developments currently are on the south side of the highway, and new commercial development is likely to expand out from this established location. This development creates a conflict as pedestrians make home based commercial trips which require crossing the Parks Highway.

Safer crossings could be encouraged through construction and proper maintenance of surrounding trail networks which would direct the flow of walking, biking and motorized pedestrians to reduced speed areas of the Parks Highway or to access points that might be signalized in the future.

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APPENDIX E.
LAND USE ASSESSMENT

Community Impact Assessment
& Comprehensive Plan Revision

[LAND USE ASSESSMENT]

Prepared for the City of Houston's Comprehensive Plan Revision

Prepared by:
R&M Consultants, Inc.

Van Le, AICP
Project Manager

November, 2015

LIST OF TABLES 1
LIST OF FIGURES 2
1.0 Land Use Analysis Overview 3
1.1 Existing Conditions - Zoning District Map Evaluation, Land Use and Population 3
2.0 Population and Population Projections 5
3.0 Build Out and Housing Needs Assessment 11
4.0 School Needs Analysis (MSB Data Source) 17
5.0 Commercial Space Needs Analysis 20
6.0 Other Public Facilities Needs Analysis 20
7.0 Industrial Space Needs Analysis 21
8.0 Subareas Analysis – (See Existing Land Use and Planning Concepts Map) 21
9.0 Suitability Analysis (See Map Packet) 22

LIST OF TABLES

Table 1: Existing Zoning by Acreage and % of Total Land 3
Table 2: Existing Land Uses by Acreage and % of Total Land 4
Table 3: Vacant Residentially Zoned Land by Residential Zoning District 4
Table 4: Alaska Statewide and Local Area Population Projections, 2012 to 2042 8
Table 5: Mid Growth Scenario, Projected Annual Average Growth Rates, Houston 2014-2035 9
Table 6: High Growth Scenario, Projected Annual Average Growth Rates, Mat-Su Borough, 2014-2035 10
Table 7: Total Housing Units by Housing Type 11
Table 8: Houston Housing Units, Occupancy, and Vacancy Rates, 2009-2013 Five Year Estimates 12
Table 9: Houston Housing Units, by Year Built, 2009-2013 Five Year Estimates 13
Table 10: Houston Occupied Housing Units, by Selected Utility Characteristics, 2009-2013 Five-Year Estimates 14
Table 11: Houston Housing Units, by Value of Owner-Occupied Units, 2009-2013 Five Year Estimates . 14
Table 12: Low, High, and Mid Growth Scenarios, Future Housing Demand in Houston, Number of Housing Units, Houston, Various Years (2014-2035) 16
Table 13: Vacant Acreage by Zone District and Housing Demand, Houston, 2014 16
Table 14: Existing Zoning by Housing Type under Existing Zoning, Capacity for New Housing 17
Table 15: Mat-Su Borough Population Growth and Change 18
Table 16: Existing Commercial Land Use 20
Table 17: Existing Industrial Zoning Districts 21
Table 18: Existing Land Use Analysis and Recommendations 23

LIST OF FIGURES

Figure 1: Houston Population, 1990 and 2000-2014 5
Figure 2: Mat-Su Borough Population, 1990 and 2000-2014 5
Figure 3: Houston Annual Population Growth Rate, 2001-2014 6
Figure 4: Mat-Su Borough Annual Population Growth Rate, 2001-2014 6
Figure 5: Low Growth Scenario, Project Annual Average Growth Rates, Houston, 2014-2035 9
Figure 6: Mid Growth Scenario, Projected annual Average Growth Rates, Houston 2014-2035..... 10
Figure 7: High Growth Scenario, Projected Annual Average Growth Rates, Houston, 2014-2035 11

1.0 Land Use Analysis Overview

The purpose of a land use analysis and assessment is to evaluate the existing land use and zoning districts to determine if there is enough land in the future for the projected growth and desired future residential, commercial and Industrial development. A land use analysis includes a build out analysis which uses existing and projected land use data to determine if there is enough capacity for growth if every parcel of land is developed in the future.

1.1 Existing Conditions - Zoning District Map Evaluation, Land Use and Population

The purpose of this evaluation is to understand how much land is zoned for each type of district to help determine if there is enough of each district to support future needs based on growth projections. Approximately 16,210 acres are zoned with the City of Houston, including the newly annexed and zoned Knikatnu, Inc. owned lands. The table below summarized the zoning district area by type.

Table 1: Existing Zoning by Acreage and % of Total Land

Zoning District	Approx. Area (acres)	Percent of Total
PLI – Public Lands and Institutions	3450	21.28%
R-1 - Single-family and Two-family Residential	3940	24.30%
MFR – Multifamily Residential	960	5.92%
RA 2.5 – Residential / Agriculture	190	1.17%
RA 5 – Low-Density Residential Agriculture	2480	15.30%
NC – Neighborhood Commercial District	0	0%
C – Commercial District	210	1.30%
LI – Light Industrial	1290	7.96%
HI – Heavy Industrial	1460	9.01%
H – Holding District	1270	7.83%
PH – Parks Highway District	960	5.92%

Of the approximately 16,210 acres within the City of Houston, almost 80% or 12,961 acres of that total land is undeveloped. Approximately 15% of the total land in Houston is currently being used for residential purposes. The following table summarizes the area of existing land uses by type.

Table 2: Existing Land Uses by Acreage and % of Total Land

Land Use	Area (acres)	% Of Total
Churches	2	0.01%
Commercial – Heavy	12	0.07%
Commercial – Light	32	0.20%
Communications	10	0.06%
Duplex – Two-Family	11	0.07%
Education – Public	241	1.49%
Mobile Home	97	0.60%
Mobile Home Parks	1	0.01%
Multi Family	12	0.07%
Public Use	18	0.11%
Public Safety	93	0.57%
Recreation	3	0.02%
Residential	2435	15.02%
Residential Garage	261	1.61%
Residential W/ Commercial Use	10	0.06%
Transient Lodging	11	0.07%
Vacant	12961	79.96%
Total	**16,210**	**100%**

Table 3: Vacant Residentially Zoned Land by Residential Zoning District

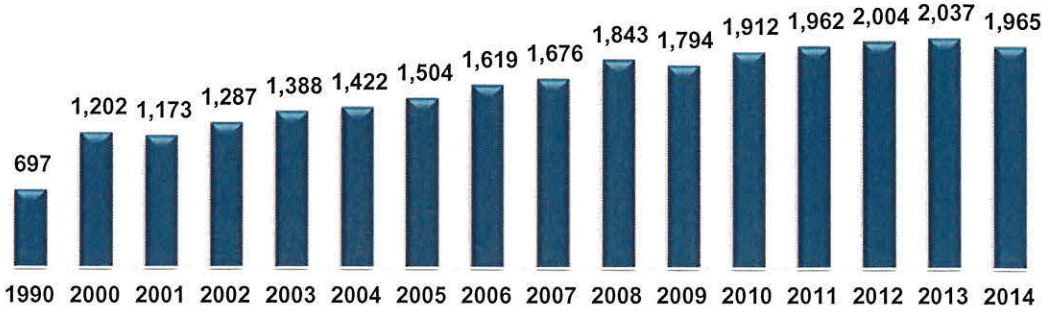
Zoning	Vacant (Acres)
R-1	2582
RA-2.5	55
RA-5	1690
MFR	416

Total	4327

2.0 Population and Population Projections

Houston experienced steady population growth over the past two decades. In 2014, Houston's population was estimated at 1,965 residents – nearly triple its 697 residents in 1990 (182 percent growth, see Figure 1). In comparison, the entire Mat-Su grew from 39,683 to 98,063 over the same period (147 percent growth, see Figure 4).

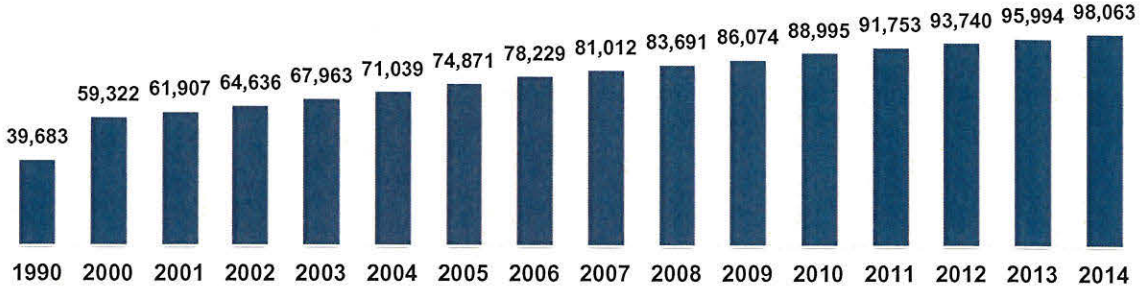
Figure 1: Houston Population, 1990 and 2000-2014



Source: ADOLWD

Houston is expected to match the broader Mat-Su Borough in terms of population growth, which ADOLWD projects population growth to slow from the current annual growth rate of slightly more than 3.6% to less than 2% by 2035.

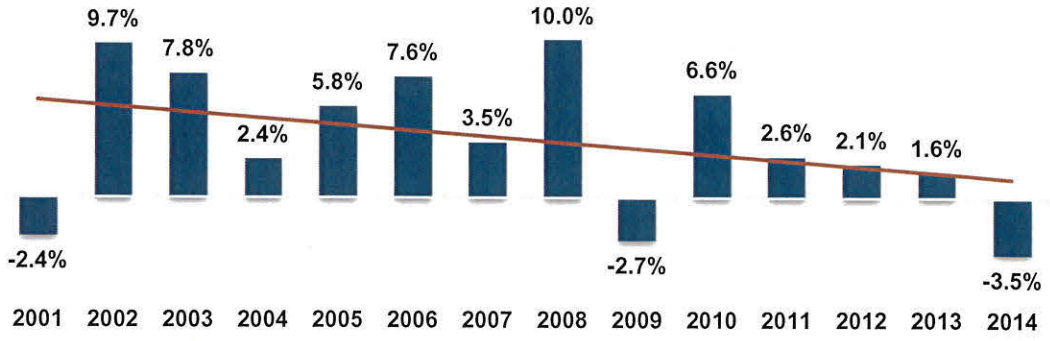
Figure 2: Mat-Su Borough Population, 1990 and 2000-2014



McDowell Group projects Houston's population growing at a similar rate of approximately 2% over the current period to 2015. With this growth rate, Houston is projected to grow to slightly more than 3,100 residents in 2035, which is an increase of around 50% from current population levels.

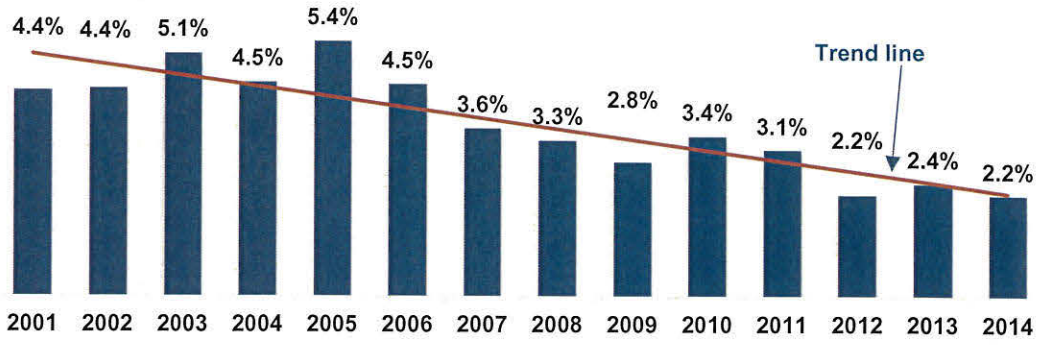
In recent years, population growth rates have slowed in both Houston and the Mat-Su Borough. As shown in Figure 3, Houston grew by 2.6 percent from 2010 to 2011, but experience negative growth from 2013 and 2014. On average, Houston grew 0.7 percent annually since 2011. In comparison, the Borough's population grew 2.5 percent per year, on average, since 2011 (see Figure 4).

Figure 3: Houston Annual Population Growth Rate, 2001-2014



Source: ADOLWD

Figure 4: Mat-Su Borough Annual Population Growth Rate, 2001-2014



Source: ADOLWD

Population Projections

This analysis provides population projections for Houston, based on extending past trends into the future. This methodology differs from a forecast, which would account for economic and other factors with the potential to affect population change. Forces that may affect population growth in Houston over the next 20 years include the following:

- **Economic conditions in Alaska**, including factors such as oil prices, gas line development, and other events in the oil and gas industry (responsible for about a third of Alaska's economy). In

general, increases in economic activity are accompanied by increases in population. Conversely, if economic activity contracts, population growth tends to slow or decline.

- **Economic conditions in Anchorage** might affect Mat-Su's role as a "bedroom" community (a third of the Mat-Su Borough's labor force is employed in Anchorage). Job growth in Anchorage can have population effects in the Mat-Su Borough.

- **Local (Mat-Su) economic conditions** – To the extent the local economy grows (or declines) in response to local events, related or unrelated to statewide or national economic trends, Houston's population could be affected.

- **The condition of the U.S. economy** – A weakening U.S. (Lower 48) economy can cause in-migration to Alaska, as the unemployed come to Alaska seeking work. Conversely, strong growth in the U.S. economy can lead to out-migration from Alaska.

- **Housing costs** – As long as housing prices are lower in the Mat-Su Borough compared to Anchorage, AND commuting costs remain stable, the Mat-Su Borough population will continue to have a large component of Anchorage workers and their households. A similar scenario has developed between Houston and Wasilla; with lower housing costs, some opt to live in Houston and commute to Wasilla (or Anchorage) for employment.

- **Natural growth and other demographic trends** – Birth and death rates, aging of the population, and other demographic forces may also affect local population trends.

It is beyond the scope of this study to consider all of these factors. However, statewide and local population projections, prepared by the Alaska Department of Labor and Workforce Development (ADOLWD) can be used as the basis for Houston-specific projections.

ADOLWD periodically prepares long-term population forecasts for Alaska overall and for local areas. The most recent projections, published in April 2014, indicate slow growth (0.8 percent annually) over the next 25 years for the state overall.[1] The Mat-Su Borough is expected to continue experiencing the fastest rates of growth, at 1.9 percent annually (see Table 4).

[1] Alaska Population Projections, 2012-2042. Alaska Department of Labor and Workforce Development, April 2014.

Table 4: Alaska Statewide and Local Area Population Projections, 2012 to 2042

	Percent Growth	Annual Growth Rate
Anchorage	35%	1.0%
Mat-Su Borough	77%	1.9%
Kenai Peninsula Borough	15%	0.5%
Fairbanks North Star Borough	32%	0.9%
City and Borough of Juneau	2%	0.1%
Statewide	**26%**	**0.8%**

Source: ADOLWD

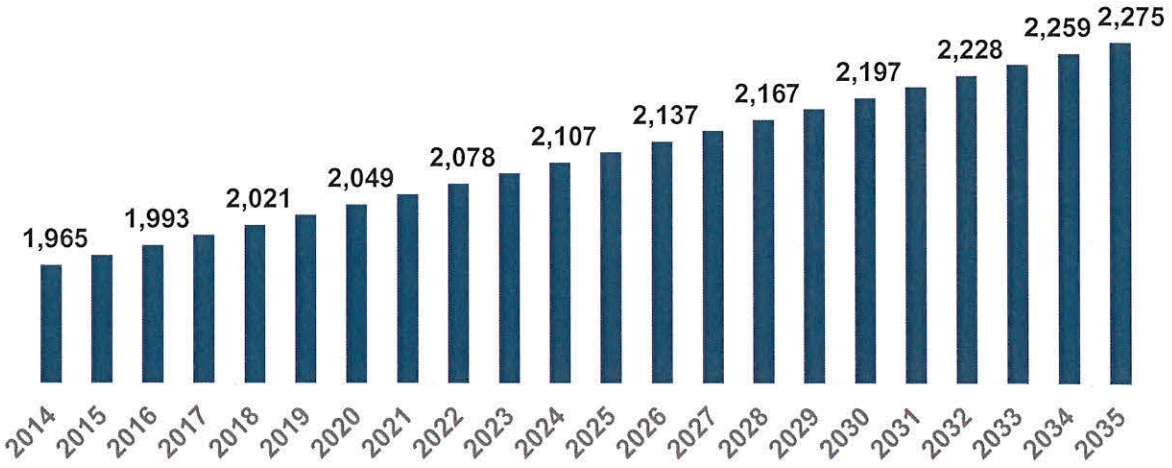
ADOLWD uses a "cohort component" methodology, separating the population of each gender into age groups and aging them forward in time, then adding projected births and in-migrants and subtracting projected deaths and out-migrants. ADOLWD assigns each borough/census area its own unique mortality, fertility, and migration rates "based on recent data and knowledge of the specific populations." Again, these projections do not consider particular events in the economy (such as Alaska's current state government budget deficits or low oil prices in general).

For purposes of this study, three growth projections have been defined, including low-case, mid-case, and high-case projections. These projections are described, below.

Low Growth Scenario

The Low Growth Scenario assumes Houston's projected growth between 2014 and 2035 will be similar to the recent 4-year (2011-2014) average annual growth of 0.7 percent. Under this scenario, Houston's population will grow by 310 persons between 2014 and 2035, for an overall growth rate of 16 percent during that time period (see Figure 5). Based on an average of 2.6 persons per household (2010 Census), this growth would indicate 119 new housing units would be needed to accommodate this population growth by 2035.

Figure 5: Low Growth Scenario, Project Annual Average Growth Rates, Houston, 2014-2035



Source: McDowell Group estimates

Mid Growth Scenario

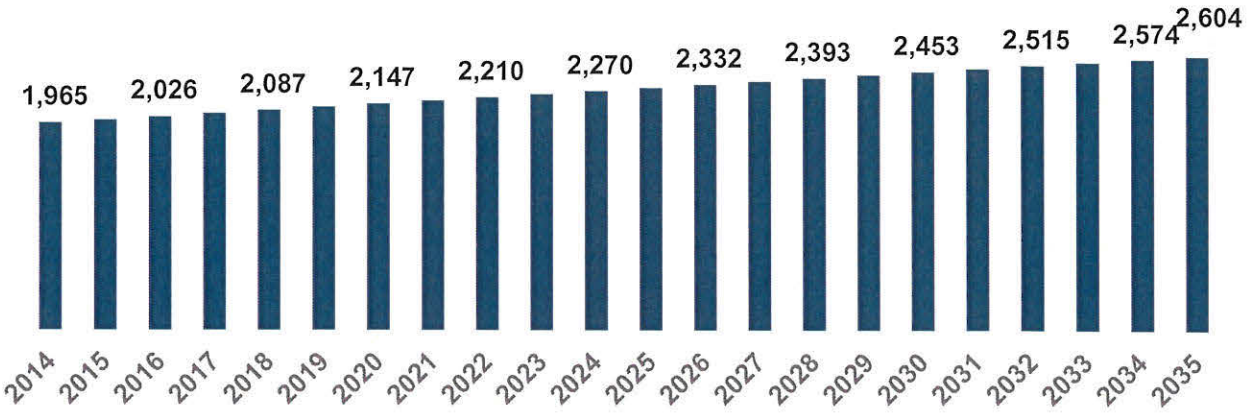
The Mid Growth Scenario applies a growth rate at the mid-point between those used in the high and low growth scenarios (see Table 3). Under this scenario, it is estimated that Houston's population will grow by 639 persons between 2014 and 2035, or 33 percent growth overall (see Figure 6). Based on an average of 2.6 persons per household, this growth would indicate 246 new housing units would be needed to accommodate this population growth by 2035.

Table 5: Mid Growth Scenario, Projected Annual Average Growth Rates, Houston 2014-2035

Years	Annual Growth Rate
2014-2017	1.54%
2017-2022	1.45%
2022-2027	1.35%
2027-2032	1.26%
2032-2035	1.16%

Source: McDowell Group calculations

Figure 6: Mid Growth Scenario, Projected annual Average Growth Rates, Houston 2014-2035



Source: McDowell Group estimates

High Growth Scenario

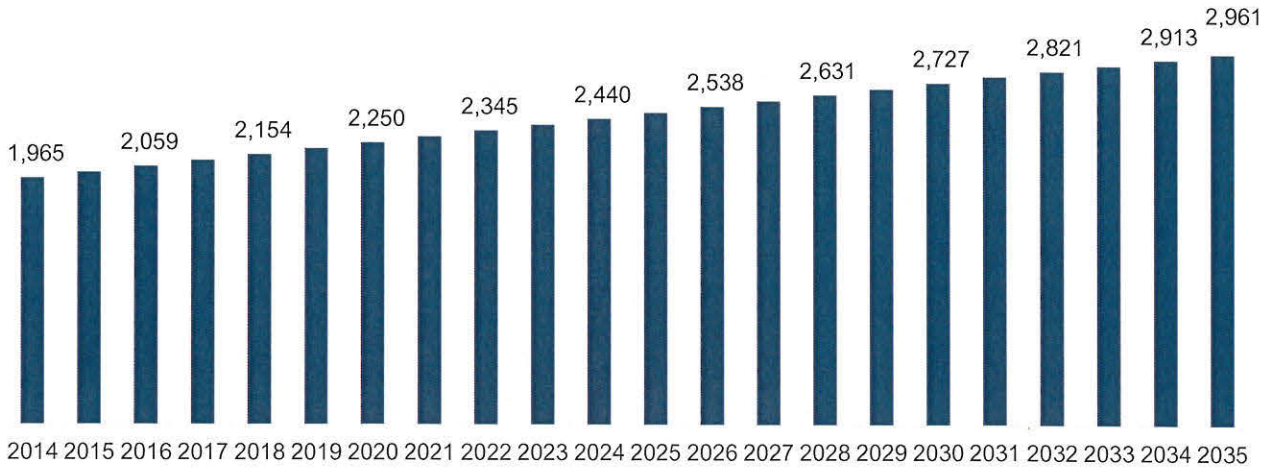
The High Growth Scenario assumes Houston matches the broader Mat-Su estimates for population growth as projected by ADOLWD (see Table 4). Under this scenario, it is estimated that Houston's population will grow by 996 persons between 2014 and 2035, for an overall growth rate of 51 percent (see Figure 7). Based on an average of 2.6 persons per household, this growth would require 383 new housing units by 2035.

Table 6: High Growth Scenario, Projected Annual Average Growth Rates, Mat-Su Borough, 2014-2035

Years	Births	Deaths	Net Migration	Population Change	Annual Growth Rate
2014-2017	1,400	506	1,469	2,363	2.37%
2017-2022	1,591	621	1,476	2,446	2.19%
2022-2027	1,782	755	1,455	2,482	2.00%
2027-2032	1,962	909	1,419	2,472	1.81%
2032-2035	2,128	1,072	1,359	2,415	1.62%

Note: Average annual numbers are rounded to whole numbers. Source: ADOLWD

Figure 7: High Growth Scenario, Projected Annual Average Growth Rates, Houston, 2014-2035



Source: McDowell Group estimates.

3.0 Build Out and Housing Needs Assessment

Housing in Houston

According to Mat-Su Borough and City of Houston data, there are 999 housing units in Houston. Single-family detached units make up 85 percent (846 units) of all housing units, with the remaining composed of 62 multi-family dwellings, 8 duplexes, and 85 mobile homes (see Table 9).

Table 7: Total Housing Units by Housing Type

	Count	
Total housing units	**991**	**100%**
Single-Family Detached	846	85%
Mobile Home	85	9%
Multi-Family	62	6%
Duplex	8	1%

Columns may not sum to 100 percent due to rounding. Source: City of Houston, Mat-Su Borough

The current amount of land zoned for residential development is considered for the total build out capacity. Using minimum lot sizes stated in the City of Houston Municipal Code, Title 10 Land Use Regulations and the *Housing Needs Analysis* to be conducted by the McDowell Group, the amount of potential housing units and type of housing can be determined.

This estimate is corroborated by the American Community Survey's 2009-2013 5-year estimate of 991 housing units in Houston. Of these units 72 percent (or 716 units) are considered occupied; and, of these units, 78 percent (561 units or 56 percent of all housing units) are owner-occupied.

According to the City of Houston Comprehensive Plan and Community Impact Assessment Household Survey conducted in November 2014, approximately 35 percent of local property owners do not reside in Houston. Presuming these nonresidents have a dwelling on their property, this would suggest approximately 350 homes in Houston are used as vacation/recreation properties (or otherwise used only occasionally).

Houston Housing Characteristics

Housing data for Houston from the American Community Survey (2009-2013 5-year estimates) are provided in Table 8. The data suggests approximately 28 percent of housing units are unoccupied.

Table 8: Houston Housing Units, Occupancy, and Vacancy Rates, 2009-2013 Five Year Estimates

	Count	Margin of Error	Percent	Margin of Error
Total housing units	**991**	**+/-36**	**100%**	**-**
Occupied housing units	716	+/-50	72.3%	+/-4.9
Vacant housing units	275	+/-51	27.7%	+/-4.9
Homeowner vacancy rate	5.7%	+/-2.9%	-	-
Rental vacancy rate	9.9%	+/-6.9%	-	-

Source: U.S. Census Bureau, American Community Survey, 2009-2013 Five-Year Estimates.

The majority of housing units (55 percent) were built since 1990, with construction peaking between 2000 and 2009 (32.3 percent of the housing units) (See Table 9.0).

Table 9: Houston Housing Units, by Year Built, 2009-2013 Five Year Estimates

	Count	Margin of Error	Percent	Margin of Error
Total housing units	**991**	**+/-36**	**100%**	**-**
Built 2010 or later	39	+/-21	3.9%	+/-2.1
Built 2000 to 2009	320	+/-56	32.3%	+/-5.6
Built 1990 to 1999	189	+/-50	19.1%	+/-5.0
Built 1980 to 1989	169	+/-42	17.1%	+/-4.2
Built 1970 to 1979	147	+/-43	14.8%	+/-4.2
Built 1960 to 1969	98	+/-31	9.9%	+/-3.1
Built 1950 to 1959	24	+/-19	2.4%	+/-1.9
Built 1940 to 1949	5	+/-8	0.5%	+/-0.8
Built 1939 or earlier	0	+/-9	0.0%	+/-2.0

Source: U.S. Census Bureau, American Community Survey, 2009-2013 Five-Year Estimates.

Table 9.0 indicates that 14 percent (+/-5.1 percent margin of error) of occupied housing units in Houston lack complete plumbing facilities, and 11 percent (+/- 5.0 percent) lack complete kitchen facilities.

Table 10: Houston Occupied Housing Units, by Selected Utility Characteristics, 2009-2013 Five-Year Estimates

	Count	Margin of Error	Percent	Margin of Error
Occupied housing units	**716**	**+/-50**	**100%**	-
Lacking complete plumbing facilities	100	+/-37	14.0%	+/-5.1
Lacking complete kitchen facilities	81	+/-35	11.3%	+/-5.0

Source: U.S. Census Bureau, American Community Survey, 2009-2013 Five-Year Estimates.

The median value of an owner-occupied unit in Houston is estimated at $177,300 (+/- $20,161 margin of error, see Table 11.0). Almost a third (30 percent) of these units are estimated to be valued at less than $100,000.

Table 11: Houston Housing Units, by Value of Owner-Occupied Units, 2009-2013 Five Year Estimates

	Count	Margin of Error	Percent	Margin of Error
Owner-occupied units	**561**	**+/-47**	**100%**	-
Less than $50,000	92	+/-33	16.4%	+/-5.7
$50,000 to $99,999	77	+/-28	13.7%	+/-4.9
$100,000 to $149,999	47	+/-22	8.4%	+/-3.7
$150,000 to $199,999	120	+/-40	21.4%	+/-7.1
$200,000 to $299,999	143	+/-41	25.5%	+/-6.9
$300,000 to $499,999	70	+/-28	12.5%	+/-4.8
$500,000 to $999,999	12	+/-15	2.1%	+/-2.7
$1,000,000 or more	0	+/-9	0.0%	+/-3.5
Median (dollars)	**$177,300**	**+/-$20,161**	-	-

Source: U.S. Census Bureau, American Community Survey, 2009-2013 Five-Year Estimates

Housing Demand Projections

Housing demand will grow (or decline) with changes in population, as discussed above. However, demographic trends can also have specific impacts on housing demand. Demographic factors affecting future housing demand in Houston include:

- **Aging:** The aging of Houston's population will result in changes in household characteristics and housing preferences. For example, U.S. Census data for Anchorage suggests that householders younger than 34 year and older than 64 are more likely to live in rental or multifamily units, and householders between age 35 and 64 are more likely to live in owner-occupied single-family detached housing.

Additionally, one of the important demographic questions in the coming years is how baby-boomers will behave when they reach retirement age. Will they leave Alaska? Move from Anchorage or Wasilla? Older households will make a variety of housing choices. Many will choose to remain in their homes as long as they are able. Some may downsize to smaller single-family homes; these will be a mixture of owner and renter units. Some may choose to move away from Houston to be closer to specialized medical facilities or to be closer to family care-givers.

- **Household composition:** Houston may be impacted by similar state and national trends in decreasing household size over time due to aging of the householders and smaller families. For example, as householders age, fewer households include children under the age of 18.

- **Income Levels and Home Affordability:** Income levels also affect demand for different types of housing. For example, families with lower incomes may prefer higher density housing (such as duplex, two-family townhouse, and some types of multifamily housing) and are more likely to be renters. Data from the American Community Survey (2009-2013 5-year estimates) estimate that home prices in Houston are 22 percent lower than Wasilla ($177,300 median value for owner-occupied homes in Houston compared to $227,800 in Wasilla). Lower housing costs make Houston an attractive place to live, including commuters to Wasilla.

Another factor affecting housing in Houston is the potential for increased demand for vacation and recreational properties.

While many factors can impact housing demand, shifts in population are the main driving force. Based on low, mid, and high population growth scenarios, housing units needed in Houston to accommodate new demand can be estimated.

Under a low growth scenario, approximately 119 new occupied housing units will be needed by 2035; under a high growth scenario, 383 new occupied housing units will be required. The mid-point is 246 new occupied housing units by 2035 (see Table 10). While some of this demand can be met by conversion of vacant housing units (currently estimated at 5.7 percent, see Table 5), new housing development will be clearly needed.

Table 12: Low, High, and Mid Growth Scenarios, Future Housing Demand in Houston, Number of Housing Units, Houston, Various Years (2014-2035)

Years	Low-Growth	Mid-Growth	High-Growth
2014	756	756	756
2017	772	791	811
2022	799	850	902
2027	828	909	994
2035	875	1,001	1,139
# Growth 2014-2035	+119	+246	+383

Source: McDowell Group estimates.

Land Use Implications

Residential development in Houston can occur on land zoned as:

- R-1: 1-acre minimum lot size designated for single-family and two-family (low density)
- MFR (multifamily): designated for medium density use
- RA-2.5: 2.5 acre lot designated for residential/agriculture use
- RA-5: 5-acre lot size designated for low density residential use

According to City of Houston and Mat-Su Borough GIS data, a total of 4,742 acres within Houston are vacant, buildable, and zoned for residential development (see Table 3.0 and Table 13.0 below). This level of vacant land suggests an ample amount of zoned land is available to address future housing demand and residential development for single-family homes and multi-family homes in Houston by 2035, based on the population projections described in this analysis.

Table 13: Vacant Acreage by Zone District and Housing Demand, Houston, 2014

Zone District	Vacant Zoned Acreage	Number of Available Buildable Lots	Low Growth Scenario Additional # of housing units by 2035	Mid Growth Scenario Additional # of housing units by 2035	High Growth Scenario Additional # of housing units by 2035
R-1	2,582	2,582			
RA-2.5	55	22			
RA-5	1,690	338			
MFR	416	104			
Total	**4,742**	**3,046**	**119**	**246**	**383**
Housing Demand by Housing Type					
Single Family Detached Demand (85 percent of total units)			**101**	**209**	**326**
Multi-family Demand (15 percent)			**18**	**37**	**57**

Source: Mat-Su Borough, City of Houston, McDowell Group estimates.

3.1 Residential Build Out

Table 14: Existing Zoning by Housing Type under Existing Zoning, Capacity for New Housing

Existing Zoning and Capacity for Future Growth (Base Growth) by Housing Type, Under Existing Residential Zoning				
Housing Category	**Existing Housing Stock**		**Total Build Out Capacity**	
SINGLE FAMILY	**Existing # Housing Units**	**Percent of Existing Units**	**Potential # Housing Units**	**Percent of Housing Units**
Single Family (Detached)	846	84.7%	**2194**	**85%**
Single Family Large Lot (2.5 acre lots)			**22**	**1%**
Single Family Large Lot (5 acre lots)			**338**	**13%**
Single Family (Attached)	8 Duplex	0.8%	**21**	**1%**
Sub Total 1	851	85.2%	**2963**	**100%**
Multi Family, Residential Other				
Multi-Family (3 Units or more)	62	6.2%	**104**	**6%**
Residential/Commercial	(2 parcels no units listed)	0%		
Mobile Homes	85 (1 MH Park Unit)	8.6%	**196**	**9%**
Residential Other - Residential Garage	No dwelling units	0%		
Transient Lodging	2 parcels, no dwelling units	0%		
Sub Total 2	148	14.8%	**300**	**15%**
Total	**999**	100%	**3263**	**100%**

4.0 School Needs Analysis (MSB Data Source)

Another indication of future land needs is population growth of students based on student multiplier and population projects for Houston and the Mat-Su from the Mat-Su Borough School District. Future school and educational facilities needs are based on population projections, and based on housing type to accommodate that future growth in student population. Below is a summary of the MSB School District Projections and summary of methods:

- Grades at all school sites are moved ahead one grade level, assuming 100% cohort survival.

- Kindergarten enrollment is established by analyzing live birth rate data determined by the
- State of Alaska, Department of Health and Social Services.
- A cohort survival rate is calculated for each grade level in each school by averaging the percent change over the two prior years. This rate is then applied to the incoming class to establish a projected enrollment by grade level.
- Grade level projections at every school are combined, providing for an aggregate, district wide enrollment projection.
- The District analyzes economic trends and other factors that may assist in determining the accuracy of its projected enrollment and adjusts accordingly.

Based on the two year cohort survival method, the following anticipated enrollment projections for the upcoming years are:

- FY16: 18,098 Students
- FY17: 18,303 Students
- FY18: 18,458 Students
- FY19: 18,379 Students

These enrollment projections were completed 10 months ago and MSB has already exceeded their projection of 18,098 for the 2015-16 school year. MSB is currently serving 18,455 students. Being that the State's student count period does not take place until October, MSB has held off in updating their enrollment projections for the time being.

Demographic Analysis and Enrollment Forecast Summary

Western Demographers provided a demographic analysis and enrollment forecast study that was completed in spring 2015. Western Demographers used their own methodology to arrive enrollment projections across the Valley and takes into account economic trends, the housing market, etc.

School District and Borough Overall Growth Estimates (2010-2013)

The Matanuska-Susitna Borough School District has grown at approximately 1.5 percent for the past year. The University of Alaska at Anchorage Institute of Social and Economic Research has maintained a standard 3.06 percent growth estimate for the MSB for the foreseeable future and has considered downgrading that figure to two percent. Recent population estimates from the Census Bureau American Community Survey support the eventual estimate of a 2% percent growth given the most recent measured annual growth rate of 2.46 percent.

Table 15: Mat-Su Borough Population Growth and Change

Year	2010	2011	2012	2013
Population	84,147	86,817	89,319	91,519

Change		**2,670**	**2,502**	**2,200**
Percentage Change		**3.17%**	**2.88%**	**2.46%**

The expected 1.5 percent growth will generate ***1,200 elementary students***, ***800 middle school students*** and ***1,000 high school students*** during the next ten years (2014-2024).

School Needs

Growth in the Borough tends to suggest the future locations of new elementary school attendance areas. New housing will justify new elementary schools within the next decade in these areas:

1. Big Lake / Meadow Lake area
2. Machetanz / Cottonwood Creek / Snowshoe
3. A possible additional elementary serving the far west KGB corridor

Additional school facility needs based on the MSB 6 year CIP (FY 2017-FY 2022):

1. New Knik Area High School
2. New Wasilla Area Elementary School (Hyer Road)
3. New Palmer Area Elementary School

Mat-Su Housing Growth & School Facility Implications

Most development in the Borough has relied on water wells and septic systems as the primary source of domestic utilities and future, build-out modeling has assumed the continuation of low-density development. Growth underway in the Mat-Su is the result of a variety of trends:

- **Housing costs** in the Mat-Su relative to Anchorage have been historically low and have been well documented in local media as the conversation associated with the Anchorage land shortage has grown to address both residential and industrial land needs. Many Anchorage and Joint Base Elmendorf-Richardson (JBER) employees have chosen to reside in the Mat-Su in order to afford owning a home vs. renting or to have more house for their money (purchasing power). Mat-Su homes, typically $160K less than homes in Anchorage, are attractive to buyers.

- The Mat-Su Borough continues to embody the **Alaskan lifestyle** and foster **recreational amenities** that enrich the lives of all Alaskans. Fishing, hunting, sledding, mushing, skiing, boating and aviation opportunities in the Mat-Su are among the best in the State and are within easy reach of its largest population concentration. Many choose to live as close to these recreation amenities as possible. The Glenn Highway has effectively served to tie jobs to

housing and provide a transportation conduit in both directions between Anchorage and the Mat-Su.

- Historically, the Borough has added significant **new housing units** during the four most recent decades. The most significant housing was added in the 2000's with approximately 15,636 new housing units added between 2000 and 2009.

Future School Needs

The two percent expected annual growth in the Mat-Su Borough and the 1.5 percent expected annual growth in school enrollment supported by this report will require the construction of two or three elementary schools and the completion of the Redington Secondary School Campus High School Facility. Other expansions including the Palmer Junior High may be required to address other capacity short-falls along with boundary changes to balance enrollment. These improvements will be required during the next five to eight years.

5.0 Commercial Space Needs Analysis

Houston currently has 12 acres of Heavy Commercial zoned land and 32 acres of Commercial Light Zoned land or less than 0.5% of the total land. Based on the current commercially zoned and commercial land use, there is not enough commercially zoned land for future development as desired by the City's need for more development to support the tax structure and to support the types of businesses needed to sustain the growing population. Table 16 below summarizes the existing Heavy Commercial Zoning and existing Light Commercial Zoning. The majority of the commercially zoned land is along the Parks Highway where there is good direct access but future Parks Highway upgrades may consolidate access and secondary access from side roads or shared frontage roads may be a reality.

Table 16: Existing Commercial Land Use

Land Use	Acres	Percent of Total
Commercial – Heavy	12	0.08%
Commercial - Light	32	0.23%

6.0 Other Public Facilities Needs Analysis

6.1 Parks and Recreation

The Land Use map has been updated to reflect the two parks in the City. Currently, there is only 3% of existing land uses are Recreation (see Table 2.0). Based on the desires of the community through the survey, stakeholder interviews, open houses and Steering Committee work, this is not enough recreation for the desired future for Houston to become a destination where outdoor recreation is a draw.

6.2 Library

Mat-Su 2014 Strategic Library Plan Map shows a future library in Houston but no implementation strategies or timeline for such a library is provided.

6.3 Public Safety

A new Fire Station and public safety facility is being planned by City of Houston for the area of Birch Road. If funding for a City based police force is anticipated, more facilities will be needed.

6.4 Transportation

A future Transportation Corridor to support the development of the railroad extension (from Port McKenzie) should be reserved for the future development of a road corridor from Port Mackenzie to Parks Highway through Houston.

7.0 Industrial Space Needs Analysis

There is currently no land use that has developed as either light industrial or heavy industrial. However, there is currently 1290 acres of Light Industrially Zoned land and 1460 acres of Heavy Industrially Zoned land including the Knikatnu, Inc. annexed land. With the availability of this newly zoned land, the need for industrially zoned land may be met for the short term but land use and growth policies may still warrant the need to determine if additional land is needed.

Table 17: Existing Industrial Zoning Districts

Zoning	Acres	Percent of Total Area
Light Industrial	1290	7.96%
Heavy Industrial	1460	9.01%

8.0 Subareas Analysis – (See Existing Land Use and Planning Concepts Map)

- Town Center District (Civic Center of Houston)
- Commercial Areas District (Commercial Activities Center of Houston)

- Geographic Center of Houston – Node

9.0 Suitability Analysis (See Map Packet)

Land suitability is an analysis to determine how much land is developable, based on environmental constraints. These natural constraints include wetlands, floodplains, and unstable soils, slopes that exceed 45% as well as any known historical or archeological sites. Vacant land is categorized into levels of suitability for development based on the presence of constraining environmental factors.

5.1.1 *Suitable land* is assumed to be 100% available for development

5.1.2 *Marginally Suitable* land is assumed to be 66% available (i.e. 60 out of every 100 acres of marginally suitable vacant land are considered developable)

5.1.3 *Unsuitable land* is assumed to be not available for development

Environmental data sets used for this analysis are sourced from the Matanuska Susitna Borough. Wetlands data is from the Cook Inlet Wetlands Inventory and the initial suitability analysis included all types of wetlands within the inventory as unsuitable land. After review, not all types of wetlands within the inventory are undevelopable and so we are working to refine that constraint in the analysis to more realistically represent that attribute.

Table 18: Existing Land Use Analysis and Recommendations

Map Pages	Description	Recommended Action
1	Parcel 73412 is split over the railway ROW and Parks Highway ROW and has 3 residential units	
3	Parcel 201824 is proposed Susitna Valley State Forest	If State Forest is approved, update land use map
8	City parcel 6627 is where Fire House and City Hall are located. Current land use is recorded as Residential with Commercial Use	Change land use to PLI
8	Parcel 7346 is zoned PHD; 7 dwelling units exist on the designated single-family residential land use	Change land use or zoning if needed
12	Parcel 515626 is privately owned with 1 residential dwelling and parcel 57350 is privately owned with residential garage use; both zoned for PLI	Change zoning
15	Parcels 56708, 49748 have split zoning of R-1 and Holding District buffering the railroad	Eliminate split zoning
17	Parcel 73198 is privately owned, zoned for PLI. Recall discussion with Steering Committee that it might be park space?	
18	Parcel 12086 has split zoning of R-1 and MRF buffering the railroad from the R-1	Eliminate split zoning
19	Parcel 31015 is Borough owned and has Park designation according to City – land use map does not reflect this use	Update Land use map to show recreational use
22	City owned parcel 83874 with one Mobile Home- what is this parcel? (it is zoned PLI)	
23	City owned parcels 27141, 48676 zoned R-1 - what are these parcels?	
23	Privately owned parcel 87426 is zoned for PLI	
29	Native Corp owned parcel 26121 is zoned RA-5 but with annexation, it is proposed to be rezoned to MFR	If approved, update zoning from RA-5 to MFR

Map Pages	Description	Recommended Action
35	City owned parcel 75182 on north shore of Loon Lake- zoning is R-1, should it be PLI? What is the parcel use?	
41	Borough owned parcel 59946 is zoned RA-5 - is this to remain Borough owned? Should it be rezoned for PLI?	
43	Parcel 67787 is privately owned, zoned for R-1 but is bordered by the Parks Highway and ARRC.	Should be R-1.
46	Parcel 31962 is privately owned, zoned for PLI and is split by the railroad – is it owned by ARRC? What is the intent of the parcel?	
47	Parcels 37005, 46707, 14093, 20663, 1595 are zoned PLI but land use is private single family residentially used parcels. Zoning or land use needs to be updated.	COH: rezone parcels from PLI to R-1 or RA -2.5 or update land use
47	Parcel 33760 is zoned RA-2.5, use is single family residential, and has 4 residential units on it – zoning or land use might need to be updated	
49	PLI zoned parcels 80457 and 27934 are privately owned	
52	Parcel 7018 is privately owned, single family residential land use with one dwelling unit – zoning is Commercial	

General Notes:

- **Parks Highway District**
  - Intent: encourage a moderate level of growth which will provide the city with an economic base, employment opportunities, and decrease dependency on external governmental or economic factors. Encourage this area to support mixed residential and commercial use which maintains community character and promotes a community center.
  - Introduction of a **Town Center district** or overlay might replace this designation in some areas – PHD may not be needed at all if this is established
- **Neighborhood Commercial District**

- Intent: allows for the provisions of goods and services on a retail basis within residential districts to provide residents with convenience of neighborhood shopping. Intended to apply only to areas which are isolated from other commercial zones, located on collector streets rather than local roads but are easily accessible for the surrounding residential district.
- Currently, no parcels are zoned for NCD
  - City is discussing the removal of this zoning district, debating whether it serves a purpose separate from a conditional use within a residential district

- **Industrial Districts**
  - Newly annexed Knikatnu Inc. land is proposed for mainly HI and LI land uses.
    - Knikatnu, Inc. anticipates proposing through the CUP process the following projects:
      - Wastewater treatment plant
      - Railroad Reliant Industries
      - Warehousing and other Support Services
- **Commercial District**
  - Other than the Gold Miners Lodge in the northeast, only commercial zoning exists near the Big Lake Road intersection extending north to W Larae Road.
  - Parks Highway District currently allows for commercial development within it
    - If Parks Highway District is eliminated, Town Center District will most likely include some commercial but may way to reconsider some current PHD parcels for commercial designation
- **Recreation and Lake Access**
  - Concerns about lack of access and determined recreation spaces have been expressed within the Steering Committee as well as at the Open Houses
    - Only two areas are designated for recreation/parks – one is the Susitna Campground by City Hall and the other is the Park on the north shore of Bear Paw Lake

- No Parks and Recreation District exists within zoning, only PLI. Might want to consider creating a P&R District
- Parcel 31015 is owned by the Borough but surrounds the northern shoreline of Bear Paw Lake – Park designation according to our Project Area map but is not listed as a park on our land use map (update land use map)
- City owned parcel 75182 on north shore of Loon Lake, currently zoned for R-1 but could be PLI and has recreational and lake access potential
- Land west of Houston Middle and High Schools is owned by the Borough, zoned PLI has been sighted by the public as a potential area for recreational trails (CIA Open House)

Next Steps

Land Use Plan Map

a. Land Use Designations

b. Designate distribution and general location of land uses including residential, commercial, industrial, parks and institutional development

c. Address desired density, intensity, character of land use designations

d. Ensure adequate housing, employment and recreation opportunities

e. Maintain a balance distribution of land uses

f. Provide guidance for future public facilitates and utility investments

g. Provides basis for future zoning decisions but is not a Zoning Map

h. COH's Municipal Code, Title 10, Land Use Regulations is the primary tool for implementing the Comprehensive Plan Policies and are applied as Zoning Districts on the Zoning Map

i. The Land Use Plan Map is the graphical representation and geographically explicit statement of the Comp Plan policies

APPENDIX F.
CITY OF HOUSTON PLANNING AND ZONING COMMISSION RESOLUTION NO. 16-PC-07

Introduced By: Councilmember Hartley
Introduction Date:
Public Hearing Date: July 28, 2016
Vote: Anderson, Burnett, and Hartley in favor
Jones and Mistor absent

CITY OF HOUSTON
PLANNING & ZONING COMMISSION

RESOLUTION NO. 16-PC-07

A RESOLUTION OF THE HOUSTON PLANNING & ZONING COMMISSION FORWARDING FINDINGS AND RECOMMENDATIONS ON THE CITY OF HOUSTON COMPREHENSIVE PLAN UPDATE DRAFT DATED JUNE 23RD, 2016.

WHEREAS, The City of Houston received Grant # 14-DC-057 in the amount of $350,000 to perform a Community Impact Assessment and Comprehensive Plan Update; and

WHEREAS, this process is nearing completion and a Draft Comprehensive Plan Update is ready for review; and

WHEREAS, Houston Municipal Code 7.06.030 Planning Commission Duties states that the Planning & Zoning Commission shall "Undertake a general review of the Comprehensive Plan at least once every two years and make recommendations to the Council for amendments"; and

WHEREAS, this draft plan update was introduced by the Planning Commission at the publicly noticed Planning Commission regular meeting on June 30, 2016 and set to a public hearing on July 28th, 2016; and

WHEREAS, the Houston Planning Commission sufficiently considered all evidence and testimony presented to them to make the following recommendation.

NOW, THEREFORE, BE IT RESOLVED by the Planning Commission of the City of Houston to forward the following recommendations regarding proposed City of Houston Comprehensive Plan Update:

Section 1. This following ~~findings~~ **recommendations** are made or affirmed:

Recommendation 1:

Under Town Center Development, add language to encourage the development of street side or other public parking venues in the town center.

Recommendation 2:

Implement additional information on the history of industry in Houston.

Recommendation 3:

Under Transport add objective to provide additional traffic crossings across the Little Susitna River to promote public safety and convenience.

Introduced By: Councilmember Hartley
Introduction Date:
Public Hearing Date: July 28, 2016
Vote: Anderson, Burnett, and Hartley in favor
Jones and Mistor absent

PASSED, APPROVED, AND ADOPTED By a duly constituted quorum of the Planning & Zoning Commission for the City of Houston on this 28th day of January, 2016.

Christian Hartley, Chair

ATTEST:

Sonya Dukes, CMC
Houston City Clerk

APPENDIX G.
CITY OF HOUSTON
CITY COUNCIL
ADOPTING ORDINANCE 16-22

Introduced by: Mayor Thompson
Introduction Date: August 11, 2016
Public Hearing: September 8, 2016
Adoption Date: September 8, 2016
Vote: Barney, Johansen, Johnson, Jorgensen, Stout, Wilson and Thompson in favor

HOUSTON, ALASKA
ORDINANCE 16-22

AN ORDINANCE OF THE HOUSTON CITY COUNCIL REPEALING THE 1999 CITY OF HOUSTON COMPREHENSIVE PLAN, AS AMENDED IN 2003 (ORDINANCE SERIAL NO. 199-078; 2003-108) AND ADOPTING THE 2016 CITY OF HOUSTON COMPREHENSIVE PLAN.

BE IT ORDAINED AND ENACTED BY THE CITY OF HOUSTON, ALASKA:

WHEREAS, The City of Houston received State of Alaska Grant #14-DC-057 in the amount of $350,000 to perform a Community Impact Assessment and Comprehensive Plan Update; and

WHEREAS, in 2013 the City created a Community Impact Assessment and Comprehensive Plan Update Steering Committee to work closely with the consultant, City staff, City Planning Commission and City Council through the public process; and

WHEREAS, in 2013 the City hired qualified planning consultants through the bidding process to assist the Committee and staff in the process of revising the Comprehensive Plan through a number of public meetings, open houses and workshops ; and

WHEREAS, the 2016 City of Houston's Comprehensive Plan is based on community and stakeholder input and has been supported by the City and Committee as a balanced approach to the community's future;

WHEREAS, the 2016 City of Houston's Comprehensive Plan is based on community and stakeholder input and has been supported by the City and Committee as a balanced approach to the community's future;

WHEREAS, the Houston Planning and Zoning Commission reviewed the 2016 plan, held a Public hearing and forwarded recommendations on the plan to the City Council (Resolution 16-PC-07).

SECTION I: CLASSIFICATION: This ordinance is a non-code ordinance.

SECTION II: SEVERABILITY: If any provisions of this ordinance, or any application thereof to any person or circumstances is held invalid, the remainder of this ordinance and the application to all other persons or circumstances shall not be affected thereby.

Introduced by: Mayor Thompson
Introduction Date: August 11, 2016
Public Hearing: September 8, 2016
Adoption Date: September 8, 2016
Vote: Barney, Johansen, Johnson, Jorgensen, Stout, Wilson and Thompson in favor

SECTION III: PURPOSE: The Purpose of Ordinance 16-22 is to replace the regulatory framework for land use and development in the City of Houston with a new, revised comprehensive plan that is responsive and convenient for the City residents.

SECTION IV: REPEAL OF THE 1999 COMPREHENSIVE PLAN: the 1999 Comprehensive Plan (Adopted in Ordinance Serial No. 1999-078) including the amendment adopted in 2003 (Ordinance Serial No. 2003-108) is hereby repealed.

SECTION V: ADOPTION OF THE 2016 COMPREHENSIVE PLAN: The 2016 City of Houston Comprehensive Plan, as submitted by the Houston Planning and Zoning Commission and the City of Houston Community Impact Assessment and Comprehensive Plan Update Steering Committee as contained in Exhibit A of this ordinance, is hereby adopted.

SECTION VI: SUBMISSION TO THE MATANUSKA - SUSITNA BOROUGH. The Mayor shall submit the 2016 City of Houston Comprehensive plan in this ordinance to the Matanuska-Susitna Borough for approval by the Borough Planning Commission and Assembly as required by AS 29.40.030 (b) and MSB 17.42.025.

SECTION VII: ENACTMENT: Sections IV and V of this ordinance shall be effective upon the effective date of the ordinance of the Matanuska Susitna Borough Assembly approving the City of Houston Comprehensive Plan in this ordinance.

ADOPTED by the Houston City Council on September 8, 2016.

THE CITY OF HOUSTON, ALASKA

Virgie Thompson

Virgie Thompson, Mayor

ATTEST:

Sonya Dukes

Sonya Dukes, CMC, City Clerk

Community Outreach

City of Houston Comprehensive Plan and Community Impact Assessment Survey

November 2014

Dear << Name>>

The City of Houston needs your help! We are in the process of updating our Comprehensive Plan and Community Impact Assessment. As part of that process, we have contracted with the McDowell Group, an Alaska research firm, to conduct a survey of Houston property owners and residents. The purpose of the survey is to gather your opinions about the city's priorities for the next 20 years. Please take a few minutes to complete the enclosed survey now. Your participation is critical. You can make a difference for your community.

The information you provide is confidential and is seen only by McDowell Group. The City of Houston will never see any individual survey data. Survey results are presented only in aggregate with other responses.

Please complete your survey by **December 5, 2014** and return it by using the enclosed self-addressed, postage-paid envelope. You may also fax the survey to (907) 586-2673, scan to robert.koentizer@mcdowellgroup.net, OR complete the survey on-line. Type the following address into your web browser and enter the password found in the bottom right of your survey's last page.

HoustonCompPlanSurvey.com

When you return your completed survey (either by mail, online, fax, or scan), your name will be entered into a drawing to win your choice of one of **20 $50 Fred Meyer or Walmart gift cards.** Winners will be randomly selected by McDowell Group.

If you have any questions about this survey, please contact Bob Koenitzer, McDowell Group Project Manager at (866-586-6133) or robert.koenitzer@mcdowellgroup.net.

We appreciate your time and assistance with this important project.

Sincerely,

Virgie Thompson

Virgie Thompson
Mayor
City of Houston

Len Anderson
Chair, City of Houston CIA and Comprehensive Plan Revisions Steering Committee

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City of Houston Comprehensive Plan and Community Impact Assessment Survey

The City of Houston is in the process of updating its Comprehensive Plan and Community Impact Assessment. This process will outline city priorities and guide planning efforts for the next 20 years. As part of that process, we appreciate you taking the time to complete this survey. Your opinions will help shape the future of your community.

If you prefer, you may also complete the survey online at a secure website by entering the following URL into your computer's browser and then entering your password (found in the bottom right of the survey last page). You will be entered in the drawing if you complete the survey by mail or online.

HoustonCompPlanSurvey.com

When you return your completed survey (either online or by mail), your name will be entered into a drawing to win your choice of **one of 20 $50 Fred Meyer or Walmart gift cards**.

1. **Did you live in Houston for more than 9 months in the past year?**

   01☐ Yes ⇨ **1a. If yes, how many years have you lived in Houston? #_____years** (go to Question 2)

   02☐ No ⇨ **1b. Do you rent your Houston property to others?** 01☐ Yes (go to Q3) 02☐ No (go to Q3)

2. **Do you own or rent your Houston residence or property?**

   01☐ Own 02☐ Rent 03☐ Some other arrangement: _____

3. **Overall, how would you rate your quality of life in Houston using a scale of 1 – 10, where 1 means "very poor' and 10 means "very good"?** (Circle answer) 01☐Do not live in Houston

Very Poor									Very Good
1	2	3	4	5	6	7	8	9	10

4. **Please indicate your level of agreement regarding the following statements about the community of Houston.**

	Strongly Agree	*Agree*	*Disagree*	*Strongly Disagree*	*Unsure/ Don't know*
a. Houston is a safe place to live.	1	2	3	4	5
b. Houston is family-friendly.	1	2	3	4	5
c. Houston is a good place to enjoy a rural lifestyle.	1	2	3	4	5
d. Houston is a good place for people to live affordably.	1	2	3	4	5
e. Houston is a good place for outdoor recreation.	1	2	3	4	5
f. Houston could use more community planning.	1	2	3	4	5
g. Houston could use more landscaping of public spaces.	1	2	3	4	5

5. **Please indicate how important it is for the City of Houston to support each of the following transportation-related projects.**

	Very important	*Somewhat important*	*Not important*	*Unsure/ Don't know*
a. Improved road maintenance	1	2	3	4
b. Improved lighting on roads	1	2	3	4
c. Public transportation (bus service) between Houston and other parts of the Mat-Su Borough	1	2	3	4
d. New Alaska Railroad depot/train stop	1	2	3	4
e. New road between Houston and Port Mackenzie	1	2	3	4
f. More paved roads	1	2	3	4
g. Improved street/road signage	1	2	3	4
h. Development of a "Park and Ride" lot for commuters	1	2	3	4
i. Development of a Hawk Lane bike path	1	2	3	4

6. **Of the transportation-related projects listed above, which one should be the <u>most important</u> priority for the City? _____(enter letter a-i)** 01☐ Unsure/Don't know

7. **Please indicate how important it is for the City of Houston to support each of the following recreation-related projects.**

	Very important	*Somewhat Important*	*Not important*	*Unsure/ Don't know*
a. Creation of new parks with playgrounds	1	2	3	4
b. Improved public access to lakes	1	2	3	4
c. Creation of recreation programs for youth	1	2	3	4
d. Maintenance of existing trails and pathways	1	2	3	4
e. More non-motorized trails and pathways (for walking, biking, horse-riding, dog-sledding, etc.)	1	2	3	4
f. More motorized trails and pathways (for ATVs, snow machines, etc.)	1	2	3	4
g. Creation or expansion of indoor recreation facilities, such as an ice rink, swimming pool, or running track	1	2	3	4

8. **Of the recreation-related projects listed above, which one should be the <u>most important</u> priority for the City? _____(enter letter a-g)** 01☐ Unsure/Don't know

9. **Please indicate how supportive you are for the City of Houston to strengthen each of the following environmental-related issues.**

	Very supportive	*Somewhat supportive*	*Not supportive*	*Unsure/ Don't know*
a. Stricter regulation of land near rivers, lakes, and streams	1	2	3	4
b. Stricter enforcement of flood plain development regulations	1	2	3	4
c. Protection of drinking water quality	1	2	3	4

10. **Please indicate how important it is for the City of Houston to support new development or expansion in each of the following areas of economic development.**

	Very important	*Somewhat important*	*Not important*	*Unsure/ Don't know*
a. Attracting industrial development along the railroad tracks	1	2	3	4
b. Recruiting new businesses	1	2	3	4
c. Attracting more tourism development	1	2	3	4
d. Developing a tourism attraction along the Little Susitna River (ex. river walk, city park, etc.)	1	2	3	4
e. Developing a "town center" with pedestrian-friendly facilities	1	2	3	4
f. Supporting natural resource development in the area	1	2	3	4
g. Supporting extension of utility services (ex. power, communication, etc.)	1	2	3	4

11. **Of the economic development projects listed above, which should be the most important priority for the City? _____(enter letter a-g)** 01☐ Unsure/Don't know

12. **Please indicate how important it is for the City of Houston to continue providing the following services.**

	Very important	*Somewhat important*	*Not important*	*Unsure/ Don't know*
a. Community planning	1	2	3	4
b. Road maintenance	1	2	3	4
c. Animal control and shelter	1	2	3	4
d. Fire and emergency services	1	2	3	4

13. **Please indicate how willing you are to pay for the following suggested new or improved City of Houston services or facilities through increased property taxes.**

	Very willing	*Somewhat willing*	*Not willing*	*Unsure/ Don't know*
a. Improved road maintenance	1	2	3	4
b. Funding of Public Safety Officers	1	2	3	4
c. Improved city fire and emergency services	1	2	3	4
d. Cemetery development and maintenance	1	2	3	4

14. **Please indicate how willing you are to pay a fee to drop off your garbage at a solid waste transfer station located in Houston?**

01☐ Very willing 02☐ Somewhat willing 03☐ Not willing
04☐ Unsure/Don't know

15 In Houston, do you feel there is too much, too little, or just enough private property regulation?

01☐ Too much regulation 02☐ Too little regulation 03☐ Just enough regulation
04☐ Unsure/Don't know

16. How many people, <u>including yourself</u>, live in your Houston household? #_____ people

01☐ I do not live in Houston

17. How many people in your Houston household are under 18 years of age? #____ people

01☐ I do not live in Houston

18. What is the highest level of education you have had the opportunity to complete?

01☐ Less than HS diploma 04☐ Some college 07☐ MA (Master's Degree)
02☐ HS diploma/GED 05☐ AA (Associate's Degree) 08☐ PhD (Doctorate)
03☐ Vocational/Tech Cert. 06☐ BA (Bachelor's Degree)

19. Please indicate the category that best describes your total combined household income before taxes for 2013.

01☐ Less than $15,000 04☐ $35,001 to $50,000 07☐ Over $100,000
02☐ $15,001 to $25,000 05☐ $50,001 to $75,000
03☐ $25,001 to $35,000 06☐ $75,001 to $100,000

20. Please indicate your gender 01☐ Male 02☐ Female

21. In what year were you born? 19____

22. Please feel free to comment about any other planning issues you feel are important for the City of Houston to consider as it develops its new Comprehensive Plan and Community Impact Assessment.

_____

_____

_____

_____

_____

_____

If you have any questions contact: Bob Koenitzer, McDowell Group Survey Manager, call toll free 1-866-586-6133 or 1-907-586-2990, or e-mail *robert.koenitzer@mcdowellgroup.net*.

Please complete and return this survey by December 3, 2014.

Thank you. Your opinions matter!

For more information on the City of Houston Comprehensive Plan and Community Impact Assessment, please visit: http://houstonakcompplan.com/

Password

City of Houston Comprehensive Plan and Community Impact Assessment Survey

December 2014

Dear << Name>>

A couple weeks ago, we sent you a survey that asked for your opinions about the City of Houston's priorities for the next 20 years as part of our process to update our City's Comprehensive Plan and Community Impact Assessment. If you have completed the survey, thank you for your time and participation in our planning process. If you have not completed the survey, please take a few minutes to complete the enclosed survey now. Your participation is critical. You can make a difference for your community.

The information you provide is confidential and is seen only by McDowell Group. The City of Houston will never see any individual surveys or names associated with survey data. Survey results will be presented only in total with other responses.

We have extended the survey's due date to **December 15, 2014.** Please return your survey by using the enclosed self-addressed, postage-paid envelope. You may also fax the survey to (907) 586-2673, scan to robert.koenitzer@mcdowellgroup.net, OR complete the survey on-line. Type the following address into your web browser and enter the password found in the bottom right of your survey's last page.

HoustonCompPlanSurvey.com

When you return your completed survey (either by mail, online, fax, or scan), your name will be entered into a drawing to **win your choice of one of 20 $50 Fred Meyer or Walmart gift cards.** Winners will be randomly selected by McDowell Group.

If you have any questions about this survey, please contact Bob Koenitzer, McDowell Group Project Manager at (866-586-6133) or robert.koenitzer@mcdowellgroup.net.

We appreciate your time and assistance with this important project.

Sincerely,

Virgie Thompson

Len Anderson

Virgie Thompson
Mayor
City of Houston

Len Anderson
Chair, City of Houston CIA and Comprehensive Plan Revision Steering Committee

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Hi, just a reminder that you're receiving this email because you have expressed an interest in the City of Houston's Community Impact Assessment & Comprehensive Plan Revision. Don't forget to add vle@rmconsult.com to your address book so we'll be sure to land in your inbox!

You may unsubscribe if you no longer wish to receive our emails.

City of Houston Community Impact Assessment and Comprehensive Plan Revision

Reminder: Complete the Survey!

As part of the City of Houston's Community Impact Assessment and Comprehensive Plan Revision, we are conducting a survey of Houston residents and property owners to gather your opinions about the City's priorities for the next 20 years.

You received a survey in the mail from McDowell Group, an Alaska research firm. We appreciate you taking a few minutes to complete the survey.

Your opinions matter and we thank you in advance!

Thank you for attending the Future's Workshop in September

On September 18th, residents gathered in the Houston Fire Station for the first project open house, the Future's Workshop.

Attendees were tasked with "creating ideal futures" and openly discussed what the future of Houston should include; all responses were recorded.

For the results of the Future's Workshop and to provide us with feedback, go to the Public Involvement page of the project website: http://houstonakcompplan.com/

Please continue to participate in the City's Community Impact Assessment and Comprehensive Plan Revision

The City of Houston Community Impact Assessment and Comprehensive Plan Revision is a collaborative effort between the City of Houston, the Planning Commission, Houston residents and business owners, and the R&M Team.

Questions? Please Contact:

Van Le, AICP
Project Manager
R&M Consultants, Inc.

email:
comments@rmconsult.com
phone: 907-646-9659

Visit the project website:
www.houstonakcompplan.com

process your input is important appreciated!

R&M Consultants, Inc., 9101 Vanguard Drive, Anchorage, AK 99507

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JOIN US AT THE

OPEN HOUSE

THURSDAY

June 4, 2015

4:30 pm-6:30 pm

HOUSTON FIRE STATION

The City of Houston is conducting a Community Impact Assessment (CIA) to identify the potential impacts upcoming projects may have on the community. Please join us at the open house to review identified impacts and provide feedback. The CIA will be used to help inform the Comprehensive Plan Revision currently underway. The City, in partnership with the Alaska Department of Transportation & Public Facilities, is also kicking off a Parks Highway Corridor Plan effort that will be introduced at the Open House.

13965 W Armstrong Road, Houston, AK 99694

For More Information Please Contact: **PLANNER & PUBLIC INVOLVEMENT COORDINATOR**
TARYN OLESON | R&M Consultants, Inc. | Comments@RMConsult.com | 907.646.9645

VISIT THE PROJECT WEBSITE – www.HoustonAKCompPlan.com

R&M
9101 Vanguard Drive
Anchorage, AK 99507
Innovating Today for Alaska's Tomorrow

JOIN US AT THE

OPEN HOUSE

THURSDAY
June 4, 2015
4:30 pm-6:30 pm

MR. AND MRS. SMITHERS
OR CURRENT RESIDENT
5943 Meow Avenue
Anchorage, AK 99518

Hi, just a reminder that you're receiving this email because you have expressed an interest in the City of Houston's Community Impact Assessment & Comprehensive Plan Revision. Don't forget to add vle@rmconsult.com to your address book so we'll be sure to land in your inbox!

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JOIN US AT THE OPEN HOUSE

The City of Houston is conducting a Community Impact Assessment (CIA) to identify the potential impacts upcoming projects may have on the community. Please join us at the open house to review identified impacts and provide feedback. The CIA will be used to help inform the Comprehensive Plan Revision currently underway.

Thursday, June 4, 2015
4:30 PM - 6:30 PM
Houston Fire Station

We hope you continue to participate in the City's Community Impact Assessment and Comprehensive Plan Revision process, your input is important appreciated!

For more information about the City of Houston Community Impact Assessment and Comprehensive Plan Revision, please visit the project website
www.houstonakcompplan.com

The City of Houston Community Impact Assessment and Comprehensive Plan Revision is a collaborative effort between the City of Houston, the Planning Commission, Houston residents and business owners, and the R&M Team.

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CITY OF HOUSTON, ALASKA
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You may unsubscribe if you no longer wish to receive our emails.

The Draft Community Impact Assessment is Available for Review

The Draft Community Impact Assessment (CIA) is now available for public review. The full report and appendices can be found on the project website:

http://houstonakcompplan.com/

The CIA will help inform the current City of Houston Comprehensive Plan revision effort by analyzing potential impacts transportation projects may have on the community and residents' quality of life. The evaluation will allow the city and its residents to prepare for positive impacts and mitigate any potential negative impacts and assist Houston in maintaining its unique community character.

We appreciate your interest in the CIA and Comprehensive Plan Update process and value your comments on this draft report. Comments can be submitted through the project website, or you can contact a member of the project team.

Thank you and please contact a member of the project team if you have any questions!

The City of Houston Community Impact Assessment and Comprehensive Plan Revision is a collaborative effort between the City of Houston, the Planning Commission, Houston residents and business owners, and the R&M Team.

Questions? Please Contact:

Van Le, AICP
Project Manager
R&M Consultants, Inc.

email:
comments@rmconsult.com
phone: 907-646-9659

Visit the project website
www.houstonakcompplan.com

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JOIN US AT THE

OPEN HOUSE

THURSDAY
May 5, 2016
5:00 pm-7:00 pm

Please join us at the Open House to review the Draft Comprehensive Plan for the City of Houston. This 20-year plan reflects the community's core values and future needs while providing a framework for development in the City of Houston through 2035.

HOUSTON FIRE STATION 13965 W Armstrong Road, Houston, AK 99694

For More Information Please Contact: **PLANNER & PUBLIC INVOLVEMENT COORDINATOR**
VAN LE | R&M Consultants, Inc. | Comments@RMConsult.com | 907.646.9659

VISIT THE PROJECT WEBSITE – www.HoustonAKCompPlan.com

JOIN US AT THE

OPEN HOUSE

THURSDAY
May 5, 2016
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You may unsubscribe if you no longer wish to receive our emails.

Join us at the Draft Comprehensive Plan Open House

Please join us at the Open House to review the Draft Comprehensive Plan for the City of Houston on May 5th, 2016. This 20-year plan reflects the community's core values and future needs while providing a framework for development and improvements in the City of Houston through 2035. We appreciate your interest and encourage your feedback on the Draft Comprehensive Plan Revision.

Open House

Thursday, May 5th, 2016
5:00 PM - 7:00 PM

Houston Fire Station 9-1
13965 W Armstrong Road, Houston

http://houstonakcompplan.com/

The Draft Comprehensive Plan will be posted to the website before the Open House on Thursday.

Comments can be submitted at the Open House, through the project website, or you can contact a member of the project team.

Thank you and please contact Project Manager, Van Le at vle@rmconsult.com if you have any questions!

The City of Houston Community Impact Assessment and Comprehensive Plan Revision is a collaborative effort between the City of Houston, the Planning Commission, Houston residents and business owners, and the R&M Team.

Questions? Please Contact:

Van Le, AICP
Project Manager
R&M Consultants, Inc.

email:
comments@rmconsult.com
phone: 907-646-9659

Visit the project website:
www.houstonakcompplan.com

R&M Consultants, Inc., 9101 Vanguard Drive, Anchorage, AK 99507

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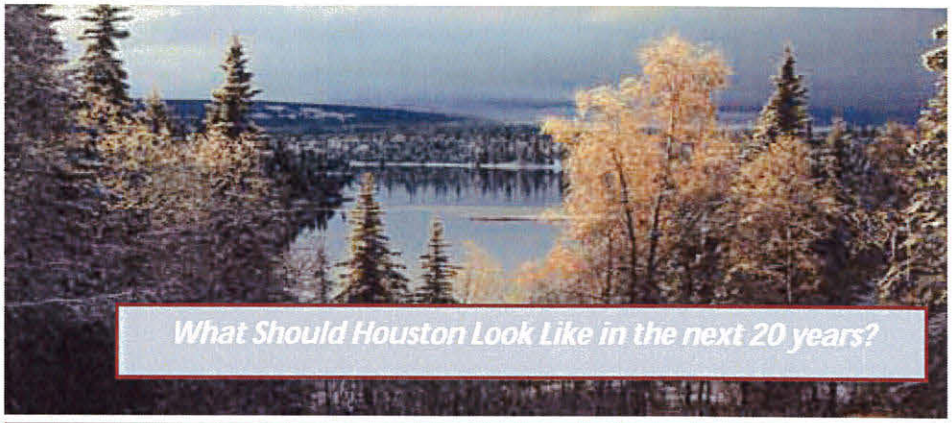
PUBLIC NOTICES

1. **Postcard Mailing and Flyer– Futures Workshop**
   Postcard sent to 1,651 residents, tenants property owners, and businesses and flyers distributed at Founder's Day event and at City Hall
2. **Household Opinion Survey Mailing**
   Cover letter, opinion survey, and second round mailing sent out 1,651 residents, tenants, property owners, and businesses
3. **Constant Contact E-Newsletter – Household Survey**
   Email newsletter with reminder to complete the Household Survey and with information on past Future's Workshop
4. **Postcard Mailing – CIA Open House**
   Postcard sent to 1,651 residents, tenants, property owners, and businesses inviting them to the public open house to identify the potential impacts upcoming projects may have on the community for the CIA
5. **Constant Contact E-Newsletter – CIA Open House**
   Email newsletter inviting stakeholders to the CIA Open House
6. **Constant Contact E-Newsletter – Draft CIA Review**
   Email newsletter notifying stakeholders the Draft CIA is available for review and to solicit comments on the Draft.
7. **Postcard Flyers – Draft Comprehensive Plan Review**
   Over 200 flyers were distributed throughout the community, including City Hall, the Post Office, Miller's Market, etc. inviting them to the public open house to review the Draft Comprehensive Plan.
8. **Constant Contact E-newsletter- Draft Comprehensive Plan Open House**
   Email newsletter inviting stakeholders to the public open house to review the Draft Comprehensive Plan.
9. **Frontiersman Advertisement– Public Hearing Notice**
   Advertisement placed in the Frontiersman notifying interested stakeholders of the City Council Public Hearing on the Comprehensive Plan
10. **City of Houston Website – Screen Shot of Home Page**
    Throughout the project, the city's website prominently advertised the CIA and Comp Plan efforts, events, and updates as they were available. The City Calendar on the left reflected all events and Steering Committee meetings and posted the agenda of each meeting a minimum of one week prior to the meeting date.
11. **CIA & Comp Plan Project Website – Screen Shots (partial view)**
    The project specific website, linked to the City of Houston's website, has been routinely updated and managed throughout the project to keep stakeholders well informed. All drafts and reports available for review are posted on the Documents page. Comments can be submitted any time through the website
12. **Public Involvement Page of Project Website – Content View**
    Full content on the Public Involvement page of the project specific website.

Your Community, Your Future, Your Plan



Save the date:
Thursday,
September 18, 2014 for a
Futures Workshop

4:30 PM to 7:30 PM
Houston Fire Station

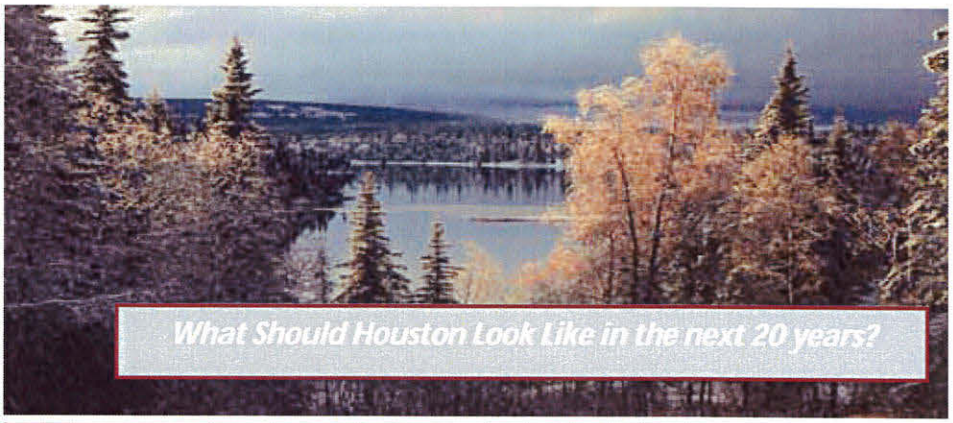
The City of Houston is conducting a Community Impact Assessment (CIA) and revising its Comprehensive Plan to guide future growth. Since the Comprehensive Plan was updated in 2003, population growth, transportation infrastructure projects and industrial development are on the rise. Join us at the first community workshop to plan for the future and prepare for growth and development while preserving community values.

For More Information Please Contact:
Van Le, AICP, Project Manager
R&M Consultants, Inc.

E-mail:
comments@rmconsult.com
Phone: 907-646-9659

Visit the Project Website:
www.HoustonAKCompPlan.com

Your Community, Your Future, Your Plan



Save the date:
Thursday,
September 18, 2014 for a
Futures Workshop

4:30 PM to 7:30 PM
Houston Fire Station

The City of Houston is conducting a Community Impact Assessment (CIA) and revising its Comprehensive Plan to guide future growth. Since the Comprehensive Plan was updated in 2003, population growth, transportation infrastructure projects and industrial development are on the rise. Join us at the first community workshop to plan for the future and prepare for growth and development while preserving community values.

For More Information Please Contact:
Van Le, AICP, Project Manager
R&M Consultants, Inc.

E-mail:
comments@rmconsult.com
Phone: 907-646-9659

Visit the Project Website:
www.HoustonAKCompPlan.com

R&M Consultants, Inc.
9101 Vanguard Drive
Anchorage Alaska

City of Houston Comprehensive Plan Household Survey

Watch Your Mail!

As part of Houston's Comprehensive Plan development, we have asked McDowell Group, an Alaska research firm, to conduct a mail survey of Houston residents. The Comprehensive Plan is a document that will guide our community's growth for the next 20 years. We want your opinions to help guide Houston's future.

McDowell Group will be mailing a survey to all households with a Houston mailing address this Fall. Once you receive the survey, we would appreciate you taking a few minutes to participate. Your opinion matters and we thank you in advance.
Sincerely,

Virgie Thompson

Mayor, City of Houston

R&M Consultants, Inc.
9101 Vanguard Drive
Anchorage Alaska

City of Houston Comprehensive Plan Household Survey

Watch Your Mail!

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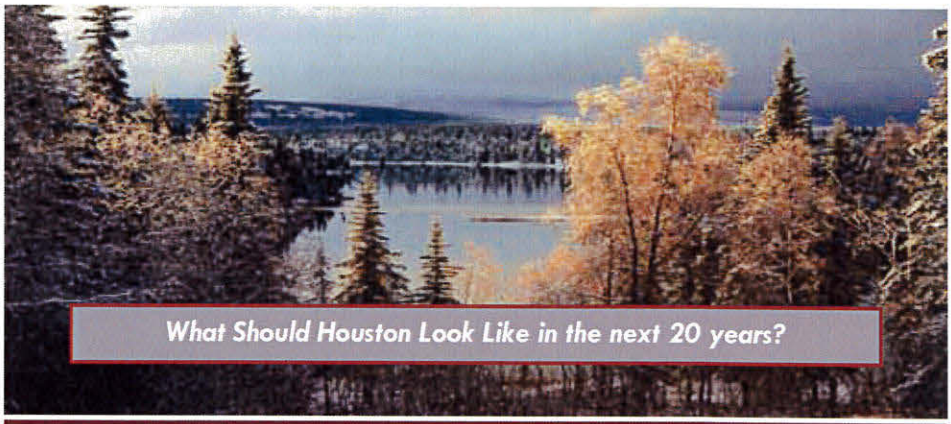
Mayor, City of Houston

Your Community, Your Future, Your Plan



Open House & Futures Workshop

Thursday, September 18, 2014

4:30 PM to 7:30 PM
Houston Fire Station

The City of Houston is conducting a Community Impact Assessment (CIA) and revising its Comprehensive Plan to guide future growth. Since the Comprehensive Plan was updated in 2003, population growth, transportation infrastructure projects and industrial development are on the rise. Join us at the first community workshop to plan for the future and prepare for growth and development while preserving community values; families are encouraged to attend.

For More Information Please Contact:
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R&M Consultants, Inc.

E-mail: comments@rmconsult.com
Phone: 907-646-9659

Visit the Project Website:
www.HoustonAKCompPlan.com
to sign up for updates

R&M Consultants, Inc.
9101 Vanguard Drive
Anchorage Alaska 99507

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Watch Your Mail

for the City of Houston Comprehensive Plan Household Survey, conducted by the McDowell Group in late fall.

We want your opinions to help guide Houston's future.

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City of Houston Comprehensive Plan and Community Impact Assessment Survey

November 2014

Dear << Name>>

The City of Houston needs your help! We are in the process of updating our Comprehensive Plan and Community Impact Assessment. As part of that process, we have contracted with the McDowell Group, an Alaska research firm, to conduct a survey of Houston property owners and residents. The purpose of the survey is to gather your opinions about the city's priorities for the next 20 years. Please take a few minutes to complete the enclosed survey now. Your participation is critical. You can make a difference for your community.

The information you provide is confidential and is seen only by McDowell Group. The City of Houston will never see any individual survey data. Survey results are presented only in aggregate with other responses.

Please complete your survey by **December 5, 2014** and return it by using the enclosed self-addressed, postage-paid envelope. You may also fax the survey to (907) 586-2673, scan to robert.koentizer@mcdowellgroup.net, OR complete the survey on-line. Type the following address into your web browser and enter the password found in the bottom right of your survey's last page.

HoustonCompPlanSurvey.com

When you return your completed survey (either by mail, online, fax, or scan), your name will be entered into a drawing to win your choice of one of **20 $50 Fred Meyer or Walmart gift cards.** Winners will be randomly selected by McDowell Group.

If you have any questions about this survey, please contact Bob Koenitzer, McDowell Group Project Manager at (866-586-6133) or robert.koenitzer@mcdowellgroup.net.

We appreciate your time and assistance with this important project.

Sincerely,

Virgie Thompson

Virgie Thompson
Mayor
City of Houston

Len Anderson
Chair, City of Houston CIA and Comprehensive Plan Revisions Steering Committee

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City of Houston Comprehensive Plan and Community Impact Assessment Survey

The City of Houston is in the process of updating its Comprehensive Plan and Community Impact Assessment. This process will outline city priorities and guide planning efforts for the next 20 years. As part of that process, we appreciate you taking the time to complete this survey. Your opinions will help shape the future of your community.

If you prefer, you may also complete the survey online at a secure website by entering the following URL into your computer's browser and then entering your password (found in the bottom right of the survey last page). You will be entered in the drawing if you complete the survey by mail or online.

HoustonCompPlanSurvey.com

When you return your completed survey (either online or by mail), your name will be entered into a drawing to win your choice of **one of 20 $50 Fred Meyer or Walmart gift cards**.

1. **Did you live in Houston for more than 9 months in the past year?**

   01☐ Yes ⇨ **1a. If yes, how many years have you lived in Houston? #_____years** (go to Question 2)

   02☐ No ⇨ **1b. Do you rent your Houston property to others?** 01☐ Yes (go to Q3) 02☐ No (go to Q3)

2. **Do you own or rent your Houston residence or property?**

   01☐ Own 02☐ Rent 03☐ Some other arrangement: _____

3. **Overall, how would you rate your quality of life in Houston using a scale of 1 – 10, where 1 means "very poor' and 10 means "very good"?** (Circle answer) 01☐Do not live in Houston

Very Poor									Very Good
1	2	3	4	5	6	7	8	9	10

4. **Please indicate your level of agreement regarding the following statements about the community of Houston.**

	Strongly Agree	*Agree*	*Disagree*	*Strongly Disagree*	*Unsure/ Don't know*
a. Houston is a safe place to live.	1	2	3	4	5
b. Houston is family-friendly.	1	2	3	4	5
c. Houston is a good place to enjoy a rural lifestyle.	1	2	3	4	5
d. Houston is a good place for people to live affordably.	1	2	3	4	5
e. Houston is a good place for outdoor recreation.	1	2	3	4	5
f. Houston could use more community planning.	1	2	3	4	5
g. Houston could use more landscaping of public spaces.	1	2	3	4	5

5. **Please indicate how important it is for the City of Houston to support each of the following transportation-related projects.**

	Very important	*Somewhat important*	*Not important*	*Unsure/ Don't know*
a. Improved road maintenance	1	2	3	4
b. Improved lighting on roads	1	2	3	4
c. Public transportation (bus service) between Houston and other parts of the Mat-Su Borough	1	2	3	4
d. New Alaska Railroad depot/train stop	1	2	3	4
e. New road between Houston and Port Mackenzie	1	2	3	4
f. More paved roads	1	2	3	4
g. Improved street/road signage	1	2	3	4
h. Development of a "Park and Ride" lot for commuters	1	2	3	4
i. Development of a Hawk Lane bike path	1	2	3	4

6. **Of the transportation-related projects listed above, which one should be the <u>most important</u> priority for the City? _____(enter letter a-i)** 01☐ Unsure/Don't know

7. **Please indicate how important it is for the City of Houston to support each of the following recreation-related projects.**

	Very important	*Somewhat Important*	*Not important*	*Unsure/ Don't know*
a. Creation of new parks with playgrounds	1	2	3	4
b. Improved public access to lakes	1	2	3	4
c. Creation of recreation programs for youth	1	2	3	4
d. Maintenance of existing trails and pathways	1	2	3	4
e. More non-motorized trails and pathways (for walking, biking, horse-riding, dog-sledding, etc.)	1	2	3	4
f. More motorized trails and pathways (for ATVs, snow machines, etc.)	1	2	3	4
g. Creation or expansion of indoor recreation facilities, such as an ice rink, swimming pool, or running track	1	2	3	4

8. **Of the recreation-related projects listed above, which one should be the <u>most important</u> priority for the City? _____(enter letter a-g)** 01☐ Unsure/Don't know

9. **Please indicate how supportive you are for the City of Houston to strengthen each of the following environmental-related issues.**

	Very supportive	*Somewhat supportive*	*Not supportive*	*Unsure/ Don't know*
a. Stricter regulation of land near rivers, lakes, and streams	1	2	3	4
b. Stricter enforcement of flood plain development regulations	1	2	3	4
c. Protection of drinking water quality	1	2	3	4

10. **Please indicate how important it is for the City of Houston to support new development or expansion in each of the following areas of economic development.**

	Very important	*Somewhat important*	*Not important*	*Unsure/ Don't know*
a. Attracting industrial development along the railroad tracks	1	2	3	4
b. Recruiting new businesses	1	2	3	4
c. Attracting more tourism development	1	2	3	4
d. Developing a tourism attraction along the Little Susitna River (ex. river walk, city park, etc.)	1	2	3	4
e. Developing a "town center" with pedestrian-friendly facilities	1	2	3	4
f. Supporting natural resource development in the area	1	2	3	4
g. Supporting extension of utility services (ex. power, communication, etc.)	1	2	3	4

11. **Of the economic development projects listed above, which should be the most important priority for the City? _____(enter letter a-g)** 01☐ Unsure/Don't know

12. **Please indicate how important it is for the City of Houston to continue providing the following services.**

	Very important	*Somewhat important*	*Not important*	*Unsure/ Don't know*
a. Community planning	1	2	3	4
b. Road maintenance	1	2	3	4
c. Animal control and shelter	1	2	3	4
d. Fire and emergency services	1	2	3	4

13. **Please indicate how willing you are to pay for the following suggested new or improved City of Houston services or facilities through increased property taxes.**

	Very willing	*Somewhat willing*	*Not willing*	*Unsure/ Don't know*
a. Improved road maintenance	1	2	3	4
b. Funding of Public Safety Officers	1	2	3	4
c. Improved city fire and emergency services	1	2	3	4
d. Cemetery development and maintenance	1	2	3	4

14. **Please indicate how willing you are to pay a fee to drop off your garbage at a solid waste transfer station located in Houston?**

01☐ Very willing 02☐ Somewhat willing 03☐ Not willing
04☐ Unsure/Don't know

15 In Houston, do you feel there is too much, too little, or just enough private property regulation?

01☐ Too much regulation 02☐ Too little regulation 03☐ Just enough regulation
04☐ Unsure/Don't know

16. How many people, <u>including yourself</u>, live in your Houston household? #_____ people

01☐ I do not live in Houston

17. How many people in your Houston household are under 18 years of age? #____ people

01☐ I do not live in Houston

18. What is the highest level of education you have had the opportunity to complete?

01☐ Less than HS diploma 04☐ Some college 07☐ MA (Master's Degree)
02☐ HS diploma/GED 05☐ AA (Associate's Degree) 08☐ PhD (Doctorate)
03☐ Vocational/Tech Cert. 06☐ BA (Bachelor's Degree)

19. Please indicate the category that best describes your total combined household income before taxes for 2013.

01☐ Less than $15,000 04☐ $35,001 to $50,000 07☐ Over $100,000
02☐ $15,001 to $25,000 05☐ $50,001 to $75,000
03☐ $25,001 to $35,000 06☐ $75,001 to $100,000

20. Please indicate your gender 01☐ Male 02☐ Female

21. In what year were you born? 19____

22. Please feel free to comment about any other planning issues you feel are important for the City of Houston to consider as it develops its new Comprehensive Plan and Community Impact Assessment.

_____

_____

_____

_____

_____

_____

If you have any questions contact: Bob Koenitzer, McDowell Group Survey Manager, call toll free 1-866-586-6133 or 1-907-586-2990, or e-mail *robert.koenitzer@mcdowellgroup.net*.

Please complete and return this survey by December 3, 2014.

Thank you. Your opinions matter!

For more information on the City of Houston Comprehensive Plan and Community Impact Assessment, please visit: http://houstonakcompplan.com/

Password

City of Houston Comprehensive Plan and Community Impact Assessment Survey

December 2014

Dear << Name>>

A couple weeks ago, we sent you a survey that asked for your opinions about the City of Houston's priorities for the next 20 years as part of our process to update our City's Comprehensive Plan and Community Impact Assessment. If you have completed the survey, thank you for your time and participation in our planning process. If you have not completed the survey, please take a few minutes to complete the enclosed survey now. Your participation is critical. You can make a difference for your community.

The information you provide is confidential and is seen only by McDowell Group. The City of Houston will never see any individual surveys or names associated with survey data. Survey results will be presented only in total with other responses.

We have extended the survey's due date to **December 15, 2014.** Please return your survey by using the enclosed self-addressed, postage-paid envelope. You may also fax the survey to (907) 586-2673, scan to robert.koenitzer@mcdowellgroup.net, OR complete the survey on-line. Type the following address into your web browser and enter the password found in the bottom right of your survey's last page.

HoustonCompPlanSurvey.com

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We appreciate your time and assistance with this important project.

Sincerely,

Virgie Thompson

Len Anderson

Virgie Thompson
Mayor
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Chair, City of Houston CIA and Comprehensive Plan Revision Steering Committee

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Hi, just a reminder that you're receiving this email because you have expressed an interest in the City of Houston's Community Impact Assessment & Comprehensive Plan Revision. Don't forget to add vle@rmconsult.com to your address book so we'll be sure to land in your inbox!

You may unsubscribe if you no longer wish to receive our emails.

City of Houston Community Impact Assessment and Comprehensive Plan Revision

Reminder: Complete the Survey!

As part of the City of Houston's Community Impact Assessment and Comprehensive Plan Revision, we are conducting a survey of Houston residents and property owners to gather your opinions about the City's priorities for the next 20 years.

You received a survey in the mail from McDowell Group, an Alaska research firm. We appreciate you taking a few minutes to complete the survey.

Your opinions matter and we thank you in advance!

Thank you for attending the Future's Workshop in September

On September 18th, residents gathered in the Houston Fire Station for the first project open house, the Future's Workshop.

Attendees were tasked with "creating ideal futures" and openly discussed what the future of Houston should include; all responses were recorded.

For the results of the Future's Workshop and to provide us with feedback, go to the Public Involvement page of the project website: http://houstonakcompplan.com/

Please continue to participate in the City's Community Impact Assessment and Comprehensive Plan Revision

The City of Houston Community Impact Assessment and Comprehensive Plan Revision is a collaborative effort between the City of Houston, the Planning Commission, Houston residents and business owners, and the R&M Team.

Questions? Please Contact:

Van Le, AICP
Project Manager
R&M Consultants, Inc.

email:
comments@rmconsult.com
phone: 907-646-9659

Visit the project website:
www.houstonakcompplan.com

process your input is important and appreciated!

R&M Consultants, Inc., 9101 Vanguard Drive, Anchorage, AK 99507

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JOIN US AT THE

OPEN HOUSE

THURSDAY

June 4, 2015

4:30 pm-6:30 pm

HOUSTON FIRE STATION

The City of Houston is conducting a Community Impact Assessment (CIA) to identify the potential impacts upcoming projects may have on the community. Please join us at the open house to review identified impacts and provide feedback. The CIA will be used to help inform the Comprehensive Plan Revision currently underway. The City, in partnership with the Alaska Department of Transportation & Public Facilities, is also kicking off a Parks Highway Corridor Plan effort that will be introduced at the Open House.

13965 W Armstrong Road, Houston, AK 99694

For More Information Please Contact: **PLANNER & PUBLIC INVOLVEMENT COORDINATOR**
TARYN OLESON | R&M Consultants, Inc. | Comments@RMConsult.com | 907.646.9645

VISIT THE PROJECT WEBSITE – www.HoustonAKCompPlan.com

R&M
9101 Vanguard Drive
Anchorage, AK 99507
Innovating Today for Alaska's Tomorrow

JOIN US AT THE
OPEN HOUSE

THURSDAY
June 4, 2015
4:30 pm-6:30 pm

MR. AND MRS. SMITHERS
OR CURRENT RESIDENT
5943 Meow Avenue
Anchorage, AK 99518

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Thursday, June 4, 2015
4:30 PM - 6:30 PM
Houston Fire Station

We hope you continue to participate in the City's Community Impact Assessment and Comprehensive Plan Revision process, your input is important appreciated!

For more information about the City of Houston Community Impact Assessment and Comprehensive Plan Revision, please visit the project website www.houstonakcompplan.com

The City of Houston Community Impact Assessment and Comprehensive Plan Revision is a collaborative effort between the City of Houston, the Planning Commission, Houston residents and business owners, and the R&M Team.

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You may unsubscribe if you no longer wish to receive our emails.

The Draft Community Impact Assessment is Available for Review

The Draft Community Impact Assessment (CIA) is now available for public review. The full report and appendices can be found on the project website:

http://houstonakcompplan.com/

The CIA will help inform the current City of Houston Comprehensive Plan revision effort by analyzing potential impacts transportation projects may have on the community and residents' quality of life. The evaluation will allow the city and its residents to prepare for positive impacts and mitigate any potential negative impacts and assist Houston in maintaining its unique community character.

We appreciate your interest in the CIA and Comprehensive Plan Update process and value your comments on this draft report. Comments can be submitted through the project website, or you can contact a member of the project team.

Thank you and please contact a member of the project team if you have any questions!

The City of Houston Community Impact Assessment and Comprehensive Plan Revision is a collaborative effort between the City of Houston, the Planning Commission, Houston residents and business owners, and the R&M Team.

Questions? Please Contact:

Van Le, AICP
Project Manager
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JOIN US AT THE

OPEN HOUSE

THURSDAY
May 5, 2016
5:00 pm-7:00 pm

Please join us at the Open House to review the Draft Comprehensive Plan for the City of Houston. This 20-year plan reflects the community's core values and future needs while providing a framework for development in the City of Houston through 2035.

HOUSTON FIRE STATION

13965 W Armstrong Road, Houston, AK 99694

For More Information Please Contact: **PLANNER & PUBLIC INVOLVEMENT COORDINATOR**
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You may unsubscribe if you no longer wish to receive our emails.

Join us at the Draft Comprehensive Plan Open House

Please join us at the Open House to review the Draft Comprehensive Plan for the City of Houston on May 5th, 2016. This 20-year plan reflects the community's core values and future needs while providing a framework for development and improvements in the City of Houston through 2035. We appreciate your interest and encourage your feedback on the Draft Comprehensive Plan Revision.

Open House

Thursday, May 5th, 2016
5:00 PM - 7:00 PM

Houston Fire Station 9-1
13965 W Armstrong Road, Houston

http://houstonakcompplan.com/

The Draft Comprehensive Plan will be posted to the website before the Open House on Thursday.

Comments can be submitted at the Open House, through the project website, or you can contact a member of the project team.

Thank you and please contact Project Manager, Van Le at vle@rmconsult.com if you have any questions!

The City of Houston Community Impact Assessment and Comprehensive Plan Revision is a collaborative effort between the City of Houston, the Planning Commission, Houston residents and business owners, and the R&M Team.

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Project Manager
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AFFIDAVIT OF PUBLICATION

UNITED STATES OF AMERICA, STATE OF ALASKA, THIRD DIVISION

BEFORE ME, THE UNDERSIGNED, A NOTARY PUBLIC, THIS DAY

PERSONALLY APPEARED BEFORE **JACKIE DOWNS** WHO, BEING

FIRST DULY SWORN, ACCORDING TO LAW, SAYS THAT SHE IS THE

LEGAL AD CLERK OF THE **FRONTIERSMAN**

PUBLISHED AT WASILLA, IN SAID DIVISION THREE AND STATE OF ALASKA

AND THAT THE ADVERTISEMENT, OF WHICH THE ANNEXED IS A TRUE

COPY, WAS PUBLISHED ON THE FOLLOWING DAYS:

AUGUST 26, 2016

AND THAT THE RATE CHARGED THEREIN IS NOT IN EXCESS OF

THE RATE CHARGED PRIVATE INDIVIDUALS.

Jackie Downs

SUBSCRIBED AND SWORN TO BEFORE ME
THIS 13TH DAY OF SEPTEMBER 2016.

Nancy E Downs

NOTARY PUBLIC FOR STATE OF ALASKA

NANCY E DOWNS
Notary Public, State of Alaska
My Commission Expires
August 25, 2019

CITY OF HOUSTON

City of Houston

www.houston-ak.gov

Public Hearing Notice
Houston City Council - Regular Meeting
September 8, 2016, 7 P.M.

Houston City Hall - 138778 Armstrong Road

During the upcoming Regular City Council meeting on September 8, 2016, at 7 p.m. the Houston City Council will take public testimony on the following public hearing items:

- AM 16-15: City Council statement of non-protest to the application of a retail marijuana store license # 10316 held by Silverthorn Investment group LLC. DBA Denali 420 Recreationals *(Introduced by Mayor Thompson).*
- Ordinance 16-21: An Ordinance of the Houston City Council amending Houston Municipal Code Title 3, Elections to provide clarification and specifications to definitions, declaration of candidacy payment options, notifications, election officials, ballots, election procedures, materials, voting methods, ballot counting procedures and the recount process, and requiring voter identification and a payment for contest of election. *(Introduced August 11, 2016).*
- Ordinance 16-22: An Ordinance of the Houston City Council repealing the 1999 City of Houston Comprehensive plan, as amended in 2003, (Ordinance serial no. 199-078; 2003-108) and adopting the 2016 City of Houston Comprehensive Plan. *(Introduced August 11, 2016).*

Comments are limited to 3-minutes per person.

Publish: August 26, 2016

HOUSTON CITY HALL
13878 W ARMSTRONG ROAD, HOUSTON AK. 99694
WWW.HOUSTON-AK.GOV
IF YOU HAVE ANY QUESTIONS PLEASE CONTACT THE CLERK'S OFFICE AT 907-892-6869

City of Houston

www.houston-ak.gov

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Houston City Council - Regular Meeting
September 8, 2016, 7 P.M.

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Publish: August 26, 2016

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September 2016

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11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

< Aug Oct >

Read more

Licensed Houston Business Services

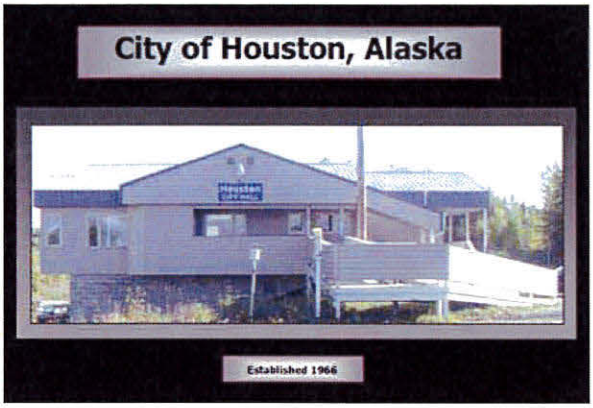
The Mat-Su Valley is the fastest growing area in Alaska! Several large infrastructure projects as well as the peace and beauty of Valley life are drawing record numbers of families and businesses to the area.

Please click read more and visit the category buttons on the *left* to discover who is doing business in Houston and which services you may be able to benefit from right here at home.

Shop local!

Read more

Welcome to Houston, Alaska!



Houston Happenings

DRAFT CITY OF HOUSTON COMPREHENSIVE PLAN AVAILABLE FOR REVIEW
Visit http://houstonakcompplan.com to access this document.

The *DRAFT* Community Impact Assessment (CIA) is Available for Public Review.

The full report and appendices can be found on the project website:

http://houstonakcompplan.com/
The CIA will help inform the current City of Houston Comprehensive Plan revision effort by analyzing potential impacts transportation projects may have on the community and residents' quality of life. the evaluation will allow the City and its residents to prepare for positive impacts and mitigate and potential negative impacts.

For more information contact:
Project Manager, Van Le , AICP at 907.646.9659 or
comments@rmconsult.com

To View All City Holidays Click Here

Notice:

The Little Su Campground is now CLOSED as of September 6th, 2016.

Houston/Willow Creek Sled Trailhead Parking Area Welcome all trail user enthusiasts! The new Houston/Willow Creek Trailhead parking area is maintained by the City of Houston. Click Here for directions and information.

For Campground Information please call 907-355-8794

Public Notice

9.8.16 Notice of Council Action Taken

Click Here

NOTICE OF PUBLIC HEARINGS

Regular City Council Meeting

Items set for a Public Hearing at a Regular Meeting on September 8, 2016 at 7:00 pm. (Public Hearing to be held 13878 W Armstrong Road).

Ordinance 16-21: An Ordinance of the Houston City Council amending Houston Municipal Code, Title 3 Elections.

Ordinance 16-22: An Ordinance of the Houston City Council repealing the 1999 City of Houston Comprehensive Plan as amended in 2003, and adopting the 2016 City of Houston Comprehensive Plan.

MSB District 7 Platting Board Seat Available

The Borough is looking to fill a vacant seat on the Platting Board for District 7.

For more information and how to apply please visit,http://www.matsugov.us/boards/platting

The Platting Board acts on applications for preliminary plats, variances, public use easements, plat note amendments and vacation of public interest. The Platting Board also acts on appeals of the Platting Officer's decision.

Zoning Map

To view the City of Houston Official Zoning Map, Click Here!

For Marijuana Business Information in the City of Houston, Click Here!

Alaska State Rail Plan

Click Here for the official website outlining future freight and passenger rail transportation policy in Alaska.

Mayor Thompson is available 5 days a week after 5 pm
Please call City Hall to set up an appointment

Unless otherwise noted:

All City Meetings are Held at Houston City Hall, located at 13878 W Armstrong Road, Houston AK 99694.

For a **Map** CLICK HERE

Your Next Regular City Council Meeting

Thursday, September 8th, at 7:00pm

Agenda: Click Here

Packet: To Be Posted

Your Next Planning Commission Meeting

Thursday September 29th, at 7:00 pm

For Agenda: To Be Posted

For Packet: To Be Posted

NOTICE TO RESIDENTS CONCERNING ISO RATING

Houston residents and business owners may see reduced fire insurance premium costs due to an improved fire class rating.

Please click here for notice for your Insurance Company.

City of Houston, 13878 W Armstrong, PO Box 940027, Houston AK 99694
P:907-892-6869 F:907-892-7677

Last updated 9/9/2016

Parks HWY Project MP 44-52 (Lucus Rd - Big Lake Rd)

DOT info about the Parks HWY expansion project Click Here or 1-907-535-1877 or mycomments@brooks-alaska.com

Absentee By-Mail Ballot Applications

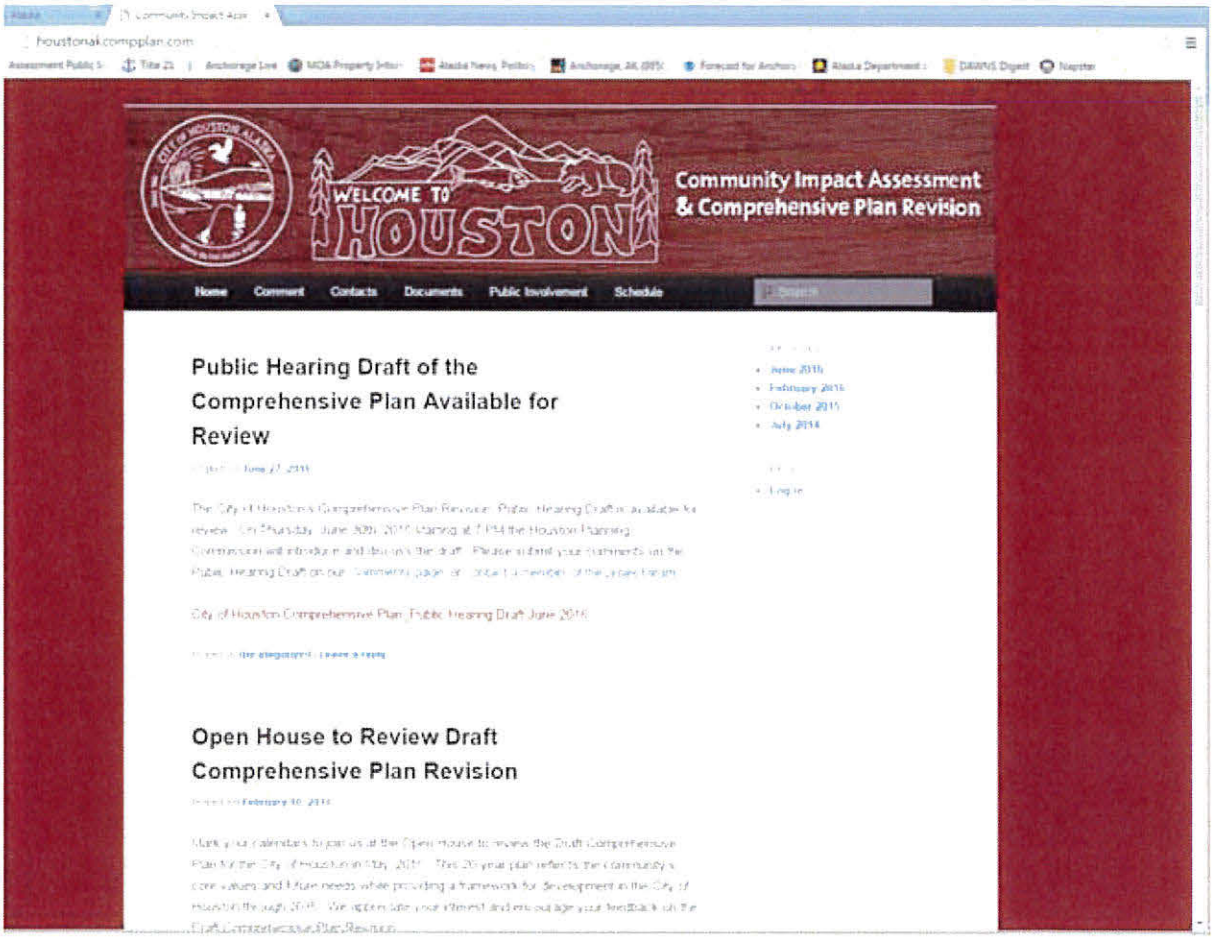
Did you know?

You can vote by mail. Click here to apply for an Absentee By-Mail Application!

We are on Facebook!

The City of Houston is on Facebook.

Check us out by clicking here!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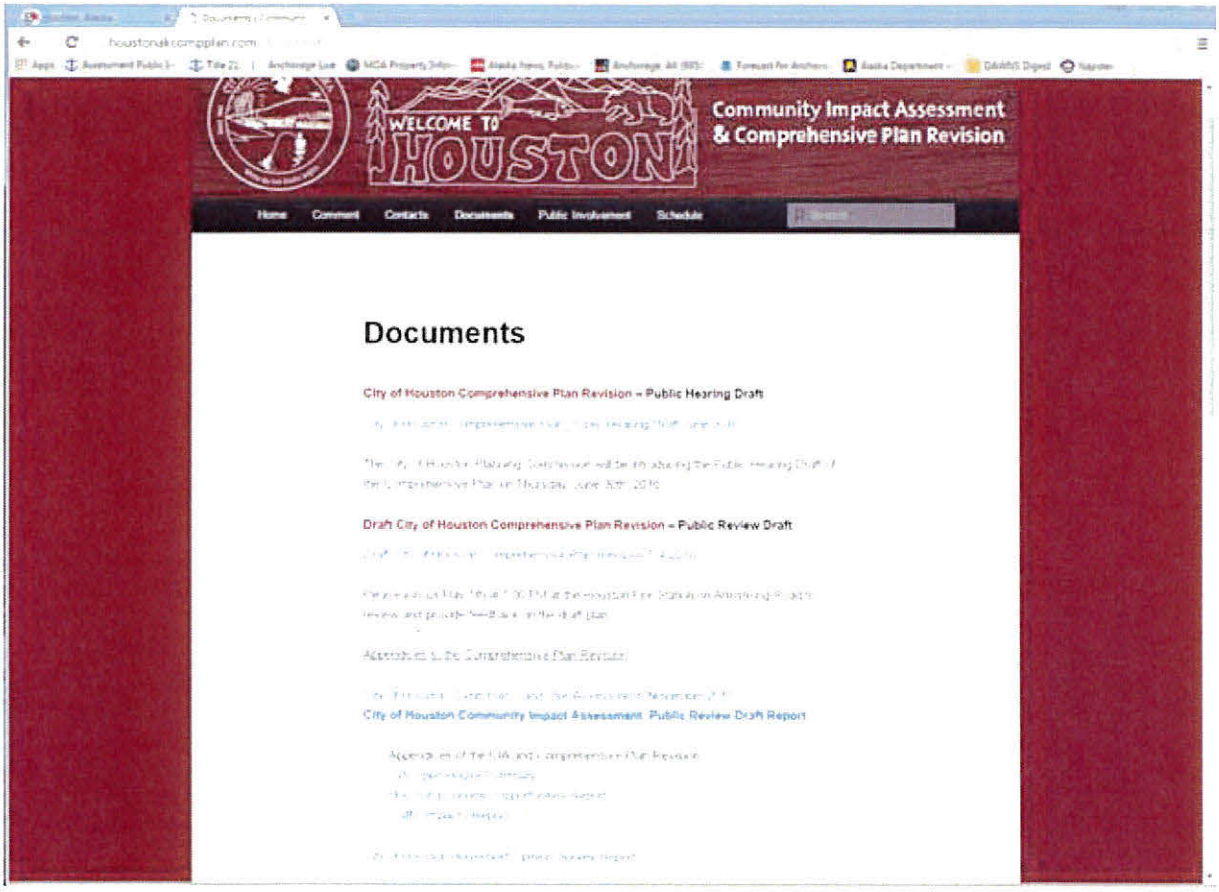
Home
Comment
Contacts
Documents
Public Involvement
Schedule
Public Hearing Draft of the Comprehensive Plan Available for Review
Open House to Review Draft Comprehensive Plan Revision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Home
Comment
Contacts
Documents
Public Involvement
Schedule
Documents
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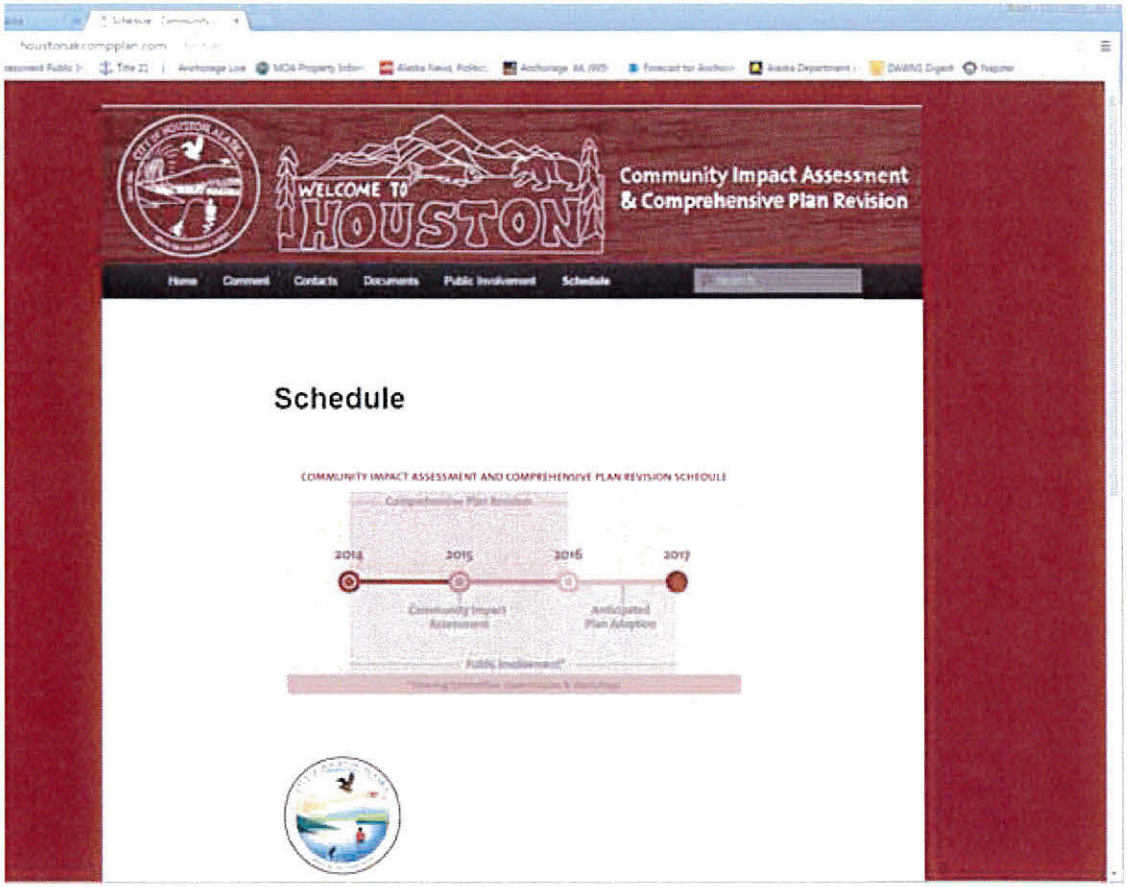
Draft City of Houston Comprehensive Plan Revision – Public Review Draft
City of Houston Community Impact Assessment Public Review Draft Report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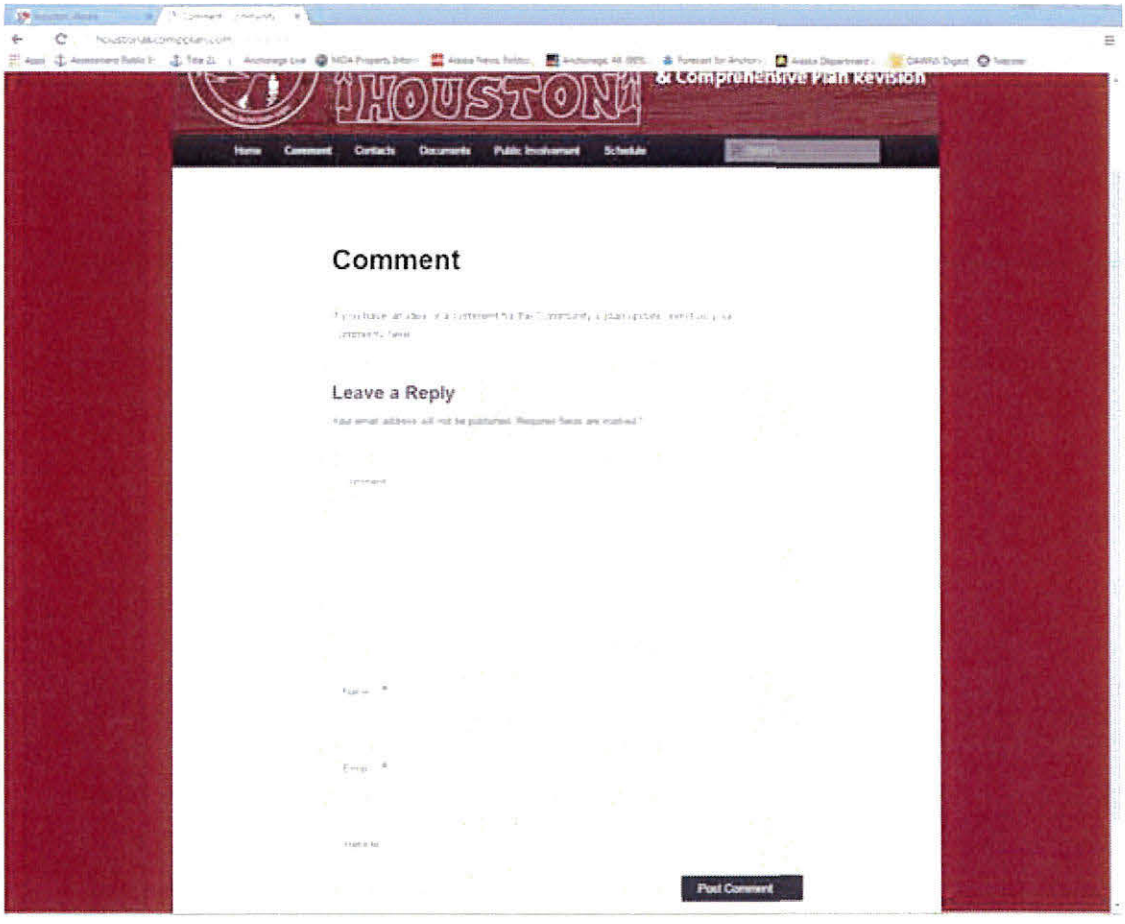
Community Impact Assessment & Comprehensive Plan Revision
Home
Comment
Contacts
Documents
Public Involvement
Schedule
Schedule
COMMUNITY IMPACT ASSESSMENT AND COMPREHENSIVE PLAN REVISION SCHEDULE
2014
2015
2016
2017
Community Impact Assessment
Anticipated Plan Adoption


HOUSTON
& Comprehensive Plan Revision
Home
Comment
Contacts
Documents
Public Involvement
Schedule
Comment
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Public Involvement

Join Us at the Open House to review the Draft Comprehensive Plan

Join us at the Houston Fire Station on **Thursday, May 5th** to review and provide feedback on the City of Houston's Draft Comprehensive Plan. Members of the project team and Steering Committee will be in attendance to answer any questions you may have. Please continue to help your community plan for the next 20 years by visiting us at the Open House.

Thank you for attending the Second Open House on June 4th

The second Open House focused on the Community Impact Assessment. Thank you for joining us to identify and analyze the impacts upcoming projects may create for the City of Houston. The information gathered at the Open House will be incorporated into the CIA.

Thank you for participating in the Survey!

Thank you for your participation in the City of Houston Comprehensive Plan Household Survey, conducted by the McDowell Group over the last two months. Your opinions will help guide Houston's future.

The Future's Workshop was held on September 18th at the Houston Fire Station where residents gathered to answer the question;

"What should Houston be like in 20 years?"

If you missed the Workshop, it's not too late to participate. Please use the comment form or contact the Project Manager to tell us what your ideal future of Houston is like!

Workshop Summary:
In small groups, residents were tasked with "creating ideal futures" and openly discussed what the future of Houston should include; all responses were recorded. After the small group session, residents reported key themes and ideas shared within their group to all attendees in an effort to find common ground on the future.

The Mind Maps are the complete list of ideas and themes we heard the community say during the Future's Workshop:
View or print the Workshop's Small Group Mind Maps.
View or print the Workshop's Whole Group Mind Maps .

The following is what we heard the community say in the whole group session:

Community Character

- Houston as a destination for tourism and recreation

- Have a unique identity or theme for us to be recognized by distinguish Houston Alaska from the rest of the country and state
- Preservation of residential character – keeping "Houston Houston" with larger parcels for housing and minimal light pollution and noise
- Own a recreational identity; more than just trail heads
- Design standards for development
- Establish a Town Center keeping to the Houston feel
- Preservation of existing trails and ecology
- Involving community in the development and construction of community facilities
- Maintaining the quiet dark character – open for growth but keep it rural
- Community needs to be proactive
- Family friendly
- Make both sides of the river and railroad tracks feel like one community
- Wide reaching community government and development- increased involvement

Working Mission Statement:

The community of Houston wants to develop as a destination for tourism and recreation; while maintaining a family friendly community that will encompass a future town center, designated trails and community facilities.

Transportation

- Train station in the City
- More connectivity – more emergency access
- Town center that is accessible and multiuse
- Multiuse pathways
- Better signage
- Main road be protected – increased vegetation
- Maintain multiuse trails
- Improved lighting and roadways
- Eventually expand availability of utilities and services
- Safety on the Parks corridor
- Development of King Arthur Rd.
- Hawk lane bike path – improvement of pedestrian safety via pathways and lighting
- Industrial development along the rail lanes- light industrial
- Increase vegetative buffers in roadways
- Main artery needs proper planning for controlled access and the expansion of the Parks highway and the secondary roadways – *proper planning for corridor*
- *Port to Parks*
- Bus stop marker, signage, and lighting
- Park and ride with Valley-movers throughout Mat-Su and Anchorage Bowl

Summary Statement:

There is a need to increase safety, accessibility, and mobility through much of the City and improvements shall be beneficial to all users, including pedestrians, bicyclists, and other non-motorized uses, while maintaining the community character.

Planning

- More staffing for City, Fire department should not be responsible for all emergency and police services
- Evolve into a 1st class city

- Corridor study
- Planning land use (one comment on no zoning restrictions)
- Water resource planning –special attention to the flood planes
- Development suitability study
- MSB build out- match with community growth
- Program to reduce junk cars
- Transfer centers
- Incentive for people to come here – education, recreation facilities, design
- Encourage subdivision with more high income development

Summary Statement:
Effective, implementable planning is a recognized need for successful growth, development, and overall health of the community, as defined by its residents.

Housing

- Incentivize Dr. and medical facilities to move here
  - Assisted care facilities
- Plan for multi-family and senior housing with the aging population
- Conveniences for high end houses for a higher tax base – designate areas for high end housing

Summary Statement:
The availability of housing in Houston should be appealing for a wide range of incomes, while providing opportunities for satisfactory, safe living for all residents.

Community Facilities and Services

- Education – elementary school
- Town Center with; pedestrian friendly facilities, landscaping, panels and walk theme, restaurants, mixed use, near river or railroad, building codes (Form based codes)
- Youth summer programs
- Opportunities for post-secondary education/carter school
- Public safety; EMS expansion, year round water flow for fire
- Flood control response planning
- Community watch
- Recreation; trails, multiuse, designated facilities for recreation (rinks, pools, ball courts), preservation of natural areas, facility maintenance for motorized and non-motorized users including horses and dogs
- Animal shelter
- Utility expansion dependent on road alignment ; natural gas, coal, alternative energy
- Recreation destination; use Little Su for business services (tourism)
- Cemetery
- Veterinary clinic
- Daycare
- Business districts; planned, designed, and built
- Pharmacy
- Dentist
- Medical facilities
- Assisted care facilities
- Gas station and goods services
- Grocery store or food shops

Summary Statement:
The City of Houston recognizes the need to expand its facilities and services in order to provide safe and satisfactory living for its residents, while enhancing the City's autonomy, economy, and unique identity.

Economic Development

- Keep tax base
- Local jobs
- Riverwalk
- Community identity for economic development (using it to draw in visitors and residents)
- Centralized for recreation for Hatcher Pass, Deskha, etc. – capitalize on natural location
- Facilities at King Arthur; Laundromat, shower, gym, meeting place
- Daycare
- Natural resource development; coal mines, power plant, city owned utility

Summary Statement:
While maintaining the current tax structure, the City of Houston aims to develop economically by capitalizing on its current amenities and natural resources; allowing commercial and light industrial development as long as it aligns with the community character and will be to the benefit of City residents.

Let us know how you would define Houston's Community Character and your opinion on these summary statements!

COMMISSION BUSINESS

Upcoming PC Agenda Items

MSB Board of Ethics Opinion 16-01
Correction to Code References in PC Resolutions 16-30, 16-31, and 16-32

(Page 3,843 – 3,882)

COMMISSION BUSINESS

MATANUSKA-SUSITNA BOROUGH

BOARD OF ADJUSTMENT AND APPEALS

IN RE:	)	
	)	
Request for Advisory Opinion,	)	Ethics Case No. 16-01
Bill Kendig, Requestor	)	
	)	
	)	

CERTIFICATE OF SERVICE

1. I am the secretary for the Board of Ethics.

2. I certify that on October 10, 2016, I served true and accurate copies of the following document:

ADVISORY OPINION 16-01

To: Ethics Board Members
(Via Email)
Dan F. Kennedy
Daniel Bowen
Diana Straub

Bill Kendig
(Via Email @ customfinancial@hotmail.com)

DATED at Palmer, Alaska, this 10 day of October, 2016.

MATANUSKA-SUSITNA BOROUGH
BOARD OF ETHICS

BRENDA J. HENRY, CMC, Assistant Clerk

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MATANUSKA-SUSITNA BOROUGH
Board of Ethics
c/o Office of the Borough Clerk
350 E. Dahlia Avenue • Palmer, Alaska 99645-6488
Phone (907) 861-8684 • Fax (907) 861-7845

Advisory Opinion No. 16-01

October 10, 2016

On September 1, 2016, the Board of Ethics received a Request for an Advisory Opinion from Mr. Bill Kendig, who is a member of the Planning Commission. The Board of Ethics met in a special meeting at 10 a.m. on October 10, 2016, to consider the request of Mr. Kendig.

Specific Question for the Board of Ethics

Mr. Kendig has requested an Advisory Opinion from the Board on the following question:

Should Mr. Kendig recuse himself from discussion and voting on Planning Commission Resolution Serial No. 14-33, which has been remanded back to the Planning Commission by the Superior Court.

Findings

The Board of Ethics finds that in his most recent request, Mr. Kendig states that he has not done business with Central Monofill Services (CMS), but with Central Environmental, Inc. (CEI), which are two separate companies.

The Board of Ethics finds that consistent with the amended order in 3PA-15-01925 CI, that Mr. Kendig stated "that he had done business with CEI, which is a corporation owned by the same individuals as the ones who own CMS." Mr. Kendig stated "that the most recent sale occurred in the late summer or early fall of 2014, but prior to that transaction, he had not done business with CEI in four or five years." Appellant's Excerpt of Record, p. 168.

The Board of Ethics finds that Per MSB 2.71.080 Mr. Kendig was previously recused from voting on Planning Commission Resolution No. 14-33 regarding a conditional use permit (CUP) as he had done business within the last 12-month period with a corporation that was directly related to CMS, which is the company that applied for the CUP.

The Board of Ethics finds that Planning Commission Resolution No. 14-33 denied a conditional use permit for a monofill (private landfill) for CMS. The resolution failed with three Planning Commissioners voting in support and three voting opposed. Mr. Kendig was recused due to his prior business relations.

The Board of Ethics finds that in their Advisory Opinion No. 15-01, Conclusion No. 5, that "The Board of Ethics concludes that MSB 2.71.080, Recusal did apply in relation to Planning Commission Resolution No. 14-33, but that Mr. Kendig was properly recused and that resolution is not at issue for this request."

The Board of Ethics finds that Planning Commission Resolution 14-33 is currently at issue for Board of Ethics Advisory Opinion No. 16-01.

Conclusions

1. The Board of Ethics concludes that Mr. Kendig is eligible to sit on the Planning Commission under MSB 4.05.030.

2. The Board of Ethics concludes that Mr. Kendig is subject to the Borough code, under MSB 4.05.030.

3. The Board of Ethics concludes that the code of ethics applies to Mr. Kendig as a municipal official under MSB 2.71.030.

4. The Board of Ethics concludes that as a Planning Commission Member Mr. Kendig does have the ability to take official action as he does vote in support or opposition of Planning Commission resolutions that are quasi-judicial in nature, such as whether to approve a CUP, which is the subject of Resolution No. 14-33.

5. The Board of Ethics concludes that MSB 2.71.080, Recusal, does apply in relation to Planning Commission Resolution No. 14-33, as they previously stated in Board of Ethics Advisory Opinion 15-01.

Summary of Opinion

The Board of Ethics has determined that Mr. Kendig does have a conflict under MSB 2.71.070, Conflict of Interest; Prohibited Acts, as it relates to Planning Commission Resolution No. 14-33 and should recuse himself under MSB 2.71.080, from discussion or voting on the question of a conditional use permit for CMS.

MATANUSKA-SUSITNA BOROUGH
BOARD OF ETHICS

Doug Kennedy, Chair

Attest:

Brenda J. Henry, CMC, Assistant Clerk

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MATANUSKA-SUSITNA BOROUGH
Planning and Land Use Department
Development Services Division
350 East Dahlia Avenue • Palmer, AK 99645
Phone (907) 861-7822 • Fax (907) 861-7876
www.matsugov.us

MEMORANDUM

DATE: October 20, 2016

TO: Planning Commission

THROUGH: Alex Strawn, Development Services Manager

FROM: Mark Whisenhunt, Planner II

SUBJECT: Correction to Code Reference in Planning Commission Resolutions 16-30, 16-31, and 16-32

Staff found one error in Planning Commission Resolutions 16-30, 16-31, and 16-32. The error is the same in each resolution and reads:

> *NOW, THEREFORE, BE IT FURTHER RESOLVED, that the Matanuska-Susitna Borough Planning Commission hereby finds this application does meet the standards of MSB 17. 30. 060 and does hereby approve the conditional use permit for the earth material extraction activities with the following conditions:*

The language has been corrected to reference the appropriate code and should read:

> *NOW, THEREFORE, BE IT FURTHER RESOLVED, that the Matanuska-Susitna Borough Planning Commission hereby finds this application does meet the standards of MSB 17.67 and does hereby approve the conditional use permit for the construction of a 180-foot tall structure with the following conditions:*

A copy of the corrected resolutions will be provided to the applicant. Please accept my sincere apology for this error and any inconvenience it has caused.

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1.15.155 REVISOR OF ORDINANCES.

(A) The clerk, with the advice and assistance of the attorney, is the revisor of ordinances and shall revise for consolidation into the borough code all ordinances of a general and permanent nature.

(B) The revisor shall edit and revise the ordinances for consolidation, without changing the meaning of any ordinance, in the following manner:

(1) assign numbers to sections, renumber sections, parts of sections, articles, chapters, and titles;

(2) change the working of section or subsection titles, or delete subsection titles, and change or provide new titles for articles, chapters, and titles;

(3) change capitalization for the purpose of uniformity;

(4) substitute the proper designation for the terms "the preceding section," "this act," and like terms;

(5) substitute the proper calendar date for "effective date of this ordinance," "date of passage of this ordinance," and other phrases of similar import;

(6) strike out figures if they are merely repetition of written words or vice versa, or substitute figures for written words or vice versa for the purpose of uniformity;

(7) correct manifest errors which are clerical, typographical, or errors in spelling, or errors by way of additions or omissions;

(8) correct manifest errors in references to ordinances;

(9) rearrange sections, combine sections or parts of sections with other sections or parts of sections, divide long sections into two or more sections, and rearrange the order of sections to conform to a logical arrangement of subject matter as may most generally be followed in the code;

(10) change all sections when possible to read in the present tense, indicative mood, active voice, and if the use of personal pronouns cannot be avoided in a section, change the section to read in the third person, and singular number, or any other necessary grammatical change in the manner generally followed in the code;

(11) delete or change sections or parts of sections if a deletion or change is necessary because of other assembly amendments which did not specifically amend or repeal them;

(12) omit all temporary ordinances, all titles to ordinances, all enacting, amending and repealing clauses, all declarations of emergency, and all purpose, validity, whereas and construction clauses unless, from their nature, it may be necessary to retain some of them to preserve the full meaning and intent of the ordinance.

(C) The revisor shall edit and revise the ordinances as they are enacted by the assembly, without changing the meaning of any law, so as to avoid the use of pronouns denoting masculine or feminine gender.

(D) Any changes made by the revisor of ordinances pursuant to subsection (B)(11) of this section shall be reported to the assembly in an informational memorandum.

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By: Mark Whisenhunt
Introduced: August 15, 2016
Public Hearing: Sept. 19, 2016
Action: Approved

MATANUSKA-SUSITNA BOROUGH
PLANNING COMMISSION RESOLUTION NO. 16-30

A RESOLUTION OF THE MATANUSKA-SUSITNA BOROUGH PLANNING COMMISSION APPROVING A CONDITIONAL USE PERMIT (CUP) IN ACCORDANCE WITH MSB 17.67 – TALL STRUCTURES INCLUDING TELECOMMUNICATION FACILITIES, WIND ENERGY CONVERSION SYSTEMS, AND OTHER TALL STRUCTURES, FOR A 180 FOOT TALL TELECOMMUNICATION TOWER (NSL1), LOCATED AT 23619 W. PARKS HIGHWAY; MSB TAX ID # 18N04W11A001; WITHIN TOWNSHIP 18 NORTH, RANGE 4 WEST, SECTION 11, SEWARD MERIDIAN.

WHEREAS, an application for a Conditional Use Permit was submitted by MTA Communications to construct a 180-foot tall telecommunication tower at 23619 W Parks Hwy (Tax ID# 18N04W11A001); within Township 18 North, Range 4 West, Section 11, Seward Meridian; and

WHEREAS, it is the purpose and intent of MSB Chapter 17.67 to enable the orderly build-out of wireless telecommunication infrastructure, WECS, and other tall structures while promoting the health, safety, and general welfare of the public; and

WHEREAS, the Planning Commission has reviewed this application, associated materials, and the staff report, with respect to standards set forth in MSB 17.67; and

WHEREAS, the proposed tall structure is a 180-foot tall telecommunication tower; and

WHEREAS, the subject lot is not within a special land use district; and

WHEREAS, there are no existing tall structures at the subject property; and

WHEREAS, the applicant held a public meeting on June 1, 2016 at the Willow Community Center; and

WHEREAS, a certified mailing notification shows the notice was mailed on May 17, 2016 to all property owners within one-half mile of the subject property and to the Willow Area Community Council; and

WHEREAS, the notification included a legal description and map of the parcel, a description of the proposed development, the date, time, and location of the informational meeting, contact name, telephone number, and address of the applicant, and comment form created by the borough with a deadline to submit comments and submittal options; and

WHEREAS, exhibit F & G of the application material contains a copy of all received written comments, a written report summarizing the comments received during the public meeting, and a detailed the response from the applicant; and

WHEREAS, the proposed tall structure site is 185 feet away from the Parks Highway right-of-way; and

WHEREAS, the proposed setback to the Parks Highway right-of-way is greater than the height of the tower; and

WHEREAS, the proposed access is "dog-legged" to make use of the heavily treed property for screening; and

WHEREAS, a computer model using topography and surface interference data was used to identify the best locations for the proposed location and tower height; and

WHEREAS, co-locating on existing towers were considered; however, it was determined the available spaces on existing towers did not provide coverage for the identified gaps in service; and

WHEREAS, the Matanuska-Susitna Borough Trail Plan identifies the Hessler-Norris Sled Dog trail as a winter only trail; and

WHEREAS, the Hessler-Norris Sled Dog trail, at its closest point is approximately 780 feet from the base of the proposed tower; and

WHEREAS, the subject property is heavily treed, which will aid in screening the proposed conditional use; and

WHEREAS, the Hessler-Norris Sled Dog trail, and other winter trails are located throughout the area of Willow; and

WHEREAS, according to the Matanuska-Susitna Borough's database of registered airport and landing strips, there are no existing airports or airfields within the one-half mile notice area; and

WHEREAS, according to a Federal Aviation Administration determination issued on June 21, 2016, the proposed tall structure will not be a hazard to air navigation; and

WHEREAS, the tower facility is located within a fenced and locked area. The fence is 6-feet in height and topped with barbed wire; and

WHEREAS, the proposed tower has been engineered in accordance with all state building codes; and

WHEREAS, the applicant submitted documents showing the proposed tower conforms to the Electronic Industries Alliance/Telecommunication Industries Association's EIA/TIA-22-G structures standards; and

WHEREAS, the proposed tower and transmission equipment will operate within radio frequency levels deemed safe by the Federal Communications Commission; and

WHEREAS, signs will be posted that contain: a contact number, owner information, federal antenna structure registration number, and a "no trespassing" notice; and

WHEREAS, signs will be posted on the surrounding 6-foot tall fence; and

WHEREAS, the site requires 240-volts for the operation of the facility; and

WHEREAS, a "high voltage - dangerous" sign will be located at the base of the facility; and

WHEREAS, fencing that surrounds the supporting telecommunication equipment will be 150 feet away from the closest (western) property line; and

WHEREAS, the proposed tall structure site is approximately 620 feet away from the northern lot line; and

WHEREAS, the proposed tall structure site is approximately 1,115 feet away from the eastern lot line; and

WHEREAS, two parking spaces will be provided at the proposed site.

NOW, THEREFORE, BE IT RESOLVED, that the Matanuska-Susitna Borough Planning Commission hereby adopts the aforementioned findings of fact and makes the following conclusions of law supporting approval of Planning Commission Resolution 16-30:

1. The proposed use meets the criteria to qualify for conditional use permit for the construction of a 180-foot tall structure (MSB 17.67.040(A)(2)); and
2. The applicant has met the pre-application requirements for new tall structures that require a Conditional Use Permit (MSB 17.67.050); and
3. The visibility of the proposed tall structures from public parks and trails has been minimized (MSB 17.67.080(B)(2)); and
4. The proposed tall structure will not interfere with the approaches to any existing airport or airfield that are identified in the borough's regional aviation system plan or by the Alaska State Aviation System Plan (MSB 17.67.080(B)(3)); and

5. The proposed tower will not be harmful to the public health, safety, convenience, and welfare (MSB 17.67.080(B)(4)); and
6. The proposed use meets the minimum setback distances from all property lines in accordance with MSB 17.55 (MSB 17.67.090(A)(1)); and
7. The minimum setback for the tower base is greater than the height of the tower (MSB 17.67.090(A)(2)); and
8. Adequate vehicle parking has been provided (MSB 17.67.090(B)(1)); and
9. Adequate signage has been provided (MSB 17.67.090(C)(1)(a)); and
10. A "high voltage - dangerous" sign will be posted in accordance with code (MSB 17.67.090(C)(1)(b)); and
11. A 24-hour emergency contact number has been provided (MSB 17.67.090(C)(1)(c)); and
12. A fence not less than six feet in height with a secured gate, is being provided (MSB 17.67.090(C)(2).

NOW, THEREFORE, BE IT FURTHER RESOLVED, that the Matanuska-Susitna Borough Planning Commission hereby finds this application does meet the standards of MSB 17.67 and does hereby approve the conditional use permit for the construction of a 180-foot tall structure with the following conditions:

1. The operation shall comply with all federal, state, local regulations, and the terms and conditions of the permit.
2. Authorized representatives of the borough shall be allowed to inspect the site and related records, at reasonable times for the purpose of monitoring compliance with all permit conditions. Upon reasonable notice from the borough, the permittee shall provide necessary assistance to facilitate authorized inspections (MSB 17.67.300(D)).
3. The facility shall be removed, at the owner's expense within 90 days after abandonment or termination of the permit in accordance with MSB 17.67.130(A)(1).
4. A fence 6-feet in height and topped with barbed wire shall be constructed and maintained in good working condition. The fence shall surround the base of the tower and supporting telecommunication equipment as indicated on the site plan dated August 24, 2016.
5. The following informational signage shall be visibly posted at the tower site:
   a. The antenna structure registration number required by the Federal Communications Commission.
   b. The party responsible for the operation and maintenance of the facility.

c. Warning signs shall be located at the base of the facility and shall display in large, bold, high contrast letters the following: "HIGH VOLTAGE - DANGER".

d. A 24-Hour emergency contact number.

6. The tower shall be lit in accordance with the Federal Aviation Administration's voluntary lighting guidelines.

ADOPTED by the Matanuska-Susitna Borough Planning Commission this 19th day of September, 2016.

JOHN KLAPPERICH, Chair

ATTEST

MARY BRODIGAN, Planning Clerk

(SEAL)

PASSED UNANIMOUSLY: Klapperich, Anderson, Vague, Kendig, and Adams

By: Mark Whisenhunt
Introduced: August 15, 2016
Public Hearing: Sept. 19, 2016
Action: Approved

MATANUSKA-SUSITNA BOROUGH
PLANNING COMMISSION RESOLUTION NO. 16-31

A RESOLUTION OF THE MATANUSKA-SUSITNA BOROUGH PLANNING COMMISSION APPROVING A CONDITIONAL USE PERMIT (CUP) IN ACCORDANCE WITH MSB 17.67 - TALL STRUCTURES INCLUDING TELECOMMUNICATION FACILITIES, WIND ENERGY CONVERSION SYSTEMS, AND OTHER TALL STRUCTURES, FOR A 180 FOOT TALL TELECOMMUNICATION TOWER (DLY1), LOCATED AT 41238 W. PARKS HIGHWAY; MSB TAX ID # 20N04W06C003; WITHIN TOWNSHIP 20 NORTH, RANGE 4 WEST, SECTION 6, SEWARD MERIDIAN.

WHEREAS, an application for a Conditional Use Permit was submitted by MTA Communications to construct a 180-foot tall telecommunication tower at 41238 W. Parks Hwy (Tax ID# 20N04W06C003); within Township 20 North, Range 4 West, Section 6, Seward Meridian; and

WHEREAS, it is the purpose and intent of MSB Chapter 17.67 to enable the orderly build-out of wireless telecommunication infrastructure, WECS, and other tall structures while promoting the health, safety, and general welfare of the public; and

WHEREAS, the Planning Commission has reviewed this application, associated materials, and the staff report, with respect to standards set forth in MSB 17.67; and

WHEREAS, the proposed tall structure is a 180-foot tall telecommunication tower; and

WHEREAS, the subject lot is not within a special land use

district; and

WHEREAS, there are no existing tall structures at the subject property; and

WHEREAS, the applicant held a public meeting on June 1, 2016 at the Willow Community Center; and

WHEREAS, a certified mailing notification shows the notice was mailed on May 17, 2016 to all property owners within one-half mile of the subject property and to the Willow Area Community Council; and

WHEREAS, the notification included a legal description and map of the parcel, a description of the proposed development, the date, time, and location of the informational meeting, contact name, telephone number, and address of the applicant, and comment form created by the borough with a deadline to submit comments and submittal options; and

WHEREAS, Exhibit F & G of the application material contains a copy of all received written comments, a written report summarizing the comments received during the public meeting, and a detailed the response from the applicant; and

WHEREAS, the proposed tall structure site is approximately 290 feet away from the Parks Highway right-of-way; and

WHEREAS, the proposed setback to the Parks Highway right-of-way is greater than the height of the tower; and

WHEREAS, a computer model using topography and surface

interference data was used to identify the best locations for the proposed location and tower height; and

WHEREAS, co-locating on existing towers were considered; however, it was determined the available spaces on existing towers did not provide coverage for the identified gaps in service; and

WHEREAS, the Matanuska-Susitna Borough Trail Plan does not identify any trails within the one-half mile notice area; and

WHEREAS, the subject property is heavily treed, which will aid in screening the proposed conditional use; and

WHEREAS, according to the Matanuska-Susitna Borough's database of registered airport and landing strips, there are no existing airports or airfields within the one-half mile notice area; and

WHEREAS, according to a Federal Aviation Administration determination issued on June 21, 2016, the proposed tall structure will not be a hazard to air navigation; and

WHEREAS, the tower facility is located within a fenced and locked area. The fence is 6-feet in height and topped with barbed wire; and

WHEREAS, the proposed tower has been engineered in accordance with all state building codes; and

WHEREAS, the applicant submitted documents showing the proposed tower conforms to the Electronic Industries Alliance/Telecommunication Industries Association's EIA/TIA-22-G

structures standards; and

WHEREAS, the proposed tower and transmission equipment will operate within radio frequency levels deemed safe by the Federal Communications Commission; and

WHEREAS, signs will be posted that contain: a contact number, owner information, federal antenna structure registration number, and a "no trespassing" notice; and

WHEREAS, signs will be posted on the surrounding 6-foot tall fence; and

WHEREAS, the site requires 240-volts for the operation of the facility; and

WHEREAS, a "high voltage - dangerous" sign will be located at the base of the facility; and

WHEREAS, fencing that surrounds the supporting telecommunication equipment will be 165 feet away from the closest (northern) property line; and

WHEREAS, the proposed tall structure site is approximately 660 feet away from the western lot line; and

WHEREAS, the proposed tall structure site is approximately 2300 feet away from the southern lot line; and

WHEREAS, two parking spaces will be provided at the proposed site.

NOW, THEREFORE, BE IT RESOLVED, that the Matanuska-Susitna Borough Planning Commission hereby adopts the aforementioned

findings of fact and makes the following conclusions of law supporting approval of Planning Commission Resolution 16-31:

1. The proposed use meets the criteria to qualify for conditional use permit for the construction of a 180-foot tall structure (MSB 17.67.040(A)(2)); and
2. The applicant has met the pre-application requirements for new tall structures that require a Conditional Use Permit (MSB 17.67.050); and
3. The location of the tall structure is such that its negative effects on the visual and scenic resources of all surrounding properties have been minimized (MSB 17.67.080(B)(1)); and
4. The visibility of the proposed tall structures from public parks and trails has been minimized (MSB 17.67.080(B)(2)); and
5. The proposed tall structure will not interfere with the approaches to any existing airport or airfield that are identified in the borough's regional aviation system plan or by the Alaska State Aviation System Plan (MSB 17.67.080(B)(3)); and
6. The proposed tower will not be harmful to the public health, safety, convenience, and welfare (MSB 17.67.080(B)(4)); and

7. The proposed use meets the minimum setback distances from all property lines in accordance with MSB 17.55 (MSB 17.67.090(A)(1)); and

8. The minimum setback for the tower base is greater than the height of the tower (MSB 17.67.090(A)(2)); and

9. Adequate vehicle parking has been provided (MSB 17.67.090(B)(1)); and

10. Adequate signage has been provided (MSB 17.67.090(C)(1)(a)); and

11. A "high voltage - dangerous" sign will be posted in accordance with code (MSB 17.67.090(C)(1)(b)); and

12. A 24-hour emergency contact number has been provided (MSB 17.67.090(C)(1)(c)); and

13. A fence not less than six feet in height with a secured gate, is being provided (MSB 17.67.090(C)(2).

NOW, THEREFORE, BE IT FURTHER RESOLVED, that the Matanuska-Susitna Borough Planning Commission hereby finds this application does meet the standards of MSB 17.67 and does hereby approve the conditional use permit for the construction of a 180-foot tall structure with the following conditions:

1. The operation shall comply with all federal, state, local regulations, and the terms and conditions of the permit.

2. Authorized representatives of the borough shall be allowed to inspect the site and related records, at reasonable times for the purpose of monitoring compliance with all permit conditions. Upon reasonable notice from the borough, the permittee shall provide necessary assistance to facilitate authorized inspections (MSB 17.67.300(D)).
3. The facility shall be removed, at the owner's expense within 90 days after abandonment or termination of the permit in accordance with MSB 17.67.130(A)(1).
4. A fence 6-feet in height and topped with barbed wire shall be constructed and maintained in good working condition. The fence shall surround the base of the tower and supporting telecommunication equipment as indicated on the site plan dated August 24, 2016.
5. The following informational signage shall be visibly posted at the tower site:
    a. The antenna structure registration number required by the Federal Communications Commission.
    b. The party responsible for the operation and maintenance of the facility.

c. Warning signs shall be located at the base of the facility and shall display in large, bold, high contrast letters the following: "HIGH VOLTAGE - DANGER".

d. A 24-Hour emergency contact number.

6. The tower shall be lit in accordance with the Federal Aviation Administration's voluntary lighting guidelines.

ADOPTED by the Matanuska-Susitna Borough Planning Commission this 19th day of September, 2016.

JOHN KLAPPERICH, Chair

ATTEST

MARY BRODIGAN, Planning Clerk

(SEAL)

PASSED UNANIMOUSLY: Klapperich, Anderson, Vague, Kendig, and Adams

By: Mark Whisenhunt
Introduced: August 15, 2016
Public Hearing: Sept. 19, 2016
Action: Approved

MATANUSKA-SUSITNA BOROUGH
PLANNING COMMISSION RESOLUTION NO. 16-32

A RESOLUTION OF THE MATANUSKA-SUSITNA BOROUGH PLANNING COMMISSION APPROVING A CONDITIONAL USE PERMIT (CUP) IN ACCORDANCE WITH MSB 17.67 - TALL STRUCTURES INCLUDING TELECOMMUNICATION FACILITIES, WIND ENERGY CONVERSION SYSTEMS, AND OTHER TALL STRUCTURES, FOR A 180 FOOT TALL TELECOMMUNICATION TOWER (KSH1), LOCATED AT 15960 E KASHWITNA ROAD, TAX ID# 23N04W29C006; WITHIN TOWNSHIP 23 NORTH, RANGE 4 WEST, SECTION 29, SEWARD MERIDIAN.

WHEREAS, an application for a Conditional Use Permit was submitted by MTA Communications to construct a 180-foot tall telecommunication tower at 15960 E Kashwitna Road (Tax ID# 23N04W29C006); within Township 23 North, Range 4 West, Section 29, Seward Meridian; and

WHEREAS, it is the purpose and intent of MSB Chapter 17.67 to enable the orderly build-out of wireless telecommunication infrastructure, WECS, and other tall structures while promoting the health, safety, and general welfare of the public; and

WHEREAS, the Planning Commission has reviewed this application, associated materials, and the staff report, with respect to standards set forth in MSB 17.67; and

WHEREAS, the proposed tall structure is a 180-foot tall telecommunication tower; and

WHEREAS, the subject lot is not within a special land use district; and

WHEREAS, there are no existing tall structures at the subject property; and

WHEREAS, the applicant held a public meeting on May 23, 2016 at the Upper Susitna Senior Community Center; and

WHEREAS, a certified mailing notification showed notice was mailed on May 7, 2016 to all property owners within one-half mile of the subject property and to the Susitna Community Council; and

WHEREAS, the notification included a legal description and map of the parcel, a description of the proposed development, the date, time, and location of the informational meeting, contact name, telephone number, and address of the applicant, and comment form created by the borough with a deadline to submit comments and submittal options; and

WHEREAS, exhibit F & G of the application material contains a copy of all received written comments, a written report summarizing the comments received during the public meeting, and a detailed the response from the applicant; and

WHEREAS, the proposed tall structure site is approximately 185 feet away from the public use easement to the north; and

WHEREAS, the proposed setback to the public use easement is greater than the height of the tower; and

WHEREAS, a computer model using topography and surface interference data was used to identify the best locations for the proposed location and tower height; and

WHEREAS, co-locating on existing towers were considered; however, it was determined the available spaces on existing towers did not provide coverage for the identified gaps in service; and

WHEREAS, the proposed access is "dog-legged" to make use of the heavily treed property for screening; and

WHEREAS, the Matanuska-Susitna Borough Trail Plan does not identify any trails within the one-half mile notice area; and

WHEREAS, the subject property is heavily treed, which will aid in screening the proposed conditional use; and

WHEREAS, according to the Matanuska-Susitna Borough's database of registered airport and landing strips, there are no existing airports or airfields within the one-half mile notice area*; and*

WHEREAS, according to a Federal Aviation Administration determination issued on May 31, 2016, the proposed tall structure will not be a hazard to air navigation; and

WHEREAS, the tower facility is located within a fenced and locked area. The fence is 6-feet in height and topped with barbed wire; and

WHEREAS, the proposed tower has been engineered in accordance with all state building codes; and

WHEREAS, the applicant submitted documents showing the proposed tower conforms to the Electronic Industries Alliance/Telecommunication Industries Association's EIA/TIA-22-G structures standards; and

WHEREAS, the proposed tower and transmission equipment will operate within radio frequency levels deemed safe by the Federal Communications Commission; and

WHEREAS, signs will be posted that contain: a contact number, owner information, federal antenna structure registration number, and a "no trespassing" notice; and

WHEREAS, signs will be posted on the surrounding 6-foot tall fence; and

WHEREAS, the site requires 240-volts for the operation of the facility; and

WHEREAS, a "high voltage - dangerous" sign will be located at the base of the facility; and

WHEREAS, fencing that surrounds the supporting telecommunication equipment will be approximately 150 feet away from the closest (northern & western) property lines; and

WHEREAS, the proposed tall structure site is approximately 185 feet away from the western lot line; and

WHEREAS, the proposed tall structure site is approximately 435 feet away from the southern & eastern lot lines; and

WHEREAS, two parking spaces will be provided at the proposed site.

NOW, THEREFORE, BE IT RESOLVED, that the Matanuska-Susitna Borough Planning Commission hereby adopts the aforementioned findings of fact and makes the following conclusions of law supporting approval of Planning Commission Resolution 16-32:

1. The proposed use meets the criteria to qualify for conditional use permit for the construction of a 180-foot tall structure (MSB 17.67.040(A)(2)); and
2. The applicant has met the pre-application requirements for new tall structures that require a Conditional Use Permit (MSB 17.67.050); and
3. The location of the tall structure is such that its negative effects on the visual and scenic resources of all surrounding properties have been minimized (MSB 17.67.080(B)(1)); and
4. The visibility of the proposed tall structures from public parks and trails has been minimized (MSB 17.67.080(B)(2)); and
5. The proposed tall structure will not interfere with the approaches to any existing airport or airfield that are identified in the borough's regional aviation system plan or by the Alaska State Aviation System Plan (MSB 17.67.080(B)(3)); and

6. The proposed tower will not be harmful to the public health, safety, convenience, and welfare (MSB 17.67.080(B)(4)); and
7. The proposed use meets the minimum setback distances from all property lines in accordance with MSB 17.55 (MSB 17.67.090(A)(1)); and
8. The minimum setback for the tower base is greater than the height of the tower (MSB 17.67.090(A)(2)); and
9. Adequate vehicle parking has been provided (MSB 17.67.090(B)(1)); and
10. Adequate signage has been provided (MSB 17.67.090(C)(1)(a)); and
11. A "high voltage - dangerous" sign will be posted in accordance with code (MSB 17.67.090(C)(1)(b)); and
12. A 24-hour emergency contact number has been provided (MSB 17.67.090(C)(1)(c)); and
13. A fence not less than six feet in height with a secured gate, is being provided (MSB 17.67.090(C)(2).

NOW, THEREFORE, BE IT FURTHER RESOLVED, that the Matanuska-Susitna Borough Planning Commission hereby finds this application does meet the standards of MSB 17.67 and does hereby approve the conditional use permit for the construction of a 180-foot tall structure with the following conditions:

1. The operation shall comply with all federal, state, local regulations, and the terms and conditions of the permit.
2. Authorized representatives of the borough shall be allowed to inspect the site and related records, at reasonable times for the purpose of monitoring compliance with all permit conditions. Upon reasonable notice from the borough, the permittee shall provide necessary assistance to facilitate authorized inspections (MSB 17.67.300(D)).
3. The facility shall be removed, at the owner's expense within 90 days after abandonment or termination of the permit in accordance with MSB 17.67.130(A)(1).
4. A fence 6-feet in height and topped with barbed wire shall be constructed and maintained in good working condition. The fence shall surround the base of the tower and supporting telecommunication equipment as indicated on the site plan dated August 24, 2016.
5. The following informational signage shall be visibly posted at the tower site:
   a. The antenna structure registration number required by the Federal Communications Commission.
   b. The party responsible for the operation and maintenance of the facility.

c. Warning signs shall be located at the base of the facility and shall display in large, bold, high contrast letters the following: "HIGH VOLTAGE - DANGER".

d. A 24-Hour emergency contact number.

6. The tower shall be lit in accordance with the Federal Aviation Administration's voluntary lighting guidelines.

ADOPTED by the Matanuska-Susitna Borough Planning Commission this 19th day of September, 2016.

JOHN KLAPPERICH, Chair

ATTEST

MARY BRODIGAN, Planning Clerk

(SEAL)

PASSED UNANIMOUSLY: Klapperich, Anderson, Vague, Kendig, and Adams

MATANUSKA-SUSITNA BOROUGH
Planning and Land Use Department
350 East Dahlia Avenue • Palmer, AK 99645
Phone (907) 861-7833 • Fax (907) 861-7876
Email: planning@matsugov.us

MEMORANDUM

DATE: October 28, 2016

TO: Planning Commissioners

FROM: Eileen Probasco, Director of Planning and Land Use

SUBJECT: Items tentatively scheduled for future PC Meetings or Administrative Actions and Updates on PC items sent to the Assembly

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December 5, 2016 *(MSB Assembly Chambers)*

Introduction for Public Hearing Quasi-Judicial
(*None*)

Introduction for Public Hearing Legislative

- **Resolution 16-42,** a resolution recommending the Assembly adopt the update to the Borough Recreational Trails Plan. Public Hearing: December 19, 2016. (*Staff: Emerson Krueger*)
- **Resolution 16-43,** a resolution recommending Assembly approval of an ordinance amending MSB 17.60.150 General Standards for Marijuana Related Facilities. Public Hearing: December 19, 2016. (*Staff: Alex Strawn*)

Agency/Staff Reports
(*None*)

Land Use Classifications
(*None*)

Public Hearing Quasi-Judicial

- **Resolution 14-33**, remand to the Planning Commission for further consideration of the Central Monofill Services (CMS) application for a Conditional Use Permit under MSB Code 17.60, for the operation of a monofill for the disposal of inert construction and demolition debris, including regulated asbestos-containing material (RACM) and non-regulated asbestos-containing material (non-RACM), and an outdoor storage yard for the sale of salvageable/recyclable materials, located at 2840 S. Glenn Highway (Tax ID: 17N02E18C010) AND 2560 S. Glenn Highway (Tax ID: 17N02E19B006); within Township 17 North, Range 2 East, Sections 18 and 19, Seward Meridian. (*Applicant: Central Monofill Services (CMS), Staff: Mark Whisenhunt*)

Public Hearing Legislative

(*None*)

Unfinished Business

(*None*)

New Business

(*None*)

Commission Business

Upcoming Planning Commission Agenda Items

December 19, 2016 *(MSB Assembly Chambers)*

Introduction for Public Hearing Quasi-Judicial

(*None*)

Introduction for Public Hearing Legislative

(*None*)

Agency/Staff Reports

(*None*)

Land Use Classifications

(*None*)

Public Hearing Quasi-Judicial

(*None*)

Public Hearing Legislative

- **Resolution 16-42,** a resolution recommending the Assembly adopt the update to the Borough Recreational Trails Plan. Public Hearing: December 19, 2016. (*Staff: Emerson Krueger*)
- **Resolution 16-43,** a resolution recommending Assembly approval of an ordinance amending MSB 17.60.150 General Standards for Marijuana Related Facilities. Public Hearing: December 19, 2016. (*Staff: Alex Strawn*)

Unfinished Business

(*None*)

New Business

(*None*)

Commission Business

- 2017 Planning Commission Meeting Schedule. (*Staff: Mary Brodigan*)
- Upcoming Planning Commission Agenda Items

January 16, 2017 *(MSB Assembly Chambers)*

Introduction for Public Hearing Quasi-Judicial

(*None*)

Introduction for Public Hearing Legislative

- **Resolution 17-01.** A resolution recommending assembly approval of amendments to Title 43 Subdivisions, to address Substantial items outlined in the staff memorandum dated March 1, 2013. Public Hearing: February 6, 2017. (*Staff: Fred Wagner*)

Agency/Staff Reports

(*None*)

Land Use Classifications

(*None*)

Public Hearing Quasi-Judicial

(*None*)

Public Hearing Legislative

(*None*)

Unfinished Business

(*None*)

New Business

(*None*)

Commission Business

- Upcoming Planning Commission Agenda Items

Upcoming PC Actions

Quasi-Judicial

- Earth Materials Extraction CUP, 18N02W27D009. (*Applicant: T&J Gravel*, *Staff: Mark Whisenhunt*)
- Forks Roadhouse Beverage Dispensary CUP. (*Staff: Mark Whisenhunt*)
- Burnett Subdivision, Lot 11B, Variance. (*Applicant: Stephen Spence*)
- Talkeetna Herb Co. Marijuana Conditional Use Permit 25N04W31D005. (*Applicant: Krystal Dietrich*)
- The Naked Herbalist Marijuana CUP; 22N04W28B001. (*Applicant: Peggy France*)
- Alaska Precision Marijuana CUP; 6377B02L005. (*Applicant: David Straub*)
- Green Degree Marijuana CUP; 1005000L00W-1. (*Applicant: Kerby Loman*)
- QAP Montana Creek Pit, Earth Materials Extraction CUP, 23N04W32C001.
- QAP Sunshine Pit, Earth Materials Extraction CUP, 24N04W30A006.

Legislative

- Title 17 Consolidation. (*Staff: Sara Jansen*)
- Title 43 Amendments (*Staff: Fred Wagner*)

Other Upcoming Administrative Actions (Not going to the PC)

- Nash/Chijuk Creek NRMU Timber Transportation Permit. (*Staff: Mark Whisenhunt*)
- Minnick Earth Materials Extraction Administrative Permit. (*Staff: Mark Whisenhunt*)

PC Decisions Currently Under Appeal

(*None*)

Updates on PC items going to the Assembly (Pending)

Planning Commission		**Assembly**	
Reso		**ORD/Reso #**	**IM**
Resolution 16-05, A resolution recommending Assembly adoption of the Seldon Road Extension Corridor Access Management Plan. (*Staff: Mike Campfield*)		ORD # 16-__	IM # 16-__
Actions:	01/08/16 – PC Introduction 02/01/16 – PC Public Hearing – Approved		

Planning Commission		**Assembly**	
Reso		**ORD/Reso #**	**IM**
Resolution 16-27, recommending Assembly adoption of the FY 2018 – 2023 Capital Improvement Program. (*Staff: Sara Jansen*)		ORD # 16-__	IM # 16-__
Actions:	08/15/16 – PC Introduction 09/19/16 – PC Public Hearing – Approved		

Updates on PC items that went to the Assembly (Complete)

None