

# **Port MacKenzie Master Plan Update**



Loading Coal on a Super Panamax Ship (June 2010)

**By**

**Matanuska-Susitna Borough**

**Planning and Land Use Department**

## NOTICE

This plan and the information contained herein does not constitute, nor shall it be construed as, a waiver of any right, title or interest, including sovereign interest, in any lands owned by or under the jurisdiction of the Matanuska-Susitna Borough or any grantee in trust of Borough lands.

The maps included in the report are for illustrative purposes only and are not intended to accurately depict ownership boundaries.

## ACKNOWLEDGEMENTS

The Borough owes a debt of gratitude to the Port Commissioners, Professionals, and Interested Parties for their insight, dedication and helpful comments on this update of the Port MacKenzie Master Plan. In particular, the Borough would like to acknowledge the following people for their contributions of time, energy, and support toward the success of this update:

- The Borough Port Commission
  - Bish Buckle;
  - Dave Cruz;
  - Greg Bell;
  - Jay Nolfi;
  - John Riggs;
  - Paul Campbell;
  - Paul Duclos;
- Marc Van Dongen, Director, Port MacKenzie
- Mari Montgomery, University of Alaska Land Management Director
- Rick Hoggan, P.E. Mill Creek Engineering Company
- Mike Pochop, P.E. Hanson Alaska L.L.C.

CODE ORDINANCE

By: Borough Manager  
Introduced: 01/18/11  
Public Hearing: 02/01/11  
Adopted: 02/01/11

**MATANUSKA-SUSITNA BOROUGH  
ORDINANCE SERIAL NO. 11-007**

AN ORDINANCE OF THE MATANUSKA-SUSITNA BOROUGH ASSEMBLY AMENDING  
MSB 15.24.030, ADOPTING THE PORT MASTER PLAN, 2011 UPDATE.

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BE IT ENACTED:

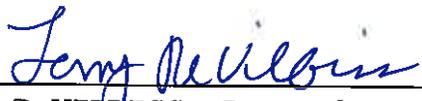
Section 1. Classification. This ordinance is of a general and permanent nature and shall become a part of the Borough Code.

Section 2. Amendment of section. MSB 15.24.030(F) is hereby amended to read as follows:

(F) Point MacKenzie Port Master Plan, January 1998, amended May 1999, **amended February 2011,** has been adopted by the commission and assembly as part of the overall borough comprehensive plan.

Section 3. Effective date. This ordinance shall take effect upon adoption by the Matanuska-Susitna Borough Assembly.

ADOPTED by the Matanuska-Susitna Borough Assembly this  
1 day of February, 2011.

  
\_\_\_\_\_  
LARRY DEVILBISS, Borough Mayor

ATTEST:

  
\_\_\_\_\_  
LONNIE R. McKECHNIE, CMC, Borough Clerk

(SEAL)

PASSED UNANIMOUSLY: Keogh, Woods, Arvin, Ewing, Bettine,  
Colver, and Halter

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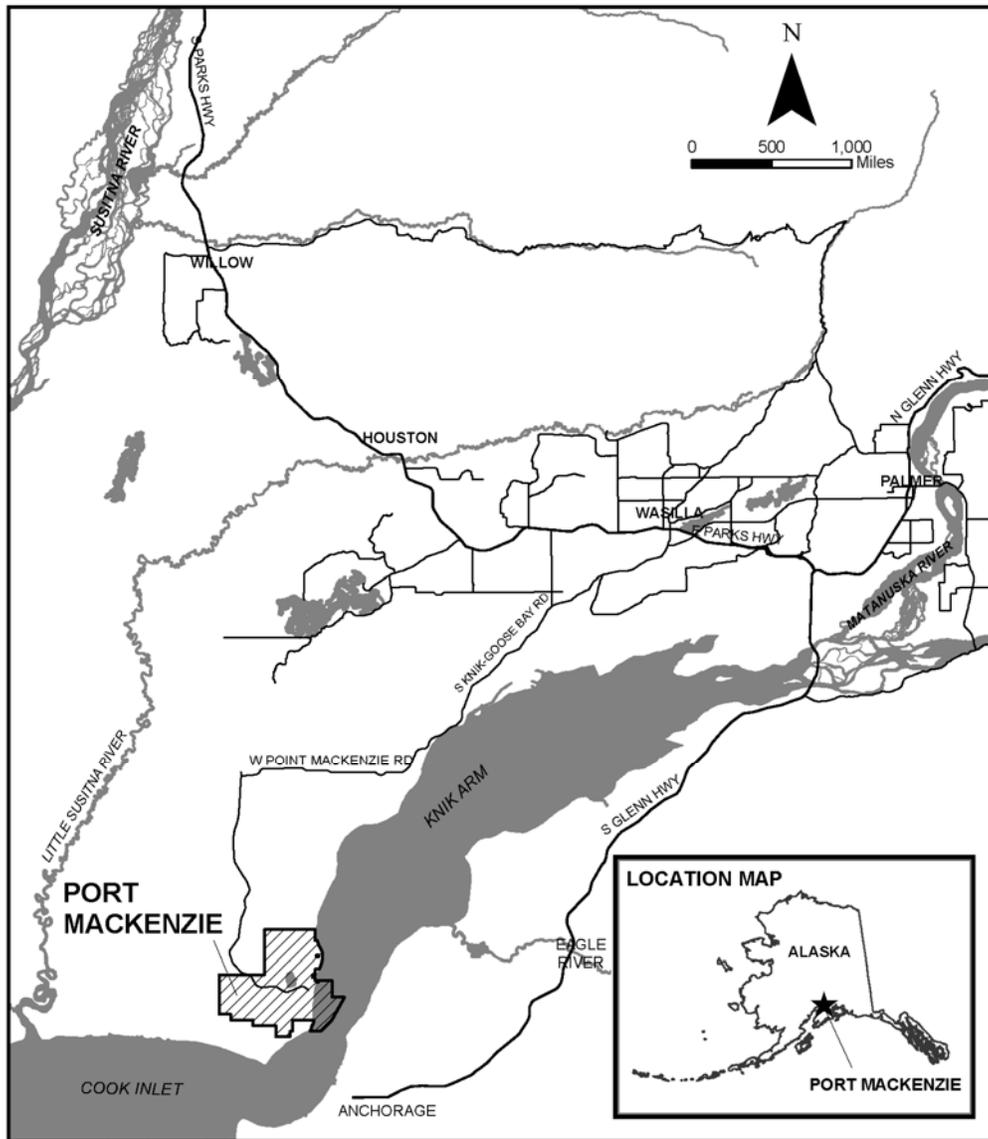
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# 1. Introduction

## 1.1 Overview

Port MacKenzie is located in South Central Alaska at the head of Cook Inlet along the Knik Arm across from the Municipality of Anchorage (see Figure 1 below).<sup>1</sup> The Port is located in, owned, and operated by the Matanuska-Susitna Borough. The other key landowner in the Port District is the University of Alaska.

**Figure 1. Port MacKenzie Location**



<sup>1</sup> Latitude: 61° 16' 6" N Longitude: 149° 54' 52" W

Port MacKenzie is ideally suited for handling bulk materials, serving the local communities and providing critical tide water access to the interior of Alaska. Port MacKenzie provides the ability to easily facilitate substantial growth in Alaskan export capacity to complement existing port operations that may be limited by local land, capacity or public restrictions.

Port MacKenzie provides large upland areas of currently undeveloped land that are adjacent or in close proximity to the existing deep draft dock and barge dock. As such, bulk materials can be offloaded, stored, reclaimed and shipped via rail, truck, pipeline, barge and ship without prohibitive constraints and growth limitations.

The Borough is constructing a rail link (estimated for completion in 2013) that will connect the Port to the Alaska Railroad System. When complete, the rail line will provide the gateway tide water access to Interior Alaska via the existing rail corridor. The Port will provide the ability to efficiently move materials between ship, rail, truck and barge as needed. An existing bulk material handling conveyor, ship loader and deep water mooring system provide the ability to load any size ship with wood chips, coal, limestone, cement, bulk fuel, mineral concentrates and other commodities. This master plan provides utility corridors with additional conveyor, piping, rail and truck access between the dock and upland areas. This plan accommodates mineral, petrochemical, forest products, fabrication, power generation, and manufacturing industries in a productive and economic manner.

The Matanuska-Susitna Borough (Borough) has prepared this master plan as an update to the 1998 Point MacKenzie Port Master Plan. The plan updates land use designations for future land development and use. It also provides guidelines for future port improvements and development to meet cargo demand, community acceptance and environmental compatibility that will complement other modes of local, state and international transportation through 2031.

## **1.2 Land Area**

The Port District is comprised of approximately 8,940 acres of uplands and 1,238 acres of tidelands. The uplands include 7,621 acres of land and 1,319 acres of waterbodies and wetlands (see Figure 2). The other landowner in the Port District is the University of Alaska, which owns about 830 acres of land within the District.

### **Public Access to the Shoreline**

The Borough has been granted approximately 1.9 square miles of tidelands with a shoreline frontage approaching 2.2 linear miles. This master plan makes provision for physical and visual access to the shoreline in a manner that is consistent with the activities being conducted on the land and water areas involved, and the proprietary interests of the private land owners, lessees, and public rights and needs. Restricted access to the shoreline within the Port District is necessary for security and public safety factors.

### 1.3 Port MacKenzie Master Plan Update

An overall master planning study of Port facilities has not been completed since 1998. This document provides a framework to guide the orderly growth and development of the Port over the next 20 years.

This plan contains three primary sections: a land use section, a transportation section and a facilities/utilities section.

This document is intended to provide the layout for the physical development and use of the land, waterbodies and wetlands, tidelands, and submerged lands within the Port District.

The usefulness of this plan relates directly to its status as an official statement of public policy adopted by the Matanuska-Susitna Borough Assembly. It serves a number of useful purposes, which include use by the Port Commission as a reference indicating needed policy changes and as a guide for policy decisions; by the Port staff as a basis for land use decisions, capital improvements programming and for rendering services; by other governmental agencies as necessary information leading to coordinated efforts; and to individuals as an accurate source of information, regarding public land use opportunities for private use and investment, and as a basis for protecting existing development.

### 1.4 Vision

#### VISION

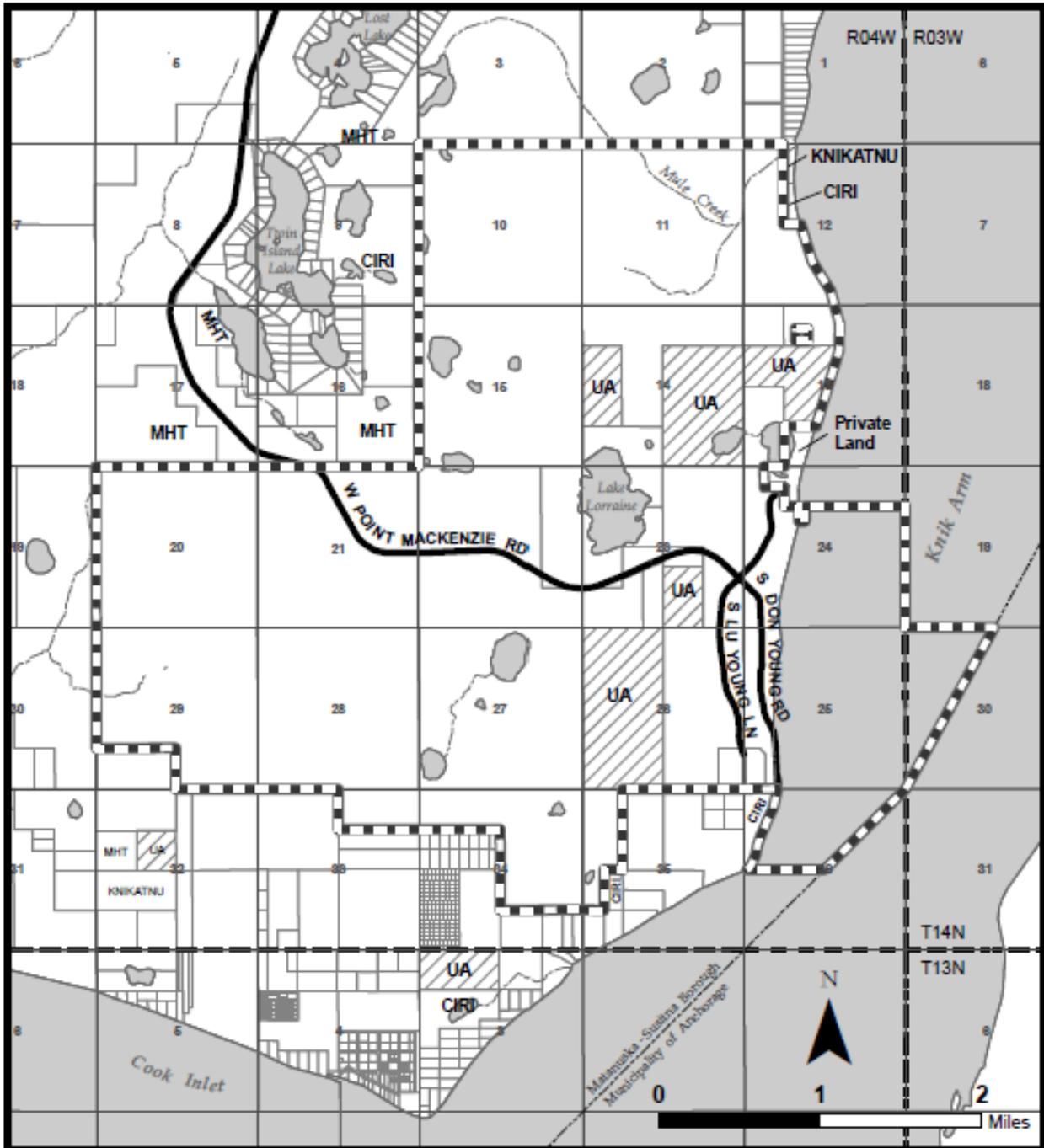
*To develop and maintain waterfront assets in a manner that generates long-term economic benefits for the residents of the Borough, without permanently depleting the usefulness of these assets. Port MacKenzie is envisioned to be an economic engine for resource development throughout Alaska.*

This Master Plan is structured to implement this vision in a timely and organized manner, and polices and regulations must be developed to ensure that the integrity of the strategic vision is never compromised.

Port MacKenzie will clearly define its development and investment objectives, publish policies and guidelines for activities and investments that are to be permitted in the Port District, and entertain only those proposals that are consistent with its development objectives, guidelines, Master Plan, and vision:

- Create new employment opportunities;
- Stimulate economic development in the Port District, Borough, and State through capital investment for industrial facilities by private enterprises; and
- Establish a transportation link for exporting natural resources from the State of Alaska.

Figure 2. Port District



## **1.5 Port Commission**

The Port Commission serves as an advisory body to the assembly and the manager on Port development matters and provides advisory input to the Port District's operational and administrative staff. The Port Commission was involved in the update process through a series of personal interviews and work sessions as well as considering the plan and providing recommendations at Port Commission meetings.

## **1.6 Planning Efforts**

This Port MacKenzie Master Plan Update was developed as a standalone master plan superseding the Point MacKenzie Port Master Plan, as amended (1998). This Master Plan is a living document and should be updated again following significant port development or significant changes to the economy.

This Plan was prepared with input from the Borough Port Commission, Port Director, Economic Development Director, planning staff, land owners, potential users, neighbors, and various stake holders. The intent of this Plan is to provide a flexible guide for present use, short-term infrastructure needs, and near, intermediate and long-term future use of the Port. While fully aware that it is impossible to predict the future, the master plan must anticipate the future and provide a plan that will best prepare the Port to maximize the use of the land and current facilities, promote sensible and desired growth and facilitate presentation and marketing of the Port's potential. Due to the amount of activity that is happening within the Port District and the many different forms of inquiry and information, a Port District Leasing and Land Use Permit Committee was established. The committee includes borough staff from the departments involved with Port Development. The committee is tasked with reviewing applications for leases, Land Use Permits, and other forms of use in the Port District.

In order to update the master plan, the current and potential future users of the Port, along with the landowners within and adjacent to the Port, were interviewed. The purpose of the interviews was to identify anticipated future development of the Port and associated industrial complex as well as the siting constraints for each development. Previous studies and reports on the Port were reviewed for background information (listed in Appendix B).

A consultant was engaged to assist with review of the layout and future operations to ensure functionality, efficiency, compatibility, and safety. A mechanical and mining engineer specializing in bulk material handling projects including Port facilities, mining, power generation, cement and various industrial mineral, petroleum and chemical plants provided input to the plan and assisted with interviewing Port Commissioners, Borough staff, and potential future Port users. The layout drawings are primarily based on the engineer's experience and knowledge, Port Commission review, as well as the information provided in the studies and interviews.

This Port Master Plan Update was developed in three phases. The first phase, known as the observations phase, included the collection of data and the assembly of extensive outreach meetings to gather input from external and internal Port constituents. The second phase involved the review and documentation of the information gathered in phase one to identify siting and

infrastructure constraints for existing and future uses. Based on this review and the input and data collected in the observations phase, recommended updates to the master plan were developed and presented to the Port Commission for feedback. In the final phase of the process, that feedback was incorporated into a draft of the final master plan update which was then presented for public review, planning commission review, and assembly approval.

Industry sectors projected to have the greatest growth potential, and which Port MacKenzie could attract by virtue of its geographical location and facilities, were short listed as the most likely to locate at Port MacKenzie.

The nature and growth potential of current business activities at Port MacKenzie were confirmed through discussions with current tenants of the Port, Borough staff, the Port Commission and Administration. In addition, potential business leads provided by the Borough were investigated through personal and telephone interviews.

Cargo projections were updated based on the most recent studies, information provided by current and potential Port MacKenzie tenants, and from expected future project and construction activity in the region.

## **1.7 Public Participation**

The public planning process is concerned with identifying land use concerns and finding solutions for problems that have arisen or may arise from land use situations. The process of seeking solutions to public problems on a long range and comprehensive basis involved public hearings and public participation in Port District planning and development decisions. The public review period for this plan was 30 days long. Copies of the draft were made available to the public in a number of locations, including the Dorothy Swanda Jones Borough Building in Palmer, the Point MacKenzie General Store and the Borough webpage.

Public notice and review of this master plan update occurred the month of November, 2010. Some involvement, such as telephone calls, visits, and informal contacts, were not recorded yet added substantially to the decision making process.

On-going public information programs dealing on a daily basis with Port District activities and projects are conducted through the Port District staff. The Borough Public Affairs Director informs local citizens through several programs and several thousand copies of a comprehensive report are published and distributed throughout the Borough annually.

## 1.8 Mission and Goals

### Mission

*To develop a world class Alaskan deep-water port capable of safely and efficiently transporting people and commodities.*

### Goals

- 1) To complete utilities (natural gas, wastewater treatment) to service the Port.
- 2) To complete docks (barge dock expansion, ferry landing, deep-draft dock expansion).
- 3) To complete road improvements (Pt. MacKenzie Road, Port Access Road, Burma Road).
- 4) To develop a year-round Cook Inlet ferry system.
- 5) To complete a rail line from the existing Alaska Railroad to the Port.
- 6) To construct rail and vessel loading/unloading facilities at the Port.
- 7) To construct petroleum product storage and processing facilities including a connection to Anchorage via pipeline.
- 8) To promote the creation of a natural gas liquids (NGL) processing facility, petrochemical facility, refinery, power plant, LNG plant, or other value-added gas processing facility at Port MacKenzie.
- 9) As port development occurs, ensure the public trust and establish a system of transparency, accountability, public participation, and collaboration.

## 1.9 Key Development Needs For Port MacKenzie

The following are some of the major needs of the Port for successful operations:

### Road connection to Parks Highway

Upgrading Point MacKenzie Road and Burma Road to controlled access, four-lane arterials as well as construction of a Big Lake bypass will provide the level of service necessary for the commercial and industrial activities of the Port.

### Rail connection to Alaska Railroad

A connection to the railbelt is the essential component to facilitate natural resource exports. The Port is about 40 miles from the railbelt. The efficiency of transporting bulk commodities to tidewater over a rail extension will lead to new natural resource extraction activities.

### Natural gas supply

Distribution and high pressure transmission natural gas pipelines must be extended to the Port District for domestic and industrial use. Natural gas has been extended to Alsop Road, nine miles to the north to service the Goose Creek Correctional Center and surrounding area.

### **Ferry logistics**

Coordination of ferry operations with Port operations must occur to ensure safety and efficiency. Ferry operations must complement Port activities.

### **Deep-draft dock expansion, adding a second trestle**

A second trestle connecting the barge dock to the deep draft dock will increase the efficiency of loading and unloading vessels. Eventually, the deep-draft dock will need to be expanded to accommodate two vessels.

## **2. Port Operations**

### **2.1 Security**

The Port Physical Security Plan was recently updated and approved by the Coast Guard. The next update to the security plan will be required in 2015. Port security inquiries should be forwarded to the Port Director.

### **2.2 Fire Protection and Emergency Services**

The Borough's 20-year plan for Port Emergency Services is in Appendix D.

Fire protection within the Port District is currently a responsibility of the existing leasees. Fire protection consists of a fire hydrant at the barge dock connected to two 20,000-gallon water tanks located up the bluff. The Port District is not within a designated fire service area. The closest fire service area to the Port is the Wasilla-Lakes Fire Service Area No. 130 with Fire Station 6-4 at Mile 3.2 Point MacKenzie Road, about 18 miles away.

The Central Mat-Su Fire Department (CMSFD) will provide fire, rescue, and EMS services to Port MacKenzie to protect the critical infrastructure of the Mat-Su Borough. The area is currently within the response area of Emergency Services District 1 for EMS and rescue responses. A realistic response time, given that responders are not assigned to a major incident, would be 40 to 50 minutes for a chief officer and 45 to 60 minutes for fire apparatus, a rescue, or an ambulance. A Borough-owned 32-foot airboat was acquired to assist with water rescue options; however, a boat house is required in order to stage it near the barge dock. For management and timeliness, an Emergency Services District covering the Port District should be established with costs shared by tenants.

In the near term, leasees should install adequate fire suppression systems to control the fire hazards associated with their operations (i.e., natural resource storage with adequate water delivery systems). Structures should have sprinkler systems and fire hose connections at a minimum.

In the mid-term, a 20-acre parcel north of Point MacKenzie Road, illustrated on the layout drawings in Appendix A, should be developed to include a three-bay fire station that will house an aerial rig, a hazardous materials response vehicle, a heavy rescue vehicle and three command

vehicles. This facility should be collocated with a five to ten bed emergency medical clinic, an Alaskan State Trooper substation, general administrative offices, and a FAA-certified helipad.

## **2.3 Cargo Operations**

Port MacKenzie is currently developing the berths and infrastructure for handling commercial cargo for export. The Port presently has two tenants. Alutiiq Manufacturing Contractors (AMC) constructs modular homes and ships around 50 homes a year to rural communities in Alaska, both by road and across Port MacKenzie's docks. AMC is expected to continue to manufacture and ship a similar number of homes each year for the next five years and its growth beyond five years is anticipated to be consistent with the rate of growth of the projected economic and construction activity in Alaska (Kane, 2010). NPI leases land primarily for bulk commodity export operations at the Port. Wood chips and saw logs have been exported to Asia.

In 2008, the Port exported 451 thousand tons of construction-quality gravel for the Port of Anchorage expansion project. Additional material is available for export to projects at the Ted Stevens Anchorage International Airport and possibly the Knik Arm Bridge.

Importation of cement began in 2009 with two vessels each carrying 17,000 short tons. The cement was bagged and warehoused. About 3,700-pounds of rebar were also imported on vessels. A third vessel brought an additional 13,360 short tons of cement in 2010.

Scrap metal export also began in 2009.

Coal export began in 2010 with a test run of a Super Panamax vessel, loaded with 76,000 tons of coal in Seward. The vessel docked at Port MacKenzie to be topped off with coal trucked down from Healy.

There has been a significant increase in the number of local and national business entities expressing interest in establishing various business operations in the Port District but not necessarily using the Port's docks. These proposals include a bulk fuel storage facility, a timber curing facility, a power generation and solid waste disposal plant, a sewage treatment plant, a peat processing and ore reprocessing facilities.

## **2.4 Future Cargo Operations**

Future cargo operations at the Port were evaluated based on a two-phase economic analysis completed by Dr. Paul Metz, a registered professional geologist (Metz, 2007a&b), other studies, as well as information provided by local entrepreneurs, the Port Director, and other Borough staff. Port MacKenzie is being developed as a bulk commodities export and import center. The type of bulk natural resources and other cargo expected to be part of the future operations include coal, petroleum products, oil and gas field modules, natural gas pipeline construction, forest products, limestone products, and other minerals.

Completion of the rail extension linking Port MacKenzie to the Railbelt will result in a dramatic increase in bulk commodity exports. The following potential future commodities are listed in order

of priority for Port development based on if the commodity is anticipated in the next five years and the duration the commodity is expected to be handled at the Port:

#### **2.4.1 Coal**

Port MacKenzie is well positioned to provide rail transport and Port facilities for the export of coal from the Usibelli Coal Mine in Healy. The Usibelli Coal Mine is the only active coal mine and current source of coal for export from Alaska. The exports from the mine have fluctuated significantly in recent years, with a peak market of approximately one million tons to approximately 400,000 tons, with an intermediate term annual average of 750,000 tons (Denton, 2010). Currently, up to one million tons of coal is exported through the Port of Seward using a coal loading facility owned by the Alaska Railroad Corporation and currently operated by Usibelli Coal Mines, Inc. The Usibelli Mine at Healy alone has over 250 million short tons of proven coal reserves. In addition, the Chulitna Basin in the Upper Susitna Valley contains several billion tons of coal that are also provided access to tide water by the rail extension. Usibelli Coal Mine, Inc. is currently exploring alternatives to mine coal at Wishbone Hill near Sutton and ship it out of Port MacKenzie. If successful, this venture may ship up to 500,000 tons of coal per year out of Port MacKenzie.

With rapid increases in the demand for coal in China, there is a strong market for coal in the Pacific Rim. The market for the sub-bituminous and low sulfur coals from Alaska is primarily for the power generation industries in South America and Asia (Brown, 2010). In addition, the construction of a coal fired power plant at the Port could lead to the need for an additional million tons per year of coal. Due to transportation savings associated with the rail extension and Port MacKenzie, it is expected that it will be economic to export a significantly greater amount.

During the first five years, after completion of the rail extension, it is highly probable that at least an additional one million tons of coal could be transported annually over the rail extension and exported through Port MacKenzie. Due to the design of this relatively high speed freight rail extension, and the inherent transportation cost savings, the amount of coal transported over the extension during the second five years could be up to four million tons (Metz, 2007a).

#### **2.4.2 Petroleum Products**

The development of petroleum storage facilities at Port MacKenzie to accommodate both the export and import of petroleum products will add additional transportation and storage capacity to the Cook Inlet area, as well as facilitate the transfer of fuels to and from Southwest, Interior and Northern Alaska.

There is a growing demand for low sulfur diesel fuel in Interior and Southwest Alaska, as a function of mineral and energy development. This demand is associated with federally mandated low sulfur fuel specifications that went into effect in 2009. The new regulations require off-road equipment (i.e. mining operations) to only use low sulfur fuel. Flint Hills Refineries does not produce low sulfur diesel fuel in its North Pole refinery, and Conoco-Philips has not completed a low sulfur fuel refinery addition on the North Slope. Low sulfur fuel will need to be imported. It is expected that the rail extension will be used to transport low sulfur diesel fuel to meet Interior and

North Slope demands. Fuel suppliers have discussed the possibilities of establishing tank farms at Port MacKenzie and then shipping the fuel north by rail and truck.

It is estimated that at least 60,000 tons of low sulfur diesel fuel will be transported north from Port MacKenzie to Interior Alaska, and a similar amount to Southwest Alaska, for a total of 120,000 tons of low sulfur fuel each year. This will begin during the first five years of operations and will continue to grow as more and more diesel fuel is sent north. In addition, fuel suppliers are considering setting up tank farms at Port MacKenzie and annually transporting 80,000 to 90,000 tons of fuel via the rail extension to North Slope markets.

The increasing demand for petroleum products in South Central Alaska, coupled with the apparent lack of space for expansion of the tank farms at the Port of Anchorage, indicate that development of a tank farm at Port MacKenzie is likely.

### **2.4.3 Oil and Gas Field Modules**

Several corporations have discussed using Port MacKenzie to build oil and gas industry modules, specifically sea-lift modules. These corporations include oil companies as well as oilfield service industries. For example, one oilfield service company expects to supply about 24 8,000-ton gas compression modules for the gas pipeline project over a period of 5 years, commencing around 2012. According to the company, these modules will be manufactured at several locations around the world as no single location has the resources to build all of them. The company would like to manufacture and ship about six of these modules out of Port MacKenzie, over a period of three to four years.

### **2.4.4 Forest Product Exports**

Forest product exports have been a major business activity at Port MacKenzie. The primary product has been wood chips for Japanese, Korean, and Taiwanese markets. This low unit value commodity is very sensitive to the cost of transportation from the standing forest to the Port facility. Transport has been by truck with economic haulage distances limited to the Susitna Valley region. Large timber resources occur on State of Alaska lands, Alaska Mental Health Trust lands and Native Corporate lands in the Tanana Basin (see Fairbanks Economic Development Corporation (FEDC) Prospectus, March 2007). These Tanana Basin resources will become economic for export through Port MacKenzie by rail, once the rail extension is complete. Total available resources for harvest in the Susitna Valley and Tanana Basin exceed 1.6 billion board feet with an estimated sustainable yield of 30 million board feet per year. It is estimated that a minimum of 60,000 tons per year of forest products could be exported during the first five years following rail extension completion (Metz, 2007b).

### **2.4.5 Natural Gas Pipeline Logistics**

Three natural gas pipeline alternatives are being considered:

- 1) TransCanada (AGIA) Denali Project – The Alaska Gas Pipeline: This 1,700-mile pipeline would run from the North Slope to Calgary in Alberta, Canada with a potential 1,500-mile extension to Chicago.

- 2) Alaska Gasline Project: The pipeline would be 800-miles long stretching from Prudhoe Bay to Valdez, paralleling the Trans-Alaska Oil Pipeline. The project could include a spur from Glenallen to the Southcentral gas grid.
- 3) Alaska Stand Alone Gas Pipeline: This 750-mile pipeline would run from the North Slope along either the Parks or Richardson-Glen Highways to the Cook Inlet.

Regardless which project is successful, it will be necessary to transport pipe, compressor station construction materials, compressor components, construction equipment, fuel, construction camps and camp supplies from tidewater to inland locations. The most cost effective way to transport these construction materials to the construction areas is by rail, as far as possible, and then by truck the rest of the way. In March 2007, Northern Economics completed a comparative study that assessed the ability of Southcentral ports to transport pipe for the proposed Alaska Highway natural gas line project (Burden, 2007). The study assumed an Alaskan port would be used to transport construction materials for the portions of the pipeline running from Prudhoe Bay, 950 miles to Burwash Landing, Yukon Territory. Assuming the Port MacKenzie rail extension is built, the study concluded that Port MacKenzie would be the most cost effective port for transporting pipeline materials. Accordingly, Port MacKenzie and the rail extension would be used to transport pipeline sections and materials north.

The proposed natural gas pipelines are predicated on 35 trillion cubic feet (TCF) of proven conventional natural gas on the Alaska North Slope. Estimated conventional resources of natural gas in the region exceed 200 TCF. Unconventional natural gas resources are estimated to be several times greater (Metz, 2007b).

The market size for this Port MacKenzie business activity will vary pending the final pipeline route selection. However, if the Alaska Highway route is used, the Northern Economics study determined that 122,760 forty-foot long segments of pipe (joints), weighing 12.3 tons per joint, would need to be transported through Port MacKenzie during a two-year period. In addition, appropriate support materials, structures, fuel and supplies would also be transported on this route. Assuming the Alaska Highway route is used, the Prudhoe Bay to Burwash Landing pipeline segment alone would account for about 1.6 million tons of rail freight over the first two years of pipeline construction. Additional freight tonnage of 320,000 tons would be accounted for by other construction materials, fuel and supplies.

#### **2.4.6 Value-Added Natural Gas Processing**

When a natural gas pipeline is built, the possibility of a natural gas fractionation plant at Port MacKenzie has been discussed. This would provide an anchor industry for the Port. Natural gas would continue to be transported to the port and products from the fractionation plant would be exported as well as used in Alaska.

It is also possible that petrochemical facilities could be built at Port MacKenzie. The products from a world-class petrochemical complex would include methanol, ethylene, polyethylene, ethylbenzene, ethylene glycol, Styrofoam, alpha olefins, ethylene dichloride, ammonia, urea and caustic soda. In addition to the gas liquids from the Alaska natural gas pipeline, benzene and water

are necessary inputs. Benzene could be produced at the Flint Hills Refinery in Fairbanks and transported by rail to the Port.

Meeting the energy requirements for petrochemical production would necessitate a large power generation plant. Production rates of a petrochemical plant would depend on the volume of natural gas transported via pipeline from the North Slope. A proposed 4.5 billion cubic feet per day pipeline would result in about 13 million tons of petrochemical products that would require 450 vessels a year to export (Metz, et. al., 2004).

#### **2.4.7 Limestone Products**

The Globe Creek limestone deposit, located approximately 38 miles north of Fairbanks, is the largest known high-quality limestone deposit in Alaska and contains an estimated 1.6 billion tons of high-purity limestone.

Limestone contains the essential materials for the production of lime (calcium oxide) and Portland cement (hydrated calcium and aluminum silicates). The economy of scale of lime production is as small as 100 tons per day, while the economy of scale of Portland cement is at least 10 times larger. Neither of these products is produced in Alaska, thus local needs are met with imports from either the contiguous states or other countries. Current markets for lime in Alaska include: metal mining, water and wastewater treatment, and oil well completions.

Lime transported by rail from north of Fairbanks could be more economical to barge from Port MacKenzie to Southwest and Northwest Alaska than lime currently imported from British Columbia. It is possible that lime will be produced in kilns 10 miles north of Fairbanks and transported through Port MacKenzie during the first five years of rail operations.

It is expected that eventually cement will also be manufactured at the limestone site and exported through Port MacKenzie. The export of cement would involve the transport of much larger tonnages. Limestone products are used to help maintain water quality for waters associated with mining operations. Limestone products will be exported across the rail extension through Port MacKenzie for use in Southwest Alaska, in villages and cities, and major mining operations such as Pebble, Red Dog, or Donnelly Creek (Metz, 2007a). Though the current market for Portland cement in Alaska is small compared to the minimum economic sized operation, Alaskan produced cement would primarily be for export.

#### **2.4.8 Other Minerals**

The rail corridor from Port MacKenzie to the Fairbanks area transects several mining districts and metal-rich geologic provinces (Metz, 2007a). Mineral deposits and mineral occurrences are found as clusters of mineralization referred to as mining districts. These mineralized clusters include copper, molybdenum, antimony, and lead that are generally transported as mineral concentrates rather than as intermediately refined metals such as dore bars of gold. Metallic minerals that will likely be transported by rail through Port MacKenzie include antimony, copper, lead, molybdenum, silver, tin, tungsten, and zinc. The 2007 Economic Analysis of Rail Link (Metz), includes estimates of the freight associated with the future mines. The annual expected rail freight

load ranges from 9 to 21 million tons. Thus, it is expected that mineral concentrates will eventually be the largest commodity export.

## **2.5 The Cook Inlet Ferry System and other Passenger Ships**

The Borough expects to commence daily ferry services soon utilizing the Borough-owned M/V Susitna. The ferry is capable of carrying 20 vehicles and 114 passengers. While not directly affecting cargo operations at Port MacKenzie, the primary benefit of the ferry service would be to significantly reduce the travel time from Anchorage to the Port District, and provide potential entrepreneurs and industrialists an economic incentive to establish offices in the Commercial District at the Port. The Borough's tourism industry could benefit from small and large cruise ships docking at Port MacKenzie.

## **3. Land Use**

### **3.1 Existing Conditions**

Port MacKenzie is divided by the east-west trending Point MacKenzie Road. This division has generally been used to separate heavy industrial uses to the south from the commercial and light industrial uses that will locate north of the road.

The Knik Arm Bluff runs north-south along the waterfront with average bluff elevations over 100 feet. West of the bluff is a ridge that runs north-northwest. Lu Young Lane is on the east side of the ridge at the top of the bluff. Rail service will be available south of Point MacKenzie Road west of the ridge and docks. Land at the top of the bluff, closest to the docks, is reserved for marine/rail industry including bulk material processing, storage, and transfer. Marine/rail-related industry requires sites within close proximity to water bodies due to functional dependencies on the industrial activity for direct access or for linkages to waterborne products or processes.

A major ridge system occurs north, east, and west of Lake Lorraine.

The Port District is currently comprised of four zoning districts per MSB 17.23:

- Waterfront Dependant District (WDD);
- Port Industrial District-I (PID-I);
- Port Industrial District-II (PID-II); and the
- Port Industrial District - Interim Materials District (PID-IMD).

This plan replaces the Port Industrial District – Interim Materials District with Port Industrial District – I. The primary land use in this district consists of clearing, grading and excavating in preparation for the bi-modal road project. This temporary district includes 320 acres of land that will revert back to PID-I when material extraction activities have ceased. Earth material extraction should be an allowed use with standards in the Port District.

Near term infrastructure development has led to re-evaluation of the layout of the existing districts.

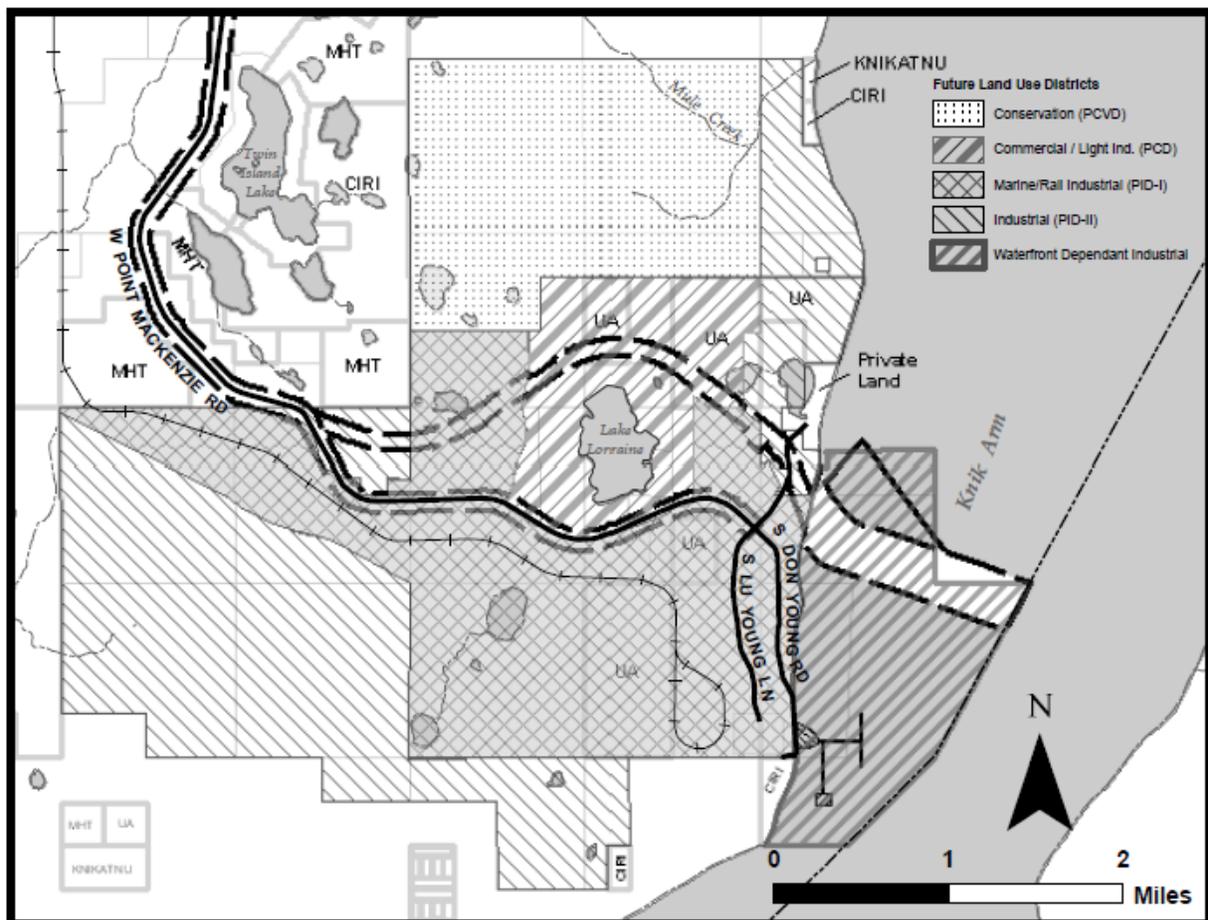
This plan also incorporates two new districts:

- Port Commercial District (PCD)
- Port Conservation District (PCVD).

The updated districts are illustrated on Figure 3. The Port District encompasses land use districts (zoning) some of which are further divided into subunits. The locations of the different land use districts within the Port District are described below.

WDD occupies the southeast corner of the Port District and includes tidelands and the docks. PID-I includes the uplands closest to the docks, the land along rail, and two areas north of Point MacKenzie Road reserved for future heavy industrial uses. PID-II lies back from the existing roads and the railway and includes land identified for industrial activities not directly dependant on the rail or docks that still benefit from the proximity to tidewater and the railroad. PCD occurs around Lake Lorraine and includes land north and east of the lake. Existing and future land uses within each land use district are described below.

**Figure 3. Future Land Use Districts**



### **3.2 Waterfront Dependant District (WDD)**

The Waterfront Dependant District includes 1,239 acres of tidelands and submerged lands owned by the Borough.

The plan for this area is to locate those waterfront uses that are necessary to operate a commercial/industrial port. Land activities in this area shall be directly related to a water activity and require navigable channels and specialized facilities at the land-water interface.

#### **Land Use**

This district includes the 16-acre open-cell barge dock with a 500-foot bulkhead barge dock and a 1,200-foot trestle pier deep-draft dock extending offshore (see Figure 4 below). The barge dock is available for temporary uses such as staging of material during import or export or final assembly of modules. The deep-draft dock can accommodate both Panamax and cape-sized vessels. Due to the limited space available this asset must be managed carefully to maximize its water-dependant utility. A transportation route from the deep-draft dock across the barge dock to Lu Young Lane must be reserved for truck traffic transporting freight on and off vessels.

#### **Dock Design and Expansion**

Plans are in place for the expansion of the deep draft dock that includes a new trestle. An additional trestle will allow for more rapid transport of cargo on and off vessels. The current dock design and plans for expansion are illustrated on Figure 4. Expansion of the docks will be necessary as use increases.

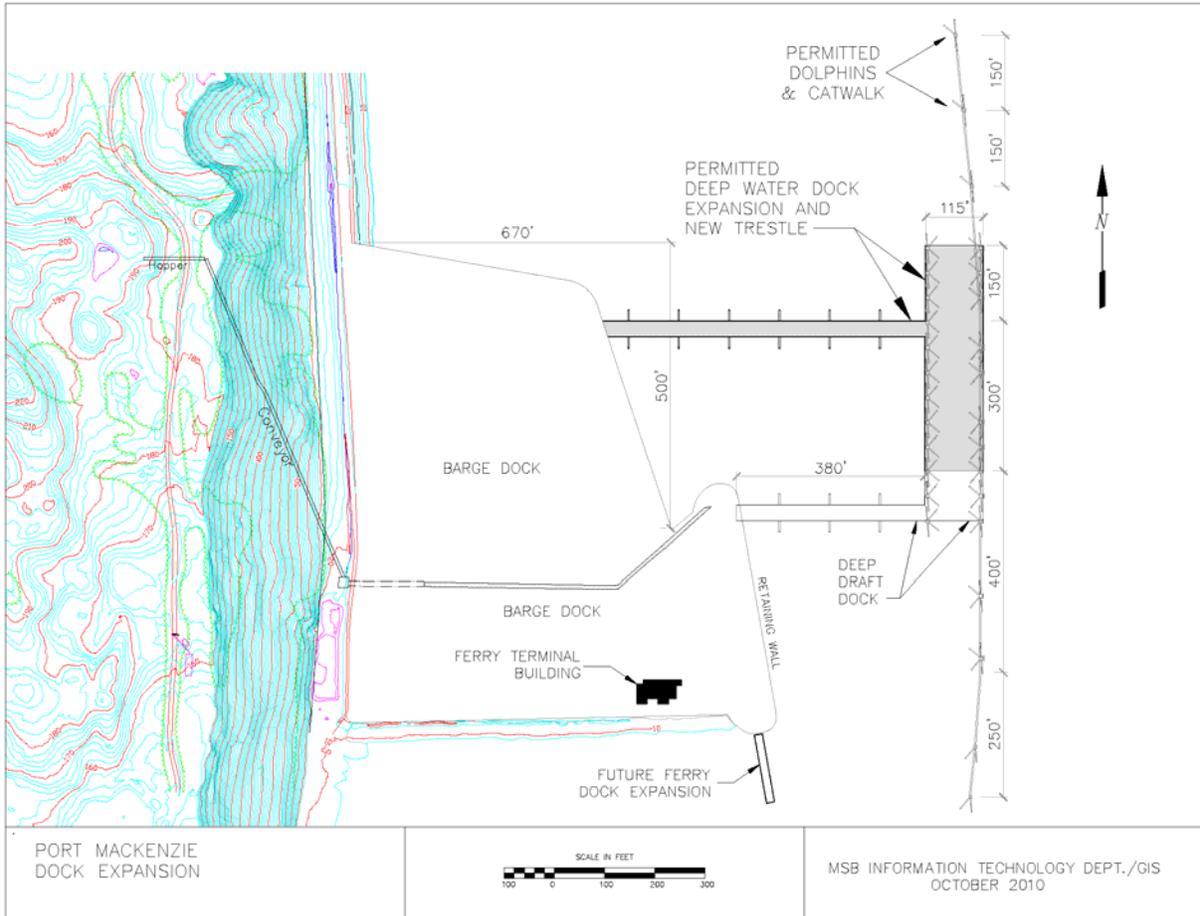
#### **Small Ship Repair and Inspection**

The addition of a future ship repair and inspection facility can easily be added as an addition to the existing dock areas. A single berth dry dock rack can be added south or north of the barge dock. However, the south side of the barge dock has been identified as essential for loading sea-lift modules onto barges.

#### **Cook Inlet Ferry System**

The Cook Inlet Ferry System will connect the communities of Cook Inlet via water. Matanuska-Susitna Borough residents will have an alternative to driving to Anchorage. Anchorage residents will quickly access Port MacKenzie and the State's new medium-security prison. The ferry is also expected to provide transportation for the Port workforce as well as freight, vehicle transport, and passenger service to the village of Tyonek and the City of Kenai. The ferry system will greatly enhance the Borough's efforts to develop the marine port and industrial complex at Port MacKenzie.

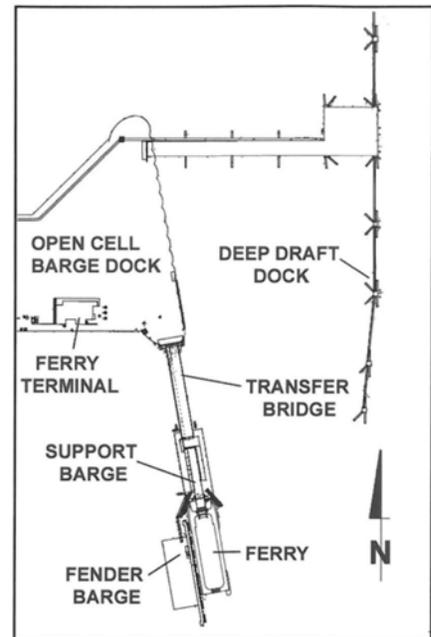
**Figure 4. Dock Expansion**



In the near term, ferry traffic arriving to board at Port MacKenzie will be routed to a queuing area where Don Young Road turns south along the bluff. The Port MacKenzie Layout Drawings in Appendix A show the ferry traffic queuing area. The general public and ferry traffic will be directed by signage to a security post where Point MacKenzie Road ends and Don Young road begins. The Security Gate will prevent traffic from proceeding along Don Young Road to the dock. At the security gate public traffic will be directed to a parking and ferry vehicle queue area. At the parking area, visitors can utilize a scenic viewing area located at the top of the bluff that provides a panoramic view of the Port MacKenzie docks, Knik Arm and the City of Anchorage.

### Ferry Terminal and Dock

A 7,000-square foot ferry terminal building was constructed at the southeast end of the barge dock. The terminal will be used for ferry passenger ticketing and office space for Port business. Design for a ferry dock is complete. This project will consist of a fender barge and a support barge with a bridge connecting to the barge dock (inset to the right).



### 3.3 Port Industrial District - I (PID-I)

The Port Industrial District – I is a largely undeveloped rail and marine industrial area of great importance to the region’s economic base. This Port Master Plan seeks to preserve and protect this unique coastal resource by limiting uses to strictly marine/rail-oriented industrial ones. This plan continues the existing marine/rail-oriented industrial uses and supports the development of available vacant land with similar uses in order to provide a homogenous industrial climate with an assured, reasonable long-term growth potential.

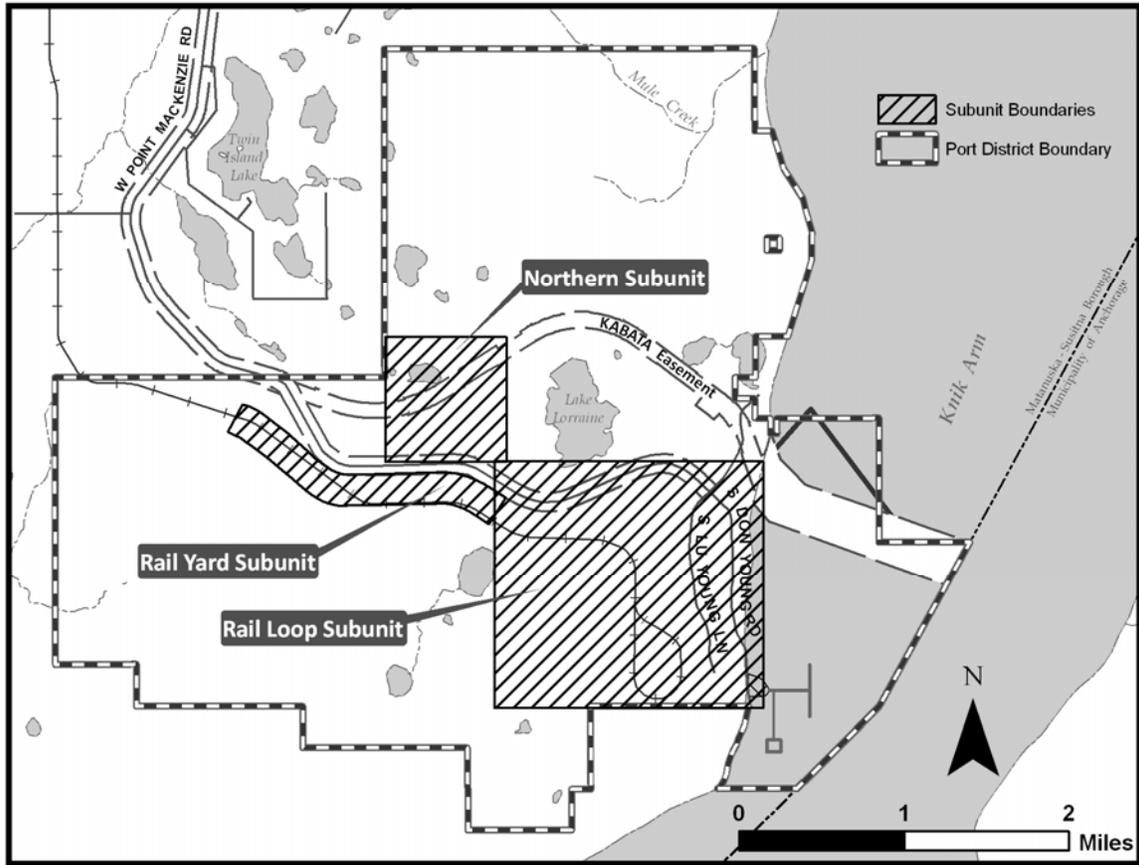
The Port Industrial District – I is reserved for industrial uses that require close proximity to the marine terminal and railroad.

#### Port Industrial District – I Planning District Subunits

The Port Industrial District – I consists of 3,047 acres of land. The plan for this area is to retain and continue marine/rail-related industrial uses. To facilitate description of the existing and future uses, portions of this planning district have been divided into the following subunits illustrated on Figure 5:

- Rail Loop Subunit;
- Rail Corridor Subunit; and the
- Northern Subunit.

**Figure 5. PID-I Subunits**



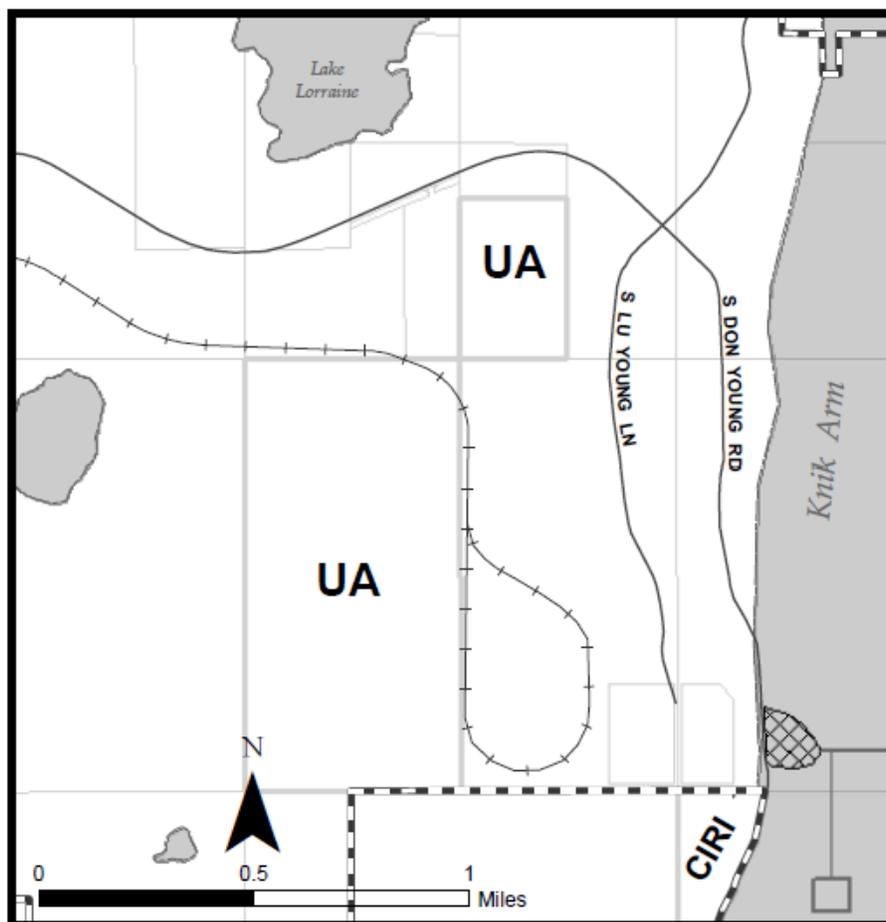
**3.3.1 Rail Loop Subunit**

This subunit is comprised of 1,573 acres around a future rail loop and will contain the various industries that relate to the rail loop and marine terminal (see Figure 6).

A 30-acre area has been cleared at the end of S. Lu Young Lane, uphill from the dock. The area includes two 20,000-square foot storage warehouses, a paved, five-acre bulk material storage and loading area, and a 60-inch wide, 3,000-foot long privately owned conveyor system. The elevated conveyor system extends from the bulk material stockpile area down to the docks.

A modular facility construction plant is located on a sixteen-acre cleared area, south of Point MacKenzie Road across from Lake Lorraine. Approximately 30 acres west of the modular construction plant has been cleared and used as a sand and gravel source.

**Figure 6. PID-I: Rail Loop Subunit**



The rail loop is designed to handle 100-car unit trains hauling bulk materials. The interior of the rail loop contains about 80 acres reserved for bulk material handling. Expanded rail facilities are anticipated to serve bulk fuel storage, value added gas processing and storage, and other future industrial uses in the area. Bulk commodities will be off loaded and stored within and adjacent to the rail loop. Multiple car unloaders are anticipated to accommodate a variety of commodities.

The Port MacKenzie Layout Drawings in Appendix A illustrate the anticipated future layout of land uses, utilities, and the surface transportation network.

Cargo operations in this subunit are expected to continue and expand with additional area used for staging exports and providing for imported commodity storage. Water linked uses should be located in this subunit along the material handling corridor or road system. Expected uses are noted below:

### **Coal**

An area suitable for the projected volume of coal delivered via truck has been identified adjacent to the rail loop nearest the marine terminal. A similar area within the rail loop has been identified for the projected volume of coal to arrive by train. The size and location of both areas were developed

based on discussions with several representatives from Usibelli Coal (Denton, 2010) and the recommendations of an engineer specializing in bulk material movement (Hoggan, 2010). Expansion of the conveyor corridor to service the interior of the rail loop as well as the area identified for truck coal will include additional conveyor belts.

### **Mineral Concentrates and Other Bulk Commodities**

Multiple commodities can be off-loaded from trains and stored inside the rail loop. Area within the rail loop has also been identified as future stockpiling areas for coal, limestone products, mineral concentrates or other bulk commodities yet to be identified. Land immediately northeast of the rail loop has been identified for additional bulk package/material storage to serve the existing and anticipated mines in Interior Alaska (see Appendix A). This area is for ore concentrate containers such as copper, zinc and lead.<sup>2</sup> This area can be used for expanded petrochemical product handling and storage, truck coal, cement, gravel or other products that are associated with truck or rail.

### **Petroleum Products**

Tank farm area has been identified for bulk petroleum product storage immediately north of the rail loop<sup>3</sup>. Locations for pipeline, valve yards, truck, rail, and vessel loading racks are illustrated on the Port MacKenzie Layout Drawings in Appendix A. It is anticipated that both deep-draft vessels and barges will be loaded and unloaded with petroleum products and the location is close enough to meet this need. The proximity of the tank farm to the rail loop also allows for the loading or unloading of a unit train with petroleum products.

Two areas are identified for future value-added natural gas processing facilities. One is north and east of the tank farm area. This area is suitable for a natural gas processing and liquefaction plant that would require about 60 acres.

A large petrochemical complex, which could process the natural gas into a host of industrial chemicals, would require about 100 acres. This area has been identified at the western edge of this planning subunit.

### **Pipeline Logistics**

Several lease areas have been identified as suitable for import and processing of the pipe and associated materials required to construct a natural gas pipeline. The lease area labeled fabrication on the Port MacKenzie Layout Drawings in Appendix A is tentatively identified as the location for pipeline logistical support. Prior to pipeline construction use, the fabrication area could be used for initial sea-lift module fabrication before final assembly on the barge dock.

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<sup>2</sup> An engineer specializing in bulk material handling from mines to tidewater assisted in determining the acreage necessary to support the anticipated volume of future cargo, which is reflected in the areas set aside for bulk material storage.

<sup>3</sup> Tank farm location was based on interviews with potential future port users as well as an evaluation of the Port of Anchorage operations.

## Transportation and Logistical Support

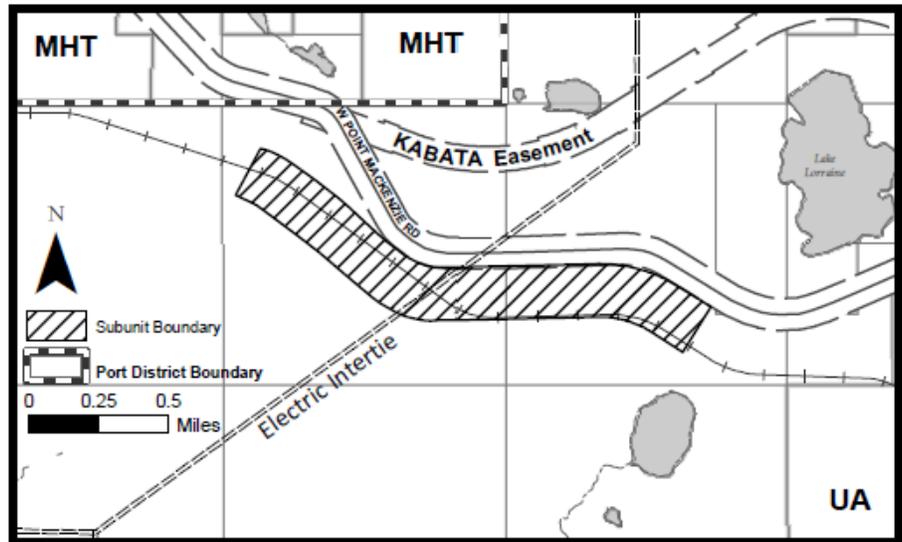
The area adjacent to the eastern boundary of the potential pipeline logistics site has been identified as suitable for transportation and logistical support.

## Ferry Queuing

A scenic outlook at the beginning of the hill down to the marine terminal has been identified for ferry traffic queuing.

### 3.3.2 Rail Yard Subunit

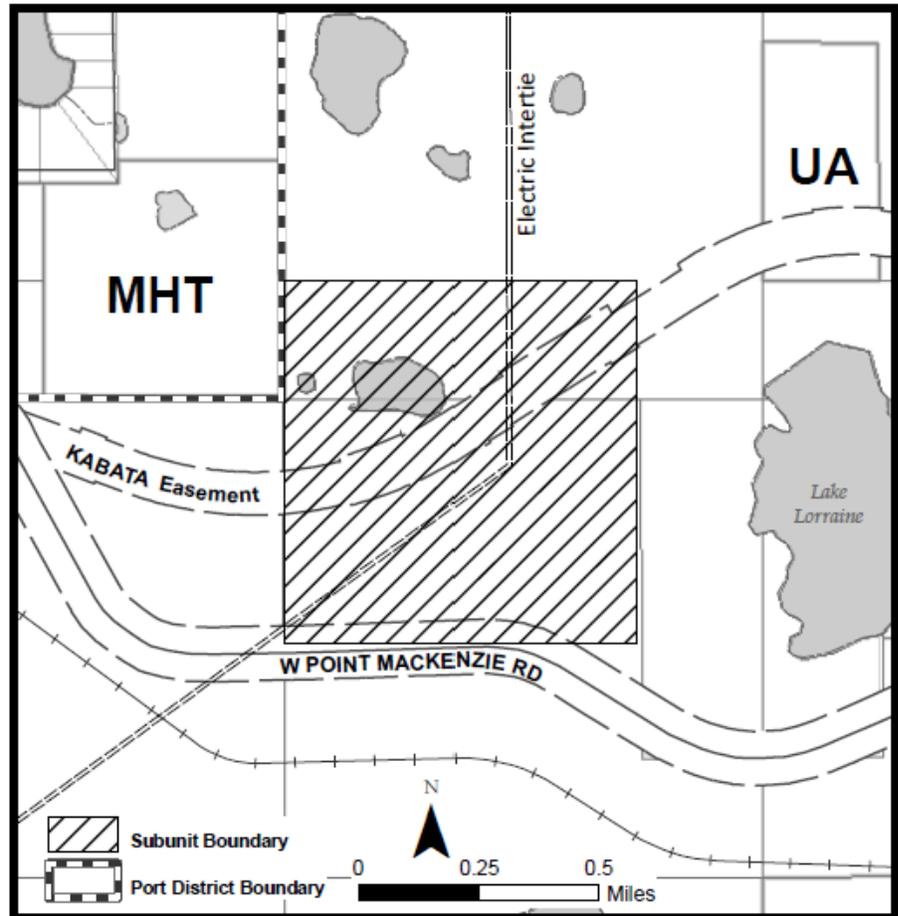
This subunit, shown to the right, is comprised of about 215 acres which are currently undeveloped except for Point MacKenzie Road and the electric and telephone utilities. Rail-dependent development is anticipated in this subunit. This area will be occupied by a large number of transportation related uses such as roads and railroad switching yards. This Master Plan calls for continuing the rail-oriented activities. The anticipated primary land use will be an Alaska Railroad rail yard. An alternate location is under consideration for the Rail Yard subunit which is shown in the surface transportation board environmental impact statement for the rail extension.



A parking lot south of Point MacKenzie Road is currently used for winter access to Figure Eight Lake as well as private property south of the Port District. The parking lot may be relocated so it does not conflict with the marine/rail-industrial uses of the Port.

### 3.3.3 Northern Subunit

This subunit is comprised of 356 acres and is bisected by high-tension power transmission lines (inset to the right). The remaining land with this subunit is undeveloped. The southern portion of the subunit (~100 acres) north of Point MacKenzie Road and south of the Knik Arm Bridge easement has been identified as suitable for a power generation plant. Other heavy and light industrial uses that do not require direct access to docks should locate here. A rail spur may be developed into this area. The easement for the Knik Arm Bridge passes through the northern half of this subunit. In addition, a quarter mile noise and lighting buffer exists along the inside of the western boundary of this subunit. The remainder of this subunit is suitable for other industrial processes.



### 3.4 Port Industrial District - II (PID-II)

The Port Industrial District – II consists of 3,095 acres of land in three separate areas. About 624 acres lie along the bluff including the Knik Arm Bridge up to the northern boundary of the Port District. About 2,390 acres encompass the southwest corner of the Port District. About 140 acres of this district contain the intersection of Point MacKenzie Road and the Knik Arm Bridge Road. The plan for these areas is to locate commercial and industrial uses that do not require close proximity to the docks or railroad, such as general manufacturing. An area within this district has been identified as suitable for a large petrochemical storage and processing facility, directly west of the rail loop. Transient commodity storage is anticipated to occur south of Point MacKenzie Road just inside the Port District Boundary. A quarter-mile noise and lighting buffer along the inside of the northern and northwestern boundaries of the Port is also included in this land use district.

### **3.5 Port Commercial District (PCD)**

The Port Commercial District includes about 1021 acres around Lake Lorraine, extending to the northeast. The plan for this area is to locate commercial and light industrial uses not related to the marine terminal or railroad, incineration or transient storage. The boundaries of this district are shown on Figure 3. Land in this district is primarily undeveloped. A loop road is planned around Lake Lorraine to service the commercial district. Land use within the loop will be restricted those uses commonly found in a business/industrial park. Commercial and light industrial uses are allowed within this district.

#### **Commercial Offices**

Commercial office uses are tentatively planned for the land surrounding Lake Lorraine. Lake Lorraine is an ideal area for employee open space to be incorporated with offices. Corporate and general lease office space will serve as a picturesque setting for Port related businesses. The construction of the Knik Arm Bridge will further enhance the value Port Commercial District. Though this is set aside for Port-related commercial business and office uses, it is openly acknowledged that it is in close proximity to heavy industrial activities and that off-site effects of the industrial activities such as noise are an accepted component of the area. A 200-foot, no development, buffer zone around the circumference of the entire lake ensures that the water's edge will be maintained in its natural state.

#### **Foreign Trade Zone**

A tax free industrial and manufacturing area is identified northeast of Lake Lorrain to provide a secure area that businesses can bring materials into the 'Free Port', provide assembly and value added services, and then export the finished items through the Port without incurring value added taxes. The Point MacKenzie Freeport Center would provide manufacturing, warehousing and distributing facilities to serve the Pacific Rim. As a separately controlled security area, the Freeport center will meet all necessary customs and quarantine requirements.

### **3.6 Port Conservation District (PCVD)**

The boundaries of this district are shown on Figure 3. The 1,753 acres of land in this district are primarily wetlands with little or no development at this time. The intent is to preserve, maintain and enhance natural habitat areas so that biological productivity will be sustained. The primary feature of this area is Mule Creek in the northern most portion of the district. Mule Creek is listed in the Alaska Department of Fish and Game Catalog of Waters Important for the Spawning, Rearing or Migration of Anadromous Fishes as a salmon-bearing stream used by Coho for spawning and rearing. The intent of this district is to set aside high-value wetlands to be used as mitigation for Port-related development projects.

## 4. Transportation

### 4.1 Introduction

This chapter addresses the existing and future transportation facilities and traffic to integrate the transportation needs of the Port District into a regional context.

The Port, as an intermodal facility, requires unimpeded access to the surface transportation system beyond the Port District. Port traffic is largely industrial with a subset of public traffic utilizing the Cook Inlet Ferry System or accessing nearby private property.

#### 4.1.1 Existing Conditions

**West Point MacKenzie Road**, as a major arterial, is the primary access road for the Port entering the Port District from the west and heading east for about three miles. The route becomes Don Young Road at a four-way intersection and continues 1.5 miles to the docks.

**South Lu Young Lane**, a minor collector, provides access to lease lots on the land above the docks. The roadway is about one mile long and heads south from the four-way intersection terminating at a private gate to the south of the NPI lease area. This roadway is currently used by industrial truck traffic to transport bulk materials to a 22-acre bulk material storage area.

**South Grain Terminal Access Road**, a minor collector, extends about three-quarters of a mile northeast from the four-way intersection ending just outside the Port District at the Knik Dock, a privately owned parcel.

The **Bi-Modal Bulk Facility (BMBF)**, a minor collector, located approximately one mile northwest of the docks, includes a 1.7-mile-long roadway and an adjacent bulk material storage pad of approximately 82 acres. The road provides connectivity between Point MacKenzie Road and South Lu Young Lane and segregates heavy inbound trucks from traffic to the docks.

### 4.2 Transportation Trends

Significant growth and development are anticipated over the next ten years in the Point MacKenzie community. While less than 300 people are currently estimated to live in the community, the development of the Cook Inlet Ferry system, construction and operation of the Goose Creek Correctional Center, and connecting the Port to the Alaska Railroad will continue to create and sustain jobs which will lead to a local population boom. A conservative annual population growth rate used in the MSB build-out analysis for the Point MacKenzie community is eight percent.

The primary mode of travel in Point MacKenzie is by road. In the next five to ten years, bus and share-a-ride van pools will be used for transit services to and from the Port and area businesses.

Traffic count data was available for two points along Point MacKenzie Road: one south of the intersection with Holstein Avenue, the other south of Alsop Road. Table 4.1 lists the traffic data (1999-2009) for Point MacKenzie Road south of the intersections with Ayrshire Avenue, Holstein Avenue and Alsop Road. The data indicate traffic is growing on Point MacKenzie Road. The significant increases in traffic volume are related to development projects at the Port.

**Table 4.1. Traffic Count Data**

<b>Pt MacKenzie Road Traffic Counts</b>				
<b>Location</b>	<b>1999</b>	<b>2000</b>	<b>2003</b>	<b>2009</b>
S. of Holstein	53	65	211	-
S. of Alsop	-	-	-	323

- means no data available

Increasing local population, increasing industrial traffic, operation of the correctional center and ferry traffic are all expected to result in an increased number of vehicles using Point MacKenzie Road. Insufficient data exists to project traffic growth rates on Point MacKenzie Road.

Additional data is required to determine the average daily traffic count for the Port District.

### **4.3 Multi-Modal Opportunities**

The Port MacKenzie transportation network is designed to incorporate multiple modes of travel and freight/bulk material transportation. Upgrades to existing conditions, an understanding of regional transportation trends, and infrastructure requirements of future industrial activities assist in facilitating multi-modal transportation opportunities. The transportation system is designed to be multi-modal, containing roads, rail, marine, and pipeline/conveyor transportation elements.

The Bi-Modal Bulk Facility (BMBF) is critical in providing multi-modal transportation opportunities to aid the development of Port MacKenzie as a major exporter of bulk commodities. The BMBF includes 82 acres of bulk material storage. Aggregate storage pads will be serviced primarily by truck during the initial stages of operation. The facility has 1.7 miles of roadway that provide connectivity with Point MacKenzie Road and South Lu Young Lane.

As a world-class export facility, shipping operations are more dependent on rail as the principal bulk materials delivery method. The element of the Port MacKenzie transportation system that stitches together multi-modal opportunities are the intermodal transfer connections. These intermodal transfer connections consist of internal roadways, rail lines, pipelines and conveyor systems for bulk commodities and liquid products, a barge dock, and a deep-draft dock to import and export materials from Port MacKenzie. A fully-developed multi-modal port will serve as a key transportation asset for the state of Alaska and positions the Port District to attract significant new private investment and employment opportunities.

## **4.4 Rail Service**

The forthcoming Port MacKenzie Rail Extension connects the Port District to the Alaska Railroad Corporation mainline system. With about 40 miles of new rail, the rail extension will terminate in a loop enclosing approximately 78 acres for storage of bulk commodities, such as coal, limestone, aggregates, and other minerals resulting in greatly increased industrial activity.

The loop was designed to accommodate storage of multiple bulk commodities. At least two bulk material car unloaders will be needed: one for coal and one for limestone. A location for a bulk fuel loading and unloading system has been identified adjacent to the tank farm located along the rail loop. This facility will provide piping, pumps and discharge equipment to fill rolling stock tank cars for fuel delivery. The location is designed to supply a 100-car train with bulk fuel without having split to the train load.

Parcels ideal for industrial manufacturing and fabrication operations which are not dependant on proximity to tidelands will be serviced by a combination of rail and roadway elements. As the Port develops, various rail spurs will be constructed as offshoots of the rail extension project. These spurs are anticipated to service industries largely dependent on rail as a primary mode of transporting material and products. Areas identified as fabrication, modular fabrication, bulk aggregate storage, tank farm, and gas-derived products can be served with multiple rail spur extensions. An alternative rail configuration is shown on the layout drawing for the 15+ year time interval labeled Option B. The Option B rail configuration includes a larger, second rail loop to the north of the small, teardrop loop. Actual configuration of rail within the Port may be a combination of both spurs and a second loop.

## **4.5 Truck Service**

In the near term, trucking will serve as the primary method for moving bulk commodities and other materials in and out of the Port District. The Port offers various routes to facilitate efficient transport. Heavy industrial vehicle trips are distributed depending on the type of material being transported and the delivery schedules of such materials. Shipments scheduled to be directly loaded on a barge or staged on the barge dock access the docks by traveling on Don Young Lane. An additional 22 acres has been identified as suitable for coal storage transported by trucks that are accessed by South Lu Young Lane. This route will offer direct access to bulk commodity storage areas where material will be stored and delivered to ships by conveyor.

## **4.6 Traffic Circulation**

Efficient and safe traffic circulation is predicated on an understanding of the trips generated from overall Port activities. The Bi-Modal Bulk Facility serves as an initial conduit for distributing bulk commodity truck traffic from other industrial material shipments accessing the docks.

Ferry traffic bypasses the BMBF and continues on Port MacKenzie Road to the ferry traffic queuing area. While some industrial traffic will continue to utilize Port MacKenzie Road as a means to access the docks, industrial traffic will be controlled to mitigate conflict between private

vehicles and heavy industrial traffic. Traffic signals at the ferry queuing area and ferry terminal will be installed when necessary.

This Master Plan recognizes the existing section line easements that occur in the Port District as legal access to privately owned land in and around the District. Any vacations of section line easement will require provision of adequate alternate access and Borough support.

As land around Lake Lorraine develops as a commercial district, traffic generated from various professional, commercial and office-related land uses will also be distributed prior to entering the industrial districts. A road network is designed to surround Lake Lorraine which will be accessed from Point MacKenzie Road. This second-tier road network will provide on-site circulation to individual lease lots within the Port District.

The Knik Arm Bridge and Toll Authority (KABATA) easement was used for planning purposes to design a roadway that conveniently and efficiently bypasses the commercial and industrial districts of the Port. Although heavy industrial, light commercial and recreational traffic will access Port MacKenzie Road, trips generated from the Kink Arm Bridge will be redirected prior to entering both the commercial and industrial boundaries of the Port (Frazier, 2010).

#### **4.7 Ferry Landing**

The Ferry Landing and Ferry Dock will be accessed from Don Young Lane. The M/V Susitna has the capacity to hold 20 vehicles per one-way trip. A scenic outlook at the beginning of the hill on Don Young Lane has been identified for ferry traffic queuing. A pilot car may be used to efficiently distribute traffic to and from the ferry. A south port access road may be developed to provide an alternative access for ferry and recreational traffic to bypass the industrial land uses of the Port District.

#### **4.8 On-Site Circulation**

On-site circulation focuses on the design of access connections serving site development and the relationship between site circulation and access to the abutting roadway. Roadway functions, access hierarchy and the principles of safe and efficient access should be considered to promote well-organized transportation development of the Port District. Level of Service (LOS) classifications for the road network will determine the right-of-way required to design a circulation system capable of establishing safe and efficient on-site circulation patterns. Guidelines should be drafted to include driveway operations for various commercial and industrial activities, including ingress/egress maneuverability and speed, throat length and driveway geometrics.

Proper on-site circulation design is achieved when three major elements – access location and design, site circulation and parking, building footprint and location – are integrated into the overall development plan. Site circulation directly affects the safety, traffic operations and the assigned LOS functional of the street system. Good site circulation is necessary to protect the integrity of the public streets. Driveways should allow for sufficient stacking distances to meet the needs of tenant operators. Leasees shall provide adequate on-site parking and adequate space for loading and unloading at all times.

## 4.9 Future Transportation Improvements

Future transportation improvements will be necessary to facilitate efficient and safe multi-modal surface transportation of vehicles, people, and commodities. The Borough will pursue geometric roadway improvements such as widening for anticipated roadway and utility expansion, potentially adding roundabouts or signals to high volume intersections, and/or adding turning lanes. These improvements will be required to mitigate the traffic impacts from homogenizing industrial, commercial, and recreational traffic usage and maintain required Level of Service (LOS) grades for Port MacKenzie roadways. Roadway LOS is a measure of roadway congestion ranging from LOS A (least congested) to LOS F (most congested). The LOS grading structure is a qualitative assessment heavily based on rate of speed and travel distances. LOS is one of the most common terms used to describe how "good" or how "bad" traffic is projected to be along a particular roadway in a defined geographical area. LOS serves as a benchmark to determine whether transportation improvements for Port MacKenzie will comply with existing LOS grades.

Future transportation improvements should also consider Volume to Capacity (V/C) ratio in conjunction with LOS grades to develop an appropriate and proficient surface transportation system. The V/C ratio is a measure of traffic demand on a facility (expressed as volume) compared to its traffic-carrying capacity. Traffic volumes of a particular roadway are generally expressed as average daily traffic (ADT) or vehicle per hour (VPH) for a specific street segment. Potential choke points due to future rail service, transportation of modular products via heavy trucks and peak ferry traffic may indicate that a roadway facility is operating at or near capacity. Port traffic moving at an acceptable rate of speed will perform at suitable LOS grades. However, segments of the transportation system may indicate the facility is operating at or near capacity despite acceptable LOS grades. In-road traffic counting loops should be installed to provide long-term data for use in determining need for future improvements.

## **5. Facilities/Utilities**

### **5.1 Introduction**

This chapter addresses the existing and future facility and utility needs for development of Port MacKenzie. Utilities, as a group, include emergency/fire suppression, potable water, wastewater, storm water systems, electrical service, pipelines, conveyors, and natural gas. The availability of such utilities and facilities will encourage the development of Port MacKenzie for large-scaled industrial, manufacturing and commercial uses. Utility layout is shown in the Port MacKenzie Layout Drawings in Appendix A. All utilities should be buried when crossing public roads and railways to allow for unfettered movement of tall freight.

An important consideration for future utility and facility requirements is the estimation of potential industrial, manufacturing and commercial activity. Utility and facility needs can be estimated by the overall utility usage of certain land uses and the distribution and intensity of these uses.

### **5.2 Ferry Terminal Building**

A 7,000-square foot ferry terminal building was constructed in 2006 at the southeast end of the barge dock. The ferry terminal building includes ticketing counters, waiting areas, office space, storage, restroom areas, and will offer a fast commute for contractors working at Port MacKenzie.

### **5.3 Security Posts**

A security post has been identified at the termination of Port Mackenzie Road. The general public and ferry traffic will be directed by signage to a security post at the beginning of Don Young Road. The Security Gate will control traffic proceeding along Don Young Road to and from the dock. At the security gate, public traffic will be directed to a parking and ferry vehicle queuing area. A pilot car may be used to direct ferry traffic from the queuing area to the M/V Susitna. Locations for future security posts are illustrated on the Port layout drawings in Appendix A.

### **5.4 Deep-Draft Dock**

Port MacKenzie contains a fully integrated and operational deep-water marine port with a 1,200' deep-draft dock. The deep-draft dock, with -60 MLLW, is capable of handling the world's largest vessels. The deep-draft dock is equipped with a conveyor system capable of loading bulk commodities at up to 2,000 tons/hour. An additional trestle will allow for more rapid transport of cargo on and off vessels. The design will also allow for roll-on/roll-off containers. Future development of the deep-draft dock must accommodate fuel and cement loading and unloading.

### **5.5 Barge Dock**

The 16-acre open-cell barge dock has a 500-foot bulkhead barge dock with a Depth to MLLW at of -20. Expansion of the barge dock to the south should occur to assist with loading large modules.

Space for loading and unloading racks for liquid petroleum and liquefied natural gas should be established in the near term.

## **5.6 Conveyors**

A 3,000-foot long, 5-foot wide, privately owned elevated conveyor system extends from the 22-acre bulk material stockpile area down to the deep-draft dock. Expansion of the conveyor corridor to service the interior of the rail loop as well as the area identified for truck coal will include additional conveyor belts. This expansion will allow bulk commodities to be loaded at a higher volume per hour. The existing conveyor was designed to accommodate a second conveyor on the same support structures.

## **5.7 Pipelines**

Pipelines are a necessary component of Port infrastructure. Pipelines will be constructed on the east and south sides of the tank farm to facilitate the loading and unloading of bulk fuel shipments onto both rail tankers and tanker trucks. The pipeline corridor is designed to follow the rail loop and continue eastward on the south side of the bulk material storage area. Pipelines will follow the conveyor utility corridors and access the barge dock and deep-draft dock to allow for loading and unloading of fuel onto ships. Multiple pipelines will be constructed to permit the loading and unloading of not only bulk liquid products but also bulk cement, liquefied natural gas and other liquid petroleum products.

## **5.8 Potable Water**

In the near term, incremental development of industrial land uses will require the construction of onsite well systems for potable water. As the Port develops into a world class export facility, placement of storage tanks, treatment facilities, pumping stations and piping need to be carefully considered in the overall facility and utility evaluation. The demand for potable water will be evaluated based on the composition of commercial and industrial land uses compared to the consumption of each type of use. Placement of potable water systems will be evaluated based on industrial density, soil composition and the topographical features of the Port District.

## **5.9 Wastewater Management**

Development of industrial land uses will utilize onsite septic facilities for wastewater management. Continuous development of industrial and commercial uses will require the construction of large-scale treatment facilities to efficiently manage wastewater. Location of treatment plants, pumping stations, and possibly irrigation land (to meet federally mandated tertiary treatment standards) must be identified and planned to meet local demand.

## **5.10 Storm Water Management**

Storm water is the surface runoff that results from rain and snowmelt that flows over land or impervious surfaces. Development at Port MacKenzie will alter the land's natural retention and

absorption capabilities. An increase in industrial and commercial activity will introduce a host of pollutants (i.e., sediment, oil, grease, metals, salt, pathogens and/or other toxins). These pollutants can accumulate on impervious surfaces such as rooftops, roads, storage areas and parking lots which can be picked up by storm water runoff as it moves across these surfaces. Uncontrolled storm water discharges from Port activities can negatively affect water quality, elevate pollutant concentrations and change natural hydrologic patterns.

The state's approved program is called the Alaska Pollutant Discharge Elimination System (APDES) Program. The APDES storm water permit requirements are based largely on a pollution-prevention approach. The most effective storm water management techniques emphasize preventing rain and snowmelt from coming into contact with pollutants and preventing discharges directly to nearby receiving waters. APDES storm water permits require operators of permitted activities or systems to use best management practices (BMPs) designed to effectively protect water quality for their particular site conditions and activity. BMPs include ditches, curbs, gutters, man-made channels, storm drains, storm sewers and similar means of collecting or conveying runoff that do not connect with a wastewater collection system or treatment plant. Development of the Port District shall utilize BMPs for the facilitation of storm water management systems.

## **5.11 Electric**

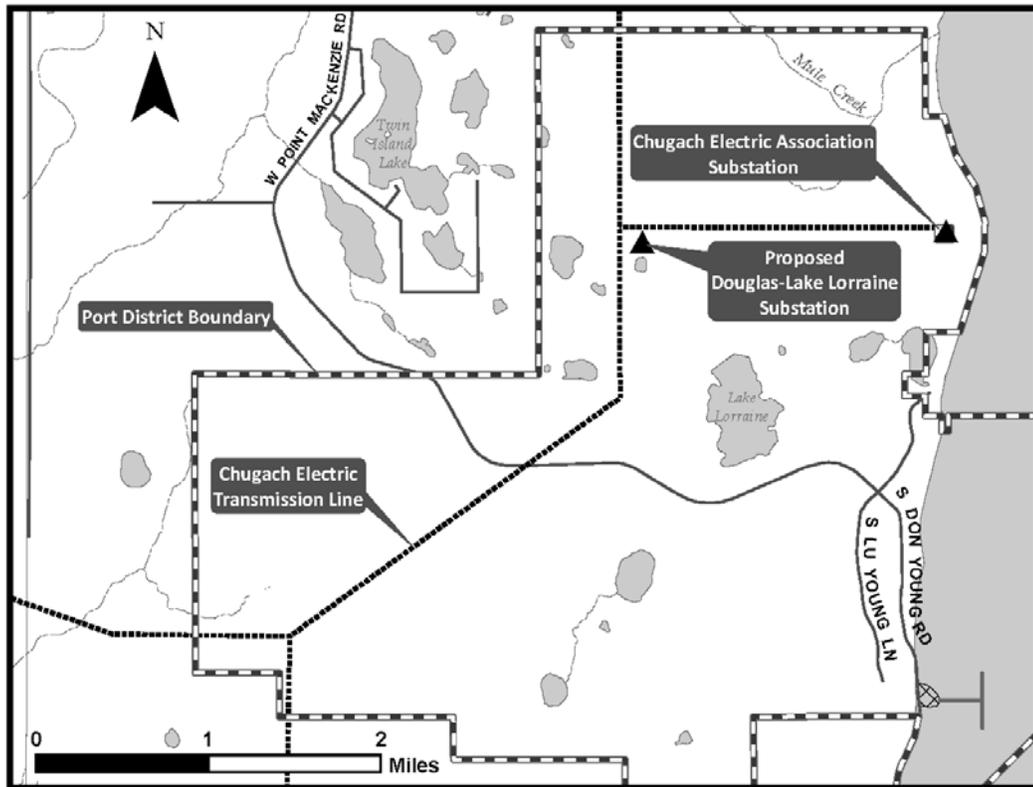
Two high-voltage electric transmission lines (230 kilovolt) enter the Port District from the southwest heading northeast. The lines turn north after crossing Point MacKenzie Road and branch once to the east where a buried transmission line crosses the Knik Arm to Elmendorf Air Force Base.

Three-phase electric power is available along Point MacKenzie Road to the barge dock. The lines are buried the last 2.3 miles. Matanuska Electric Association currently supplies electric power to the Port District via a substation and multiple 13.8 kV overhead lines. Although this power output is sufficient for the demands of current operators, incremental development will require additional electrical power loads. Electric service requirements will be determined by the electrical demand of future land uses. The location for future substation development and easement is illustrated in Figure 7.

### **Lake Lorraine Sub-Station**

As development occurs, electric power use will need to maintain capacity to power individual industrial and commercial uses within the Port District. A substation should be pursued as a top priority to encourage the development of industrial and commercial land uses. An ideal location is north of Lake Lorraine, where dense commercial development is encouraged. The area west of Lake Lorraine and Port MacKenzie Road has been identified as suitable for a power generation facility.

**Figure 7: Electrical Substations**



### **5.12 Natural Gas**

Planning for a Port MacKenzie power plant is prudent given the anticipated capacity of industrial, manufacturing and commercial uses. Natural gas delivery will be developed to sustain large-scale industrial and commercial activity at Port MacKenzie. Current plans call for a 10-inch, high-pressure gas transmission line to be extended from Mile 39 Beluga pipeline located approximately 14 miles away for near-term natural gas usage. Distribution lines within the Port District will be developed in multiple grid patterns.

### **5.13 Communications**

A telephone-microwave-relay facility was constructed by Matanuska Telephone Association to receive signals from another tower in Eagle River. Telephone lines are also buried within the utility easement. Internet service was upgraded to high speed DSL in 2007.

## 6. Recommendations

The following recommendations are the result of issues that arose during the Master Plan development that were not addressed in depth in the plan because of timing or other appropriate reasons. They include suggestions of future assessments, reviews and studies to meet or enhance specific actions to support the business of a successful Port District. The recommendations are not listed in priority order.

### 6.1 Administrative

- 1) The Master Plan should continue to be a living document with updates after significant Port development activities.
- 2) A Port Management Code should be developed to serve as guidance for items such as:
  - administrative operating procedures;
  - leasing procedures and requirements, including timing of environmental audits before, during, and after leasing;
  - standards and special permit and lease stipulations unique to the Port; and
  - tenant responsibilities.
- 3) Review of Borough Code 17.23, Point Mackenzie Port Special Use District, 18, Port, and others to offer changes which will make management of the Port District more efficient.
- 4) Create a more informative, interactive web presence, both as a marketing tool and as a means for public access to information about the port.
- 5) Develop a forward-thinking marketing plan for the Port that examines potential positioning strategies best suited for the Port.
- 6) Develop options for leasing practices. Evaluate if competition for leases, rights or franchises will be effective in sustaining competition and maintaining incentives for Port improvements. The evaluation should include consideration of:
  - Availability of private funding for investment in the Port.
  - Which categories of port assets should private investors be at risk for providing, maintaining and repairing versus those for which the public sector will be responsible
  - On what basis should user fees or subsidies be used to cover the cost of long-lived port assets?
- 7) Designate the Port District as a Fire Service District.
- 8) As the Port develops, designate the Port District as an Enhanced Service District that includes roads, water and sewer.

## 6.2 Infrastructure

- 1) Develop a Transportation Plan for the Port District which in part considers and addresses the following:
  - a. Guidelines for driveway operations for various commercial and industrial activities, including ingress/egress maneuverability and speed, throat length and driveway geometrics, etc.;
  - b. Increasing the load capacity and width of the roads within the Port;
  - c. A Road Corridor Access strategy for Point MacKenzie Road through Burma Road to the Parks Highway ;
  - d. Relocating the parking lot south of Point MacKenzie Road used to access Figure Eight Lake and private property south of the Port District so it does not conflict with the marine/rail industrial uses of the Port;
  - e. Assessing the need and location of permanent access through the Port District to property south of the Port District; and
  - f. Water flowing along Don Young Road suggests that a perched aquifer surfaces along the bluff above the road. Develop a bluff slope stability strategy that recommends appropriate dewatering and water control methods.
- 2) The Port Commission should determine what additional facilities will be necessary to accommodate and support Port tenants and users. Evaluate the need for facilities such as transient housing (motel/hotel/temporary trailer, etc.), office space, commercial space for restaurants, gas stations, office space , ATV sales and maintenance, etc.
- 3) Develop a utilities plan that identifies sources and corridors for water, sewer, power, communication, and gas utilities to meet Port and tenant needs. The plan should include designation of the Water and Wastewater treatment facilities.

## 6.3 Environmental Studies

- 1) A study on the Hydrology and Hydraulic Environment of Knik Arm included information on the sedimentation effects of the proposed Knik Arm Bridge embankments on sediment deposition, but no details about how far to the south that sedimentation extends (i.e. how it would affect the Port). Additional analysis is necessary to determine the effects of the proposed Knik Arm Bridge on Port Operations. Extent and magnitude of sedimentation resulting from the proposed causeways should be a focus of the analysis.
- 2) A hydrologic study of the Port district should be conducted to determine where future potable and industrial water supplies should be developed.

- 3) A regional wetland assessment was conducted in 2006. The assessment did not include a classification of the wetlands. Additional wetland mapping and classification should be completed for the Port District.
- 4) Conduct a noise study as the port develops. Include a description of the buffering necessary to mitigate identified potential negative effects of noise.

#### **6.4 Port Land Management**

- 1) Additional cultural resource inventory transects must be conducted in advance of port development. Inventories should be conducted according to the anticipated development schedule illustrated in Appendix A. Cultural resource inventory transects that have been completed, and that need to be completed, are shown in Appendix B.
- 2) A strategic land acquisition study should be conducted to determine if and how the land base of the Port District should be expanded. The study should provide guidance for future acquisition of strategically located parcels within and outside the Port District to meet land use needs or to avoid negative impacts on wetlands. Include consideration of adding the 7-Mile Lake area to the District to accommodate the recommendation of the MSB Regional Aviation Systems Plan Airport Location Study for development of a land/seaplane airport at 7-Mile Lake.
- 3) Develop a landscaping plan for the Port District that utilizes the benefits of vegetative cover in buffering roadside views, or providing small rest and outdoor lunch areas, etc.

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## 8. Glossary of Terms

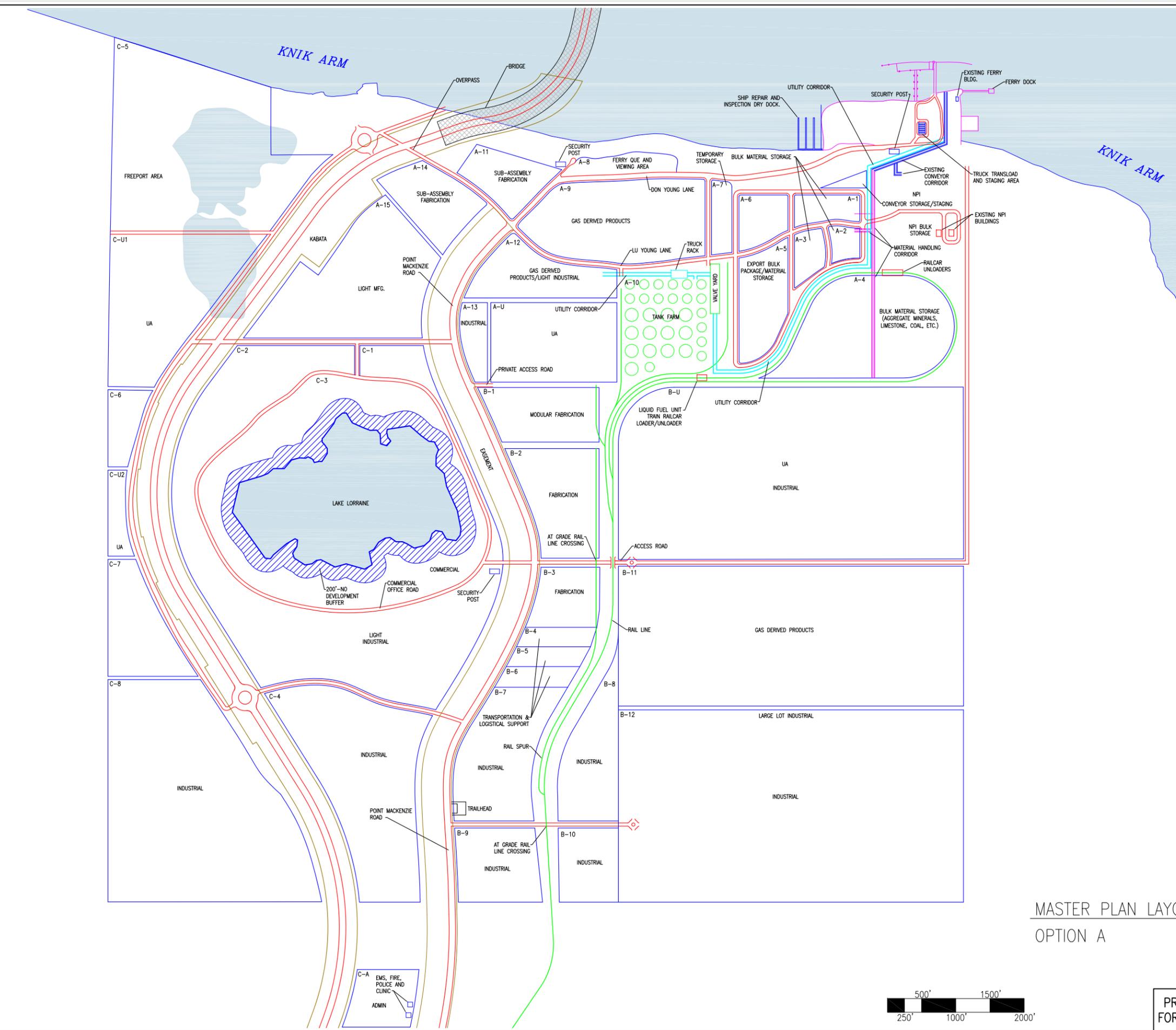
**“Commodity”** means an economic good, such as a product of agriculture or mining or an article of commerce, especially when delivered for shipment.

**"Tidelands,"** properly speaking, are lands between the lines of mean high tide and mean low tide, whereas "submerged lands" are those seaward of mean low tide and not uncovered in the ordinary ebb and flow of the tide. For literary convenience the term "tidelands" will refer to both types of property in the plan.

## **Appendix A – Port MacKenzie Layout Drawings**

- 1) Master Plan Layout Option A**
- 2) Master Plan Layout Option B**
- 3) Facilities Layout Years 1 – 5**
- 4) Facilities Layout Years 5 – 10**
- 5) Facilities Layout Years 10 – 15**
- 6) Facilities Layout Years 15+ Option A**
- 7) Master Plan Utility Corridors Option A**
- 8) Facilities Layout Years 15+ Option B**
- 9) Master Plan Utility Corridors Option B**





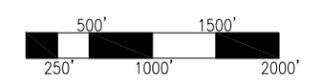
**LEGEND**

- ROAD
- RAIL
- EASEMENTS
- PIPELINE
- CONVEYOR
- BULK FUEL STORAGE TANK
- UTILITY CORRIDOR

\*RELOCATE EXISTING UTILITIES TO 20' UTILITY CORRIDOR ALONG ROADWAYS AS PAD DEVELOPMENT OCCURS

<b>Area A</b>	
Lease Lots	A-1 thru A-15
UA Land	A-U
<b>Area B</b>	
Lease Lots	B-1 thru B-12
UA Land	B-U
<b>Area C</b>	
Lease Lots	C-1 thru C-8
UA Land	C-U1 thru C-U2

MASTER PLAN LAYOUT  
OPTION A



PRELIMINARY NOT FOR CONSTRUCTION

Note: Data modified by MSB Planning Dept. All lots identified in this map are conceptual in nature and do not define a legal description.

MASTER PLAN LAYOUT OPTION A

PORT MACKENZIE  
ALASKA

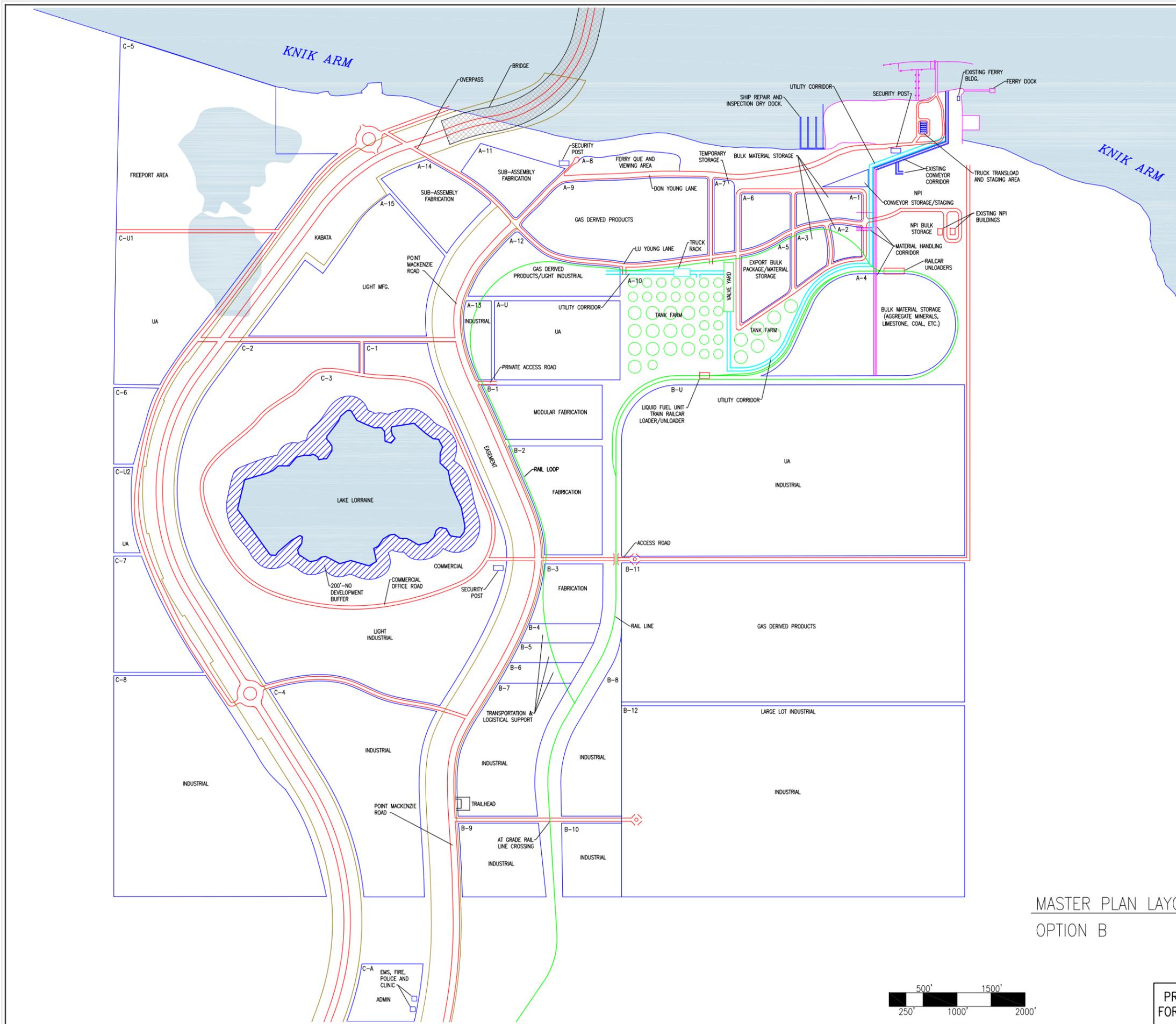
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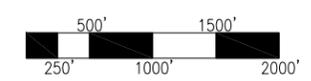
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- BULK FUEL STORAGE TANK
- UTILITY CORRIDOR

\*RELOCATE EXISTING UTILITIES TO 20' UTILITY CORRIDOR ALONG ROADWAYS AS PAD DEVELOPMENT OCCURS

<u>Area A</u>	
Lease Lots	A-1 thru A-15
UA Land	A-U
<u>Area B</u>	
Lease Lots	B-1 thru B-12
UA Land	B-U
<u>Area C</u>	
Lease Lots	C-1 thru C-8
UA Land	C-U1 thru C-U2

MASTER PLAN LAYOUT  
OPTION B



PRELIMINARY NOT FOR CONSTRUCTION

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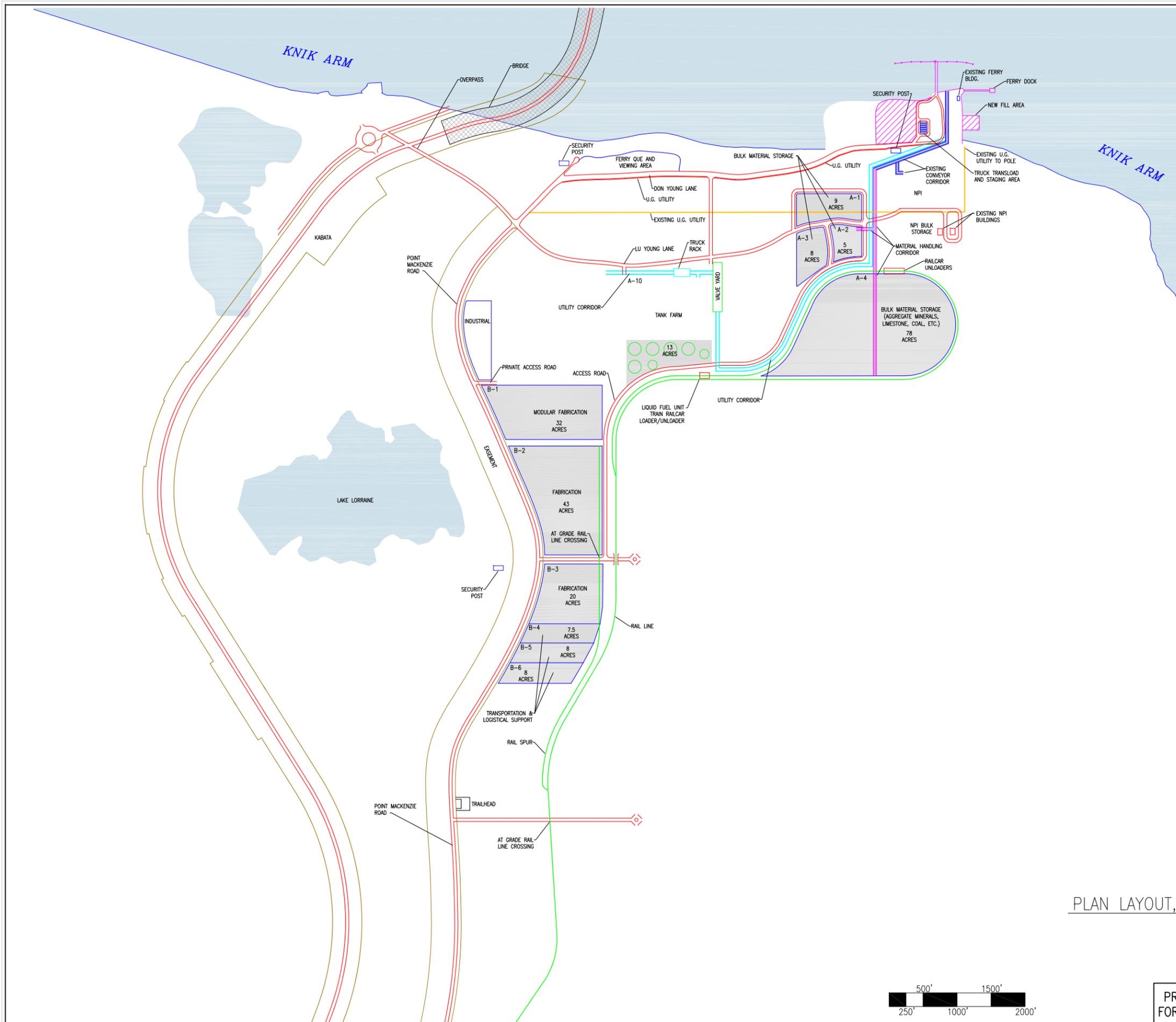
MASTER PLAN LAYOUT OPTION B  
PORT MACKENZIE  
ALASKA

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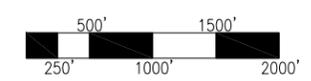
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- BULK FUEL STORAGE TANK
- UTILITY CORRIDOR

\*RELOCATE EXISTING UTILITIES TO 20' UTILITY CORRIDOR ALONG ROADWAYS AS PAD DEVELOPMENT OCCURS

**NEW DEVELOPMENT IN THIS PHASE:**

- Rail Loop
- Rail Spur to Fabrication Lot
- Tank Farm
- Fuel Pipeline to Docks
- Ferry Dock
- Transportation and Logistical Support
- Trucked Coal Export
- Second Conveyor
- 2 Barge Dock expansions
- Knik Arm Bridge

PLAN LAYOUT, YEARS 1-5



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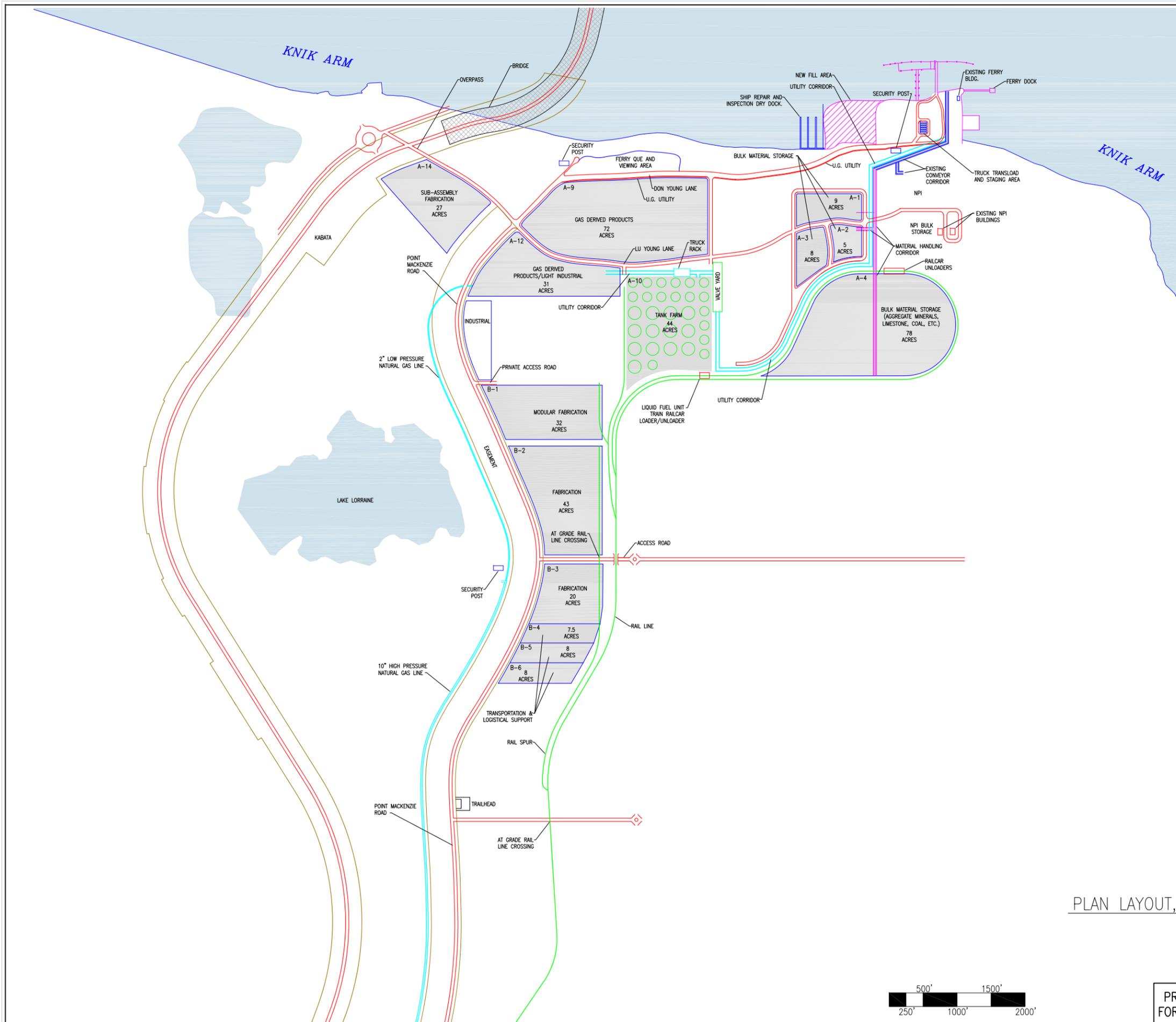
FACILITIES LAYOUT YEARS 1-5

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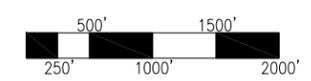
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- BULK FUEL STORAGE TANK
- UTILITY CORRIDOR

\*RELOCATE EXISTING UTILITIES TO 20' UTILITY CORRIDOR ALONG ROADWAYS AS PAD DEVELOPMENT OCCURS

**NEW DEVELOPMENT IN THIS PHASE:**

- Gas Pipeline
- Value Added Gas Products
- Rail Coal/Limestone Export
- Rail Spur to Modular Fabrication Lot
- Rail Spur to Tank Farm
- Barge Dock Expansion
- Ship Repair Dry Dock
- South Port Access Road Constructed
- Deep Draft Dock Expansion

PLAN LAYOUT, YEARS 5-10



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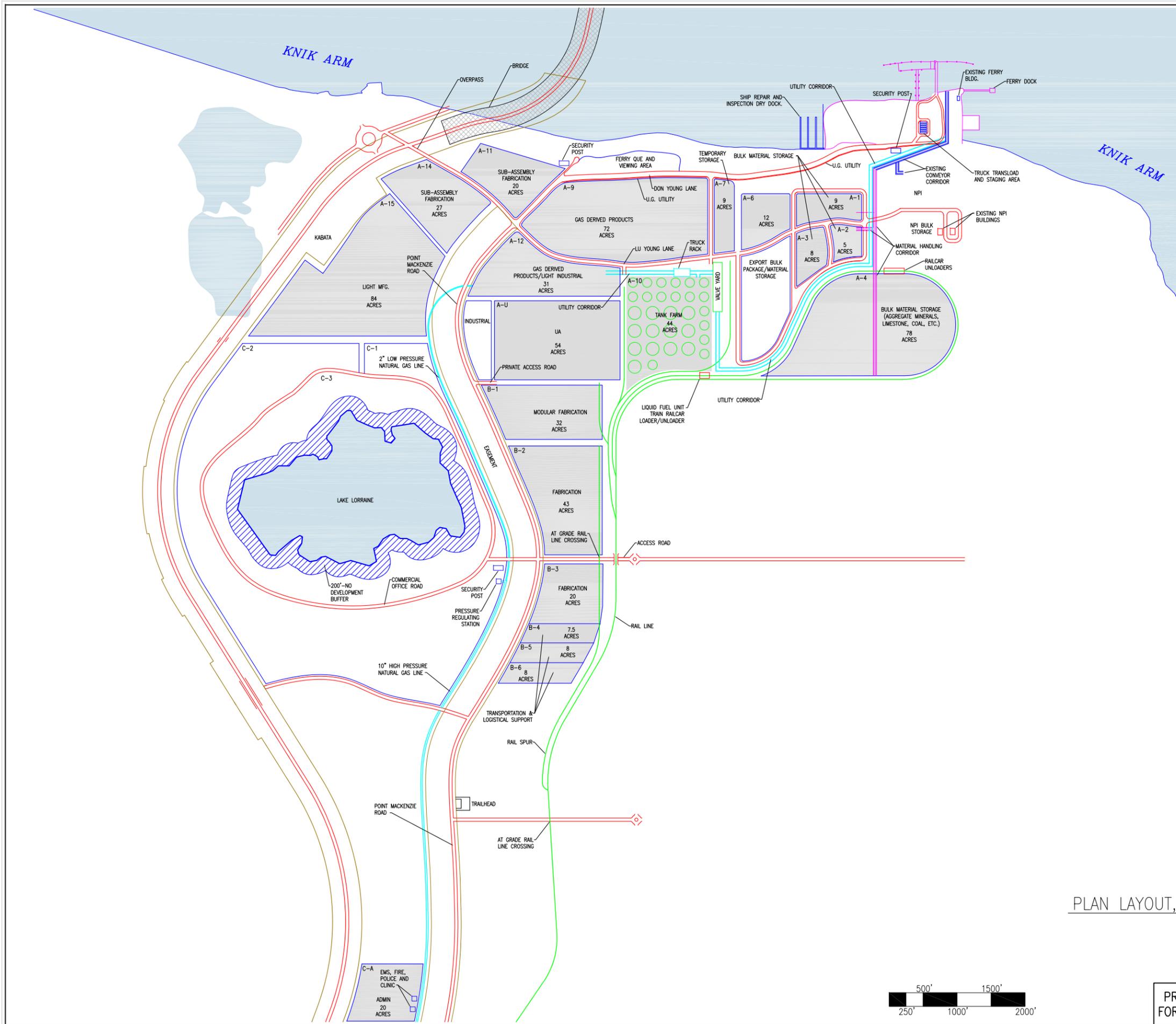
FACILITIES LAYOUT YEARS 5-10  
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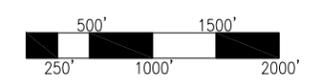
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- BULK FUEL STORAGE TANK
- UTILITY CORRIDOR

\*RELOCATE EXISTING UTILITIES TO 20' UTILITY CORRIDOR ALONG ROADWAYS AS PAD DEVELOPMENT OCCURS

**NEW DEVELOPMENT IN THIS PHASE:**

- Rail Spur to Bulk Package/Material Storage
- Begin Other Mineral Export
- EMS, Fire, Police Station, Clinic and General Admin.
- Lake Lorraine Commercial Loop Road
- Additional Light Manufacturing and Sub-Assembly Fabrication

PLAN LAYOUT, YEARS 10-15



**PRELIMINARY NOT FOR CONSTRUCTION** Note: Data modified by MSB Planning Dept. All lots identified in this map are conceptual in nature and do not define a legal description.

C-A  
EMS, FIRE, POLICE AND CLINIC  
ADMIN  
20 ACRES

FACILITIES LAYOUT YEARS 10-15

PORT MACKENZIE ALASKA

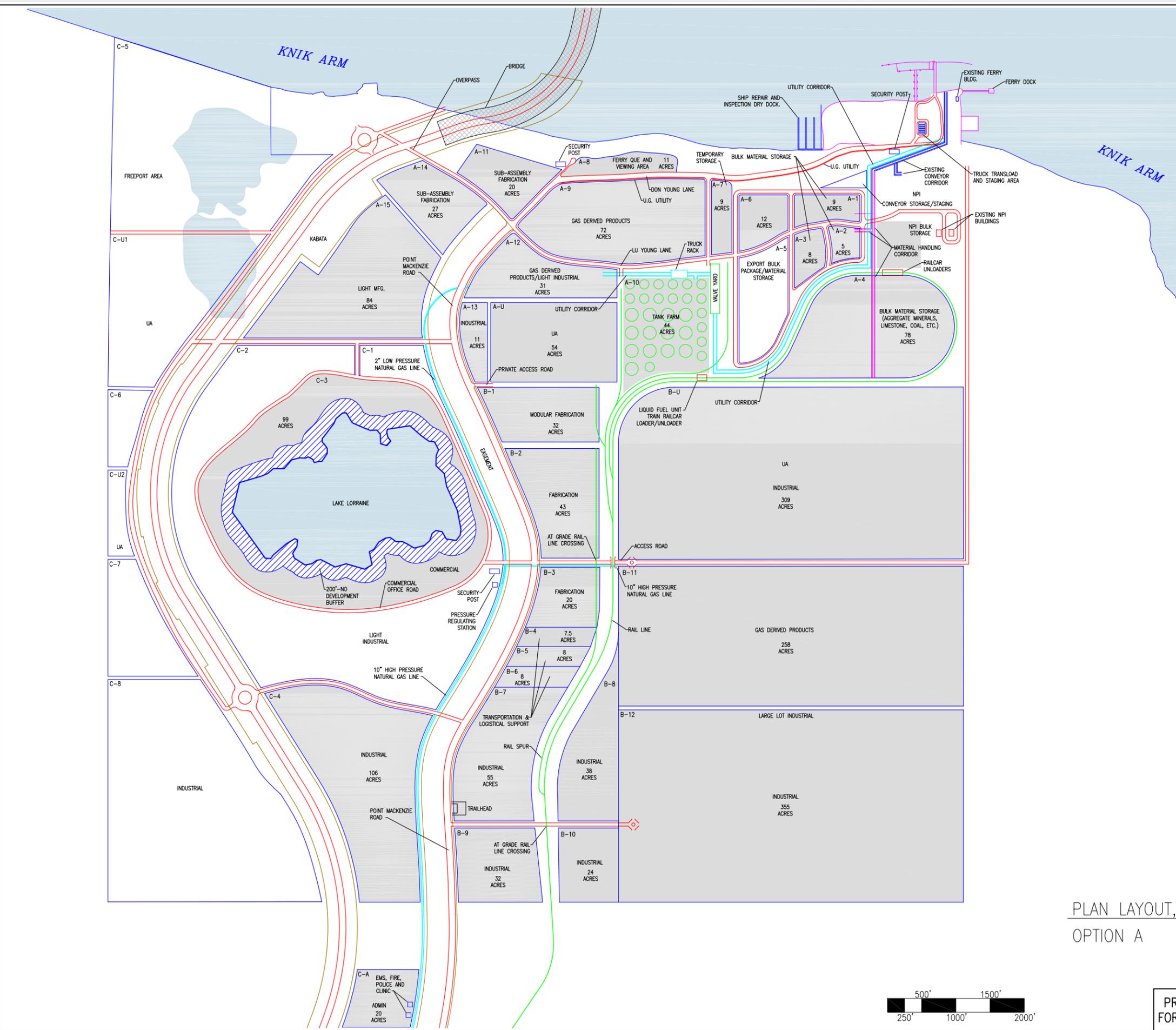
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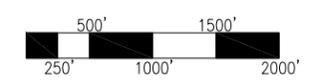
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- BULK FUEL STORAGE TANK
- UTILITY CORRIDOR

\*RELOCATE EXISTING UTILITIES TO 20' UTILITY CORRIDOR ALONG ROADWAYS AS PAD DEVELOPMENT OCCURS

- NEW DEVELOPMENT IN THIS PHASE:
- Petrochemical Facility
  - Freeport Area
  - Additional Industrial and Sub-Assembly Fabrication

PLAN LAYOUT, YEARS 15+  
OPTION A



PRELIMINARY NOT FOR CONSTRUCTION  
 Note: Data modified by MSB Planning Dept. All lots identified in this map are conceptual in nature and do not define a legal description.

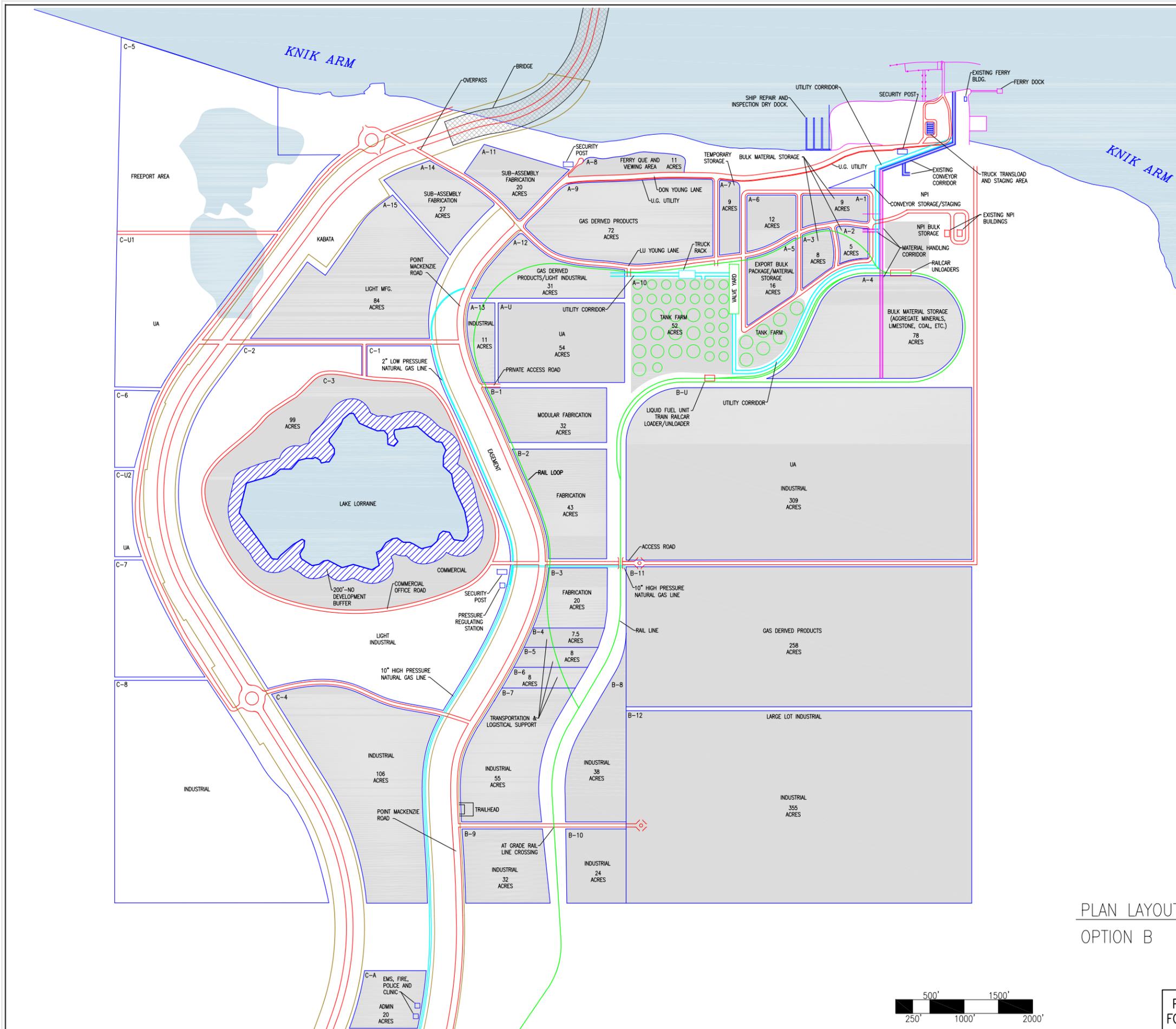

FACILITIES LAYOUT YEARS 15+ OPTION A  
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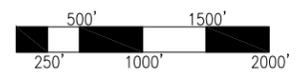
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- BULK FUEL STORAGE TANK
- UTILITY CORRIDOR

\*RELOCATE EXISTING UTILITIES TO 20' UTILITY CORRIDOR ALONG ROADWAYS AS PAD DEVELOPMENT OCCURS

**NEW DEVELOPMENT IN THIS PHASE:**

- Petrochemical Facility
- Freeport Area
- Additional Industrial and Sub-Assembly Fabrication

PLAN LAYOUT, YEARS 15+  
OPTION B



PRELIMINARY NOT FOR CONSTRUCTION

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FACILITIES LAYOUT YEARS 15+ OPTION B

PORT MACKENZIE  
ALASKA

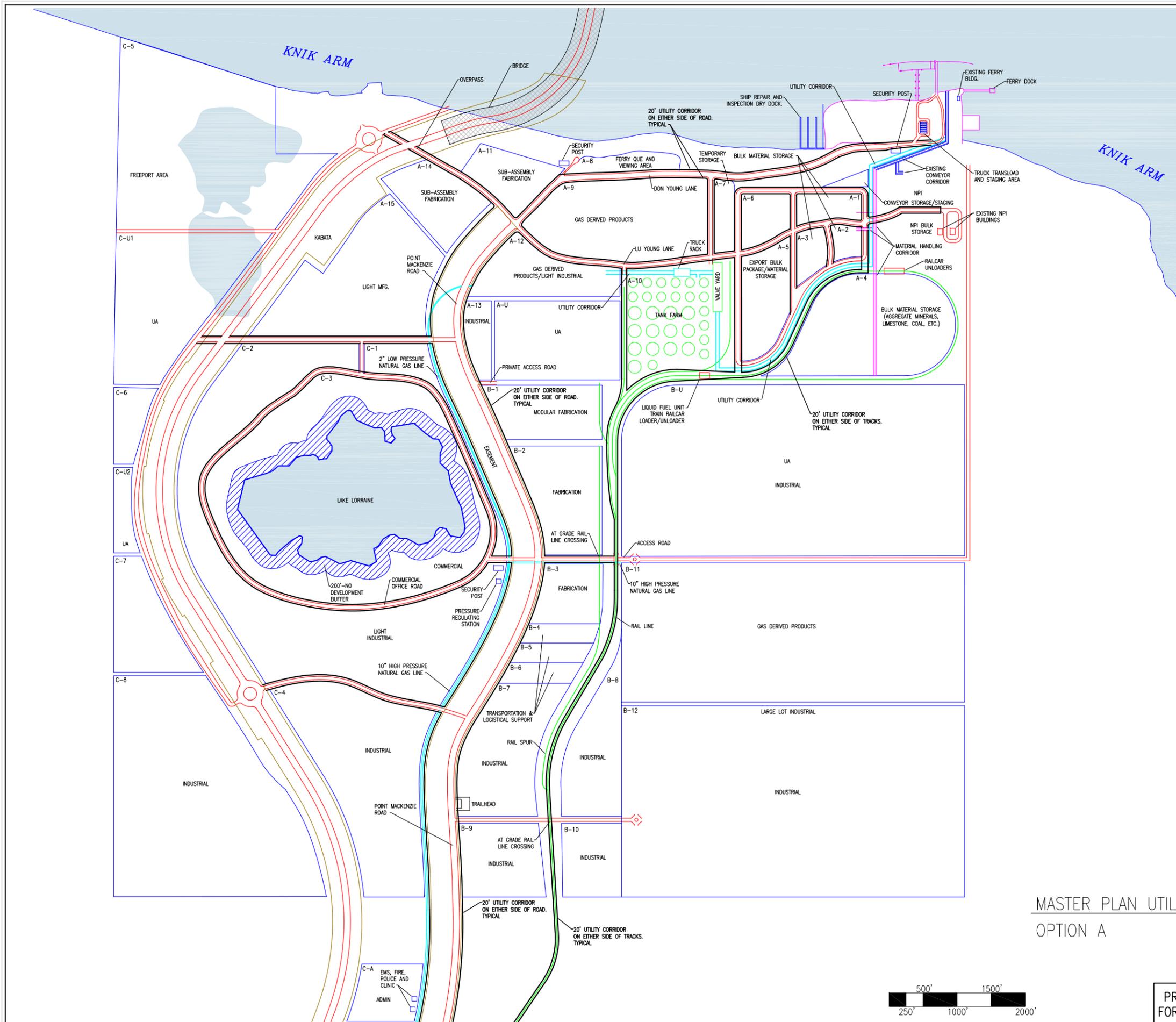
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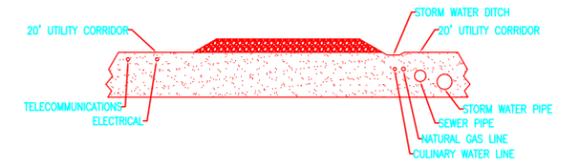
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- PIPELINE
- CONVEYOR
- BULK FUEL STORAGE TANK
- = UTILITY CORRIDOR

\*RELOCATE EXISTING UTILITIES TO 20' UTILITY CORRIDOR ALONG ROADWAYS AS PAD DEVELOPMENT OCCURS



TYPICAL UTILITY CORRIDOR

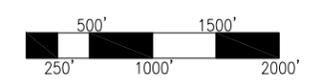
MASTER PLAN UTILITY CORRIDORS OPTION A

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MASTER PLAN UTILITY CORRIDORS  
OPTION A



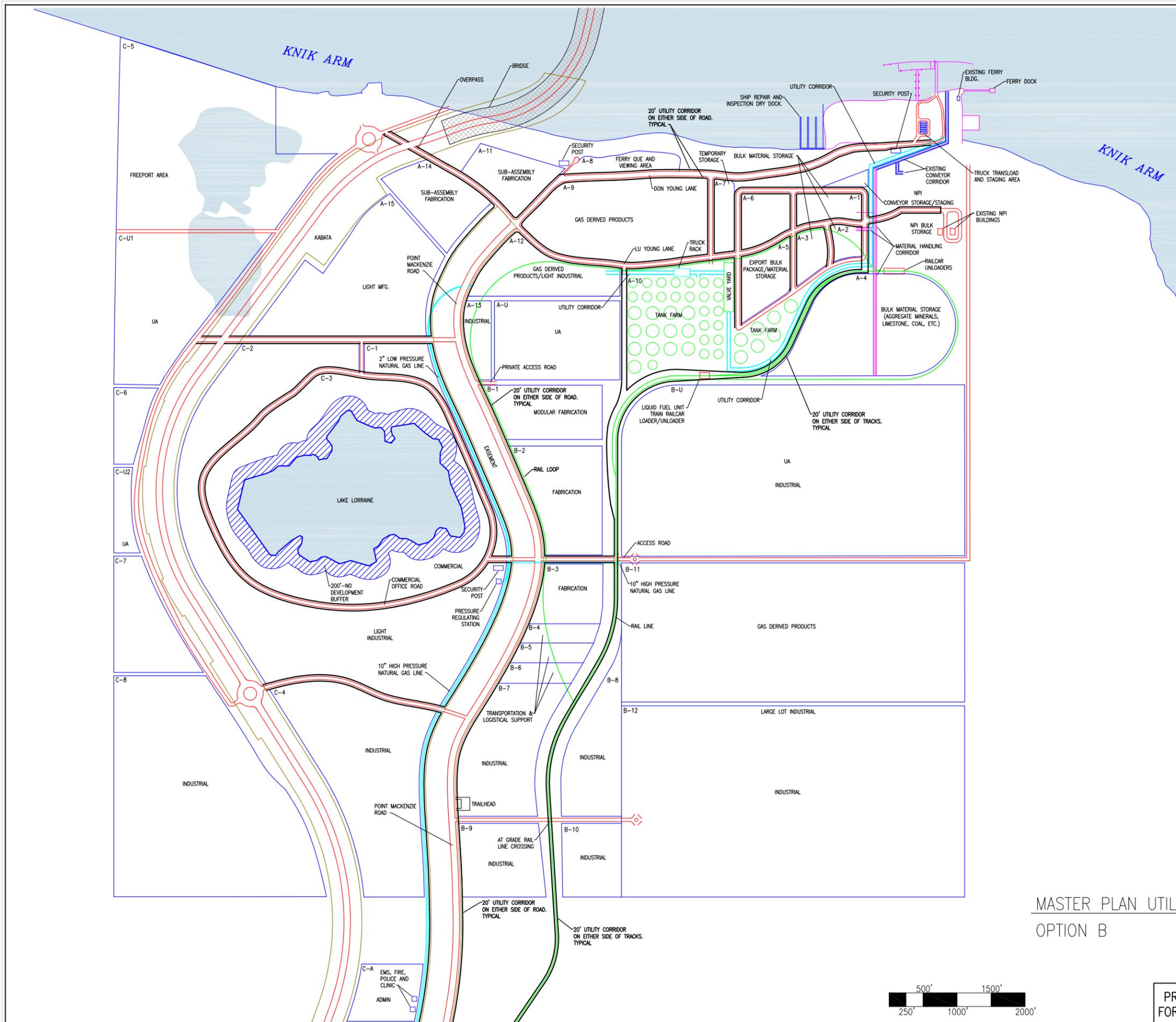
PRELIMINARY NOT FOR CONSTRUCTION

Note: Data modified by MSB Planning Dept. All lots identified in this map are conceptual in nature and do not define a legal description.

FILE#: 1024  
DATE: 02/18/2011  
REVISIONS:  
SCALE:

PLAN VIEW

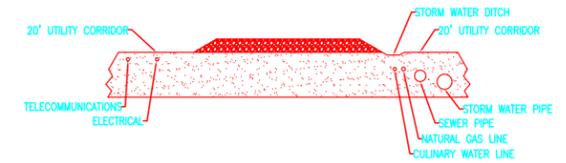
U-1.0A



**LEGEND**

- ROAD
- RAIL
- EASEMENTS
- PIPELINE
- CONVEYOR
- BULK FUEL STORAGE TANK
- = UTILITY CORRIDOR

\*RELOCATE EXISTING UTILITIES TO 20' UTILITY CORRIDOR ALONG ROADWAYS AS PAD DEVELOPMENT OCCURS



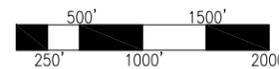
TYPICAL UTILITY CORRIDOR

MASTER PLAN UTILITY CORRIDORS OPTION B  
PORT MACKENZIE  
ALASKA

7000 South 2469 East Ste. 206  
Salt Lake City, Utah 84121  
Phone: (801) 944-0777  
Fax: (801) 944-0660  
www.millcreekeng.com



MASTER PLAN UTILITY CORRIDORS  
OPTION B



PRELIMINARY NOT FOR CONSTRUCTION

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FILE#: 1024  
DATE: 02/18/2011  
REVISIONS:  
SCALE:

PLAN VIEW

U-1.0B



## **Appendix B – Previous Studies and Reports**

Preliminary Feasibility Report, Point MacKenzie Seaport. Planning Department, MSB. April 1972.

Point MacKenzie Marine Port Development Plan. Development Services Department, MSB. January 1988.

Point MacKenzie Transportation Corridor Study. Peratrovich, Nottingham & Drange, Inc. March 1992.

Southcentral Ports Development Projects, Peratrovich, Nottingham & Drange, Inc. January 1993.

Point MacKenzie Area Which Merits Special Attention Plan. Alaska Department of Community and Regional Affairs, Municipal and Regional Assistance Division. May 1993.

Point MacKenzie Port Development, *Overview of Planning and Permitting Requirements*. Jon Issacs and Linda Perry Dwight. June 1993.

Port MacKenzie Development Project Prefeasibility Study. Peratrovich, Nottingham & Drange, Inc. Northern Economics. May 1998.

Concepts to Maximize Development Potential of Port MacKenzie and Upland Areas. The Cornell Group, Inc. August 2001.

Geotechnical Report, Knik Arm Ferry. Shannon and Wilson, Inc. February 2003.

Sand and Gravel Assessment: Elmendorf Moraine, Port MacKenzie. Shannon and Wilson, Inc. October 2003.

Geotechnical Engineering Report, Knik Arm Ferry, Terminal Building. Shannon and Wilson. September 2005.

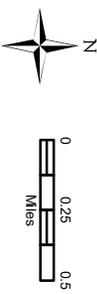
Point MacKenzie Regional Wetland Assessment. Critical Habitats, Inc. January 2006.

Point MacKenzie Road Borrow Source Evaluations, Shannon and Wilson Inc. February 2008.

Geotechnical Engineering Report. Port MacKenzie Bi-Modal Bulk Facility. Shannon and Wilson Inc. May 2009.

# PORT MACKENZIE CULTURAL RESOURCE INVENTORY AREAS & TRANSECTS

- Cultural Resource Inventory Transects
- ▨ Cultural Resource Inventory Needed
- ▨ Cultural Resource Inventory Complete
- ▭ Port District Boundary



MSB Information Technology Dept./GIS  
September 2010

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R4W R3W

KINK ARM

MSB BOUNDARY  
MOA

T14N  
T13N

1 **Appendix C - History of Port MacKenzie**

2 Port MacKenzie began in 1983 when a committee was formed to begin planning port  
3 development. A port development district and port commission were established in 1988.  
4 Construction of the port access road was accomplished in phases from 1990 to 1991. The Point  
5 MacKenzie Area which Merits Special Attention Plan (AMSA) was approved by the State in  
6 1993 and adopted by the Borough (Nolfi, 2010).

7 The Borough applied to the Alaska Department of Natural Resources for title to the tidelands  
8 that would lie under and extend from the docks. Title to the land was transferred to the  
9 Matanuska - Susitna Borough on August 8, 1996. In 1999 the borough selected additional tide  
10 and submerged lands adjacent to tidelands acquired in 1996. These additional tide and  
11 submerged lands are necessary for future moorage, berthing areas and dock expansion (Riggs,  
12 2010).

13  
14 Initial construction of the barge dock  
15 took place from 1999 to 2003 and  
16 resulted in an eight-acre staging area  
17 with 500 feet of bulkhead barge dock  
18 at -20 feet mean lower low water.



19  
20



A plant specializing in building manufactured facilities was constructed on a 15-acre lease in 2000. Modular homes, constructed at the plant, began being shipped on barges to rural Alaska in 2001. The plant was used in 2005 for constructing pump and electrical modules destined for the North Slope (King, 2010). The plant has also constructed bunkers and range

29 buildings for the military, prefabricated houses that are trucked to the Interior, and a building for  
30 the Alyeska ski area.

31  
32 In 2004, construction of woodchip handling facilities began on the bluff directly above the barge  
33 dock.

34 Three-phase electrical power was extended to the Port in 2003. A design for extension of natural  
35 gas service has also been  
36 completed.

37 Construction of a 1,200-foot long  
38 deep-draft dock and installation  
39 of a 3,000-foot conveyor system  
40 took place in 2004. In January of  
41 2005, the first major export  
42 vessel was loaded with 84  
43 million pounds of wood chips.



44 A storage warehouse was constructed from 2007-2008 within the lease area where the conveyor  
45 begins. In 2009, the warehouse was used to store imported super sacks of cement. In 2008, about  
46 451,000 tons of sand and gravel were loaded onto barges by the conveyor for use across the Knik  
47 Arm in the Port of Anchorage Expansion Project (Van Dongen, 2010).

48  
49 Approximately 13 miles of the Point MacKenzie Road, which leads to the Port, was improved  
50 and paved from 2008 to 2009. The remaining two miles to the docks was paved after the Don  
51 Young Road hill reduction project in 2011.

52  
53 Reports on and studies of the Port MacKenzie area are listed in Appendix B.

54  
55

**PORT MACKENZIE DISTRICT EMERGENCY SERVICES  
20-YEAR PLAN**Overview:

The Port MacKenzie District has initiated the building of its major infrastructure: the deep-water Port Dock and Ferry Terminal are built, there are several industries already conducting business in the District, and the work for the Port road and the railroad extension are underway.

It is envisioned that with the completed rail extension, the Ferry in full-service, a major coal export contract, and the possibility of a natural gas terminus, the Port will grow exponentially in the next 5 to 10 years.

There are currently no local emergency services available in the Port MacKenzie District. The closest fire station is located 18 miles away (Point MacKenzie Public Safety Building – Station 6-4), and the next closest fire and ambulance station will be 28 miles away (once Station 6-3 is completed this Winter).

The Port MacKenzie District is zoned commercial and industrial, and it is anticipated that there will be a variety of “hazardous” activities and material in the District; therefore, “enhanced” levels of emergency services must be planned. With the growing construction activity, and the pending industrial activity in the Port MacKenzie District, it is time to initiate on-site emergency services to the area.

Near-Term Plan:**Fire Protection Plan**

The Wasilla-Lakes Fire Service Area will provide primary structural fire protection, and secondary wildland fire protection services to the Port District until such services can be located in the Port District. Any service provided will be on a fee-for-service basis until such time as a Fire Service Area can be established.

The West Lakes Fire Service Area will provide mutual aid back-up fire protection services to the Port District for both structural and wildland fire protection. Any service provided will be on a fee-for-service basis until such time as a Fire Service Area can be established.

The State of Alaska Division of Forestry will provide primary wildland fire protection services for all wildfires (non-structural) that occur in the Port District.

**EMS Plan**

Either Central or West Lakes will provide the closest-available-appropriate ambulance unit for any medical care and transportation

# **DEPARTMENT OF EMERGENCY SERVICES**

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## **PORT MACKENZIE DISTRICT EMERGENCY SERVICES 20-YEAR PLAN**

necessary. Because EMS is an areawide function, and there already exists a fee-for-service price schedule, EMS response and services will be the financial responsibility of the person(s) receiving the service.

### **Rescue Plan**

Heavy (Technical) Rescue and HazMat services will be provided by the Central Mat-Su Fire Department. Because Rescue is an areawide function, and there already exists a fee-for-service price schedule, Rescue response and services will be the financial responsibility of the person(s) receiving the service.

### **Water Rescue Plan**

When the M/V Susitna begins its Ferry Service, Water Rescue services will be available to provide rescue services to the ferry vessel should it be necessary (as per the US Coast Guard Certification of the M/V Susitna "Rescue Plan").

### **Facility**

The MSB Land Management Division will classify Borough land for the future building of a combined Fire/EMS/Rescue/Law Enforcement facility that may also include a Medical Clinic. We will apply for State Legislative CIP grant money to build this multi-use facility.

### **Planning Department and DES Fire Code Officials Joint Review**

International Building Codes/National Fire Protection Association Standards applied to all commercial and industrial buildings constructed within the Port District.

All buildings over "X" square feet must have emergency services radio frequency repeaters.

All buildings that will store hazardous and/or highly flammable materials must have a foam system in addition to the automatic fire sprinkler system.

Apply to the State of Alaska Fire Marshall's Office for Fire Code Official deferment for the Port District.

### **Water Supply**

# **DEPARTMENT OF EMERGENCY SERVICES**

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## **PORT MACKENZIE DISTRICT EMERGENCY SERVICES**

### **20-YEAR PLAN**

Add drafting capability to the existing two 20,000-gallon water tanks located at Port MacKenzie for use by our fire personnel when fighting fires in the Port District.

#### **Heavy Machinery Availability**

Enter into "Memorandum of Agreement" with Port District businesses to utilize heavy machinery (i.e., front-end loaders, excavators, etc.) when needed for rescue or fire services.

#### **2011 – 2015 Plan:**

##### **Port District Infrastructure**

Commercial Power – Install commercial power supply throughout the entire Port District.

Industrial Water Supply System – Install a commercial/industrial caliber water system capable of providing large quantities of water to all areas of the Port District (buried water mains, commercial wells, fire hydrants, etc.). Possibly, tie into the Prison's water system.

##### **Create Fire Service Area**

Develop legislation to create a new "Port MacKenzie District" Fire Service Area, and an "Enhanced" EMS and Rescue Service Area.

##### **Create Appropriate Agreements**

Develop agreement between MSB Rescue and the M/V Susitna Ferry Craft for rescue services beyond the Mat-Su Borough boundaries.

Develop automatic and mutual aid agreements with other fire service areas (Municipality of Anchorage, Elmendorf AFB, Fort Richardson, Chugiak, Wasilla-Lakes FSA, West Lakes FSA, Houston, Palmer, etc.).

Develop "Fire Brigade" agreement(s) with the cooperating commercial/industrial businesses within the Port District.

Create "Water Supply" agreement with the Goose Creek Correctional Center for access to their water system.

##### **Human Resources**

Hire 4 to 6 full-time cross-trained firefighters/EMT/rescue techs to staff the station 24-hours per day, 7-days per week.

# **DEPARTMENT OF EMERGENCY SERVICES**

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## **PORT MACKENZIE DISTRICT EMERGENCY SERVICES 20-YEAR PLAN**

Form industrial fire brigade(s) in cooperation with the commercial businesses in the Port District to augment firefighter/rescue manpower.

### **Facility**

Construct a multi-use Public Safety Facility that will house the Fire Department, Emergency Medical Services, Technical and Heavy Rescue, Law Enforcement agency, and a Medical Clinic.

### **Apparatus**

Purchase one Pumper/Tanker fire apparatus, one Rescue/Engine combo apparatus, one Ambulance vehicle, and one Command vehicle.

### **Equipment**

Purchase a Foam Trailer and sufficient quantities of foam, and all necessary fire, EMS, and rescue equipment.

### **Communications**

Construct a radio tower capable of providing radio coverage to the entire Port District as well as the greater Borough/Anchorage Cook Inlet area, and install both DES radio frequencies and the M/V Susitna's marine antennae and repeaters (and related radio frequencies) on the tower.

Purchase mobile radios for vehicles, portable radios, and notification devices for field personnel.

### **Training**

Provide fire brigade training to those commercial businesses participating in the fire brigade program.

Enhanced training for DES personnel:

- Industrial firefighting training;
- Heavy rescue training;
- Hazardous Materials training; and,
- Continuing education for firefighters, rescue techs, and EMS personnel.

### **Revenue Sources**

# **DEPARTMENT OF EMERGENCY SERVICES**

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## **PORT MACKENZIE DISTRICT EMERGENCY SERVICES 20-YEAR PLAN**

Port MacKenzie Fire Service Area taxation, “Enhanced” EMS and Rescue Service Area taxes, State of Alaska CIP Legislative Grants, Alaska Department of Homeland Security Grants, FEMA Assistance to Firefighter Grants, Department of Justice COPS Grants.

### 2016 – 2020 Plan:

#### Human Resources

Hire an additional 4 to 6 full-time cross-trained firefighters/Paramedics/rescue techs to staff the station 24-hours per day, 7-days per week. Having cross-trained personnel in all three professional disciplines will be more cost-effective than hiring specialty certified personnel.

Continue to form industrial fire brigade(s) in cooperation with the commercial businesses in the Port District to augment firefighter/rescue manpower.

#### Facility

Assess the need to construct another Public Safety Facility within the Port District.

#### Apparatus

Purchase Industrial caliber fire apparatus, Hazardous Materials apparatus, another Ambulance vehicle, and another Command vehicle.

If sufficient industrial buildings and petro-chemical storage facilities are operational in the District, an Industrial Aerial Platform will be required, also.

#### Equipment

Purchase all necessary fire, EMS, and rescue equipment.

#### Communications

Purchase mobile radios for vehicles, portable radios and notification devices for field personnel.

#### Training

Provide fire brigade training to those commercial businesses participating in the fire brigade program.

# **DEPARTMENT OF EMERGENCY SERVICES**

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## **PORT MACKENZIE DISTRICT EMERGENCY SERVICES 20-YEAR PLAN**

Enhanced training for DES personnel:

- Industrial firefighting training;
- Operation of Industrial Aerial Platform;
- Heavy rescue training;
- Hazardous Materials training; and,
- Continuing education for firefighters, rescue techs, and EMS personnel.

### **Mutual Aid Agreements**

Renew and revise automatic and mutual aid agreements with other fire service areas (Municipality of Anchorage, Elmendorf AFB, Fort Richardson, Chugiak, West Lakes, Houston, Palmer, etc.).

### **Revenue Sources**

Port MacKenzie Fire Service Area taxation, "Enhanced" EMS and Rescue Service Area taxes, State of Alaska CIP Legislative Grants, Alaska Department of Homeland Security Grants, FEMA Assistance to Firefighter Grants, Department of Justice COPS Grants.

2021 – 2025 Plan:

**DEPARTMENT OF EMERGENCY SERVICES**

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**PORT MACKENZIE DISTRICT EMERGENCY SERVICES**

**20-YEAR PLAN**

2026 – 2030 Year Plan: