

# Port Lions Airport Master Plan

Project No. 54746

*Prepared for:*

Federal Aviation Administration



222 W. 7th Ave #14  
Anchorage, AK 99513

*Prepared on behalf of the Sponsor:*

Alaska Department of Transportation  
and Public Facilities



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- Appendix 1 Public Involvement Process
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- Appendix 3 PAPI Approach Slope Analysis
- Appendix 4 Airport Layout Plan
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## EXECUTIVE SUMMARY

Port Lions is a community consisting of approximately 220 people living on an island roughly 19 miles northwest of the City of Kodiak in the Kodiak archipelago. The 1996 Alaska Aviation System Plan Update indicates Port Lions should be served with a community class airport. The existing Port Lions Airport is a sub-standard community class airport. It is sub-standard in runway length; 2,200 feet versus the standard 3,300 feet. The existing safety areas are also sub-standard at approximately 200 feet beyond each threshold versus the standard 300 feet beyond each threshold. The safety area width of 150 feet does meet the standards.

This master plan puts forth one build alternative and a no build alternative. The build alternative proposes a new 3,300-foot long community class airport. The alignment would be rotated approximately 13° counter-clockwise. The existing apron would form the westerly runway safety area and the new runway would have a 5/23 magnetic heading. A standard 90,000 square foot apron and single taxiway would be constructed north of the new runway near the westerly end. The new runway and taxiway would have medium intensity runway lights.

This new alignment will allow an Area Navigation instrument approach at such time that the Federal Aviation Administration (FAA) develops an Instrument Flight Rules (IFR) airway system around Kodiak Island. However, terrain may force the missed approach point to be established northeast of the airport over the waters of Kizhuyak Bay. The final approach course to either runway threshold may also have to be angled away from the extended runway centerline in accordance with FAA procedures.

This safety related project designed to bring the airport up to the DOT&PF desired community airport standards should score quite well in the Airport Project Evaluation Board scoring system that ranks all DOT&PF projects on a statewide basis. The total cost estimate for the project is estimated to be \$13,380,000.

## **1.0 GENERAL**

Port Lions is located in Settler Cove, on the north coast of Kodiak Island, 19 miles west-northwest of the City of Kodiak, 247 air miles southwest of Anchorage (Figure 1-1). It lays at approximately 57° 52' North Latitude and 152° 53' West Longitude. (Sec. 05, T027S, R022W, Seward Meridian). Port Lions is located in the Kodiak Recording District. The area encompasses 6.3 sq. miles of land and 3.7 sq. miles of water. The climate of the Kodiak Islands is dominated by a strong marine influence. There is little or no freezing weather, moderate precipitation, and frequent cloud cover and fog. Severe storms are common from December through February. Annual precipitation is 54 inches, with 75 inches of snowfall.

### **1.1 Background**

The town of Port Lions was founded in 1964 by the displaced inhabitants of the Village of Afognak to the north, which was partially destroyed by a tsunami after the 1964 Good Friday Earthquake. On May 14, 1964, while on a reconnaissance survey, village residents Oscar Ellison and George Naumoff chose the site where Port Lions is currently situated. The community was named in honor of the Lions Club, for their support in rebuilding and relocating the village. The City government was incorporated in 1966. For many years, Port Lions was the site of the large Wakefield Cannery, on Peregrebni Point. The cannery burned down in March 1975. Soon thereafter, the village corporation purchased a 149-foot floating processor, the Smokwa. Although sold in 1978, the Smokwa processed crab in the area intermittently between 1975 and 1980. A small sawmill, located south of town, operated until 1976.

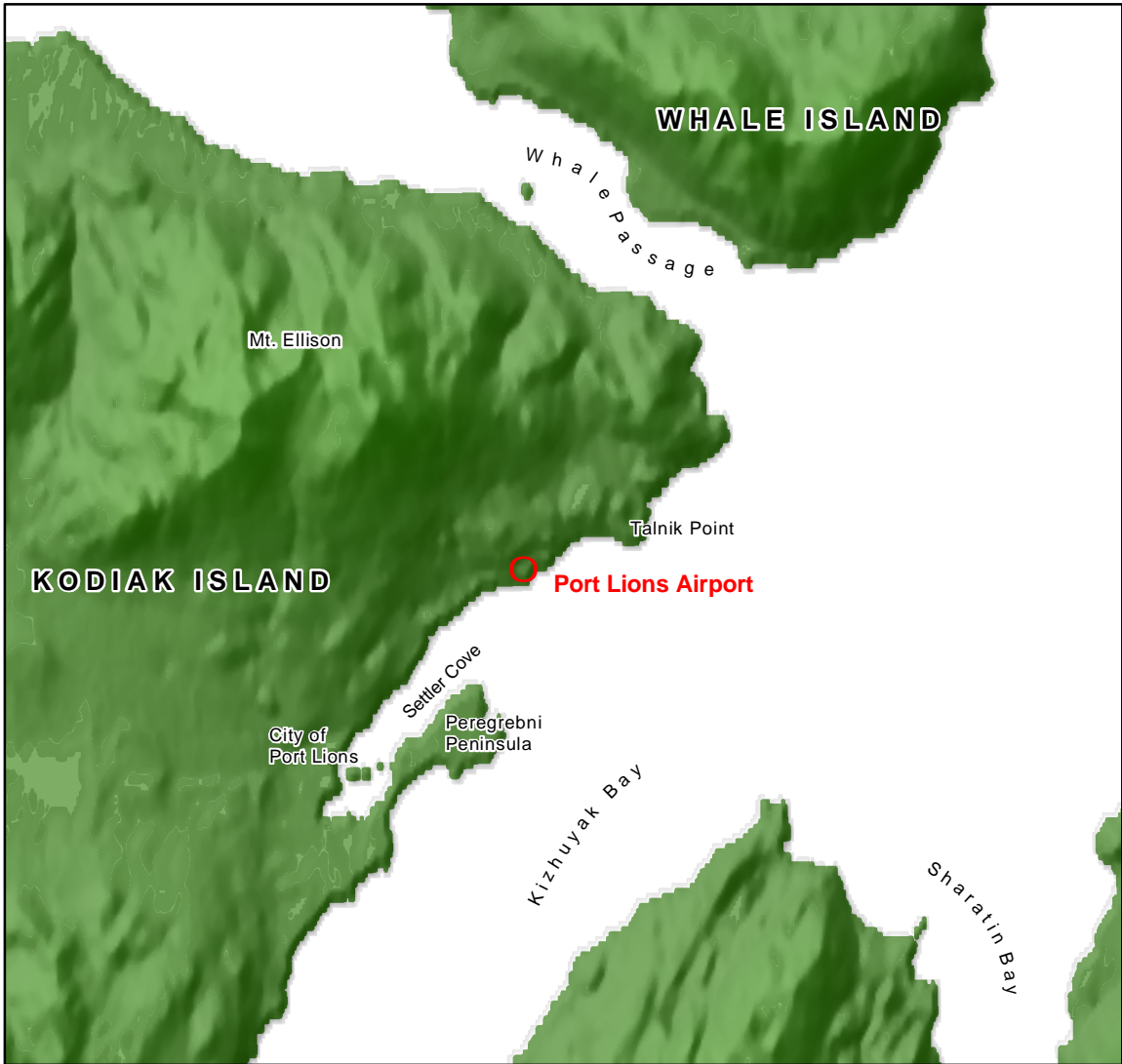
### **1.2 Existing Conditions Summary**

The Port Lions airport has a 2,200-foot by 75-foot long gravel surfaced runway with total runway safety area length of 2,600 feet (approximately 200 feet off of each end) by 150 feet wide (Figure 1-2). The detached apron is approximately 100 feet by 200 feet and is accessed from the runway by two taxiways. The runway has medium intensity runway lights and a rotating beacon, but no other navigation aids. The runway is not monitored, which means there are no airport services such as fuel or aircraft maintenance offered. Pilots are requested to visually inspect the airport before landing or taking off.

The DOT&PF stations a grader in Port Lions for snow removal. This grader does not have a permanent shelter and one should be provided with this project. There are no leases on the airport for air carrier use. Air carriers shuttle passengers to the airport in vehicles, the vehicles substituting for a terminal shelter. There is no public bathroom or public telephone on the ramp.

The Port Lions Airport is a safe and efficient facility in moderate condition, but several deficiencies were identified by the airport sponsor at the beginning of the master plan process.

1. Brush surrounding the wind cone and some of the runway edge markers are overgrown.
2. Several of the runway lights do not function properly.
3. Pilots report that the existing alignment is satisfactory, but local topography and trees beyond the approach ends penetrate the surrounding airspace and compromise the safety of operations.



**Port Lions Airport Master Plan**

**Location and Vicinity Map**

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 Department of Transportation  
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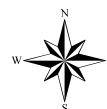
**Figure  
 1-1**



## Port Lions Airport Master Plan

### Existing Airport and Community Facilities

AKSAS Project No. 54746  
 State of Alaska  
 Department of Transportation  
 and Public Facilities



**Figure  
 1-2**

4. The apron can become congested during the summer with aircraft and automobiles.
5. There is no place to tie-down aircraft during high winds.
6. The local landfill is located approximately 3,800 feet from the existing runway. According to FAA separation standards, a landfill should be at least 5,000 feet from the runway end for airports serving piston-type aircraft.
7. The 2,200-foot runway is below the state standard for a community class airport and the runway has insufficient Runway Safety Area beyond each approach end.
8. The airport is subject to vandalism.
9. The airport is used to access private property beyond the approach end of Runway 24.

A public involvement process (Appendix 1) was also conducted that identified several more issues. They are:

10. Turbulence generated during a southwesterly wind makes approaches on Runway 24 difficult.
11. Approaches to Runway 6 are limited due to topographical constraints.
12. A fish stream is located off of the approach end of Runway 6 and may create environmental issues if an extension of the runway in this direction occurs.
13. Larger apron space and tie-down area is needed for increased summer and hunting activity and potential helicopter medevac operations.
14. The existing runway lighting requires significant maintenance and needs to be replaced.
15. Security fencing is needed to prevent residents from using the runway to access land east of Runway 24 and to discourage deer and other wildlife from standing on the runway. Security fence may pose new problems with snow removal and maintenance.
16. If security fencing is placed, a perimeter road needs to be considered to access private property and native allotments east of Runway 24.
17. Concerns were raised over having only one air carrier provide service and controlling ticket prices.

### **1.3 Inventory of City Infrastructure**

The community water and sewer system was built by the Bureau of Indian Affairs (BIA) and Indian Health Service (HIS) in 1965. Over 100 residences are connected to the City's piped water and sewer systems and 95% of these have complete plumbing. The Branchwater Creek Reservoir provides water, which is treated and stored in a 125,000-gallon tank. The existing dam is weakening; funding has been provided to make repairs. A local priority is to construct a new 500,000-gallon dam on the Creek. A new landfill site has been identified (Figure 1-2).

Port Lions is accessible by air and water. Along with the State owned gravel airstrip, the City owns a dock which may be used by seaplanes. Regular and charter flights are available from Kodiak. The boat harbor with breakwater and dock provide 82 boat slips. The State Ferry operates bi-monthly from Kodiak between May and October. Barge service is available from Seattle.

Power is generated by the Kodiak Electric Association using diesel generators. They have a fuel storage capacity of 1,100 gallons to power the generators.

Bulk fuel is sold by Kizhuyak Oil Sales/Village Council. They have a storage capacity of 90,600 gallons.

#### **1.4 Local Government Structure**

Port Lions was incorporated in 1966. It is a second-class city with a mayor-council government. Council members' terms are three years, and the mayor is elected from the council. Services provided by the City include fire protection, street maintenance, water supply, sewage collection, and garbage collection. The City also owns several parks, a cemetery, a solid waste disposal site, a library and a health clinic (ESE 1982). A public dock and a small boat harbor are owned by the City. The major sources of revenue come from user service fees and state and federal grants (ESE 1982). For many years the City of Port Lions maintained the state road, the airstrip, and provided a shore hand to tie up the state ferry when it docked in the boat harbor under contract with the State of Alaska; however, a private individual underbid the city for the 2006-2007 contract.

Port Lions has a well-equipped elementary and high school, which is operated by the Kodiak Island Borough and employs eight residents (DCED 2002). The school's gym is available after hours for community recreation. In addition, the school regularly offers workshops on special topics such as art, music, photography, and writing. A library is maintained for both elementary and high school use.

The public library in Port Lions includes periodicals, reference and technical books, records, children's books, and novels for all ages. Community volunteers staff the library. Port Lions' two-story Community Hall includes a large meeting room, kitchen facilities, and administrative offices. This building is the primary location for city council meetings, social and governmental community functions, and administrative functions for the City of Port Lions (ESE 1982).

Port Lions falls within EMS Region 2G in the Kodiak Region and it is classified as an isolated village. Emergency Services have marine and air access. Emergency service is provided by 911 Telephone Service, volunteers and a health aide. The local health clinic is owned and maintained by the City of Port Lions. It is set up to handle outpatient care, but also includes a two-bed infirmary. The staff consists of residents from the community (ESE 1982). Emergency medical evacuation is generally done by small Kodiak based aircraft since the runway is too short for twin engine aircraft to fly to Port Lions direct from Anchorage. With the existing runway lights, technically the airport is open at night but there are no records of night medical evacuation flights. The US Coast Guard (USCG) has made night medical evacuation flights to Port Lions. The USCG helicopters are able to utilize advanced navigation equipment and night vision goggles to avoid the terrain at night and still fly to the community.

Port Lions maintains a volunteer fire department with a pumper/tanker fire truck. Fire hydrants are connected with the city water system and an emergency phone system is installed at key locations. An 8-acre cemetery is owned and maintained by the City. A 5-acre site is maintained for solid waste disposal, and once-a-week garbage collection is provided by the city.

The Kodiak Island Borough is a second-class borough incorporated under the statutes of the State of Alaska. Its governing body comprises an elected seven-member assembly, a mayor, and

a vice-mayor. Planning and zoning for Port Lions is provided and conducted through the Kodiak Island Borough Planning Department.

The Port Lions Traditional Council, a federally recognized tribe, is located within the community. Other native associations include the Native Village of Afognak and the Kodiak Island Inter-Tribal Council (DCED 2002). The Afognak Native Corporation was established in 1977 through the merger of two village corporations formed under the Alaska Native Claims Settlement Act. The shareholders of these two merged village corporations, Port Lions Native Corporation and Natives of Afognak, Inc., were all descendants of the old Afognak Village on Afognak Island. The Corporations' primary activities are timber, development of corporation lands, providing management services to Afognak Joint Venture, development of tourism-based industries, and support and preservation of the Alutiiq Culture of its shareholders (Afognak Native Corporation 2002). The Koniag Regional Corporation is a private, native-owned company. Koniag holds title to the mineral subsurface rights to all of the land that is owned by the Afognak Native Corporation (ESE 1982).

## **1.5 Socio Economic Data**

This section presents an overview of the socio economic conditions in Port Lions and the surrounding Kodiak Island Borough.

### **1.5.1 Population**

The majority of the population in Port Lions is Alutiiq. The 2000 census found 63.7% of the residents had an Alaska Native heritage. The 2000 census found the Per Capita income for Port Lions was \$17,492, the Median Household income was \$39,107, and the Median Family income was \$42,656. In 2000, approximately 12.1% of the population of Port Lions was living below the poverty level.

Port Lions has been experiencing a slow but steady rate of growth over the past 20 years. Based on the population projections presented in Table 1-1 below, this trend is expected to continue through the next 20 years. Most growth has occurred within the older group of citizens, which raised the median age of the community from 25.6 years in 1980 to 33.5 years in 2000. This indicates there will be a need to shift the focus of development towards the elderly and provide them with the goods and services that are of benefit to them. Meanwhile, the youth population is dropping, so the need for new or improved facilities for children and students may not be as great a priority because there is less demand for those services.

Table 1-1  
Population, 1970 –2005

<u>Year</u>	<u>Port Lions</u>
1970	227
1980	215
1990	222
2000	256
2001	246
2002	227
2003	236
2004	239
2005	220

Source: Alaska Dept. of Labor, Research & Analysis Section, and 2000 Census Data.

Meanwhile, the Kodiak Island Borough has seen steady growth in all of its age groups, except for the 20-34 year age group. Many of the residents in this age group attend post-secondary educational institutions outside of the borough, or they relocate for employment opportunities. The borough and the state had a fairly high unemployment rate throughout the 1990s, compared to the nation as a whole. This may have been part of the influencing factors for Port Lions residents to relocate. Again, in the borough, the group with the largest gain is the 45 to 54 years old age group, which increased the median age of residents' borough wide. Future needs for the borough may focus on services for the elderly as well.

### **1.5.2 Employment and Per Capita Income**

The economy of Port Lions is based primarily on commercial fishing, fish processing and tourism. Twenty-four residents hold commercial fishing permits. All of the residents depend to some extent on subsistence food sources such as salmon, crab, halibut, shrimp, clams, duck, seal, deer and rabbit. Most residents lead a fishing and subsistence lifestyle, or supplement employment with subsistence activities. Employment opportunities are related to the school, US Post Office, City administration, City services (water, sewer, solid waste), and the native corporations.

A discussion of employment, unemployment, and per capita income is included in the Forecast section of this document.

### **1.5.3 Industry**

Overall, employment in the Kodiak Island Borough is predominantly in the manufacturing and government sectors, followed by services and trade (Table 1-2). The agriculture/forestry/fishing sector is an important economic factor for the area, especially for Port Lions. Interestingly, this sector employs the least people of any sector represented in the borough. However, this sector has grown substantially since 1990, when only 30 people worked in this sector. The sector peaked in 1995, employing 99 people borough-wide, and has since fallen slightly to a current

workforce of 86 people. Overall, the workforce in the Kodiak Island Borough swelled in the mid-1990s, but has since decreased and fallen below the workforce population of 1990.

As a remote community without any land-based access to the mainland, residents of the Kodiak Island Borough rely on air transportation for the import and export of cargo as well as for passenger service. Historically, as industry grows so does the population base and, as a result, so does air traffic activity.

Table 1-2  
Industry Employment 1990 - 2001  
Kodiak Island Borough

<b>Industry</b>	<b>1990</b>	<b>1991</b>	<b>1992</b>	<b>1993</b>	<b>1995</b>	<b>1996</b>	<b>1997</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>
Construction	158	161	164	142	154	186	158	139	127	138	167
Manufacturing	2,062	2,091	1,810	1,885	2,260	2,350	2,584	2,509	1,871	1,774	2,102
Trans/Comm/ Utilities	319	320	339	323	301	343	303	299	279	279	288
Trade	921	931	851	828	841	960	883	842	998	928	934
Finance/Insur./ Real Estate	111	112	136	135	148	141	145	155	162	179	169
Services/Misc.	1,021	958	845	828	894	934	999	1,028	1,161	1,185	1,142
Ag., Forestry, & Fishing	30	21	52	62	99	85	95	70	80	86	60
Government	1,120	1,116	1,120	1,115	1,117	1,092	1,140	1,150	1,120	1,145	1,229
<b>TOTAL</b>	<b>5,742</b>	<b>5,710</b>	<b>5,317</b>	<b>5,318</b>	<b>5,814</b>	<b>6,091</b>	<b>6,307</b>	<b>6,192</b>	<b>5,798</b>	<b>5,714</b>	<b>6,091</b>

Source: Department of Labor and Workforce Development, Research and Analysis Section

In 2002 the Alaska Department of Labor and Workforce Development reclassified the industry groups into standard North American Industry Classification System (NAICS) codes. Table 1-3 reflects the new breakout categories for 2002 through 2005.

Table 1-3  
Industry Employment  
Kodiak Island Borough

<b>Industry</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>
Government	1,258	1,302	1,330	1,139
Natural Resources and Mining	94	90	122	118
Construction	184	183	192	166
Manufacturing	1,536	1,153	1,383	1,375
Trade, Transportation, and Utilities	852	824	825	815
Information	68	70	72	67
Financial Activities	189	186	187	192
Professional and Business	308	177	157	134
Education and Health Services	352	373	539	463
Leisure and Hospitality	504	486	465	469
Other	272	380	230	243
<b>Total</b>	<b>5,617</b>	<b>5,224</b>	<b>5,502</b>	<b>5,181</b>

Source: Department of Labor and Workforce Development, Research and Analysis Section

## 1.6 Environmental Overview

This summary of the known environmental conditions in the project area was collected through a review of existing documentation, including the 1975 and 1982 Port Lions Comprehensive Development Plans (ESE 1982; G&S 1975), the U.S. Fish and Wildlife Service National Wetlands Inventory, the Alaska Department of Community and Economic Development's Community Profiles, and an on-site visit to the project area August 21, 2002.

### 1.6.1 Climate

The climate of the Kodiak Islands is dominated by a strong marine influence. Moderately heavy precipitation, cool temperatures, high clouds, and frequent fog, with little or no freezing weather, characterize the area. The humidity is generally high and the temperature variation is small (20° F to 60° F). Relatively cool summers and warm winters are common. There are approximately 60 inches of precipitation per year (Kodiak Island Community Profiles 1981). Average annual precipitation is 55.51 inches (G&S 1975). The average annual snowfall is 90 inches, and there is generally abundant snowfall present by November (DOT&PF 1983).

Sky cover/visibility and icing are two other climatic features of importance to the Kodiak area. Fog is the principal cause of reduced visibility and can be expected about 10% of the time, daily. Foggy conditions are most common from June to September (Kodiak Island Community Profiles 1981).

### 1.6.2 Wetlands

Numerous small wetlands are found near the shoreline in the upper cove area within Port Lions. Figure 1-3 displays the identified wetlands in the project area. The following wetlands have been identified in the project area from current National Wetlands Inventory (NWI) mapping:

PSS1/EM1C:

[P] Palustrine, [SS] Scrub-Shrub, [1] Broad-Leaved Deciduous / [EM] Emergent, [1] Persistent, [C] Seasonally Flooded

E2USP:

[E] Estuarine, [2] Intertidal, [US] Unconsolidated Shore, [P] Irregularly Flooded

PSS4/1B:

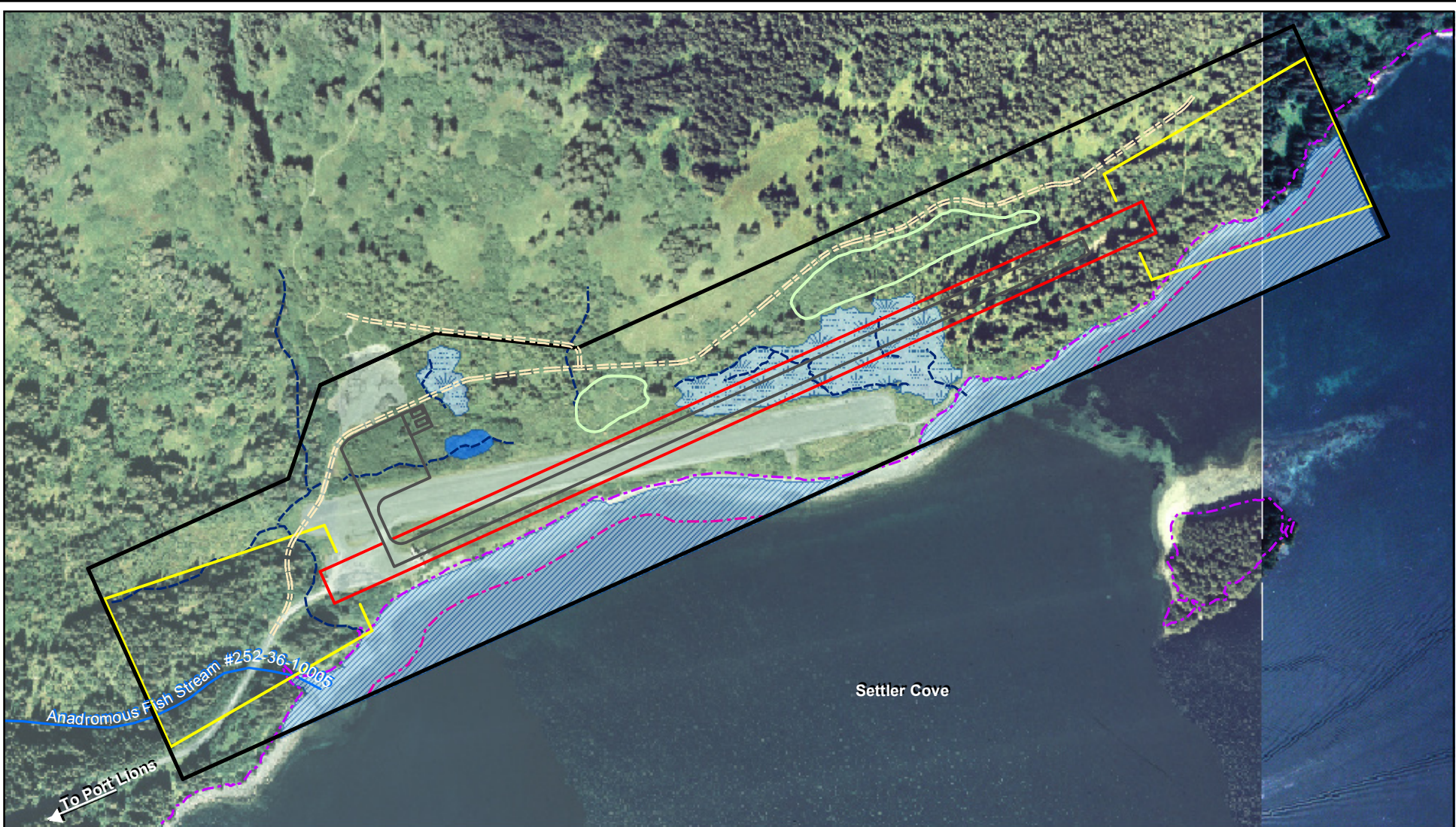
[P] Palustrine, [SS] Scrub-Shrub, [4] Needle-Leaved Evergreen / [SS] Scrub-Shrub, [1] Broad-Leaved Deciduous, [B] Saturated

PF04B:

[P] Palustrine, [FO] Forested, [4] Needle-Leaved Evergreen, [B] Saturated

### 1.6.3 Soils and Geology

Peat is found in poorly drained areas around Port Lions. The top layer of soil consists of a vegetative mat generally ranging in depth from 3 inches to 3 feet and covers a layer of volcanic ash which is about 60 years old. One deeper area of peat was found in the project area. The soil



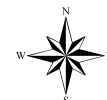
**Port Lions Airport Master Plan  
Environmental Assessment  
Wetlands and Waterbodies**

AKSAS Project No. 54746  
State of Alaska  
Department of Transportation  
and Public Facilities



**Legend**

- Wetlands
- Waterbodies
- Ponds
- Anadromous Fish Stream
- Small Streams and Drainages
- Approximate High Tide Line
- Approximate Low Tide Line
- Proposed Runway and Taxiway
- Proposed Apron
- Proposed Access Road and Trail
- Proposed Runway Safety Area
- Proposed Runway Protection Zone
- Proposed Airport Property Boundary
- Wasting Site Location



**Figure  
1.3**

beneath the ash layer is a silty loam that contains a substantial percentage of greywacke rock fragments. Rounded granite rocks are also common in this layer.

The bedrock geology of the area consists of marine sediments dating from the Cretaceous and Jurassic periods of the Mesozoic era. These are in the form of greywacke and slate, and lie at varying depths, including surface exposures. This rock is fractured and tightly folded (G&S 1975).

A full geotechnical report is attached in Appendix 2.

#### **1.6.4 Hydraulics and Hydrology**

The major watersheds in the Port Lions vicinity include the Port Lions River, Branchwater Creek, and Bourbon Creek. The water system utilizes a reservoir located on Branchwater Creek as the supply source. The minimum flow of Branchwater Creek has been estimated at 150 gallons per minute and the minimum flow of the Port Lions River has been estimated to be 550 gallons per minute.

#### **1.6.5 Wind**

Two types of winds are found in the Kodiak Island area. The first type consists of wind produced by a strong pressure gradient. Air tries to move from an area of high barometric pressure to an area of low barometric pressure along the isobaric pressure lines. This type of wind generally comes over the mountains down long, narrow valleys, and then extends over the water where it disperses. The second type is storm winds generally associated with low pressure systems. These are generated in the Gulf of Alaska and often sustain wind speeds of 50 to 75 knots. The most severe storms occur from December through February (Kodiak Island Community Profiles 1981). The prevailing winds in this area are northeasterly, with a maximum speed of 99 knots.

Wind data has not been collected at the Port Lions Airport. Anecdotal information from local pilots indicates that wind coverage for the existing runway alignment is satisfactory albeit with storm-related turbulence. Southern winds travel up and over the small hill beyond the approach end of Runway 24 and cause turbulent air perpendicular to the runway approach.

The nearest wind data for Port Lions is the wind data for the new Ouzinkie runway located 14.4 miles away on a bearing of N 73° 14.4' E. The coverage for a realigned runway 5/23 with a heading of N 65° 45' 22" E using the Ouzinkie data computes a 10.5 knot coverage of 99.41% and a 13-knot coverage of 99.75%. Any local wind channeling by terrain will probably be similar at Ouzinkie and Port Lions as the topographic features are generally oriented in the same direction.

#### **1.6.6 Fish and Wildlife**

Fish and wildlife are abundant in the Port Lions area. The area is known for large stocks of salmon and Alaska brown bear. Coho and pink salmon spawn in the Port Lions River. Rainbow trout are also found in the Port Lions River and in several other local streams. All four species of salmon utilize the Kizhuyak Bay tributaries as spawning sites. Area waters also have runs of Dolly Varden. Marine bottom fish in the area include pollock, cod, sablefish, ocean perch,

halibut, turbot, flathead sole, rock sole, and Atka mackerel. Wildlife common to the area include deer, bear, ptarmigan, and a variety of waterfowl. Marine mammals include seven species of whale, two species of porpoise, sea otters, Steller sea lions, and harbor seals. Rare birds include eagles and the peregrine falcon.

Figure 1-3 depicts the anadromous streams near the airport. Three additional unnamed creeks and anadromous fish streams flow through the project area.

### **1.6.7 Vegetation**

The northeasterly boundary of the city limits of Port Lions approximately coincides with the extent of the forested area. Most of the trees that occupied the village center have been removed. The coastal edge is dominated by Sitka spruce. Deciduous species, particularly Sitka alder, dwarf birch, and low-growing willows are found in recovery areas along stream ways. The lack of soil depth and exposure conditions result in numerous shrub species, including Labrador tea, blueberry, and low bush cranberry. The land above the head of Settler Cove consists of a mixture of spruce and shrub.

## **1.7 Historical Aviation Activity, Certification, and Ownership**

Port Lions is operated as a non-towered airport. As such no air traffic activity is collected or maintained. As a non-towered airport pilots self separate and operate at the pilot's discretion. The airport is also not operated or maintained as a 14 CFR Part 139 certificated airport. Certificated airports in Alaska need to be served by aircraft with more than thirty passenger seats to require certification. In the Lower 48 this requirement is for service with ten or more seats. The Port Lions airport is owned and maintained by the State of Alaska, Department of Transportation and Public Facilities (DOT&PF), Central Region. The airport manager of record is the airport manager in Kodiak.

## **1.8 Financial Data**

The DOT&PF maintains revenue and expense data for all airports. Revenue is primarily from leases, fuel flow, and concessions. Port Lions does not have any of these, so its revenue generation is \$0. The DOT&PF bids the local maintenance contract each year. The bid for the 2006-2007 season to plow snow and maintain the lights and windsock is \$20,000. The expenses for administration are shared with the rest of the rural airports in Central Region and are not accounted for separately.

## **2.0 FORECASTS**

### **2.1 Introduction**

This report presents a comprehensive 20-year air traffic forecast for Port Lions Airport. By estimating the future air traffic at Port Lions Airport, the adequacy of existing airport facilities and the need for additional facilities and the degree to which existing facilities should be improved can be identified. The forecast also serves to identify the relative timing for implementation of new or expanded airport facility developments at the airport.

The proposed methodology for the Port Lions Airport air traffic forecast is based on the process recommended in FAA AC 150/5070-6B, *Airport Master Plans* and updated in *Forecasting Aviation Activity by Airport* (FAA July 2001). These documents provide national guidance for the preparation of airport master plans and are recommended for use in preparing individual airport master plan forecasts. The advisory circular has been the primary guidance in the preparation of master plans since enactment of the Airport and Airways Development Act of 1970 and has been recently updated with a seven-step process for the development of aviation forecasts. The recommended steps are:

- Step 1. Identify aviation activity measures
- Step 2. Review previous airport forecasts
- Step 3. Gather data
- Step 4. Select forecast methods
- Step 5. Apply forecast methods and evaluate results
- Step 6. Compare forecast results with FAA's Terminal Area Forecasts
- Step 7. Obtain approval of the forecasts

## **2.2 Step 1. Identify Aviation Activity Parameters and Measures to Forecast**

The level and type of aviation activity anticipated at an airport as well as the nature of the planning to be done determines the parameters to be forecasted. Generally, the most important activity forecast for airfield planning is the level and type of aviation demand generated at the airport. It is this demand that defines the runway and taxiway requirements and drives the location of aprons and ultimately landside development.

As indicated in *Forecasting Aviation Activity by Airport*, practical considerations dictate the level of detail and effort that should go into an airport planning forecast. Air traffic activity at Port Lions is comprised of single and twin-engine GA aircraft. Commercial Aircraft operations that generate passenger and cargo enplanements have historically comprised a significant percentage of the annual activity. The forecast for Port Lions airport will focus on the following parameters:

- Passenger Enplanements – *Commuter*
- Aircraft Operations – *Commuter, General Aviation, Military (Itinerant and Local)*
- Based Aircraft – *Single and Multi Engine, Helicopter, Ultra Light, and others*

## **2.3 Step 2. Collect and Review Previous Airport Forecasts**

This step recommends acquiring existing FAA and other related forecasts for the area and airport served. The relevant forecasts for Port Lions airport include the FAA Terminal Area Forecast (TAF), the Alaska Aviation System Plan and the Southwest Transportation Plan.

### **2.3.1 Federal Aviation Administration, Terminal Area Forecast**

The FAA Terminal Area Forecast (TAF) (Table 2-1) for Port Lions Airport contains FAA's forecast for fiscal years 2005-2025. The TAF reports passenger enplanements, aircraft operations, and based aircraft for four categories: air carriers, air taxi and commuters, general

aviation (GA), and the military. A further division is made between local and itinerant aircraft operations.

Table 2-1  
Federal Aviation Administration, Terminal Area Forecast (2005-2025)  
Port Lions Airport

Year	Passenger Enplanements		Air Carrier	Commuter/Air Taxi	GA	Military	Total Operations
	Commuter	Total	0%	72%	28%	0%	100%
2005	2,665	2,665	0	9,662	500	0	10,162
2006	2,665	2,665	0	9,662	500	0	10,162
2007	2,665	2,665	0	9,662	500	0	10,162
2008	2,665	2,665	0	9,662	500	0	10,162
2009	2,665	2,665	0	9,662	500	0	10,162
2010	2,665	2,665	0	9,662	500	0	10,162
2011	2,665	2,665	0	9,662	500	0	10,162
2012	2,665	2,665	0	9,662	500	0	10,162
2013	2,665	2,665	0	9,662	500	0	10,162
2014	2,665	2,665	0	9,662	500	0	10,162
2015	2,665	2,665	0	9,662	500	0	10,162
2016	2,665	2,665	0	9,662	500	0	10,162
2017	2,665	2,665	0	9,662	500	0	10,162
2018	2,665	2,665	0	9,662	500	0	10,162
2019	2,665	2,665	0	9,662	500	0	10,162
2020	2,665	2,665	0	9,662	500	0	10,162
2021	2,665	2,665	0	9,662	500	0	10,162
2022	2,665	2,665	0	9,662	500	0	10,162
2023	2,665	2,665	0	9,662	500	0	10,162
2024	2,665	2,665	0	9,662	500	0	10,162
2025	2,665	2,665	0	9,662	500	0	10,162

Source: Federal Aviation Administration

As a non-towered airport with no local FSS, data reported in the FAA TAF for the Port Lions Airport are extrapolated from estimates recorded on FAA’s form 5010 Airport Master Record during routine airport inspections. The last inspection of Port Lions airport was performed on May 18, 2004. Aircraft operations data reported in the FAA TAF appears to be an estimate rather than actual activity reported by operators.

## 2.4 Step 3. Gather Data

### 2.4.1 Data Requirements

As a non-towered airport with no local FSS, records of air traffic at the Port Lions Airport are not maintained onsite. Historical air traffic data for the Port Lions Airport was acquired from FAA’s Airport Master Record Form 5010, the FAA TAF for Port Lions Airport, and actual records of operations and passenger enplanements reported to FAA. In addition, HDR staff performed informal interviews with operators providing service to Port Lions to supplement and

validate aircraft operations, annual passenger enplanements, and annual freight tonnage estimates.

**2.4.2 Historical Aviation Data**

**2.4.2.1 Aircraft Operations**

Table 2-2 presents the historical aircraft operations for Port Lions airport from 1985 to 2005. The FAA contracts for periodic 5010 inspection of the Port Lions airport. Information from those 5010 inspections are updated and fed into the TAF database. An estimated number of operations are calculated by FAA personnel at the time of the inspection.

Table 2-2  
Reported Aircraft Operations (1985 – 2005)  
Port Lions Airport

<u>Year</u>	<u>Commuter</u>	<u>GA</u>	<u>Military</u>	<u>Total</u>
1985	0	0	0	0
1986	0	0	0	0
1987	0	0	0	0
1988	0	0	0	0
1989	0	0	0	0
1990	0	0	0	0
1991	0	0	0	0
1992	0	0	0	0
1993	0	0	0	0
1994	0	0	0	0
1995	0	0	0	0
1996	1,276	500	0	1,776
1997	4,800	500	0	5,300
1998	4,800	500	0	5,300
1999	4,800	500	0	5,300
2000	4,800	500	0	5,300
2001	4,800	500	0	5,300
2002	4,800	500	0	5,300
2003	4,800	500	0	5,300
2004	4,800	500	0	5,300
2005	9,662	500	0	10,162

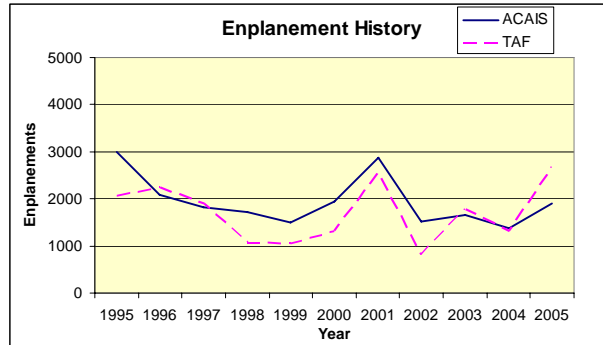
Source: FAA Terminal Area Forecast

**2.4.2.2 Passenger Enplanements**

Passenger enplanements at the Port Lions airport have remained relatively consistent since 1995. As a community with no land based access to Kodiak, residents rely on air transportation for passenger and freight service and therefore passenger enplanements remain fairly regular from year to year. Table 2-3 compares reported enplanements from the TAF and the Air Carrier Activity Information System (ACAIS) database.

Table 2-3  
 Reported Passenger Enplanements (1995 – 2005)  
 Port Lions Airport

<u>Year</u>	<u>TAF</u>	<u>ACAIS</u>
1995	2,057	3,002
1996	2,237	2,088
1997	1,901	1,822
1998	1,077	1,715
1999	1,045	1,499
2000	1,311	1,947
2001	2,552	2,868
2002	800	1,522
2003	1,789	1,662
2004	1,324	1,383
2005	2,665	1,907



Source: FAA Terminal Area Forecast, ACAIS printouts at DOT&PF

It should be noted that the U.S. Department of Transportation relies on a voluntary reporting of enplanement data for non-scheduled flights while scheduled flights are required to report their enplanements. Scheduled flights are defined in 14 CFR 298.2 as transport service operated over routes pursuant to published flight schedules or pursuant to mail contracts with the U.S. Postal Service. Fluctuations in enplanement activity, therefore, may be the result of inaccurate record keeping, irregular reporting from non-scheduled air carriers, or changes in demand for air travel due to changes in demographics or disposable income. Construction projects in a community can also cause spikes in the reported enplanements. Thus, the ACAIS database may not reflect actual activity. With the inherent potential inaccuracies of the ACAIS data, one would expect ACAIS to be below the TAF. However, the opposite is shown in the chart above. For a majority of the last ten years, the ACAIS is above the TAF. An analysis of the ACAIS reports in the files at the Alaska DOT&PF offices shows regular yearly reporting by the scheduled air carriers and no reporting by the Kodiak Island based non-scheduled air carriers.

**2.4.2.3 Cargo Activity**

Air cargo service provides residents with a means of importing and exporting goods to and from the community. Table 2-4, presents data acquired from the U.S. DOT, Bureau of Transportation Statistics, Office of Airline Information, and reflects reported freight and mail enplaned at the Port Lions Airport from 1991 to 2005.

Air cargo service provides residents with a means of importing and exporting goods to and from the community. Aircraft in Alaska serve the same role for moving freight and mail that trucks provide in the Lower 48 states.

The US Postal Service provides priority and other classes of mail service to rural Alaska, and in locations where the community is not on the highway system, the mail moves by air. A 1985

special provision in Federal law permits and subsidizes the delivery of fourth class mail at rates that are significantly lower than freight rates. Stores or businesses that ship large quantities of goods such as groceries and other consumer goods palletize their loads and deliver them directly to an air cargo shipper, bypassing the Post Office. Thus the term “bypass mail” is used for these shipments. A postal official at the air carrier facility accepts the pallet on behalf of the Post Office, and bills for the fourth class postage. The air carrier is responsible for delivery of the goods to the recipient in the destination community. Individuals can also ship goods by fourth class mail, but those packages must be taken to a post office. Approximately 75% of the fourth class mail to rural Alaska is transported as bypass mail. Hazardous materials and construction materials are not accepted by the Post Office as fourth class mail, and must be shipped by air freight. Delivery of mail by air at these favorable rates has facilitated a better flow of goods to rural Alaska.

The Rural Air Service Improvement Act (RSIA) (Public Law 107-206, Sec. 3002, 2002) changed the freight, mail, and passenger service in rural Alaska including freight and mail reporting requirements for air carriers. Essentially, beginning in 2002, air carriers were required to report all freight and mail on form T-100 to the Federal DOT, Bureau of Transportation Statistics (BTS). The BTS implemented a system to facilitate all air carriers to submit their data on a web based system. Prior to this 2002 change in the law, only the largest air carriers reported their data. This change in the method of reporting has created an interesting spike in the reported numbers.

As shown in the table below, reported freight and mail activity is dramatically higher in the last three years. (The new system was being implemented in the later half of 2002.) For the period reported, freight peaked at 101,739 lbs. in 2005. Mail peaked at 95,596 lbs. also in 2005. This data suggest a relatively stable level of cargo activity considering the reports were relatively stable under the old reporting system from 1999 into 2002 and also relatively stable under the new T100 reporting system.

Table 2-4  
Historical Cargo (Freight and Mail) Activity (lbs.) (1991 – 2005)  
Port Lions Airport

Year	Freight	Mail	Total
1991	444	7,924	8,368
1992	72	9,032	9,104
1993	507	10,402	10,909
1994	513	13,886	14,399
1995	344	15,607	15,951
1996	NA	16,235	16,235
1997	334	24,581	24,915
1998	NA	23,054	23,054
1999	206	17,025	17,231
2000	1,619	14,891	16,510
2001	2,421	13,035	15,456
2002	11,398	27,662	39,060*
2003	75,467	67,292	142,759
2004	61,282	87,850	149,132
2005	101,739	95,596	197,335

\* = Missing all Kodiak to Port Lions data and some Port Lions to Kodiak data.  
Source: U.S. DOT, Bureau of Transportation Statistics, Office of Airline Information.

**2.4.2.4 Based Aircraft and Fleet Mix**

The TAF reports one aircraft based at the Port Lions airport starting in 1996. A public database (www.landings.com) indicates there are 3 aircraft registered in Port Lions; a Piper PA-12, a PA18A, and a PA-28.

With the exception of a Fairchild C-119 Flying Boxcar that has been “parked” at the Port Lions airport since 1989, there were no based aircraft present at the airport during a site visit in July 2001 performed by HDR personnel. The Flying Boxcar had been traveling from Kodiak to Anchorage in 1989 when it lost power and made an emergency landing at the Port Lions airport. During the 2001 site visit, the airport manager indicated that the aircraft is not airworthy though the owners have made attempts to repair it. DOT&PF reported the C-119 was removed in 2003.

The airport manager indicated that a couple of aircraft may base at the airport during the summer but none are based at the airport during the winter. The airport manager also indicated that several transient aircraft will tie down at the airport for a few days to as long a week during the summer. These aircraft belong to hunters and anglers visiting the area. There have been summers when the apron can be congested with aircraft and vehicles. The airport has no aircraft hangers and only rudimentary tie-down facilities.

**2.4.2.5 Airport Master Record, Form 5010**

Table 2-5 presents aircraft operations data as reported on the FAA’s form 5010 airport master record for Port Lions airport. Form 5010 reports basic airport identifying information plus manager and owner name, address, and phone number in addition to runway and taxiway information and air traffic activity estimates. It is important to note that the operations data reported for Port Lions airport made during an airport inspection on May 18, 2004 did not change the data already reported on previous 5010 reports. It is not clear whether the inspector neglected to change the data or whether the inspector considered the data accurate at the time of the inspection. Conditions may have changed slightly since the last inspection.

Table 2-5  
Federal Aviation Administration, Airport Master Record (form 5010)  
Port Lions Airport

Air Carrier	0 annual aircraft operations
Commuter and Air Taxi	4,800 annual aircraft operations
Itinerant General Aviation	500 annual aircraft operations
Total Annual Aircraft operations	5,300 annual aircraft operations
Aircraft Based on Field	1

Source: FAA 5010 Airport Master Record.

Using the 5010 data, HDR calculates an average of approximately 102 operations per week that results in a total of 5,304 annual aircraft operations for the Port Lions airport. Of these annual aircraft operations 91% were attributed to commuter/air taxi operators, and 9% were attributed to itinerant GA operators. Commercial air carrier service is not expected or reported for this facility.

**2.4.2.6 Air Traffic Data collected by HDR Alaska, Inc.**

In an effort to supplement and validate aircraft operation and passenger and cargo enplanements data reported in the TAF and FAA 5010, commercial air operators and the airport manager were informally interviewed. Currently only two commercial operators, Island Air Service and Servant Air provide scheduled service. Other air taxi operators based in Kodiak provide on demand service to Port Lions. Island Air Service provides scheduled service fifteen times per week in the summer (June 1 through mid September), twelve times per week during the rest of the year, and on-demand charter service with Piper Saratoga single engine and Britten Norman Islander twin-engine aircraft. Servant Air’s schedule is twice per day each weekday with Piper Saratoga and Cessna 207 single engine and Piper Navajo, Piper Aztec, and Britten Norman Islander twin engine aircraft. This computes to approximately 1,185 scheduled flights per year, or 2,370 scheduled operations per year. National Weather Service climate records for Kodiak Island indicate that on an average approximately 5 days per month, or 60 days per year the ceilings and visibility are too bad to fly. This results in approximately 1,990 completed scheduled operations. Factoring in non-scheduled passenger and freight flights, and assuming an average of one general aviation (14 CFR 91) flight per day, plus 5 annual medical evacuation flights by the US Coast Guard, HDR computes approximately 3,170 annual operations for Port Lions.

The airport manager confirmed aircraft activity at the airport peaks in the summer and is associated with fishing, hunting, and other recreational activities.

**2.4.3 Air Traffic Base-Year Summary**

Table 2-6 presents the air traffic data collected and summarized and compared for a base year estimate (year 2006). The FAA 5010 for Port Lions has not been updated with a 2006 inspection. Activity data shown is, therefore, for year 2004 (the year of the last inspection).

Table 2-6  
Base Year Air Traffic Data  
Port Lions Airport

	Aircraft Operations			
	<u>Commuter/ Air Taxi</u>	<u>GA</u>	<u>Military</u>	<u>Total</u>
FAA TAF	9,662	500	0	10,162
FAA form 5010	4,800	500	0	5,300
HDR Estimate	2,440	720	10	3,170

Source: Compiled by HDR Alaska, Inc., September 2006

**2.5 Socioeconomic Analysis**

**2.5.1 Population**

Population estimates for Alaska are produced by the U.S. Census Bureau, the Alaska Department of Labor and some municipalities. These different sources may be very similar or they may differ. There are several reasons for the differences and the user should weigh all of the following factors in using estimates.

Definitions of Residency - The U.S. Census and the Alaska Department of Labor both estimate permanent full-time residents for Alaska. The number of persons temporarily in the state can vary by as much as 20% and some communities may be much more seasonal because of the tourism, fishing, timber and construction industries. If an individual's usual place of residence is in another state but works or lives part of the year in Alaska, that person is not counted as an Alaska resident in these estimates. However some local communities may count such persons in their estimates.

Port Lions has been experiencing a near steady population over the past 20 years. Based on population projections presented in Table 2-7 below, this trend is expected to continue through the next 20 years. The most growth has occurred within the older class of citizens, which has risen the median age of the community from 25.6 in 1980 to 33.5 in the year 2000. This indicates there will be a need to shift the focus of development to cater towards the elderly and provide them with the goods and services that are of benefit to them. Meanwhile, the youth population is dropping, so the need for new or improved facilities for children and students may not be as great of a priority because there is less demand for those services.

Meanwhile, the Kodiak Island Borough has seen steady growth in all of its age groups except for the 20-34 year age groups. This age group has had a significant loss of population since 1980. The main possibilities for this is either because many of the residents in this age group attend a post-secondary educational institution outside of the borough, or that they relocate as young adults for employment opportunities. The borough and the state had a fairly high unemployment rate throughout the 1990s compared to the nation as a whole. This may have been a contributing factor to relocation. Again in the borough, the group with the largest gain is the 45 to 54 year age group, which increased the median age of residents' borough wide. Future needs for the borough may focus on services for the elderly here also. The Department of Labor estimates that the largest growing demand for employment over the next ten years will be in the health care and community assistance industry.

Table 2-7  
Population, 1970 –2005 (Forecast 2006-2026)

<u>Year</u>	<u>Port Lions</u>	<u>Kodiak Borough</u>	<u>Statewide</u>
1970	227	9,409	553,171
1980	215	9,939	569,054
1990	222	13,309	586,722
2000	256	13,913	596,906
2001	246	13,566	600,622
2002	227	13,645	601,581
2003	236	13,959	605,212
2004	239	13,538	609,655
2005	220	13,638	617,082
Ann. Avg. Growth	<b>0.60%</b>	<b>4.10%</b>	<b>1.35%</b>

<u>Year</u>	<u>Port Lions</u>	<u>Kodiak Borough</u>	<u>Statewide</u>
<b>Population Projections</b>			
2006	221 <sup>2</sup>	14,197 <sup>2</sup>	625,413 <sup>1</sup>
2011	223 <sup>2</sup>	14,779 <sup>2</sup>	633,856 <sup>1</sup>
2016	224 <sup>2</sup>	15,385 <sup>2</sup>	642,413 <sup>1</sup>
2021	225 <sup>2</sup>	16,016 <sup>2</sup>	651,085 <sup>1</sup>
2026	227 <sup>2</sup>	16,673 <sup>2</sup>	659,875 <sup>1</sup>

<sup>1</sup> Population Projection, Alaska Dept. of Labor, Research.

<sup>2</sup> Population Projections, HDR Alaska, Inc.

Source: Alaska Dept. of Labor, Research & Analysis Section, <http://www.dced.state.ak.us>

### 2.5.2 Employment

There is no current employment data available for the City of Port Lions. However, data is available for the state and the Kodiak Island Borough. The statewide unemployment trend of the 1990s was echoed in the Kodiak Island Borough and has since continued to rise. In 1995, the Borough saw unemployment drop by 2.2% and it has varied anywhere from 7.2% to 9.8% since then, and currently sits at 8.4%. On the other hand, while the Kodiak Borough watched its unemployment rates rise farther through the early 1990s, the State of Alaska began to see a decline in unemployment as a whole with the attraction of new businesses and industries, and a diversification of the economic base. This was especially visible in urban areas such as Anchorage. So while the Kodiak Island Borough has struggled with high unemployment rates in recent years, the state as a whole has reduced unemployment from a high of 9.2% in 1992, to a rate of 6.2% in 2001. This is slightly higher than the nation, which was 4.8% in 2001 (U.S. Bureau of Labor Statistics).

Table 2-8  
Unemployment Rate (8.75%), 1995-2005

<u>Year</u>	<u>Port Lions</u>	<u>Kodiak Borough</u>	<u>Statewide</u>
1995	--	9.8	7.3
1996	--	9.5	7.8
1997	--	9.8	7.9
1998	--	7.2	5.8
1999	--	7.2	6.4
2000	--	8.1	6.2
2001	--	8.6	6.2
2002	--	8.9	7.1
2003	--	9.8	7.7
2004	--	9	7.4
2005	--	8.4	6.8
Ann. Avg.	--	8.75%	6.96%

Source: Alaska Dept. of Labor, Research & Analysis Section

**2.5.3 Per Capita Income**

The income data presented in the table below is directly related to the unemployment data above (there is no data available for Port Lions). The State of Alaska has seen an overall average annual 3.29% increase in per capita income (1995-2003), while the Kodiak Island Borough has witnessed a 3.4% average annual increase in per capita income from 1995 through 2005.

These changes in income reflect the changes in employment around the state since 1990. The same time period when wages began to go down in the Kodiak Island Borough (approximately 1992) is also when the Borough saw unemployment rise. For the rest of the state, the results were reversed. The state began to see a drop in unemployment, which made jobs more competitive. Thus, wages have risen over time and this is reflected in the statewide per capita income in Table 2-9. It can only be assumed that Port Lions' wages have performed similarly to those of the Kodiak Island Borough and have declined relative to the statistics of the Borough.

Table 2-9  
Per Capita Income, 1995-2005

<u>Year</u>	<u>Port Lions</u>	<u>Kodiak Borough</u>	<u>Statewide</u>
1995	--	\$22,342	\$23,711
1996	--	\$22,708	\$22,073
1997	--	\$23,725	\$21,496
1998	--	\$24,378	\$21,073
1999	--	\$25,264	\$27,835
2000	--	\$26,695	\$28,523
2001	--	\$27,794	\$29,960
2002	--	\$27,873	\$31,027
2003	--	\$29,479	\$32,151
2004	--	--	--
2005	--	\$24,120	--
Annual Average Income		\$25,438	\$26,428
Average Annual %	--	3.40%	3.29%

Source: Alaska Dept. of Labor, Research & Analysis Section.

**2.5.4 Industry**

Overall, employment in the Kodiak Island Borough is predominantly in the manufacturing and government sectors, followed by services and trade. The agriculture/forestry/fishing sector is an important economic sector for the area, especially for Port Lions.

As a remote community without any land based access to the mainland, residents of the Kodiak Island Borough rely on air transportation for the import and export of day to day mail and cargo as well as passenger service. Heavy goods are transported by water. Typically as industry grows so does the population base and as a result air traffic activity.

The remoteness of the region inhibits economic factors of scale that could significantly reduce per capita costs of goods and services. Examples of economies of scale that are more achievable in less remote areas are discounts in price resulting from high volume purchase of goods and nearly universal use of large electrical generation facilities. The limited transportation infrastructure inhibits movement between communities within the region, multiplying the costs of each individual movement.

Aviation is the primary means of accessing the area. Mainline service connects the region to the rest of the world through the key airport at Kodiak. Port Lions is defined as a General Aviation airport in the National Plan of Integrated Airport Systems (NPIAS), 2005 – 2009, since the enplanements for this facility fall below the 2,500 level required for commercial service. Because of the small population center and rugged terrain, a high percentage of freight is flown into this remote village. The community depends heavily for delivery of goods on the U.S. Postal Service bypass mail system, which allocates 4th class mail delivery from postal hubs to communities among approved system carriers.

## 2.6 Base Year (2006) Air Traffic Activity Estimate

Table 2-10, presents base year (2006) air traffic activity estimates generated by HDR.

Table 2-10  
Air Traffic Estimate, Base Year (2006)  
Port Lions Airport

Based Aircraft	Aircraft Operations					Passenger Enplanements		
	AC	Air Taxi/Commuter	GA	Military	Total	AC	Air Taxi/Commuter	Total
1	0	2,440	720	10	3,170	0	2,143	2,143

Source: Compiled by HDR Alaska, Inc., September 2006.

Given the reported passenger enplanements, this means that of the estimated 1,220 commercial departures from Port Lions, each aircraft carried an average of 1.76 passengers from Port Lions. If these same aircraft carried freight and mail from Kodiak to Port Lions on the outbound leg (approximately 85% of the 197,000 total pounds is outbound) then each aircraft carried approximately 137 pounds of cargo, and presumably they also carried a nearly equal number of Kodiak enplaned passengers heading for Port Lions. These are light loads upon which these commercial air carriers could make any profit. However, the analysis validates HDR’s decision to use an estimation of operations rather than the 5010 or TAF forecast of operations.

These 2006 base year passenger enplanements are based on the 2005 ACAIS reported enplanements increased by the 0.6% projected population growth. HDR also estimated passenger enplanements from non-scheduled air carriers. This value is assumed to be 225 flights, and each flight is assumed to carry 1 passenger, resulting in the base year passenger enplanements increasing to 2,143.

## **2.7 Step 4. Select Forecasting Methods**

Air traffic activity was forecast based on growth rates for the local population. The TAF in Alaska has usually been proven to be quite inaccurate. As shown in Table 2-6 where the TAF is compared to the scheduled flights, there is virtually no way that the TAF projections could be met. HDR is likewise uncertain about the validity of the 5010 operations data. These numbers have been constant for several years with no adjustment. A regression analysis of the historical air traffic activity data from either the TAF or the 5010 was not performed to generate future growth rates. Forecasting erroneous historical air traffic activity into the future would exacerbate the error and result in an inaccurate forecast of air traffic activity at Port Lions airport. HDR has selected as the base year an operations estimate based primarily on the current air carrier schedules.

A low forecast scenario of 0.6% is based on the historical annual average population growth rate.

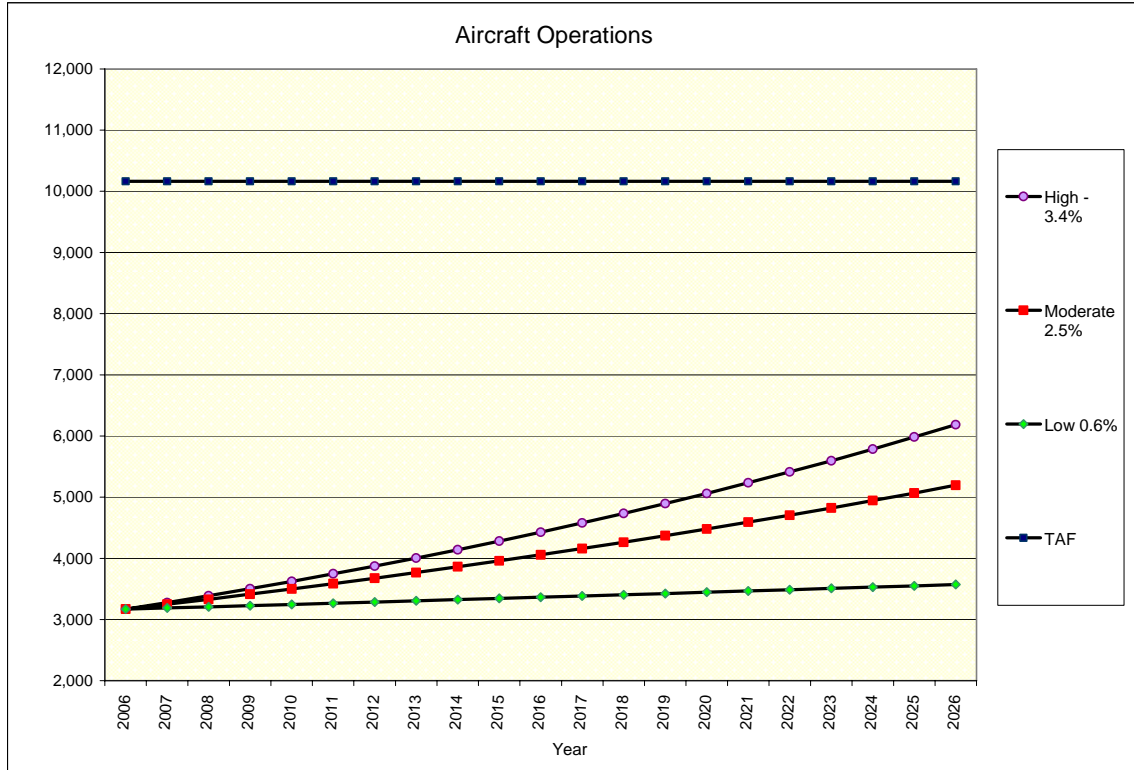
The moderate scenario (2.5% growth rate) is based on the average annual rate of growth for aircraft operations as forecast for Kodiak in the 1996 Alaska Aviation System Plan Update. The forecast of operation presented in the AASP is based on a macro analysis of the growth trends for the entire state of Alaska and a microanalysis of the economic trends in Southwest Alaska. Scenario two reflects a moderate level of potential growth.

The high scenario (3.4% growth rate) is based on the average annual rate of growth of per capita income for residents in the Kodiak Island Borough. As per capita income increases, residents may choose to travel more frequently thus increasing the possible number of aircraft operations. Scenario three reflects the highest level of potential growth.

## **2.8 Step 5. Apply Forecast Methods and Evaluate Results**

This section presents three scenarios of air traffic forecasts for aircraft operations, passenger enplanements, and cargo for the Port Lions airport (Figures 2-1 through 2-3). The three forecast scenarios use the base year (2006) estimate for aircraft operations and enplanements, and the 2005 cargo summary from Bureau of Transportation Statistics (BTS).

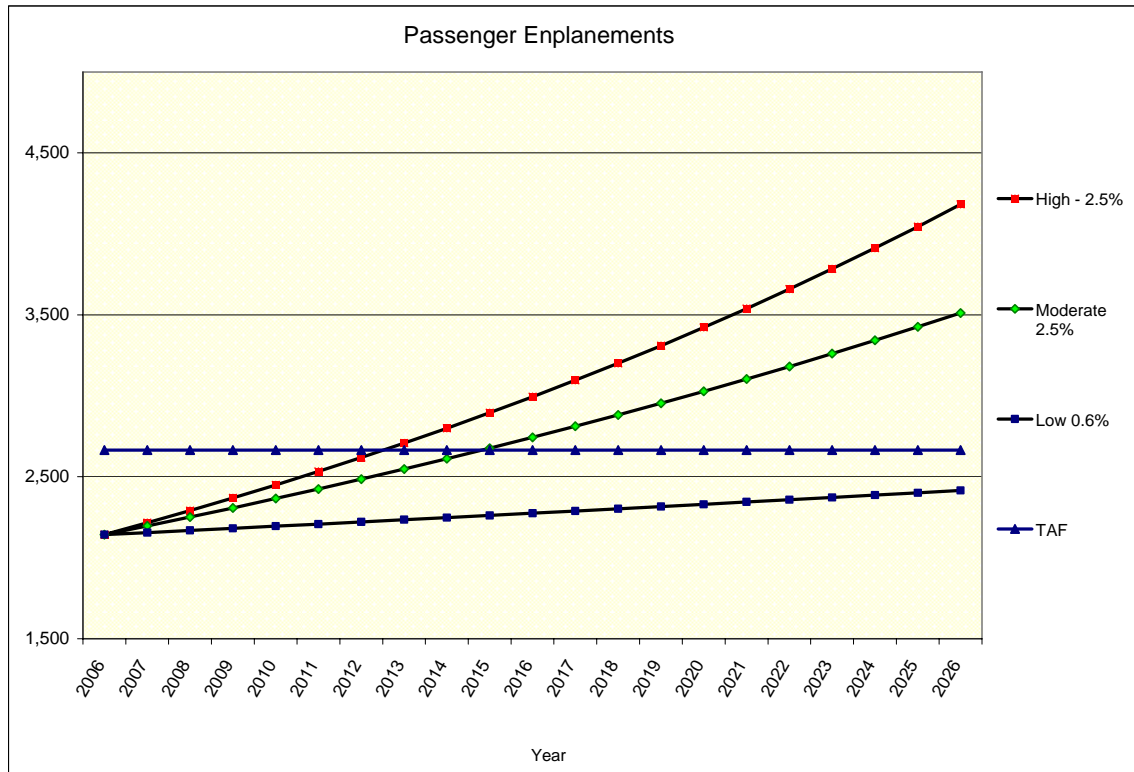
Figure 2-1  
Aircraft Operations Forecast  
Port Lions Airport



Source: Compiled by HDR Alaska, Inc., November 2006

Year	Low	Moderate	High	TAF
2006	3,170	3,170	3,170	10,162
2007	3,278	3,249	3,189	10,162
2008	3,389	3,330	3,208	10,162
2009	3,504	3,414	3,227	10,162
2010	3,624	3,499	3,247	10,162
2011	3,747	3,587	3,266	10,162
2012	3,874	3,676	3,286	10,162
2013	4,006	3,768	3,306	10,162
2014	4,142	3,862	3,325	10,162
2015	4,283	3,959	3,345	10,162
2016	4,429	4,058	3,365	10,162
2017	4,579	4,159	3,386	10,162
2018	4,735	4,263	3,406	10,162
2019	4,896	4,370	3,426	10,162
2020	5,062	4,479	3,447	10,162
2021	5,234	4,591	3,468	10,162
2022	5,412	4,706	3,488	10,162
2023	5,596	4,824	3,509	10,162
2024	5,787	4,944	3,530	10,162
2025	5,983	5,068	3,552	10,162
2026	6,187	5,194	3,573	10,162

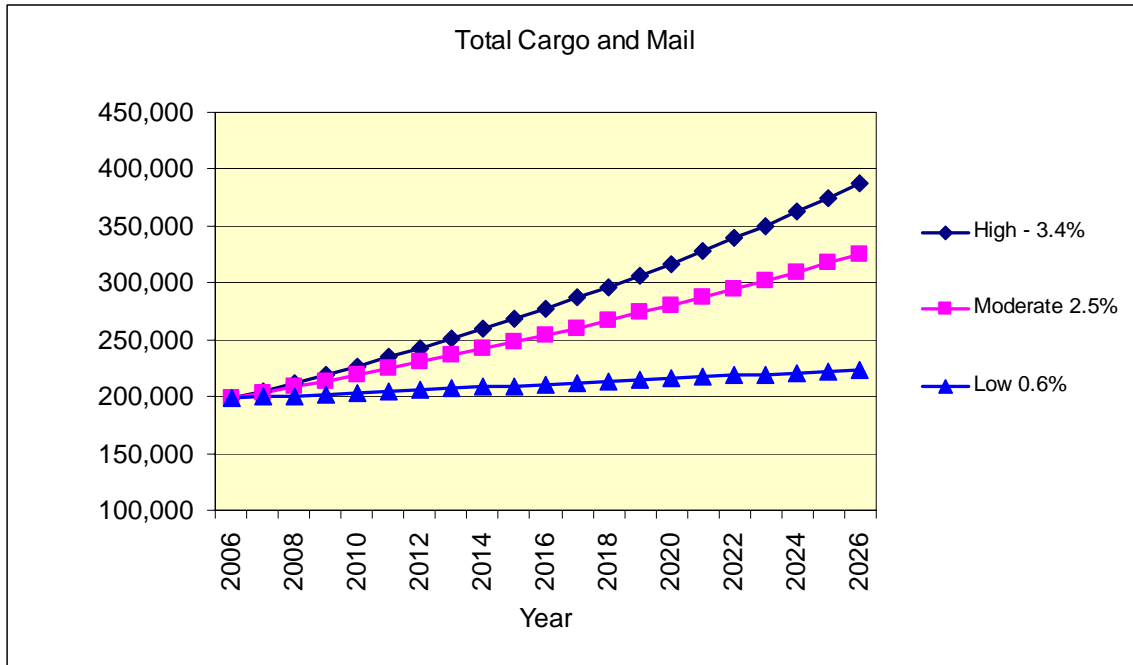
Figure 2-2  
 Passenger Enplanements Forecast  
 Port Lions Airport



Source: Compiled by HDR Alaska, Inc., November 2006

Year	Low	Moderate	High	TAF
2006	2,143	2,143	2,143	2,665
2007	2,216	2,197	2,156	2,665
2008	2,291	2,251	2,169	2,665
2009	2,369	2,308	2,182	2,665
2010	2,450	2,365	2,195	2,665
2011	2,533	2,425	2,208	2,665
2012	2,619	2,485	2,221	2,665
2013	2,708	2,547	2,235	2,665
2014	2,800	2,611	2,248	2,665
2015	2,895	2,676	2,262	2,665
2016	2,994	2,743	2,275	2,665
2017	3,096	2,812	2,289	2,665
2018	3,201	2,882	2,302	2,665
2019	3,310	2,954	2,316	2,665
2020	3,422	3,028	2,330	2,665
2021	3,539	3,104	2,344	2,665
2022	3,659	3,181	2,358	2,665
2023	3,783	3,261	2,372	2,665
2024	3,912	3,342	2,387	2,665
2025	4,045	3,426	2,401	2,665
2026	4,182	3,512	2,415	2,665

Figure 2-3  
Cargo Operations Forecast  
Port Lions Airport



Source: Compiled by HDR Alaska, Inc., November 2006

Year	Low	Moderate	High
2006	198,519	198,519	198,519
2007	199,710	203,482	205,269
2008	200,908	208,569	212,248
2009	202,114	213,783	219,464
2010	203,327	219,128	226,926
2011	204,546	224,606	234,641
2012	205,774	230,221	242,619
2013	207,008	235,977	250,868
2014	208,250	241,876	259,398
2015	209,500	247,923	268,217
2016	210,757	254,121	277,337
2017	212,021	260,474	286,766
2018	213,294	266,986	296,516
2019	214,573	273,661	306,598
2020	215,861	280,502	317,022
2021	217,156	287,515	327,801
2022	218,459	294,703	338,946
2023	219,770	302,070	350,470
2024	221,088	309,622	362,386
2025	222,415	317,362	374,707
2026	223,749	325,296	387,447

## 2.9 Step 6. Compare Airport Planning Forecast Results with TAF

Table 2-11 presents a comparison between the updated air traffic forecast for Port Lions Airport and the FAA TAF. Based on communication with FAA personnel, the FAA TAF is an estimate of air traffic activity and does not accurately reflect actual conditions at the Port Lions airport. The updated forecast presented in this report is based on current actual data as described in Section 3.0 of this report and is more representative of actual air traffic at Port Lions Airport.

Table 2-11  
Air Traffic Forecast, Port Lions Airport  
Federal Aviation Administration, Terminal Area Forecast

		<u>Airport Forecast</u>	<u>Base Year TAF</u>	<u>AF/TAF (% Difference)</u>
<b>Passenger Enplanements</b>				
Base yr.	2006	2,143	2,665	-20%
Base yr. + 5yrs.	2011	2,425	2,665	-9%
Base yr. + 10yrs.	2016	2,743	2,665	3%
Base yr. + 15yrs.	2021	3,104	2,665	16%
Base yr. + 20yrs.	2026	3,512	2,665	32%
<b>Commercial Operations</b>				
Base yr.	2006	2,440	9,662	-75%
Base yr. + 5yrs.	2011	2,761	9,662	-71%
Base yr. + 10yrs.	2016	3,123	9,662	-68%
Base yr. + 15yrs.	2021	3,534	9,662	-63%
Base yr. + 20yrs.	2026	3,998	9,662	-59%
<b>General Aviation Operations</b>				
Base yr.	2006	720	500	44%
Base yr. + 5yrs.	2011	815	500	63%
Base yr. + 10yrs.	2016	922	500	84%
Base yr. + 15yrs.	2021	1,043	500	109%
Base yr. + 20yrs.	2026	1,180	500	136%
<b>Total Operations</b>				
Base yr.	2006	3,170	10,162	-69%
Base yr. + 5yrs.	2011	3,587	10,162	-65%
Base yr. + 10yrs.	2016	4,058	10,162	-60%
Base yr. + 15yrs.	2021	4,591	10,162	-55%
Base yr. + 20yrs.	2026	5,194	10,162	-49%

1. The TAF does not provide a forecast beyond 2025. TAF data shown for 2026 is actually 2025.  
Note: TAF data is on a U.S. government fiscal year basis (October through September)

Table 2-12 presents the 20-year air traffic forecast for the Port Lions airport. Average annual growth rates are presented for purposes of evaluation.

Table 2-12  
Based Aircraft, Base Year (2006)  
Port Lions Airport

	Forecast Levels, Base Year 2006					Average Annual Compound Growth Rates			
	2006 Base Yr. Level	2007 Base Yr. + 1yr.	2011 Base Yr. + 5yrs.	2016 Base Yr. + 10yrs.	2026 Base Yr. + 20yrs.	2007 Base yr. to +1	2011 Base yr. to +5	2016 Base yr. to +10	2026 Base yr. to +20
<b>Passenger Enplanements (Commercial)</b>									
Air Carrier	0	0	0	0	0	0.0%	0.0%	0.0%	0.0%
Commuter	2,143	2,197	2,425	2,743	3,512	2.5%	2.5%	2.5%	2.5%
<b>TOTAL</b>	<b>2,143</b>	<b>2,197</b>	<b>2,425</b>	<b>2,743</b>	<b>3,512</b>	<b>2.5%</b>	<b>2.5%</b>	<b>2.5%</b>	<b>2.5%</b>
<b>Operations</b>									
<u>Itinerant</u>									
Air Carrier	0	0	0	0	0	0.0%	0.0%	0.0%	0.0%
Commuter/air taxi	2,440	2,501	2,761	3,123	3,998	2.5%	2.5%	2.5%	2.5%
<b>Total Commercial Operations</b>	<b>2,440</b>	<b>2,501</b>	<b>2,761</b>	<b>3,123</b>	<b>3,998</b>	<b>2.5%</b>	<b>2.5%</b>	<b>2.5%</b>	<b>2.5%</b>
General aviation	720	738	815	922	1,180	2.5%	2.5%	2.5%	2.5%
Military	10	10	11	13	16	2.5%	2.5%	2.5%	2.5%
<u>Local</u>									
General aviation	0	0	0	0	0	0.0%	0.0%	0.0%	0.0%
Military	0	0	0	0	0	0.0%	0.0%	0.0%	0.0%
<b>TOTAL</b>	<b>3,170</b>	<b>3,249</b>	<b>3,587</b>	<b>4,058</b>	<b>5,194</b>	<b>2.5%</b>	<b>2.5%</b>	<b>2.5%</b>	<b>2.5%</b>
<b>Based Aircraft</b>									
Single Engine (Nonjet)	1	1	1	1	1	0.0%	0.0%	0.0%	0.0%
Multi Engine (Nonjet)	0	0	0	0	0	0.0%	0.0%	0.0%	0.0%
Helicopter	0	0	0	0	0	0.0%	0.0%	0.0%	0.0%
Ultra Light	0	0	0	0	0	0.0%	0.0%	0.0%	0.0%
Other	0	0	0	0	0	0.0%	0.0%	0.0%	0.0%
<b>TOTAL</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>0.0%</b>	<b>0.0%</b>	<b>0.0%</b>	<b>0.0%</b>

Source: HDR Alaska, Inc. November 2006

## **2.10 Step 7. Obtain approval of the forecast**

The FAA has a responsibility to review aviation forecasts that are submitted to the agency in conjunction with airport planning, including airport master plans and environmental studies. FAA reviews such forecasts with the objective of including them in its TAF and the NPIAS. In addition, aviation activity forecasts are an important input to benefit-cost analyses associated with airport development, and FAA reviews these analyses when federal funding requests are submitted. The FAA has an Advisory Circular (AC) on Airport Master Plans, AC 150/5070-6B, dated July 2005, which includes a chapter on aviation forecasts.

The forecasts should be:

- ⇒ Realistic
- ⇒ Based on the latest available data
- ⇒ Reflect the current conditions at the airport
- ⇒ Supported by information in the study
- ⇒ Provide an adequate justification for the airport planning and development.

While the forecast methods provide a means for developing quantifiable results, aviation forecasters must use their professional judgment to determine what is reasonable as recommended in AC 150/5070-7, “The Airport System Planning Process”- paragraph 506.

In essence, then, FAA will find an airport planning forecast generally acceptable if the 5-year, 10-year, and 15-year forecast levels for the airport forecast and the TAF are within 10 percent of each other. The relevant parameters that should come within 10 percent are total airport operations, total commercial operations, and total enplanements. It should be emphasized that if the proposed airport forecast exceeds the TAF by more than 10 percent and is considered valid on FAA review, it will be incorporated into the TAF and NPIAS.

HDR believes that the forecast presented does represent a realistic outlook based on available data, reflecting the current conditions of the Port Lions Airport that can be used to provide justification for future airport planning as defined in AC 150/5070-7, “The Airport System Planning Process.”

## **2.11 FAA Approval**

The FAA Alaska Region, Airports Division approved this forecast on December 5, 2006.

## **3.0 FACILITY REQUIREMENTS**

### **3.1 Summary**

The build alternative recommends a community class runway of 3,300 feet by 75 feet with standard safety area 3,900 feet by 150 feet. The runway would have medium intensity runway lights. A standard 60,000 square foot apron (200 ft x 300 ft) and 30,000 square foot leasing area (100 ft x 300 ft) would be constructed adjacent to each other. A single taxiway would connect the apron to the runway. A new Snow Removal Equipment Storage Building on a 10,000 square foot pad (100 ft x 100 ft) should be constructed to house the existing grader; and a front end loader with a snow blade should be assigned to the airport to help with snow removal operations.

This structure could be two separate smaller structures that each house one piece of equipment. The SREB pad would be located so it does not interfere with the apron usage or lease lot activity.

### **3.2 General**

Access to Port Lions will continue to be by air and water. The Port Lions Airport will continue to serve a prime role in quickly moving people, small goods, and mail (including bypass mail) to and from Kodiak and the community. Port Lions is close enough to Kodiak that water access will continue to play a major role in commerce. Heavy and bulk items will continue to travel to Port Lions by water due to the capability and cost.

### **3.3 Emerging Trends**

Several events are on the horizon that will change air service to Kodiak Island and the communities on the Island. Fuel availability and price will change the aircraft fleet. Most of the aircraft serving Kodiak Island are piston powered single engine and twin engine airplanes. These aircraft burn aviation grade gasoline containing tetra-ethyl lead, also called leaded gasoline. There is considerable uncertainty over the availability of leaded gasoline by the end of the planning period. Leaded gasoline has to be made and handled separately from the remaining gasoline products at a refinery. It also has to be shipped in containers or barges specifically used for leaded gasoline so residual lead does not contaminate other gasoline supplies. This special handling requirement makes the cost of aviation fuel very high. In some rural areas of Alaska the price of aviation fuel is over \$8.00 per gallon in the summer of 2006. Suppliers have not made any definitive statements about stopping the manufacture of leaded aviation fuel, but it would be prudent to plan on changes in the future.

Those changes could mean the aircraft fleet migrating towards turbine powered aircraft, probably turbine powered propeller type aircraft also called turboprop. Alaska has already seen this trend in some rural areas. Turbine powered aircraft can use a wider variety of fuel, and the fuel can be shipped in the same containers used for other petroleum products. The capital cost for turbine powered aircraft is higher, but the time between major engine maintenance is also much greater. There is a high probability that twin turboprop aircraft will be serving the villages on Kodiak Island by the end of the planning period.

One of the other drivers in this change in the fleet is the US Congress. The US Postal Service provides priority and other classes of mail service to rural Alaska, and in locations where the community is not on the highway system, the mail moves by air. A 1985 special provision in Federal law permits and subsidizes the delivery of fourth class mail at rates that are significantly lower than freight rates. Stores or businesses that ship large quantities of goods such as groceries and other consumer goods palletize their loads and deliver them directly to an air cargo shipper, bypassing the Post Office. Thus the term Bypass Mail is used for these shipments. A postal official at the air carrier facility accepts the pallet on behalf of the Post Office, and bills for the fourth class postage. The air carrier is responsible for delivery of the goods to the recipient in the destination community. Individuals can also ship goods by fourth class mail, but those packages must be taken to a post office. Approximately 75% of the fourth class mail to rural Alaska is transported as bypass mail. Hazardous materials and construction materials are not

accepted by the Post Office as fourth class mail, and must be shipped by air freight. Delivery of mail by air at these favorable rates has facilitated a better flow of goods to rural Alaska.

The Rural Air Service Improvement Act (RSIA) (Public Law 107-206, Sec. 3002, 2002) changed the freight, mail, and passenger service in rural Alaska. One of these changes is the encouragement of air carriers to upgrade to larger aircraft flying under 14 CFR 121, rather than the air taxi operations under 14 CFR 135. A Part 121 air carrier that hauls both passengers and mail has a mail dispatch priority over a Part 135 air carrier. The intent of Congress was to reward air carriers who fly passengers and to discourage air carriers who only fly mail. No air carrier on Kodiak Island has yet stepped forward to secure a Part 121 certificate. Nonetheless it is prudent for the villages on Kodiak Island to plan for this possible change.

The FAA and industry working groups are also working to improve the Instrument Flight Rules (IFR) capability on and around Kodiak Island. Currently only the Kodiak Airport has instrument approach and departure procedures. In general the plan is to create a ring shaped airway around the Island where IFR aircraft could safely fly clear of terrain and low enough to be below icing levels most of the year. This is now possible through the use of Area Navigation (RNAV) using the Wide Area Augmentation System (WAAS) signals to enhance Global Positioning System (GPS) satellite navigation. Approach and Departure procedures for the villages would connect to this ring. Thus, it is important for each village on the Island to plan for this eventuality. Each airport should have the capability for a WAAS enhanced GPS approach and departure. The Capstone Project in other parts of Alaska is accelerating the development of avionics and the type of procedures that will be used around Kodiak Island in the future.

### **3.4 Design Hour demand**

Capacity is not anticipated to be an issue for Port Lions. The single runway and taxiway planned for this facility should be able to handle all anticipated traffic loads with no delays. HDR estimates the peak hour of the average day of the peak month is approximately 6 aircraft. This is well below the calculated capacity of the runway. The airfield capacity for Port Lions in a single runway, single taxiway, VFR condition is approximately 50 aircraft per hour per AC 150/5060-5. This is far more capacity than is needed for the anticipated volume of traffic.

### **3.5 Security**

Port Lions is not anticipated to be served by the size of aircraft that require a formal security program under Federal Regulation 49 CFR 1544; airports served by aircraft with more than 60 passenger seats require this type of program. Thus this airport will not require a formal airport security program to support an air carrier security program. However, general security guidelines do apply to Port Lions just as they apply to all small airports in Alaska.

Federal Regulation 49 CFR 1540 contains general rules for Civil Aviation Security that applies to all segments of civil aviation. It sets forth definitions, and specifies the responsibility of passengers and air carrier employees towards aviation security.

Federal Regulation 49 CFR 1550 applies to the operation of aircraft that are not covered under other security programs, including general aviation. This regulation authorizes the

Transportation Security Administration (TSA) to inspect any aircraft at any time. This regulation also sets forth a requirement that any aircraft over 12,500 pounds must screen passengers if they do not already screen passengers under another security program.

Security fencing is not required by these regulations. A wildlife control safety fence may be considered in the future should deer or bears become a hazard to aircraft operations. One of the early community requests was for a gate across the access road to the apron to control vandalism on the airport. DOT&PF Central Region Maintenance<sup>1</sup> does not agree with a gate as the proper method to control vandalism. Gates require locks and key control procedures to allow authorized apron access for freight and mail and passengers, and require repairs when the gates and locks are damaged which are not budgeted items at rural airports like Port Lions. Other rural airports utilize vigilance and social controls to manage vandalism. The airport access road will not traverse the apron like the road does to the old apron and should direct vehicles away from the aircraft operation area. A simple barricade of barrels or sawhorses could be installed by the community across the access road to the apron to further discourage unauthorized access but Maintenance does not want to be involved in these community decisions.

### **3.6 Airspace and Airfield**

The volume of traffic is not sufficient to justify an air traffic control tower. In order for an airport to qualify for an FAA funded air traffic control tower the annual operations need to be in 40,000 to 60,000 range; the exact number depends on the mix of civilian and military and the size of the aircraft. It is anticipated this airport will continue to operate as a non-towered airport. The airspace around and over the airport is currently shown as Class G uncontrolled. In the future, when an instrument approach procedure is developed for the airport, this airspace will be upgraded to Class E to protect aircraft using the instrument approach procedure.

The selection of a design aircraft for Port Lions is primarily based on future anticipation of what could happen with the fleet. Currently two of the air carriers serving Port Lions (and the rest of Kodiak Island) utilize Britten Norman Twin Islander aircraft. This aircraft is only used in Alaskan markets where runways are short and twin engine reliability for over water operation is desired. In the future the fleet will change. Currently Servant air also flies a Piper Navajo and Aztec. The Navajo requires a runway in the length approximated by a community class airport to operate at full loads. Medical evacuation aircraft flying out of Anchorage are twin turbine aircraft that also require a runway in the community class length. The Alaska Aviation System Plan (AASP) recognized this problem and basically recommended a facility that would accommodate 100 percent of the fleet smaller than 12,500 pounds with a community class airport. A community class airport in the AASP generally meets the design standards for an Airport Reference Code (ARC) of B-I. The AASP recommends a community class airport unless an airport of different dimensions can be justified. Since heavy freight is transported to Port Lions by water, HDR recommends a community class airport for Port Lions. Table 3-1 sets forth the dimensional standards for a community class airport.

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<sup>1</sup> Personal Communication, Anna Walker, Safety and Security Officer, March 15, 2007

Table 3-1  
Minimal Dimensional Standards  
Port Lions Airport

	<u>Community Class Standards (ARC B-II)</u>
Runway Length DOT&PF Standard	3,300 ft <sup>A</sup>
Runway Width	75 ft
Runway Shoulder Width	10 ft
Runway Safety Area Length beyond each threshold	300 ft
Runway Safety Area Width	150 ft
Runway Protection Zone Length	1,000 ft
Runway Protection Zone Inner Width	500 ft
Runway Protection Zone Outer Width	700 ft
Obstacle Free Zone Length beyond each threshold	200 ft
Obstacle Free Zone Width	250 ft
Object Free Area Length beyond each threshold	300 ft
Object Free Area Width	500 ft
Runway Centerline to Aircraft Parking Area	250 ft
Apron Size	200 ft x 300 ft
Taxiway Width	35 ft
Taxiway Shoulder Width	10 ft
Taxiway Safety Area Width	79 ft
Taxiway Object Free Area Width	131 ft
Taxiway Length	212.5 ft

Note: These dimensions are minimal dimensions. The AASP suggests these dimensions can be exceeded with justification.

### 3.7 Passenger Terminal

The latest Alaska Aviation System Plan states that DOT&PF as the airport operator will not construct common use passenger terminals at rural airports. Most other rural airports with passenger terminals have had them constructed by air carriers wishing to provide that additional service to their customers. In a few cases a local government has constructed a passenger terminal, and then leased use of all or parts of the terminal to air carriers. In a few cases the local government operates the terminal as a service to the citizens and air carriers at no cost. In these cases the Alaska Administrative Code 17AAC 45.130 allows a rent reduction or waiver in the lease rental collected by the DOT&PF.

We anticipate the status quo will continue for Port Lions. Passengers generally travel to the airport in vehicles, and during inclement weather conditions stay inside the vehicle until it is time to board the aircraft. The use of vehicles substitutes for the need for a passenger terminal.

### **3.8 General Aviation**

The DOT&PF as the airport operator will not construct any aircraft hangers to store aircraft. Any aircraft hangers will be constructed by tenants on the airport. Public aircraft tie downs sufficient to tie down four aircraft should be installed. This will provide parking for any resident aircraft plus any transient aircraft that need to tie down in Port Lions. An apron approximately 90,000 square feet should accommodate the tie downs and provide turn around space for aircraft to unload passengers and freight, reload, and takeoff.

### **3.9 Cargo**

The regulations governing the storage and handling of air cargo and mail could potentially change. Currently, mail is transferred from the aircraft to a local station agent for delivery to the post office. Bypass mail is supposed to be picked up by the air carrier station agent and delivered to the recipient. Cargo is either left on the apron for the recipient to pick up, or delivered by the station agent. Future air cargo regulations may preclude leaving cargo unattended on the apron. If this happens, someone would either have to watch over the cargo until it is picked up or deliver it to the recipient.

### **3.10 Support**

Port Lions as a non Part 139 airport is not required by the FAA to have Airport Rescue and Fire Fighting equipment (ARFF). In the event of an airport emergency, the local municipal response would be anticipated to respond. The airport is also not required to have trained first responders, thus the local emergency fire and medical response would be the first on the scene of an airport incident supplemented by response from adjacent communities or from the US Coast Guard and trained airport staff flown in from Kodiak if needed. An airport maintenance Snow Removal Equipment Building (SREB) should be provided to store the equipment used for snow removal. The DOT&PF has a relatively new grader at Port Lions and this should be supplemented with a loader with a snow blade to facilitate clearing snow from around the runway lights. Fuel storage and de-icing are not anticipated on the apron at Port Lions. Any aircraft maintenance is anticipated to be conducted in Kodiak where larger facilities and better access to parts and support exist.

### **3.11 Ground Access, parking**

The access road from town to the current airport apron will need to be relocated to the northwest side of the airport to access the new apron. A trail off of the end of the old runway provided access to Talnik Point. A replacement trail should be constructed to allow traditional uses to continue.

### **3.12 Utilities**

Power is currently extended to the airport to power the runway lights. This power feed should be moved as part of the project to provide power at the new apron. A new lighting vault should be constructed as part of the project. Power will also be needed at the snow removal equipment storage building. A phone line extension is also encouraged. A phone in the SREB is very useful. Also since cell phone service does not exist in Port Lions, a pay phone at the apron for pilots to get weather briefings and to open and close flight plans would be a safety enhancement for the airport. Should an automated weather observation system be installed in the future, a phone line is necessary to send the data into the National Weather Service network.

### **3.13 Other**

Design of the new airport needs to consider continued use of the beach adjacent to the airport for traditional fishing and gathering activities.

## **4.0 ALTERNATIVES DEVELOPMENT AND EVALUATION**

### **4.1 Summary**

One build alternative and a no-build alternative were put forward in the environmental document. The build alternative is the preferred alternative.

### **4.2 General**

This section of the airport master plan brings together different elements of the planning process to meet both the needs of the airport users as well as the needs of the airport sponsor. An Environmental Analysis is being written in conjunction with this airport master plan. HDR looked at a variety of ways to meet the air transportation needs of Port Lions; and towards that end identified only one development option that would meet those needs.

### **4.3 Alternatives Analysis Process**

Alternatives were evaluated and analyzed as to whether they would meet the current and future aeronautical needs plus the environmental conflicts associated with each. While HDR did not conduct a detailed wetlands study and wildlife assessment of each alternative, we evaluated the layout of the various alternatives on aerial photography and made estimates of wetland impacts after conducting ground truthing surveys of some of the locations. We also evaluated the aerial obstruction issues associated with the most promising alternative in accordance with Advisory Circular 150/5300-13.

### **4.4 Identification of Alternatives**

Several alternatives were considered. An alternative to place the airport in the drainage basin of Branchwater Creek was rejected since this drainage is the watershed for the municipal water supply. Another alternative further west beyond the Branchwater Creek drainage was rejected due to the expense of constructing the access road, the severe impact to wetlands, probable deep peat and ash foundation soils, and the runway being higher would be useable less of the time due to weather issues. An alternative on Pelegribni Point was considered and rejected. Planning

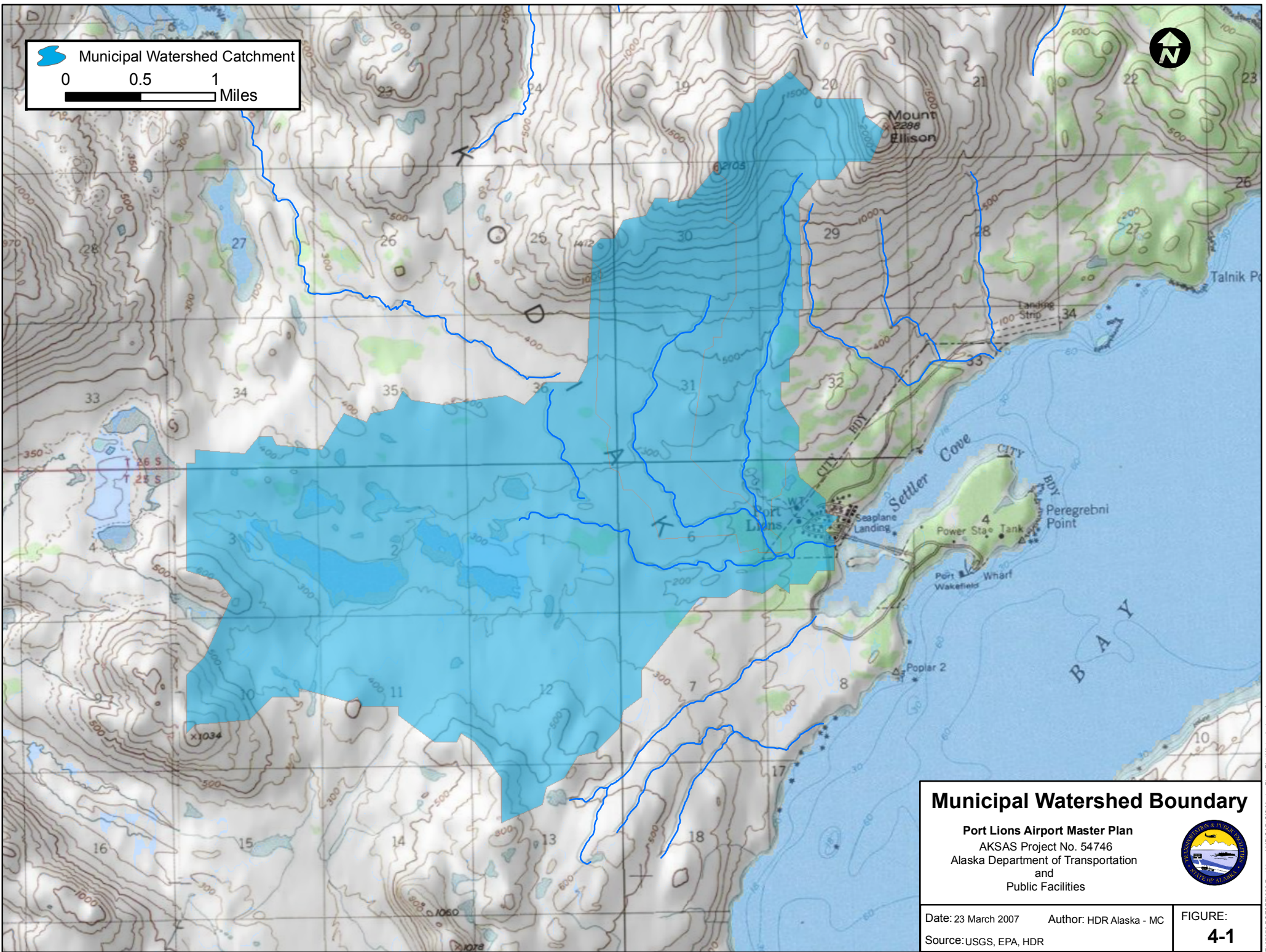
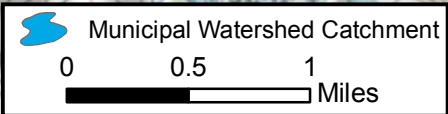
level contour mapping indicate the runway would cut through two hills with a 30 to 35-foot cut and fill a swamp in the middle. Construction on this site would require approximately 1.3 million cubic yards of excavation and would require clearing of at least 110 acres of heavy timber. The Kodiak Island Borough has zoned a portion of the property affected by a potential runway alignment as public lands; however, the remaining property is set aside as conservation. The alignment would also impact an already established sub-division with established residences on the southwest end of the alignment. The Community of Port Lions was adamantly opposed to changing the established land uses for this area. Alternative 1, an extension of the existing runway on the current alignment was dropped from consideration due to the environmental impacts of constructing the embankment fill into the inter-tidal wetlands deemed to be critical habitat and subsistence use area. HDR carried one build alternative forward in the environmental documentation in addition to the no-build alternative. The build alternative (Alternative 2) is a rotation relative to the existing runway alignment and construction of a new runway (see Figure 4-1).

#### **4.5 Selection of Recommended Alternative**

The recommended alternative (Alternative 2) is to rotate the runway alignment and extend the length to the DOT&PF community class standard of 3,300 feet with standard runway safety areas. A 300-foot by 300-foot apron and lease lot area would be connected to the runway with a single taxiway. A 100-foot by 100-foot maintenance area would hold a new two-bay snow removal equipment storage building, or two one-bay buildings depending on the requirements of Maintenance. A new portion of two-lane access road would connect the old access road to the new apron. A single lane access road would provide access from the apron to connect with the trail to Talnik Point east of the end of the new runway. The old portions of the airport access road and Talnik Point trail would be obliterated to limit unauthorized access to the new runway. The runway should be paved to provide better service to the community. This alternative is the only alternative that will meet all of the project objectives and will provide a community class airport of adequate length to meet the future aviation needs in Port Lions including the potential for an instrument approach to the airport for better access in inclement weather.

The terrain around the airport Alternative 2 is problematic in two areas. The Part 77 transition surface is normally a 7:1 slope that is not penetrated by terrain. It would take massive cuts into the mountain north of the runway to achieve a clear transition surface for the recommended alternative to meet standards. Discussions with FAA recommended that this slope could be steeper and shown on the ALP as a non-standard condition.

Terrain on the approaches was also problematic. FAA guidance is contained in AC 5300-13, for siting the threshold to avoid terrain. The resulting analysis is shown on Figures 4-2, 4-3, and 4-4 and in the ALP. Terrain penetrations exist for the approaches to both ends of the proposed runway. The analysis found that this terrain penetration could be mitigated by installing Precision Approach Path Indicator (PAPI) lights on both ends of the runway as allowed in the AC. The PAPI will need to be set at a nominal 4° approach slope. The normal approach slope is 3°; however, the steeper 4° is allowed. The steeper approach slope can easily be flown by all of the aircraft anticipated to utilize this runway. A flight check by FAA is required to ensure there are no unanticipated issues.



**Municipal Watershed Boundary**

Port Lions Airport Master Plan  
 AKSAS Project No. 54746  
 Alaska Department of Transportation  
 and  
 Public Facilities



Date: 23 March 2007 Author: HDR Alaska - MC  
 Source: USGS, EPA, HDR

FIGURE:  
**4-1**

Z:\07072 DOT&PF\229 PortLions AMP\CAD\GIS\Master Plan\_Fig\Watersheds.mxd



# Port Lions Airport Master Plan Environmental Assessment Alternative 2 Runway Realignment

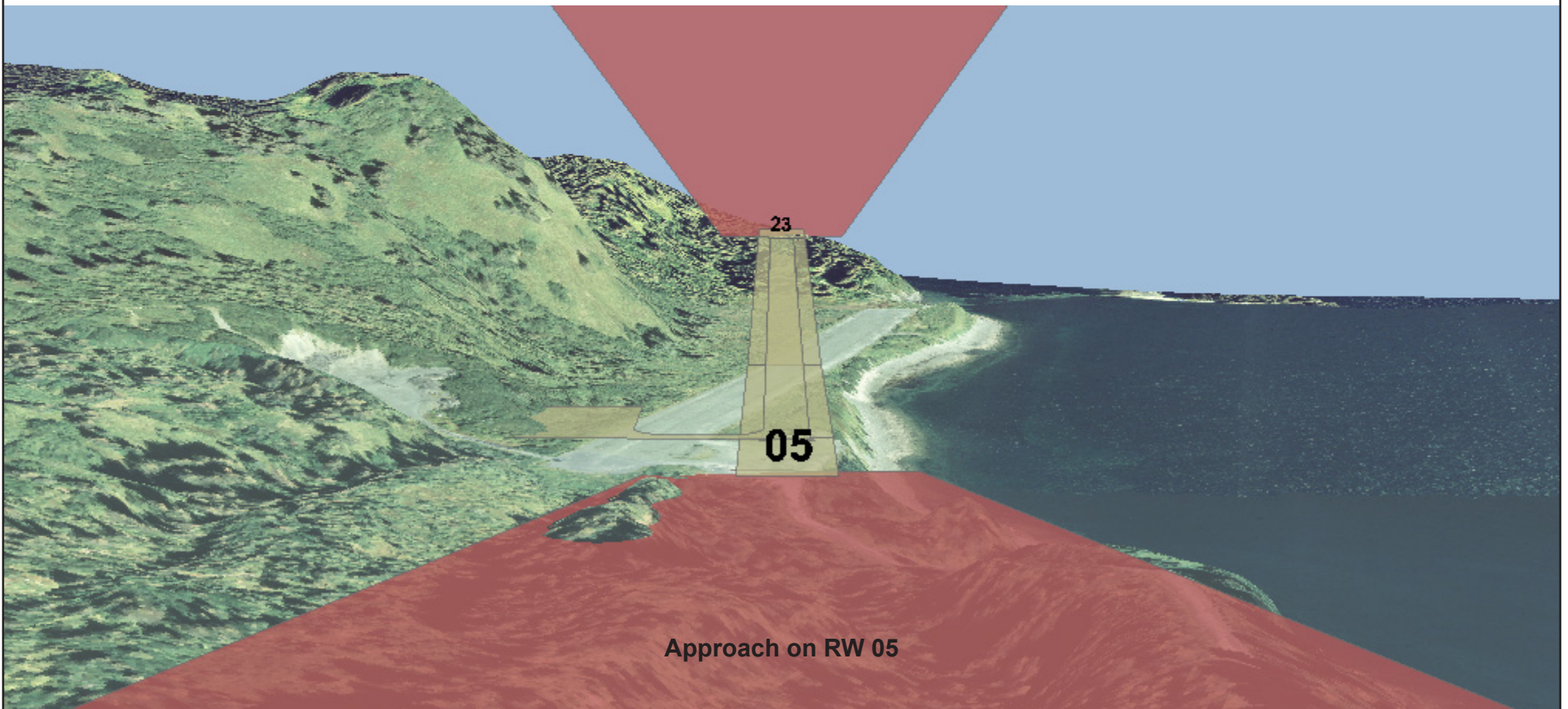
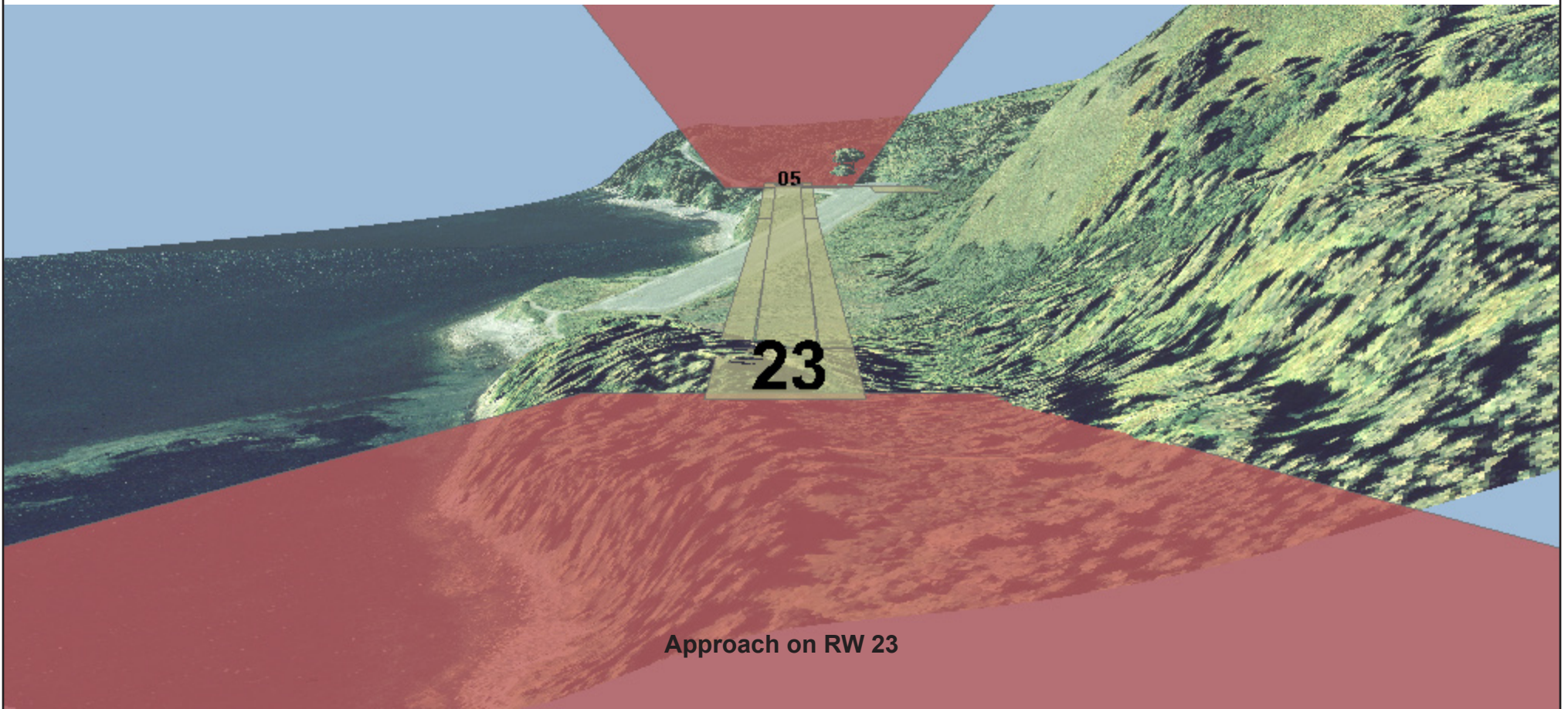
AKSAS Project No. 54746  
State of Alaska  
Department of Transportation  
and Public Facilities



### Proposed improvements include:

1. Realign runway and lengthen to 3,300 feet, but maintain runway width of 75 feet.
2. Construct a 300-foot by 150-foot runway safety area (RSA) beyond each runway end (Runway 05 and 23).
3. Construct a 212-foot long by 35-foot wide taxiway to provide adequate runway separation distance.
4. Construct an apron with a maintenance pad for a snow removal equipment building (SREB) and an aviation support area for potential lease lot development.
5. Construct a 0.95-mile airport bypass road on the north side of the airport to access areas to the east of Runway 23.
6. Construct a 1,100-foot trail to relocate an existing segment near the northwest end of the runway that will be eliminated through cut/fill activities.
7. Install a gate across airport access roads to limit unauthorized incursions onto airport property.
8. Replace lighting system.

**Figure  
4.2**



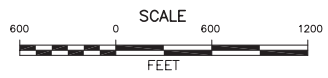
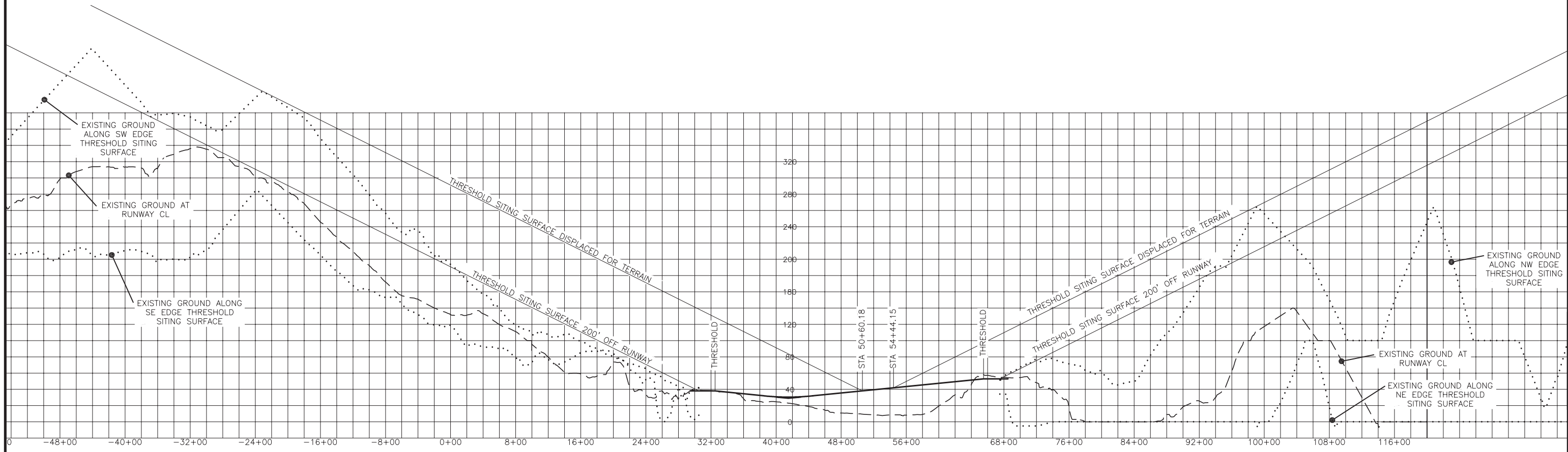
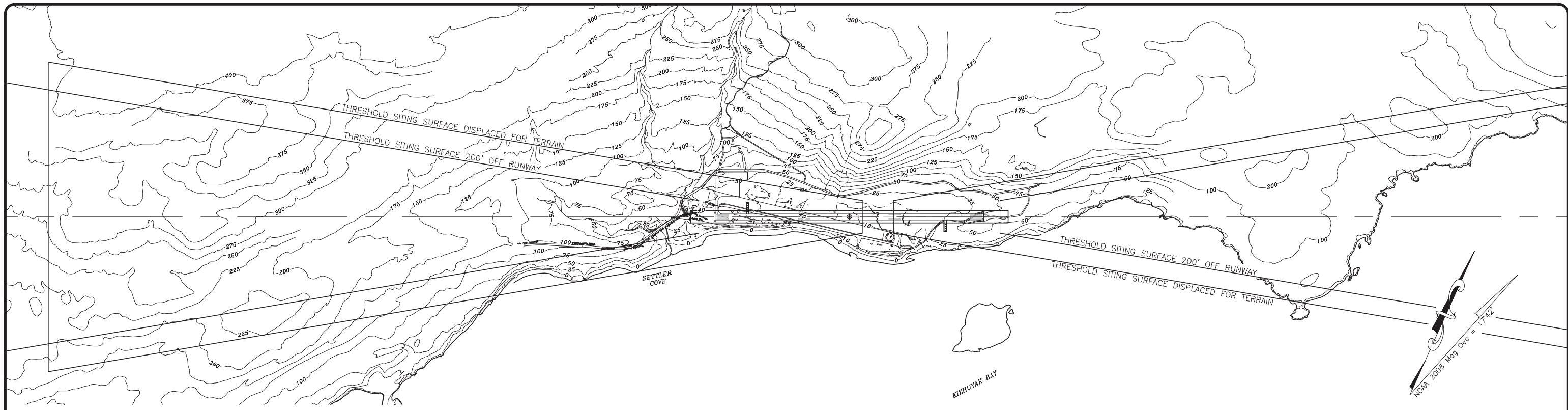
PROPOSED RUNWAY  
75' X 3,300'

**PORT LIONS AIRPORT**  
PORT LIONS, ALASKA  
THRESHOLD SITING SURFACE  
APPENDIX 2, TABLE A2-1 LINE 5

STATE OF ALASKA  
**DEPARTMENT OF TRANSPORTATION  
AND PUBLIC FACILITIES**  
CENTRAL REGION

**FIGURE 4-3**

Date Plotted: March 5, 2007  
 Layout Name: C:\Pwworking\SEA\dgrealey\jms66501\PAPI\_P&F.dwg  
 File Name:  
 Designed By: DUG  
 Drawn By: DUG  
 Checked By: CFS



BY	DATE	REVISION

**STATE OF ALASKA**  
**DEPARTMENT OF TRANSPORTATION**  
**AND PUBLIC FACILITIES**  
**CENTRAL REGION**

**PORT LIONS AIRPORT**  
 PORT LIONS, ALASKA

APPENDIX 2 RUNWAY END SITING SURFACE  
 LINE 5

DATE:	3-5-07
FIGURE	4-4

The drawings showing the analysis of the PAPI approach surface clearances is located in Appendix 3. FAA advisory circulars specify a horizontal fan shaped area 10° either side of centerline to be clear of obstructions for four miles beyond the runway threshold; the vertical clearance is formed by the third PAPI light angle forming the Obstruction Clearance Surface (OCS). The nominal 4° approach slope using the threshold crossing height and other parameters as specified in the FAA procedure reduce the OCS angle to 2.8333°. FAA personnel recommend the horizontal fan be expanded to 12° as an additional safety factor; however, this recommended but not required expansion places terrain into the horizontal plane. Should the post construction flight check indicate potential issues, DOT&PF should set up the approaches with the final approach course to the threshold angled away from the terrain per AC 5300-13, paragraph 5c and Figure A2-2.

## **5.0 AIRPORT LAYOUT PLAN**

A new Airport Layout Plan showing the preferred alternative is included with this master plan as Appendix 4.

## **6.0 FACILITIES IMPLEMENTATION PLAN**

Development of the preferred alternative as shown in the ALP cannot realistically be implemented in phases. This project should be constructed with one contract. A safety plan will need to be written as part of the contract to allow air service to continue to Port Lions while the new runway alignment and new apron are under construction. This will be a short term problem that may temporarily restrict aircraft loads. It is anticipated that during construction the old runway will remain in service while the easterly half of the new runway is constructed. Then traffic can start using the easterly half of the new runway while the remainder of the project is built. However, if funding is limited the paving could be deferred to a future date. HDR encourages the paving to be constructed with the initial construction if at all possible to secure the best instrument approach minimums. Paving with the initial construction will also secure the best bid prices because mobilization of paving equipment can occur with the rest of the mobilization.

## **7.0 FINANCIAL FEASIBILITY**

### **7.1 Cost Estimate**

A planning level cost estimate for this project is attached as Appendix 5. The total cost of the project is estimated to be \$13,380,000. If the FAA administered Airport Improvement Program (AIP) is utilized for a majority of the funding, approximately 95% of the project would be paid for with AIP funds. This price is based on the assumption that FAA will approve a non-standard Part 77 transition surface on the north side of the airport. As shown on the ALP drawings, the standard slope is 7:1. A 7:1 slope would require extensive cuts on both approaches and north of the runway itself. Excavation of these obstructions results in a project cost estimated at nearly \$70M. Opening of these cuts is not favored by the community due to the environmental consequences. A 2:1 slope eliminates the majority of these cuts.

The installation of Precision Approach Path Indicator (PAPI) lights also figures prominently into the final price for this project. The new runway alignment has terrain penetrations of the

airspace on the north sides of the approaches to the new runway as defined in AC 150/5300-13. This terrain adversely impacts the threshold siting criteria. HDR calculates that a set of PAPI lights installed on both ends of the runway will allow both VFR and IFR use of the new runway by providing visual guidance over the terrain for pilots on approach. The PAPI will need to be set at the steepest allowable normal setting of 4 degrees. The DOT&PF has a long standing policy that installation and maintenance of navigation aids such as PAPI is the responsibility of the FAA. DOT&PF has contracted with FAA to install PAPI on other projects. The FAA Air Traffic Organization should be brought into the design process early to ensure PAPI are correctly incorporated into the project and ensure the FAA will accept these light systems for ownership and maintenance.

## **7.2 Airport Project Evaluation Board**

Funding for this project will need to compete with all other airport projects statewide. The DOT&PF process for establishing a numerical ranking for projects is called the Airport Project Evaluation Board, or APEB. As a safety project that is improving the airport to Community Class Airport standards, the new runway for Port Lions should compete very well for the limited AIP funds. A negative in the scoring process is the small population of Port Lions which reduces the potential score. DOT&PF will make the final score decision and will need to place this project into the Airport Capital Improvement Spending Plan. Local financial community support can also improve the chances of this project competing with other statewide airport needs. Community support can come in many forms including but not limited to reduced royalties on construction rock and gravel, and reduced selling price for land need for this project.

A new loader is needed, but the APEB is not designed to encourage acquisition of new equipment and will probably reflect a low score for the loader. Maintenance may find it necessary to initially transfer a used loader to Port Lions until it requires replacement in order to justify a new loader. A new Snow Removal Equipment Building (SREB) should be included in this project to protect the investment in the equipment. The system scores projects to replace existing buildings better than it scores installation of buildings where none currently exist. For many years DOT&PF contracted for the grader storage with the City, but that is not currently an option. It is anticipated there would be some savings in mobilization to include the SREB in the airport construction project. A new building is also necessary before purchasing the loader, and would extend the life of the existing grader. HDR encourages the DOT&PF to revisit the APEB policy to encourage installing buildings where none currently exist.

## **7.3 Airport Improvement Program**

The AIP is due to expire at the end of Federal Fiscal Year 2007. Congress needs to reauthorize or renew the program and appropriate funding in order for AIP funds to be available. During the reauthorization process, the AIP program could change the way airport capital projects are funded or it could simply renew the existing program. Airport users can participate in the renewal process by expressing their desires to Congress during the reauthorization debates during the summer of 2007.

**Appendix 1**  
**Public Involvement Process**

## Port Lions Airport Master Plan

The process to develop an Airport Master Plan for the community of Port Lions has begun. The Airport Master Plan is an Alaska Department of Transportation and Public Facilities (DOT&PF) project intended to identify and recommend actions to correct safety and capacity issues with an ultimate goal to provide better and safer air traffic service over the next 20 years to the citizens of Port Lions.



### Q. What is an Airport Master Plan?

A. In everyday life, a plan helps us develop a course of action for achieving our goals. In much the same way, an airport master plan helps the DOT&PF and the Federal Aviation Administration (FAA) plan the future of Alaska's airports. The airport planning process involves listening to input from airport users, community members, and regulatory agencies, and then identifying an airport's needs and issues. The goal of the master plan is to identify improvements that accommodate aviation demand while also resolving any operational, environmental, or other challenges. The airport master plan then describes both the needed improvements and the timing of these improvements over the short and the long term.

### Q. Why are we preparing an Airport Master Plan for Port Lions?

A. The DOT&PF operates approximately 260 airports across the state and is interested in making sure that public airports in Alaska meet minimum design standards. Preparing a master plan for the Port Lions Airport will help ensure that the airport meets the air transportation needs of the community well into the future. The DOT&PF recognizes the importance of Port Lion's Airport to the mobility of its citizens. Developing a master plan for the community will provide safe, efficient, and adequate aviation facilities that meet the requirements of the DOT&PF and the FAA, as well as satisfy the needs of Port Lions and the Kodiak Island Borough.

### Background Information

The state-owned Port Lions Airport is located approximately 247 miles southwest of Anchorage and 19 miles outside of the City of Kodiak. The facility has a single lighted runway with a gravel surface and is 2,200 feet long by 75 feet wide. The standard approach is on Runway 24, and the standard departure is on Runway 6 due to topographical constraints. The airport is served approximately three times daily by Kodiak-based Island Air with a single-engine Piper Cherokee and a twin-engine Brit-Norman Islander. On occasion, Andrews Airways flies into the airport under charter contract, and several privately owned aircraft drop off out-of-state hunters and anglers visiting local sport lodges in the area.

### Issues at the Port Lions Airport

Through previous discussions with residents in Port Lions, we understand that this airport master plan must resolve several issues to successfully ensure the future of safe air service for the community. Some of these issues include:

- *Airport Location.* The airport is confined by coastline and local topography. Is the current airport location suitable for facility expansion?
- *Runway Wind Coverage.* Local pilots report strong northeast and southwest winds that create turbulent conditions.
- *Runway Safety Area (RSA) Development.* The existing RSA is deficient at both ends of the runway.
- *Airport Lighting.* Several runway lights and lights atop the wind cone do not work.
- *Apron Congestion.* The airport manager indicates that the aircraft apron can become congested with automobiles during summer months.
- *Wildlife Hazards.* The Port Lions landfill may be within the minimum FAA recommended separation distance between airports and wildlife attractants.
- *Airport Security.* Reports of vandalism at the airport.



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## How can I be involved?

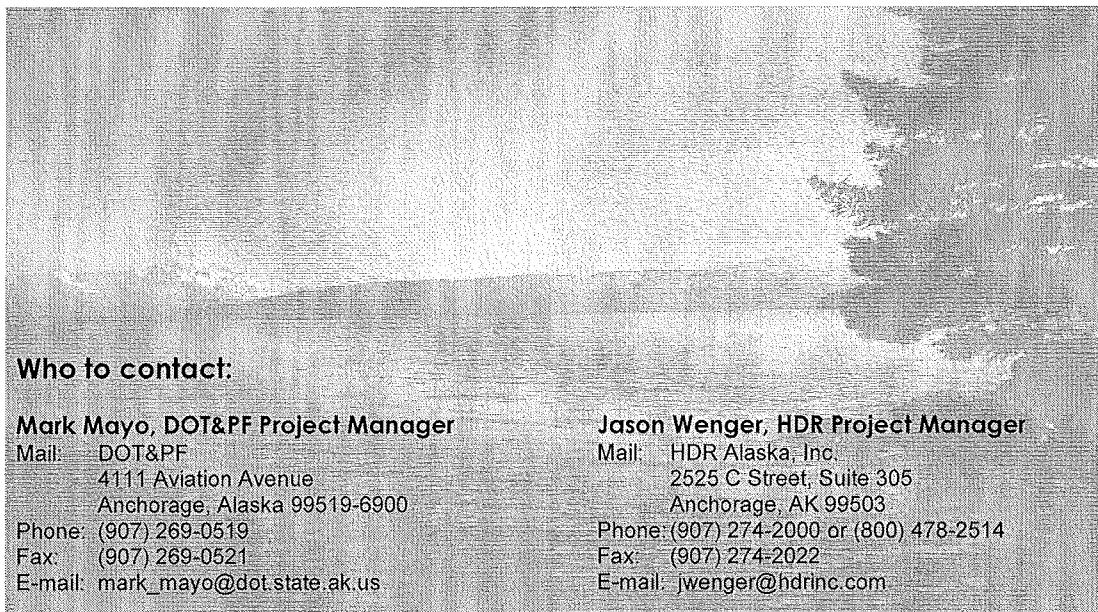
The planning team wants you to be involved in this project. By holding workshops in the community, mailing newsletters, and submitting documents for local review, DOT&PF and its consultant, HDR Alaska, will ensure that the community has an active role in this process. Aside from these formal opportunities to participate, the planning team also invites your comments and questions any time during the process by phone, fax, e-mail, or regular mail. Please contact us.

## Project Kickoff Meeting

Please mark your calendar and plan on attending the upcoming project kickoff meeting in Port Lions. The project team will be in Port Lions on **August 21, 2002** and hold a kickoff meeting to introduce the project to the community and answer questions. The meeting is scheduled to begin at **1:00 p.m.** at the **City offices**. Please come and share your ideas about the airport. Your thoughts are important and will help define the direction of the project and the future of the Port Lions Airport.

HDR Alaska, Inc.  
Port Lions Airport Master Plan  
2525 C Street, Suite 305  
Anchorage, AK 99503

To:



### Who to contact:

#### Mark Mayo, DOT&PF Project Manager

Mail: DOT&PF  
4111 Aviation Avenue  
Anchorage, Alaska 99519-6900  
Phone: (907) 269-0519  
Fax: (907) 269-0521  
E-mail: [mark\\_mayo@dot.state.ak.us](mailto:mark_mayo@dot.state.ak.us)

#### Jason Wenger, HDR Project Manager

Mail: HDR Alaska, Inc.  
2525 C Street, Suite 305  
Anchorage, AK 99503  
Phone: (907) 274-2000 or (800) 478-2514  
Fax: (907) 274-2022  
E-mail: [jwenger@hdrinc.com](mailto:jwenger@hdrinc.com)

## Port Lions Airport Scoping Report is Available

The Phase I Scoping Report for the Port Lions Airport Master Plan is now available for review. The report proposes improvements to address safety and capacity needs at the airport over the next twenty years. It looks at existing conditions, evaluates the needs of the airport and community, and provides an initial environmental assessment of the proposed airport improvement projects.

On behalf of the Federal Aviation Administration (FAA), the Alaska Department of Transportation and Public Facilities (DOT&PF) invites you to review the Phase I Scoping Report and submit your comments on the document. Your input will help assure that the final report is complete and covers all important community and airport safety, needs, and issues. Please return comments before **November 28, 2003**.

### What is Contained in the Phase I Scoping Report?

The Scoping Report:

- Describes the existing conditions at the airport and in Port Lions
- Outlines FAA and DOT&PF requirements and standards for the airport
- Summarizes community and airport needs and gives a 20-year forecast for the future of the airport
- Presents three alternatives for meeting the safety and community needs (from these alternatives, a Preferred Alternative will be selected and included in the new Port Lions Airport Master Plan)

### What Are the Issues at the Port Lions Airport?

The Phase I Scoping Report identifies a number of safety issues and needs at the Port Lions Airport. These are items that do not comply with either FAA or DOT&PF standards for ARC-II aircraft (like the Islander) or DOT&PF standards for a community class airport. Some, but not all, of the issues and needs include:

- ➔ The runway length is too short.
- ➔ The apron can become congested during the summer with aircraft and automobiles.
- ➔ The airport is used to access private property beyond the east end of the runway.
- ➔ The landfill is too close to the airport.
- ➔ The runway safety area length is too short.
- ➔ Trees and hills penetrate the surrounding airspace and compromise the safety of operations.
- ➔ There is no place to tie-down aircraft during high winds.

### Where Can I Get More Information?

The Port Lions Airport Master Plan project now has a website where you can get more information, review reports, submit comments and questions, and view the project schedule. The website also has links to the project team to answer your questions and to receive comments on the project and specific reports. The website is a source of up-to-date project information, so visit it often. The website address is: [www.portlionsairport.com](http://www.portlionsairport.com).

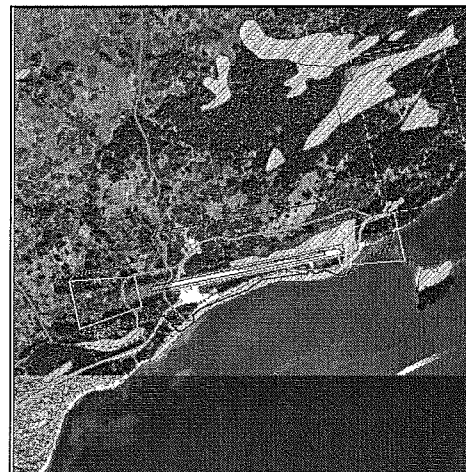
### What Are the Suggested Alternatives for Improving the Airport?

#### No Action Alternative

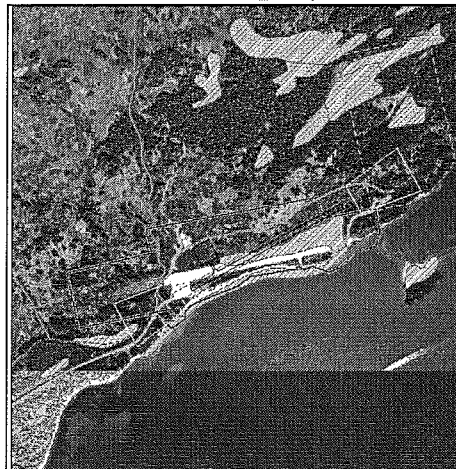
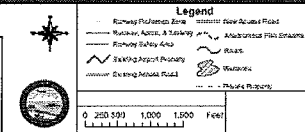
No airport improvements would be made under this alternative, other than those already planned and programmed. The airport would continue to be maintained and operated as it is.

#### Alternative 1

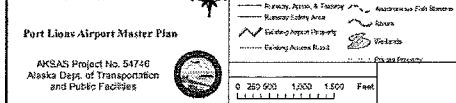
The runway would be extended from 2,200 ft to 2,700 ft. The apron would be moved to the north side of the runway. A new access road would be developed on the north side of the airport that would connect to the existing trail, and the existing road around the airport would be closed.



Alternative 1



Alternative 2



#### Alternative 2

The airport would be realigned and extended to 2,700 ft. The apron would be moved to the north side of the runway. Similar to Alternative 1, a new airport bypass road would be developed on the north side of the airport.



## Anchorage Daily News

### Anchorage Daily News Display Ad Request

**To:** Karen, Anchorage Daily News

**Contact:** Robin Reich, HDR Alaska, Inc., phone 644-2000/fax 644-2022

**Billing:** Jodi Lindall, HDR Alaska Inc. 2525 C St. Suite 305, Anchorage, AK 99503

**Ad Size:** Final size should be 2 columns wide and about 5½ inches long.

**Run Dates:** One day—October 16, 2003

**Preferred Section:** Front Section



### Port Lions Airport Master Plan State Project No. 54746 Notice of Intent to Conduct Preliminary Engineering, and Environmental Studies, and Notice of Wetland Involvement

The Alaska Department of Transportation and Public Facilities (DOT&PF) and the Federal Aviation Administration (FAA) are preparing an environmental assessment as part of the Port Lions Airport Master Plan.

Airport improvement project alternatives include:

- ◆ Extending the runway length from 2,200 ft to 2,700 ft
- ◆ Realigning and extending the runway
- ◆ Moving the apron to north side of the runway
- ◆ Constructing a new airport bypass road on the north side of the airport that would connect to the existing trail
- ◆ Closing the existing bypass road

.....

#### Invitation to a Public Scoping Meeting

A public scoping meeting will be held in Port Lions, as noted below:

Thursday, October 30, 2003  
12 noon – 1:30 p.m.  
Port Lions City Hall

For more information, please contact:

Mark Mayo  
DOT&PF Project Manager  
907-269-0519  
[mark\\_mayo@dot.state.ak.us](mailto:mark_mayo@dot.state.ak.us)

.....

Persons with a hearing impairment can contact DOT&PF at a telephone device for the deaf at 907-269-0674. The DOT&PF will also provide, upon request, accommodations for special needs related to disabilities.

## Kodiak Daily Mirror

Kodiak Daily Mirror, Display Ad Request

**To:** Sarah

**Contact:** Robin Reich, HDR Alaska, Inc., phone 644-2000/fax 644-2022

**Billing:** Jodi Lindall, HDR Alaska Inc. 2525 C St. Suite 305, Anchorage, AK 99503

**Ad Size:** Final size should be 2 columns wide and about 5½ inches long.

**Run Dates:** One day—October 16, 2003

**Preferred Section:** Front Section



**Port Lions Airport Master Plan**  
State Project No. 54746  
**Notice of Intent to Conduct Preliminary  
Engineering, and Environmental Studies,  
and Notice of Wetland Involvement**

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- ◆ Realigning and extending the runway
- ◆ Moving the apron to north side of the runway
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- ◆ Closing the existing bypass road

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A public scoping meeting will be held in Port Lions, as noted below:

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Port Lions City Hall

For more information, please contact:

Mark Mayo  
DOT&PF Project Manager  
907-269-0519  
mark\_mayo@dot.state.ak.us

.....

Persons with a hearing impairment can contact DOT&PF at a telephone device for the deaf at 907-269-0674. The DOT&PF will also provide, upon request, accommodations for special needs related to disabilities.



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**Port Lions Airport Master Plan**  
State Project #54746  
**Public Meeting**

**October 30, 2003 at 12:00 pm**  
**Port Lion City Hall**

Agenda

**Meeting Purpose:** To provide an update on the project, to solicit comments on the proposed draft airport improvement alternatives as discussed in the Phase I Scoping Plan, and to initiate public scoping as required by the National Environmental Policy Act (NEPA) for the environmental assessment and draft master plan.

- 12:00 Lunch**
- 12:15 Welcome & Introductions, and Agenda Overview**  
*Mark Mayo, Project Manager, DOT&PF*
- 12:20 Project Overview and Alternatives**  
*Jason Wenger, HDR*
- 12:30 NEPA Requirements and Environmental Issues**  
*Robin Reich, HDR*
- 12:40 Discussion for future planning and schedule**  
*Jason Wenger, HDR*
- 12:45 Questions and Comments**
- 1:15 Adjourn**

Comments

Comments are also accepted by phone, fax, mail, or e-mail. Please send your comments to one of the project team members listed below:

**Mark Mayo**  
**Project Manager**  
ADOT&PF  
P.O. Box 196900  
Anchorage, AK 99519  
Telephone: 907-269-0519  
Fax: 907-269-0520  
Email: mark\_mayo@dot.state.ak.us

**Jason Wenger**  
**Project Manager**  
HDR Alaska, Inc.  
2525 C Street, Suite 305  
Anchorage, AK 99503  
Telephone: 907-644-2000  
Fax: 907-644-2022  
Email: jason.wenger@hdrinc.com

**Comments will be accepted until November 28, 2003.**

---

Send to file 07072-229



**Port Lions Airport Master Plan  
Public Scoping Meeting**

Sign-In Sheet

October 30, 2003 12:00 pm

**Port Lions City Hall**

Name	Mailing Address	E-Mail
Bruce Dines	Box 110 Port Lions	
Mike Barthson	Box 47 PORT LIONS	
Marvin Barthson	PO Box 71 Port Lions	
Mara Barthson	Box 71 Port Lions	
Jason Wenger	HDR 2525 C Street Suite 305 Anch AK 99507	
Robin Reich	HDR "	
Betty Nelson	Box 75 Port Lions, 99550	
Bruce Nelson	Box 92 Port Lions AK 99550	
Alvin Mullan	Box 2 Port Lions AK 99550	
Pat Pestrikoff	BX 18 Port Lions AK 99550	
Michelle Stearns	KODIAK ISLAND BOROUGH	
SUE LUKIN GIRARD	PO BOX 114 PORT LIONS	
Jan + Julie Kaiser	PO Box 78 PL	



Subject: Port Lions Airport Master Plan	
Client: Department of Transportation and Public Affairs	
Project: Public Scoping Meeting	Project No: State Project #54746
Meeting Date: October 30, 2003	Meeting Location: Port Lions City Hall
Notes by: Robin Reich, HDR	

**Team Members in Attendance:**

Mark Mayo, DOT&PF  
Rex Young, DOT&PF  
Jason Wenger, HDR Alaska, Inc.  
Robin Reich, HDR Alaska, Inc.

**Public In Attendance:**

See attached sign in sheet.

**Topic Discussed:**

See attached meeting agenda sheet.

**Meeting Summary:**

The project team held a public scoping meeting that included a presentation and a question and answer period on October 30, 2003, from 12:00-1:15 p.m. Approximately 20 members of the public attended the meeting.

Mark Mayo called the meeting to order and introduced the project team. Jason Wenger provided a brief project description and described the alternatives for improving the airport in Port Lions. Robin Reich then discussed the NEPA process and some of the environmental, social, and economic issues associated with the project alternatives. Throughout the presentations, the public was encouraged to comment on the project and their issues and concerns with alternatives. Many comments and questions were voiced during the meeting and are listed below.

**Issues and Questions Summary:**

***Adjacent Land Lessees Concerns***

- Shareholders lease land adjacent to airport from Afognak Corporation.
- There are also Native allotments east of the airport area.
- DOT should contact and work with the lessees and allotment owners regarding the airport project.
- The shareholders are concerned about what will happen to their leased land with Alternative #2.
- Does DOT negotiate with the lessees or Afognak Corporation?

***Alternatives Concerns***

- Will the Realignment Alt (#2) enable more landings? A wind analysis would help to understand whether the new configuration would allow more landings when there is a crosswind.
- Paklook Air and Andrew Air also fly charters into Port Lions. The carriers should be contacted for their opinion of alternatives.
- Alternative #1 seems safer than #2 because there would be fewer crosswinds.
- I like Alternative #1 better than Alternative #2 (many meeting attendees stated this).

- Why did the pilots like Alternative #1 better? If pilots like Alternative #1 better, it should be the preferred alternative.
- What are the cost differences between the alternatives?
- Will people be able to use the existing apron once the airport is upgraded and the new apron is built?

#### ***Runway Access/Intrusions Concerns***

- People often drive on the runway and safety area. Last week, the runway had to be re-graded because of people driving and “spinning out” on the runway.
- Anything to deter people from accessing the runway would be good, but don’t make it difficult for transient aircraft to use tie down area.
- Natural barriers may be a good way to keep people from driving onto the runway. However, natural barriers have to be able to stop 4-wheelers.
- Fencing could keep people off the runway. Fences are not as desirable as natural barriers.
- A gate between the road and apron may be a good way to keep people out, but may be a problem because someone will have to open with a key.
- A gate between the road and apron may also pose problems for medevac emergencies.
- Will the apron be the only way to access the runway?

#### ***Subsistence Issues***

- The marine area near at east end of runway is a subsistence area. In the past, clams were collected there. Although PSP is a problem now, clamming may be important in the future.
- Firewood is collected on the beach adjacent to the airport area.
- It is important that residents be able to access the subsistence area on the beach for clamming and collecting firewood. Residents would like to be able to access the beach from the east side of the runway, if possible.
- There is an important salmonberry picking area beyond the east end of airport. The picking area is just outside of the Alternative #2.
- There are two salmon streams at the west end of airport. Pink salmon are found in the streams. Some people say that the salmon no longer run there.
- People want to be able to access hunting grounds north of the airport. Currently, hunters access trails north of the runway through the gravel pit. The new access road should allow people to get to trails.
- The new access road may make it easier for people to access hunting trails north of airport.

#### ***Erosion Issues***

- The south side of the airport area is eroding into the ocean. The improvements at the airport should address this issue.

#### ***Wildlife Issues***

- Porpoise, sea otters, and sea lions are sometimes seen in the marine area adjacent to the airport. Sea otters feed on clams in the area. Killer whales have been seen in Kizhuyak Bay.
- Bears have torn out lights on the airport in the past.
- Bird are not a problem at the landfill. The landfill is well maintained; garbage is burned and covered often (at least weekly) by the City of Port Lions. Bears are often seen at the landfill.
- There are no bald eagle nests near the airport.
- Steller’s eiders aren’t seen in the area.

#### ***Cultural Site Issues and Concerns***

- People have collected seal oil lamp artifacts from the beach area adjacent to the runway.
- A 3,000-year-old skull fragment was found on the beach.
- There are probably more artifacts in the area.
- What will happen if more artifacts are found?

***General Comments***

- There needs to be a place for the Coast Guard emergency medevac to land at airport.
- Would be nice to have a parking area at the airport. People need to be able to leave cars.
- There is a need for transient airplane tie downs at the airport.
- When the C-117 flew out, a longer runway was needed.
- DOT should consult the Environmental Impact Statement for oil and gas development in Shelikof Strait, written about 15-20 years ago, for information regarding projected impacts on Port Lions.

***General Questions***

- How long until the project will be built?
- How long does NEPA take?
- Is the distance between the airport and the landfill a problem?
- What is the slope of the existing runway?
- How will the new lease lots be administered?

**Appendix 2**  
**Geotechnical Report**



**Duane Miller & Associates**

1041 E. 76th Avenue  
Anchorage, Alaska 99518-3215  
(907) 644-0510, fax 644-0507

*Arctic & Geotechnical Engineering*

December 10, 2004

HDR Alaska, Inc.  
2525 C St., Suite 305  
Anchorage, Ak 99503

Attention: Jason Wenger, P.E.

Subject: Geotechnical Exploration  
Airport Improvements  
Port Lions, Alaska  
DM&A Job No. 4086.041

This letter presents the results of our geotechnical exploration in the vicinity of the existing Port Lions airstrip. Alaska DOT/PF plans to upgrade the airport facility by widening and extending the existing runway prism or by rotating the alignment slightly counter-clockwise to take advantage of onshore terrain conditions. We coordinated our field investigation with Mr. Jason Wenger, P.E., Project Engineer for HDR, who supplied maps and other documentation. Mr. Alvin Muller, Port Lions Public Works Director, arranged local logistic support, and operated the excavator owned by the City of Port Lions.

Ten test pits (PLA-1 through PLA-10) were dug with a Case 580D backhoe equipped with an 18-inch toothed bucket. The pits ranged in depth from 4.5 to 8.5 feet. Mr. Walt Phillips, P.G., DM&A Project Geologist, observed the soil and groundwater conditions encountered in each test pit and collected representative soil samples. Pit locations were determined by measuring from identifiable landmarks and then quantified by use of a handheld GPS system. In addition, surface observations were made to the north and west of the runway in areas inaccessible to the backhoe. At seven sites (PLA-11 through PLA-17), the depth of overburden was determined using a 6-foot long steel probe. Test hole and probe locations are shown schematically on Plate 1.

Soil samples were double sealed in plastic bags to prevent moisture loss and were shipped to our laboratory in Anchorage. In the Laboratory the samples were reexamined to confirm the field classifications and to select samples appropriate for testing. Laboratory work included moisture content, gradation and plasticity testing.

When laboratory testing was complete, the soils were classified in accordance with the Unified Soil Classification System (Plate 2) and graphic logs of the test pits were prepared (Plates 3 through 7). Laboratory test data, including moisture contents and sieve analysis results are presented graphically on the logs and are tabulated in the summary of samples (Plates 8 through 10).

### Previous Work

In October and November of 1971, the Alaska DOT conducted a centerline soils and materials site investigation in the Port Lions area as part of a project to provide road access from Port Wakefield to the Port Lions airport. That work included centerline information along the present airport access road from Port Lions and an evaluation of the quarry site adjacent to the airport.

The Alaska DOT/PF conducted another extensive soils investigation in the vicinity of the airport in December 1982. This work, prior to upgrading the already existing airport facility, included a search for a material site that could serve as an alternate to the existing quarry just north of the airport.

A housing foundation study by the Alaska Area Native Health Service in 1979 also discusses the general geologic setting at Port Lions.

It is our understanding that the Bureau of Indian Affairs is presently reviewing conditions at the existing airport materials site (rock quarry) in anticipation of a project to upgrade the Wakefield Road.

### Physiographic Setting

Port Lions is located on Settlers Bay near the northern end of Kodiak Island, about 20 miles north of the City of Kodiak. The geology of the northwestern portion of Kodiak Island consists primarily of a series of interbedded marine sediments that have been metamorphosed to slates, argillites and graywackes. These alternating layers vary from an inch or two to several feet in thickness and have a prevailing northeast strike with a dip to the northwest.

The present rolling topography in the Port Lions area is the result of regional Pleistocene glaciation that extended over most of Kodiak Island. In addition to intermittent deposits of glacial till and colluvium, the bedrock is commonly mantled by

several inches to a foot or two of volcanic ash resulting from the Katmai eruption of 1912. Wave cut bluffs are common on headlands and streams tend to be incised into bedrock with little deposition except as small fans and deltas along the beach. Local beach deposits and associated dunes have accumulated in coves and other protected areas.

A wet maritime climate prevails throughout the region, and precipitation levels are moderately high. Drainage is typically well defined on the mountain slopes with steep, swift streamflow. Freezing weather is uncommon, so no permafrost is present in the project area.

### Foundation Conditions

**Existing Runway Prism**—Five test pits (PLA-3 through PLA-7) were dug to gain information about foundation conditions beneath and adjacent to the existing runway. The organic mat immediately adjacent to the prism is one half to one foot thick. Brown organic silt, sometimes capped with a foot or two of tan sandy ash, is present below the live organic mat. The organic silt layer varies from 1.5 feet thick at the western end of the runway to about 4 feet at the eastern end. The organic silt is generally quite soft. In August 2004, the water table ranged in depth from 7 feet at the western end of the runway to only one foot at the eastern end.

Some colluvial rock fragments are mixed in the silty material beneath the western third of the runway prism. In this area, the silty colluvium forms a unit about 3 feet thick immediately beneath the organic silt. At the eastern end of the runway, the colluvial layer thins and in some areas the silt appears to rest directly on weathered bedrock. Bedrock was identified at a depth of 4.5 to 7.0 feet throughout the area.

**Potential Runway Extensions**—West of the existing runway, probe refusal on rocky colluvium or weathered bedrock occurred consistently between 2 and 3 feet (PLA-16 and PLA-17). Foundation conditions beneath any extension of the runway to the west would be similar to those under the western third of the existing prism. To extend the runway to the west, however, a sharply incised stream would have to be rerouted or bridged.

Extension of the runway to the east is blocked by another stream and associated wetland. This stream carries water coming off the hillside along the northern edge of the

airport reserve. It passes immediately east of the present prism and is constrained by a ridge to the east.

A hole dug in that ridge (PLA-8) encountered bedrock at 5 feet beneath 3.0 feet of organic rich material and 2.0 feet of light gray till composed of clayey gravelly silt. DOT work in the area found similar conditions.

**Potential Runway Rotation**—If the runway were to be rotated slightly counter-clockwise, the western end of the runway would lie at the top of the terrace slope near Test Pit PLA-1. That 7-foot deep hole exposed soft, wet organic rich soil for its full depth except for a sandy ash layer between 3.5 and 6.0 feet.

To the east, the rotated runway would cross a large wetland area underlain by a thick unit of compressible organic rich material. Water in this area is at or near the surface. Probes PLA-14 and PLA-15 indicate that the thickness of this material varies, but in places is more than 6-feet thick.

**Access Road**—Test Pits PLA-9 and PLA-10 show that the existing access road approaches the airport along a till-blanketed ridge. The silty sand (till) unit varies in thickness but locally extends to a depth of at least 8 feet. A new access road around the western end of the runway would cross this till/bedrock ridge and transition onto the colluvial/bedrock terrain that underlies the western end of the runway (PLA-3).

The proposed road alignment along the northern side of the runway will cross a bedrock ridge just south of the existing rock quarry (PLA-2) and then follow along the transition from the colluvium covered bedrock slope to the north and the bogland to the south. Probe PLA-11 revealed about 3.0 feet of organic material and colluvial gravel over the shaley rock on the slope. Sheet drainage flowing on or just above the bedrock surface tends to make the surficial layer susceptible to slumping. Differential compression should be anticipated with variations in overburden thickness along the edge of the wetlands.

**Material Site**— The existing quarry site has been used for portions of the existing runway prism and for local road construction. Stockpiled material from the quarry is regularly used for road and pad maintenance by the City of Port Lions. In August 2004, about 500 yards of material was stockpiled at the quarry site but much of the material was oversized and not suitable for surface maintenance.

The existing material site is a quarry, cut into interbedded black shale and argillite. The material is well indurated but highly fractured and sheared. We understand that explosives have not been needed for excavation in the past. Elsewhere on Kodiak Island, however, indurated sandstone layers that are resistant to ripping have been encountered in similar deposits. We did not conduct new durability tests on this material but two degradation tests run by DOT yielded values of 5 and 6, indicating a material that will tend to degrade and produce fines when manipulated in wet weather.

The working face is 20 to 40 feet high with 2 to 6 feet of overburden above the cut face. Portions of the rock unit tend to be platy and friable, but other portions of the sequence are blocky with boulders to 24 inches in diameter exposed in existing stockpiles. Because of varying rock quality across the face, sorting may be required to separate material suitable for crushing.

#### Conclusions and Recommendations

**Foundation conditions**– If the runway alignment is shifted counter-clockwise, the eastern extension of the runway will cross a bog with soft organic-rich soils extending to depths greater than 6 feet. Differential settling can be expected wherever this material is overlain by fill. Further investigation is needed to establish the limits of this soft material and to determine settlement characteristics. Drainage from the adjacent sidehill now flows through the bog and around the eastern end of the present airport prism. That drainage would need to be collected and routed around or through the new prism.

Road construction or runway extension at the west end of the existing airport would cross rock cored hills with varying thicknesses of organic material, ash, silty till and colluvium over bedrock. A roadway extension along the northern edge of the airport property will cut into a steep, wet, colluvium covered hillside or be overlain along the northern edge of a significant bogland. In either case, site-specific soils information is desirable prior to final design.

The ridge to the east of the airport is underlain by bedrock with varying thicknesses of organic material, ash and till. If this material is to be removed, a more thorough examination of overburden characteristics is recommended. If the cut is to extend into rock, tests should be conducted to determine its ripability.

**Borrow Material**–The existing quarry at the airport appears to be the best source of readily available material. Crushing and screening will be required, however, to produce

a useable product. If the ridge to the east of the airport is to be lowered, the cut may serve as a rock source with material similar to that found in the existing quarry. If such a cut is to be made, additional information will be needed to establish excavation characteristics and to determine wearing capabilities.

Locally, resistant rock and/or alluvial sources are scarce and material for surfacing may have to be imported by barge.

Very truly yours,

Walter T Phillips, P.G.

Attachments:     Plate 1,  
                      Plate 2,  
                      Plates 3 through 7,  
                      Plates 8 and 9,  
                      Plate 10,  
                      Plate 11,

Project Map  
Soil Classification System  
Test Hole Logs  
Summary of Samples  
Particle Size Data  
Soil Summary at Probe Locations

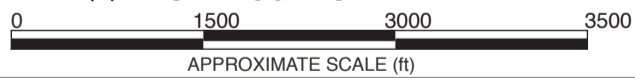


Note: Air photo © 2001, AeroMap, Inc.  
All locations are approximate.



**LEGEND:**









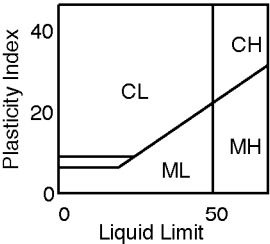







- PLA-1  TEST PIT LOCATION
- PLA-11  PROBE LOCATION



**Duane Miller & Associates**  
Job No.: 4086.041  
Date: December 2004

**SITE MAP**  
Airport Improvement  
Port Lions, Alaska

Plate  
**1**

MAJOR DIVISIONS		SYMBOL	TYPICAL NAMES
<b>COARSE GRAINED SOILS</b> 50% or more larger than #200 sieve, 0.075 mm	<b>GRAVELS</b> More than half of the coarse fraction is larger than #4 sieve size, > 4.75 mm.	Clean gravels with little or no fines	<b>GW</b>  Well graded gravels, sandy gravel
			<b>GP</b>  Poorly graded gravels, sandy gravel
		Gravels with more than 12% fines	<b>GM</b>  Silty gravels, silt sand gravel mixtures
			<b>GC</b>  Clayey gravels, clay sand gravel mixtures
	<b>SANDS</b> More than half of the coarse fraction is smaller than #4 sieve size, < 4.75 mm.	Clean sands with little or no fines	<b>SW</b>  Well graded sand, gravelly sand
			<b>SP</b>  Poorly graded sands, gravelly sand
		Sands with more than 12% fines	<b>SM</b>  Silty sand, silt gravel sand mixtures
			<b>SC</b>  Clayey sand, clay gravel sand mixtures
<b>FINE GRAINED SOILS</b> > 50% finer than #200 sieve	<b>SILTS and CLAYS</b>  <b>Plasticity Chart</b> 	Liquid limit less than 50	<b>ML</b>  Inorganic silt and very fine sand, rock flour
			<b>CL</b>  Inorganic clay, gravelly and sandy clay, silty clay
			<b>OL</b>  Organic silts and clay of low plasticity
		Liquid limit greater than 50	<b>MH</b>  Inorganic silt
			<b>CH</b>  Inorganic clay, fat clay
			<b>OH</b>  Organic silt and clay of high plasticity
<b>HIGHLY ORGANIC SOILS</b>		<b>Pt</b>  Peat and other highly organic soil	

**KEY TO TEST DATA**

PP = Pocket Penetrometer  
Dd = Dry Density (pcf)  
LL = Liquid Limit  
PL = Plastic Limit  
PI = Plastic Index  
NP = non Plastic  
SpG = Specific Gravity  
SA = Sieve Analysis  
MA = Sieve and Hydrometer Analysis  
OLI = Organic Loss  
RD = Relative Density  
D1557 = modified Proctor  
TS = Thaw Consolidation  
Con = Consolidation  
TXUU = Unconsolidated Undrained Triaxial  
TXCU = Consolidated Undrained Triaxial  
TXCD = Consolidated Drained Triaxial  
**Strength Data**  
XXX(YYY), where  
XXX =  $(\sigma_1 - \sigma_3)/2$   
YYY =  $\sigma_3$

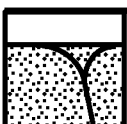
**KEY TO SAMPLE TYPE**

gr = Grab sample  
Ab = Auger bulk  
Ac = Air chip  
Sh = 2.5" ID split barrel w/ 340 lb. manual hammer  
Sh\* = 2.5" ID split barrel w/ 140 lb. manual hammer  
Sha = 2.5" ID split barrel w/ 340 lb. automatic hammer  
Tw = Shelby tube  
Ss = 1.4" ID split barrel w/ 140 lb. manual hammer  
Cc = 3.25" continuous core barrel

**UNIFIED SOIL CLASSIFICATION SYSTEM**

GROUP	ICE VISIBILITY	DESCRIPTION	SYMBOL	
<b>N</b>	Segregated ice not visible by eye	Poorly bonded or friable	<b>Nf</b>	
		Well bonded	No excess ice	<b>Nb</b>
			Excess microscopic ice	<b>Nbn</b> <b>Nbe</b>
<b>V</b>	Segregated ice is visible by eye and is one inch or less in thickness	Individual ice crystals or inclusions	<b>Vx</b>	
		Ice coatings on particles	<b>Vc</b>	
		Random or irregularly oriented ice	<b>Vr</b>	
		Stratified or distinctly oriented ice	<b>Vs</b>	
		Uniformly distributed ice	<b>Vu</b>	
<b>ICE</b>	Ice greater than one inch in thickness	Ice with soil inclusions	<b>ICE + soil type</b>	
		Ice without soil inclusions	<b>ICE</b>	

**ICE CLASSIFICATION SYSTEM**



**DUANE MILLER & ASSOCIATES**

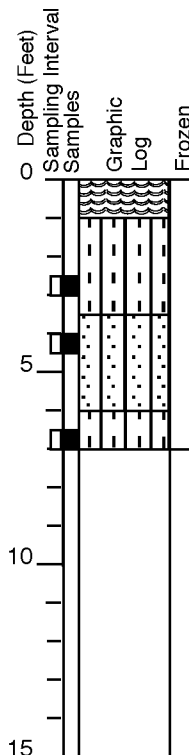
Project: Airport Improvement  
 DM&A Job No.: 4086.041  
 Logged By: W. Phillips

Moisture Content % (●),  
 PL & LL (—), Salinity (Δ)  
 and Sampling Blows/ft (○)

0	20	40	60	>80	P200	Other Tests	Blow Counts	Sampler Type
		●						Gr
			●			SA, PI		Gr
						20.2%		Gr
						79.5%		Gr

**Log of HOLE: PLA-1**

Date Drilled: August 3, 2004  
 Contractor: City  
 Equipment: CASE 580D w/ 18" toothed bucket  
 GPS Coord.: N 57° 53' 02.5" W 152° 51' 04.2"  
 Elevation: -



Depth (Feet)	Description
0 - 1	<b>ORGANIC MAT (Pt)</b> Root mat w/ organic silt
1 - 3	<b>ORGANIC SILT (OL)</b> Dark brown w/ roots and traces of organic material
3 - 5	<b>SILTY SAND (SM)</b> Light gray ash (?)
5 - 7.0	<b>ORGANIC SILT (OL)</b> Brown w/ trace to some organic material Bottom of pit at 7.0 ft.
7.0 - 15	Frozen

**DUANE MILLER & ASSOCIATES**

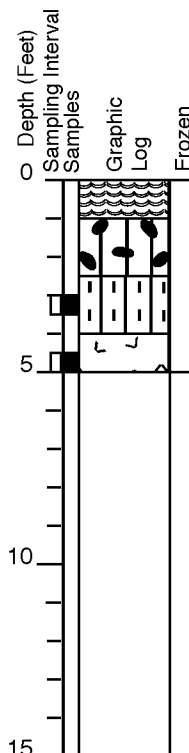
Project: Airport Improvement  
 DM&A Job No.: 4086.041  
 Logged By: W. Phillips

Moisture Content % (●),  
 PL & LL (—), Salinity (Δ)  
 and Sampling Blows/ft (○)

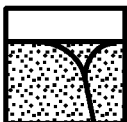
0	20	40	60	>80	P200	Other Tests	Blow Counts	Sampler Type
	●							Gr
								Gr

**Log of HOLE: PLA-2**

Date Drilled: August 4, 2004  
 Contractor: City  
 Equipment: CASE 580D w/ 18" toothed bucket  
 GPS Coord.: 25' E of N 57° 53' 11.1" W 152° 50' 59.5"  
 Elevation: -



Depth (Feet)	Description
0 - 1	<b>ORGANIC MAT (Pt)</b> Brown w/ organic silt
1 - 3	<b>SILTY GRAVEL (GM)</b> Gray-brown rock fragments to 2"+ mixed with organic silt
3 - 5	<b>ORGANIC SILT (OL)</b> Brown w/ trace to some angular sand and small rock fragments
5 - 5.0	<b>BEDROCK (Bx)</b> Black shale w/ thin quartz interbeds Bottom of pit at 5.0 ft.
5.0 - 15	Frozen



**Duane Miller & Associates**  
 Job No.: 4086.041  
 Date: December 2004

**LOG of TEST PITS PLA-1 and PLA-2**  
 Airport Improvement  
 Port Lions, Alaska

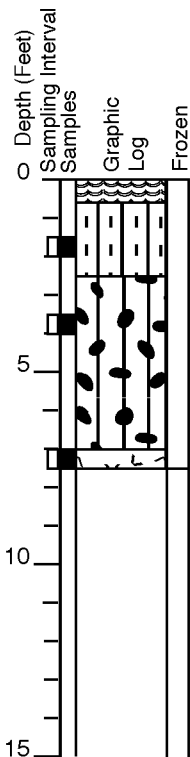
**DRAFT**

**DUANE MILLER & ASSOCIATES**

Project: Airport Improvement  
 DM&A Job No.: 4086.041  
 Logged By: W. Phillips

Moisture Content % (●),  
 PL & LL (—), Salinity (Δ)  
 and Sampling Blows/ft (○) Other Tests

0	20	40	60	>80 P200	Other Tests	Blow Counts	Sampler Type
	●				1.4%		Gr
●							Gr
	●						Gr



**Log of HOLE: PLA-3**

Date Drilled: August 4, 2004  
 Contractor: City  
 Equipment: CASE 580D w/ 18" toothed bucket  
 GPS Coord.: N 57° 53' 06.6" W 152° 51' 07.2"  
 Elevation: -

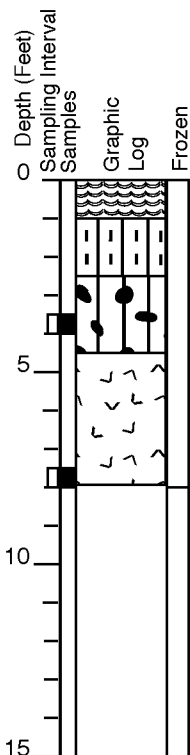
Description
<b>ORGANIC MAT (Pt)</b>
<b>ORGANIC SILT (OL)</b> Brown w/ rock fragments, one rock to 14"
<b>SILTY GRAVEL (GM)</b> Gray-brown colluvium, shale and silt mixed, silt content varies w/ some gravel (GP) layers, most rock pieces <5" in diameter
Water seep encountered at 7.0 ft. while digging
<b>BEDROCK (Bx)</b> Shale
Bottom of pit at 7.0 ft.

**DUANE MILLER & ASSOCIATES**

Project: Airport Improvement  
 DM&A Job No.: 4086.041  
 Logged By: W. Phillips

Moisture Content % (●),  
 PL & LL (—), Salinity (Δ)  
 and Sampling Blows/ft (○) Other Tests

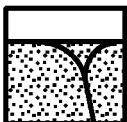
0	20	40	60	>80 P200	Other Tests	Blow Counts	Sampler Type
●							Gr
		●					Gr



**Log of HOLE: PLA-4**

Date Drilled: August 4, 2004  
 Contractor: City  
 Equipment: CASE 580D w/ 18" toothed bucket  
 GPS Coord.: N 57° 53' 08.5" W 152° 50' 56.6"  
 Elevation: -

Description
<b>ORGANIC MAT (Pt)</b>
<b>ORGANIC SILT (OL)</b> Brown w/ occasional rock fragments and thin ash and charcoal layers
<b>SILTY GRAVEL (GM)</b> Colluvium, mixed rock fragments and silt, 6" ash lens at 2.5'
<b>WEATHERED BEDROCK (Bx-w)</b> Brown-gray fragmented rock and silt
Bottom of pit at 8.0 ft.



Duane Miller & Associates  
 Job No.: 4086.041  
 Date: December 2004

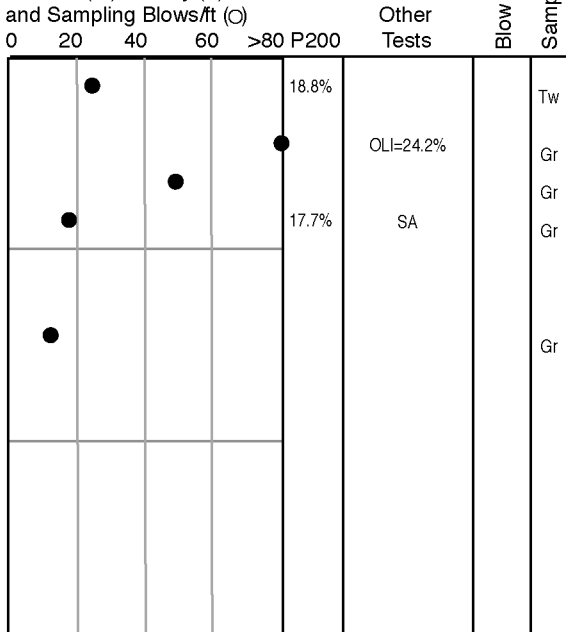
**LOG of TEST PITS PLA-3 and PLA-4**  
 Airport Improvement  
 Port Lions, Alaska

**DRAFT**

**DUANE MILLER & ASSOCIATES**

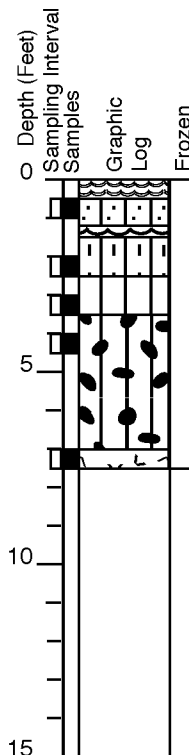
Project: Airport Improvement  
 DM&A Job No.: 4086.041  
 Logged By: W. Phillips

Moisture Content % (●),  
 PL & LL (—), Salinity (Δ)  
 and Sampling Blows/ft (○)



**Log of HOLE: PLA-5**

Date Drilled: August 4, 2004  
 Contractor.: City  
 Equipment: CASE 580D w/ 18" toothed bucket  
 GPS Coord.: N 57° 53' 08.8" W 152° 50' 45.8"  
 Elevation: -

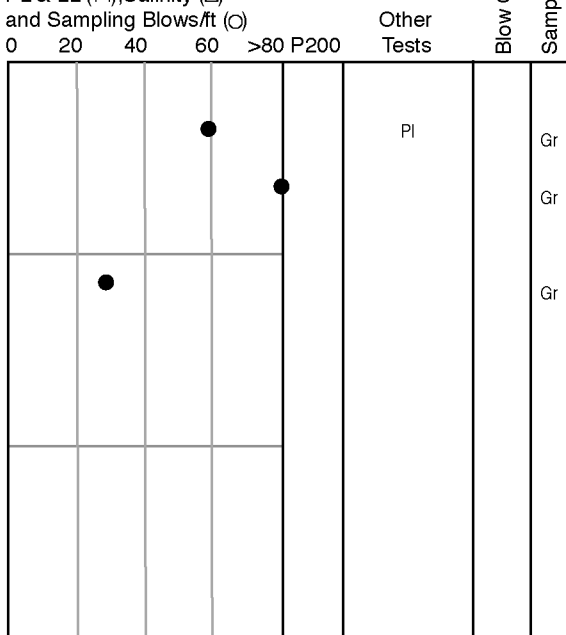


Depth (Feet)	Description
0 - 0.5	ORGANIC MAT (Pt)
0.5 - 1.5	SILTY SAND (SM) Tan sandy ash
1.5 - 2.5	PEAT (Pt) Dark brown w/ some silt
2.5 - 3.5	ORGANIC SILT (OL) Brown
3.5 - 4.5	SILT (ML) Gray
4.5 - 7.5	SILTY GRAVEL (GM) Dark gray oriented rock fragments mixed w/ silt, some silty sand (SM), colluvium
7.5 - 15	WEATHERED BEDROCK (Bx-w) Gray Bottom of pit at 7.5 ft.

**DUANE MILLER & ASSOCIATES**

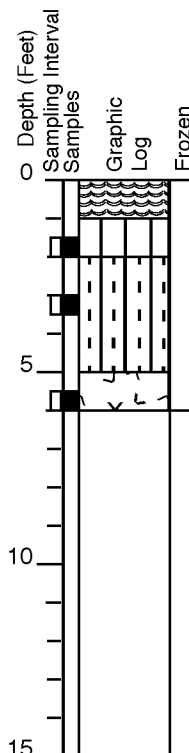
Project: Airport Improvement  
 DM&A Job No.: 4086.041  
 Logged By: W. Phillips

Moisture Content % (●),  
 PL & LL (—), Salinity (Δ)  
 and Sampling Blows/ft (○)

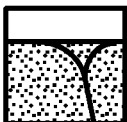


**Log of HOLE: PLA-6**

Date Drilled: August 4, 2004  
 Contractor.: City  
 Equipment: CASE 580D w/ 18" toothed bucket  
 GPS Coord.: N 57° 53' 11.5" W 152° 50' 20.8"  
 Elevation: -



Depth (Feet)	Description
0 - 0.5	ORGANIC MAT (Pt) w/ grass roots and organic silt
0.5 - 1.5	SILT (ML) Tan to gray ash w/ sand
1.5 - 6.0	ORGANIC SILT (OL) w/ roots and thin peat (Pt) layers Water at 1'
6.0 - 15	WEATHERED BEDROCK (Bx-w) Gray oriented rock fragments w/ silt Bottom of pit at 6.0 ft.



Duane Miller & Associates  
 Job No.: 4086.041  
 Date: December 2004

**LOG of TEST PITS PLA-5 and PLA-6**  
 Airport Improvement  
 Port Lions, Alaska

**DRAFT**

**DUANE MILLER & ASSOCIATES**

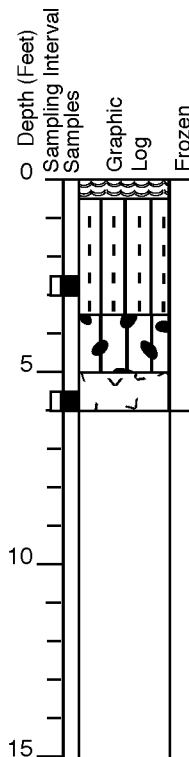
Project: Airport Improvement  
 DM&A Job No.: 4086.041  
 Logged By: W. Phillips

Moisture Content % (●),  
 PL & LL (—), Salinity (Δ)  
 and Sampling Blows/ft (○)

0	20	40	60	>80	P200	Other Tests	Blow Counts	Sampler Type
				●				Gr
								Gr

**Log of HOLE: PLA-7**

Date Drilled: August 4, 2004  
 Contractor: City  
 Equipment: CASE 580D w/ 18" toothed bucket  
 GPS Coord.: N 57° 53' 06.0" W 152° 50' 53.9"  
 Elevation: -



Depth (Feet)	Description
0 - 4	ORGANIC MAT (Pt) ORGANIC SILT (OL) w/ thin ash layers and scattered rock fragments
4 - 6	SILTY GRAVEL (GM) Mixed oriented black rock fragments and gray-brown colluvial rock fragments w/ silt
6.0	WEATHERED BEDROCK (Bx-w) Gray Bottom of pit at 6.0 ft.

**DUANE MILLER & ASSOCIATES**

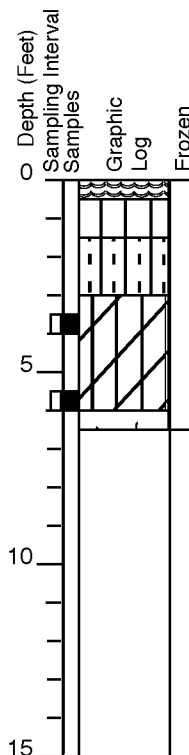
Project: Airport Improvement  
 DM&A Job No.: 4086.041  
 Logged By: W. Phillips

Moisture Content % (●),  
 PL & LL (—), Salinity (Δ)  
 and Sampling Blows/ft (○)

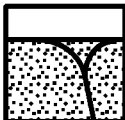
0	20	40	60	>80	P200	Other Tests	Blow Counts	Sampler Type
						PI		Gr
								Gr

**Log of HOLE: PLA-8**

Date Drilled: August 4, 2004  
 Contractor: City  
 Equipment: CASE 580D w/ 18" toothed bucket  
 GPS Coord.: N 57° 53' 13.1" W 152° 50' 14.9"  
 Elevation: -



Depth (Feet)	Description
0 - 1.5	ORGANIC MAT (Pt) SILT (ML) Tan ash
1.5 - 6.5	ORGANIC SILT (OL) Dark brown
4.5 - 6.5	CLAYEY GRAVELLY SILT (gML) Light gray, hard, clayey silt w/ rock fragments to 8"+, till (?), ppn is 1 to 1.5 T/ft <sup>2</sup>
6.5	WEATHERED BEDROCK (Bx-w) Gray shale Bottom of pit at 6.5 ft.



Duane Miller & Associates  
 Job No.: 4086.041  
 Date: December 2004

**LOG of TEST PITS PLA-7 and PLA-8**  
 Airport Improvement  
 Port Lions, Alaska

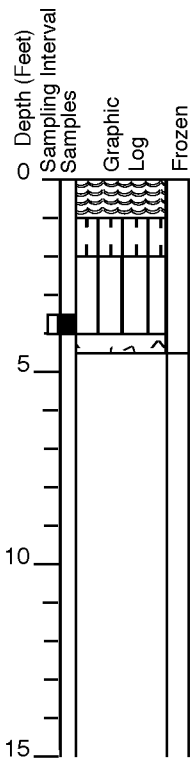
**DRAFT**

**DUANE MILLER & ASSOCIATES**

Project: Airport Improvement  
 DM&A Job No.: 4086.041  
 Logged By: W. Phillips

Moisture Content % (●),  
 PL & LL (—), Salinity (Δ)  
 and Sampling Blows/ft (○)      Other Tests

0	20	40	60	>80	P200	Other Tests	Blow Counts	Sampler Type
								Gr



**Log of HOLE: PLA-9**

Date Drilled: August 4, 2004  
 Contractor.: City  
 Equipment: CASE 580D w/ 18" toothed bucket  
 GPS Coord.: N 57° 53' 01.1" W 152° 51' 09.2"  
 Elevation: -

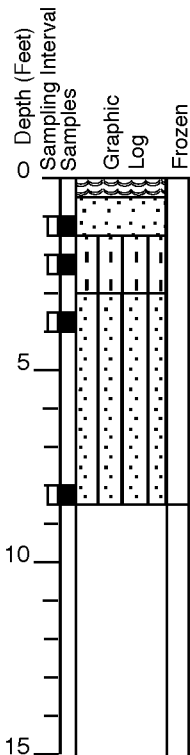
Description
<b>ORGANIC MAT (Pt)</b> w/ organic silt
<b>ORGANIC SILT (OL)</b> Dark brown
<b>GRAVELLY SILT (gML)</b> Light gray w/ clay and fragmented, rounded rocks to 10", till (?)
<b>BEDROCK (Bx)</b> Gray shale Bottom of pit at 4.5 ft.

**DUANE MILLER & ASSOCIATES**

Project: Airport Improvement  
 DM&A Job No.: 4086.041  
 Logged By: W. Phillips

Moisture Content % (●),  
 PL & LL (—), Salinity (Δ)  
 and Sampling Blows/ft (○)      Other Tests

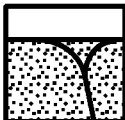
0	20	40	60	>80	P200	Other Tests	Blow Counts	Sampler Type
						7.0%		Gr
						27.1%	SA	Gr
						75.4%		Gr
								Gr



**Log of HOLE: PLA-10**

Date Drilled: August 4, 2004  
 Contractor.: City  
 Equipment: CASE 580D w/ 18" toothed bucket  
 GPS Coord.: N 57° 52' 56.0" W 152° 51' 17.2"  
 Elevation: -

Description
<b>ORGANIC MAT (Pt)</b> Grass and alder root mat
<b>SAND (SP-SM)</b> Tan ash
<b>ORGANIC SILT (OL)</b> Brown to red-brown
<b>SILTY SAND (SM)</b> Light gray, w/ clay and subrounded boulders to 12", grading to gravelly silt (gML), till
Bottom of pit at 8.5 ft.

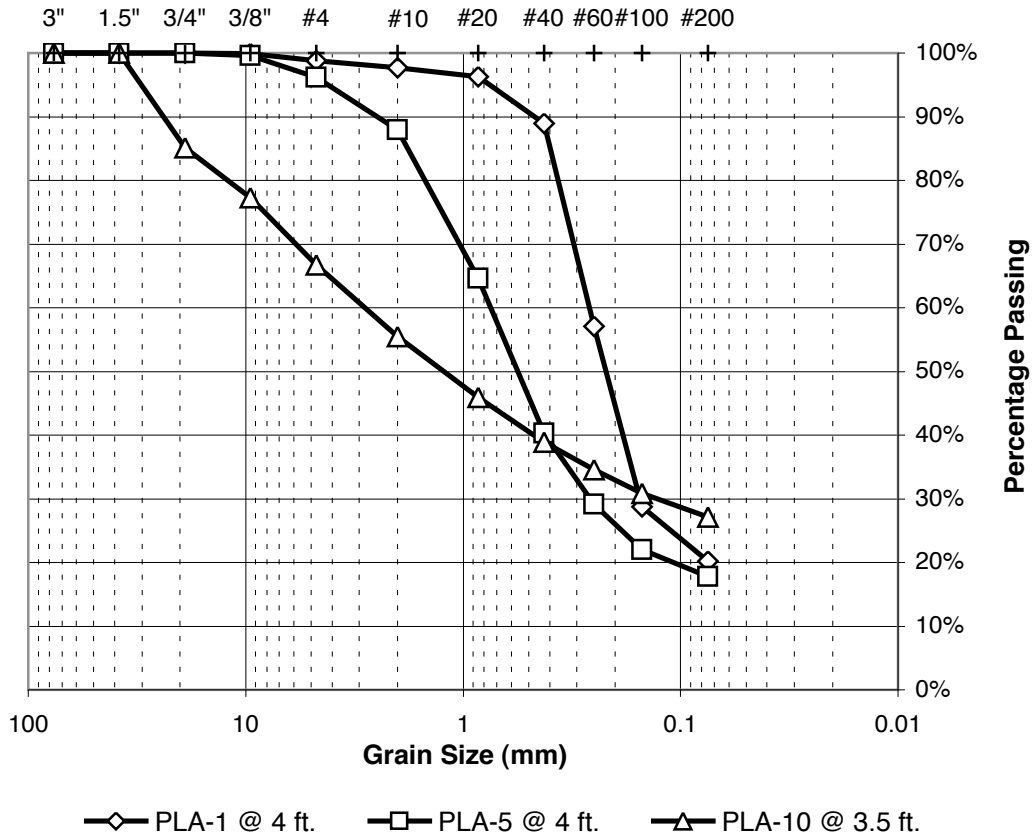


**DRAFT**

Test Hole	Sample Depth	Soil Type (USCS)	Thermal State	Sampler Type	Moisture Content	Dry Density	Organic Loss	Passing #200	Other Tests
PLA-1	2.5 ft.	OL	Unfrozen	Gr	36.3%				
PLA-1	4.0 ft.	SM	Unfrozen	Gr	48.5%			20.2%	SA
PLA-1	6.5 ft.	OL	Unfrozen	Gr	95.8%			79.5%	
PLA-2	3.0 ft.	OL	Unfrozen	Gr	26.8%				
PLA-2	4.5 ft.	Bx	Unfrozen	Gr					
PLA-3	1.5 ft.	OL	Unfrozen	Gr	20.0%				
PLA-3	3.5 ft.	GP	Unfrozen	Gr	3.7%			1.4%	
PLA-3	7.0 ft.	Bx	Unfrozen	Gr	15.5%				
PLA-4	3.5 ft.	GM	Unfrozen	Gr	10.1%				
PLA-4	7.5 ft.	Bx-w	Unfrozen	Gr	48.7%				
PLA-5	0.5 ft.	SM	Unfrozen	Tw	24.8%			18.8%	
PLA-5	2.0 ft.	OL	Unfrozen	Gr	132.1%		24%		
PLA-5	3.0 ft.	ML	Unfrozen	Gr	49.1%	67 pcf			
PLA-5	4.0 ft.	SM	Unfrozen	Gr	18.0%			17.7%	SA
PLA-5	7.0 ft.	Bx-w	Unfrozen	Gr	12.7%				
PLA-6	1.5 ft.	ML	Unfrozen	Gr	58.7%				
PLA-6	3.0 ft.	OL	Unfrozen	Gr	238.9%				
PLA-6	5.5 ft.	Bx-r	Unfrozen	Gr	28.8%				
PLA-7	2.5 ft.	OL	Unfrozen	Gr	79.2%				
PLA-7	5.5 ft.	Bx-w	Unfrozen	Gr					

Test Hole	Sample Depth	Soil Type (USCS)	Thermal State	Sampler Type	Moisture Content	Dry Density	Organic Loss	Passing #200	Other Tests
PLA-8	3.5 ft.	gML	Unfrozen	Gr	14.0%				PI
PLA-8	5.5 ft.	gML	Unfrozen	Gr	8.8%				
PLA-9	3.5 ft.	gML	Unfrozen	Gr	11.8%				PI
PLA-10	1.0 ft.	SP-SM	Unfrozen	Gr	29.7%			7.0%	
PLA-10	2.0 ft.	OL	Unfrozen	Gr	97.0%				
PLA-10	3.5 ft.	SM	Unfrozen	Gr	15.2%			27.1%	SA
PLA-10	8.0 ft.	gML	Unfrozen	Gr	12.0%			75.4%	PI

Boring =>	PLA-1	PLA-5	PLA-10
Depth =>	4.0 ft.	4.0 ft.	3.5 ft.
3" =>	100.0%	100.0%	100.0%
1 1/2" =>	100.0%	100.0%	100.0%
3/4" =>	100.0%	100.0%	85.1%
3/8" =>	99.9%	99.6%	77.2%
#4 =>	98.8%	96.1%	66.8%
#10 =>	97.7%	87.9%	55.5%
#20 =>	96.3%	64.6%	45.9%
#40 =>	88.9%	40.3%	38.9%
#60 =>	57.0%	29.1%	34.6%
#100 =>	28.8%	22.0%	30.9%
#200 =>	20.2%	17.7%	27.1%
<b>Analysis of Data</b>			
D10 size =>			
D30 size =>	0.153 mm	0.261 mm	0.127 mm
D50 size =>	0.220 mm	0.561 mm	1.224 mm
D60 size =>	0.263 mm	0.745 mm	2.822 mm
Coeff. of Uniformity, Cu =			
Coeff. of Curvature, Cc =			
Gravel (+#4) percentage =	1%	4%	33%
Sand percentage =	78.6%	78.4%	39.7%
Fines percentage =	20.2%	17.7%	27.1%
Unified Soil Class Symbol =	<b>SM</b>	<b>SM</b>	<b>SM</b>

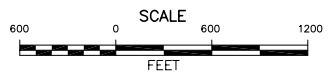
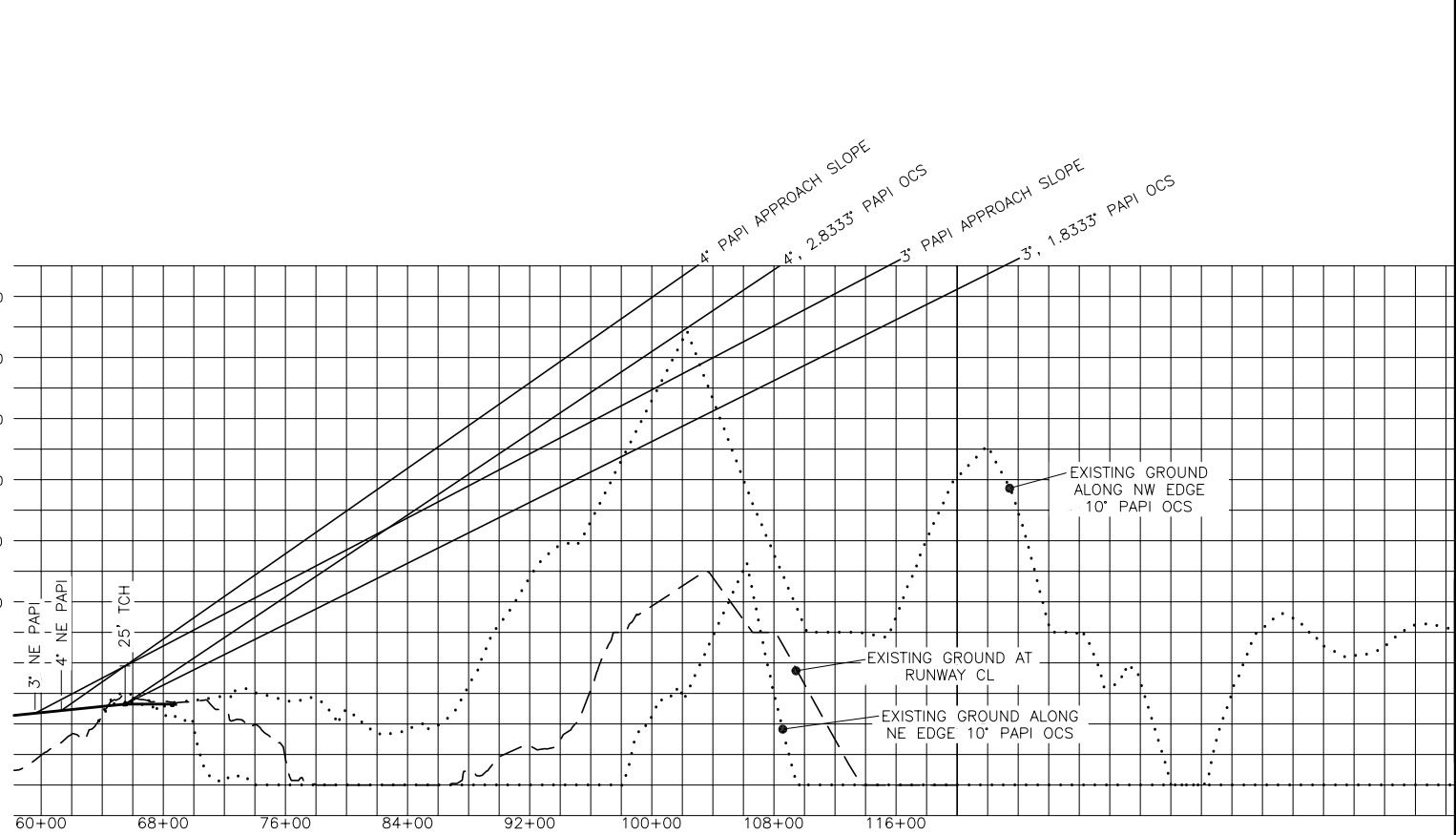
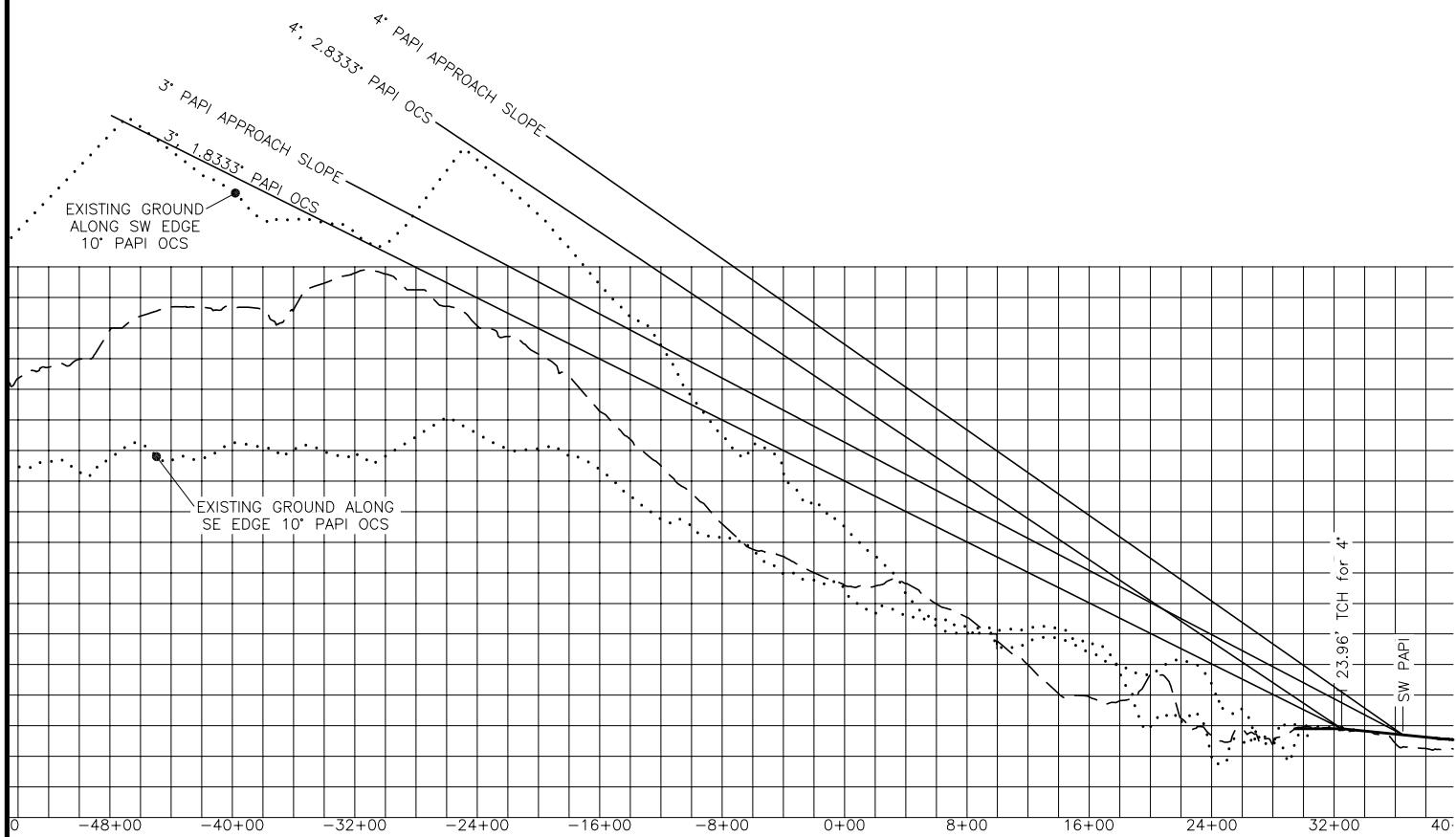
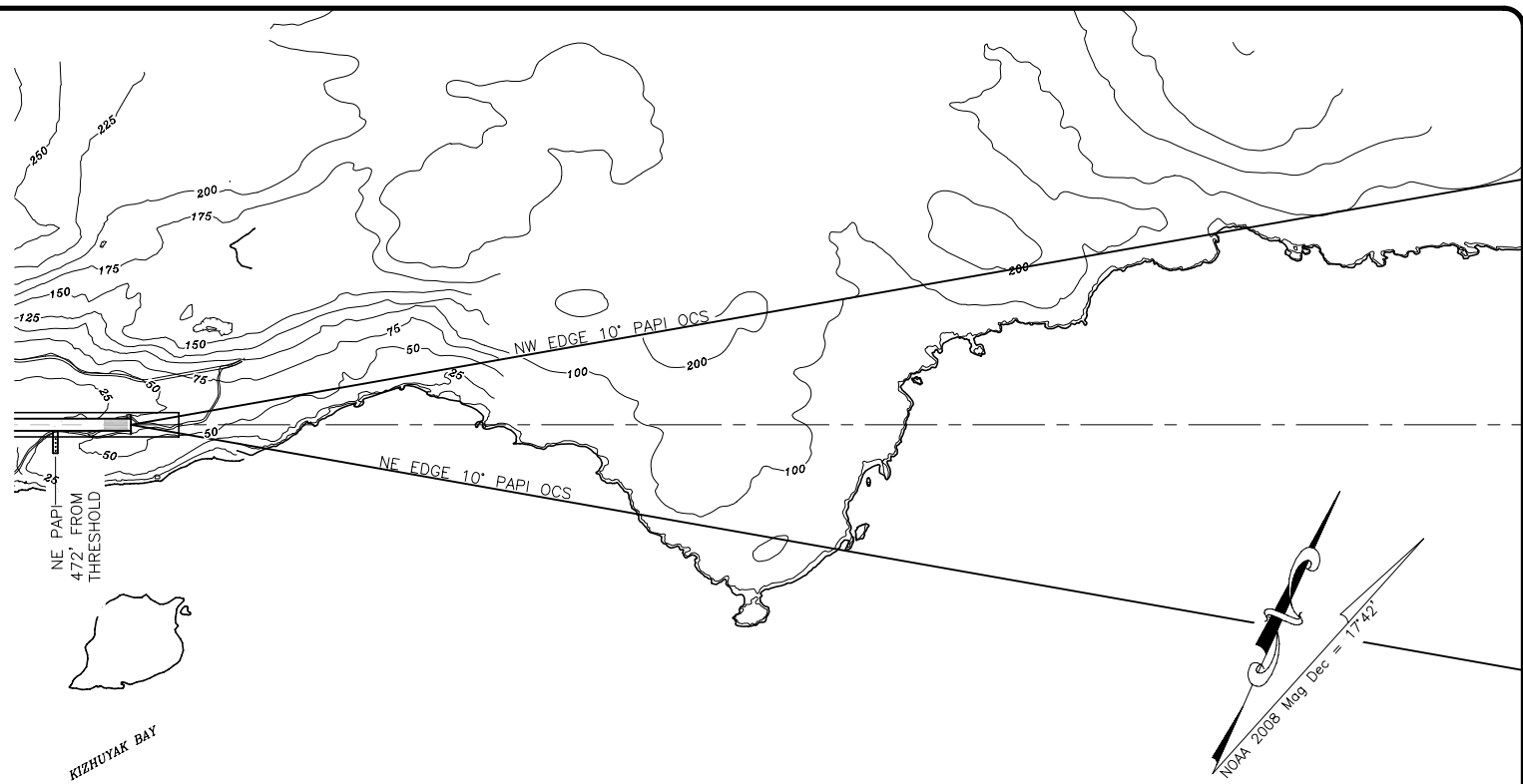
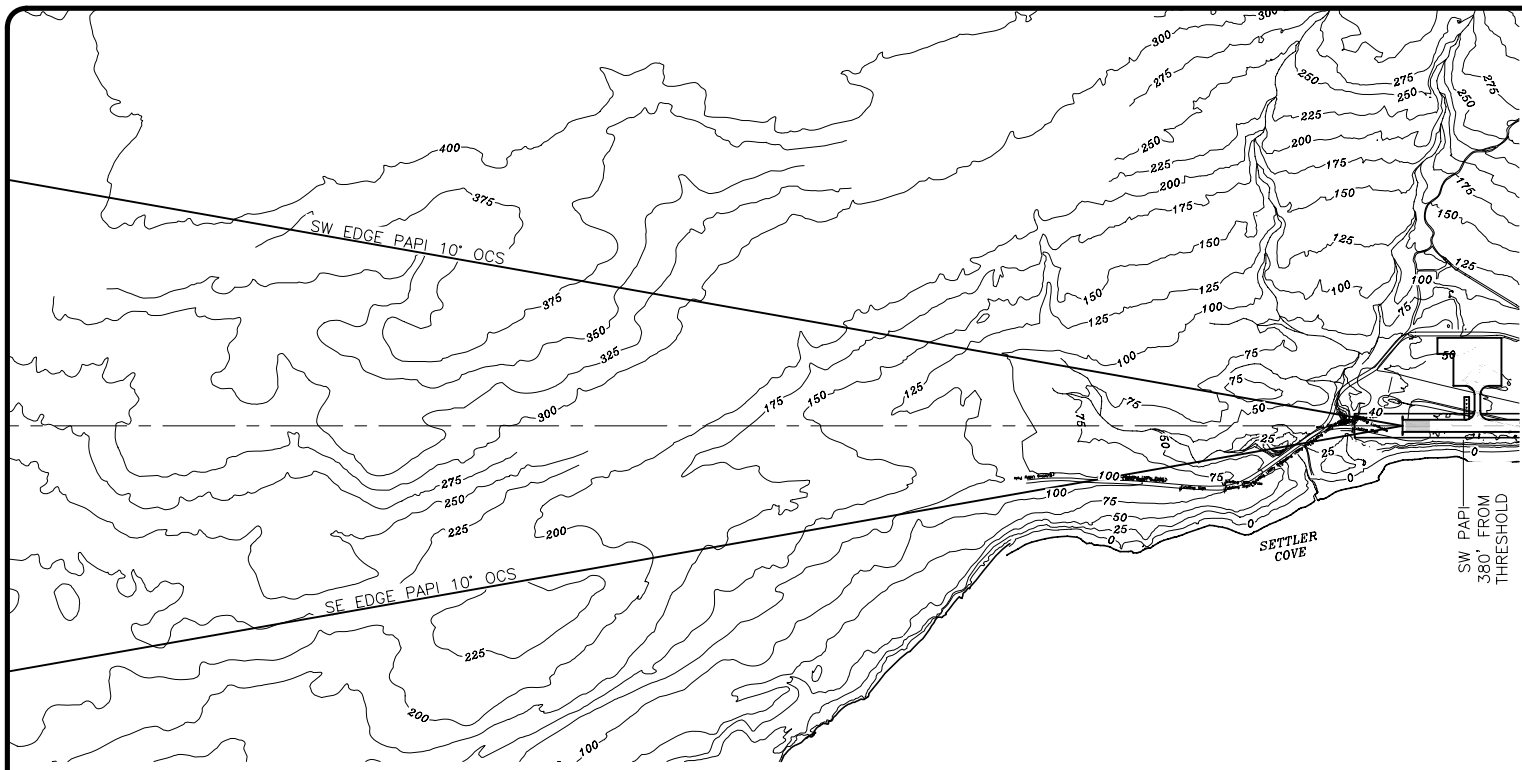


SUMMARY of PROBES-August 2004

Probe Number	LOCATION (NAD 27) Latitude (N)      Longitude (W)		Organic mat/ Silt/ Ash/ Organic Silt (ft)	Top of Silty Gravel Colluvium (ft)	Refusal: Colluvium/ Bedrock	Surface Cover
PLA-11	57° 53' 06.0"	152° 50' 53.9"	2.0	2.0	3	Grassy Hillside
PLA-12	57° 53' 13.1"	152° 50' 14.9"	2.5	2.5	3.5	Alder/Willow/trees
PLA-13	57° 53' 10.8"	152° 50' 42.5"	5.5	-	5.5	Grassy meadow
PLA-14	57° 53' 13.4"	152° 50' 27.5"	6 +	-	6 +	Willow/Spruce
PLA-15	57° 53' 06.0"	152° 50' 53.9"	6+	-	6 +	Grassy Bog
PLA-16	57° 53' 06.0"	152° 50' 53.9"	2.8	-	2.8	Grass/ Willow
PLA-17	57° 53' 06.0"	152° 50' 53.9"	2.2	-	2.2	Grass/Berry/Fern

**Appendix 3**  
**PAPI Approach Slope Analysis**

Date Plotted: March 5, 2007  
 Layout Name: C:\P\working\SEA\dgn\sea\vmse6501\PAPI P&F.dwg  
 File Name:  
 Designed By: DUG  
 Drawn By: DUG  
 Checked By: CFS



PAPI: PRECISION APPROACH PATH INDICATOR  
 OCS: OBSTACLE CLEARANCE SURFACE

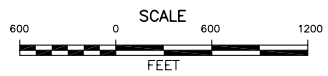
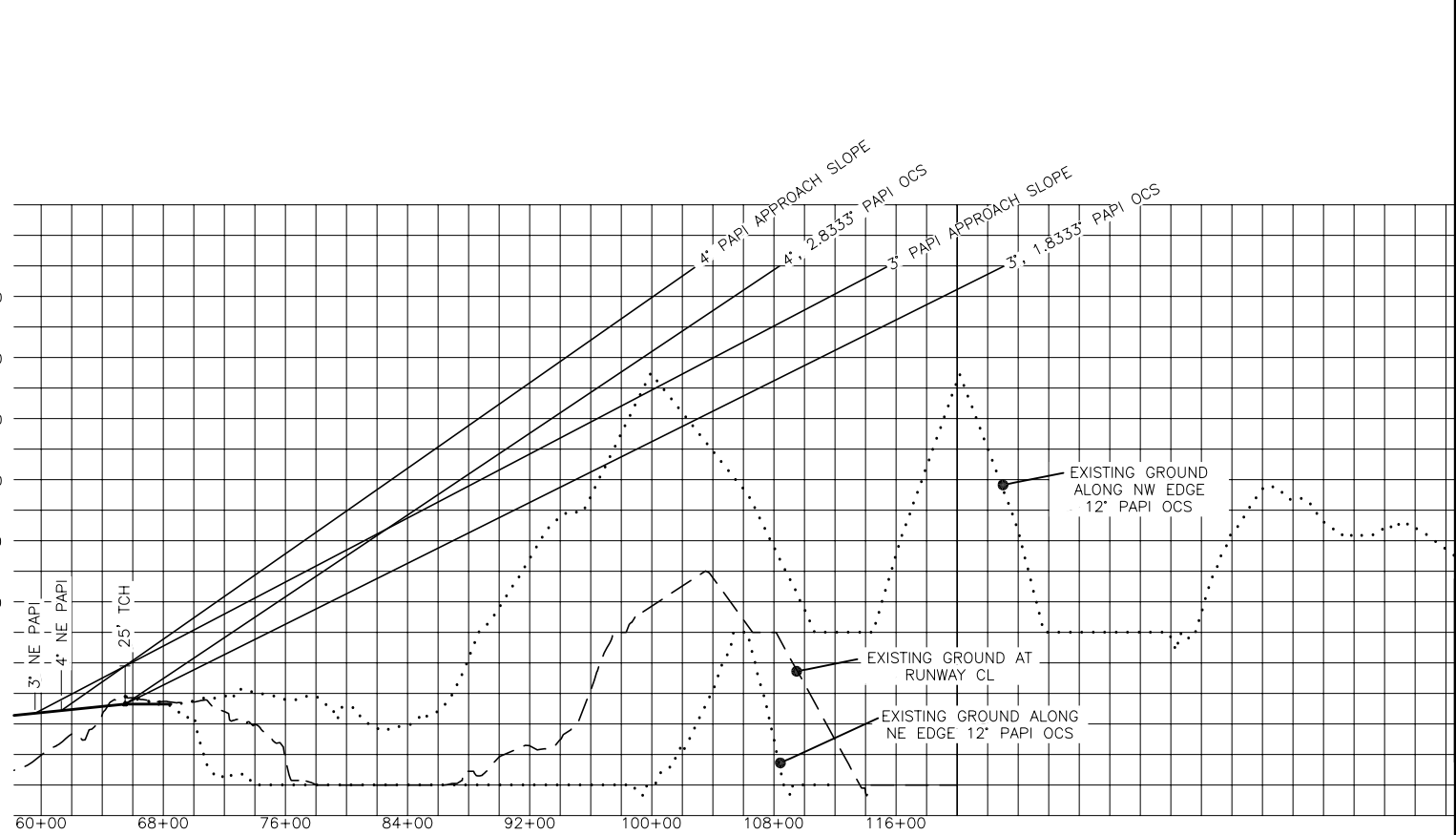
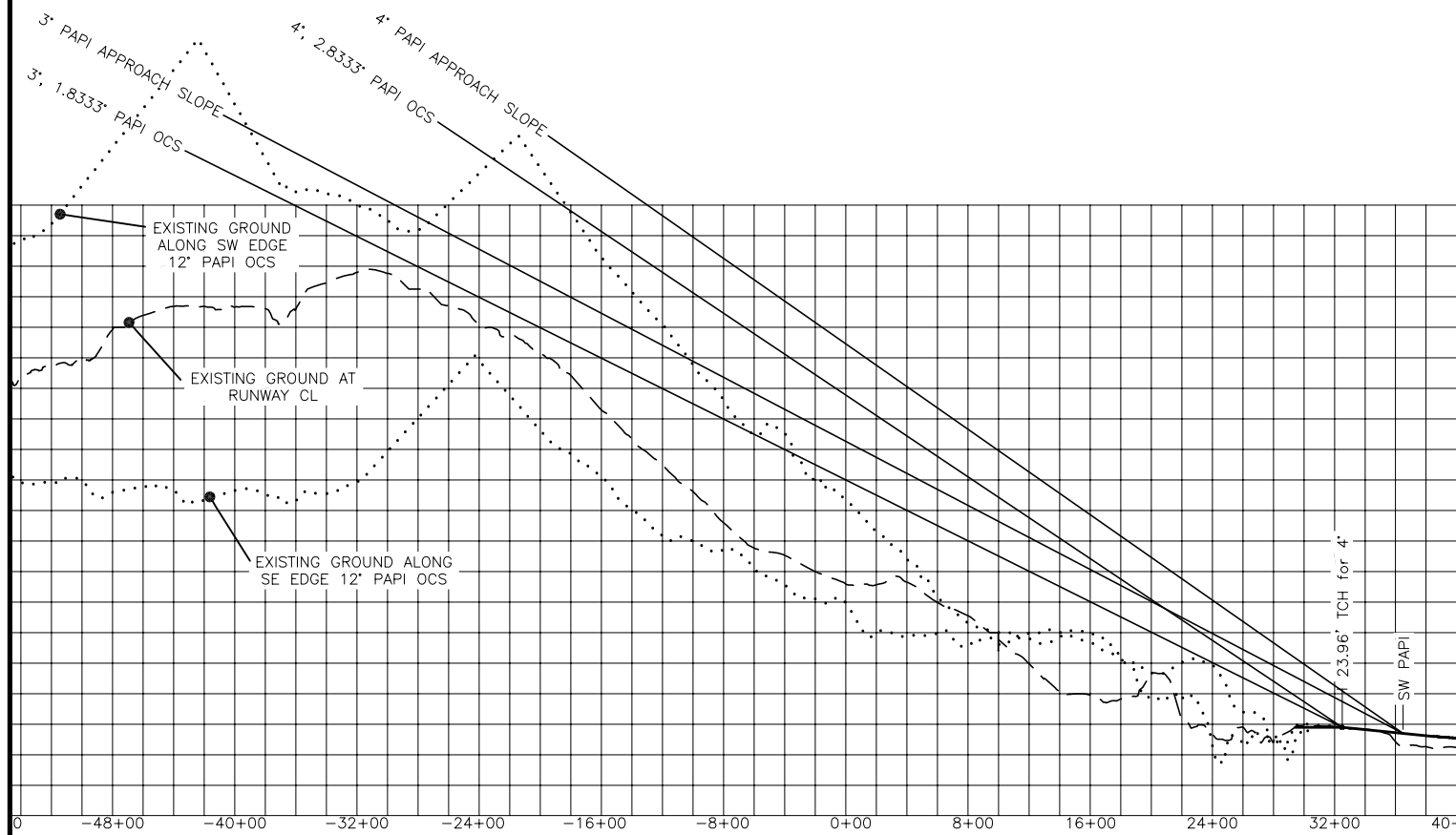
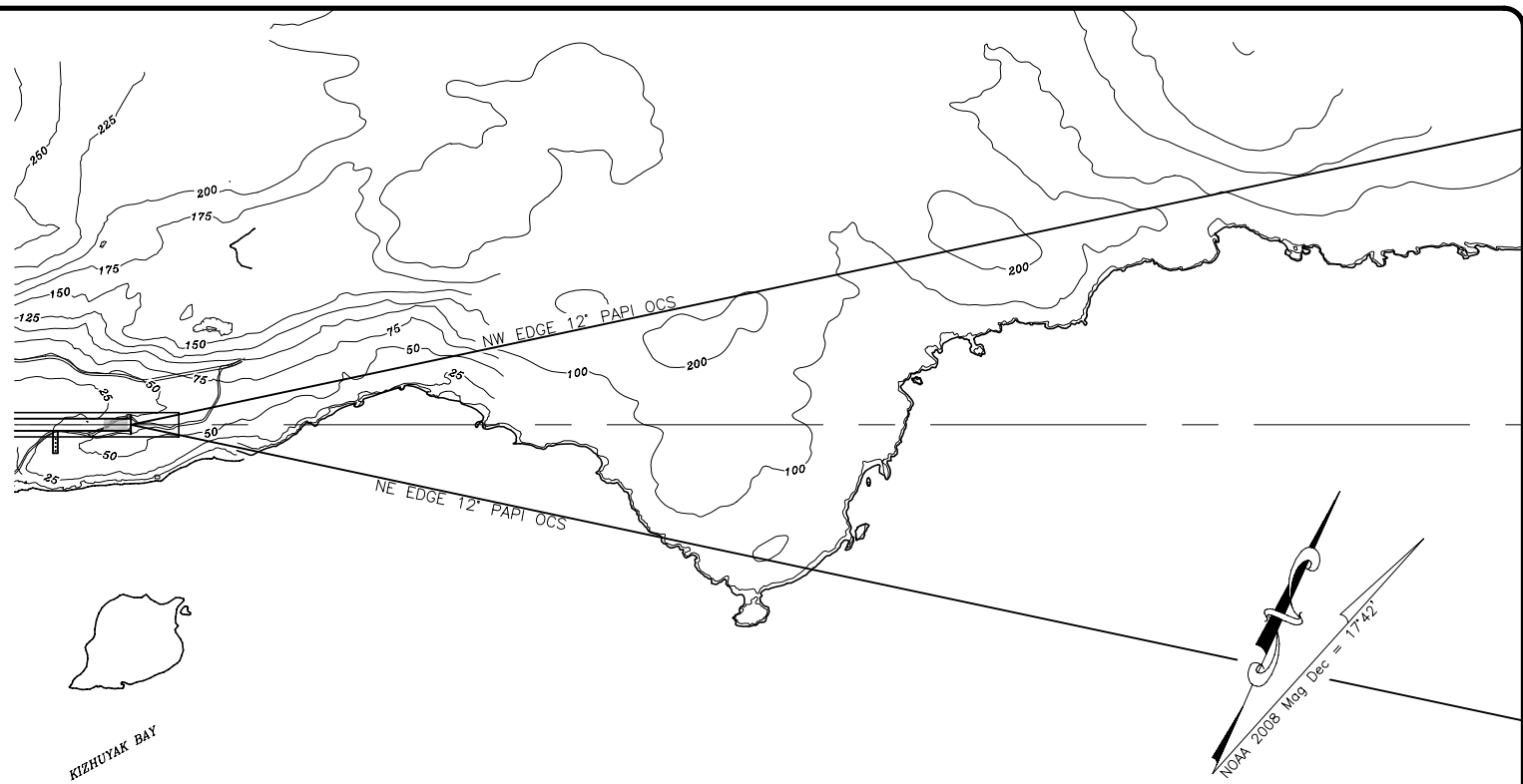
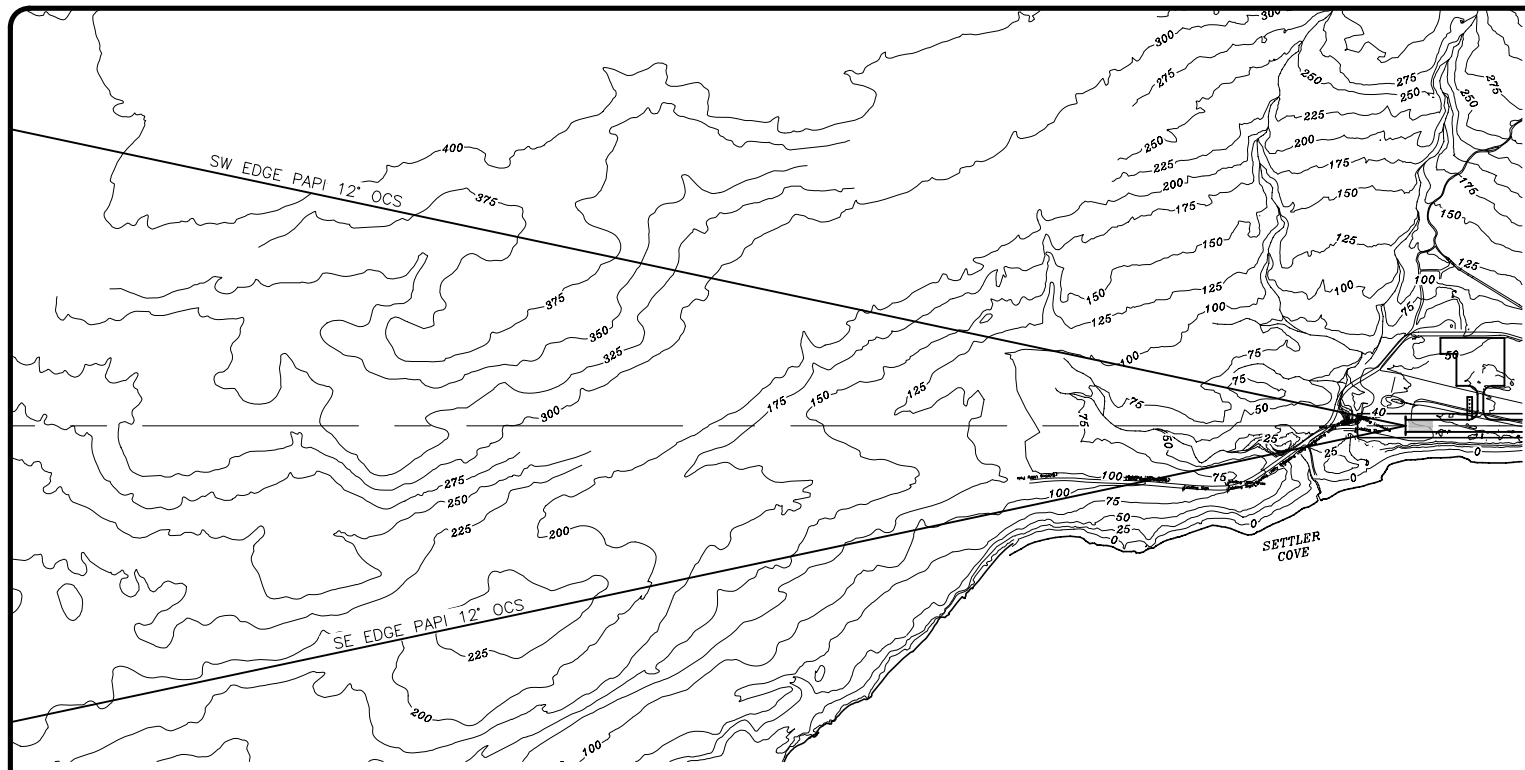
BY	DATE	REVISION

**STATE OF ALASKA**  
**DEPARTMENT OF TRANSPORTATION**  
**AND PUBLIC FACILITIES**  
**CENTRAL REGION**

**PORT LIONS AIRPORT**  
 PORT LIONS, ALASKA  
 PRECISION APPROACH PATH INDICATOR  
 APPROACH SLOPE  
 &  
 10' OBSTACLE CLEARANCE SURFACE

DATE:  
 3-5-07  
 APPENDIX  
 6  
 FIGURE  
 1

Date Plotted: March 5, 2007  
 Layout Name: C:\P\working\SEA\dgreeley\smas6501\PAPI P&F.dwg  
 File Name:  
 Designed By: DUG  
 Drawn By: DUG  
 Checked By: CFS



PAPI: PRECISION APPROACH PATH INDICATOR  
 OCS: OBSTACLE CLEARANCE SURFACE

BY	DATE	REVISION

**STATE OF ALASKA**  
**DEPARTMENT OF TRANSPORTATION**  
**AND PUBLIC FACILITIES**  
**CENTRAL REGION**

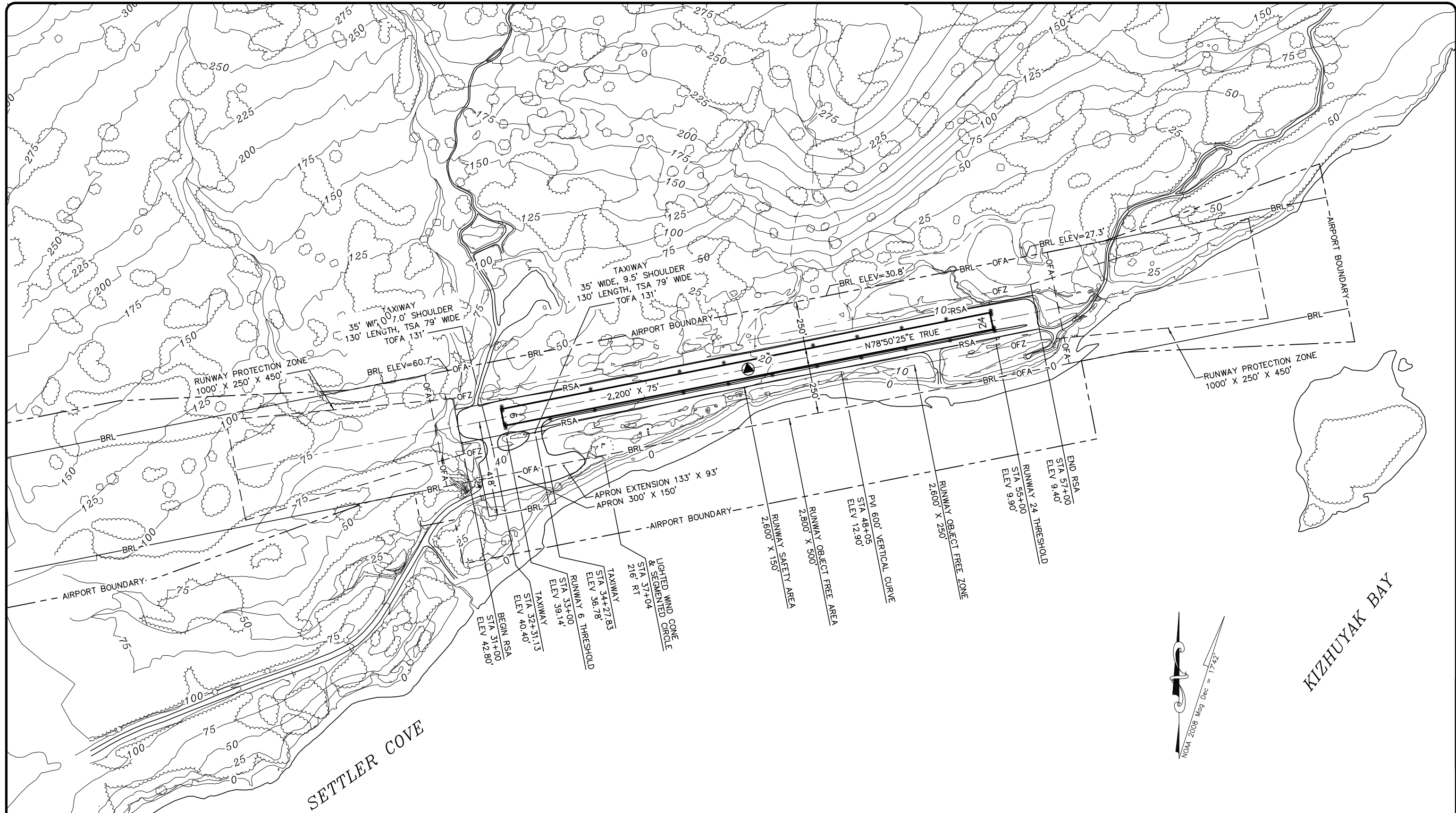
**PORT LIONS AIRPORT**  
 PORT LIONS, ALASKA  
 PRECISION APPROACH PATH INDICATOR  
 APPROACH SLOPE  
 &  
 12' OBSTACLE CLEARANCE SURFACE

DATE:  
 3-5-07  
 APPENDIX  
 6  
 FIGURE  
 2

**Appendix 4**  
**Airport Layout Plan**

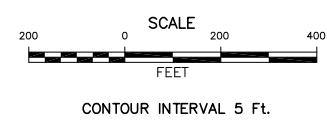


Date Plotted: January 28, 2007  
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 File Name:  
 Designed By: DJG  
 Drawn By: DJG  
 Checked By: JFS

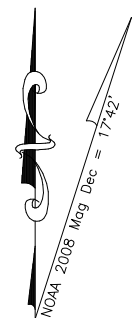


SETTLER COVE

KIZHUYAK BAY



**DRAFT**



BY	DATE	REVISION

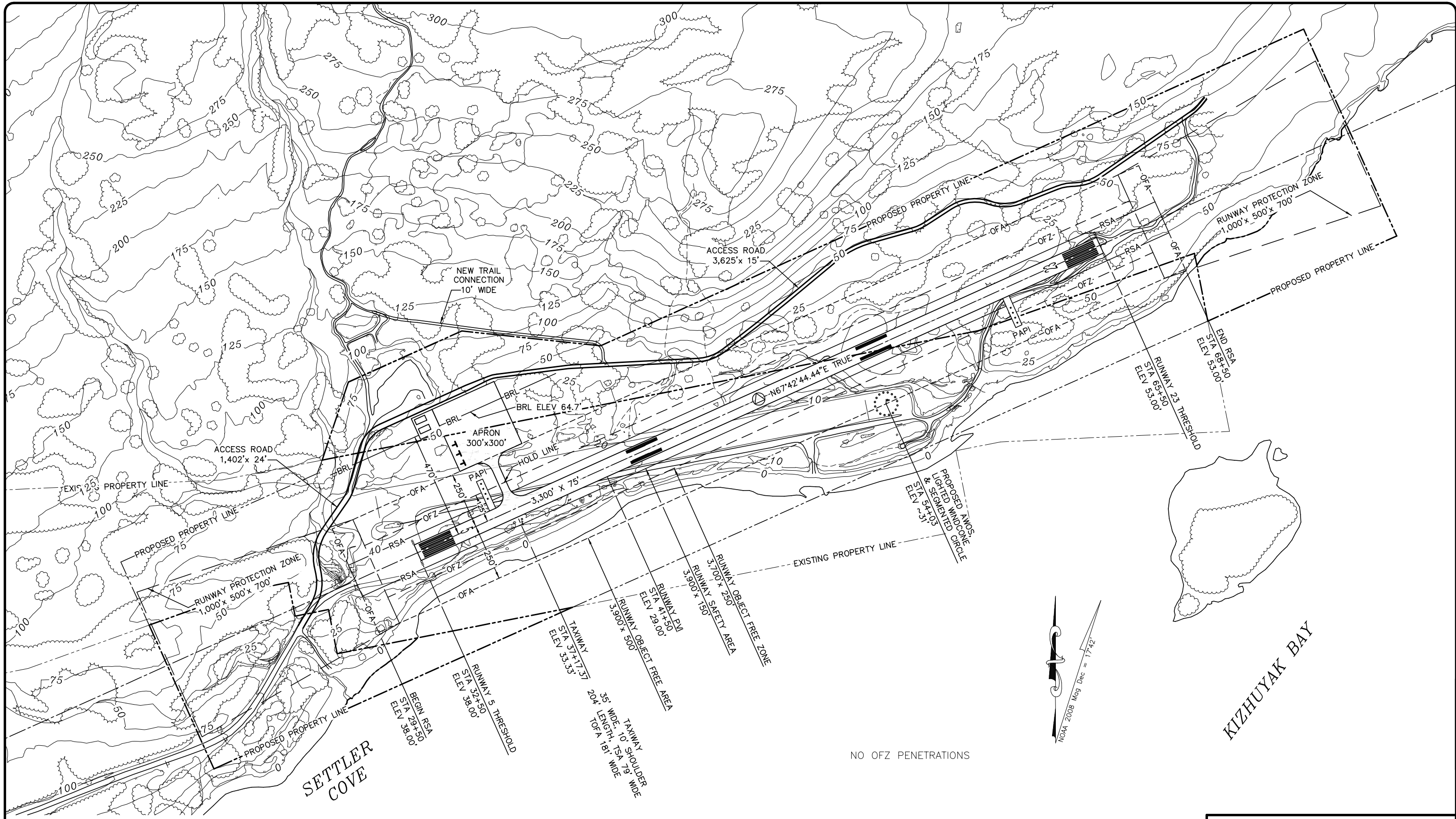
**STATE OF ALASKA**  
**DEPARTMENT OF TRANSPORTATION**  
**AND PUBLIC FACILITIES**  
**CENTRAL REGION**

**PORT LIONS AIRPORT**  
 PORT LIONS, ALASKA  
 AIRPORT LAYOUT PLAN

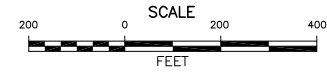
EXISTING PLAN

DATE: 1-31-07	SHEET: 2 OF 6
---------------	---------------

Date Plotted: January 28, 2007  
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 File Name:  
 Designed By: DUG  
 Drawn By: DUG  
 Checked By: CFS



**DRAFT**



NOTE:  
 1. CONTOUR INTERVAL 5 FT.  
 2. NO OFZ OBJECT PENETRATIONS

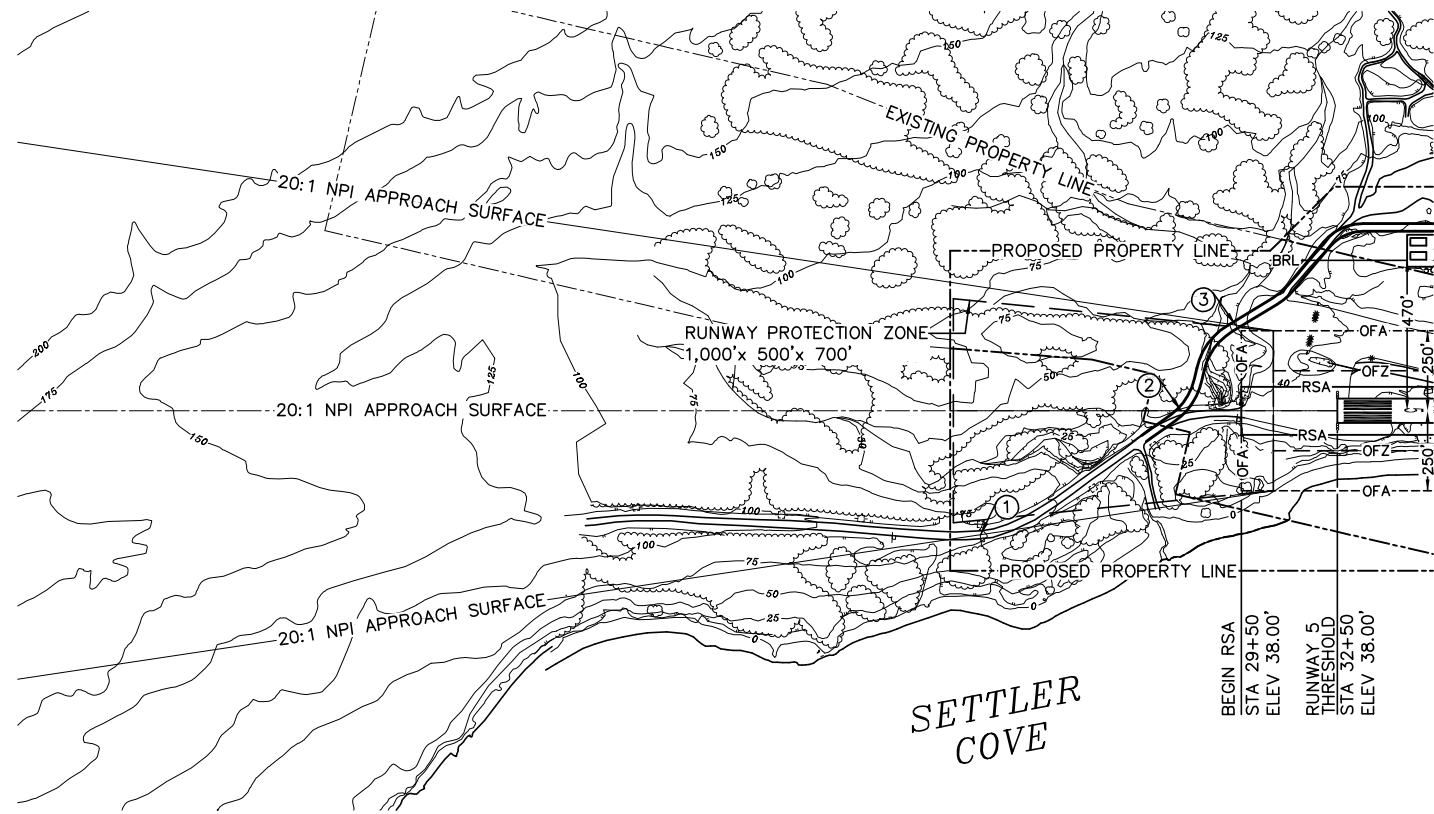
BY	DATE	REVISION

**STATE OF ALASKA**  
**DEPARTMENT OF TRANSPORTATION**  
**AND PUBLIC FACILITIES**  
**CENTRAL REGION**

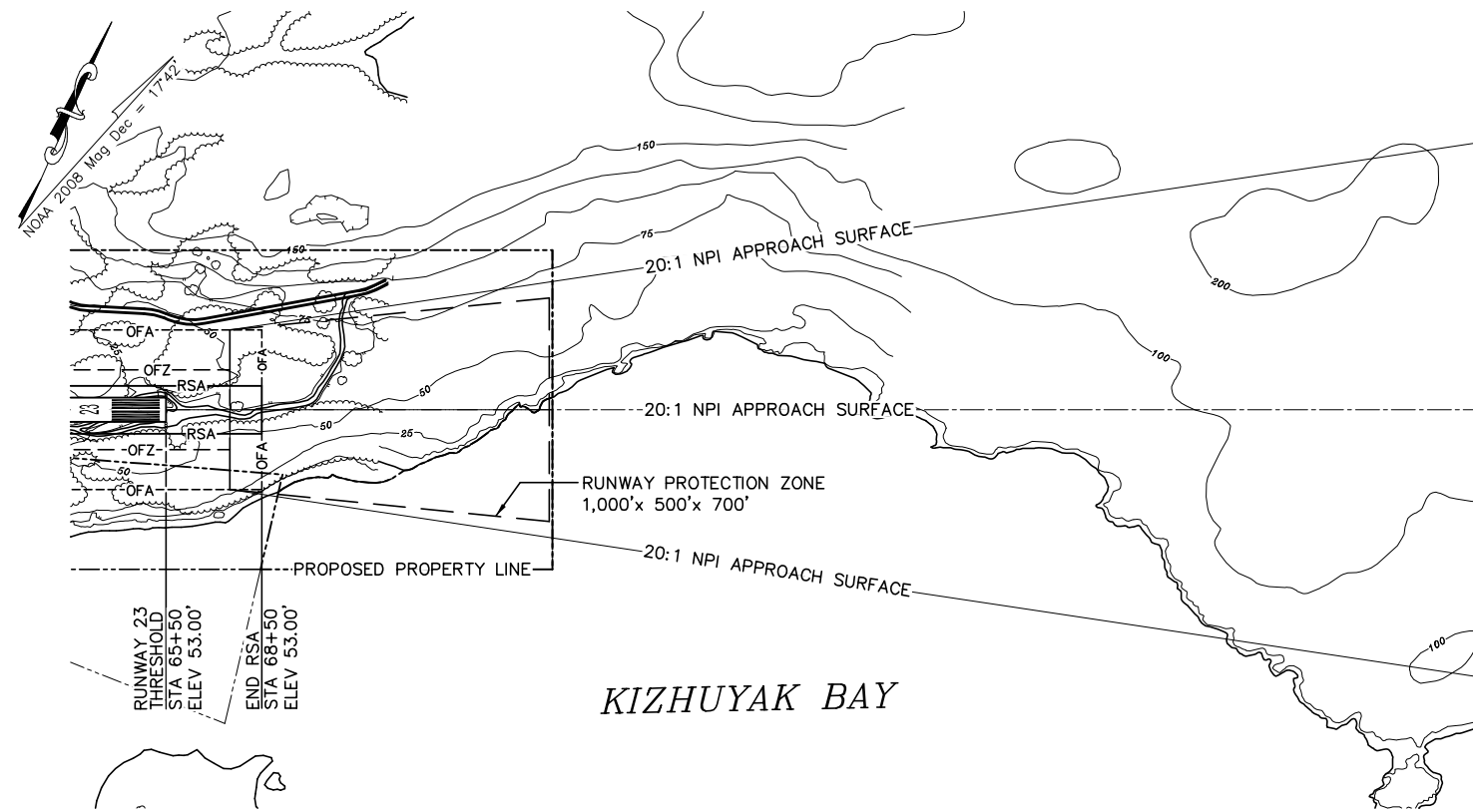
**PORT LIONS AIRPORT**  
 PORT LIONS, ALASKA  
 AIRPORT LAYOUT PLAN

DATE: 1-31-07  
 SHEET: 3 OF 6  
 ULTIMATE PLAN

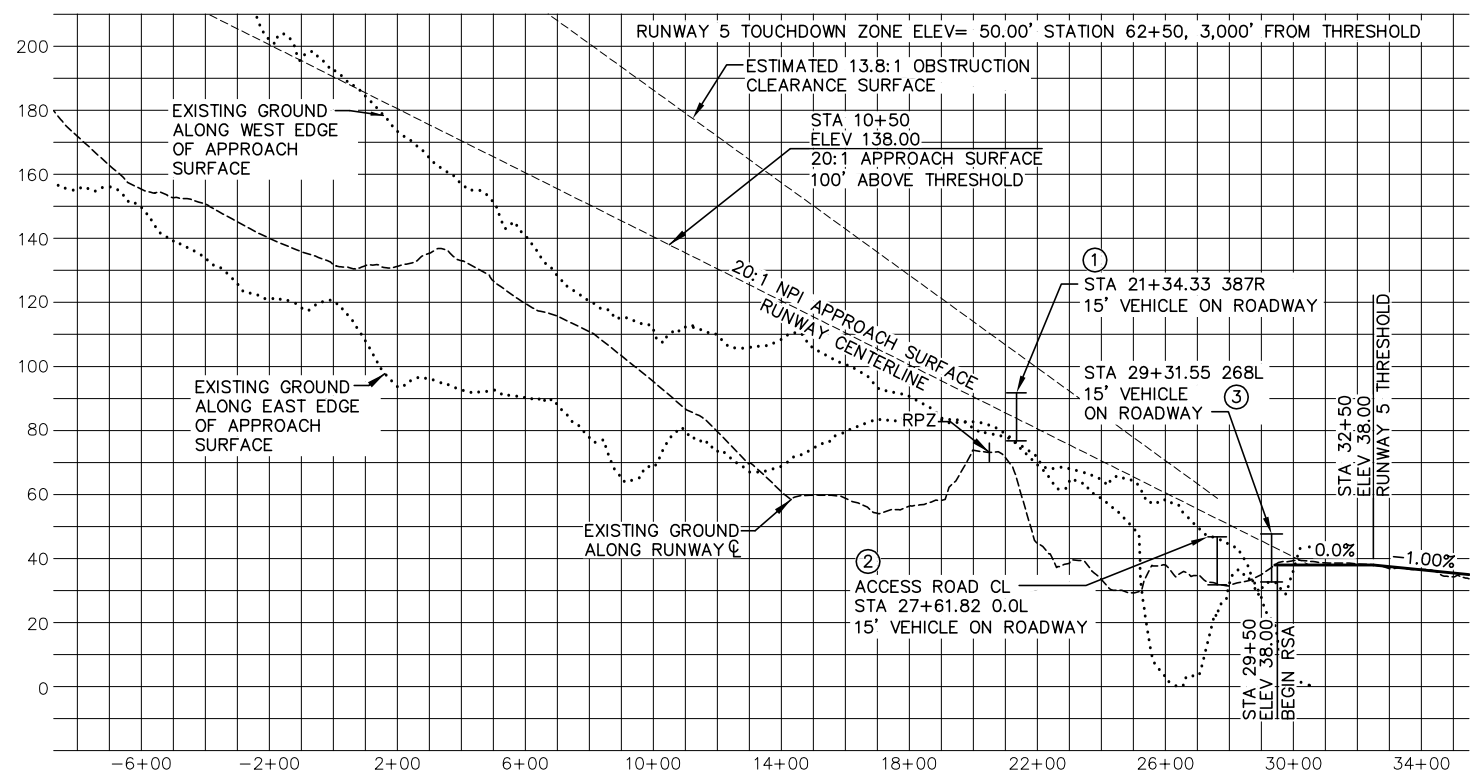
Date Plotted: January 28, 2007  
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 Designed By: DUG  
 Drawn By: DUG  
 Checked By: CFS



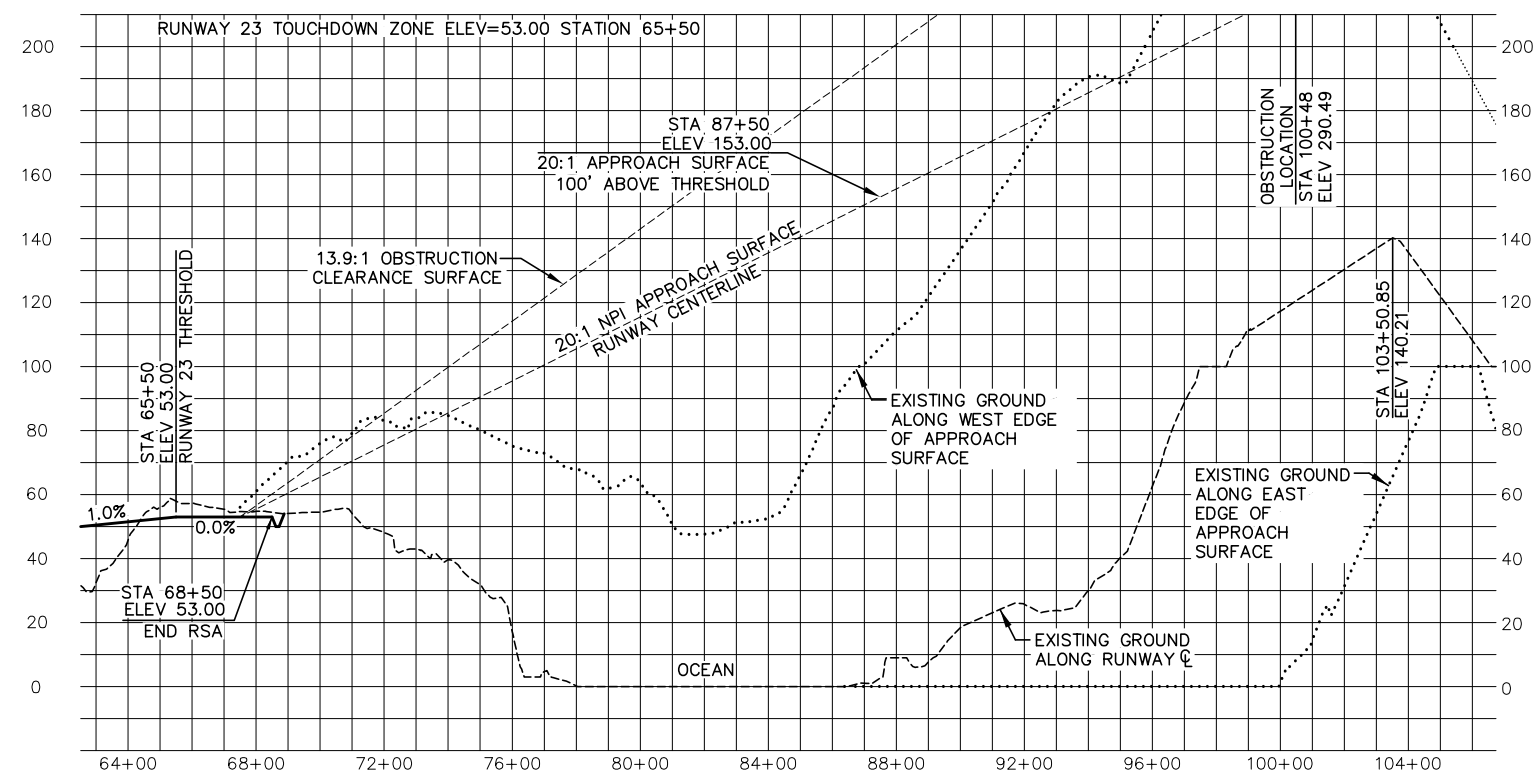
**RUNWAY 5 ULTIMATE APPROACH PLAN**



**RUNWAY 23 ULTIMATE APPROACH PLAN**



**RUNWAY 5 ULTIMATE APPROACH PROFILE**



**RUNWAY 23 ULTIMATE APPROACH PROFILE**

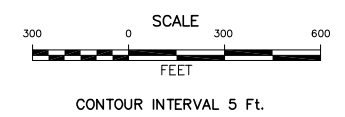
**20:1 APPROACH SURFACE OBSTRUCTIONS TABLE (INNER PORTION RW 5)**

ID #	DESCRIPTION	STATION/OFFSET	ELEVATION	SURFACE PENETRATED	SURFACE ELEVATION	AMOUNT PENETRATION	DISPOSITION	STAGE TO CORRECT
1	ACCESS ROAD	21+34.33/387R	91.79	NPI APPROACH	83.78	8.0	TO REMAIN	N/A
3	ACCESS ROAD	29+31.55/268L	47.68	NPI APPROACH	43.92	3.8	TO REMAIN	N/A

**20:1 APPROACH SURFACE OBSTRUCTIONS TABLE (INNER PORTION RW 23)**

ID #	DESCRIPTION	STATION/OFFSET	ELEVATION	SURFACE PENETRATED	SURFACE ELEVATION	AMOUNT PENETRATION	DISPOSITION	STAGE TO CORRECT
	NONE							

- NOTES:
1. THERE ARE NO OFA PENETRATIONS
  2. THERE ARE NO OFZ PENETRATIONS.
  3. THERE ARE NO TERRAIN PENETRATIONS IN THE RUNWAY APPROACH END SITING SURFACES AS DEFINED IN FAA AC 150/5300-13 CHG 9 APPENDIX 2 TABLE A2-1, LINE 5
  4. THE RUNWAY 5 APPROACH END SITING SURFACES ARE PENETRATED BY VEHICLES AT LOCATION 1 & 3
  5. THERE ARE NO OBSTRUCTIONS IN THE APPROACH OF RUNWAY 23.
  6. RUNWAY 5/23 GEODETIC MEAN BEARING IS N67°42'15.44"E
  7. OBSTRUCTION SLOPE ESTABLISHED PER ORDER 5010, APPENDIX 1 PARAGRAPH 57
  8. REFER TO SHEET 5 OF 6 AIRPORT AIRSPACE 14 CRF, PART 77 FOR PENETRATIONS OF THE OUTER APPROACH SURFACES.



**DRAFT**

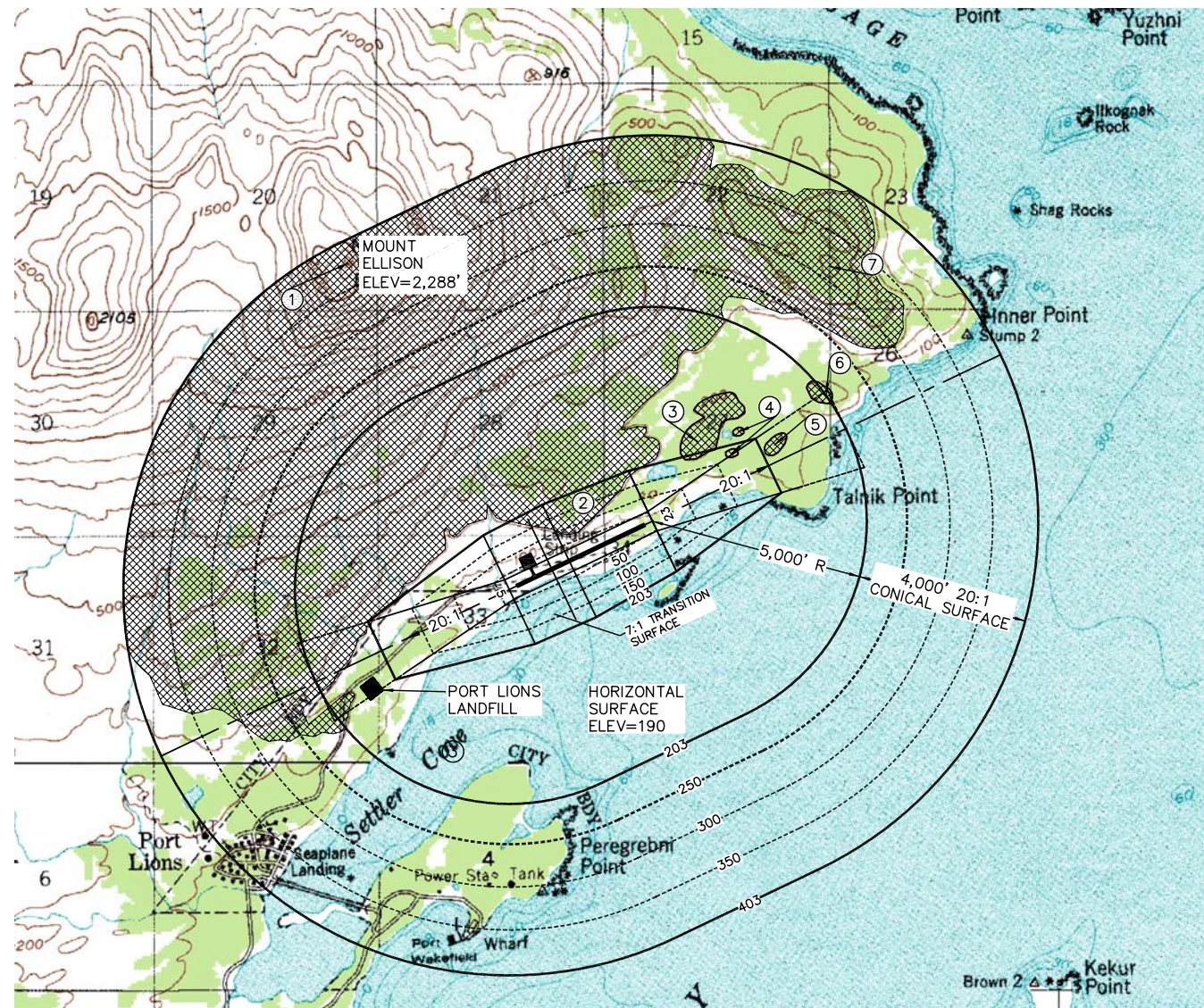
BY	DATE	REVISION
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**STATE OF ALASKA**  
**DEPARTMENT OF TRANSPORTATION**  
**AND PUBLIC FACILITIES**  
**CENTRAL REGION**

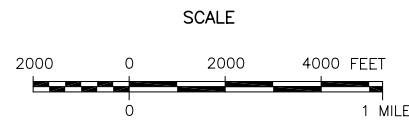
**PORT LIONS AIRPORT**  
 PORT LIONS, ALASKA  
 AIRPORT LAYOUT PLAN

DATE: 1-31-07  
 SHEET: 4 OF 6  
 INNER PORTION OF THE APPROACH SURFACE

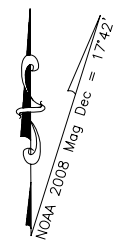
Date Plotted: January 29, 2007  
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 File Name:  
 Designed By: DUG  
 Drawn By: DUG  
 Checked By: CFS



ELEVATIONS ARE IN FEET  
 AIRPORT ELEVATION IS 53.0' NAVD 88  
 DRAWING BASED ON U.S.G.S. KODIAK D3  
 REFER TO THE INNER PORTION OF THE APPROACH SURFACE SHEET FOR CLOSE IN DETAILS, SHEET 4  
 ULTIMATE PRIMARY SURFACE IS 500' WIDE  
 THERE ARE NO KNOWN HEIGHT RESTRICTIONS  
 THERE ARE NO SEWAGE LAGOONS WITHIN 10,000' OF THE AIRPORT. THE PORT LIONS LANDFILL IS APPROXIMATELY 4,000' FROM RUNWAY 5.

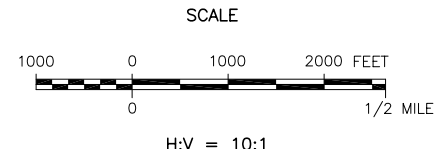
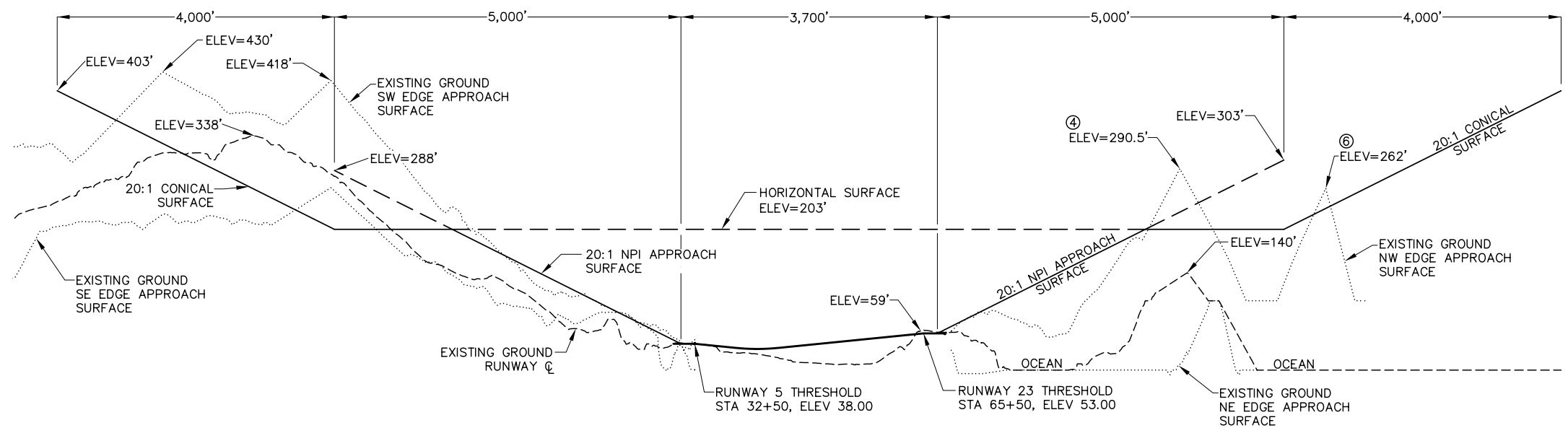


ID #	DESCRIPTION	STATION OFFSET	ELEVATION (MSL)	SURFACE PENETRATION	SURFACE ELEVATION	AMOUNT PENETRATION	DISPOSITION	STAGE TO CORRECT
1	TERRAIN HIGH POINT	29+46, 8,440L	2288	CONICAL/HORIZ				--
2	HIGH TERRAIN	--		TRANSITION				--
3	TERRAIN HIGH POINT	65+21, 1,222L	200+	HORIZONTAL/TRANS				--
4a	TERRAIN HIGH POINT	91+11, 634L	200+	APPROACH/TRANS				--
4b	TERRAIN HIGH POINT	94+61, 1,026L	200+	TRANSITION				--
5	TERRAIN HIGH POINT	101+05, 390L	200+	APPROACH				
6	TERRAIN HIGH POINT	117+28, 968L	200+	APPROACH/CONICAL				
7	TERRAIN HIGH POINT	130+51, 3,580L	600+	CONICAL				



DRAFT

NORTHEAST →



RUNWAY 5/23 PROFILE

BY	DATE	REVISION

**STATE OF ALASKA**  
**DEPARTMENT OF TRANSPORTATION**  
**AND PUBLIC FACILITIES**  
**CENTRAL REGION**

**PORT LIONS AIRPORT**  
 PORT LIONS, ALASKA  
 AIRPORT LAYOUT PLAN  
 AIRPORT AIRSPACE  
 14 CFR, PART 77

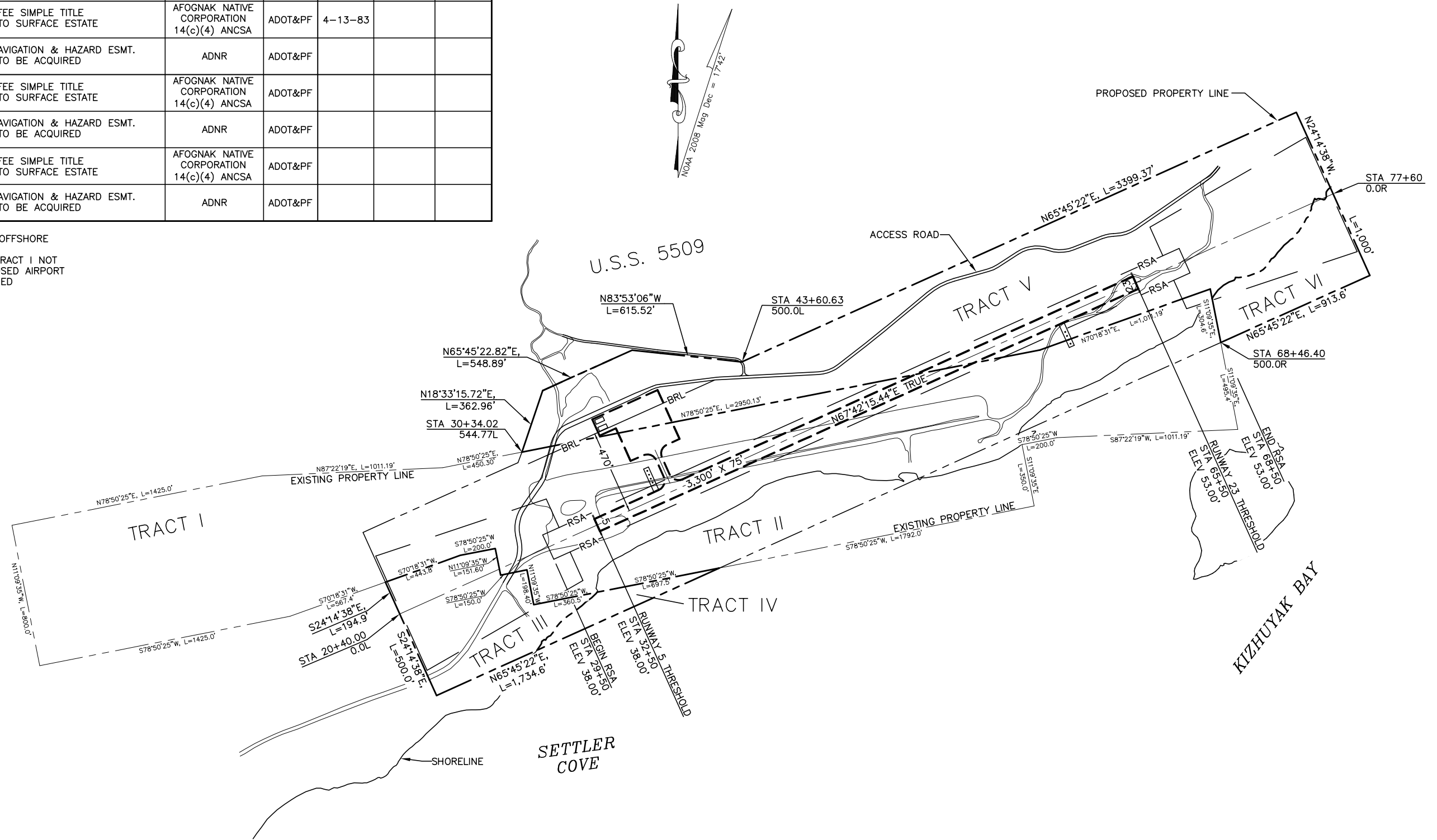
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 SHEET: 5 OF 6

Date Plotted: January 28, 2007  
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 Designed By: DUG  
 Drawn By: DUG  
 Checked By: CFS

PROPERTY STATUS								
TRACT	A.D.A. No.	AREA (ACRES)	INTEREST	GRANTOR	GRANTEE	DATE ACQUIRED	RECORDED DOC. No.	ACQUIRED AIP No.
I	11457	89.8	FEE SIMPLE TITLE TO SURFACE ESTATE	AFOGNAK NATIVE CORPORATION 14(c)(4) ANCSA	ADOT&PF	4-13-83		
II	11464	28.7	AVIGATION & HAZARD ESMT. TO BE ACQUIRED	ADNR	ADOT&PF			
III		11.16	FEE SIMPLE TITLE TO SURFACE ESTATE	AFOGNAK NATIVE CORPORATION 14(c)(4) ANCSA	ADOT&PF			
IV		2.13	AVIGATION & HAZARD ESMT. TO BE ACQUIRED	ADNR	ADOT&PF			
V		60.87	FEE SIMPLE TITLE TO SURFACE ESTATE	AFOGNAK NATIVE CORPORATION 14(c)(4) ANCSA	ADOT&PF			
VI		7.13	AVIGATION & HAZARD ESMT. TO BE ACQUIRED	ADNR	ADOT&PF			

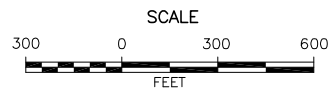
TRACTS II, IV & VI ARE OFFSHORE

WESTERLY PORTION OF TRACT I NOT NEEDED FOR THE PROPOSED AIRPORT AND CAN BE RELINQUISHED



EXISTING AIRPORT BOUNDARY BEARINGS & DISTANCES FROM ADOT PORT LIONS AIRPORT PROPERTY PLAN SHEET DATED 1-18-83

RIGHT OF WAY AGREEMENT ISSUED EFFECTIVE 6-1-72, PERPETUAL, BY DEPT. OF PUBLIC WORKS, DIV. OF AVIATION, ADA-01942 TO DEPT. OF HIGHWAYS FOR HIGHWAY PROJECT ALS-0370(1) WAKEFIELD TO PORT LIONS.



**DRAFT**

BY	DATE	REVISION

**STATE OF ALASKA**  
**DEPARTMENT OF TRANSPORTATION**  
**AND PUBLIC FACILITIES**  
**CENTRAL REGION**

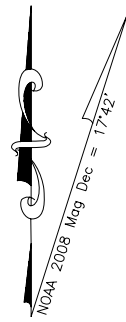
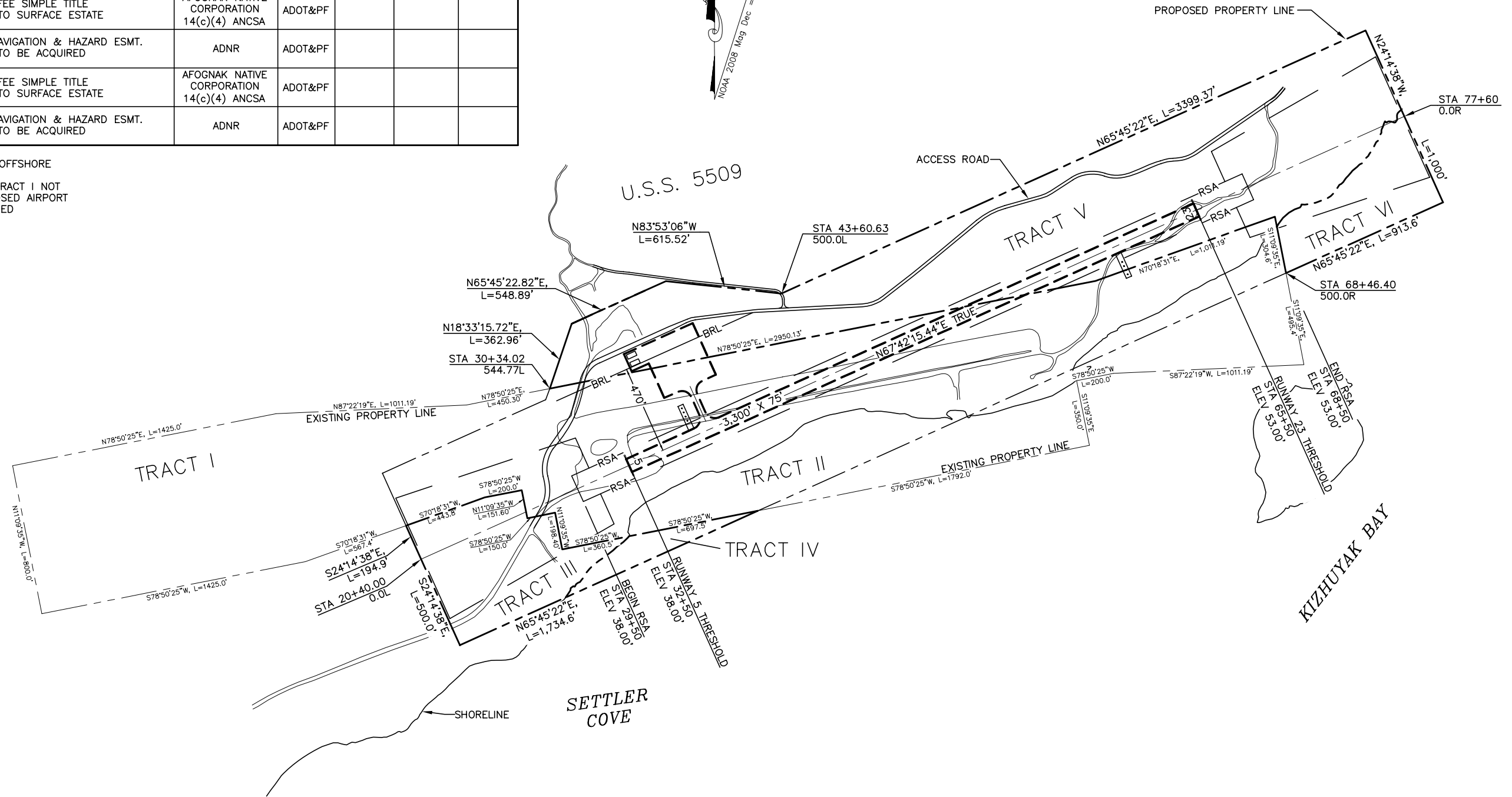
**PORT LIONS AIRPORT**  
 PORT LIONS, ALASKA  
 AIRPORT LAYOUT PLAN  
 PROPERTY MAP

DATE:	1-31-07
SHEET:	6 OF 6

PROPERTY STATUS								
TRACT	A.D.A. No.	AREA (ACRES)	INTEREST	GRANTOR	GRANTEE	DATE ACQUIRED	RECORDED DOC. No.	ACQUIRED AIP No.
I	11457	89.8	FEE SIMPLE TITLE TO SURFACE ESTATE	AFOGNAK NATIVE CORPORATION 14(c)(4) ANCSA	ADOT&PF	4-13-83		
II	11464	28.7	AVIGATION & HAZARD ESMT. TO BE ACQUIRED	ADNR	ADOT&PF			
III		11.16	FEE SIMPLE TITLE TO SURFACE ESTATE	AFOGNAK NATIVE CORPORATION 14(c)(4) ANCSA	ADOT&PF			
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VI		7.13	AVIGATION & HAZARD ESMT. TO BE ACQUIRED	ADNR	ADOT&PF			

TRACTS II, IV & VI ARE OFFSHORE

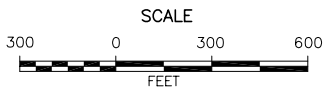
WESTERLY PORTION OF TRACT I NOT NEEDED FOR THE PROPOSED AIRPORT AND CAN BE RELINQUISHED



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 Designed By: DJG  
 Drawn By: DJG  
 Checked By: CFS

EXISTING AIRPORT BOUNDARY BEARINGS & DISTANCES FROM ADOT PORT LIONS AIRPORT PROPERTY PLAN SHEET DATED 1-18-83

RIGHT OF WAY AGREEMENT ISSUED EFFECTIVE 6-1-72, PERPETUAL, BY DEPT. OF PUBLIC WORKS, DIV. OF AVIATION, ADA-01942 TO DEPT. OF HIGHWAYS FOR HIGHWAY PROJECT ALS-0370(1) WAKEFIELD TO PORT LIONS.



**DRAFT**

BY	DATE	REVISION

**STATE OF ALASKA  
DEPARTMENT OF TRANSPORTATION  
AND PUBLIC FACILITIES  
CENTRAL REGION**

**PORT LIONS AIRPORT**  
PORT LIONS, ALASKA  
AIRPORT LAYOUT PLAN

PROPERTY MAP

DATE:	1-31-07
SHEET:	7 OF 7

**Appendix 5  
Cost Estimate**

**PORT LIONS AIRPORT ROTATION ALTERNATIVE**

\*\*\*\*\* RUNWAY WITH 2:1 TRANSITION SURFACE, NO APPROACH SLOPE EXCAV \*\*\*\*\*

Item No.	Pay Item	Pay Unit	Unit Price	Quantity	Amount	Subtotal
G-100a	MOBILIZATION AND DEMOBILIZATION	L.S.	\$1,000,000	1	\$1,000,000	
G-155a	WORKERS MEALS & LODGING, OR PER DIEM	L.S.	\$150,000	1	\$150,000	
G-130a	FIELD OFFICE	L.S.	\$50,000	1	\$50,000	
G-130b	FIELD LABORATORY	L.S.	\$20,000	1	\$20,000	
G-130g	NUCLEAR TESTING EQUIPMENT STORAGE SHED	EACH	\$8,000	1	\$8,000	
G-131a	ENGINEERING TRANSPORTATION (Truck)	EACH	\$40,000	1	\$40,000	
G-131b	ENGINEERING TRANSPORTATION (ATV)	EACH	\$8,000	1	\$8,000	
G-135a	CONSTRUCTION SURVEYING BY THE CONTRACTOR	L.S.	\$150,000	1	\$150,000	
	<b>SUBTOTAL CONTRACTOR ITEMS</b>					<b>\$1,426,000</b>
P-151a	CLEARING	AC	\$5,500.00	36	\$198,000	
P-151b	CLEARING LARGE TREES	AC	\$6,500.00	13	\$84,500	
P-151c	CLEARING AND GRUBBING	AC	\$8,200.00	35	\$287,000	
P-152a	UNCLASSIFIED EXCAVATION	CY	\$5.00	215,170	\$1,075,850	
P-152b	ROCK EXCAVATION	CY	\$15.00	24,216	\$363,240	
P-152h	BORROW EMBANKMENT	CY	\$8.00	325,700	\$2,605,600	
P-157b	TEMPORARY EROSION AND POLLUTION CONTROL	L.S.	\$15,000.00	1	\$15,000	
P-500	REROUTE TRAIL	L.S.	\$5,000.00	1	\$5,000	
	<b>SUBTOTAL EARTHWORK</b>					<b>\$4,634,190</b>
P-154a	SUBBASE COURSE	CY	\$10.00	44,000	\$440,000	
P-208a	CRUSHED AGGREGATE BASE COURSE	CY	\$35.00	11,450	\$400,750	
P-401a	BITUMINOUS SURFACE COURSE	TON	\$55.00	3,100	\$170,500	
P-401b	BITUMINOUS MATERIAL	TON	\$900.00	155	\$139,500	
	<b>SUBTOTAL SURFACING</b>					<b>\$1,150,750</b>
P-620	RUNWAY MARKING	L.S.	\$150,000	1	\$150,000	
P-640b	SEGMENTED CIRCLE (PANEL TYPE)	L.S.	\$35,000	1	\$35,000	
P-650a	AIRCRAFT TIE-DOWN	Set	\$500	6	\$3,000	
P-660c	REFLECTIVE MARKERS	Ea	\$60	60	\$3,600	
P-681a	GEOTEXTILE SEPARATION	SY	\$2.0	114,000	\$228,000	
	<b>SUBTOTAL FINISHES</b>					<b>\$419,600</b>

Item No.	Pay Item	Pay Unit	Unit Price	Quantity	Amount	Subtotal
D-701a	CULVERTS (w/ END SECTIONS)	L.F.	\$100	600	\$60,000	
	<b>SUBTOTAL DRAINAGE</b>					<b>\$60,000</b>
T-901a	SEEDING	AC	\$3,750	17	\$63,750	
T-905a	TOPSOIL	SY	\$1.0	82,300	\$82,300	
	<b>SUBTOTAL TURF</b>					<b>\$146,050</b>
L-100b	REGULATOR, L-828	EACH	\$7,500	1	\$7,500	
L-100d	MEDIUM INTENSITY RUNWAY EDGE AND THRESHOLD LIGHTS, L-861 ABD L-861E	EACH	\$850	44	\$37,400	
L-100e	TAXIWAY EDGE LIGHTS	EACH	\$850	19	\$16,150	
L-100g	HANDHOLES	L.S.	\$15,000	1	\$15,000	
L-100t	NEW PAPI SYSTEM	L.S.	\$250,000	1	\$250,000	
L-101a	ROTATING BEACON, HIGH INTENSITY	Ea	\$9,500	1	\$9,500	
L-107a	8 FOOT LIGHTED WIND CONE	Ea	\$7,000	1	\$7,000	
L-107c	8 FOOT UNLIGHTED WIND CONE	Ea	\$5,000	1	\$5,000	
L-108a	UNDERGROUND CABLE #8 AWG, COPPER, 5kV, L-824	LF	\$2	7,600	\$15,200	
L-108d	#6 BARE COPPER GROUND CONDUCTOR	LF	\$1	8,000	\$8,000	
L-108g	GROUND ROD	L.S.	\$2,000	1	\$2,000	
L-109c	ELECTRICAL ENCLOSURE AND FOUNDATION IN PLACE	Ea	\$20,000	1	\$20,000	
L-109d	INSTALLATION OF ELECTRICAL EQUIPMENT IN NEW/EXIST STRUCTURE	Ea	\$25,000	1	\$25,000	
L-110g	2-INCH PVC CONDUIT	LF	\$5	8,000	\$40,000	
	<b>SUBTOTAL LIGHTING INSTALLATION</b>					<b>\$457,750</b>
S-142a	SNOW REMOVAL EQUIPMENT BUILDING	L.S.	\$875,000	1	\$875,000	
S-143a	FUEL TANK (1,000 GAL)	L.S.	\$25,000	1	\$25,000	
	<b>SUBTOTAL STRUCTURAL ITEMS</b>					<b>\$900,000</b>
Total Basic Construction Bid						\$9,194,340
Contingency @ 15%						\$1,379,151
ICAP @ 5%						\$459,717

Item No.	Pay Item	Pay Unit	Unit Price	Quantity	Amount	Subtotal
S-150b	LOADER	L.S.	\$250,000	1	\$250,000	
	ENGINEERING DESIGN	7% of Construction Cost			\$772,325	
	CONSTRUCTION ADMINISTRATION	8% of Construction Cost			\$882,657	
	RIGHT-OF-WAY	2% of Construction Cost			\$220,664	
	NEPA ENGINEERING AND APPROVAL	2% of Construction Cost			\$220,664	
	<b>SUBTOTAL MISCELLANEOUS ITEMS</b>					<b>\$2,346,310</b>
	<b>TOTAL CONSTRUCTION COST</b>					<b>\$13,380,000</b>