SEWARD AIRPORT MASTER PLAN

JULY 2008

STATE PROJECT NO. 56525

SEWARD AIRPORT MASTER PLAN

Prepared for:

The State of Alaska Department of Transportation
and Public Facilities
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ACRONYMS

ALP ..... Airport Layout Plan
AMHS ..... Alaska Marine Highway System
ARC ..... Airport Reference Code
ARRC ..... Alaska Railroad Corporation
ASOS ..... Automated Surface Observing System
CAP ..... Civil Air Patrol
CTAF ..... Common Traffic Advisory Frequency
DME ..... Distance Measuring Equipment
DOT&PF ..... State of Alaska Department of Transportation and Public Facilities
EAS ..... Essential Air Service
FAA ..... Federal Aviation Association
GGDST ..... Godwin Glacier Dog Sled Tours
gpm ..... gallons per minute
GPS ..... Global Positioning System
IFR ..... Instrument Flight Rules
MIRL ..... Medium-Intensity Runway Lights
nm ..... nautical mile
OFA ..... Object Free Area
PAPI ..... Precision Approach Path Indicator
PCI ..... Pavement Condition Index
RPZ ..... Runway Protection Zone
RSA ..... Runway Safety Area
TAF ..... Terminal Area Forecasts
USDOT ..... U.S. Department of Transportation
USFWS ..... U.S. Fish and Wildlife Service
VASI ..... Visual Approach Slope Indicator
VFR ..... Visual Flight Rules

1.0 INTRODUCTION

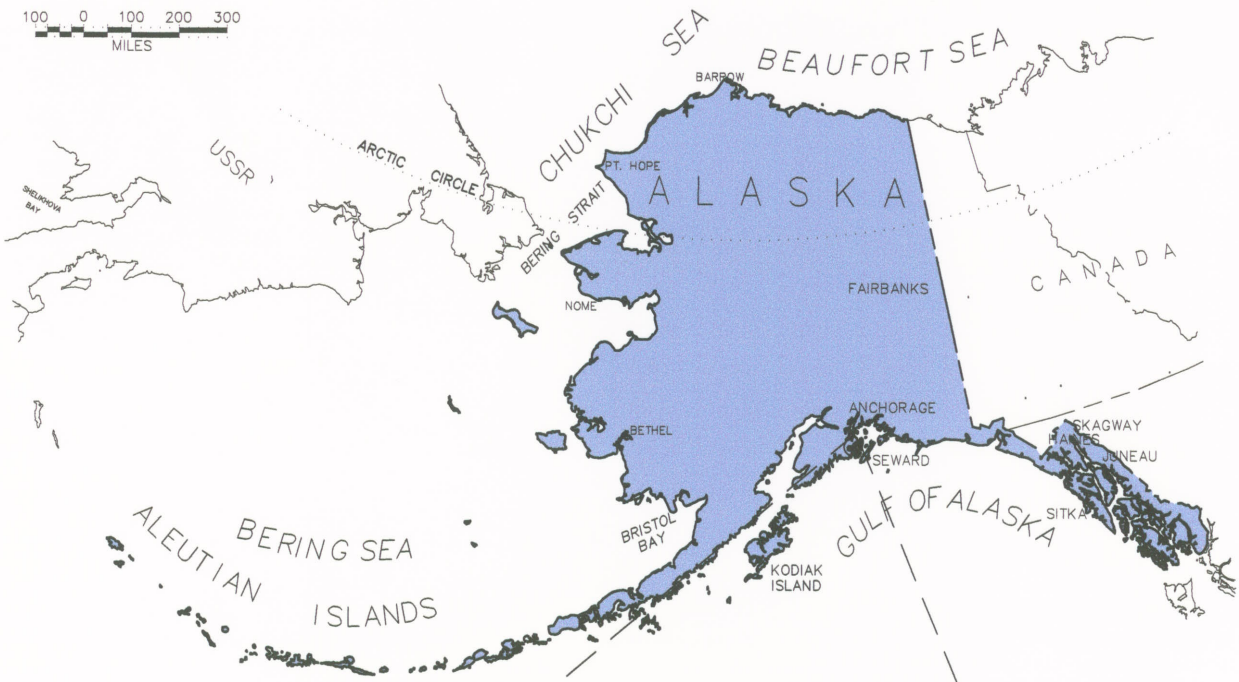
This Master Plan for the Seward Airport documents existing conditions, forecasts future activity, determines facility requirements, and identifies alternatives. It also establishes the purpose, need, and alternatives for a future environmental assessment. This Master Plan is based on existing data and information, findings from field investigations, interviews with Airport users, and input from agencies such as the Federal Aviation Administration (FAA), the Alaska Railroad Corporation (ARRC) and the City of Seward. This Plan and Airport Layout Plan (ALP) will serve as a guide for development and funding of the Airport for the next 20 years.

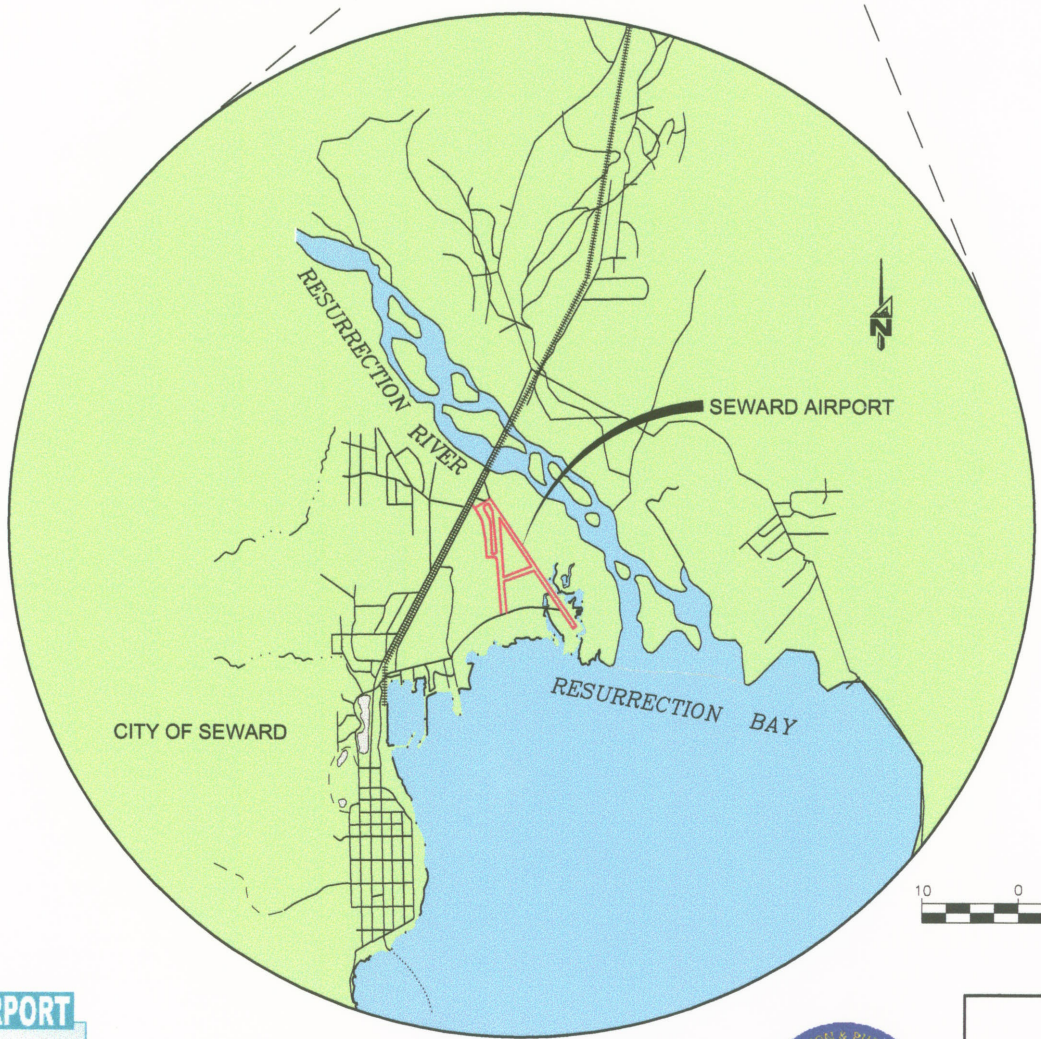
2.0 COMMUNITY PROFILE

2.1 Overview

Seward is situated on Resurrection Bay on the east end of the Kenai Peninsula and in 2006 had a population of 2,627 according to an estimate by the State Demographer with the State of Alaska Department of Commerce, Community, and Economic Development. It is located at the base of Mount Marathon and is the gateway to the Kenai Fjords National Park. Seward is 75 air miles and 125 highway miles south of Anchorage.

The Seward city limits encompass 14.4 square miles of land and 7.1 square miles of water. The community is at latitude 60° 6’ 15” north and longitude 149° 26’ 32” west. The elevation of the community ranges from sea level to approximately 55 feet. The climate is maritime year round and the port is ice-free. Temperatures range from 17° F to 38° F in the winter and 49° F to 63° F in the summer. Seward receives an annual average of 66 inches of rain and 80 inches of snowfall.





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SEWARD AIRPORT VICINITY MAP

FIGURE 1

2.2 History and Culture

Russian fur trader and explorer Alexander Baranof named Resurrection Bay in 1792. While sailing from Kodiak to Yakutat, he sought shelter in the bay during a storm and named the bay Resurrection Bay because it was the Russian Sunday of Resurrection. The town of Seward was named after William Seward, U.S. Secretary of State from 1861 to 1869, who negotiated the purchase of Alaska from Russia. One of the first permanent settlers in the area was Capt. Frank Lowell who arrived with his family in the 1890s. In 1903, John and Frank Ballainne, along with a group of settlers, arrived to construct a railroad and Seward became incorporated in 1912. Between 1915 and 1923, the Alaska Railroad was constructed and Seward became an important seaport and supply center. Because Seward has an ice-free harbor, it was a very important logistics port for the Aleutian Campaigns in World War II and several military observation and artillery posts were constructed in the mouth of Resurrection Bay to defend it from the Japanese military. By 1960, Seward was the largest community on the Kenai Peninsula. During the 1964 Earthquake, tsunamis destroyed the railroad terminal and killed several residents.

2.3 Demographics

Seward is mostly a non-native community. Only 21 percent of the population is Alaska Native, though the federally recognized Qutekcak Native Tribe does actively participate in the community. Close to 60 percent of the population is male and the median age is 37 according to 2000 Census figures. The average price for a home in Seward is $132,300 and over 60 percent of the housing is single-family detached style homes. The per capita income is approximately $20,360.

2.4 Government and Economy

Seward was incorporated as a “Home Rule City” in 1912. Seward has a manager form of government and is located in the Kenai Peninsula Borough. A mayor and a six-member city council manage city business. The City of Seward is located within the boundaries of the Chugach Alaska Native Regional Corporation. The city’s municipal employees include a city clerk, a city manager, a public works director, and police chief among others. A three-

percent Borough sales tax and a two-percent City sales tax are the only taxes levied in the community.

Because Seward is the Southern terminus for the Alaska Railroad and has a road connection to Anchorage and the Interior, it has long been a major transportation center. Seward has a very diverse economy compared to other communities in Alaska. Major components of the economy include tourism, commercial fishing, ship services and repairs, a coal export facility for the Usibelli Mine, the development of gas and oil resources, a state prison, and the University of Alaska's Institute of Marine Sciences. Eighty residents hold commercial fishing licenses and over 320,000 cruise ship passengers visit Seward annually. Key tourist attractions include the Alaska Sea Life Center, the Kenai Fjords National Park, and the Chugach Heritage Center. One of the highlights of the year is the annual Fourth of July celebration, which features the grueling Mount Marathon race that attracts participants and spectators from all parts of Alaska and beyond.

2.5 Transportation Facilities

Seward is connected to the rest of Alaska by rail, highway, air, and water. The Seward Highway connects Seward to the Alaska Highway System. The Port of Seward serves cruise ships, cargo barges, and freighters from the lower 48 and overseas. The small boat harbor has two boat-launch ramps and moors for 650 boats. The Alaska Railroad transports 1.4 billion pounds of cargo each year. Much of this cargo passes through the port of Seward and consists of goods and supplies bound for the Interior and coal from Healy for export overseas.

2.6 Utilities

2.6.1 Communications

Interior Telephone and AT&T Alascom provide local telephone service. GCI and Alaska Communications Systems Long Distance provide long distance service. There are three different Internet providers. Seward has six radio stations along with three television stations. GCI Cable provides cable television service. There is one weekly newspaper in Seward, *The Seward Phoenix Log*.

2.6.2 Electricity

Electricity is provided by the Seward Electric System, which purchases the power from Chugach Electric and charges customers 9.2 cents per kilowatt-hour. Seward Electric System also owns five-diesel generators that have a 10,500-kilowatt capacity to provide backup power to the community. Electricity is available to all lease lots on the Airport.

2.6.3 Wastewater

A city-managed public sewage system serves 97.0 percent of Seward and carries wastewater to a two-cell treatment lagoon on Lowell Point approximately three and a half miles south of the Seward Airport. 2.1 percent of Seward households utilize septic tanks. No public wastewater service is available on the Airport.

2.6.4 Water

Almost all homes in Seward have indoor plumbing with only 0.9 percent lacking complete plumbing (sink bath/shower or flush toilet), and merely 2.0 percent lack a complete kitchen (lack of stove, refrigeration or running water). 98.9 percent of the homes in Seward utilize the public water system with just 0.7 percent of homes using an individual well. Water is supplied by eight wells where it is chlorinated before being distributed to Seward. Funding has been requested to drill a new water well to keep up with increasing demands. No city drinking water is available at the Airport, but water is available at the nearby coal facility offices and along the Seward Highway.

2.6.5 Solid Waste Generation and Disposal

Solid waste is collected by the Seward Disposal Service and taken to the Seward Transfer Facility located on Hemlock Street 1.5 miles northwest of the Seward Airport. From the Seward Transfer Facility, waste is hauled to the Central Peninsula Baling Facility in Soldotna.

2.6.6 Fuel

The primary fuel supplier in Seward is Shoreside Petroleum, which has six fuel tanks with a capacity of 120,000 gallons each. The City of Seward has an additional 40,000 gallons of fuel capacity and there are 68,000 gallons of capacity available elsewhere in the community.

2.7 Emergency Services

2.7.1 Medical Services

Providence Seward Medical Center and the North Star Health Clinic provide medical service to the community. Providence Seward Medical Center is a qualified Acute Care facility and operates a helicopter pad one mile southwest of Downtown for medical evacuations and transfers to larger facilities. Wesley Rehabilitation and Care provides long-term care and Seward Life Action Council Counseling Facility provides specialized care. The Seward Volunteer Fire Department and EMS, Inc, provides emergency services and transportation along with the Seward Volunteer Ambulance Corps.

2.7.2 Public Safety

The local police department handles most of the law enforcement matters within Seward and the Alaska State Troopers, who have a post in Seward, handle any police matters in the surrounding area. The City Volunteer Fire Department provides fire and rescue services. In addition to the paid fire chief, an average of 28 volunteers staff the volunteer fire department.

2.8 Community Land Use

The Seward Planning and Zoning Commission is the planning authority for the community and consist of seven members. The south portion of Seward contains the downtown area and is generally planned for commercial activity such as offices, hotels, and restaurants. The central portion of the City contains much of the residential development along with churches and schools. The north portion of the City between the port and the Airport is designated for industrial development and contains port-related businesses along with the coal transshipment facility. The City is currently developing a comprehensive plan that provides more detail on proposed development and zoning.

3.0 AVIATION FACILITIES INVENTORY

3.1 Airport Overview

3.1.1 Location

The Seward Airport is located on approximately 302 acres next to the Resurrection River at the head of Resurrection Bay. The Airport is located east of the Seward Highway and is about two miles northeast of downtown Seward. The Airport is surrounded on three sides by high mountains.

3.1.2 Service Area

The Seward Airport is classified as a Local Airport in the 1996 Alaska Aviation System Plan. A Local Airport "serves as secondary access to a community served by another mode as primary access, or a recreational or emergency airstrip." Seward is connected to the rest of Alaska by railroad, highway, air, and water.

The Seward Airport primarily serves the City of Seward and residents between Moose Pass and Seward. Local residents use the Airport for travel to Anchorage and Prince William Sound. Tour operators also provide sightseeing tours of Kenai Fjords National Park via airplane and helicopter from the Airport. The number of operations at the Airport is much higher in the summer than in the winter months.

3.1.3 Airport Management and Certification

Seward Airport is owned and operated by the State of Alaska Department of Transportation and Public Facilities (DOT&PF). Maintenance staff is based in Seward and Soldotna and administrative staff in Anchorage. The Seward Airport is uncertified and non-towered.

3.1.4 Design Criteria

Airport design criteria are usually based on the most demanding aircraft that is forecast to utilize the Airport for at least 500 operations per year during the 20-year planning period. The most recent ALP assigns an Airport Reference Code (ARC) of B-III to Runway 12-30.

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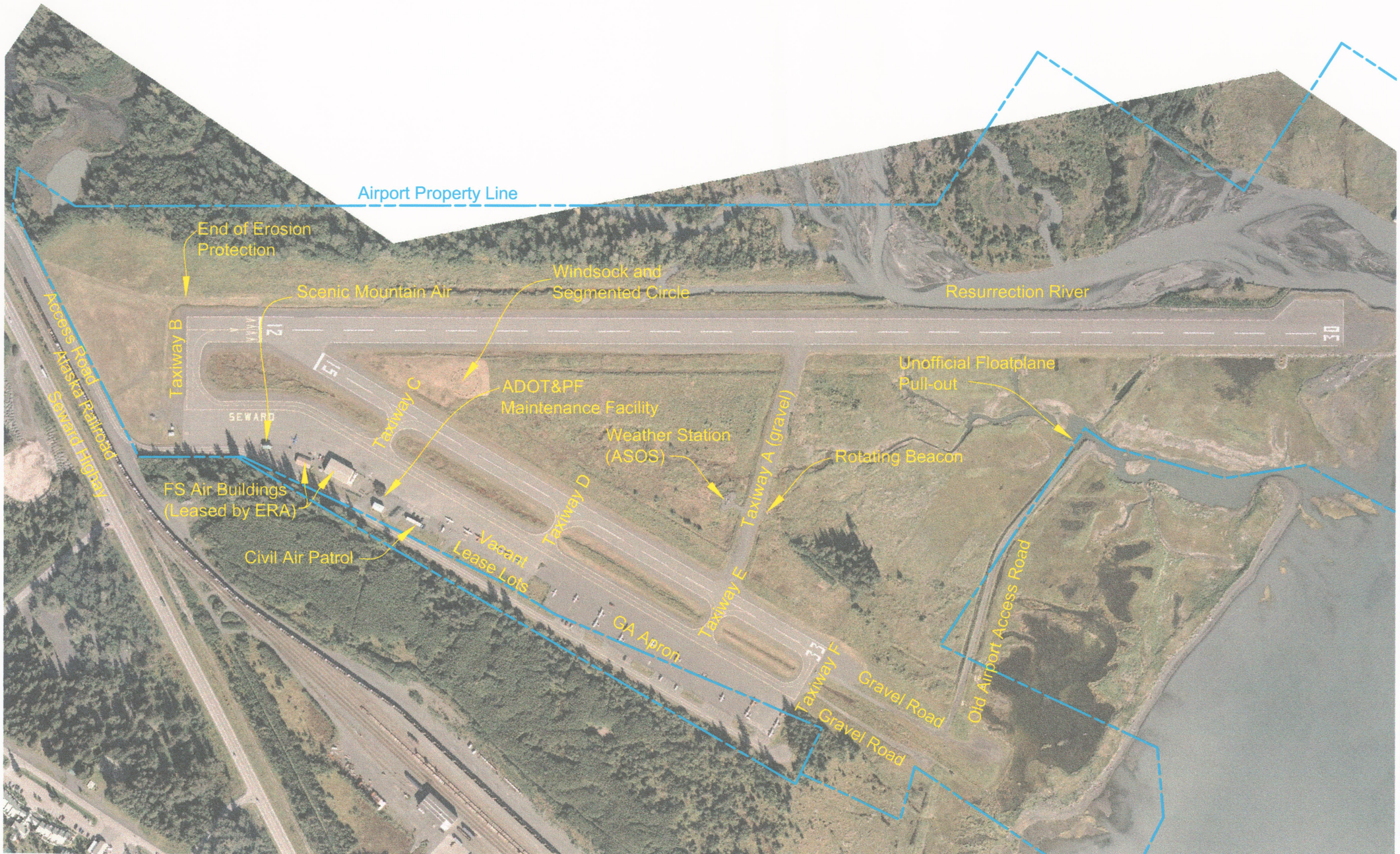
MASTER PLAN



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SEWARD AIRPORT

AIRPORT OVERVIEW MAP

FIGURE 2

However, the Runway 12-30 Runway Safety Area (RSA) appears to be built to ARC B-II standards. Runway 12-30 is the primary runway and was originally constructed to address pilot concerns about runway length and crosswinds at the airport.

Runway 15-33 has an ARC of A-I. This runway is built to small aircraft standards and is intended to accommodate most single-engine and many small twin-engine aircraft. This standard will accommodate the vast majority of aircraft expected to use the Seward Airport such as general aviation aircraft.

3.1.5 History and Capital Improvements

The original deed for the Airport property was obtained from the Alaska Railroad by the State of Alaska in 1907. Runway 15-33 was originally a gravel strip built in the late 1920s. Runway 12-30 was added in the early 1950s. A short history of the Seward Airport until 1952 was published by the State of Alaska Department of Aviation in a report entitled *Biennial Report – Progress and Finance: 1951-1952*. The applicable pages of this report are included in Appendix A.

In 1962, a small apron was built, both runways were paved, and the current entrance to the Seward Highway was constructed. The Airport suffered major damage in the 1964 Good Friday earthquake, but repairs by the U.S. Army Corps of Engineers returned the Airport to its previous configuration.

In 1981, a survey of existing property leases was conducted. In 1983, both runways and the apron were reconstructed and medium intensity taxiway lights and taxiway markings were added. The 1983 project also included construction of the existing sand storage building.

During the early 1990s, the DOT&PF leased approximately 7.6 acres from the ARRC along the west side of the Airport to accommodate the development of the current General Aviation apron. The apron and access road were subsequently expanded towards the south in 1991. An erosion control project was constructed along the east side of Runway 12-30 in 1995.

Future improvements for Seward Airport listed in the 2004 DOT&PF Spending Plan include $2.7 million for runway reconstruction and $350,000 for new runway lights.

Table 1: Seward Historical and Planned Capital Improvements

Project	Grant Year	Cost
Rehabilitate Runway, Apron and Taxiway, Improve SRE	1983	$979,933
Construct Apron, Improve Access Road, Construct Taxiway, Acquire Land	1991	$1,505,540
Improve Airport Drainage (Erosion Control)	1995	$658,000
Seward Airport Improvements	> 2007	$2,700,000
Seward Airport Lighting Replacement	>2007	$350,000

Source: FAA and DOT&PF Draft FFY 2002 – 2007 AIP Spending Plan – April 22, 2004

3.1.6 Airport Expenditures and Revenues

The only source of revenue for the Seward Airport is receipts from the few tenants that currently lease the lots along the north portion of the apron. Expenses for the Airport are primarily for maintenance activities and utilities. The following table summarizes available expenditure and revenue information for the Seward Airport for the past three years.

Table 2: Airport Expenditures and Revenues

Category	FY 2001	FY 2002	FY 2003
Expenditures	N/A*	$6,602.91	$8,474.60
Utilities	N/A*	$6,369.72	$677.49
Supplies and Materials	N/A*	$233.19	$3,555.44
Personnel	N/A*	N/A*	$4,241.67
Revenues	$6,793.32	$3,872.27	$5,137.36

*Data not available Source: DOT&PF

3.2 Airfield

The Seward Airport airfield consists of two paved runways, six taxiways, and a paved apron. The Airport is equipped with basic visual navigational aids and Runway 12-30 is lighted. The following table summarizes the technical data associated with the Seward Airport.

Table 3: Seward Airport Data

Item	Existing
General Airport Data	
Airport Reference Point (ARP)	60° 07' 36.978" N 149° 25' 07.724" W
Airport Elevation	22.4 feet MSL
Airport Reference Code (ARC)	Runway 12-30: B-III Runway 15-33: A-I
Airport Area	302 acres
Runway Data 12-30	
Length and Width	4,535 feet x 100 feet
Runway End 12	
Coordinates	Not available
Elevation	22.44 feet
Runway End 30	
Coordinates	Not available
Elevation	12.27 feet
Safety Area Length and Width	4,750 feet x 150 feet
Pavement Surface	Asphalt
Pavement Strength	D169
Pavement Condition Index (PCI)	51-79 (2002)
Runway Lighting Intensity	Medium
Runway Markings	Visual
Approach Surfaces	20:1
Primary Surface Length and Width	4,935 feet x 500 feet
Navigational Aids	VASI on Runway 30
Right Traffic	No
Runway Data 15-33	
Length and Width	2,289 feet x 75 feet
Runway End 15	
Coordinates	Not available
Elevation	18.50 feet
Runway End 33	
Coordinates	Not available
Elevation	11.19 feet
Safety Area Length and Width	2,769 feet x 120 feet
Pavement Surface	Asphalt
Pavement Strength	S12.5
Pavement Condition Index (PCI)	51 (2002)
Runway Lighting Intensity	None
Runway Markings	Visual
Approach Surfaces	20:1
Primary Surface Length and Width	2,689 feet x 250 feet
Navigational Aids	None
Right Traffic	No
Apron and Taxiway Data	
Apron Length and Width	2,700 feet by 170 feet
Pavement Surface	Asphalt
Pavement Condition Index (PCI)	27-87 (2002)

3.2.1 Runways

The Airport has two runways. Runway 12-30 is listed on the ALP (May 29, 1991) as having a length of 4,240.5 feet, but this length does not include the usable runway beyond the displaced threshold at the north end of the runway. The length of usable runway is actually 4,535 feet. The runway is 100 feet wide, is paved with asphalt, and is marked with Visual Flight Rules (VFR) markings. The runway is not grooved and is in fairly good condition with limited areas of moderate to severe pavement failure. There is a small turnaround area at the south end of the runway. The threshold of Runway 12 is displaced approximately 285 feet to provide 20:1 approach clearance above the railroad along the Seward Highway and to provide an adequate safety area beyond the threshold. The portion of runway beyond the threshold is usable by aircraft for the beginning of a takeoff roll or for braking after landing. The existing ALP reports a pavement strength of D169.

Runway 15-33 is shown on the most recent ALP as having a length of 2,279 feet. However, the threshold bar at the north end of the runway is painted to indicate that the runway is 2,289 feet long. The runway is 75 feet wide, is paved with asphalt, and is marked with VFR markings. These markings, however, do not appear to comply with FAA AC 150/5340-1H - *Standards for Airport Markings*. In addition to the discrepancy with the threshold bar, the Runway 33 numerals are located too close to the end of the runway and most of the taxiway lead-in stripes have an incorrect radius. The runway is not grooved and is in fair condition. Pieces of wood, originally placed as part of the runway fill material, have begun to protrude through the pavement causing humps and holes in the runway. The existing ALP reports a pavement strength of S12.5.

Based on a total runway length of 4,535 feet, the usable RSA for Runway 12-30 is 4,750 feet by 150 feet. There is approximately 15 feet of safety area beyond the Runway 12 end, and only 200 feet beyond the Runway 30 end. For Runway 15-33, the safety area is 2,759 feet by 120 feet. The safety area beyond the Runway 15 end consists primarily of a portion of Runway 12-30, but the safety area beyond the Runway 33 end consists of a low-lying area that may not meet the grading requirements for Runway Safety Areas. The RSA of Runway 15-33 is of sufficient width, but the RSA for Runway 12-30 is narrower than the B-III standard of 300 feet.

3.2.2 Runway Alignment

The alignment of Runway 12-30 provides 88 percent wind coverage for aircraft with a crosswind capability of 10.5 knots. Runway 15-33 provides 98 percent wind coverage for aircraft with a crosswind capability of 10.5 knots. The overall wind coverage for the Airport is 98 percent for aircraft with a crosswind capability of 10.5 knots.

Although the available data indicates that Runway 15-33 provides better crosswind coverage for small aircraft, local pilots report that winter winds are more aligned with Runway 12-30. The presence of significant glare ice on the airfield requires that pilots use Runway 12-30 during the winter so the crosswinds do not blow the airplanes off the runway. Runway 12-30 was originally constructed in 1952 to address concerns by pilots that Runway 15-33 did not provide adequate crosswind coverage for certain weather conditions.

The following table shows the percentage of time that the wind blows each direction at the Seward Airport. The percentages are shown for each month and the percentages for each month sum to 100 percent. Percentages greater than five percent are highlighted to show trends.

The following table indicates that there is indeed seasonal variation of wind direction at the Seward Airport. Autumn and winter winds tend to be from the north-northwest with a magnetic direction of 310º to 360º. Spring and summer winds tend to be from the south with a magnetic direction of 130º to 170º. These directions are generally aligned with the surrounding terrain consisting of a valley to the north-northwest of the Airport and a bay directly south of the Airport.

Table 4: Wind Direction Percentages by Month (Jun 1998-Dec 2003)

RW Align.	Magnetic Direction	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
	8°	2.7	2.7	2.1	2.3	2.4	1.3	1.3	2.5	3.2	3.8	3.8	3.0
	18°	0.9	0.6	1.0	0.9	0.9	0.6	0.6	0.8	1.2	1.5	1.5	0.8
	28°	0.7	0.4	0.6	0.4	0.5	0.3	0.3	0.4	0.5	1.1	1.1	0.5
	38°	0.5	0.4	0.3	0.3	0.3	0.2	0.3	0.3	0.4	0.7	0.7	0.3
	48°	0.5	0.2	0.3	0.4	0.4	0.2	0.1	0.2	0.5	0.4	0.4	0.4
	58°	0.4	0.2	0.3	0.3	0.3	0.2	0.1	0.4	0.3	0.2	0.2	0.3
	68°	0.4	0.4	0.3	0.1	0.1	0.1	0.2	0.3	0.4	0.2	0.2	0.2
	78°	0.6	0.3	0.3	0.4	0.4	0.3	0.3	0.5	0.3	0.5	0.5	0.3
	88°	0.3	0.3	0.4	0.3	0.3	0.4	0.4	0.5	0.3	0.5	0.5	0.2
	98°	0.4	0.6	0.6	0.4	0.4	1.1	0.8	0.9	0.5	0.3	0.3	0.3
	108°	0.7	0.6	0.7	0.6	0.7	1.2	2.0	1.5	1.1	0.5	0.5	0.2
RW12	118°	1.1	0.9	1.5	1.4	1.5	3.1	4.6	3.3	2.2	0.7	0.7	0.5
	128°	2.7	2.1	1.9	3.1	3.3	5.7	8.0	5.6	3.6	1.5	1.5	1.3
	138°	3.6	3.6	3.5	5.8	6.3	18.2	18.7	10.7	5.6	2.4	2.4	2.6
RW15	148°	4.1	2.9	3.2	4.8	5.2	12.7	12.0	6.4	3.9	2.0	2.0	2.0
	158°	3.3	2.8	3.6	5.0	5.4	9.9	8.9	6.2	3.6	1.9	1.9	1.8
	168°	5.5	6.1	5.1	7.2	7.8	12.8	12.4	11.8	7.2	3.6	3.6	3.0
	178°	4.1	4.5	3.4	3.4	3.7	4.2	3.6	4.2	4.1	3.8	3.8	2.0
	188°	1.0	1.4	0.9	0.8	0.8	1.1	0.9	0.6	0.7	0.7	0.7	0.6
	198°	0.4	0.5	0.2	0.1	0.1	0.1	0.3	0.3	0.2	0.5	0.5	0.2
	208°	0.3	0.2	0.3	0.2	0.2	0.1	0.2	0.1	0.3	0.3	0.3	0.1
	218°	0.2	0.2	0.2	0.1	0.1	0.0	0.1	0.1	0.2	0.3	0.3	0.1
	228°	0.2	0.5	0.2	0.2	0.2	0.1	0.0	0.1	0.2	0.1	0.1	0.3
	238°	0.2	0.2	0.2	0.2	0.2	0.1	0.0	0.0	0.2	0.2	0.2	0.2
	248°	0.1	0.6	0.3	0.2	0.2	0.0	0.1	0.1	0.2	0.2	0.2	0.2
	258°	0.4	0.6	0.2	0.2	0.2	0.0	0.0	0.2	0.3	0.4	0.4	0.3
	268°	0.6	0.7	0.5	0.6	0.7	0.3	0.2	0.3	0.5	0.6	0.6	0.5
	278°	1.3	1.0	1.1	1.3	1.4	0.6	0.7	0.8	1.2	1.0	1.0	0.7
	288°	1.4	1.5	2.5	2.2	2.4	1.1	0.9	2.0	2.6	2.3	2.3	1.8
RW30	298°	2.7	2.6	3.6	3.5	3.8	1.2	1.2	2.7	3.8	3.3	3.3	3.0
	308°	4.7	5.0	6.3	5.0	5.4	1.8	1.7	2.5	5.0	4.8	4.8	4.5
	318°	6.6	7.4	8.4	6.8	7.3	3.1	3.1	4.3	7.2	7.7	7.7	6.8
RW33	328°	7.7	7.0	9.0	7.5	8.1	4.4	3.4	4.8	7.4	8.4	8.4	8.0
	338°	14.4	13.2	13.6	10.0	10.9	5.8	4.9	9.2	12.4	15.8	15.8	17.2
	348°	15.6	17.7	14.7	11.0	11.7	4.7	4.7	9.3	10.3	16.8	16.8	23.3
	358°	10.0	10.0	8.3	13.7	6.7	3.0	3.1	6.0	8.3	11.0	11.0	12.1
	Total	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %

Source: National Climatic Data Center and DOWL Engineers

3.2.3 Taxiways

Taxiways C, D, E, and F connect Runway 15-33 to the apron. Taxiway B connects the north end of Runway 12-30 to the apron. Taxiways B, C, D, E, and F are all paved. Taxiway A connects the midpoint of Runway 12-30 with Runway 15-33 near Taxiway E. The pavement of Taxiway A has not been maintained and has deteriorated to gravel in many places. Repair work to the taxiway surface following the flood in 1995 was accomplished with gravel. Many airport users have requested that this taxiway be restored to a usable condition and the DOT&PF has plans for gravel resurfacing of this taxiway during 2004. The existing ALP indicates that the taxiway safety area associated with Taxiway A is approximately 61 feet wide.

3.2.4 Apron

The paved apron parallel to Runway 15-33 is approximately 2,700 feet long. The width of the apron is approximately 170 feet at the north end and 225 feet at the south end. The apron contains an ADG II taxiway along its east side which means that only approximately half of the apron width is available for aircraft parking and other typical apron activities. The apron is significantly narrower adjacent to the various lease lots near the center of the Airport.

The south end of the apron, a 138,000 square-foot area containing 46 tie downs, is utilized primarily for general aviation aircraft parking. Air taxi operators are the main users of the north end of the apron, an area approximately 60,000 square feet in size. The central portion of the apron is utilized primarily by Civil Air Patrol (CAP) aircraft and aircraft requiring access to the refueling station at the Short Final Air, LLC hangar.

3.2.5 Airfield Pavement Condition

A pavement inspection in 2002 reported that the runway pavement is generally in good condition, but that the condition varies from poor to excellent. There are stumps and pieces of wood protruding through the pavement on both runways and on adjacent taxiways. Rutting has begun on Runway 12-30, Taxiway B and the apron. Various other pavement problems, including cracking, raveling, depressions, corrugations, and rough patching, also exist at the Airport.

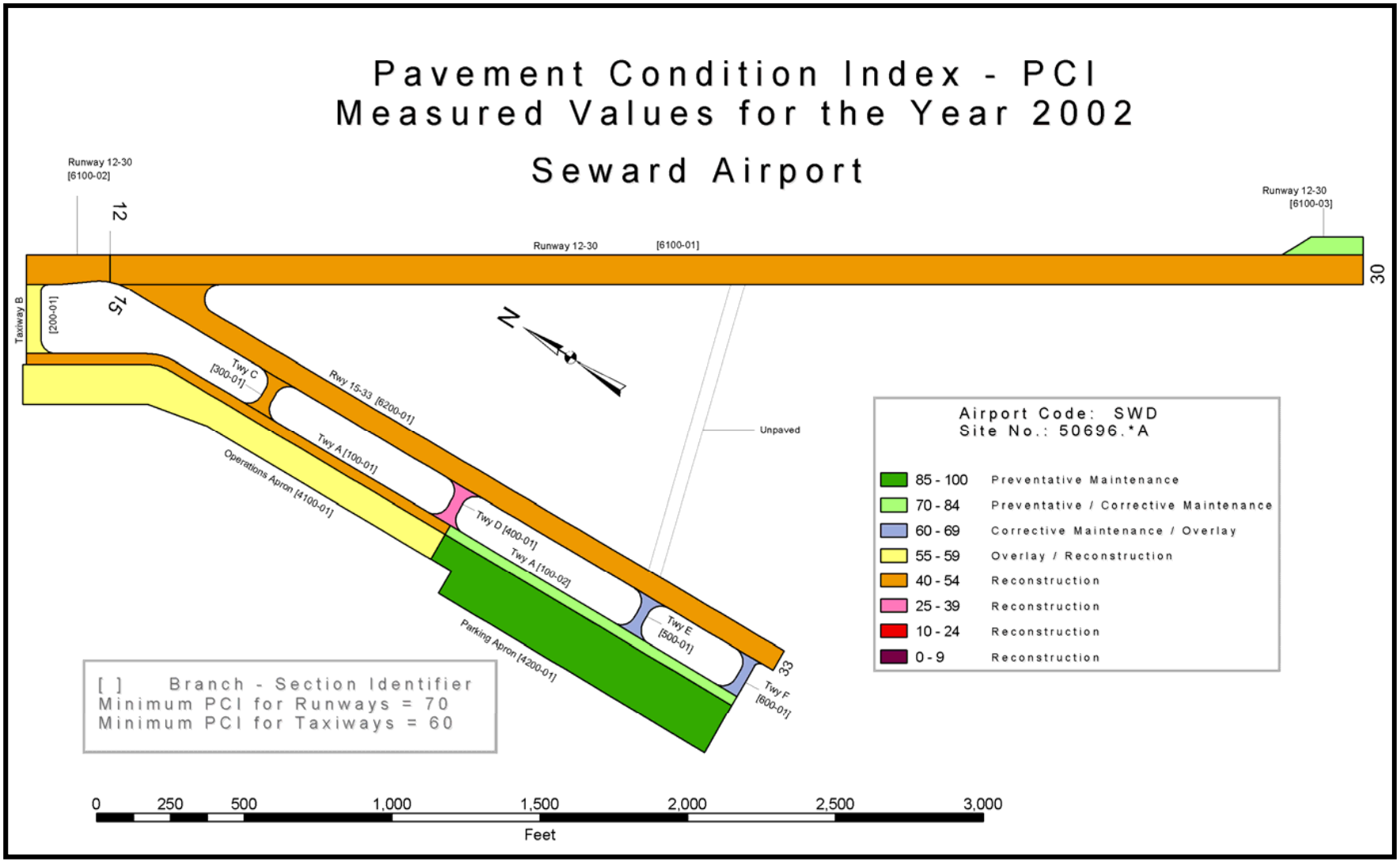
Figure 3: A Recent Patch on Runway 12-30

Figure 4: Pothole in Runway 15-33

Table 5: Pavement Condition Summary

Use Category	Number of Sections	Total Area (SF)	Weighted Average PCI
Apron	2	364,429	73.20
Runway	4	660,575	51.88
Taxiway	7	138,647	56.13
All	13	1,136,651	59.07

Source: 2002 DOT&PF Pavement Condition Survey



Source: 2002 DOT&PF Pavement Condition Survey

Figure 5: Pavement Condition Index Diagram

3.2.6 Navaids and Lighting

The Airport has Medium-Intensity Runway Edge Lights (MIRL) on Runway 12-30. This lighting system is in poor condition and requires significant maintenance. Light cans routinely "float" up out of the ground and many of the runway lights lean to the side significantly. The lighting control building is in poor condition and is located in a low-lying area. In May 2008, replacing and elevating the building scored highly in an evaluation of Airport Improvement building and Equipment projects. In the near future, flooding of the lighting building should no longer be a problem.

Figure 6: Flooded Lighting Building

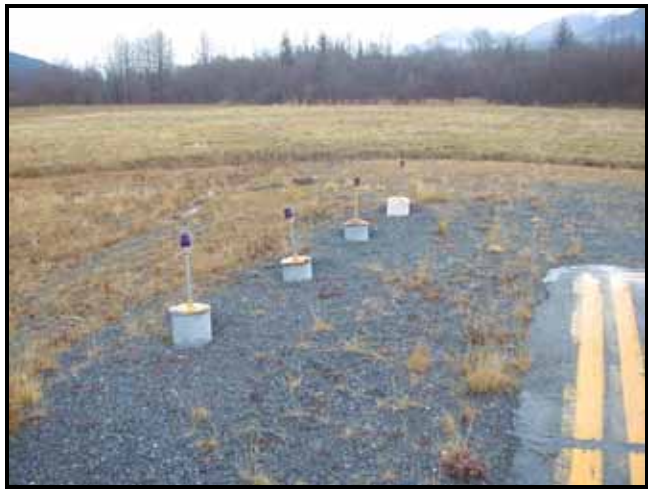


Figure 7: Floating Light Cans

There is a Visual Approach Slope Indicator system (VASI) on Runway 30. The VASI is pilot controlled and its alignment is offset five degree five degrees clockwise from the runway centerline. The VASI is unusable beyond four miles. There is a rotating beacon located near the midpoint of Taxiway A between the runways. There is also a segmented circle and a windsock located between the runways near the intersection of the two runways.

Seward Airport does not have a control tower or a flight service station. The Automated Surface Observing System (ASOS) frequency is 135.20 and the Common Traffic Advisory Frequency (CTAF) is 122.9.

Figure 8: VASI on Runway 30

Figure 9: Rotating Beacon

3.2.7 Drainage and Soils

Seward is located at the head of Resurrection Bay. This Bay is an extension of an eroded glacial valley in the Kenai Mountains and is a deep fjord extending north from the Gulf of Alaska. Rising steeply above the bay, the surrounding Kenai Mountains climb to altitudes of 5,000 feet.

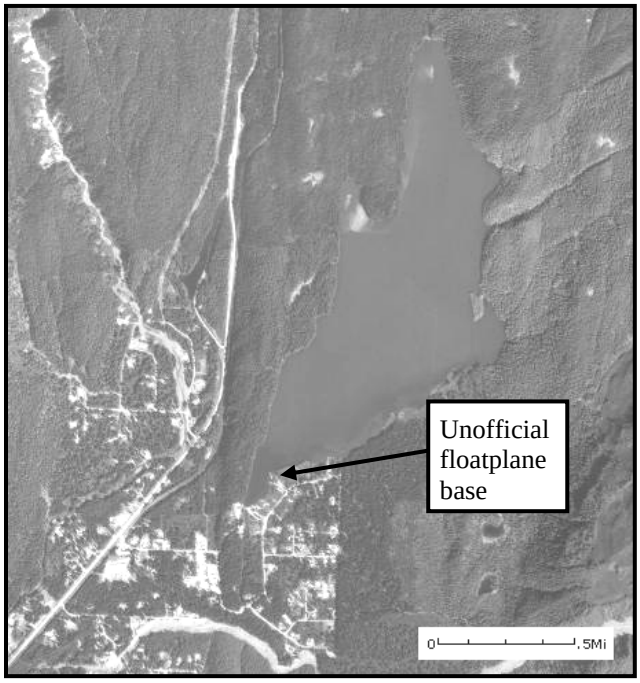
The Seward Airport was constructed in the Resurrection River floodplain. The river is a wide, glacial river with low banks and over time, the river channel has moved back and forth across the floodplain. Wetland areas have developed where surface drainage is restricted or in areas subject to tidal inundation. With depths of one to two feet, the groundwater table is very shallow in places.

3.2.8 Floatplanes

Currently, there are no floatplane facilities on Seward Airport property. However, there are private float aircraft based north of Seward on Bear Lake. Bear Lake is approximately six miles from downtown Seward, and is approximately one-half mile from the Seward Highway. The lake is approximately 1.5 miles long. With the exception of a small amount of privately owned land on the south end of the lake, most of the land surrounding the lake is part of the Chugach National Forest. Historically, float aircraft have been able to convert to wheels at the Seward Harbor, and either takeoff from the Harbor Frontage Road or are towed

to the Airport. This created conflicts between aircraft and boats/vehicles and this procedure is no longer allowed.

There is interest among airport users in creating floatplane facilities at the Seward Airport. The idea of creating a floatplane pond on the Airport was proposed in the 1985 *Seward Airport Land Use and Development Plan*. The 1985 proposal was to construct a floatplane runway east of the Airport in an area that is now the main channel of the Resurrection River. Access to the airfield to remove aircraft from the water is not the primary issue. The primary issue is having a calm, safe place to land. The Bay is too rough at times and there is no place to tie-up in the harbor. Although some operators use Bear Lake, there is no public access to the lake at this time.



Source: USGS 1997 Photograph

Figure 10: Bear Lake

3.2.9 Helicopters

There are currently no designated helicopter facilities at the Seward Airport. One tour company, through a sublease, operates a helicopter from Lot 1D, Block 200. There have been several complaints by fixed-wing aircraft owners related to dust and debris damage to

their aircraft caused by rotor wash. There are also safety problems related to vehicles and pedestrians on the apron during helicopter operations.

3.3 Landside Facilities

3.3.1 Lease Lots

The Airport is laid out with nine airside lease lots of various sizes in Block 200 on the west side of the Airport. Buildings owned by Scenic Mountain Air, Inc., Short Final Air, LLC, Gregory Thrall, and the CAP currently occupy four of these lots. The DOT&PF has a maintenance building and sand storage facility on their lot. Four lease lots remain empty. Other Lessees on the Airport include the Department of Commerce, National Oceanic and Atmospheric Administration (NOAA) lease for the Airport's ASOS equipment located approximately at the midpoint of Taxiway A, and the FAA for the VASI on the approach to Runway 30. Shoreside Petroleum also has a lease to access the Airport to deliver fuel to the Airport.

The Alaska Railroad Corporation leases a triangular parcel to the airport that comprises most of the tie down area and a portion of the lease lots. This lease to the DOT&PF must now comply with the accepted 1981 flood map. Appendix E contains background information on developing lease lots while the FEMA flood maps are being updated.

Table 6: Seward Lease Lots

Location	Size	Aviation Use?	Lessee	Contract Number	End Date
Block 200, Lot 1A	14,170	Yes	Scenic Mountain Air, Inc.	06989	03/01/09
Block 200, Lot 1D	48,049	Yes	Short Final Air, LLC	05462	09/22/08
Block 200, Lot 3	~23,400	Yes	AKDOT&PF		
Block 200, Lot 4A	18,750	Yes	Alaska Wing CAP	07883	08/13/08
Block 200, Lot 5A	18,750	Yes	Vacant		
Block 200, Lot 6	15,000	Yes	Vacant		
Block 200, Lot 7	15,000	Yes	Vacant		
Block 200, Lot 8	15,000	Yes	Gregory Thrall	08379	5/16/17
Block 200, Lot 9	15,000	Yes	Vacant		

3.3.2 Terminal Facilities and Utilities

There is no common-use terminal building on the Airport. Some of the air-tour operators may provide limited-waiting areas seasonally, but no building provides year-round terminal services. Telephone service and electricity are available to all lease lot holders. However, only one of the buildings on the Airport has water or restroom facilities. There is no public telephone on the Airport for closing flight plans.

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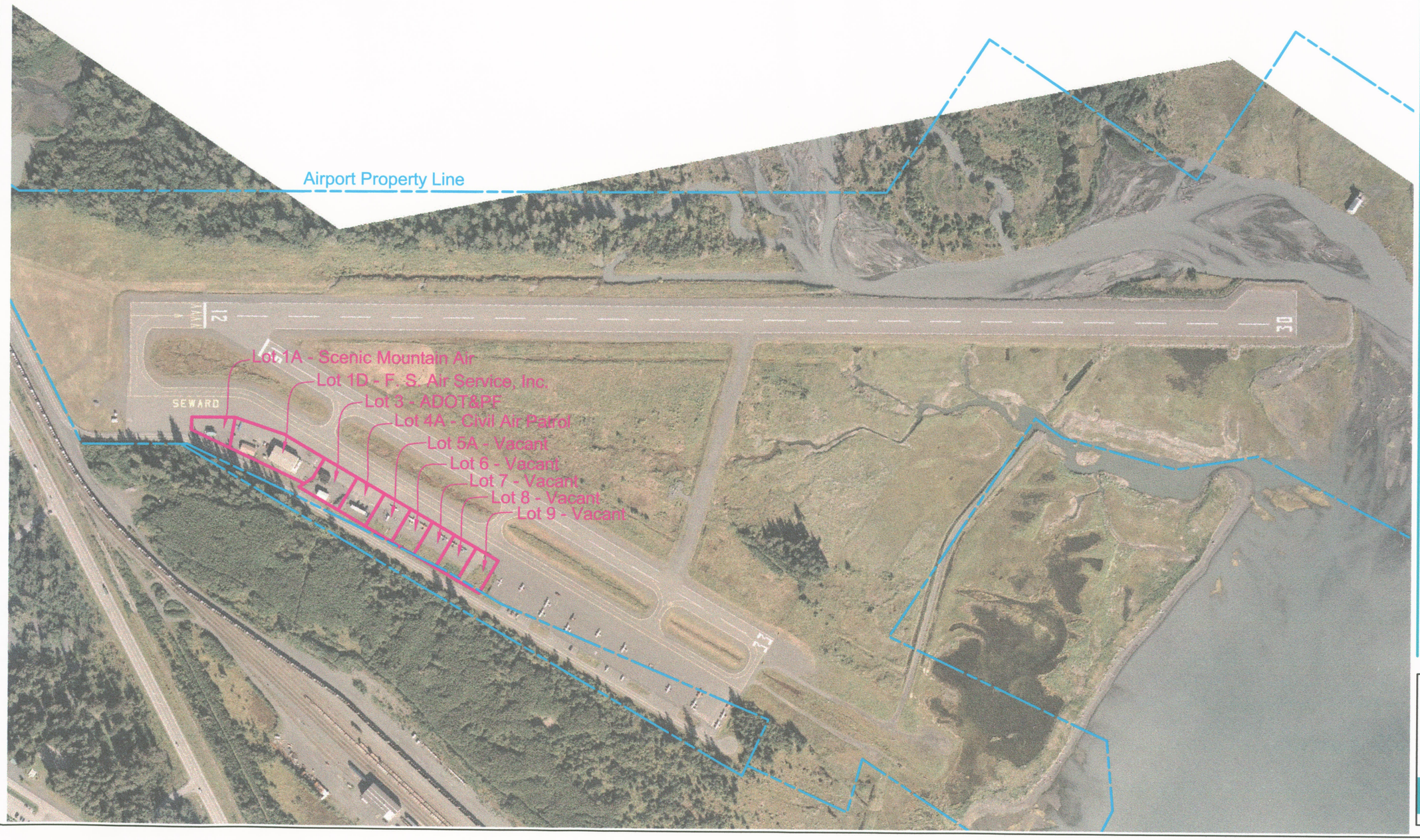

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AIRPORT LEASE LOTS

FIGURE 11

3.3.3 Fixed Base Operation and Fuel Services

All buildings on the Airport are directly related to flying activities and are located on the western side of the parking apron. An exception to this is the Airport's lighting and electrical building, which is located just north of the parking apron.

Scenic Mountain Air Inc. owns the most northern building on the apron, which is located on Block 200, Lot 1A. It is a single story wood frame building. It is used as a scheduling and waiting area for passengers on charter flights and includes administrative office space. Associated with the building is a 50-gallon fuel tank that is used for heating fuel oil. Though the lease allows for a hangar to be built, one has not been built. Scenic Mountain Air is currently trying to sell their lease.

Figure 12: Scenic Mountain Air Office

South of this building on Block 200, Lot 1D, is the Short Final Air, LLC office building and hangar. The office building is a single story wood framed building that is subleased to ERA Aviation. This building also has a septic system located between the office and the Short Final Air, LLC hangar. The office has the only restroom on the Airport and there is a water well on the northwest corner of the lot. The well water is not potable. The Short Final Air, LLC Office also has a 100-gallon heating oil tank.

South of the office is the Short Final Air, LLC maintenance hangar. The hangar is a pre-engineered steel building used for the purpose of private aircraft storage. Short Final Air, LLC

also has two fuel tanks and a pump station located on the south side of the hangar adjacent to the apron. One of the tanks holds 5,000 gallons of Jet A fuel, while the other holds 5,000 gallons of 100 LL AvGas. Shoreside Petroleum provides both types of fuel, which are sold to the public.

Figure 13: Short Final Air, LLC Office

Figure 14: Short Final Air, LLC Hangar

The DOT&PF maintenance facilities South of Short Final Air, LLC are located on Block 200, Lot 3. The main building is a pre-engineered steel structure and is used to store and maintain a loader, which is used for snow removal and airport maintenance. A small office is located in the maintenance building for DOT&PF staff. A sand storage building is also on this lot and is located between the maintenance building and the parking apron. The building also has a small aboveground tank used to store heating oil.

Figure 15: DOT&PF Maintenance Building

Figure 16: Sand Storage Building

South of the DOT&PF maintenance facility is the hangar of the Seward Composite Squadron of the Alaska Wing of the CAP. This is a new pre-engineered steel building that was completed in the spring of 2002 and is used to store and maintain the squadron's C-172 as well as other CAP aircraft used during search and rescue missions. The building is also used for training and

storage of equipment associated with CAP operations. Behind the hangar is a mobile office building that is used for office and storage space.

Figure 17: **CAP Hangar**

Figure 18: CAP Office

In 2004, the Godwin Glacier Dog Sled Tours (GGDST) office was located on ARRC property adjacent to the north end of the apron. GGDST has since removed this building and is operating as a sublesse on Lot 1D, Block 200.

Figure 19: GGDST Office on Alaska Railroad Property

3.3.4 Fencing and Security

A 10-foot high fence runs along the west side of the apron south of the lease lots. There are several gaps in the fence in order for people parking along the Airport road to access their aircraft. There are no gates on these gaps and no method of preventing unauthorized access to the apron. Seward Police Department estimates approximately four to six apron and runway

incursions a month. There is no fencing on any of the lease lots along the northern half of the apron. There is no other perimeter fencing either, preventing access to the runway.

The southern portion of the apron does have area lighting along the Airport road. Additional area lighting is located on several of the lease lots along the north end of the apron.

3.3.5 Surface Access and Parking

The Seward Airport is served by a single access road. The road begins at the Seward Highway near the southernmost Resurrection River Bridge and runs southwest alongside the train tracks. The road then turns south and parallels the west side of the apron and the lease lots. The access road is paved and is approximately 24 feet wide and 4,000 feet long. Because the access road crosses the Alaska Railroad tracks at the Seward Highway, it can be blocked when trains are inbound, outbound or switching. Community members report that the current airport entrance is dangerous due to limited visibility when entering the Seward Highway and there is widespread support to find a better solution.

Tenants requiring access to aircraft along the southern portion of the apron park in the parking spaces along the airport road. Tenants and tourists requiring access to the buildings on the lease lots generally park on the apron in the vicinity of the various buildings because there is limited space on the lease lots for parking. However, it is the tenant's responsibility to provide space for parking on their lease lots. Access to these buildings is generally by driving along the apron on the airfield side of the lease lots. This causes occasional conflicts between vehicles, aircraft, and pedestrians. This conflict is especially evident when tour helicopters are loading and unloading passengers at the north end of the apron during the summer.

3.4 Maintenance and Operations

3.4.1 Fire Protection

Because the Seward Airport is uncertified, it is not required to provide aircraft rescue and firefighting (ARFF) services. A combination paid/volunteer fire department supplies fire protection for Seward; there is a paid fire chief and twenty-eight volunteers on the roster. The usual turnout for an emergency call is 12-15 people. Response time to the Airport depends on

the time of day and day of the week. Monday through Friday during normal working hours, the response time is four to five minutes for one engine. After normal work hours, weekends, and holidays the response time is eight to ten minutes for one engine. The fire station is approximately 2½ miles from the Airport.

Vehicles that would initially respond to an incident at the Airport are two 1,500 gallons per minute (gpm) pumper engines, one heavy rescue unit and one command vehicle. Secondary response would bring a 1,250-gpm-pumper engine to the site. Water carried by the initial responding pumper engines is 1,250 gallons and the secondary pumper carries 1,000 gallons of water, bringing the total to 2,250 gallons. There is also another 1,250-gpm-pumper engine and a light rescue unit available within the fleet, which are located near the Spring Creek Correctional Center.

The fire department uses Aqueous Film Forming Foam. Each pumper engine carries at least 15 gallons. There is a total of 365 gallons of foam in storage at the fire station.

Depending on the nature of the emergency, Bear Lake Fire Department would be called for mutual aid. Bear Lake is a total volunteer fire department and their response time ranges from ten to twenty minutes.

A fire protection hydrant pump was installed near the river when the CAP hangar was built to provide emergency water for structure fires. This is the only source of fire protection water in the vicinity of the Airport.

3.4.2 DOT&PF Maintenance Equipment

DOT&PF employees in Seward are responsible for airport maintenance in addition to their primary highway maintenance duties. State maintenance equipment at Seward includes a grader, pick-up truck with blade attachment, loader, sanding truck, and snow blower. Most of this equipment is stored in town at the State's maintenance building and is used for highway maintenance.

3.4.3 Snow Removal and Storage

A sand storage building is located at the Seward Airport and is situated between the maintenance building and the parking apron. The sand storage building is constructed of wood and consists of two walls, a roof and is 18 feet wide by 42 feet long. The sand building is in generally poor condition.

The DOT&PF uses a snow blower and loader in the winter to remove snow from the runways, taxiways, and the aprons. One exception to this is Taxiway A, which receives no maintenance.

3.4.4 Wildlife Hazards

The wetlands along the south edge of the Airport are a popular wildlife viewing and hunting area. Residents report that waterfowl hunting occurs in this area. In the past, there has also been an eagle's nest 350 feet east of the north end of Runway 12-30.

A fish processor approximately 3,600 feet southwest of Runway 33 occasionally dumps waste into Resurrection Bay south of the Airport. This activity potentially poses a hazard because it attracts flocks of seagulls. Residents report that this fish processing activity has lessened somewhat in recent years.

3.5 Surrounding Land Use

The largest landowner adjacent to the Airport is the Alaska Railroad, which owns all of the property on the west side of the Airport. The property between the Airport and the coal facility is currently undeveloped, but the Railroad intends to lease and develop this property as an industrial park in the future.

The CAP owns a large parcel of land to the northeast of the Airport and has expressed a desire to develop this property for aviation uses. However, most of this parcel lies within the Resurrection River floodplain, which makes future development unlikely.

The other parcels of land adjacent to the Airport are relatively small and are owned either by individuals or the City of Seward. A privately owned parcel along the south boundary of the

Airport is completely surrounded by the Airport and the only access to this parcel is across Airport property.

Table 7: Ownership of Land Adjacent to the Seward Airport

Owner	Location	Current Land Use
United Methodist Church	North of Airport	Forest/River
CAP	North of Airport	Forest/River
Estate of Peter Byrne Hugelen	Northeast of Airport	Forest/River
Virginia Hess et al.	East of Airport	Forest/River
John A. Todd Jr.	East of Airport	Forest/River
Basil Bolstridge et al.	East of Airport	Forest/River
City of Seward	East of Airport	Forest/River
Martin Kowalski et al.	East of Airport	Forest/River
Leirer Family Limited Partnership	South of Airport	Tidal Wetlands
Alaska Railroad Corp.	West of Airport	Forest/Industrial
Raymond Gillespie et al.	Northwest of Airport (across Seward Highway)	Forest/Industrial

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BASIL & ELIZABETH BOLSTRIDGE and JAMES & SUSAN ROTT

MARY P FAY & TERI L NAMTVEDT

VIRGINIA JESS ET AL

JOHN A TODD JR

TOMMY BOYCE

CITY OF SEWARD

BASIL BOLSTRIDGE ET AL

MARIE JORDAN

ROTT JAMES

CITY OF SEWARD

MARTIN KOWALSKI ET AL

CITY OF SEWARD

ESTATE OF PETER BYRNE HUGELEN

UNITED METHODIST CHURCH

CIVIL AIR PATROL

RAYMOND GILLESPIE ET AL

AFOGNAK LOGGING

RAYMOND GILLESPIE ET AL

CITY OF SEWARD

CITY OF SEWARD

ARRC

12 WAY

5

SEWARD

LEASED FROM ARRC

33

ALASKA RAILROAD CORPORATION

LEIRER FAMILY LIMITED PARTNERSHIP

SEWARD AIRPORT

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FIGURE 20

4.0 AIRSPACE AND AIR TRAFFIC CONTROL

4.1 Air Traffic Patterns and Approaches

All runway traffic patterns at the Seward Airport are standard left hand patterns. The Airport has a day-use-only Global Positioning System (GPS) Instrument Approach Procedure with a minimum descent altitude of 2,500 feet. The approach is available to commercial operators through an Operations Specification in the operator's General Operations Manual. This instrument approach will place aircraft in the vicinity of the Airport, but aircraft must use a circle-to-land technique and visually locate the Airport for landing. The instrument approach is rarely used because the minimum descent altitude is approximately 2,500 feet above the Airport. The approach begins near Kenai Lake north of the Airport and the instrument approach designers assume a descent rate of 400 feet per mile. Based on this descent rate, aircraft arrive at the Airport at an elevation of 2,500 feet.

4.2 Air Traffic Control

Because Seward is an uncontrolled airport, a CTAF of 122.9 is used by pilots to announce their intentions and avoid conflicts with other aircraft in the vicinity. Standard procedure is for arriving aircraft to announce their call sign, location, and intentions when they are five miles from the Airport. For departing aircraft, standard procedure is to announce their call sign, location, and intentions before taxiing to the departure runway. Pilots monitor the ASOS on a frequency of 135.2 to receive local weather observations.

4.3 Airways

Because there are no enroute navigational aids in the Seward vicinity, there are no airways that pass over the Airport. However, Airway V617 between Homer and Johnstone Point passes four nautical miles (nm) to the south of the Seward Airport. Airway V508 between Kenai and Middleton Island passes five nm to the north of the Airport.

4.4 Airports and Navaids within 50 Miles

The closest Navaid to the Seward Airport is the Soldotna Non Directional Beacon with Distance Measuring Equipment (NDB/DME), 48.4 nm northwest of Seward. The next closest Navaid to Seward is the Wildwood Airport NDB located 60.5 nm to the northwest.

The following two tables show the airports and Navaids nearest to the Seward Airport.

Table 8: Nearby Airports

Facility	Distance	Course	Coordinates
Lawing [9Z9]	17.2 nm	5°	60° 24' 40" N 149° 22' 13" W
Quartz Creek [JLA]	23.2 nm	337°	60° 28' 58" N 149° 43' 8" W
South Gasline [AK39]	41.1 nm	327°	60° 41' 50" N 150° 10' 48" W
Chenega Bay [C05]	43.0 nm	93°	60° 4' 38" N 147° 59' 31" W
Whittier [IEM]	44.3 nm	28°	60° 46' 38" N 148° 43' 18" W
Rotor Air [1AK4]	46.4 nm	302°	60° 31' 27" N 150° 45' 8" W
Moose Run Airstrip [AK55]	46.7 nm	298°	60° 29' 21" N 150° 48' 6" W
Hope [5HO]	47.2 nm	353°	60° 54' 15" N 149° 37' 26" W
Sterling Air Park [40AK]	49.7 nm	302°	60° 33' 19" N 150° 50' 33" W
Dan France [7AK6]	49.8 nm	296°	60° 28' 40" N 150° 55' 43" W

Source: www.aeroplanner.com

Table 9: Nearby Navaids

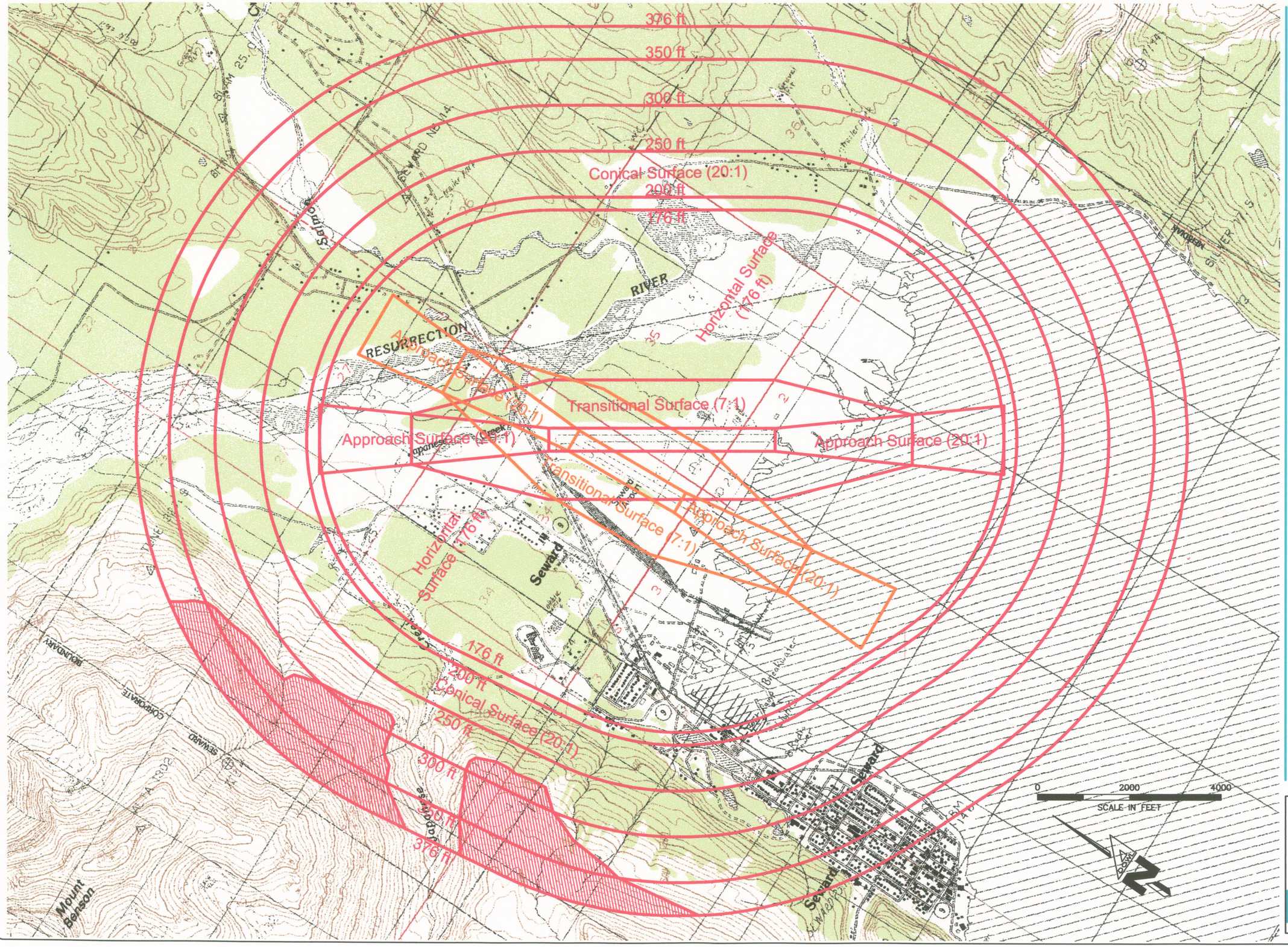
Facility Name	ID	Type	Distance	Course	Coordinates
Soldotna	OLT	NDB/DME	48.4 nm	296°	60° 28' 30" N 150° 52' 44" W
Wildwood	IWW	NDB	60.5 nm	299°	60° 35' 55" N 151° 12' 40" W
Kenai	ENA	VOR/DME	60.5 nm	300°	60° 36' 53" N 151° 11' 43" W
Anchorage	ANC	VOT	65.3 nm	345°	61° 10' 36" N 149° 58' 59" W
Campbell Lake	CMQ	NDB	65.5 nm	344°	61° 10' 16" N 150° 2' 52" W
Anchorage	ANC	VOR/DME	65.8 nm	340°	61° 9' 3" N 150° 12' 24" W
Homer	HOM	VORTAC	66.5 nm	249°	59° 42' 34" N 151° 27' 24" W
Bruck	BOB	NDB	66.5 nm	341°	61° 10' 4" N 150° 10' 38" W
Merrill	MRI	VOT	66.6 nm	349°	61° 12' 52" N 149° 50' 44" W
Elmendorf	EDF	TACAN	68.7 nm	351°	61° 15' 18" N 149° 46' 9" W

Source: www.aeroplanner.com

4.5 FAR Part 77 Surfaces and Obstructions

The Seward Airport lies in a valley at the head of Resurrection Bay. The Airport is surrounded on three sides by high mountains. The primary runway, Runway 12-30, is roughly aligned with the Resurrection River valley to the northwest of the Airport. The FAR Part 77 airspace west of the Airport is slightly penetrated by Mount Marathon and Mount Benson.

Other items that may penetrate the Part 77 airspace include trees 940 feet from the end of Runway 12 with a height of 45 feet above the runway elevation. There are also trees 800 feet north of Runway 15, 30 feet to the right of the runway centerline, with a height of 40 feet. The threshold of Runway 12 is displaced to avoid a penetration of the 20:1 approach slope by the train tracks along the Seward Highway north of the Airport.



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FAR PART 77 AIRSPACE

FIGURE 21

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5.0 INITIAL AIRPORT DEVELOPMENT ISSUES

Issues and concerns related to the future development of the Seward Airport have been identified through initial meetings with DOT&PF, FAA, the City of Seward, the ARRC, and the public. An initial trip to assess the Airport and meet with the City was followed by a second trip to hold a public meeting and obtain comments and suggestions related to future Airport development. Issues raised by the public during these trips are summarized below.

5.1 Forecasts

- Concerns about the lack of aviation growth in Seward.
- Request to look into airport configurations capable of handling much larger aircraft than currently fly into Seward, thus promoting tourism.
- Air traffic has decreased due to declines in logging, fish spotting, and prisoner transportation.
- Loss of Essential Air Service (EAS) subsidy was perceived as a political decision.

5.2 Airfield

- The crossover taxiway is in poor condition and can damage propellers.
- Interest in installing lighting on Runway 15-33.

5.3 Terminal

- A shared terminal is desired as a long-range option.

5.4 Safety and Security

- FAA sees airfield incursions as a priority item to address.
- Lack of continuous fencing around the airfield.

5.5 Roads and Parking

- The development of a shared parking lot for tenants at the north end of the Airport needs to be explored.
- The airport entrance has poor site distance, is too close to the bridge over the Resurrection River, and is too close to the ARRC tracks.
- There is a need to have two entrances into the Airport in case of emergencies.

5.6 Utilities

- Lack of utilities at the Airport is hampering development.
- The City fire department requires sprinklers in new, large hangars, but no water is available.

5.7 Maintenance and Operations

- Concern about the compatibility of remote-controlled model aircraft on the Airport.

5.8 Environmental

- The wetlands along the south edge of the Airport are a popular wildlife viewing and hunting area.

5.9 Navigational Aids

- Interest in having approach aids Precision Approach Path Indicator (PAPIs) on both runways.
- Reliability concerns with VFR approaches, lack of a usable Instrument Flight Rules (IFR) approach.

5.10 Floatplane Facility

- Floatplane facilities are desired on the Airport. To provide a safe landing facility when the waves in Resurrection Bay are too rough, pilots also need the ability to change from floats to wheels.

5.11 Helicopters

- Helicopters hover along the apron and cause debris and wind damage to parked aircraft.
- Helicopters also frequently land in front of the fuel pumps and interfere with aircraft taxiing along the apron.

6.0 SEWARD SOCIOECONOMIC PROFILE AND AIR TRAFFIC FORECAST

6.1 Methodology

The Seward air traffic forecast was developed consistent with the recommendations in Federal Aviation Administration Advisory Circular 150/5070-6A, and related July 2001 guidance paper entitled "Forecasting Aviation Activity by Airport." Information used to develop this forecast included historic air traffic data, prior forecasts, interviews with air carriers serving Seward and other informed parties, and examination of Seward and the surrounding region's past economy and future economic trends. The forecast incorporates considerable judgment using information obtained from the parties interviewed, as well as the experience and intuition of the forecasters. Low, moderate and high growth scenarios are developed in this report.

6.2 Socioeconomic Profile

Seward is located at the head of Resurrection Bay on the east coast of the Kenai Peninsula in Southcentral Alaska. The City was founded in 1903 when a group of settlers arrived to start work on a railroad. Its ice-free harbor made Seward an important port for transshipment of goods via rail to and from Interior Alaska. It was incorporated as a home rule city in 1912 and is part of the Kenai Peninsula Borough. By 1960, Seward was the largest community on the Kenai Peninsula. A tsunami from the 1964 earthquake destroyed the railroad terminal and killed several residents. The terminal was rebuilt, but in the interim, much of the cargo transshipment moved to the Port of Anchorage, and Seward was never able to regain its status as the transportation gateway to Southcentral Alaska.

Seward is connected to Anchorage (125 miles north) and the Alaska Highway system by the Seward Highway. The Alaska Railroad delivers cargo year round and passengers seasonally to Seward, and cruise ships and cargo vessels call at the Port of Seward. Although Seward has an airport with two runways, one 4,240 feet long and capable of handling commercial traffic of 18 seat Twin Otters, they have not had scheduled air service since 2002.

6.2.1 Population

The estimated 2006 population of the City of Seward was 2,627. The City population has declined slightly over the last twelve years from a 1990 population of 2,699, although population growth of the surrounding area is greater. In 2000, the median age of Seward residents is about 37 years, and about 620 residents (about 22 percent) are under 18 years old. About nine percent of Seward residents (253) are aged 62 and older in 2000. The following table presents historic population information for the City of Seward.

Table 10: Population of the City of Seward

Year	Population
1950	2,114
1970	1,587
1980	1,843
1990	2,699
1991	2,856
1992	2,878
1993	2,886
1994	2,965
1995	2,917
1996	2,891
1997	2,996
1998	3,028
1999	3,010
2000	2,830
2001	2,768
2002	2,794

Sources: State of Alaska Departments of Labor and Workforce Development, and Community and Economic Development.

2000 census data for the City of Seward indicates that the average household size is 2.4 persons and 86.7 percent of residents are high school graduates. In 2000, the annual median household income for the City of Seward was $44,306, and the average per capita income

was $20,360. Just over 10 percent of the population lived below the poverty level. Also in 2000, nearly 28 percent of the wage and salary jobs were with government entities, and 10 percent of workers were self-employed.

Since the Airport serves the population of the surrounding area and not just the City of Seward, it is important to look at population trends in the Seward-Hope census subarea, which includes surrounding communities. Because of a change in the geographic boundaries of census subareas in the Seward area, a time series of population for the Seward-Hope census subarea is not available before 1990. According to the State Demographer at the State of Alaska Department of Labor and Workforce Development, the population of that census subarea has grown at an annual average rate of 1.65 percent between 1990 and 2002. Bear Creek is the second largest community in the subarea (2002 population of 1,858), and grew an annual average of 3.3 percent between 1990 and 2002.

Table 11: Population of Seward and Surrounding Area, 1990 to 2002

Year	Seward-Hope Census Subarea	Percent Change	City Population	Percent Change
1990	4,662		2,699	
1991	4,747	1.8 %	2,856	5.8 %
1992	4,834	1.8 %	2,878	0.8 %
1993	4,923	1.8 %	2,886	0.3 %
1994	5,013	1.8 %	2,965	2.7 %
1995	5,105	1.8 %	2,917	-1.6 %
1996	5,198	1.8 %	2,891	-0.9 %
1997	5,294	1.8 %	2,996	3.6 %
1998	5,391	1.8 %	3,028	1.1 %
1999	5,489	1.8 %	3,010	-0.6 %
2000	5,590	1.8 %	2,830	-6.0 %
2001	5,696	1.9 %	2,768	-2.2 %
2002	5,708	0.2 %	2,794	0.9 %
Average		1.7 %		0.3 %

Source: State Demographer's Office, State of Alaska Department of Labor and Workforce Development.

6.2.2 Economic Activity

The economy of Seward has diversified beyond its status as a transportation center. In fact, Seward has one of the most diversified economies in the state. Many Seward residents

participate in commercial fisheries, and several fish processing plants are located in the area. In addition, the Seward area is the location of the Spring Creek State Correctional Facility, the University of Alaska's Institute of Marine Sciences, the Alaska Vocational and Technical Center, and the Alaska SeaLife Center. Shipbuilding and repair is also an important business sector in Seward. The community has a 50-ton and a 150-ton boatlift, a marine surveyor, and several marine support businesses. The beauty of the area, proximity to visitor attractions and great sport fishing opportunities has also contributed to a strengthening tourism sector in the area. The strength of Seward's economy is shown by the fact that while Seward has 10 percent of the population of the Kenai Peninsula Borough, it has 13 percent of the jobs.

The visitor and fish processing industries located in the area lend a strong seasonality to the local economy. Gross sales in Seward between 2000 and 2002 showed an average distribution over calendar quarters as follows: first quarter = 14.5 percent; second quarter = 28.8 percent; third quarter = 40.6 percent; and forth quarter = 16.1 percent. The following analysis addresses the major economic sectors in Seward. Examination of available economic trend data and interviews with business and community leaders in Seward and around the region is the basis for this analysis.

6.2.3 Tourism

Tourism has been a strong economic sector in Seward. It is the center for the Kenai Fjords National Park, and visitors travel to Seward to visit the park, the Exit Glacier, the Alaska SeaLife Center, and other attractions. Local activities such as the Mt. Marathon Race and Fourth of July festivities, the Seward silver salmon and halibut derbies also attract visitors. In 2002, the Alaska SeaLife Center attracted 150,918 visitors. Although it is difficult to say how many highway and railroad passengers are tourists, it is important to note that about 32,000 people traveled to Seward by railroad, and about 295,000 people traveled to Seward by highway in 2002.

Seward has about 460 hotel rooms, and about 73 bed and breakfasts, most with multiple rooms. The summer of 2003 found local accommodations business flat to slightly down from the prior year. Local business owners say that 2002 was a good year because travelers stayed within the U.S. for their vacations. However, 2003 showed a slowing in visitors,

likely due to the continued weak national economy. One hotel owner commented that tour group traffic had decreased from the prior year, but that independent traveler traffic was up from 2002.

The harbor's 550 slips are full of boats. There is a waiting list for slips and a harbor expansion is being planned. Many of the boat owners renting slips are residents of other areas of the state who travel to Seward to go boating. In 2003, 125-charter fishing boats were licensed to operate out of Seward, although not all of those boats call Seward their homeport. Visitors entering the Kenai Fjords National Park (headquartered in Seward) have increased from 135,859 in 2000 to 250,643 in 2002. Data for 2003 is not yet available. A waterfront multi-agency building with room for the Chamber of Commerce, the Kenai Fiords National Park headquarters and other agencies is being planned, and should be completed by 2006.

Seward is a terminus port for cruise ships visiting Alaska. During the 2007 season, 65 cruise ship dockings occurred at Seward, and those ships carried about 153,518 visitors. (In 2002, Seward had 309,042 visitors arrive or depart by cruise ship). Disembarking tourists are loaded onto busses or trains to travel to the Anchorage International Airport, while incoming visitors are bussed or trained down from Anchorage to embark on their cruises. A new train terminal at the Anchorage International Airport makes this system even more convenient. Unfortunately, this system tends to take visitors through Seward without allowing them time to shop, obtain services or take local tours including helicopter tours. Train service to the Anchorage airport terminal is on a charter basis by the cruise lines, and so is not available to the public.

6.2.4 Fisheries

In 2002, 74 Seward residents held commercial fishing permits and 103 residents held crew licenses. Seward has four large commercial fish processors and several small processors. One local processor stated they were expanding in some areas and that their halibut, sablefish and other bottom fish market was strong, although the market for salmon (the largest portion of their processing business by weight) is not as good. The largest processor, Icicle Seafoods, was the fifth largest employer in Seward in 2002 with an annual average of

91 employees. Although fish processing tends to be seasonal, it does provide some high-paying year-round jobs. The City of Seward received $369,645 for its share of fish landing taxes in 2001.

Fish processors in Seward generally transport fresh fish by refrigerated van on the Seward Highway to the Anchorage International Airport rather than by plane from Seward. Even when scheduled flights from Seward were available, they were not frequent enough to coordinate transfers in Anchorage to flights leaving the state. Transporting fish via highway allows the processors more flexibility to meet those flights.

6.2.5 Transportation

The transportation sector brings goods and visitors to Seward via rail, highway and oceangoing vessel. Although most of the transshipment of goods to interior Alaska now occurs at the Port of Anchorage, some shippers use Seward, especially when ice is present in Cook Inlet near the Port of Anchorage. Coal exports from the Port of Seward resumed in the fall of 2003, with rail cars bringing the coal into Seward from the Usibelli Mine in Interior Alaska for transfer to ships. The Alaska Railroad has a maintenance station at Seward.

6.2.6 Government

Seward has a strong government sector. Besides its local government and school district employment, the immediate vicinity houses the Spring Creek Correctional Facility, the Alaska Vocational and Technical Center, the University of Alaska's Institute of Marine Sciences, the headquarters for the Kenai Fjords National Park, and an office of the U.S. Forest Service. Government employment constitutes about 30 percent of the jobs in Seward.

6.2.7 Employment and Earnings

The following table presents State of Alaska Department of Labor data for average annual employment by industry in the City of Seward. This information can be somewhat misleading because of reporting standards for businesses. Self-employed people such as commercial fishers and sole proprietors of small businesses (such as bed and breakfasts) are not counted here. Also, the figure reported is average annual employment and does not show

the seasonal changes in employment. It counts the number of jobs, not the number of individuals working. Consequently, one person could hold two or more jobs throughout the year, and so, be counted here more than once.

Table 12: Seward Annual Average Employment by Industry, 1990 to 1999

Industry	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Mining	NA	NA	NA	NA	0	0	0	0	0	0
Construction	63	54	20	38	31	60	100	110	93	85
Manufacturing	312	334	239	298	259	229	168	143	230	250
Trans., Comm., & Util.	106	118	129	147	149	149	162	190	218	300
Trade	266	323	378	318	334	324	349	377	412	393
Finance, Ins., R.E.	NA	NA	NA	NA	22	22	21	24	23	22
Services & Misc.	223	242	284	346	366	338	363	340	404	429
Ag., Forestry, & Fishing	135	173	353	342	3	2	1	1	1	1
Government	626	586	604	602	604	652	660	617	656	653
Federal	46	48	50	51	52	54	63	62	90	95
State	416	369	378	371	364	367	371	366	377	364
Local	164	170	176	181	188	231	226	189	189	194
Total Employment	**1,753**	**1,851**	**2,029**	**2,111**	**1,767**	**1,777**	**1,824**	**1,802**	**2,037**	**2,133**

Source: State of Alaska Department of Labor and Resource Development, Research and Analysis Section.
Notes: 1999 Local Government figure assumes school district employment is at the same level as 1998. Totals may not add due to rounding. NA indicates that the number is not available

National standards for grouping employment by industry changed in 2000. Consequently, the year 2000 presents a series break in the data, and information from later years is not comparable to information from before 2000. The following table presents employment by industry for the City of Seward in 2002. Although total employment is comparable, employment in many of the industry categories are not.

Table 13: Seward Employment by Industry, 2002

Industry	Employment
Construction and Mining	98
Manufacturing	248
Trade	225
Transportation	300
Information	10
Finance	27
Professional Services	19
Health and Social Services	204
Leisure and Hospitality	339
Other	108

Public Sector	687
Federal Government	114
State Government	369
Local Government	204
Total	**2,265**

Source: State of Alaska Department of Labor and Workforce Development.

6.3 Historic Transportation Activity

The Seward Airport does not have an air traffic control tower or a local Flight Service Station. Air traffic records are not available at the site. Historic air traffic data was obtained from the DOT&PF, the U.S. Department of Transportation (U.S. DOT), air carriers who serve Seward, local pilots, Seward Airport management and other knowledgeable parties. U.S. DOT does not gather data from local fixed-wing and helicopter tours or from helicopter charter flights. The following sections present information about current transportation services, historic traffic, and fleet mix at the Seward Airport.

6.3.1 Highway, AMHS, and Rail

In addition to air travel, Seward can be reached by several other modes of transportation. The community is located on the Seward Highway, just 125 miles from Anchorage. The following table shows highway traffic passing Moose Pass one-way between 1990 and 2001. Moose Pass is on the highway between Seward and Anchorage, and Seward is the only major community on the roadway south of Moose Pass. Although traffic has dropped slightly over the past few years, it has increased an average of 1.8 percent per year since 1990.

Table 14: One Way Vehicle Traffic through Moose Pass, 1990 to 2002

Year	Average Daily Traffic	Annual Traffic
1990	663	241,995
1991	685	249,843
1992	728	265,538
1993	776	283,058
1994	804	293,460
1995	766	279,408
1996	784	286,160
1997	803	293,095
1998	883	322,295
1999	846	308,790

2000	831	303,133
2001	820	299,300
2002	809	295,285

Source: DOT&PF.

Seward is also a year round port of call for the AMHS. The following table shows AMHS traffic (both passengers and vehicles) into and out of Seward between 1990 and 2002.

Table 15: State Ferry Traffic to and from Seward, 1990 to 2002

Year	Passengers Embarking	Passengers Disembarking	Vehicles Embarking	Vehicles Disembarking	Departures
1990	3,171	3,077	1,179	1,123	44
1991	791	862	506	607	38
1992	2,939	3,237	1,281	1,267	66
1993	3,317	3,289	1,355	1,385	60
1994	2,574	2,570	1,112	1,095	52
1995	2,492	2,378	1,127	1,151	51
1996	2,545	2,593	1,079	1,141	55
1997	2,819	2,750	1,289	1,230	69
1998	3,437	3,357	1,503	1,433	72
1999	4,044	3,638	1,831	1,622	86
2000	3,746	4,044	1,706	1,697	84
2001	3,641	3,773	1,797	1,621	90
2002	3,625	3,986	1,711	1,752	72

Source: AMHS Volume Reports.

The AMHS discontinued Seward as an AMHS port of call upon completion of AMHS terminal upgrades in Whittier in 2005.

In addition, Seward is the southern terminus of the Alaska Railroad and receives year round cargo and seasonal passenger service to Anchorage and beyond. The following table shows railroad passengers embarking at Seward and charter train traffic (embarking and disembarking) at Seward. Some rail cars are chartered by cruise lines and are not available to the general public. The 2003 data is preliminary.

Table 16: Alaska Railroad Passengers from Seward to Anchorage, 1999 to 2003

Year	Embarking Passengers	Embarking and Disembarking Charter Passengers
1999	11,348	0
2000	12,525	6,119
2001	13,282	31,701
2002	14,678	34,863
2003	16,168	39,391

Source: ARRC.

Note: Although a directional breakout of charter passengers is not available for most years, in 2003, about 60 percent of the charter traffic traveled from Seward to Anchorage, and 40 percent traveled from Anchorage to Seward.

Alaska Railroad representatives were not able to provide information about the tonnage of freight at Seward that actually had Seward as an origin or destination from the tonnage of freight that was transshipped through Seward[1]. However, freight tonnage on the dock at Seward was 4,202 tons in 2001, 14,876 tons in 2002, and 29,344 tons as of July 2003. This tonnage does not include fuel and some other freight transferred by rail to Seward. Some of this increase may be attributable to significant capital improvements at the Seward railroad dock, and a new dock manager who helps with marketing. One major fuel wholesaler ships fuel to Seward via rail.

6.3.2 Air Traffic Overview

The majority of Seward intercommunity air traffic is flights to and from Anchorage. Historically, scheduled and charter service was provided by small, mostly twin engine planes. The flight takes about 35 minutes. In the past decade, Seward has received scheduled service from several air carriers, including ERA Aviation and Short Final Air, LLC. ERA stopped scheduled service in 2001 citing low passenger demand. In May of 2002, the EAS subsidy to Seward was discontinued. Restrictions on that subsidy were tightened and it was determined that Seward's close proximity (within 200 miles) to a major airport by road ruled it out as a subsidy recipient. Short Final Air, LLC, who had received the EAS subsidy, maintained scheduled service through July of 2002. Short Final Air, LLC

[1] Transshipment includes goods brought in by sea and transferred to train for shipment to other parts of Alaska, or brought in by train from other parts of Alaska and transferred to marine containers for shipment out. This generally occurs when ice builds up in Cook Inlet and marine vessels are unable to reach the Port of Anchorage.

tried to continue scheduled service by offering specials to encourage traffic but was unable to make the service pay for itself. Harbor Air used to provide floatplane service out of Bear Lake but they have since gone out of business. Alaska Aerial Tours, Kenai Air Alaska, and Bear Lake Air all used to fly tours and/or charters out of the Seward area and have all since closed Seward operations. Some of these carriers have gone out of business.

ERA Aviation, Short Final Air, LLC, and Scenic Mountain Air flew fixed-wing charters to and from Seward in 2003. Many of the summer charters were hired to bring baggage or stragglers in or out of Seward for the cruise lines. Short Final Air, LLC flies medevacs one to two times a month.

Several companies flew tours out of Seward in 2003. Scenic Mountain Air flew summer tours in Cessna 172 and 206-wheeled planes. They flew about three one-hour tours per day in the summer of 2003, and averaged about 2.5 passengers per flight. They also flew occasional charters. Because of the slow business and a perceived lack of support from the government and business community, Scenic Mountain Air is selling their office and hangar, and is pulling out of Seward.

Helicopter operations peaked in 2003 and have since scaled back to a single helicopter seasonally based at the Seward Airport. GGDST averaged five or six tours per day during their 100-day summer 2003 season, and carried two or three passengers per tour (about a 40 percent load factor). ERA Aviation began flying local helicopter tours during the 2003 cruise ship season using A-Star helicopters. During the summer of 2003, they based two or three helicopters at Seward for those tours. Godwin Glacier Tours provides charter service with their helicopters, mostly during the summer season.

6.3.3 Scheduled Air Service

The following table presents historic passenger, mail and cargo traffic on scheduled commercial air carriers at Seward between 1992 and 2002. There has been no scheduled air carrier service to Seward since July 2002. The Terminal Area Forecasts (TAF) produced by FAA does not contain much data for small airports, and no other sources report historic operations data. There is no visible trend in enplanements at Seward. Enplanement numbers

appear to react quickly to external forces, likely because there are many other modes of transportation to and from the Seward. Data in the following table excludes scheduled helicopter traffic and charters by fixed-wing aircraft and helicopters.

Table 17: Commuter Passenger, Mail and Cargo Volumes (in pounds), 1992-2002

Year	Enplaned Passengers	Outbound Cargo	Outbound Mail	Inbound Cargo	Inbound Mail	Total Mail/Cargo
1992	1,055	16,709	0	35,815	0	53,579
1993	91	1,328	0	1,723	0	3,142
1994	1,133	2,013	0	5,140	0	8,286
1995	565	1,339	0	7,707	0	9,611
1996	678	943	3	5,271	8	6,903
1997	1,196	167	25	4,355	5,264	11,007
1998	1,161	1,037	1	14,461	10	16,670
1999	566	1,776	0	8,274	0	10,616
2000	509	2,569	0	11,558	2,200	16,836
2001	328	390	0	1,008	0	1,726
2002*	241	NA	NA	NA	NA	NA

Source: U.S. DOT, Bureau of Transportation Statistics, Small Air Carrier Information Form 289C, Schedule T-1.

*The only carrier providing scheduled service stopped that service in July of 2002. The 2002-enplanement data came directly from that carrier.

Huge annual differences in cargo and mail carried in the past ten years is likely because special circumstances for a particular project or occurrence required one-time or short-term air shipment of goods or mail. Cargo and mail is most frequently shipped via highway or railway.

6.3.4 Charter Traffic (fixed-wing and helicopter)

Fixed-wing aircraft charter traffic information was obtained from USDOT statistics and confirmed by the air carriers. Charter flights are currently used mostly in the summer cruise ship season to bring baggage and stragglers in or out of Seward for the cruise lines using the port. Charters are also used for medical evacuations. One carrier who frequents Seward is approved for Department of Defense charters for operations dealing with security and safety. The following table presents fixed-wing charter enplanements at Seward for 1995 through 2002. Fixed-wing charter traffic has declined in recent years.

Table 18: Fixed-wing Charter Traffic at Seward, 1995 to 2002

Year	Enplaned Passengers
1995	50
1996	131
1997	197
1998	72
1999	647
2000	585
2001	377
2002	160

Source: U.S. DOT, Bureau of Transportation Statistics, Small Air Carrier Information Form 289C, Schedule E-1.

Helicopter charters also occur at Seward and provide medevac, remote equipment servicing and other service on demand. Enplanements and operations for charter helicopter traffic are not collected by the U.S. DOT so these estimates were developed from interviews with the air carriers and other knowledgeable parties. One helicopter operator estimated that his company in 2003 performed about 10 to 15 charters per month at Seward during the summer season. Helicopter charter traffic slows in winter, although charters may occur when fixed-wing planes cannot get through the mountain passes between Anchorage and Seward.

6.3.5 Tour Traffic (fixed-wing and helicopter)

Three operators provided tours from Seward in 2003. Two carriers operate with helicopters, and one with fixed-wing planes. Tours are of the local area and occur during the summer season, between May and September. U.S. DOT does not collect enplanement or operations data from tour operators so estimates of this traffic was developed from interviews with the air carriers and other knowledgeable parties. The only fixed-wing tour operator has decided to pull out of Seward after the 2003 summer season. 2003 was the first year for tours in Seward by one of the helicopter operators. They will continue operations at Seward, and anticipate doing at least as much business in 2004 as during their first year even given the reduction in cruise ship traffic. The other helicopter tour operator has applied for a permit from the Chugach National Forest for 1,200 glacier landings (3,200 client days) on the Godwin Glacier in 2004. This request constitutes a large increase over this company's traffic in 2003. The same company is requesting an increase in allowable glacier landings in 2005 to 1,500 (4,000 client days). Helicopters generally use the Airport but one company is considering moving its operations off the Airport next year.

6.3.6 Mail and Cargo

Table 16 presents historic mail and cargo shipments into and out of Seward. Because cargo and mail can also travel to Seward via railway, highway, and marine transportation, air carrier does not seem to be a preferred method of goods and mail shipment. Historic cargo and mail shipment via air carrier varies greatly from year to year, likely because only special circumstances dictate shipment by air. Local fish processors ship their fresh fish by highway in refrigerated vans. The U.S. Postal Service contracts with a trucking company to have mail delivered via highway and do not anticipate contracting mail delivery to an air carrier in the future.

6.3.7 Based Aircraft

During the winter season, about 20 private aircraft (mostly single-engine wheel planes) are based at the Airport. That number increases by five or six private planes on the weekend, and in the summer season. Last summer, commercial carriers based four helicopters at the Airport. Last summer there were three floatplanes based at Bear Lake. Those planes move in the winter because the lake freezes.

6.3.8 General Aviation Traffic

Seward has a very active chapter of the CAP. There are about two-dozen practicing licensed pilots living in Seward and two or three licensed instructors. In addition, Seward is a popular place to visit for Anchorage area pilots, especially during the summer. During the summer seasons as many as five or six additional private aircraft will overnight at the Airport on any given weekend. Steve Shaffer of the Seward CAP stated that since 1985, he has seen General Aviation air traffic increase by about 50 percent (an average of about 2.7 percent per year).

6.3.9 Seaplanes/Floatplanes

The seaplane float in the Seward harbor was removed and the City discourages people from landing planes in the harbor. Some seaplanes land in the bay near the Airport and taxi to a former airport road where they transport the aircraft to the aircraft-parking apron. This

normally only happens during the spring and fall when they are switching between floats and wheels.

There is a private floatplane dock at Bear Lake, which was used commercially until recently. Now there are about three private planes based on private property at the lake during the summer. Operations at the lake are minimal, likely less than 150 per season.

6.3.10 Aircraft Fleet Mix

The current fleet mix of air carriers providing service to Seward was obtained from interviews with those carriers. When scheduled service was available at Seward, commercial air carriers operated DeHavilland Twin Otters, Swearingen Merlins and Metros, Piper Navajos, and Constucciones Aeronauticas CASAs on wheels. Scenic Mountain Air, who will not be returning to Seward after 2003, flew tours with a Cessna 172 and a Cessna 206 on wheels.

Table 19: Current Fleet Mix at Seward Airport

Type of Activity	Typical Aircraft
Fixed-wing Charters	Lear 25, Lear 35, Merlin 3B, Metro, Twin Otter, King Air, Citation II
Charter and Tour Helicopters	Two Eurocopters, Two A-stars
General Aviation	Mostly small, single engine planes
Coast Guard and National Guard	C-130 fixed wing, H-60 helicopters.

Source: Interviews of air carriers, tour companies, airport management and local CAP members.

The Lear jets may be used infrequently for medevacs in the future. The Alaska National Guard lands at Seward in a C-130 only every few years. The U.S. Coast Guard occasionally lands at Seward with an H-60 helicopter and has done practice approaches to the Airport in a C-130 fixed-wing craft. About 20 General Aviation aircraft (year round) and the four helicopters (summer season only) are the only aircraft based at Seward. Air carriers serving Seward are either not anticipating future fleet mix changes, or are not able to predict any changes.

6.4 Base Year (2003) Activity Estimates

Estimates of base year 2003 aircraft activity at the Seward Airport are presented in the following table. These estimates are very different from the 2002 data reported by U.S. DOT

in Table 17 mainly because U.S. DOT does not gather data for fixed-wing local tours or for helicopter operators performing tours and charters, and we included these activities in our estimates. Activity of these operators was estimated from interviews with those carriers, and with airport management, local pilots and other knowledgeable parties. Much of the data from these interviews was the best guess of the respondent, although some carriers have internal records that they shared.

Passenger enplanements were obtained from U.S. DOT Bureau of Transportation Statistics, Small Air Carrier Information Form 289C, Schedule E-1 (for fixed-wing charters), and from interviews with air carriers and tour operators (both fixed-wing and helicopters) serving Seward. Where available, 2002 published data was used to estimate 2003 activity. Estimates obtained directly from the carriers and other knowledgeable parties were for 2003. Operations data were estimated from information about operators' flights, fleet mix and load factors, as well as from interviews with local CAP personnel, Seward Airport management, and other knowledgeable parties. Mail and cargo data came from estimates by air carriers.

The 1985 Seward Airport Land Use and Development Plan did not estimate or forecast passenger enplanements at Seward. For the base year estimate of operations at Seward, that report used FAA Terminal Area Forecasts (TAFs), which contain very little data for small airports. Therefore, we did not rely upon information in the previous forecast to estimate base year activity at Seward.

6.4.1 Assumptions for Base Year Estimates

Scheduled commercial service to and from Seward stopped in July of 2002. During that year, 241 passengers left Seward by scheduled air service. For this base year 2003 estimate we assume that charter operators would pick up a portion of those travelers who used to fly scheduled service (about 141), and the others would travel by other forms of transportation. We also assume that charter fixed-wing air carrier enplanements would remain the same as in 2002. Therefore, fixed-wing charter enplanements for 2003 are estimated at 301 (141 + 160).

The one fixed-wing tour carrier ceased operations at Seward in 2003. For this base year estimate, we assume that the two helicopter tour operators will pick up the tour traffic formerly carried by the fixed-wing operator.

Mail and freight estimates were made after interviews with charter carriers. Much of the charter freight is baggage carried for cruise ship passengers.

While U.S. DOT reports enplanement and some other data for scheduled and charter commercial flights, they do not report enplanements for tours, which load and unload at the same airport. One fixed-wing and two helicopter tour businesses operate out of Seward and create most of the air traffic at the Seward Airport. Base year tour enplanements and operations at Seward were estimated through interview with the tour companies and reported in the following table. Addition of these enplanements and operations to existing commercial activity reported by U.S. DOT greatly increases total base year activity estimates at Seward.

Table 20: Base Year (2003) Aircraft Activity at Seward

Activity	Enplaned Passengers	Aircraft Operations	Mail/Freight (In/Out) Pounds
Commercial Traffic	3,746	2,912	4,000
Fixed-wing Commercial	926	1,010	4,000
Fixed-wing Charters	301	510	4,000
Fixed-wing Tours	625	500	0
Helicopter Commercial	2,820	1,902	0
Helicopter Charters	120	160	0
Helicopter Tours	2,700	1,742	0
Other Traffic (GA and Local)	0	2,475	0
Local GA	0	1,800	0
Itinerant GA	0	600	0
Military, etc.	0	75	0
Total Traffic	**3,746**	**5,387**	**4,000**

Sources: U.S. DOT, Bureau of Transportation Statistics, and interviews with air carriers and tour operators serving Seward, local pilots and the airport management.

6.5 Air Traffic Forecast

The Seward air traffic forecast was developed consistent with the recommendations in FAA Advisory Circular 150/5070-6A, and related July 2001 guidance paper entitled "Forecasting Aviation Activity by Airport." Information used to develop this forecast included historic air

traffic data, prior forecasts, and interviews with air carriers serving Seward and other knowledgeable parties, and examination of Seward's past economy and future economic trends.

6.5.1 Existing Forecasts (DOT&PF, AK Aviation System Plan, TAF)

Previous air traffic forecasts for Seward or the region in which it resides were produced by DOT&PF for the 1985 Seward Airport Land Use and Development Plan, for the 1996 Alaska Aviation System Plan Update, and by the FAA for their TAF system. These forecasts are difficult to contrast and compare because they all measure different things over different time periods. The Seward air traffic forecast of 1985 predicted operations at the Seward airport between 1985 and 2000, and estimated an annual average growth rate of about 3.8 percent during that time, for a count of about 18,990 operations in 2000. Because this forecast is outdated, it was not used as part of this analysis. The Aviation System Plan Update did not measure operations or enplanements at Seward, but did predict a growth rate of enplanements for the Gulf Coast Region (of which Seward is a part) at about 1.9 percent per year between 1991 and 2010. The FAA estimates enplanement growth at Seward at an annual average of about 2.2 percent between 2002 and 2020. The TAF and Alaska Aviation System Plan indicators and others are compared in Table 20.

6.5.2 Local Significant Conditions

Several local significant conditions affecting air traffic at Seward are examined in this section. Some factors tend to increase demand for air travel, while most tend to dampen demand.

Factors Increasing Demand for Air Travel

Growth in the population and the economy in the Seward area in general could cause an increase in demand for air transportation. Seward and the Kenai Peninsula in general have strong, diverse economies. Population growth projections, while not large, are nonetheless positive, unlike many regions of the state.

The tourism sector in Alaska is strong and growing. Helicopter tours in other areas of the state have shown strong growth in recent years. Both helicopter tour companies operating at

Seward anticipate growth in the future. One company anticipates strong growth, and has applied for permits from the Chugach National Forest to greatly increase glacier landings, which originate in Seward over the next few years.

The AMHS discontinued Seward as a ferry stop upon completion of ferry terminal upgrades in Whittier in 2005. Loss in one mode of transportation should increase demand for other forms of transportation.

Factors Dampening Demand for Air Travel

An important factor in air traffic growth is changes in other modes of transportation to and from Seward. The Seward Highway connecting Seward with Anchorage and its international airport has been improved and upgraded in past years, making highway travel convenient and competitive with air travel in terms of time and cost. While flights between Seward and Anchorage take only about 35 minutes, the time required on either end of the flight for checking in, loading, unloading and security screening can easily reach two hours. Drive time between Anchorage and Seward takes about the same amount of time. In addition, the Alaska Railroad has recently opened a train terminal at the Anchorage International Airport making travel by rail to that airport quick and convenient during the summer season.

EAS subsidy for air service into Seward was eliminated in May of 2002. Short Final Air, LLC, the only scheduled carrier, ceased scheduled service in July of 2002, citing lack of passenger traffic.

Even when Seward had scheduled air service, there were no scheduled carriers based in Seward. This made flying less dependable as the plane had to be able to get into Seward from Anchorage in order to take passengers out. Lack of utilities at the Airport may be one reason that air carriers have been hesitant to have a fixed base at the Seward Airport.

Two cruise lines are pulling out of Seward starting in 2004 in favor of stops at Whittier. The Seward City Manager estimates that these cruise lines accounted for about 40 percent of the port calls at Seward in the 2003 season. He also noted several cruise lines have inquired about adding port calls in Seward. About half of passengers on helicopter tours based at the

Seward airport are cruise ship passengers, yet the tour companies are expecting continued growth in enplanements in spite of this decline in cruise ship stops.

Air traffic in general across the nation has been decreasing. The full impact of September 11 events may not yet be apparent, and complications such as increased insurance rates may put pressure on regional air carriers to consolidate or leave the industry. Passenger enplanements at the Kenai Municipal Airport (the largest airport on the Kenai Peninsula) have decreased by an annual average of 1.7 percent between 1992 and 2002. Although General Aviation traffic in Seward has grown at an average annual rate of about 2.7 percent since 1985, that traffic growth is expected to slow for similar reasons.

6.5.3 Trendline Development

Low, moderate and high rates of growth for air traffic at Seward were estimated using trendline analysis. The analysis was developed from examination of historic growth trends, interviews with air carriers serving Seward, Seward community representatives and other knowledgeable parties. In addition, considerable professional judgment was used in the development of this forecast.

Growth indicators for the trendline analysis came from population and socioeconomic forecasts for Seward and the Kenai Peninsula in general, anticipated growth in aviation traffic on the Kenai Peninsula from the 1996 Alaska Aviation System Plan Update, and other indicators of growth in the Seward area. Many of these forecasts are shown in the table below. These measures were used as a basis and professional judgment was used to adjust trends where warranted. Because of the rapid and large changes in enplanements at Seward between 1992 and 2002, and because the loss of scheduled services constitutes a huge break in trends, past enplanement data provided by U.S. DOT from forms 289C was not used to develop a trend line to forecast future air traffic. The following table compares various forecasts relating to air traffic growth at Seward.

Table 21: Comparison of Seward Growth Indicators

Source	Date	High Growth	Medium Growth	Low Growth
Terminal Area Forecast (TAF for Seward Enplanements, 2002 to 2020	2003		2.2%	

AK Dept. of Labor Population Forecast to 2018 - Kenai Peninsula Borough	1999	1.7%	1.4%	1.2%
Alaska Aviation System Plan Update – Seward Airport Enplanement Forecast	1996		1.9%	
City of Seward - change in sales - annual average, 1991 to 2001	2003		5.0%	
Population Growth, Seward-Hope Census subarea - annual average, 1990-2002	2003		1.7%	
Change in enplanements - Kenai Airport - annual average, 1992 to 2002	2003		-1.7%	
Average			**1.7%**	

Sources: DOT&PF, the State of Alaska Department of Labor, Kenai Municipal Airport, and the City of Seward.

Although many socioeconomic and traffic growth indicators for the area are positive, the uncertain factors mentioned earlier, combined with the availability of several other convenient modes of transportation in the Seward area and the loss of scheduled air carrier services, tend to dampen expectations of positive growth in passenger enplanements. Although actual enplanements (FAA data) declined over the past decade, we do not anticipate further decline in air traffic because of the positive local and regional economic conditions mentioned earlier, especially in the visitor industry. For those reasons, the low forecast calls for no annual growth. The moderate annual air traffic growth rate for this forecast is 1.2 percent, which is the same as the State of Alaska Department of Labor's low forecast for population growth in the Kenai Peninsula Borough. The high forecast annual growth rate is 2.0 percent, which is slightly higher than the average growth rate of the indicators in the previous table.

The same rates were used for growth in enplanements, operations, and based aircraft at Seward Airport. While changes in fleet mix and load factors could create different growth rates in enplanements and operations, this forecast increases both of those variables at the same rate. Since the air carriers stated no plans for changes to the fleet mix, or were unable to say, this analysis assumes no changes in fleet mix or load factors. Thus, enplanements and operations would grow at the same rate.

In this forecast, growth rates of cargo and mail enplaned and deplaned at Seward are the same as the trend lines used for other air traffic indicators. Although the population and economic growth in Seward is positive, there are many alternatives for shipment of cargo and mail. It is doubtful that Seward will see strong growth in air cargo.

The following tables present the low, medium and high growth forecasts for Seward enplanements and operations to the year 2023.

6.5.4 Low Growth Forecast

The following table presents results of the low growth air traffic forecast for Seward to 2023. The forecast assumes no growth in air traffic. Assumptions associated with this forecast include the continued lack of scheduled air carrier service and the continued availability of alternative transportation options for passengers and goods. This estimate also assumes a stagnation of the tourist industry in the Seward area.

Table 22: Low Growth Air Traffic Forecast, 2003 through 2023
(Growth Rate = 0.0 percent per year)

Category	Base Year 2003	2008	2013	2018	2023
Passenger Enplanements	3,746	3,746	3,746	3,746	3,746
Fixed-Wing Commercial	926	926	926	926	926
Helicopter Commercial	2,820	2,820	2,820	2,820	2,820
Operations	5,387	5,387	5,387	5,387	5,387
Commercial	2,912	2,912	2,912	2,912	2,912
General Aviation and Other	2,475	2,475	2,475	2,475	2,475
Cargo/Mail (enplaned and deplaned)	4,000	4,000	4,000	4,000	4,000
Based Aircraft	20	20	20	20	20

Source: Southeast Strategies, November 2003.

6.5.5 Moderate Growth Forecast

The following table presents results of the moderate growth air traffic forecast for Seward to 2023. The forecast assumes a growth of air traffic of 1.2 percent per year. Economic assumptions associated with this forecast include slow growth of the Seward economy, and slow increase in tourist visitations. Also considered in this forecast are the continued lack of scheduled air carrier service and the continued availability of alternative transportation options for passengers and goods.

Table 23: Moderate Growth Air Traffic Forecast, 2003 through 2023
(Growth Rate = 1.2 percent per year)

Category	Base Year 2003	2008	2013	2018	2023
Passenger Enplanements	3,746	3,976	4,221	4,480	4,755

Fixed-Wing Commercial	926	983	1,043	1,107	1,175
Helicopter Commercial	2,820	2,993	3,177	3,373	3,580
Operations	5,387	5,718	6,069	6,443	6,838
Commercial	2,912	3,091	3,281	3,483	3,697
General Aviation and Other	2,475	2,627	2,789	2,960	3,142
Cargo/Mail (enplaned and deplaned)	4,000	4,570	5,221	5,965	6,815
Based Aircraft	20	21	23	24	25

Source: Southeast Strategies, November 2003.

6.5.6 High Growth Forecast

The following table presents results of the high growth air traffic forecast for Seward to 2023. The forecast assumes a growth of air traffic of 2.0 percent per year. Economic assumptions associated with this forecast include moderate growth of the Seward economy, including moderate increases in tourist visitations. Growth in this forecast scenario comes mostly from increases in helicopter tours in the area. Also considered in this forecast is the continued lack of scheduled air carrier service, and the continued availability of alternative transportation options for passengers and goods.

Table 24: High Growth Air Traffic Forecast, 2003 through 2023
(Growth Rate = 2.0 percent per year)

Category	Base Year 2003	2008	2013	2018	2023
Passenger Enplanements	3,746	4,136	4,566	5,042	5,566
Fixed-Wing Commercial	926	1,022	1,129	1,246	1,376
Helicopter Commercial	2,820	3,114	3,438	3,795	4,190
Operations	5,387	5,948	6,567	7,250	8,005
Commercial	2,912	3,215	3,550	3,919	4,327
General Aviation and Other	2,475	2,733	3,017	3,331	3,678
Cargo/Mail (enplaned and deplaned)	4,000	4,416	4,876	5,383	5,944
Based Aircraft	20	22	24	27	30

Source: Southeast Strategies, November 2003.

The following tables summarize the full range of forecasts for Seward air traffic. Low, moderate and high air traffic forecasts for individual years to 2023 are presented after the following table.

Table 25: Air Traffic Forecast Summary Seward, Alaska, 2003 to 2023

Aircraft Operations	**2003 (Base)**	**2008**	**2013**	**2018**	**2023**
Low Forecast	5,387	5,387	5,387	5,387	5,387
Moderate Forecast	5,387	5,718	6,069	6,443	6,815
High Forecast	5,387	9,948	6,567	7,250	8,005
Enplaned Passengers (incl. Charters and Tours)	**2003 (Base)**	**2008**	**2013**	**2018**	**2023**
Low Forecast	3,746	3,746	3,746	3,746	3,746
Moderate Forecast	3,746	3,976	4,221	4,480	4,755
High Forecast	3,746	4,136	4,566	5,042	5,566
Mail/Freight (enplaned and deplaned)	**2003 (Base)**	**2008**	**2013**	**2018**	**2023**
Low Forecast	4,000	4,000	4,000	4,000	4,000
Moderate Forecast	4,000	4,570	5,221	5,965	6,815
High Forecast	4,000	4,416	4,876	5,383	5,944
Based Aircraft	**2003 (Base)**	**2008**	**2013**	**2018**	**2023**
Low Forecast	20	20	20	20	20
Moderate Forecast	20	21	23	24	25
High Forecast	20	22	24	27	30

Source: Southeast Strategies, November 2003.

6.5.7 Seaplane/Floatplane Forecast

The seaplane float in the Seward harbor was removed, and the City frowns on people landing planes in the harbor. There is a seaplane float at Bear Lake, which was used commercially until recently. Now there are about three private planes based at Bear Lake during the summer. Operations at the lake are minimal, likely less than 150 per season. Some pilots suggest that floatplane traffic could grow if a public floatplane facility were built at Bear Lake. Even at a high rate of growth (say five percent growth per year), operations at Bear Lake would be less than 400 per year by 2023. Even though the lake is only open during the summer seasons, it is unlikely that more than 200 operations per month would occur on the lake during peak season in 2023.

6.5.8 Peak Load Evaluation

Measures of base year peak activity at the Seward airport were developed from interviews with air carriers serving Seward, airport management, and other knowledgeable parties. The peak months for operations are July and August, and the peak days are the weekends. Peak

hours are in the late afternoon and early evening (3:00 to 7:00 p.m.). The following table shows moderate growth (1.2 percent) forecasts for peak operations activity at Seward.

Table 26: Moderate Forecast of Peak Air Traffic Activity
Seward, Alaska, 2003 to 2023

Category	2003	2008	2013	2018	2023
Total Operations	5,387	5,718	6,069	6,443	6,815
Total Enplanements	3,746	3,976	4,221	4,480	4,755
Peak Month Operations	1,140	1,210	1,284	1,363	1,447
Peak Month Enplanements	793	841	893	948	1,006
Busy Day Operations	54	57	61	65	69
Busy Day Enplanements	38	40	42	45	48
Busy Hour Operations	8	8	9	10	10
Busy Hour Enplanements	6	6	6	7	7
Average Peak Day Operations	38	40	43	45	48
Average Peak Day Enplanements	26	28	30	31	33
Average Peak Hour Operations	4	4	5	5	5
Average Peak Hour Enplanements	3	3	3	3	3

Source:

Notes Moderate growth rate is 1.2 percent per year. Peak enplanements were determined by applying the average load factor of 0.7 passengers per operation to the peak operations.

Definitions:

Peak Month is the calendar month when the most aircraft operations occur.
Average Peak Day is the average daily operation during the peak month (peak month operations / days in the month).
Average Peak Hour is the number of operations in the peak hour of the average peak day.
Busy Day is the number of operations in the busiest day of a typical week in a peak month.

7.0 FACILITY REQUIREMENTS

7.1 Airfield

The Seward Airport, with two paved runways and a paved apron, is well developed given its current level of activity. However, there are existing deficiencies related to airfield geometry, pavements, the access road, lighting, and other safety factors. The following sections discuss the improvements that will likely be needed during the planning period to meet anticipated demand and to comply with FAA standards.

7.1.1 Fleet Mix and Design Aircraft

The forecasted fleet mix for the Seward Airport is shown in the table below. The design aircraft is normally based on the largest aircraft expected to serve the airport with at least

500 operations per year, during the 20-year planning period. However, sometimes other factors, such as existing dimensions, emergency access, or future flexibility can also be considered. Most aircraft forecasted to use the Seward Airport have an ARC of A-I, B-I, or B-II. Only A-I aircraft are likely to have at least 500 operations per year. B-I and B-II aircraft will likely have less than 500 operations per year.

Table 27: Fleet Mix and Function by Airport Reference Code

ARC	Manufacturer	Aircraft	Function	Approach Speed (knots)	Wingspan (feet)
A-I	Varies	Cessna 172-207, Piper Cherokee, etc.	Personal use, Flight Seeing, CAP	~65	~35
A-II	DeHavilland	Twin Otter	Charters	75	65
B-I	Fairchild	Merlin 3B	Medevac/Charters	105	46.2
	Fairchild	Metro	Medevac/Charters	112	46.2
B-II	Beech	King Air C90-1	Medevac	100	50.2
	Cessna	Citation II	Medevac	108	51.7
C-I	Bombardier	Lear 25	Medevac	137	35.6
C-IV	Lockheed	C-130	Emergency Relief	130	132
D-I	Bombardier	Lear 35	Medevac	143	39.5

Although aircraft operations data indicate that the Airport should be assigned an ARC of A-I or B-I, other considerations also affect the choice of ARC. First, the primary runway is currently designated as B-III and has a B-II RSA. Second, the medevac aircraft that serve Seward often have an ARC of B-II or larger. On the very rare occasion that the Seward Highway is closed due to avalanches, floods, or other emergencies, large aircraft, such as the C-130 or DC-6, provide emergency supplies and transportation to the community.

Considering that the existing primary runway meets most B-II standards and that medevac and other emergency aircraft are generally B-II or larger, the design aircraft for the Airport should be an ARC B-II aircraft. This designation does not preclude occasional use of the Airport by larger aircraft.

7.1.2 Runway Alignment

Runway 12-30 is generally aligned with the Resurrection River valley, but aircraft approaching Runway 12 must avoid Resurrection Peaks that rise to 1,400 feet approximately four miles northwest of the runway. The approach to Runway 30 is over Resurrection Bay

and is free of obstacles. Runway 12-30 provides approximately 88 percent crosswind coverage for aircraft capable of handling a 10.5-knot crosswind. Local pilots also report that winter winds occasionally align with Runway 12-30 and that this runway is useful for landing during those conditions. The significant 100-foot width of Runway 12-30 also adds a margin of safety during windy or icy conditions.

Runway 15-33 has approximately a north-south alignment and aircraft approaching Runway 15 must avoid several hills rising to 400 feet approximately three miles north of the Airport. The approach to Runway 33 is over Resurrection Bay and is free of obstacles. Runway 15-33 provides approximately 98 percent crosswind coverage for aircraft capable of handling a 10.5-knot crosswind.

Overall, the Airport provides approximately 98 percent crosswind coverage for aircraft capable of handling a 10.5-knot crosswind. This meets the FAA requirement of 95 percent crosswind coverage. Any modifications to the airport configuration should continue to provide at least 95 percent coverage for aircraft capable of handling a 10.5-knot crosswind.

7.1.3 Runway Length

Wide varieties of aircraft use the Seward Airport. The largest aircraft at the Seward Airport is used to provide charter or medevac services when helicopters or smaller aircraft are not readily available or during other emergencies. These aircraft and their required runway lengths are shown in the following table.

Table 28: Runway Lengths for Charter and Medevac Aircraft

ARC	Manufacturer	Aircraft	Function	Runway Length * feet
A-II	DeHavilland	Twin Otter	Charters	1,500
B-I	Fairchild	Merlin 3B	Medevac/Charters	2,800
	Fairchild	Metro	Medevac/Charters	4,300
B-II	Beech	King Air C90-1	Medevac	3,300
	Cessna	Citation II	Medevac	3,200
C-I	Bombardier	Lear 25	Medevac	4,300
C-IV	Lockheed	C-130	Emergency Relief	4,000
D-I	Bombardier	Lear 35	Medevac	4,900

*Runway length assumes maximum takeoff weight: actual requirements depend on weight and weather

At present, most medevac flights to Seward are conducted by helicopters or by the King Air, Citation II, Merlin, and Metro. These aircraft can only land on Runway 12-30. Lear 25 and 35 aircraft are used for medevac flights in Southcentral Alaska, but do not currently operate at Seward due to the limited runway length. Recent changes to FAR Part 135.385 will allow some Lear jets to operate from Runway 12-30 in the future if the runway length remains approximately 4,500 feet. This change will provide additional flexibility and improved response times for medevac providers when dispatching aircraft to Seward.

Large aircraft such as the C-130 are occasionally used to provide emergency supplies and transportation to Seward when the community is cut off from Anchorage due to avalanches or floods on the Seward Highway or the Alaska Railroad. In the past, Seward has been isolated by avalanches or floods for periods as long as several days. During these periods, airlift was crucial to meeting the needs of the community.

Considering the discussion and table above, most needs of the community, such as medevac and general aviation, can be met with a shorter runway than currently exists. The standard 3,300-foot runway recommended by the Alaska Aviation Coordination Council and adopted by DOT&PF Central Region would enable medevac service by King Air and Merlin aircraft as is the current practice. However, any additional runway beyond 3,300 feet provides additional flexibility and capacity to the community.

Therefore, both runways should maintain their current lengths if no major changes are made to the airfield. If major changes to the airfield are required, then any new runway(s) should have a length of 3,300 feet.

7.1.4 Runway System Capacity

Based on the long-range planning method of AC 150/5060-5 *Airport Capacity and Delay*, the Annual Service Volume for the Seward Airport is estimated at approximately 230,000 operations per year. This compares with approximately 5,746 actual operations in 2003 and a high forecast of 8,005 operations in 2023. The maximum hourly capacity of the Airport is approximately 98 VFR operations per hour. Peak hour operations were estimated at 20 in 2001 and the high forecast estimates 25 in 2021.

Due to the limitations imposed by the surrounding terrain and the fact that the only instrument approach at Seward is a "special procedures" approach that is rarely flown, almost all operations at the Seward Airport are VFR. Therefore, the capacity of the current runway system is adequate and no additional runway capacity improvements are anticipated during the planning period.

7.1.5 Runway Design Standards

To meet the requirements for a B-II runway, the runway safety area (RSA) for Runway 12-30 should extend 300 feet beyond each end of the runway. However, the south RSA is only 200 feet long and the north RSA only extends 15 feet beyond the edge of pavement. To meet the FAA standard, Runway 30 requires an additional 100 feet of RSA at the south end. The displaced threshold of Runway 12 provides adequate safety area beyond the Runway 12 threshold. Declared distances should be developed for Runway 12-30.

The RSA at the south end of Runway 15-33 does not appear to meet the minimum grading requirements for an RSA and additional fill may be needed in this area. The RSA at the north end of Runway 15-33 meets the FAA standard for an A-I runway as outlined in AC 150/5300-13 *Airport Design* and does not require any modifications.

The object free areas (OFAs) of each runway appear free of obstructions and meet the FAA standards as outlined in AC 150/5300-13 *Airport Design*. No modifications to the OFAs are required during the planning period.

All Runway Protection Zones (RPZs) on both runways are clear of incompatible uses and include only undeveloped land and the Resurrection River. It should be noted that the Seward Highway and the ARRC tracks pass through the RPZs on the north ends of Runway 15-33 and Runway 12-30. Based on available information, the DOT&PF does not own or control all of the property beneath the RPZs. Some aviation easements do exist, but others should be obtained to ensure compatible land use development within all RPZs.

7.1.6 Taxiways

The number and location of taxiways leading to the runways appear to be adequate. However, Taxiway, A which connects the two runways, is in poor condition and should be widened and paved to allow safe passage by B-II aircraft. The taxiway safety area (TSA) should be widened to 79 feet and the taxiway pavement should be 35 feet wide. Drainage improvements should be made beneath Taxiway A to prevent future erosion damage to the taxiway.

The unnamed taxiway along the edge of the apron should be assigned a name and the Object Free Area of this taxiway should be marked to prevent aircraft and helicopters from parking too close to the taxiway and obstructing traffic along the taxiway.

In the process of assigning a designation to the unnamed taxiway along the apron, it may be necessary to rename all taxiways on the Airport in accordance with the latest guidance in AC 150/5340-18C *Standards For Airport Sign Systems.* Taxiway A and Taxiway E are essentially the same taxiway and the taxiway designations should reflect that.

7.1.7 Apron

The 46 tie-down spots available for aircraft parking are more than enough to accommodate the approximately 20 based aircraft at the Seward Airport with a moderate forecast of 25 based aircraft in 2023. The high forecast for 2023 anticipates only 30 based aircraft. Based on this information it is not necessary to create any additional tie down spaces during the planning period.

According to AC 150/1500-13 *Airport Design*, an apron area of 300 square yards should be allocated for each based aircraft. The high forecast of 30 based aircraft results in a total apron requirement of 9,000 square yards. The existing south apron of 15,300 square yards meets this requirement. The north apron provides 6,000 square yards for transient aircraft. No additional apron space is required during the planning period.

However, comments from airport users indicate that peak summer demand for tie-downs is already approaching the capacity of the airport. Some users felt that growth at the Airport is

higher than shown in the forecast. This plan should therefore identify tie-down expansion reserves that could be implemented if growth occurs beyond forecasted levels or for growth beyond the planning period.

7.1.8 Airfield Pavement Condition

Both runways have significant pavement problems with an average PCI of 51.88. Specifically, both runways have pieces of wood protruding through the pavements. These pieces of wood are causing pavement failure in small areas. To correct these problems, it will likely be necessary to rebuild both runways and repair or replace some of the base materials beneath the pavement.

The new apron at the south end of the Airport is the newest pavement on the airfield and is in generally good condition with an average PCI of 73.20. This apron will only require routine maintenance during the planning period.

7.1.9 Navaids on the Airport

Navaids at the Seward Airport include a rotating beacon, a windsock, and a segmented circle. Runway 30 is equipped with a pilot-controlled VASI. The rotating beacon is quite old and should be replaced as part of other airfield lighting upgrades. The VASI should be replaced by installing PAPIs on both ends of all runways.

7.1.10 Airfield Lighting

The lighting system currently consists of MIRLs on Runway 12-30. This lighting system is in very poor condition and the lighting control building is old and floods frequently. The entire airfield lighting system should be replaced when the runway is reconstructed.

7.1.11 Marking and Signage

Both runways are generally marked according to FAA AC 150/5340-1H - *Standards for Airport Marking*, but several specific items are incorrect. Based on the reported runway length, the threshold bar of Runway 12 appears to be located incorrectly. Also, the numerals and lead-in lines on Runway 15-33 are painted incorrectly. Therefore, all airfield markings

should be repainted according to AC 150/5340-1H as part of a future airport paving project. Additionally, basic airfield signage should be installed to indicate taxiway names and runway holding position markings.

7.1.12 Drainage and Erosion

In 1996, the Seward Airport Erosion Control Project was constructed and Runway 12-30 was reinforced to prevent damage to the runway by the Resurrection River. The area between the runway and the railroad was not reinforced. Some type of flood control structure, such as a dike, should be constructed in this area to prevent future damage to Runway 15-33, apron development, airport access, and Alaska Railroad and waterfront development that could occur if the Resurrection River moves closer to the north end of the Airport. If the existing airfield layout is retained, then the elevation of Runway 12-30 and its erosion protection should be raised three to five feet to be above the 100-year flood elevation. If an alternate airfield layout is selected, then appropriate flood protection should be developed for the new airfield layout. These requirements are discussed further in Appendix B.

7.1.13 Floatplane Facilities

There is interest among airport users for some sort of floatplane facility on the Airport. Floatplanes operating in the vicinity of Seward require a safe landing area and access to the Airport for the changeover from floats to wheels. The Master Plan should consider options for providing floatplane facilities on the Airport or at least improving floatplane access to the Airport. Options for improving floatplane access to the Airport should consider improvements to the unofficial floatplane pullout ramp at the south end of the Airport. Access to the pullout area should be outside of any safety zones associated with either runway.

7.1.14 Helicopters

Currently, during peak periods of the summer, one helicopter will be operating out of the Seward Airport. During peak activity periods, this helicopter will only be on the ground for a few minutes to pick up passengers and refuel. At other times of the year, there are no helicopters on the Airport at all. Historically, four to six helicopters operated out of the

Seward Airport. Based on historical number of helicopters at the Seward Airport, facilities for four helicopters should be developed including nearby vehicle parking and lease lots.

Most of the helipads and helicopter parking positions should be designed for smaller helicopters such as Eurocopters or A-Stars. At least one of the helipads and/or parking positions should be designed to accommodate H-60 Blackhawk helicopters. Although not the "design aircraft," H-60 helicopters are occasionally used by the military to provide emergency support to Seward.

7.2 Airspace

7.2.1 Instrument Approach

Although Seward has a GPS non-precision instrument approach, this approach is generally not used due to having a minimum descent altitude of approximately 2,500 feet above the Airport. This approach is restricted by the surrounding terrain, but commercial operators at the Seward Airport have expressed a strong desire for a more useful approach. They understand that current technology does not currently allow a better approach, but have asked that a better approach be developed as soon as more advanced technology is available. Local pilots expressed interest in the capabilities that could be brought to Seward by the Capstone program currently being developed by the FAA Alaska Region.

7.2.2 Part 77 Surfaces/Obstructions

Although mountains west of the Airport penetrate the Conical Surface, the other imaginary surfaces near the Airport are generally free of obstructions. Surveying should be completed to reveal if any trees or buildings penetrate the Part 77 airspace. If so, corrective measures should be taken. Trees that penetrate the Part 77 surfaces, particularly the approach surfaces, should be removed. Any buildings that penetrate the transitional surfaces should be lighted. Any changes in the airport configuration should attempt to minimize penetrations to the Part 77 surfaces with special attention given to providing clearance above the railroad and highway.

7.3 Landside Facilities

7.3.1 Lease Lots

According to leasing information supplied by DOT&PF, there are currently four vacant lease lots on the Airport. No additional lease lots will be required during the planning period.

7.3.2 Terminal Building

There is no common-use terminal building on the Airport. Some of the air-tour operators may provide small waiting areas seasonally, but no building provides year-round terminal services. There is no scheduled air service into Seward and the community has not expressed a need for a terminal building. Until a need for a terminal arises, one of the unused lease lots can be tentatively reserved for a terminal. The designation as a terminal reserve should not prevent the lease lot from being leased or used for tie-downs if necessary.

7.3.3 Parking

There are approximately 50 spaces along the southern portion of the apron and the individual lease lots have some parking space. The spaces along the southern apron are sufficient to serve the aircraft parking area, but the north end of the Airport tends to become congested during the peak of the tourist season. Therefore, additional common-use parking should be developed in the north part of the Airport and tenants should be required to provide adequate parking on their lease lots for their customers.

7.3.4 Access Road

The Seward Airport is served by a single access road. Because the access road crosses the Alaska Railroad tracks, it is often blocked when trains are inbound, outbound or switching. The community feels that the current airport entrance is dangerous due to limited visibility when entering or exiting the Airport road, the close proximity to the Resurrection River Bridge, and the limited vehicle staging distance between the highway and the railroad tracks. There is widespread support to improve Airport access. Therefore, a new Airport access road should be developed in a manner and location that is compatible with ARRC operations and the needs of the City of Seward.

7.3.5 DOT&PF Facilities and Equipment

State maintenance equipment at Seward includes a grader, pick-up truck with blade attachment, loader, sanding truck, and snow blower. All of this equipment is used for both highway and airport maintenance. Maintenance personnel have expressed a need for a three-bay equipment building, ideally with sewer, water and heat. They have also requested a loader, a sander, and a grader that would be dedicated to airport use.

There is also interest by maintenance staff in relocating the existing maintenance facility from downtown Seward to a site near but off the Airport. Both the highway and airport maintenance functions would be consolidated into a single facility.

7.3.6 Snow Storage

The DOT&PF uses a snow blower and loader in the winter to quickly remove any snow from the runways, taxiways, and aprons. The snow is pushed off into the infield. There are no problems with the current snow removal and storage method, and no changes are anticipated to this system in the future. The sand used to cover the runway and taxiways in the winter is kept in a sand storage building that is in poor condition and should be replaced.

7.3.7 Utilities

Water

The Airport is not supplied by a public water system. Multiple tenants at the Airport have requested water for restrooms and fire protection. This requirement could be satisfied either by adding individual water wells with storage tanks or by installing a municipal water system. Installation of a municipal water system should be a long-term goal for the Airport.

Wastewater

Several tenants have requested wastewater service for their lease lots. This could be met through individual septic tanks or a municipal water system. A municipal wastewater system should be a long-term goal for the Airport.

Telephone

Telephone service is available at all lease lots. There is no need to add additional phone capacity during the planning period.

Electric

Like phone lines, electricity is available at all lease lots. There is no need to upgrade or expand the landside electric system during the planning period except to serve additional lease lots, tie-down areas, or maintenance facilities.

Fuel Storage

The existing fuel storage capacity at the Short Final Air, LLC hangar is sufficient to meet the needs of the Airport for the planning period. However, helicopters often must land adjacent to the fuel tanks to refuel. A safer solution would be to allow tenants to place fuel tanks on lease lots at the proposed helipads so that helicopters can refuel without landing on the apron. Tenants may also place small fuel tanks on their individual lease lots in accordance with their lease conditions.

7.3.8 Fencing and Security

The only fencing on the Airport is the 10-foot-high fence that runs along the west side of the apron south of the lease lots. There are several gaps in the fence in order for people parking along the airport road to access their aircraft. There are no gates on these gaps and no method of preventing unauthorized access to the apron. There is no fencing on any of the lease lots along the northern half of the apron.

Prevention of runway incursions and unauthorized access to the airfield is currently a priority with the FAA. The lack of secure fencing around the airfield allows easy, unauthorized access to the airfield. The Seward Police Department reports an average of four to six unauthorized airfield incursions each month.

To improve the security situation at the Airport, perimeter fencing should be installed along the entire length of the existing airport access road and around the ends of Runway 15-33.

Gates should be installed on the occupied lease lots and at other critical locations. The new fencing should allow access to the fire hydrant at the north end of the Airport and should allow floatplane operators to tow floatplanes along the old access road at the south end of the Airport. Additional consideration should be given to wildlife viewing at the south end of the Airport, but fencing should be designed to prevent unauthorized access to the airfield.

The southern portion of the apron does have area lighting along the airport road. The north portion of the apron is only lit by a few lights on some of the buildings. Additional area lighting should be planned for the north portion of the apron and the unoccupied least lots.

7.4 Summary

The following table summarizes the deficiencies and facility requirements for the Seward Airport.

Table 29: Facility Requirements Summary

Component	Identified Need or FAA Standard	Existing Condition	Corrective Action
Runway 12-30			
Alignment	95 % crosswind coverage	88 % crosswind coverage	None
Length	One runway at least 3,300 feet	4,535 feet	None
Width	75 feet	100 feet	None
Capacity	Forecast of 6,838 ops/yr in 2023	Capacity of 230,000 ops/yr	None
Safety Area Width	150 feet	150 feet	None
Safety Area Length Beyond RW End	300 feet	200 feet on S end 300 feet beyond threshold on N end	Extend RSA or displace threshold
Object Free Area Width	500 feet	500 feet	None
Object Free Area Length Beyond RW End	300 feet	300 feet	None
Runway 15-33			
Alignment	95 % crosswind coverage	98 % crosswind coverage	None
Length	One runway at least 3,300 feet	2,289 feet	None
Width	60 feet	75 feet	None
Capacity	6,838 ops/yr in 2023	230,000 ops/yr	None
Safety Area Width	120 feet	120 feet	None
Safety Area Length Beyond RW End	240 feet	240 feet	None
Object Free Area Width	400 feet	400 feet	None
Object Free Area Length Beyond RW End	240 feet	240 feet	None
Taxiways			
Taxiway Width	35 feet	35 feet	None
Taxiway Safety Area Width	79 feet	79 feet except Taxiway A, which is 61 feet	Widen Taxiway A TSA
Runway Taxiway Separation	150 feet	185 feet	None

Table 29: Facility Requirements Summary (continued)

Component	Identified Need or FAA Standard	Existing Condition	Corrective Action
Miscellaneous			
Apron Size	< 9,000 sq yards in 2023	Approx. 15,300 sq yards	None
Pavement Condition	PCI > 70	PCI = 73.20	Rebuild and repave soon
Navaids on Airport	REILs, PAPIs, Beacon, windsock	1 VASI, old beacon, windsock	Install REILs, PAPIs on both runways, replace beacon
Edge Lighting	MIRLs	Old MIRLs on RW 12-30	Replace entire lighting system including building
Runway Markings	Nonprecision	Visual; incorrect	Repaint
Airfield Signage	Standard signage	No signage	Install signage
Erosion Control and Drainage	Meet 100-year flood elevation and protect entire airfield	RW below flood level with limited erosion protection	Raise runway and erosion protection 3-5 feet and add protection north of RW
Floatplane Facilities	Safe, public landing area	None in Seward area	Develop new facility
Helipad	Helipad, avoiding fixed wing area	Helicopters use apron in taxiway OFA	Develop four helipads with parking, lease lots
Airspace			
Instrument Approach	None	GPS approach with MDA of 2,500 feet	None
Part 77 Surfaces	Free of obstacles	Mountains west of airport	None
Landside			
Lease Lots	Low future demand	4 vacant lots	None
Terminal Building	Preserve options	No public terminal	None
Parking	Adequate parking other than on apron	Approx 50 spaces along south apron	Develop north parking lot
Access Road	Safe access road	Unsafe exit, blocked by trains	New access road, preferably grade-separated
DOT&PF Facilities and Equipment	Adequate facilities and equipment	Old sand building	3 bay building; loader, sander, grader for airport only; upgrade sand building
Snow Storage	Adequate space	Stored in infield	None
Utilities - Water	Potable water	Water wells	Install water service
Utilities - Wastewater	Septic system	Septic tanks	Install septic system
Utilities - Phone	Available at all lease lots	Available at all lease lots	None
Utilities - Electric	Available at all lease lots	Available at all lease lots	None
Fencing and Security	Secure fence along apron, adequate area lighting	No gates, gaps in fence, no area lighting	Repair gates, extend fencing, add lighting

8.0 AIRPORT DEVELOPMENT ALTERNATIVES

The goal of this Master Plan is to identify and evaluate development alternatives that will allow the Seward Airport to meet anticipated demands through the year 2023. Based on past trends, the level of activity at the Seward Airport is anticipated to remain low and the alternatives below are intended to provide a safe, basic airport that meets the DOT&PF requirements for a Local Airport as defined in the Alaska Aviation System Plan. This section presents the advantages and disadvantages of each alternative along with cost estimates.

The three most significant items to be addressed by the alternatives are the airfield configuration, the helipads, and the access road. Multiple alternatives are presented for each of these items. Other airport improvements are rather straightforward and only a single alternative is discussed for each of these items.

8.1 Airfield Alternatives

Although the airfield at the Seward Airport is well developed with two paved runways, both runways will soon require major repairs to the pavement and the underlying base materials and improvements to prevent erosion and flooding. Because the level of aviation activity at Seward Airport has steadily declined in recent years and because the runway repairs are estimated to be very expensive, several alternatives for airfield configuration were considered. Each of the following alternatives is intended to provide at least one 3,300-foot runway with 95 percent crosswind coverage for A-I aircraft.

8.1.1 Alternative A: No Build

Under Alternative A, there would be no major runway modifications and the Airport would continue as it is now with only minor maintenance activities. Both runways would remain in their current configurations. Pavement maintenance would include small patching of existing potholes and sealing of a few cracks. Runway 12-30 would be designated as a B-II runway and Runway 15-33 would continue as a utility runway for use by “small airplanes only” according to AC 150/5300-13 *Airport Design* and FAR Part 77. The threshold of Runway 30 would be displaced 100 feet to provide a 300-foot runway safety area.

This alternative has the benefit of continuing to provide a runway longer than the 3,300-foot standard for a Local Airport. The additional runway length may enable larger or faster aircraft, such as the C-130 or Learjet, to use the Airport occasionally.

However, this alternative does not address the long-term structural problems with the airfield pavements or the fact that the current airfield pavements are below the 100-year flood elevation. This alternative does not address the lack of flooding and erosion protection between the north end of Runway 12-30 and the railroad. This alternative does not replace the current lighting system, which is in poor condition.

Alternative A is estimated to cost $400,000, mostly for minor pavement repairs.

8.1.2 Alternative B: Reconstruct Both Runways

This alternative would retain the existing airfield layout, but would reconstruct both runways and raise Runway 12-30 to be above the 100-year flood elevation. The raised Runway 12-30 would thereby provide flood protection to the remainder of the Airport. This alternative would also raise the area between the north end of Runway 12-30 and the railroad and would construct additional erosion protection in this area. The threshold of Runway 30 would be displaced 100 feet to provide a standard RSA 300 feet beyond the threshold. The centerline of Runway 12-30 would be shifted approximately six feet southwest to accommodate the increased fill material and erosion protection. A new runway lighting system would be installed on Runway 12-30.

The primary advantage of this alternative is that it maintains the current runway length and capacity. This alternative also provides an additional margin of safety when winter winds are aligned with Runway 12-30 and both runways are covered with ice. Another advantage is that retaining the existing airfield layout will minimize the environmental impacts of upgrading the airfield. This alternative will prevent future floodwaters from passing through the Airport and endangering existing airport facilities. Keeping the Resurrection River channel east of the Airport also minimizes sediment deposition near the ARRC dock southeast of the Airport.

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PROJECT: D58337

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SCALE IN FEET

Airport Property Line

Primary Surface

ROFA

RSA

RPZ

Runway 12-30 (B-II, 4,240 x 100)

Runway 15-33 (A-I, small aircraft, 2,280 x 75)

Redesignate runway for small airplanes (<12,500 lbs) only

Displace threshold 100' to achieve 300 ft Runway Safety Area (RSA)

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ALTERNATIVE A: NO BUILD

FIGURE 22

The primary disadvantage of this alternative is the cost associated with constructing and maintaining two runways. Runway 12-30 will require continued maintenance to prevent or repair erosion by the Resurrection River, and pavement and snow removal costs for two runways are higher than for a single runway.

Alternative B is estimated to cost $7.5 million.

8.1.3 Alternative C: Reconstruct and Lengthen Runway 15-33 Only

This alternative would reconstruct and lengthen Runway 15-33 only. Runway 15-33 would be reconstructed to B-II standards and would become the primary runway at the Seward Airport. The runway would be shifted approximately 50 feet eastward to allow the existing parallel taxiway to remain in its current location and still meet the separation requirements for a B-II runway. The new runway would also be lengthened to 3,300 feet with the north end of the RSA located at the edge of the Resurrection River floodplain and the south end of the RSA being located approximately 300 feet from Resurrection Bay. A new runway lighting system would be installed on Runway 15-33.

Runway 12-30 would be converted to a flood control structure in order to provide flood protection to the remainder of the Airport and to minimize the sedimentation at the ARRC dock southwest of the Airport. The former runway would be reinforced along the eastern edge and raised to a level above the 100-year flood elevation. If Runway 12-30 were abandoned completely, then it is likely that a future flood would wash out Runway 12-30 and the Resurrection River channel would move to the center of the Airport.

The primary advantage of this alternative is cost reduction. Because the level of activity is forecasted to remain low, a single runway should be adequate for the capacity needs of the Seward Airport. Runway 15-33 was chosen for this alternative because it is the farthest from the Resurrection River and it provides 98 percent crosswind coverage for aircraft capable of handling a 10.5-knot crosswind. The construction and maintenance costs of a single runway are significantly less than for the two runways proposed in Alternative B.

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NORTH

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Raise RSA and extend erosion reinforcement to train tracks

Airport Property Line

Raise runway and shift centerline slightly to maintain river side toe of slope

ROFA

Primary Surface

RPZ

RSA

Departure RPZ

Approach RPZ

Runway 12-30 (B-II, 4,240 x 100)

30

Runway 15-33 (A-I, small aircraft, 2,280 x 75)

15

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Redesignate runway for small airplanes (<12,500 lbs) only

Displace threshold 100' to achieve 300 ft Runway Safety Area (RSA)

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SEWARD AIRPORT ALTERNATIVE B: RECONSTRUCT BOTH RUNWAYS

FIGURE 23

The disadvantages of this alternative include a loss of runway length at the Airport and increased environmental impacts. Although a 3,300-foot runway would meet the needs of the community, this alternative would somewhat limit the ability of larger or faster aircraft to use the Airport, particularly during medevacs or other emergencies. The lengthened Runway 15-33 would also impact wetlands near the south end of Runway 15-33.

Other concerns expressed by the public related to this alternative include the loss of Runway 30 for use during certain winter weather conditions and the difficulty in obtaining funding for maintenance of the flood control dike (formerly Runway 12-30). Local pilots have expressed a need to land on Runway 30 when winter winds blow down the Resurrection River valley and the Seward Airport runways are covered in ice. Several pilots felt strongly that the availability of Runway 30 under these weather conditions was a significant safety issue and explained that these conditions were the reason that the runway was originally constructed. They supported their argument with a copy of the State of Alaska Department of Aviation report entitled *Biennial Report – Progress and Finance: 1951-1952*. Applicable pages of this report are included in Appendix A.

Alternative C is estimated to cost $4.5 million.

8.1.4 Comparison of Airfield Alternatives

Each of the airfield alternatives was presented at a public meeting to obtain feedback from the public. The public preference was generally to retain both of the existing runways. The possibility of future commercial air service was mentioned along with the requirements of large aircraft for charters, medevacs, and during flooding and closures of the Seward Highway. Attendees also stressed the need for Runway 12-30 during certain wind conditions during winter months as described above. The public preference was for Alternative B.

However, Alternative C or something similar would likely meet most of the aviation needs of the community while minimizing costs to the FAA and DOT&PF. Although Alternative C does not provide the same capabilities of Alternative B, Alternative C costs significantly less and still meets the needs of the community.

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SCALE IN FEET

Airport Property Line

ROFA
Primary Surface
RPZ
RSA
RSA
ROFA
Primary Surface
SEWARD
Runway 15-33 (B-II, 3,300 x 75)
Convert Runway 12-30 to a flood control dike
Rebuild Runway 15-33 to B-II standards and make it the primary runway
Primary Surface
ROFA
RSA
RPZ
RSA
Primary Surface
ROFA
12
30
31

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SEWARD AIRPORT ALTERNATIVE C: RECONSTRUCT & LENGTHEN 15-33 ONLY

FIGURE 24

The following table summarizes the advantages and disadvantages of each of the airfield alternatives:

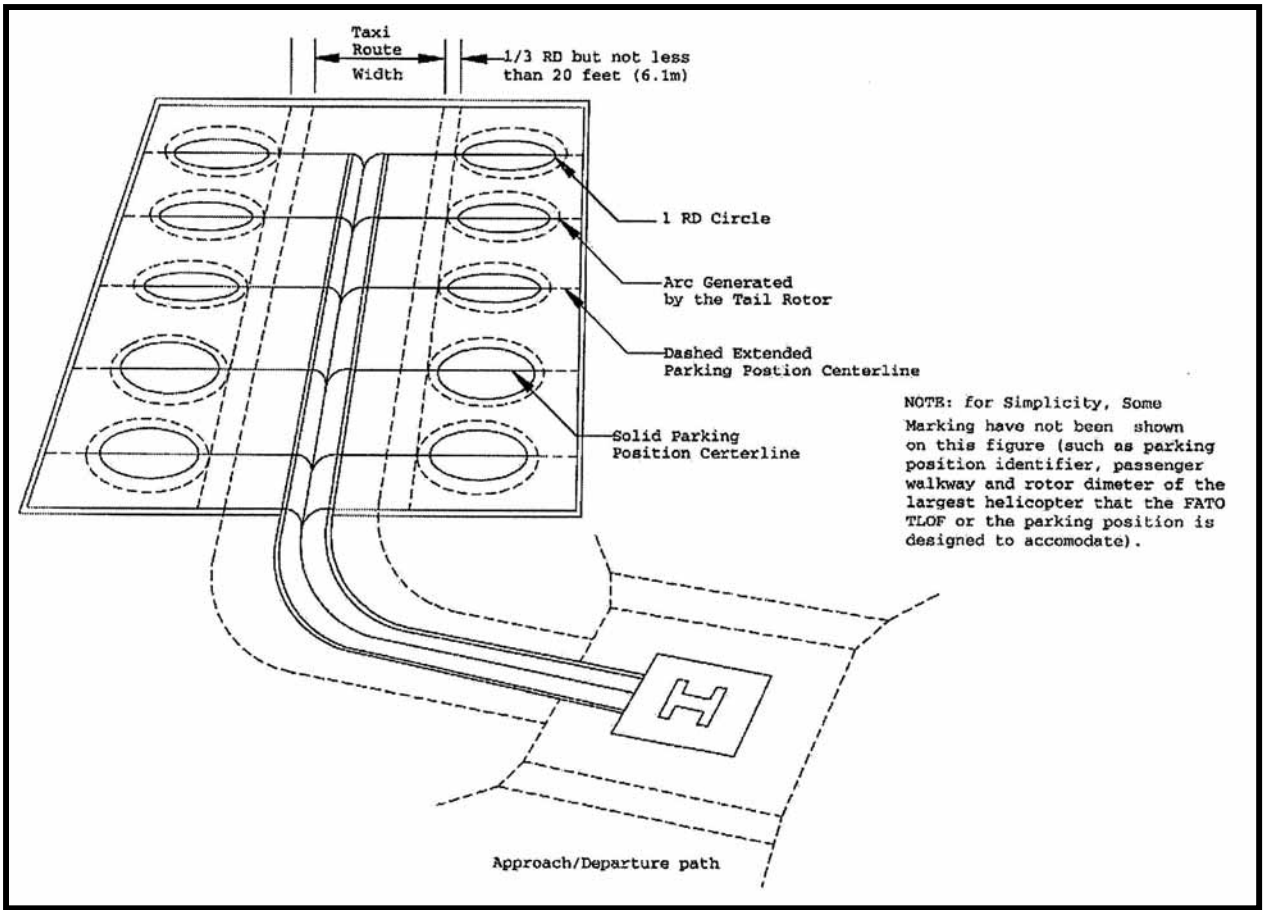
Table 30: Comparison of Airfield Alternatives

Alternative	Runway Length	Crosswind Coverage	Erosion/ Drainage	Environmental Impact	Cost
Alt A – No Build (only minor maintenance)	More than standard	Airport: 98 % RW 12-30: 88 % RW 15-33: 98 %	Potential for major failure	No impact	$400,000
Alt B – Reconstruct both runways	More than standard	Airport: 98 % RW 12-30: 88 % RW 15-33: 98 %	RW above 100-year flood	Minimal impact	$7.5 million
Alt C – Reconstruct & lengthen RW 15-33 only	Standard 3,300 feet	Airport: 98 % RW 15-33: 98 %	Dike above 00-yr flood	Wetlands on airport	$4.5 million

8.2 Helipad Alternatives

Helicopter activity is forecasted to increase at the Seward Airport primarily from flight seeing. Because the Airport currently has no helicopter facilities, provisions should be made to accommodate at least four helicopters and all associated passengers, vehicles, and buildings. Helicopter facilities could be developed as helipads, helipads with helicopter parking positions, or just helicopter parking positions alone. It may be necessary to limit certain sites to helicopter parking positions only. FAA Advisory Circular 150/5390-2B *Heliport Design* requires that helipads for large helicopters, such as the H-60 Blackhawk, must be at least 700 feet from the nearest runway centerline. The following figure shows an example of a helipad with nearby helicopter parking positions from AC 150/5390-2B *Heliport Design*.

Regardless of the configuration that is chosen, lease lots with vehicular parking should be developed to accommodate the needs of the flight seeing companies. The following sections discuss several potential helicopter facility locations on the Airport and on the ARRC property west of the Airport.



Source: FAA Advisory Circular 150/5390-2B *Heliport Design*

Figure 25: Helipad with Parking Positions

8.2.1 Alternative H-1: North of Apron

The flat, gravel area immediately north of the existing apron is currently used as an unofficial helipad by tour operators at the Seward Airport. This area is proposed as the location of future helicopter facilities due to its proximity to the existing tour offices and the airport entrance. The area is already flat and construction of helicopter facilities in this area would be relatively easy. To create the parking positions, the apron and taxiway would be extended approximately 250 feet to the north.

This site is located approximately 250 feet from the centerline of Runway 12-30. According to AC 150/5390-2B *Heliport Design*, this site is too close to the runway for a helipad. Instead, this site can only be developed as helicopter parking positions. Helicopters intending to park in this area would fly an approach to the runway then taxi over to the

parking positions. The site is large enough to hold one H-60 parking position or two Eurocopter EC-130 parking positions. If the smaller Eurocopter parking positions are selected, it may be possible to develop a lease lot with parking positions between the helicopter parking area and the airport road. The layout of the site would also require a taxiway to reach the northernmost EC-130 helicopter parking position.

This site has the advantage of being close to the airport entrance and the existing tour offices. However, the limited amount of space at this location may require that the parked helicopters slightly penetrate the transitional surface for Runway 12-30. The existing lighting control building will need to be relocated and additional facilities at the north end of the Airport will increase congestion in an already crowded area. This alternative alone does not provide adequate facilities for four helicopters, and must be combined with other alternatives to meet the anticipated demand.

8.2.2 Alternative H-2: West of Apron on ARRC Property

Because there is little available space at the north end of the Airport, this alternative proposes locating new helicopter facilities on ARRC property on the west side of the Airport access road. This area is undeveloped except for a small, modular building currently being used as an office by a flight seeing tour operator. The area is generally flat and the ARRC has indicated that airport development on this parcel would be acceptable.

Because this area is across the road from the airfield, any helicopter facility at this site would require a helipad. The helipad would be surrounded by up to six helicopter parking positions. There is sufficient space at this site to provide a helipad and one parking position that are large enough to accommodate an H-60 Blackhawk. The other parking positions would be sized for the smaller Eurocopter. In order to provide space for lease lots and vehicle parking, it would be necessary to eliminate one of the helicopter parking positions.

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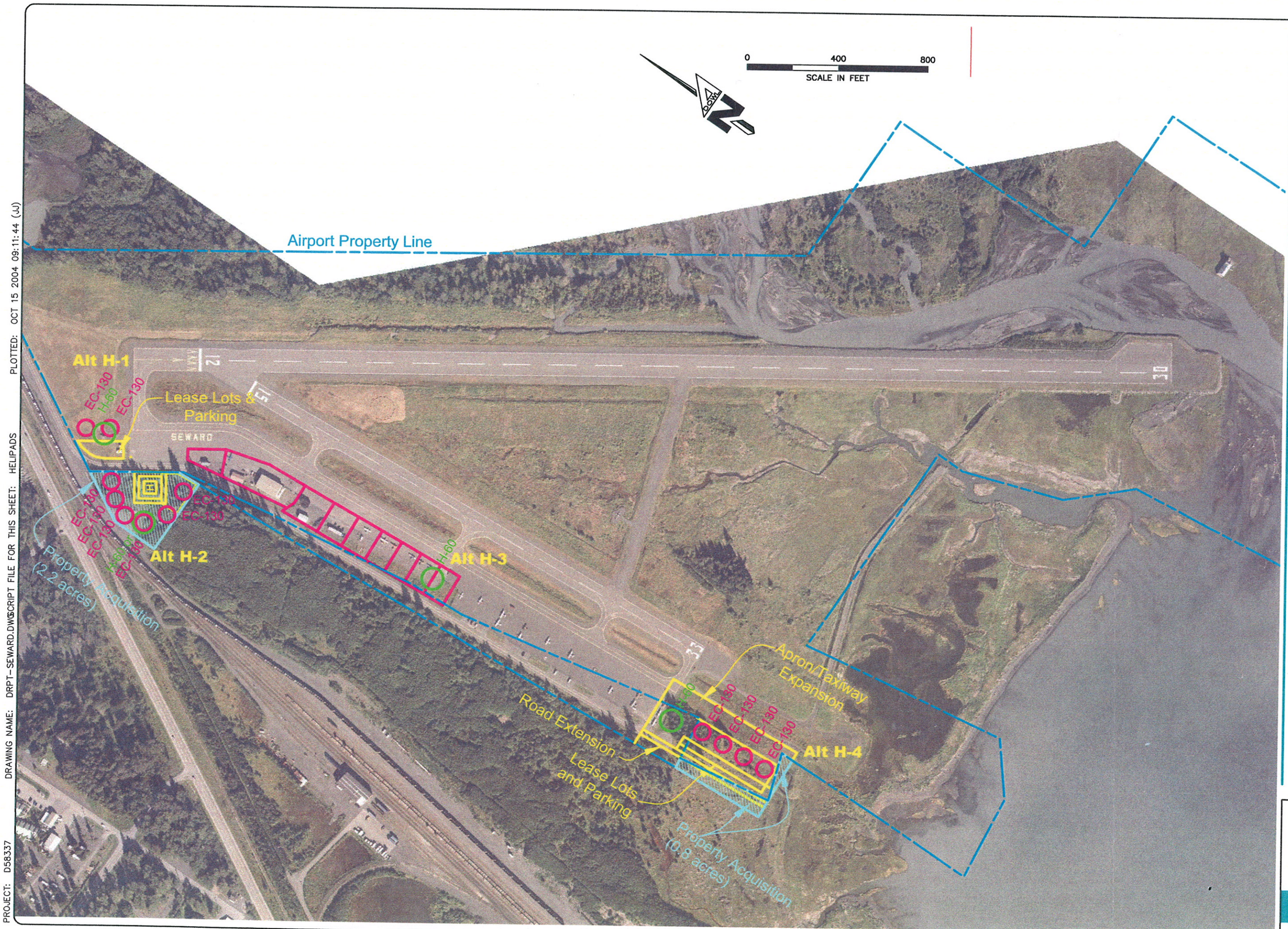

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MASTER PLAN

Legend

- Property Acquisition
- H-60 — H-60 Blackhawk Parking Position
- EC-130 — Eurocopter EC-130 Parking Position
- H — H-60 Blackhawk Helipad

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HELICOPTER ALTERNATIVES

FIGURE 26

The primary advantages of this site are its location near the airport entrance and the fact that it doesn't interfere with the existing airfield. The disadvantages of this site include increased congestion in the north part of the Airport and the necessity to purchase or lease 2.2 acres of property from the ARRC. Helicopter facilities in this area may conflict somewhat with the proposed entrance road or future maintenance facilities depending on the designs of the road, the maintenance facilities, and the helicopter facilities.

A helipad at this site would be located approximately 500 feet from the centerline of Runway 12-30. This separation meets the requirements of AC 150/5390-2B *Heliport Design* for helicopters such as the Eurocopter with takeoff weights less than 12,000 pounds. However, the H-60 Blackhawk has a maximum takeoff weight of approximately 22,000 pounds and a helipad for the H-60 would require 700 feet of separation from the runway centerline. Because the H-60 is not the "design aircraft" and only operates from the Seward Airport a few times each year, the 500-foot separation of this site should be sufficient.

8.2.3 Alternative H-3: Unoccupied Lease Lot

This alternative proposes to construct a single helicopter parking position on unoccupied lease lots along the west side of the Airport. The most likely location for a helicopter parking position would be on the two southernmost unoccupied lease lots. This location offers several advantages. First, there is no need to acquire additional property from the ARRC. Second, it is anticipated that there will be stronger demand for helicopter facilities than for lease lots during the planning period and this site would probably not be needed for a lease. Third, this site offers the possibility of leasing an adjacent lease lot to a tour operator for constructing a terminal building or hangar. This site is relatively flat and is already partially paved.

The disadvantages of this site include the proximity to fixed wing aircraft tie-down locations and the limited amount of space for developing additional helicopter facilities in the same area. This area is also farther from the Seward Highway and the Airport entrance so it would probably be less preferable to tour operators. This alternative alone does not meet the need for four helicopter parking positions and will require additional development at one of the other proposed sites.

8.2.4 Alternative H-4: South of Apron

This alternative proposes to construct a helicopter facility at the south end of the existing apron. Because this site is less than 700 feet of the Runway 33 centerline, this facility should consist of helicopter parking positions rather than a helipad. The apron, taxiway, and airport road would be extended to the south approximately 650 feet. The expanded apron would provide up to five helicopter parking positions. At least one of the parking positions would be large enough to accommodate an H-60 Blackhawk and the remaining four parking positions would accommodate smaller helicopters such as Eurocopters. There is sufficient space for lease lots and parking between the small helicopter parking positions and the access road.

This area offers the advantages of being mostly on Airport property and of having sufficient space for future expansion. Disadvantages of this site include the requirement for significant fill material and the related impacts to wetlands. This site is also much farther from the Seward Highway and will likely not be favored by tour operators. Development of this Alternative would require the purchase or lease of approximately 0.8 acres from the ARRC.

8.2.5 Comparison of Helipad Alternatives

Because the Airport needs facilities for approximately four helicopters during the planning period, the final airport development plan may require development of more than one of the alternatives discussed above. While the two sites closest to the Seward Highway are generally preferred by the tour operators, these sites are also the most constrained and offer little room for future growth. The two northern sites are also the nearest to a residential area across the Seward Highway and could increase noise impacts to the homes there. If development is preferred at the northern end of the Airport, then it may be necessary to combine Alternatives H-1 and H-2 to provide adequate space for helicopter parking positions, lease lots, and vehicle parking.

Sites H-1 and H-3 are likely the least expensive alternatives. H-4, at the south end of the apron, would require the most improvement, but would likely offer the most long-term flexibility and room for growth. If the trend in airport operations ever shifts from helicopter

activity back to fixed wing activity, then the new apron at H-4 could be easily converted to fixed wing aircraft parking.

The following table compares the advantages and disadvantages of the various helicopter facility alternatives.

Table 31: Comparison of Helipad Alternatives

Alternative	Helicopter Capacity	Lease Lots & Parking	Visibility to Customers	Env. Impact	Property Acquisition	Estimated Cost
Alt H-1- North end of apron	1-2 parking positions*	1 lease lot with parking*	Good	Noise near homes	None	$350,000
Alt H-2- West of apron (on ARRC property)	1 helipad, 4-6 parking positions*	1 lease lot with parking*	Good	Noise near homes	~2.2 acres	$500,000
Alt H-3- On lease lots	1 parking position	Lease lots nearby	Poor	None	None	$350,000
Alt H-4- South end of apron	5 parking positions	2-3 lease lots with parking	Poor	Wetlands, tree removal	~0.8 acres	$500,000

* Number of helicopter parking positions and lease lots depends on configuration

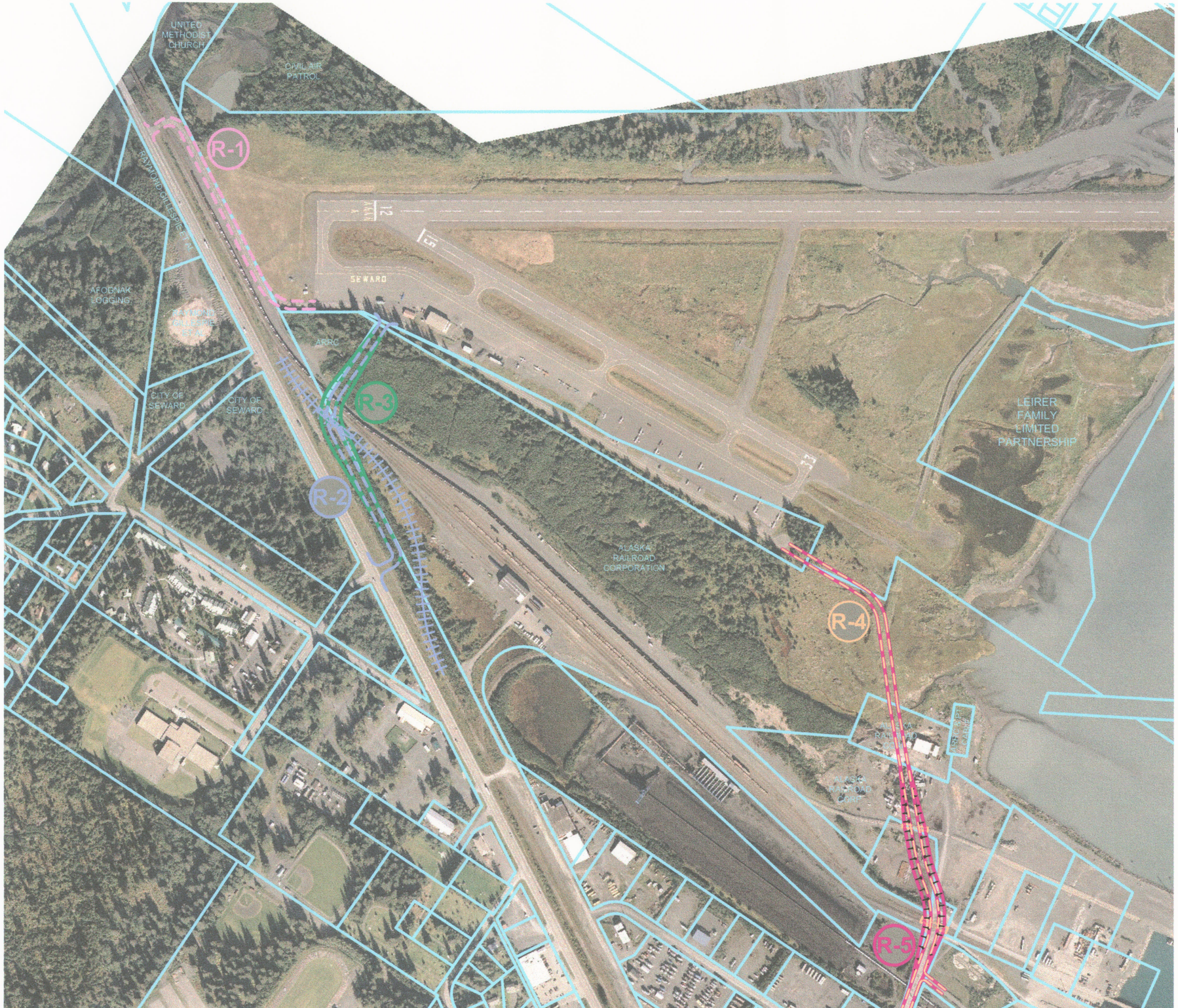
8.3 Access Road Alternatives

Because there are safety issues associated with the existing Airport exit and access can be blocked by trains, this Master Plan has explored options for alternate methods of accessing the Airport. The following sections discuss these options and provide a cost estimate for each one. In all options except for R-1, the existing access road would be gated and locked with access only available to emergency vehicles.

8.3.1 Alternative R-1: Keep Existing Access

The existing Airport exit intersection does not allow adequate space between the railroad and the Seward Highway for a long vehicle to stop. Vehicles exiting the highway may also be suddenly confronted with the queued vehicles backed up onto the highway because the airport access is blocked by a train. This intersection is also located at the end of the southernmost Resurrection River bridge and provides a less-than-optimal line of sight for vehicles leaving the Airport. Furthermore, the access road makes an extremely sharp turn just before crossing the train tracks and the road is sometimes blocked by coal trains from the coal facility.

Keeping this intersection in its current configuration would pose a continued safety hazard to Airport traffic. Because the Airport road is also the only access to the ARRC property west of the Airport, this poor intersection also reduces industrial development potential for the ARRC property. Long-term continued use of the existing intersection is not a desirable option.



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R-1 Keep Existing Access.

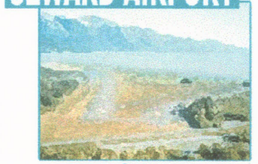
R-2 On-grade North Access. Reroute Railroad track, On grade crossing 4 sets of tracks. New highway on old roadbed.

R-3 Separated Grade North Access. Reroute Railroad track, Separated grade crossing 4 sets of tracks. New highway on old roadbed.

R-4 On-grade South Access. Follow old road bed to south end of airport. 2 on grade crossings.

R-5 Separated Grade South Access. Follow old road bed to south end of airport. 2 separated grade overpasses.

SEWARD AIRPORT



MASTER PLAN

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TRANSPORTATION & PUBLIC FACILITIES · STATE OF ALASKA

SEWARD AIRPORT

ACCESS ROAD ALTERNATIVES

FIGURE 27

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PROJECT: D58337

8.3.2 Alternative R-2: On-grade North Access

This alternative proposes an Airport road at the north end of the ARRC coal facility. The road would run from Sea Lion Avenue to the existing Airport road in the area of the Short Final Air, LLC building. Approximately 1,700 feet of passenger train track would be relocated in order to provide space for a safe intersection with the Seward Highway. The road would cross four tracks at an on-grade crossing.

The disadvantages of this alternative significantly outweigh the advantages. First, the ARRC is working to enhance safety and operational flexibility by eliminating on-grade crossings. Second, the location of the on-grade crossing would likely be blocked by trains much more often than the existing Airport exit.

Alternative R-2 is estimated to cost $1.5 million.

8.3.3 Alternative R-3: Separated-grade North Access

This alternative is the same as the previous alternative, except that the access road features a separated-grade crossing. A separated-grade crossing prevents trains from blocking access to the Airport and improves safety by separating vehicular traffic from train movements. This is the alternative preferred by the ARRC and most of the airport users.

Alternative R-3 is estimated to cost $4.8 million.

8.3.4 Alternative R-4: On-grade South Access

This alternative proposes a new Airport access road between Port Avenue and the south end of the existing Airport road. The road would include two on-grade crossings and would partially follow the old, abandoned airport road along the south side of the Airport.

This idea has been discussed by the City of Seward for several years. It does provide a safer access to the Seward Highway, but the ARRC is opposed to the creation of any new on-grade crossings. Furthermore, any road in this vicinity will interfere with future development of ARRC facilities at their dock. This alternative would also impact wetlands and drainage

patterns on ARRC property and would require acquisition of existing businesses and demolition of existing buildings.

Alternative R-4 is estimated to cost $2 million.

8.3.5 Alternative R-5: Separated-grade South Access

This alternative is the same as the previous alternative, except that the access road features two separated-grade crossings. The separated-grade crossings prevent trains from blocking access to the Airport and improve safety by separating vehicular traffic from train movements. However, the elevated roadway poses a significant barrier to future development at the ARRC dock. The ARRC is generally opposed to any road in this area.

Alternative R-5 is estimated to cost $5 million.

8.3.6 Comparison of Access Road Alternatives

There is general agreement among the FAA, DOT&PF, ARRC, and airport users that a safer and more reliable access road is needed. There is also agreement that any new access road should include separated-grade crossings. The ARRC and the public both generally favor an access road at the north end of the Airport rather than at the south end. The northern alternatives will be slightly more difficult to develop due to the limited space and the necessity to cross the rail yard. However, the northern alternatives also provide the most long-term flexibility to the ARRC for developing their dock facilities and for operating the coal facility. The northern alternatives also have fewer wetlands impacts than the southern alternatives. Considering all of the above factors, Alternative R-3 received the most support among all groups.

The following table compares the advantages and disadvantages of the various access road alternatives.

Table 32: Comparison of Access Road Alternatives

Alternative	Highway Safety	Impact to Railroad	Property Issues	Environmental Impact	Cost
Alt R-1 – No Build	Poor exit	Restricts train length	None	None	None
Alt R-2 – On-grade North Access	Good exit at Sea Lion Ave.	On-grade crossing in yard, relocation of 1,700 ft of track	Need ROW from ARRC	Minimal impact	$1.5 million
Alt R-3 – Separated-grade North Access	Good exit at Sea Lion Ave.	Relocation of 1,700 ft of track, allows longer trains	Need ROW from ARRC	Minimal impact	$4.8 million
Alt R-4 – On-grade South Access	More traffic on Port Ave.	Two on-grade crossings, blocks port development, allows longer trains	Need ROW from ARRC and private businesses	Wetlands	$2 million
Alt R-5 – Separated-grade South Access	More traffic on Port Ave.	Blocks port development, allows longer trains	Need ROW from ARRC and private businesses	Wetlands	$5 million

8.4 Other Alternatives

8.4.1 DOT&PF Maintenance Facilities

The DOT&PF airport maintenance facility is currently located on an airside lease lot and consists only of a small equipment building and a small sand storage building. Maintenance staff has requested a larger, three-bay equipment building near the Airport, but have also expressed a desire to relocate the highway maintenance station from downtown Seward. A site on or near the Airport would provide better highway access than the existing downtown facility. Although the exact size of a consolidated highway and airport maintenance facility is unknown, it would likely be larger than the existing maintenance lease lot at the Airport. Furthermore, the existing Airport maintenance facility is located on an airside lease lot that could be better used for an aviation facility such as an aircraft hangar.

Because of these factors, consideration should be given to developing future maintenance facilities on ARRC property across the road from the existing maintenance building. The ARRC property is intended for this type of industrial development and provides greater space for a consolidated facility than any location on Airport property. Development of a consolidated facility on ARRC property will depend on the availability of ARRC land and the feasibility of combining highway and airport maintenance facilities.

8.4.2 Parking

Congestion will likely increase in the vicinity of any formal helipads that are created on the Airport. Therefore, a common-use parking area of 8 to 10 spaces should be developed in conjunction with each helipad. It may be necessary to develop additional common use parking at the north end of the Airport even if no helipads are built there. The most likely areas for a common-use parking lot are just north of the apron or the area currently occupied by the DOT&PF maintenance building. The area north of the apron could be easily developed, but it is probably too far from the existing buildings to receive much use. The DOT&PF lot is ideally located close to the existing buildings, but can only be converted to a parking lot if the maintenance facility is relocated. This lot could later be converted back to a lease lot if there is a need for additional lease space.

8.4.3 Fencing and Area Lighting

Although there are several options for reducing unauthorized access to the airfield, a perimeter fence is likely the best option. Other, more limited, options such as signage or partial fencing are unlikely to be sufficient to overcome past habits of routinely driving and walking onto the airfield. Comments from tour operators and other airport users generally support the installation of a fence if adequate gates are available for accessing the airfield when necessary.

The fence would begin near the current Airport entrance and run along the access road to the south end of the Airport. Fencing would need to extend far enough south to prevent pedestrians from accessing the airfield by walking around the south end of the fence. Gates and fencing should be configured to allow aircraft access to the pullout area on the old road at the south end of the Airport. The exact configuration of fencing on the lease lots will depend on the needs and desires of the lessees.

8.4.4 Utilities

The City of Seward and various Airport tenants have expressed a strong desire for municipal utilities to be extended to the Airport. The availability of municipal water lines on the Airport would facilitate hangar owners in meeting fire protection requirements. However,

utilities are generally not eligible for FAA funding. Extending utilities to the Airport would also facilitate industrial development of the ARRC property west of the Airport and could serve a future DOT&PF maintenance facility. It may therefore be possible for the City of Seward, the ARRC, and/or the DOT&PF to jointly fund any utility extensions on the Airport.

Because the funding issue is not yet resolved, this Master Plan should identify a utility corridor for future water and wastewater extensions. The most likely location of a utility corridor is along a future Airport access road.

8.4.5 Floatplane Facilities

There are three options for providing a safe public floatplane landing area near Seward. The first option is to develop a floatplane facility on the Airport. The second option is to develop a public facility on Bear Lake. A third option is to develop an agreement with the Seward Harbor to allow floatplane access to the harbor facilities.

Although there was significant interest among airport users for some sort of floatplane facility on the Airport, a preliminary analysis indicates that developing such a facility would be extremely difficult. There is limited space on the Airport to develop a floatplane runway and tie-down spaces. The addition of a floatplane facility would essentially create another runway, complicating the airspace environment. Furthermore, the entire Airport is under the influence of the tides in Resurrection Bay and any pond on the Airport would have water levels that fluctuate with the tides. The floatplane basin could even become completely dry in certain circumstances. A floatplane basin would also have significant effects on the environment and be expensive, given the limited use expected. Due to these difficulties, no floatplane facility should be planned for the Airport.

Bear Lake provides a safe landing area in the summer, but there is no public access to the lake. The possibility of a public facility sponsored by DOT&PF was considered, but DOT&PF has limited maintenance funds at this time and cannot take on additional maintenance responsibilities. Sponsorship by another governmental entity is still a possibility, but no firm commitments have been made. Local pilots have the option of pursuing various sponsorship options with other public or private entities.

The Seward Harbor is the third option for providing floatplane facilities in the community. The Harbor is currently owned and operated by the City of Seward. Local pilots have the option of pursuing an agreement with the City to allow floatplane access to the Harbor.

9.0 INITIAL ENVIRONMENTAL ASSESSMENT

The following provides an initial analysis of the environmental effects that may occur through the implementation of the proposed alternatives in the Seward Airport Master Plan. The resource categories that are evaluated in this document are those that are recommended by the FAA Order 5050 *NEPA Implementing Instructions for Airport Projects*.

9.1 Impact Categories

9.1.1 Noise

Significant increases in noise are not anticipated from the proposed alternatives, however some residents did raise concerns about the potential noise increases from helicopter operations, depending on the placement of the proposed helipad.

9.1.2 Compatible Land Use

Land uses adjacent to the airport include a rail yard, harbor, river delta, and residential areas. All areas are considered suitable, and are related to airport functions. Land uses on the airport are also compatible with airport operations, except for unauthorized uses by hunters, recreational users that wander onto the airfield, and use by the radio-control airplane club. Some of the access, helipad, and maintenance building alternatives would require acquiring land from the ARRC.

9.1.3 Social Impacts

The proposed alternatives are recommended to improve the existing airport facility. Alternatives are recommending improvements to the runway(s), increased apron and aircraft tie downs, and providing storage (hangar). Helipads and additional parking are also being recommended (exact locations have not yet been determined). Finally, the road access to the

airport is also being considered in the alternatives as part of this Airport Master Plan. No building relocations are necessary.

9.1.4 Water Quality

Resurrection Bay water quality is considered excellent (Seward Airport EA, 1991). Temporary water quality degradation may result during construction of the airport improvements, such as potential sedimentation of the Resurrection River and tributaries adjacent to Runway 12-30. Anadromous fish streams associated with the Resurrection River delta (231-30-10080-2017 and 231-30-10080-2003) border the runways. Utilizing Best Management Practices such as silt fences would minimize sedimentation. An Erosion and Sediment Control Plan and Storm water Pollution Prevention Plan would be implemented prior to construction.

9.1.5 Contaminated Sites & Solid Waste

Currently the City of Seward does not have a landfill; a transfer facility (approximately three miles north of the City of Seward) presently lies where the city originally operated the site as an open dump for many years. The Borough assumed site operations in 1974 and operated the site as landfill until 1992 when it was closed and the transfer facility was constructed. A search on DEC's contaminated sites database revealed that the landfill had been contaminated with petroleum; the site is now listed as inactive. No contamination was identified within or adjacent to the airport property, however this will need to be verified in a Phase I Environmental Site Assessment.

9.1.6 Construction Impacts

During construction, potential adverse affects may include degradation to air and water quality, and an increase in noise levels; these impacts are expected to be minor and temporary. Staging areas and storage of fuel would be located in uplands and not allowed within 100 feet of any wetlands and/or river.

9.1.7 Induced Socioeconomic Impacts

The airport improvements could lead to increased tourism, particularly the proposed helipad and parking. Furthermore, the improved airport surface could aid in increasing (transient, non-local) airport traffic.

9.1.8 Biotic Communities

Much of the area adjacent to the existing airport is wetlands, which provide feeding and nesting habitat for waterfowl and other migratory birds, rearing and spawning grounds for salmon, and hunting and nesting areas for raptors. In addition, anadromous streams of the Resurrection River delta complex (anadromous stream # 231-30-10080) border the runways. These streams support sockeye, coho, pink, chum, and chinook salmon, as well as Dolly Varden char.

The Resurrection River delta and area supports both black and brown bears, particularly in summer. Moose are also common throughout the area, and are occasionally sighted on the runways (FAA Natural Resources Catalog, 2002). Resurrection Bay hosts a sea otter population, and there are probably populations of smaller mammals and rodents (e.g., porcupines, voles, shrews) surrounding the project area.

Three active bald eagle nests are located within airport boundaries along the northeast perimeter of the airport and are within the 660-foot buffer zone. Impacts will be assessed when an alternative has been chosen.

9.1.9 Wetlands

Much of the area adjacent to the existing airport is classified as marine, estuarine, palustrine and riverine wetlands (USFWS National Wetlands Inventory System Maps; FAA Natural Resources Catalog). As described above, these wetland areas provide prime habitat for waterfowl; rearing and spawning grounds for coho, sockeye, pink, and chum salmon; and hunting and resting areas for raptors. Runway alternatives would impact the wetlands.

9.1.10 Floodplains

The Seward Airport is subject to riverine and coastal flooding. The 1995 flood shifted 90 percent of the Resurrection River's flow into a channel adjacent to Runway 12-30. The airport lays within the Resurrection River Floodplain, and within the 100 Year Flood Hazard and 100-year Coastal Wave Run-up areas (designated Zone A and V on the Federal Emergency Management Agency Flood Insurance Rate Map FIRM for the Kenai Peninsula Borough). Some measures to protect the airport and the runways from flooding have been implemented, and additional measures such as raising and extending the erosion and flood protection are being considered.

9.1.11 Historic, Archeological, Architectural, and Cultural Resources

Two listed sites were identified within the airport property. Site # SEW-148 is associated with the Seward-Moose Pass Trail (previously Iditarod National Historic Trail) and runs discontinuously adjacent to the railroad; portions of this trail fell into disuse after the completion of the Alaska Railroad in 1923. The second site identified is Site # SEW-7 and is associated with the Russian Trail dating back from the Russian Period; the exact location of this site has not been identified. Neither site is eligible for the National Register. Consultation with the State Historic Preservation Office will be initiated in order to obtain their concurrence on a "No Historic Properties Affected" decision.

9.1.12 Coastal Zone Management Program

The Seward Airport is located within the Kenai Peninsula Coastal Management Area, and within the Upper Resurrection Bay Area Meriting Special Attention. A Coastal Project Questionnaire will be implemented during the permitting phase.

9.2 Non-impact Categories

9.2.1 Energy Supply and Natural Resources

Energy supply and natural resource consumption would not change appreciably for any alternative.

9.2.2 Light Emissions

None of the proposed changes to runway and airport lighting are anticipated to disturb the nearby residents or create off-airport glare.

9.2.3 Air Quality

The U.S. Environmental Protection Agency has not designated Seward as a non-attainment area. No air quality impacts are expected beyond the construction stage.

9.2.4 Threatened and Endangered Species

There are no U.S. Fish and Wildlife Service (USFWS) listed threatened or endangered species on or near the airport property. See Section 9.1.8, Biotic Communities, for bald eagle nest information.

9.2.5 Coastal Barriers

There are no coastal barriers within the state of Alaska.

9.2.6 Wild and Scenic Rivers

There are no designated wild and scenic rivers within the project area.

9.2.7 Farmland

There are no farmlands in or near the Seward Airport.

9.2.8 Department of Transportation Act, Section 4(f)

There are no Section 4(f) properties within or adjacent to the project areas as defined in FAA Order 5050.4A(7)(a). Two archeological listed sites were identified within the airport property: the Seward-Moose Pass Trail (previously Iditarod National Historic Trail) which runs discontinuously adjacent to the railroad; and the Russian Trail dating back from the Russian Period, whose exact location has not been identified. Neither Site is eligible for the National Register. See Section 9.1.11 Historic, Archeological, Architectural, and Cultural Resources for more information.

10.0 RECOMMENDED AIRPORT DEVELOPMENT PLAN

The following sections describe the Recommended Airport Development Plan for the Seward Airport.

10.1 Airfield Improvements

Based on public input and the results of the Environmental Assessment, Alternative B is recommended for the airfield. Alternative B will reconstruct both runways and pave all aprons and taxiways. This includes the installation of edge lighting on both runways and all taxiways. Taxiway A would be reconstructed to B-II standards and paved. A new, larger, fish-friendly culvert would be placed underneath Taxiway A.

To meet FAA standards for Runway Safety Area on the main runway, the threshold at the north end of the runway will be displaced approximately 284 feet and the threshold at the south end of the runway will be displaced 100 feet. Declared distances will be implemented on the main runway.

As part of the reconstruction of the main runway, the middle section of the runway will be raised several feet to ensure that the entire runway is above the 100 flood elevation. Additional erosion protection will be installed between the north end of the main runway and the railroad tracks along the Seward Highway. To avoid installing fill material into the Resurrection River when the runway is raised, the centerline of the main runway will be shifted to the west by approximately six feet.

10.2 Helicopter Facilities

Alternative H-4 is recommended for future helicopter facilities. This alternative would construct a helicopter apron at the south end of the existing general aviation apron. The helicopter apron would not contain a helipad, but would instead contain five helicopter parking spaces with at least one of those parking spaces large enough to accommodate an H-60 military helicopter. Helicopters wishing to use the parking area would fly an approach to one of the runways then taxi to the new parking positions.

The access road would be extended to reach the helicopter apron and additional lease lots

would be constructed along the edge of the new apron. A small amount of land would have to be leased from the ARRC to construct these facilities.

Because helicopter activity at the airport has recently decreased, the helicopter facilities should be considered a long-term project to be constructed in the future when helicopter activity increases.

To provide helicopter facilities in the short-term, DOT&PF should continue to allow subleases on Lot 1D, Block 200 and short-term permits on the area north of the existing apron. This area is large enough to park one to two helicopters on the grass. Additional helicopter parking space could also be permitted on the existing apron adjacent to the northernmost lease lots on the apron. This plan should meet any short-term needs for helicopter parking until additional facilities are constructed at the south end of the apron.

10.3 Apron Area

New area lighting should be installed along the north portion of the existing apron. A reduced fence or other methods to keep unauthorized persons off the airport will likely be installed. The exact amount of fence will be determined during the project design phase. When fencing is installed, gates will be added at various locations for access to the lease lots and tie-down areas.

11.0 PROJECT PHASING AND COST ESTIMATES

All of the improvements listed above, except the helicopter facilities, are needed in the short term and should be constructed at the same time, if possible, to achieve cost savings from a single project mobilization. All cost estimates are based on the year 2007 and include design, construction engineering, ICAP, construction, mobilization, and contingency costs. Detailed cost information is included in Appendix C.

Table 33: Project Phasing and Development Costs

	Project Description	Estimated Cost
Short Term (0-5 years)		
1	**Airfield Improvements Project** • Reconstruct both runways to the existing dimensions. Displace both thresholds of main runway. Raise main runway an average of 1.5 feet and shift centerline approximately 6 feet west. • Add erosion protection between north end of main runway and Alaska Railroad. • Widen and pave Taxiway A to meet B-II standards. Place a new, larger, fish-friendly culvert underneath Taxiway A. • Install new runway and taxiway edge lighting on entire airport. Replace rotating beacon. • Install limited security fencing along perimeter of airport. Install area lighting along north half of apron.	$18,300,000
Long Term (10-20 years)		
2	**Helicopter Facilities** • Construct helicopter apron with lease lots and access road extension.	$ 500,000
3	• Construct grade separated road crossings shown as R-3 in the alternatives.	$ 5,600,000
4	• Purchase 8 acres of lease land.	$ 100,000
	Total	$24,500,000

12.0 AIRPORT LAYOUT PLAN

The purpose of the Airport Layout Plan (ALP) is to show the type and location of future development on the airport and how it can be built according to Federal Aviation Administration safety and design standards. These drawings provide information on airport buildings, airfield surfaces, airspace, and land ownership. The Seward Airport ALP set includes nine sheets which illustrate the recommendations of this narrative report. These sheets are shown in Appendix D. Note that due to changes in magnetic declination, the runway numbers used in the ALP are different from those used in this report and the Environmental Assessment. The runway numbers shown in the ALP are current and correct at the time the ALP was approved by FAA.

Seward Airport ALP sheets include:

- Airport Data Sheet
- Existing Airport Layout Plan
- Ultimate Airport Layout Plan
- Declared Distances
- Inner Portion of the Approach Surface – R/W 13/31
- Inner Portion of the Approach Surface – R/W 16/34
- Airport Airspace, 14 CFR Part 77
- Terminal Area
- Property Map

These sheets were developed in accordance with FAA Advisory Circular 150/5300-13, Appendix 7, the Airport Layout Plan checklist provided by the FAA Alaskan Region, and the Central Region Airport Layout Plan Guidelines.

- Airport Data Sheet (Sheet 1 of 9)

  This sheet provides area and vicinity maps for the Seward Airport along with a windrose, an airport data table, a runway data table, and a legend. Current non-standard conditions are listed as well.

- Existing Airport Layout Plan (Sheet 2 of 9)

  The Existing ALP depicts the current airport configuration. Features included on this sheet include airfield surfaces,, buildings, roadways, ground contours, and the airport property line. The location and dimensions of various safety areas, object free areas, navaids, and lighting are also shown.

- Ultimate Airport Layout Plan (Sheet 3 of 9)

  The Ultimate ALP depicts the airport improvements recommended in the master plan. Changed locations and dimensions for various safety areas, object free areas, navaids, and lighting are also shown.

- Declared Distances (Sheet 4 of 9)

  This sheet depicts the various declared distances based on the displaced thresholds on the main runway. TORA, TODA, ASDA, and LDA are shown for the existing runway configuration and the future runway configuration.

- Inner Portion of the Approach Surface – R/W 13/31 (Sheet 5 of 9)

  This sheet depicts the ultimate runway ends in both plan and profile views. The property and obstructions surrounding both runway ends are shown. Each obstruction is numbered and the location, elevation, penetration of imaginary surfaces, and proposed disposition are shown for each item.

- Inner Portion of the Approach Surface – R/W 16/34 (Sheet 6 of 9)

  This sheet depicts the ultimate runway ends in both plan and profile views. The property and obstructions surrounding both runway ends are shown. Each obstruction is numbered and the location, elevation, penetration of imaginary surfaces, and proposed disposition are shown for each item.

- Airport Airspace, 14 CFR Part 77 (Sheet 7 of 9)

  This sheet depicts the dimensions and elevations of the various FAR Part 77 Imaginary Surfaces around the Airport for the ultimate conditions after the runway is extended. The height and slope of each surface is shown along with objects that penetrate these surfaces. Each obstruction is numbered and the height and amount of penetration of each object is shown in a table. A background map based on the latest available USGS topographic maps is included on this sheet to provide reference for various topographic features in the area around the airport.

- Terminal Area (Sheet 8 of 9)

  This sheet shows in detail the apron and lease lot area of the airport. Future improvements and setbacks from the runways are shown at a large scale. Building locations and heights are shown in a table.

- Property Map (Sheet 9 of 9)

  This sheet identifies the various parcels, easements, and grants that currently make up the Airport. Each item is labeled and a table summarizes the size, ownership interest, and date of acquisition of each item. Future property and avigation easement acquisitions are also shown.