



**PALMER MUNICIPAL AIRPORT  
MASTER PLAN  
CITY OF PALMER, ALASKA  
October 2009**



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CITY OF PALMER, ALASKA**

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**LIST OF ACRONYMS**

AC	Advisory Circular
ADG	Airplane Design Group
ALP	Airport Layout Plan
ARC	Airport Reference Code
ASOS	Automated Surface Observing System
CFR	Code of Federal Regulations
DEC	State of Alaska Department of Environmental Conservation
DNR	State of Alaska Department of Natural Resources
DOT&PF	State of Alaska Department of Transportation and Public Facilities
EA	Environmental Assessment
EIS	Environmental Impact Statement
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency
FMR	fair market rent
FSS	Flight Service Station
ft	feet/foot
GPS	Global Positioning System
IFR	instrument flight rules
IMPLAN	Impact Analysis for Planning
LPV	localizer performance with vertical guidance
MSB	Matanuska-Susitna Borough
NEPA	National Environmental Policy Act
PCI	Pavement Condition Index
RNP	required navigation performance
ROFA	runway object-free area
ROFZ	runway obstacle-free zone
RPZ	runway protection zone
RSA	runway safety area
RW	runway
TW	taxiway
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USDOT	United States Department of Transportation
USFWS	United States Fish and Wildlife Service
VFR	visual flight rules
WAAS	Wide-Area Augmentation System

## **1.0 INTRODUCTION**

### **1.1 Purpose**

This Master Plan for the Palmer Municipal Airport documents existing conditions, forecasts future activity, determines facility requirements, identifies development alternatives, and provides a Capital Improvement Program. It also includes an overview of environmental issues associated with any proposed development. This Master Plan is based on a review of existing documents, site visits to the airport, feedback from public and tenant meetings, and input from the Federal Aviation Administration and the City of Palmer. This plan is intended to guide development of the airport for a period of twenty years.

### **1.2 Goals**

The goals of the Master Plan provide a framework for the other development and planning work conducted for this project. In addition to the facility issues typical of most airport master plans, this master plan also includes goals related to economic development, compatible land use, and airport management. The specific goals of this plan are:

- Identify facility needs
- Develop alternatives for future airport development
- Evaluate compatible land use near the airport
- Evaluate airport operation and management practices
- Determine the economic impact of the airport
- Develop operating recommendations to help guide the operation and growth

### **1.3 Community Overview**

Palmer is located in the heart of the Matanuska Valley between the Talkeetna and Chugach mountain ranges. The community lies along the Glenn Highway, 42 miles northeast of Anchorage. The city of Palmer boundary encompasses 5.2 square miles of land. The Alaska railroad provides access to Whittier, Seward, and Anchorage for ocean freight delivery.

The first residents of the Palmer area were Ahtna and Dena'ina Athabascans. George Palmer arrived in about 1875 and established a trading post on the Matanuska River in about 1890. In the early 1900s, the area became homesteads for miners, and the Alaska Railroad connected to nearby Wasilla around 1916. In 1935, the Federal Emergency Relief Administration established

an agricultural colony in the Palmer area. The city of Palmer was incorporated in 1951, and it was the seat of government in the Matanuska-Susitna Valley until the Matanuska-Susitna Borough (MSB) was established in 1964. The MSB offices are still located in Palmer.

#### **1.4 Airport Overview**

The Palmer Municipal Airport is located on 524 acres on the east side of the city adjacent to the Matanuska River. The airport is owned and operated by the City of Palmer and hosts primarily general aviation and aerial firefighting activities.

The airport was initially constructed as a small gravel strip oriented northwest-southeast with a full-length parallel taxiway and a small north-south crosswind runway with a grass surface. In the 1970s, the crosswind runway was lengthened to become the primary runway and the runways were paved. Other major improvements to the airport include the construction of two large aprons on the west side of the airport and the development of the city golf course on the east side of the airport. Figure 1 shows an overview of the airport.





Figure 1: Airport Overview  
Palmer Municipal Airport Master Plan



## 2.0 INVENTORY

### 2.1 Airside Facilities

#### 2.1.1 Runways, Taxiways, and Aprons

The Palmer Municipal Airport has three runways. The primary runway is 6,008 feet by 100 feet and has a designation of 16-34. The crosswind runway is 3,617 feet by 75 feet and has a designation of 9-27. Both of these runways are paved and in fair to good condition. Both of the paved runways are lighted with medium-intensity runway edge lights. Runway (RW) 16-34 is equipped with runway distance remaining signs east of the runway.



**Figure 2: View Along Runway 34**



**Figure 3: View along Runway 16**



**Figure 4: View along Runway 27**



**Figure 5: View along Runway 9**

Due to the presence of trees in the approach to RW 16, the threshold of RW 16 has been displaced 500 feet south. This displacement is marked on the runway with standard marking and

threshold lights. The portion of the runway beyond the displaced threshold is still available for use by aircraft beginning a takeoff run.

The runway object-free area (ROFA) for both runways is generally free of obstructions with several notable exceptions. First, the golf course fence east of RW 16-34 penetrates the ROFA. Also, the trees east of the RW 16 threshold penetrate the ROFA. The golf course fence also penetrates the ROFA for RW 9-27.



**Figure 6: Golf Course Fence in Runway Object-Free Area**

Both runways have a sufficient runway safety area (RSA) and both runways have a clear runway obstacle-free zone (ROFZ). However, the runway protection zones (RPZ) for both runways extend off airport property and are not fully controlled by the airport. The city currently has easements that cover the majority of the RPZs for RWs 16 and 9. The city owns all of the property in the RPZ of RW 34 and the small portion of the RW 27 RPZ not owned by the airport is located in the Matanuska River floodplain and is state property. The city has acquired full ownership of a large parcel of land inside the RW 9 RPZ with money from a Federal Aviation Administration (FAA) grant.

The airport also has a gravel runway along the west side of RW 16-34. This gravel strip is unlighted, but is marked by reflectors. The strip is only used by small bush aircraft in the summer and occasionally by ski aircraft in the winter.

The runways have a combined capacity of 230,000 aircraft operations per year. Actual aircraft operations in 2007 were 28,670.



**Figure 7: Runway 16G-34G**

Both paved runways have full-length parallel taxiways. Taxiway (TW) A, the parallel taxiway for RW 16-34 is paved and 50 feet wide. TW B, the parallel taxiway for RW 9-27 is paved and 45 feet wide. There are four additional connector taxiways between RW 16-34 and TW A. These connector taxiways are all paved and 55 feet wide. There is also a short taxiway providing access to hangar lease lots north of the threshold of RW 9. The portion of this taxiway adjacent to the lease lots is known as TW J and the remainder is known as TW L. This taxiway is paved and is 35 feet wide. A continuation of TW L also serves as a short connector between RW 9-27 and the parallel TW B. All taxiways feature medium-intensity edge lighting.

The airport includes two large, separate apron areas, both along RW 16-34. The north apron is located on the west side of the runway and is approximately 2,300 feet long and 200 to 600 feet wide. There are several lease lots that project into the apron in a “finger” arrangement and the apron is much narrower where these lease lots exist. The southernmost portion of the north apron is reserved for transient aircraft and the other portions of the north apron are reserved for leased tie-down spaces and for use by lease lot tenants.



**Figure 8: Portion of North Apron**



The south apron is located south of RW 9-27 on the west side of RW 16-34 and is approximately 1,500 feet long by 300 feet wide. This apron is rectangular in shape and provides apron frontage for the industrial and commercial lease lots along its west edge. There are several leased tie-down spaces on this apron for larger, cargo aircraft and a small portion of the apron is included in the adjacent lease lots.



**Figure 9: Portion of South Apron**

### 2.1.2 Pavement Condition

The 2004 Pavement Condition Report from the State of Alaska Department of Transportation and Public Facilities (DOT&PF) indicates that much of the pavement on the airport is in need of repaving. The worst pavement on the airport at the time of the report, RW 9-27, was repaved in 2007 and is in excellent condition now.

A Pavement Condition Index (PCI) of less than 70 indicates a need for repaving. RW 16-34 has an average PCI of 58, and the PCI for the aprons ranges from 71-81. The condition of the taxiways varies widely. Some of the older taxiways are in very poor condition and need major repair and repaving. Others, such as the parallel taxiway for RW 9-27 have been repaved recently and are in excellent shape. RW 9-27 does have a weight restriction of 12,500 pounds.

### 2.1.3 Nav aids

Both runways are equipped with precision approach path indicators that were installed and flight checked in 2007. Both runways also have runway end identifier lights, but neither runway has

approach lights. The airport has a rotating beacon and segmented circle located just northwest of the intersection of the two runways. The lighted airport wind cone is located near the Flight Service Station (FSS) at the south end of the north apron.



**Figure 10: Beacon, Flight Service Station, Segmented Circle, and Automated Surface Observing System**

#### 2.1.4 Weather Equipment

The airport is equipped with an Automated Surface Observing System (ASOS) located at the south end of the north apron near the FSS. This ASOS is in good condition and operates satisfactorily. Some pilots have stated that conditions reported by the ASOS can be misleading due to the differences in weather at the airport near the river and in the surrounding valleys and mountains. In the winter, ice fog from the river sometimes affects the airport when other nearby areas are clear.

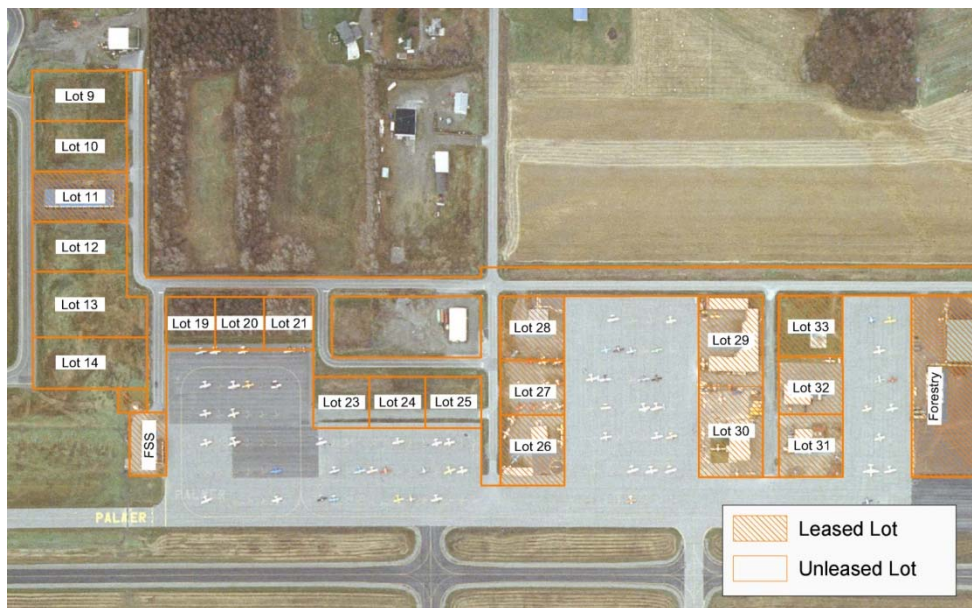
## 2.2 **Landside Facilities**

### 2.2.1 Flight Service Station

The Palmer Municipal Airport is unusual in that it hosts a FSS. The FSS is located in a small two-story building at the south end of the north apron. The FSS is staffed during normal business hours and provides traffic advisories for the airport area. Most users of the airport indicated that the FSS is an important factor in the smooth operation of the airport especially during busy summer weekends and when fire fighting operations are underway at the Forestry facility.

### 2.2.2 Lease Lots

The airport has two areas of lease lots with airfield access. The north lease lot area lies along the west side of the north apron and includes a large State of Alaska Department of Natural Resources (DNR) Forestry facility, an aircraft maintenance business, a flight training school, several T-hangars, and the city maintenance building. The south lease lot area includes the large maintenance facility of Hageland Aviation Services and the offices and logistics yard of New Horizons Telecommunications. There is also a designated T-hangar area on the north side of RW 9. This area currently has only one T-hangar building, but has good taxiway access.



**Figure 11: Lease Lot Layout**



**Figure 12: Department of Natural Resources Forestry Facility**





**Figure 13: Existing T-Hangars**

### 2.2.3 Access Roads

Access to the Palmer Airport is primarily via two roads. Airport Road provides access from the Old Glenn Highway to the north apron. Airport Road is connected to the downtown area of the city by Evergreen Street. The second main access road is Cope Industrial Way which provides access to the south apron. The south end of Cope Industrial connects to Outer Springer Loop Road which provides access to the golf course on the southeast side of the airport.

Although Airport Road and Cope Industrial Way provide good paved access to the two apron and lease areas, there is no convenient way to travel between the two areas. Currently, the only way to travel between the two apron areas is to drive west into the downtown area of the city and travel along Chugach Street. This trip entails passing through a school zone, through a portion of the business district, and along several residential streets.

### 2.2.4 Security

Airport security has recently been improved by the addition of security fencing and gates along the west side of both aprons. Although many of the access gates are generally left open, airport users report that the number of unauthorized persons on the airfield has decreased substantially since the fence was installed. The fence around the remainder of the airport is in poor condition and does not meet FAA security requirements.

### 2.2.5 Other Facilities

There are several other facilities on the airport that are not aviation-related. The most significant of these is the Palmer Municipal Golf Course located on the east side of the airport. The golf course covers approximately 115 acres and consists of almost all airport property east of

RW 16-34. The golf course pays rent to the airport and its profits are transferred to the City of Palmer Airport enterprise fund.

Other non-aviation facilities on the airport include the Fire Department buildings just south of RW 9 and the school district nutrition facility just across Cope Industrial Way. Adjacent to the school district building are two small community baseball fields. A city water well is located on airport property near the south end of Cope Industrial Way.

## **2.3 Airspace and Approaches**

### **2.3.1 Airspace**

The airspace surrounding the airport is Class E down to 700 feet above the surface. This Class E airspace overlays the entire city of Palmer and approximately 20 private air strips. The Class E airspace was implemented to support the Global Positioning System (GPS) circling approach from the southwest.

Although Palmer is surrounded on three sides by mountains, the Federal Aviation Regulation Part 77 airspace around the airport has one significant obstruction. Lazy Mountain, northeast of the airport, penetrates the Conical and Horizontal Surfaces. Minor penetrations of the Primary Surface and Transitional Surface occur on the east side of RW 16-34.

### **2.3.2 Instrument Approaches**

There are no terminal nav aids suitable for use in instrument approaches in the Palmer area. The closest nav aid is the Big Lake very-high-frequency omni-directional range located approximately 25 nautical miles west of the Palmer Airport.

The airport has two instrument approaches. The first approach is a GPS circling approach from the southwest. This approach roughly follows the Matanuska River and has a height above threshold of 618 feet. Pilots report that the high minimums of this approach frequently prohibit them from landing on the first approach to the airport and that they must circle the airport and enter the pattern to land.

The second approach is a straight-in GPS approach to RW 9. This approach brings aircraft directly over downtown Palmer and has a height above threshold of 593 feet. Because this

approach was published in 2008 and is fairly new, pilot feedback on this approach has been limited. Drawbacks of this approach for larger aircraft are that RW 9-27 is only 3,617 feet long, is limited to aircraft weighing 12,500 pounds or less and cannot be used by some aircraft.

Most instrument pilots that use the airport feel that an approach with better minimums is needed. Some sort of precision approach would allow more reliable access to the airport when weather conditions are instrument flight rules (IFR). The FAA has indicated that it may be possible to reduce the minimums for both existing GPS approaches if obstruction surveys are performed for both runways. A precision approach would require a runway approach lighting system.

## **2.4 Operations and Maintenance**

### **2.4.1 Airport Management**

The airport is owned and operated by the City of Palmer. The airport staff consists of a part-time manager. Additional city staff supports the airport as needed.

### **2.4.2 Maintenance and Operations**

Maintenance of the airport is good, but some users have reported delays in snow removal from the airfield in the past. The city has recently added staff to address this problem and the situation has reportedly improved. Other maintenance and operations issues, such as pavement maintenance, mowing, lighting, and security are performed in a timely fashion.

Another issue mentioned by several tenants is a lack of snow storage space. Previously, tenants have stored snow from their lease lots on adjacent undeveloped lots. However, recent construction on vacant lease lots has reduced the space available for snow storage and no additional storage space has been identified by the airport.

### **3.0 ECONOMIC IMPACT**

This section estimates the amount of economic return to the Palmer area from business activity related to the Palmer Airport. A detailed analysis was not undertaken due to the limited project scope, so these estimates should be considered a minimum economic impact of airport-related activity on the Palmer area. In addition to estimates of economic impacts from business activity, a ranking of types of business by value to the economy was undertaken. Knowledge of the magnitude of economic impacts by type of industry can help management when deciding which types of business development to encourage in the Palmer area. The methodology for this economic analysis is presented below, followed by the 2007 impact estimates and economic value rankings by industry. It is important to note that economic impacts include the affects of capital construction projects at the airport.

#### **3.1 Methodology**

In order to estimate the impact of activity generated by the Palmer Airport on the Palmer area economy in 2007, Southeast Strategies followed the methodology outlined here. As the scope and timing of the project did not allow an in-depth investigation into this economic impact, the results of this study should be considered conservative, and a minimum impact on the Palmer area economy.

Palmer area businesses determined to be directly impacted by activity at the Palmer Airport and non aviation-related businesses located at the Palmer Airport were interviewed about their activities and employment. Business owners estimated the amount of their 2007 business that was directly attributable to the use of the Palmer Airport. Income and employment for those businesses were weighted according to those estimates, and only employment and income that was directly attributable to Palmer Airport activity was used for this impact analysis.

The finalized employment and income information was then fed through a well known economic input/output model (Impact Analysis for Planning [IMPLAN]) calibrated to fit the MSB's economy to determine secondary impacts of initial spending in the Matanuska-Susitna area. The IMPLAN model is a community and regional level input/output model initially developed by the United States Forest Service in cooperation with the Federal Emergency Management Agency

(FEMA), and the United States Department of the Interior Bureau of Land Management, to assist the United States Forest Service in land and resource management planning.

The model uses census area level data about employment, income, and other indicators to determine how direct economic impacts will produce multiplier effects (indirect and induced economic impacts) within the MSB. The IMPLAN model can only be refined to show impacts within the census area (which coincides with the boundaries of the MSB) and cannot be narrowed to show impacts within the city of Palmer boundaries. However, it is likely that most of these impacts take place in close proximity to the city of Palmer, with little impact in other areas of the MSB. For purposes of this study, impacts will be considered to be within the local Palmer area, although some taxes and fees paid as part of this economic activity will impact other areas of the MSB.

The IMPLAN model is detailed enough to address industries individually within a local area. Survey responses were compiled by type of industry and that information was run separately through a model specific to that industry within the MSB. Results for each industry type were then compiled to obtain the aggregate impacts presented here. In addition to annual impacts created from businesses related to activity at the Palmer Airport, an estimate of annual capital project spending at the airport was also fed through the IMPLAN model to determine local area economic impacts.

The IMPLAN model calculated direct, indirect, and induced impacts on the MSB economy of Palmer Airport-related spending in terms of business revenue, full-time equivalent jobs, payroll, rents, royalties and dividends, fees and taxes, and total value added. These impact categories are defined below.

- **Business Revenue.** This is the value of the business' total production. Some of this revenue will be spent locally on payroll, rent, taxes, and other expenditures, while some of the income will leave the local economy.
- **Full-time Equivalent Jobs.** These are jobs created by business activity related directly or indirectly to airport activity. Jobs are counted as the equivalent of full-time, year round jobs. Even though some of the jobs created by airport activity at Palmer Airport

may be part-time or seasonal, they are combined and converted to full-time equivalents in this report.

- **Payroll and Proprietors' Income.** This category of impacts includes wages and salaries paid to employees as a result of airport business activity, as well as payments received by business proprietors and self-employed individuals as income.
- **Rents, Royalties and Dividends.** This category of impacts accounts for lease and rent payments, royalties and dividends that are paid by impacted businesses within the Palmer area economy.
- **Local Fees and Taxes.** This category of impacts accounts for sales, property and other local taxes paid (city and borough), as well as local fees and commissions paid within the borough economy.
- **Value Added.** This is the amount of business revenue that remains in the local area economy through local spending on the above categories of payroll and business owner income, rents and leases, and local tax and fee payments.

Value added impacts are created when income earned by a business is re-spent within the local economy, either when the business receiving the income purchases goods and services locally, or when employees of the business purchase goods and services locally. These primary and secondary economic impacts are defined below.

- Direct impacts are primary impacts to the borough economy that are a direct result of activity at the Palmer Airport. These impacts are to airport-related businesses, and businesses providing goods and services to those carriers.
- Indirect impacts are secondary impacts to the borough economy of additional spending in the area by businesses earning income directly from activity at the Palmer Airport. These impacts are created when directly-impacted businesses re-spend their income for goods and services within the local economy.
- Induced impacts are secondary impacts to the borough economy of additional spending in the area by households who earn income (usually as wages and salaries) directly from



activity at the Palmer Airport. These impacts are created when employees spend their paychecks for goods and services within the local economy.

The economic impact of capital projects at the Palmer Airport was also considered for this report. The value of construction and other capital projects occurring at the airport between 2004 and 2007 was compiled, adjusted for inflation, and an annual average developed. This average was then run through the IMPLAN economic impact model and the results included with the economic impacts of airport-related business income in the Palmer area.

### **3.2 Economic Impacts of Aviation Activity at Palmer Airport**

Businesses earning income directly from activity at the Palmer Airport were identified and interviewed about their business activity in 2007. While every attempt was made to identify and survey all Palmer area businesses that benefited directly from activity at the Palmer Airport, a few businesses may have been missed, so these estimates should be considered a minimum level of impact. The Palmer area businesses contacted included:

- Air carriers and air taxis that use the Palmer Airport.
- Aircraft maintenance and repair companies (including painting and aviation repair) that do business on or because of the Palmer Airport.
- Flight schools and aircraft rental and leasing businesses that do business on or because of the Palmer Airport.
- Aviation fuel providers located on the Palmer Airport and serving airport users.
- Government agencies associated with the Palmer Airport, including FAA's Palmer FSS, the DNR regional firefighting operation, and the City of Palmer's airport management.

In addition, the impacts of businesses located at the airport which are not related directly to aviation activity were examined. These businesses included city-run recreation facilities, MSB school-related facilities, and city emergency services agencies.

The portion of these businesses' activity directly related to the Palmer Airport was estimated, each business category was analyzed separately using IMPLAN multipliers specific to their industry types, and results were compiled to determine local economic impacts. In addition, an

estimated annual average of capital projects undertaken at the Palmer airport was analyzed for impacts.

The following table presents direct, indirect, and induced impacts of airport-related activity and capital project spending at the Palmer Airport by spending categories. Business revenue for these activities amounted to an estimated \$19.1 million in 2007. Of that amount, over \$13 million stayed within the borough economy. This activity created the full-time equivalent of about 217 jobs with an annual payroll of \$10.3 million within the Palmer area. Airport-related businesses also paid about \$2.3 million in rents, royalties and dividends, and over \$0.6 million in city and borough fees and taxes in 2007. Because several of the businesses located at the Palmer Airport are government agencies, and government agencies are often exempt from local taxation, local fees and taxes are lower than they would be if these services were provided by private business.

The final row of Table 1 represents the percent of business revenue that is spent locally as Value Added (for payroll, rents, fees and taxes) through both direct (primary) and indirect and induced (secondary) impacts in 2007.

**Table 1: 2007 Economic Impacts of Activity at Palmer Airport**

	<b>Aviation-Related Impacts</b>	<b>Other Business Impacts</b>	<b>Capital Projects Impacts</b>	<b>Total Impacts</b>
Business Revenue				
Direct	\$8,838,056	\$2,523,138	\$2,209,448	\$13,570,642
Indirect	\$951,938	\$0	\$294,630	\$1,246,568
Induced	\$2,659,948	\$1,092,480	\$534,841	\$4,287,269
<b>Total</b>	<b>\$12,449,942</b>	<b>\$3,615,618</b>	<b>\$3,038,918</b>	<b>\$19,104,478</b>
Jobs (full-time equivalent)				
Direct	101.1	39.6	18.5	159.2
Indirect	10.4	0.0	3.0	13.4
Induced	27.4	11.3	5.5	44.2
<b>Total</b>	<b>139.0</b>	<b>50.9</b>	<b>27.0</b>	<b>216.8</b>
Payroll and Proprietor' Income				
Direct	\$5,262,730	\$2,313,812	\$993,301	\$8,569,843
Indirect	\$328,419	\$0	\$103,519	\$431,938
Induced	\$801,157	\$329,045	\$161,095	\$1,291,297
<b>Total</b>	<b>\$6,392,305</b>	<b>\$2,642,857</b>	<b>\$1,257,916</b>	<b>\$10,293,078</b>

	<b>Aviation-Related Impacts</b>	<b>Other Business Impacts</b>	<b>Capital Projects Impacts</b>	<b>Total Impacts</b>
Rent, Royalties, and Dividends				
Direct	\$562,559	\$209,326	\$193,132	\$965,017
Indirect	\$133,033	\$0	\$32,832	\$165,865
Induced	\$717,931	\$294,868	\$144,348	\$1,157,147
<b>Total</b>	<b>\$1,413,523</b>	<b>\$504,194</b>	<b>\$370,312</b>	<b>\$2,288,029</b>
Local Fees and Taxes				
Direct	\$262,945	\$0	\$15,177	\$278,122
Indirect	\$48,669	\$0	\$10,422	\$59,091
Induced	\$183,015	\$75,167	\$36,801	\$294,982
<b>Total</b>	<b>\$494,629</b>	<b>\$75,167</b>	<b>\$62,399</b>	<b>\$632,195</b>
Total Value Added				
Direct	\$6,088,231	\$2,523,138	\$1,201,610	\$9,812,980
Indirect	\$510,121	\$0	\$146,774	\$656,894
Induced	\$1,702,104	\$699,080	\$342,243	\$2,743,427
<b>Total</b>	<b>\$8,300,456</b>	<b>\$3,222,218</b>	<b>\$1,690,627</b>	<b>\$13,213,301</b>
<b>Percent Retained Locally</b>	<b>66.67%</b>	<b>89.12%</b>	<b>55.63%</b>	<b>69.16%</b>

Source: Minnesota IMPLAN Group and Southeast Strategies

### 3.3 Relative Values of Airport-related Businesses to the Palmer Economy

This section provides a brief analysis of the relative value of various types of airport-related businesses to the Palmer area economy. Some categories of airport-related industries have only one or two businesses in the Palmer area. In order to not reveal sensitive business information, relative value of each type of business was estimated by examining average annual wages for that type of industry within the MSB as reported to the Alaska Department of Labor and Workforce Development for 2006. In addition, economic multipliers for the creation of jobs and business income by the various airport-related businesses in the Palmer area are compared. Table 2 presents 2006 average annual wages in the borough for airport-related businesses. This table shows that government agencies related to aviation have the highest-paying jobs.

**Table 2: Average Annual Wages by Industry, Matanuska-Susitna Borough, 2006**

Industry	2006 Average Annual Wage*
Federal Government Aviation Support	\$64,000
Heavy Construction (Capital Projects)	\$52,000
State Government Firefighting Operation	\$41,500
Local Government	\$39,000
Flight School	\$35,000
Air Transportation	\$33,000
Maintenance and Repair	\$31,500
Fuel Sales	\$21,000

Sources: Alaska Department of Labor and Workforce Development

\*(rounded to the nearest \$500)

Table 3 presents the employment multipliers by airport-related industry in the Palmer area for 2006. This ratio shows the increase in all types of jobs in the local economy for each new job created in a specific airport-related industry. For example, creation of one job within local government airport management at the Palmer Airport would result in 1.1 additional jobs in the rest of the Palmer area economy, for a total of 2.1 new jobs created.

**Table 3: Employment Multipliers by Industry, Matanuska-Susitna Borough, 2006**

Industry	Employment Multiplier
Local Government	1.10
Air Transportation	0.89
Federal Government Aviation Support	0.72
Heavy Construction (Capital Projects)	0.46
Fuel Sales	0.41
State Government Firefighting Operation	0.34
Flight School	0.31
Maintenance and Repair	0.28

Sources: Minnesota IMPLAN Group, and Southeast Strategies

Table 4 presents the business income multipliers for various airport-related industries in the Palmer area. This ratio shows the increase of income to all types of business in the local economy for each new dollar earned in a specific airport-related industry. For example, for every increase in \$100 of income to the fuel sales industry in the Palmer area, an additional \$36 will be created in the local economy, for a total increase of \$136 in business income in the Palmer area.

**Table 4: Business Income Multipliers, Matanuska-Susitna Borough, 2006**

<b>Industry</b>	<b>Business Income Multiplier</b>
Air Transportation	0.47
Federal Government Aviation Support	0.44
Flight School	0.44
Local Government	0.43
State Government Firefighting Operation	0.43
Heavy Construction (Capital Projects)	0.38
Fuel Sales	0.36
Maintenance and Repair	0.34

Sources: Minnesota IMPLAN Group, and Southeast Strategies

## **4.0 FORECAST OF AVIATION ACTIVITY**

### **4.1 Socioeconomic Profile of Palmer**

Strong growth in the Palmer area has been ongoing since the 1980s, fueled by growth in the surrounding Matanuska-Susitna Valley and in nearby Anchorage, and construction of a statewide road system into the area. The Matanuska-Susitna Valley area serves as a bedroom community to Anchorage, but also maintains a strong agricultural sector. Palmer is the seat of the MSB, the location of the Alaska State Fair, and houses a regional hospital. While there is still some mining and agriculture activity in the area, much of the economy is based on supporting the area population, and contains a diversity of retail and service businesses. Recreation and tourism is also a strong economic sector in the area.

#### **4.1.1 Population**

The estimated 2006 population of Palmer (within the city boundary) was 5,574, making it the tenth largest city in Alaska. In 2006, the median age of MSB residents was 35.0 years, slightly older than the statewide average of 32.4 years. The average household size for Palmer residents in 2000 was 2.81 persons.

The MSB has one of the fastest growing populations in the state, showing an annual average growth rate of 4.3% between 2000 and 2005 compared to a 1.1% growth rate statewide. Between 2000 and 2005, the borough gained 14,719 residents, more than the population of most communities in the state. Over 80% of that increase was due to net migration (immigration minus out migration), and less than 20% was due to natural increase (births minus deaths). Net migration for the entire state was negative over the same time period. While the population growth for the city of Palmer is not as great as that of the total MSB, the city is impacted by that greater population growth as the center of local government, and a service and retail center in the borough. The following table presents population change in Palmer and the MSB from 1960 to 2006.



**Table 5: Matanuska-Susitna Borough and Palmer Population Growth 1960 to 2006**

Year	Borough Population	Annual Growth Rate	Palmer Population	Annual Growth Rate
1960	5,188		1,181	
1970	6,509	2.5%	1,140	-0.3%
1980	17,816	17.4%	2,141	8.8%
1990	39,683	12.3%	2,866	3.4%
2000	59,322	4.9%	4,533	5.8%
2001	61,737	4.1%	4,583	1.1%
2002	64,329	4.2%	4,838	5.6%
2003	67,841	5.5%	5,321	10.0%
2004	70,482	3.9%	5,226	-1.8%
2005	74,041	5.0%	5,382	3.0%
2006	77,174	4.2%	5,574	3.6%
<b>Annual Average (1960 to 2006)</b>		<b>6.4%</b>		<b>3.9%</b>

Source: Alaska Department of Labor and Workforce Development

The 2007 population projections developed by the Alaska Department of Labor and Workforce Development show an estimated increase in the MSB population of 2.6% per year through 2030, more than twice the increase projected for the state as a whole.

#### 4.1.2 Economic Activity

The economy of Palmer and the surrounding MSB is somewhat defined by the fact that the area is close to Anchorage, yet has more available land for housing, and lower housing prices. Many MSB residents work outside of the area. Only about 55% of the workers residing in the MSB also worked in the borough in 2003 (the latest full year for which data is available). About 34% of borough residents working were employed in Anchorage while the other 11% of employed borough residents worked in places such as the North Slope and the Fairbanks North Star Borough in 2003. These figures are not available for workers living in the Palmer city limits, but it is likely there is a similar pattern for Palmer residents.

Palmer is the administrative center of the MSB, with the main government offices and utilities housed there. As such, the economy of Palmer is strongly tied to that of the borough. The largest economic sectors providing jobs in Palmer include the government, retail trade, and services sectors. Palmer is the headquarters for the MSB government, so local government is a major industry in the community. A large number of jobs in Palmer are also within retail sales

and health care industries. These support industries serve existing Palmer and MSB resident populations, and create limited revenue and business from outside of those areas.

Economic activity near Palmer can attract business and pleasure travelers to stay in Palmer, and includes the University of Alaska's Agricultural and Forestry Experiment Station and Research Farm, the statewide office of the United States Department of Agriculture (USDA), a regional hospital, and a 75-acre musk ox farm. These facilities also obtain some of their goods and services in Palmer. Besides the musk ox farm, pleasure travelers visit the Palmer area to experience the Alaska State Fair headquartered there. Seventy-three Palmer residents hold commercial fishing licenses, and 66 residents hold fishing crew licenses. In 2006, Palmer residents commercially caught over 4.7 million pounds of fish (mostly salmon), for a value of over \$2.3 million. The average annual household income for Palmer residents in 2006 was \$58,668.

Table 6 presents number of businesses, average annual employment, and earnings by industry for Palmer in 2006. While some Palmer residents work outside of the city, residents of other areas commute to Palmer to work. In 2006, there were over 2,000 more jobs in Palmer than there were residents of the city.

**Table 6: Employment and Earnings in Palmer by Industry for 2006**

Industry	Number of Businesses	Average Annual Employment	Total Wages	Average Annual Wages
Total Industries	569	7,680	\$301,273,446	\$39,228
Total Government	41	3,281	\$134,907,524	\$41,118
Federal Government	12	145	\$9,899,816	\$68,275
State Government	22	805	\$33,010,494	\$41,007
Local Government	7	2,331	\$91,997,214	\$39,467
Total Private Industry	528	4,400	\$166,365,922	\$37,815
Goods Producing	150	694	\$30,735,280	\$44,314
Natural Resources and Mining	12	66	\$1,319,215	\$19,938
Agriculture	7	49	NA	NA
Mining	5	17	\$771,262	\$44,928
Construction	128	574	\$28,081,153	\$48,922
Manufacturing	10	53	\$1,334,912	\$24,991

<b>Industry</b>	<b>Number of Businesses</b>	<b>Average Annual Employment</b>	<b>Total Wages</b>	<b>Average Annual Wages</b>
Service Providing	378	3,706	\$135,630,643	\$36,598
Trade, Transportation, and Utilities	68	835	\$26,749,532	\$32,045
Wholesale Trade	7	11	\$743,538	\$69,166
Retail Trade	47	651	\$17,353,469	\$26,653
Transportation and Warehousing	13	77	\$2,653,291	\$34,384
Utilities	1	96	NA	NA
Information	6	259	NA	NA
Financial Activities	26	277	\$12,104,011	\$43,736
Professional and Business Services	69	363	\$17,435,302	\$48,086
Education and Health Services	65	1,216	\$51,564,272	\$42,402
Education Services	6	220	NA	NA
Health Care and Social Assistance	59	996	\$41,522,575	\$41,686
Leisure and Hospitality	74	511	\$7,167,843	\$14,020
Arts, Entertainment, and Recreation	20	91	\$1,790,043	\$19,581
Accommodation and Food Services	54	420	\$5,377,800	\$12,809
Accommodation	15	138	\$2,056,636	\$14,921
Food and Drinking Places	39	282	\$3,321,164	\$11,777
Other Services	63	238	\$3,730,165	\$15,678

Source: Alaska Department of Labor and Workforce Development, 2007

#### 4.1.3 Government

Palmer is the administrative and government center of the MSB. The government sector employed 3,281 people in Palmer in 2006. The majority of those jobs are with local Borough or city governments (including school districts). State employment includes employment at University of Alaska's Agricultural and Forestry Experiment Station and Research Farm, the University of Alaska Matanuska-Susitna College campus, and the Matanuska-Susitna State Troopers headquarters. State government also includes the DNR Division of Forestry's firefighting operations for the southern half of Alaska, which is located at the Palmer Airport. Federal agencies located in Palmer include the main Alaska offices of USDA's Rural Development and National Resource Conservation Services, the Alaska Tsunami Warning Center, and the FAA's FSS.

#### 4.1.4 Services

The fastest growing support industry sector in the MSB is the health care and social assistance sector. This industry is showing strong growth statewide as the industry matures and as the

population of Alaska ages. As more medical care for borough residents is being provided locally, additional economic growth has occurred in this sector. Palmer is the location of the Valley Hospital, the Matanuska-Susitna Regional Medical Center, and Providence Hospital's new imaging center. Those facilities will continue to grow in the future as the population of MSB grows.

#### 4.1.5 Recreation and Tourism

One of the fastest growing industries in the MSB is recreation and tourism (called Leisure and Hospitality by Alaska Department of Labor and Workforce Development). Many of the economic benefits of this industry accrue in the Palmer area because of its status as the borough's administrative center. The borough has abundant recreational opportunities, and is located between the two most populous areas of the state. Anchorage and Fairbanks area residents travel to the borough year-round for recreation. In addition, the area is visited by travelers from out of state in group tours or traveling independently. Many visitors travel through the Palmer area to reach recreational areas within the borough such as Hatcher Pass. Many opportunities for sport fishing and hunting, cultural/historical experiences, and other recreational activities are found within the borough. Winter tourism is more prevalent in the borough than in most places in Alaska due to the large population centers on either side of the borough, and the major winter draw of the Iditarod sled dog race, which has its restart in Wasilla or Willow depending on the current snow conditions.

Access to and through the borough is primarily via major roadways and rail facilities. Palmer is close to transportation systems within the borough, and has several lodging, dining, and other establishments to serve travelers. In addition to traveling to Palmer to visit the city's attractions, visitors often stop in Palmer in conjunction with visits to other attractions in the borough.

Although visitor counts in the borough or its individual cities are not available, the Greater Palmer Chamber of Commerce reports that 35,886 visitors came to their center in 2006, and that this number has been increasing every year. The following table reflects the growth in visitation through growth in bed tax revenues to the MSB. The Matanuska-Susitna Visitor's Bureau estimates that there are about 1,500 rooms available to accommodate visitors in the borough in 2006. The bed tax of 5% has remained unchanged since it was implemented in 1990.

**Table 7: Bed Taxes Collected - Matanuska-Susitna Borough, 1990 to 2005**

<b>Year</b>	<b>Taxes</b>	<b>% Change</b>
1990	\$46,551	
1991	\$35,915	-22.8%
1992	\$55,345	54.1%
1993	\$72,055	30.2%
1994	\$93,345	29.5%
1995	\$121,778	30.5%
1996	\$171,899	41.2%
1997	\$242,835	41.3%
1998	\$291,021	19.8%
1999	\$349,119	20.0%
2000	\$481,776	38.0%
2001	\$542,345	12.6%
2002	\$645,423	19.0%
2003	\$684,615	6.1%
2004	\$767,579	12.1%
2005	\$829,545	8.1%
2006	\$979,353	18.1%

Source: Matanuska-Susitna Borough, 2007.

## **4.2 Palmer Airport Air Traffic Forecast**

The Palmer Municipal Airport does not have an air traffic control tower, and does not have regularly scheduled air service. Historic air traffic data for this airport was obtained from the United States Department of Transportation (USDOT), FAA, Kenai FSS, carriers using the airport, and other knowledgeable parties. The following sections present information about current transportation services, historic traffic, and a forecast of future air traffic activity at Palmer Airport.

### **4.2.1 Palmer Service Area**

The city of Palmer is located in the Matanuska-Susitna Valley northeast of Anchorage. Palmer can be reached by several modes of transportation in addition to air. The community is located on the Glenn Highway, just 42 miles from Anchorage. The Alaska Railroad also travels to Palmer and nearby Wasilla from Anchorage, with one round trip daily in summer and one weekly in winter. The majority of passengers, mail, and freight moving to and from Palmer travel via highway.

#### 4.2.2 Historic and Current Air Traffic

Palmer Municipal Airport historically has not had scheduled air service because of its close proximity to a major airport at Anchorage, only 42 miles away by highway. The majority of activity at Palmer Airport has historically been general aviation traffic. In the past, the airport has been the location of a small fuel and cargo operation, but no cargo carriers are currently operating there. The DNR Division of Forestry's Fire and Aviation program has developed a regional firefighting base at the Palmer Airport, and this program generates a large number of operations at the airport just before and during the wild fire season (March through September). Other groups, such as the Alaska State Troopers and various military organizations, sometimes train at the Palmer Airport.

In addition to general aviation, firefighting and training traffic, current activity at the Palmer Airport includes commercial aircraft rotating through a recently established carrier maintenance facility, a flight school, and occasional air taxi and charter traffic. Charter flights pick up during the firefighting season as fire crews are brought into and out of the regional base. Other activity includes aerial applications such as aerial mapping, and agricultural seeding and spraying. One communications company is based at the Palmer Airport and uses aircraft to access its remote facilities.

Reported charter traffic to and from Palmer by certified air carriers in the years 2004, 2005, and 2006 is presented in Table 8. In 2004, Arctic Circle Air Service and Hageland Aviation provided some charter service to Palmer. In 2005, Alaska Central Express (cargo only), and Wright Air Service also reported several flights into Palmer. In 2006, flights to Palmer were reported by Frontier Flying Service, Hageland Aviation, Iliamna Air Taxi, Tanana Air Service, and Wright Air Service. This information was reported to the USDOT by certified air carriers, and does not include most air taxis. In addition to this traffic presented below, several air taxis use the Palmer Airport several times a year. No one carried mail by air into or out of Palmer during those years.

**Table 8: Palmer Air Traffic - 2004 to 2006**

	2004	2005	2006
<b>Inbound</b>			
Flights	25	27	27
Passengers	74	39	174
Freight (pounds)	569	6,974	965
<b>Outbound</b>			
Flights	21	31	30
Passengers	22	94	201
Freight (pounds)	16,907	46,185	11,152

Source: USDOT, Bureau of Transportation Statistics, 2007

The Palmer Municipal Airport hosts an FAA FSS that serves the area within a 30 to 40 mile radius of Palmer. This station contacts all planes passing through the area during daylight hours. In addition to planes using the Palmer Airport, the FSS contacts planes using surrounding public and private airstrips and lakes.

Table 9 presents the count of flights in the Palmer area contacted by FSS from 2003 through 2006. As the FSS only operates in the daytime, the few night operations are not included in this data. In addition, this traffic count does not account for training activities at Palmer airport, which often consist of multiple landings and takeoffs (operations) by one plane in a short period of time. The table shows that general aviation and military air traffic in the Palmer area has decreased in the past several years, while there has been a slight increase in air carrier and air taxi traffic in that area. Over 90% of the air traffic in the area is visual flight rules (VFR).

**Table 9: Flights in the Palmer Area - 2003 to 2006**

Traffic	2003	2004	2005	2006	Average Annual Change
Air Carrier	83	82	75	84	0.4%
- IFR	32	27	21	10	-22.9%
- VFR	51	55	54	74	15.0%
Air Taxi	1,693	1,771	1,914	1,948	5.0%
- IFR	47	46	62	54	5.0%
- VFR	1,646	1,725	1,852	1,894	5.0%
General Aviation	15,405	13,013	13,100	11,168	-9.2%
- IFR	59	90	67	48	-6.2%
- VFR	15,346	12,923	13,033	11,120	-9.2%
Military	174	143	64	98	-14.6%
- IFR	11	26	5	3	-24.2%
- VFR	163	117	59	95	-13.9%
Total	17,355	15,009	15,153	13,298	-7.8%
- IFR	149	189	155	115	-7.6%
- VFR	17,206	14,820	14,998	13,183	-7.8%

Source: FAA, Palmer FSS, 2007

Note: Includes all daytime traffic in the Palmer area, not just flights into the Palmer Airport.

#### 4.2.3 Base Year (2007) Air Traffic Estimates

This section estimates 2007 air traffic at the Palmer Municipal Airport. This 2007 estimate will be the base year for the following 20-year air traffic forecast. Data sources used to develop this base year estimate include previous Palmer Municipal Airport air traffic forecasts, and historic traffic statistics provided by the FAA and the USDOT, Bureau of Transportation Statistics. In addition, local air carriers and air taxis, airport tenants, airport management and other knowledgeable parties were interviewed about air traffic at Palmer Airport. Table 10 presents the base year (2007) estimates for air traffic at Palmer Municipal Airport.



**Table 10: Base Year (2007) Aircraft Activity at Palmer**

Category	2007
Based Aircraft	120
Operations - Total	28,670
Air Carriers/Air Taxis	2,190
General Aviation - Local	16,060
General Aviation - Itinerant	5,840
Firefighting	4,380
Military	200
Instrument Approaches	115
Peak Month Operations	6,510
Peak Hour Operations	34

Source: Southeast Strategies, January 2008

#### 4.2.3.1 Based Aircraft

An estimated 120 aircraft are based at the Palmer Airport year-round, based on the airport records of tie-down leases, aerial photographs of the airport area, and discussions with airport tenants and other knowledgeable parties. The majority of those aircraft are fixed-wing single-engine craft owned by individuals. This count does not include aircraft that are rotated in and out of the airport to use on-airport maintenance facilities. During the summer season (April through September), the State of Alaska firefighting operation has short term contracts for several additional aircraft that are based at Palmer Airport. Additional private aircraft may also be based at Palmer Airport during the summer season.

#### 4.2.3.2 General Aviation Traffic

All aircraft not providing commercial transport of passengers, mail, or freight, and not in military ownership are considered general aviation. Most of the planes based at Palmer are individually owned and operated for non-commercial purposes. During summer months, private planes frequently stop at Palmer Airport, including occasional small jets. Transient aircraft stop to visit the area, wait out bad weather, and/or obtain fuel or services from the several aviation repair and maintenance businesses located at the airport. Palmer Airport hosts the offices of companies with aircraft used for business activities, such as flight training and communications facility maintenance. In addition, the State of Alaska uses aircraft for firefighting based out of the Palmer Airport in the summer season. While all of this traffic is considered general aviation, firefighting operations were estimated separately in the base year estimate due to the large

number of annual operations generated by that activity. Firefighting activity at the Palmer Airport can vary greatly from year to year depending on wildfire activity.

#### *4.2.3.3 Air Carrier and Air Taxi Traffic*

Several regional air carriers and local and regional air taxis occasionally operate charters to or from Palmer Airport. In addition, one regional air carrier has a maintenance base at Palmer Airport, and the majority of their fleet rotates through the airport for maintenance (four to five planes per week), but no passengers or freight are carried on those flights. The year round average daily traffic estimate for commercial traffic at Palmer Airport is about 3 flights per day. Traffic is higher in summer and lower in winter. Nearly a third of this traffic is currently generated by the regional carrier maintenance facility located at the Palmer Airport. No mail and very little freight moves into or out of Palmer Airport by commercial carrier.

#### 4.2.4 Air Traffic Forecast Development

The Palmer air traffic forecast was developed consistent with the recommendations in FAA (FAA) Advisory Circular (AC) 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 Palmer Airport, tenants and management at the airport, and other knowledgeable parties, as well as an examination of Palmer's past economy and future economic trends.

##### *4.2.4.1 Existing Forecast*

Table 11 presents the forecast of air traffic at the Palmer Airport from 1996 through 2016, completed for a 2001 Palmer Municipal Airport Master Plan. This forecast uses an average annual increase in operations between 4% and 5% between 1996 and 2016.

**Table 11: Forecast from 2001 Airport Master Plan**

	1996	2001	2006	2011	2016
Based Aircraft	134	139	165	196	233
Operations					
Local	6,822	9,831	10,230	12,152	14,116
Itinerant	14,500	14,651	18,345	22,148	26,329
Total	21,322	24,482	28,575	34,300	40,445
Instrument Approaches	-	75	90	225	330
Peak Month Operations	3,769	4,326	5,102	6,060	7,204
Peak Hour Operations	12	13	16	19	22

Source: Palmer Municipal Airport Master Plan, Knight Piesold and Co., 2001

Several factors impacting aviation activity at Palmer have changed since the forecast in Table 11 was developed. The following section outlines conditions and trends that may impact future air traffic activity at Palmer Municipal Airport.

#### 4.2.4.2 Trends Affecting Aviation Activity at Palmer Airport

Aviation activities are affected by a variety of factors. Local, regional, and national conditions and trends affecting air traffic at Palmer are examined in this section. Some factors tend to increase demand for air travel, while some tend to dampen that demand.

#### Factors Increasing Demand for Air Travel

The following factors could lead to an increase in aviation activity at Palmer Municipal Airport. While some factors impact the airport directly, other factors impact the region or aviation in general, and indirectly affect air traffic at Palmer Airport.

- Resource development (especially oil and gas) in Alaska will improve the economy of the state as a whole and its communities.
- The Palmer area and the MSB in general have had, and will continue to have strong population growth. The Alaska Department of Labor and Workforce Development's 2007 population forecast predicts an average population growth of about 2.6% per year through 2030.
- The tourism and outdoor recreation sector in Alaska is strong and growing. Air activity associated with tours and fishing, hunting and guiding activities have shown strong growth in recent years, and could impact air traffic at Palmer in the future. There is great

potential for growth in flight seeing, fly-in fishing, and hunting activities originating from the Palmer Airport.

- Although Palmer is a little out of the way for general aviation aircraft traveling through the region, there is great potential to increase general aviation traffic use of the Palmer airport through development of services and marketing.
- Demand is high for aircraft tie downs and private hangars in the Anchorage area. While there is excess space in the Anchorage area now, spots will eventually fill, creating demand in nearby areas.
- Residents of some communities closer to Palmer than to Anchorage (e.g., Eagle River and Chugiak) use tie-downs in the Palmer area for general aviation aircraft. Birchwood Airport near Palmer is now completely full. As demand increases, Palmer is the logical place to provide additional tie-down and hangar space.
- Demand for and high cost of space for small commercial operations at the Ted Stevens Anchorage International Airport could cause some commercial operators to move all or portions of their operations (such as cargo or maintenance operations) to areas such as Palmer Airport in the future.
- As transportation options to reach the MSB improve (highway upgrades, Knik Arm ferry and/or bridge, etc.), more non-borough resident pilots may consider basing their aircraft at airports within the borough.
- Palmer Airport management is actively seeking to develop more aviation-related business activity at the airport.
- Improved instrument approaches based on the NextGen GPS technology will allow more reliable access to the airport in poor weather conditions. A new straight-in GPS approach to RW 9 was added in 2008 and provides a better approach option than was available in the past.
- Currently freight and construction materials for area lodges have been supplied by air from Palmer.
- Fuel flights from Palmer have occurred in the past and may increase in the future.

- Military training flights and quick turnaround refueling options for air cargo operations may also provide flights into Palmer Municipal Airport.

### **Factors Decreasing Demand for Air Travel**

The following factors could lead to a decrease in aviation activity at the Palmer Airport.

- Air traffic in general across the nation has been decreasing. Ratios of pilots and based aircraft to the population have decreased consistently for many years, and will likely continue to decline.
- Results of the September 11 events have made commercial air travel in general more difficult, and complications such as increased insurance rates and new security procedures have put pressure on commercial air carriers to consolidate or leave the industry.
- High fuel, insurance, and security costs tend to increase the cost of commercial and recreational air travel.
- Disposable incomes are decreasing due to high energy costs and a slowing national economy. Recreational aviation is increasingly expensive due to high fuel and other costs, and as incomes decline, people will make less costly substitutions for expensive recreational aviation activities..
- Historic air traffic activity at the Palmer Airport has declined in the past several years. Past restrictions on private hangars at Palmer, and property taxes assessed for planes based at Palmer may have dampened demand. In addition, many airstrips exist in the Palmer area, many of which are private air parks as part of residential developments. The diversity of strips allows pilots to base planes close to their residences.
- Low cost surface transportation alternatives exist for transporting people and freight to and from the Palmer area. Commercial transport of freight by air to Palmer has never occurred, and will likely never occur. Some air delivery of freight originating in Palmer has occurred in the past, but increasing options for low cost surface transportation for that freight will lower demand for more costly air transportation of freight and mail. This will impact Palmer Airport's current mix of aviation activity slightly.

#### 4.2.4.3 Trendline Development

Low, moderate, and high rates of growth for air traffic at Palmer were estimated using trendline analysis. The analysis was developed from examination of historic growth trends, interviews with Palmer area aviation-related businesses, Palmer Airport management, 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 growth history and forecasts for Palmer and the MSB, and from historic trends in air traffic in the Palmer area. Table 12 presents these indicators. These measures were used as a basis, and professional judgment was used to adjust trends where warranted.

**Table 12: Palmer Growth Indicators**

Source	Date	Growth
Alaska Department of Labor Population Forecast to 2030 - MSB	2007	2.6%
Population Growth, City of Palmer - annual average, 1960-2006	2003	3.9%
Change in General Aviation Traffic in Palmer Area - FAA Flight Service - annual average, 2003 to 2006	2007	-9.2%

Sources: Alaska Department of Labor, and Workforce Development; Alaska Department of Commerce, Community and Economic Development; and the Palmer FAA FSS, 2007

#### 4.2.5 Air Traffic Forecast Scenarios

Air traffic forecasts for Palmer Municipal Airport to 2027 were developed for low, moderate, and high growth scenarios. Although many socioeconomic and traffic growth indicators for the area are positive, the uncertain factors mentioned earlier, combined with the current downward trend in aviation activity in the Palmer area tend to dampen expectations of positive growth in future activity at Palmer. It is possible that continued high fuel prices and economic concerns could continue to result in a negative growth, and potential for location of new aviation businesses at the Palmer airport could result in a strong positive growth. However, this forecast range is meant to be conservative, so the rates of growth chosen for the three scenarios were 0% for low growth, 1% for moderate growth, and 3% for high growth.

This forecast assumes that scheduled air service for transportation of passenger, freight, and mail will not develop at the Palmer Airport over the forecast period. The same rates of growth were used for both operations and number of based aircraft at Palmer Airport. The following tables

present the low, medium and high growth forecasts for based planes, operations (including peak operations), and instrument approaches at the Palmer Municipal Airport from 2007 to 2027. Instrument approaches are expected to increase faster than the overall forecast due to the planned addition of GPS instrument approaches at the airport.

Measures of base year peak activity at the Palmer Airport were developed from interviews with air carriers and other aviation-related businesses using Palmer Airport, airport management, and other knowledgeable parties. The peak months for operations are July and August. Peak hours are in the late afternoon and early evening (3 to 7 pm).

#### 4.2.5.1 Low Growth Forecast

Table 13 presents results of the low growth air traffic forecast for Palmer Municipal Airport to 2027. The forecast assumes no growth in air traffic. Assumptions associated with this forecast include the continued high price of fuel and other aviation-related costs, the cooling of the national economy, and the continued availability of alternative transportation options for passengers and goods to and from the Palmer area.

**Table 13: Low Growth Air Traffic Forecast**

<b>Growth Rate = 0% Per Year</b>					
	<b>2007</b>	<b>2012</b>	<b>2017</b>	<b>2022</b>	<b>2027</b>
Based Aircraft	120	120	120	120	120
Operations - Total	28,670	28,670	28,670	28,670	28,670
Air Carriers/Air Taxis	2,190	2,190	2,190	2,190	2,190
General Aviation - Local	16,060	16,060	16,060	16,060	16,060
General Aviation - Itinerant	5,840	5,840	5,840	5,840	5,840
Firefighting	4,380	4,380	4,380	4,380	4,380
Military	200	200	200	200	200
Instrument Approaches	115	115	115	115	115
Peak Month Operations	6,510	6,510	6,510	6,510	6,510
Peak Hour Operations	34	34	34	34	34

Source: South Strategies, January 2008

#### 4.2.5.2 Moderate Growth Forecast

Table 14 presents results of the moderate growth air traffic forecast for Palmer Municipal Airport to 2027. The forecast assumes a growth of air traffic of 1.0% per year. Many factors, both positive and negative, could combine to create this moderate growth scenario. For example, high

costs and negative economic growth could combine with increased presence of aviation related businesses at the Palmer Airport. This forecast assumes the continued availability of alternative transportation options for passengers and goods to and from the Palmer area.

**Table 14: Moderate Growth Air Traffic Forecast**

<b>Growth Rate = 1% Per Year</b>					
	<b>2007</b>	<b>2012</b>	<b>2017</b>	<b>2022</b>	<b>2027</b>
Based Aircraft	120	126	132	139	146
Operations - Total	28,670	30,104	31,609	33,189	34,849
Air Carriers/Air Taxis	2,190	2,300	2,414	2,535	2,662
General Aviation - Local	16,060	16,863	17,706	18,591	19,521
General Aviation - Itinerant	5,840	6,132	6,439	6,761	7,099
Firefighting	4,380	4,599	4,829	5,070	5,324
Military	200	210	221	232	243
Instrument Approaches*	115	127	140	155	171
Peak Month Operations	6,510	6,836	7,177	7,536	7,913
Peak Hour Operations	34	36	37	39	41

Source: Southeast Strategies, January 2008

\* Instrument approaches are expected to increase faster than other activity due to the planned addition of new approaches at the airport.

#### 4.2.5.3 High Growth Forecast

Table 15 presents results of the high growth air traffic forecast for Palmer Municipal Airport to 2027. The forecast assumes a growth in air traffic of 3.0% per year. Economic assumptions associated with this forecast include moderate growth of the Palmer economy, and a leveling off or decrease of fuel prices. It also assumes increased presence of aviation-related businesses at the Palmer Airport. Additional development of on-airport businesses has potential to fuel a much higher growth rate than the 3% presented here.



**Table 15: High Growth Air Traffic Forecast**

<b>Growth Rate = 3% Per Year</b>					
	<b>2007</b>	<b>2012</b>	<b>2017</b>	<b>2022</b>	<b>2027</b>
Based Aircraft	120	138	159	183	210
Operations - Total	28,670	32,971	37,916	43,603	50,144
Air Carriers/Air Taxis	2,190	2,519	2,896	3,331	3,830
General Aviation - Local	16,060	18,469	21,239	24,425	28,089
General Aviation - Itinerant	5,840	6,716	7,723	8,882	10,214
Firefighting	4,380	5,037	5,793	6,661	7,661
Military	200	230	265	304	350
Instrument Approaches*	115	157	215	294	401
Peak Month Operations	6,510	7,487	8,609	9,901	11,386
Peak Hour Operations	34	39	45	52	59

Source: Southeast Strategies, January 2008

\* Instrument approaches are expected to increase faster than other activity due to the planned addition of new approaches at the airport.

Table 16 summarizes the full range of forecasts for Palmer Airport air traffic to the year 2027.

**Table 16: Air Traffic Forecast Summary**

<b>Category</b>	<b>2007 (Base)</b>	<b>2012</b>	<b>2017</b>	<b>2022</b>	<b>2027</b>
<b>Based Aircraft</b>					
Low Forecast	120	120	120	120	120
Moderate Forecast	120	126	132	139	146
High Forecast	120	138	159	183	210
<b>Operations</b>					
Low Forecast	28,670	28,670	28,670	28,670	28,670
Moderate Forecast	28,670	30,104	31,609	33,189	34,849
High Forecast	28,670	32,971	37,916	43,603	50,144
<b>Instrument Approaches</b>					
Low Forecast	115	115	115	115	115
Moderate Forecast	115	127	140	155	171
High Forecast	115	157	215	294	401
<b>Peak Month Operations</b>					
Low Forecast	6,510	6,510	6,510	6,510	6,510
Moderate Forecast	6,510	6,836	7,177	7,536	7,913
High Forecast	6,510	7,487	8,609	9,901	11,386
<b>Peak Hour Operations</b>					
Low Forecast	34	34	34	34	34
Moderate Forecast	34	36	37	39	41
High Forecast	34	39	45	52	59

Source: Southeast Strategies, January 2008.

## **5.0 FACILITY REQUIREMENTS**

### **5.1 Design Aircraft**

Based on interviews with tenants and a review of the forecast for the airport, the design aircraft for the Palmer Airport should be an Airport Reference Code (ARC) B-III business aircraft. It is expected that there will be occasional operations by larger business jets and commercial jets, but that the number of these operations is unlikely to exceed 500 per year during the planning period. Examples of B-III aircraft include the Douglas DC-6 and older BAE 146 aircraft. Similar but less demanding aircraft include the DeHavilland Dash 8 (ARC of A-III), the Douglas DC-3 (ARC of A-III), and the Beech 1900 (ARC of B-II).

### **5.2 Runways**

#### **5.2.1 Capacity**

Airfield capacity was estimated using the long-range planning method found in AC 150/5060-5 *Airport Capacity and Delay*. Although some of the assumptions for this method are not a perfect match for the Palmer Airport, it provides a general guideline for airfield capacity. Based on this method, the Palmer Airport is estimated to have an annual service volume capacity of approximately 230,000 operations per year. The airport is estimated to have a peak operations capacity of 98 VFR operations per hour and 59 IFR operations per hour.

However, based on the limited instrument approaches and surrounding high terrain, the actual IFR capacity is likely lower than the 59 operations predicted. Regardless of the actual capacities, the airfield capacity greatly exceeds the forecast demand of 50,144 annual operations and 59 peak hour operations (mostly VFR).

#### **5.2.2 Alignment**

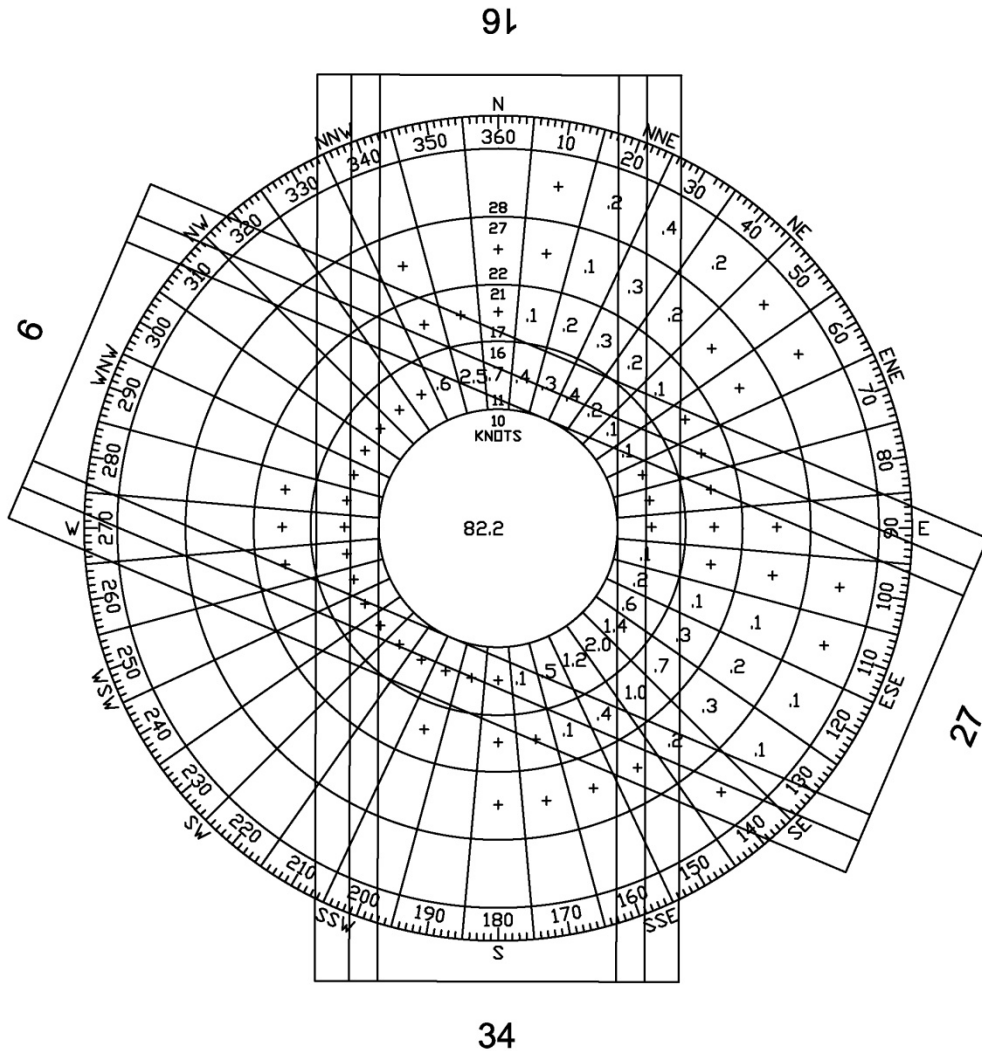
According to recently-acquired wind data from 1998 to 2007, RW 16-34 provides greater than 95% crosswind coverage for aircraft with a crosswind capability of 13 knots and 16 knots, but not 10.5 knots. The crosswind runway likewise provides adequate coverage for aircraft with a crosswind capability of 13 knots and 16 knots, but not 10.5 knots. The gravel runway has the same alignment as the primary runway, so is not considered separately for crosswind coverage. Overall crosswind coverage of the two paved runways is approximately 98 to 99% for all crosswind capabilities. No additional runways or changes to runway alignment are required. A

summary of the all-weather crosswind coverage is shown in the following table. Coverage and graphic wind roses for other weather situations such as VFR, IFR, and low IFR are included in Appendix B.

**Table 17: All-Weather Crosswind Coverage, 1998 to 2007**

Wind Speed	RW 16-34	RW 9-27	Combined
10.5 knots	93.31	92.63	98.08
13 knots	96.10	95.86	98.93
16 knots	98.09	97.72	99.44
20 knots	99.29	98.42	99.80

Source: National Climatic Data Center and DOWL HKM, 2008



**Figure 14: All-Weather Wind Rose, 1998 to 2007**

### 5.2.3 Length

FAA AC 150/5325-4B *Runway Length Requirements for Airport Design* provides runway length requirements for various categories of aircraft. For the Palmer Municipal Airport, the design aircraft is assumed to weigh more than 12,500 pounds, operate at a sea-level airport, and the airport has a mean daily maximum temperature of 66° F. Figures 3-1 and 3-2 of the AC provide runway length requirements to accommodate 75% and 100% of the large aircraft fleet between 12,500 pounds and 60,000 pounds, respectively. The runway length requirements are shown in the following table.

**Table 18: Runway Length Requirements for Large Aircraft**

Percent of Useful Load	75% of Fleet	100% of Fleet
60%	4,550 ft	4,700 ft
90%	5,750 ft	6,700 ft

Source: Figures 3-1 and 3-2 of FAA AC 150/5325-4B Runway Length Requirements for Airport Design

Note that these runway length requirements are intended to accommodate aircraft up to 60,000 pounds and that the aircraft forecast for the Palmer Airport are much smaller than 60,000 pounds. The primary runway at Palmer Airport is 6,008 feet long and is more than sufficient to accommodate the forecasted aircraft. No runway extension is required for the primary runway.

The crosswind runway at Palmer Airport is primarily used by smaller general aviation aircraft. Figure 2-1 of AC 150/5325-4B recommends a runway length of 3,300 feet to accommodate 100% of small aircraft with less than 10 seats. The existing crosswind runway at Palmer is 3,617 feet long. No runway extension is required for this runway.

The existing gravel runway is approximately 1,560 feet long and is only used for short-field landings by the smallest general aviation aircraft. The length of this runway is reported to be adequate by the pilots that use it.

### 5.2.4 Width

FAA AC 150/5300-150 *Airport Design* requires that runways intended for B-III aircraft have a minimum width of 100 feet. The primary runway is currently 100 feet wide and requires no changes.

Likewise, the crosswind runway is intended for aircraft up to ARC B-II and should have a minimum width of 75 feet if no approaches to this runway have visibility minimums lower than three-quarters of a mile. The runway is currently 75 feet wide. This runway will need to be widened to 100 feet if future approaches to this runway will have visibility minimums lower than three-quarters of a mile.

The gravel runway is intended to serve ARC A-I small aircraft. The width of the gravel runway is currently 60 feet and is reported as adequate by the pilots that use this runway. No changes to the gravel runway are required.

### 5.2.5 Runway Geometry

#### 5.2.5.1 *Runway Safety Area*

The RSA currently extends only 300 feet beyond both ends of RW 16-34. For a B-III runway, the RSA should extend 600 feet beyond the ends of the runway. A graded area should be extended at both ends of the runway to meet the 600-foot standard. The RSA for RW 16-34 is 300 feet wide and meets the width standard for a B-III RSA.

The RSA currently only extends 200 feet beyond both ends of RW 9-27. For a B-II runway, the RSA should extend 300 feet beyond the ends of the runway. The graded portion of the RSA should be extended an additional 100 feet at each end of the runway. The RSA for RW 9-27 is 150 feet wide and meets the width standard for a B-II runway.

The RSA for RW 16G-34G extends 240 feet beyond both ends of the runway and has a width of 120 feet. This RSA meets both the width and length standards for an A-I runway for use by small aircraft.

#### 5.2.5.2 *Runway Object-Free Area*

The ROFA for Runway 16-34 should have a width of 800 feet and extend 600 feet beyond the ends of a runway that serves B-III aircraft. However, there are obstructions along the east side of the existing ROFA within 400 feet of the runway centerline. First, the golf course fence is located approximately 275 feet from the runway centerline. It should be noted that the golf course was laid out and the fence constructed before the establishment of an 800-foot ROFA at

the Palmer Municipal Airport. There are also trees in the ROFA near the north end of the runway. The fate of these obstructions should be discussed as part of this plan.

The ROFA for Runway 9-27 should have a width of 500 feet and extend 300 feet beyond the ends of a runway that serves B-II aircraft. The ROFA for Runway 9-27 is generally free of obstructions, except for the golf course fence near the end of Runway 27. The fate of this obstruction should be discussed as part of this plan.

#### *5.2.5.3 Runway Obstacle-Free Zone*

The ROFZ for runways that serve large aircraft (>12,500 pounds) should be 400 feet wide and extend 200 feet beyond both ends of the runway. Both runways have an ROFZ of these dimensions that is free of obstructions.

#### *5.2.5.4 Runway Protection Zone*

The RPZ for runways serving B-II and B-III aircraft should be 1,000 feet long with an inner width of 500 feet and an outer width of 700 feet. The RPZs for both runways are free of incompatible land uses and are generally controlled by the airport. The RW 34 RPZ is completely owned by the airport. The RPZ for RW 27 is partially owned by the airport with the remainder of the RPZ located over the Matanuska River floodplain which is owned by the State of Alaska. The RPZs for RW 9 and RW 16 are partially owned by the airport with an aviation easement covering the remainder of each RPZ. The city is in the process of acquiring full title to the large easement inside the RW 9 RPZ.

### **5.3 Taxiways**

RW 16-34 has an ARC of B-III and taxiways intended for Airplane Design Group (ADG) III aircraft should be 50 feet wide and located at least 300 feet from an adjacent runway. TW A, the parallel taxiway for RW 16-34 is paved, 50 feet wide, 425 feet from RW 16-34, and meets ADG III requirements. No upgrades or expansion of TW A are required. The four connector taxiways between RW 16-34 and TW A are all paved and 55 feet wide.

RW 9-27 has an ARC of B-II and taxiways intended for ADG II aircraft should be 35 feet wide and 240 feet from an adjacent runway. TW B, the parallel taxiway for RW 9-27 is paved and

45 feet wide, but only 200 feet from RW 9-27. TWs J and L are paved and 35 feet wide. No upgrades or expansion of the RW 9-27 taxiways are required.

RW 16G-34G is a short gravel runway on the shoulder of RW 16-34. The only taxiway access to this runway is at the ends of the runway. Several pilots have requested a connector taxiway near the midpoint of this runway to decrease taxi distance for planes with tundra tires.

#### **5.4 Aprons, Tie-downs, and T-hangars**

There are currently 130 general aviation tie-down spaces at the airport and only approximately 80 of those spaces are currently occupied. With approximately 120 aircraft based at the airport, 67% of aircraft occupy a tie-down and 33% are in hangars or in private lease lots.

The high forecast calls for 210 based aircraft by 2027. If the percentage of tie downs remains steady, then approximately 140 aircraft will need a tie-down by 2027.

However, airport tenants have expressed a strong desire for inexpensive T-hangars at the airport to protect aircraft from high winds. If such T-hangars were constructed, then it is likely that a higher percentage of aircraft may be hangared in the future. Assuming that 50% of aircraft will still need a tie-down in 2027, the number of tie-downs should be at least 105.

Likewise if the percentage of aircraft on lease lots or in hangars remains steady, then approximately 70 aircraft will require hangar space by 2027. If additional, inexpensive T-hangars are built, then up to 105 aircraft could require hangar space.

#### **5.5 Pavement Condition**

As discussed in the inventory portion of this report, the 2004 Pavement Condition Report from DOT&PF indicates that much of the pavement on the airport is in need of repaving. Specifically, RW 16-34 has an average PCI of 58 and the PCI for the aprons ranges from 71-81. The condition of the taxiways varies widely. Some of the older taxiways are in very poor condition and need major repair and repaving. Essentially the entire airfield other than RW 9-27 and its associated taxiways should be repaved in the next five years.

## **5.6 Lighting, Markings, and Signage**

Both runways have medium intensity edge lighting systems that are in good repair. No additions or improvements to runway lighting are required.

RW 16-34 has standard markings for a nonprecision runway. RW 9-27 has standard markings for a visual runway. However, due to the recently published approach to RW 9, RW 9-27 should be upgraded to nonprecision markings by the addition of threshold markings (the rectangular bars just prior to the runway number). Aiming point markings (the rectangular bars 1,000 feet from the threshold) are not required for RW 9 because it is less than 4,000 feet long and is not generally used by jet aircraft. All hold position and runway distance remaining signs are in good condition and do not require replacement.

## **5.7 Helicopter Facilities**

Due to the occasional use of the airport by helicopters and several requests from airport users, a helicopter facility should be created on the airport. This facility should be designed to accommodate mid-sized civilian helicopters, but consideration should be given to making the facility large enough to accommodate at least one H-60 Blackhawk military helicopter.

The helicopter facility should be located away from residential areas if possible. This should help reduce any noise conflicts that might arise in the future. The helicopter facility should also be located away from aprons and tie-downs for fixed wing aircraft to avoid damage to these aircraft.

## **5.8 Airspace and Instrument Approaches**

During this master plan, one of the improvements most requested by commercial users of the airport was improved instrument approaches. In 2008, while this plan was underway, a straight-in GPS approach to RW 9 was published by FAA. Users indicated that the new approach was helpful and provided another option, but it still had several drawbacks. First, RW 9-27 is a relatively short runway that is not usable by large commercial aircraft. Second, the minimum descent altitude for the RW 9 approach is still not low enough for low-IFR conditions. Based on these comments users would still like some sort of precision approach to RW 16-34.



FAA has indicated that they do not have good obstruction data for the area around the Palmer Airport. Therefore, both instrument approaches for the airport assume a worst-case scenario for obstructions and have high minimum-descent altitudes. A review of instrument approach rules indicates that the existing approaches could be improved substantially if accurate survey data were available. Such survey data would also be required for any future precision approaches. Therefore, an obstruction survey should be performed in the near future.

### **5.9 Nav aids and Weather Reporting**

There are no terminal or enroute nav aids in the vicinity of the airport. Because most new approaches are based on GPS technologies, there is no need for additional nav aids in the area.

The ASOS weather station on the airport is in good condition and functioning well. No improvements or replacement of the ASOS is required.

### **5.10 Lease Lots**

Based on the forecast, the Palmer Airport will likely need additional lease lots to meet anticipated demand. Key areas of need include general aviation lease lots and large commercial lease lots.

Essentially all of the existing general aviation lease lots are currently leased. With the number of general aviation aircraft on the airport forecast to increase, additional general aviation lease lots will be required. The airport currently has approximately 120 based aircraft (mostly general aviation) and 9 general aviation lease lots (not including T-hangar lots or the Forestry facility). If this ratio holds true in the future and based aircraft increase to 210, then the airport will need an additional six to nine general aviation lease lots in the future.

Likewise the airport has four large commercial lease lots that are currently occupied. If the activity at the airport roughly doubles over the next twenty years, then another four large commercial lease lots will be required.

### **5.11 Access Roads and Parking**

Access to the airport from the Old Glenn Highway and from downtown Palmer is adequate via existing roads. However, there is limited access between the north and south apron and several

users requested a connecting road of some sort. Options should be explored to provide better access between the two aprons.

Parking is generally adequate and mostly consists of parking on lease lots when the parking is related to lease lot business. There is a small demand for parking for activities on the apron or for public parking that is currently met by parking on city or FAA areas of the airport. This is likely sufficient given the limited demand for this type of parking.

### **5.12 Land Acquisition**

The airport will need to acquire additional land in the future for three reasons. First, the airport will need additional land to allow for the expansion of the general aviation lease lot area if general aviation operations are to continue to be focused in the northwest portion of the airport. This area is currently fully developed and there is no room for additional growth in this area on existing airport property.

Other land acquisition will be required to obtain full control over existing RPZs. The city is currently attempting to purchase a large parcel in the RPZ of RW 9. All other RPZs are currently covered by an easement or are State property (the Matanuska River floodplain).

A third reason that land acquisition will be required is to provide a buffer between the airport and incompatible land uses. The City of Palmer only has zoning authority over property within the city limits, but most of the undeveloped property south of the airport is outside of the city limits. The borough currently has few if any land use controls over this property. Therefore, the only way that the airport can achieve any degree of control over the area immediately south of the airport is to purchase and annex the property. The potential for incompatible land use in this area has greatly increased in recent years and large parcels southwest of the airport have been developed into housing. Other parcels to the west of the airport are also currently undeveloped and act as a wildlife attractant, but are zoned residential and likely candidates for near-term residential development. These parcels would be good candidates for acquisition.

Another area where property acquisition may eliminate an incompatible land use is the several small parcels located at the northeast corner of the airport adjacent to the Old Glenn Highway and the Matanuska River. This area is very close to the runway and the residential and

commercial activities there are not generally compatible with airport operations. Residents of this area frequently complain of airport noise and must travel across existing airport property to reach their private property. Airport ownership of this area would eliminate the incompatible land use and allow for potential aviation development.

### **5.13 Utilities**

As the airport expands into new property or adds buildings on existing airport property, utilities will need to be extended as well. Particularly, additional utilities may be needed along the west side of the airport as new parcels are developed and hangars are added.

### **5.14 Maintenance Facilities and Equipment**

The airport maintenance is based out of a city maintenance building on the west side of the airport. This facility is currently adequate to house all of the airport maintenance equipment. However, if additional lease lots and apron area are constructed, then additional maintenance equipment will likely be required. An expansion to the existing maintenance building would likely be required to accommodate the additional equipment.

The city and many of the local pilots have also expressed a strong desire for a pilot lounge possibly with an office for the airport manager. Although this is a need that might also be met by a fixed-base operator business, the city should consider options for creating a pilot lounge of some sort.

### **5.15 Snow Storage**

Several airport users requested that additional snow storage space be made available especially in the general aviation lease lot area. In the past, vacant lease lots have been used for this purpose, but there are no longer any vacant lots and there is limited space to store snow on existing lease lots.

### **5.16 Fencing and Security**

The airport installed new security fencing several years ago along the west side of the airport. Users report that this fencing has reduced the number of unauthorized persons on the airport. No additional fencing is needed for the existing facilities. Users report that police patrols of the airport are frequent and that security is generally good.

### **5.17 Floatplane Facilities**

A desire for some sort of floatplane facility was mentioned by several airport users at the beginning of the planning process. Although the demand for floatplane facilities in Palmer is somewhat unclear, the recently completed MSB Regional Aviation System Plan identified a strong demand for floatplane facilities in the borough in general. A floatplane facility on or near the Palmer Airport could meet some of that demand.

To meet the needs of most single engine floatplanes, a water runway length of 4,000 to 5,000 feet would be required. The facility would also need to have compatible land use at both ends of the runway and have parking spaces for several dozen aircraft.

One suggestion that came out during this plan was to construct a floatplane facility in the floodplain of the Matanuska River as part of a larger flood control program for communities along the river. Although this idea was not extensively studied for this Master Plan, the possibility of such a facility could be further discussed with flood control agencies.

### **5.18 Skiplane Facilities**

There are several small aircraft on the Palmer Airport that convert to ski operations during the winter. Currently these aircraft operate on the gravel strip (which is kept covered in snow during the winter). However, there is no snow-covered access between the parking aprons and the gravel strip. A ski strip with accessible parking should be developed somewhere on the airport to accommodate these aircraft.

### **5.19 Sailplane Facilities**

There are several sailplanes based at the Palmer Airport. It is possible that sailplane activity in the area will increase due to good sailplane operations areas in the vicinity of the airport and increased sailplane tourism demand. If possible a sailplane runway should be developed on the airport. Sailplanes generally require a short, grass runway and such a runway would need to be constructed on the airport.

### **5.20 Golf Course Access**

The Palmer Golf Course is a valuable asset to the City of Palmer and access between the airport and the golf course should be improved. Golfers that arrive in the area by aircraft need better

aircraft parking and an access trail between the aircraft parking area and the golf course club house.

### **5.21 Miscellaneous Items**

Several other items were requested by airport users during the planning process. These items included providing electric plug-ins for apron tie downs, repainting the compass rose on the south apron, and a picnic or campground area on the airport. Each of these items is worth some consideration and would be a relatively minor expense.

**Table 19: Facility Requirements**

<b>Component</b>	<b>Identified Need or FAA Standard</b>	<b>Existing Condition</b>	<b>Corrective Action</b>
Design Aircraft	B-III	B-III	None
Capacity	Forecast for 50,144 annual ops 59 peak hour ops	Capacity for 230,000 annual ops 98 peak hour ops - VFR	None
Alignment	95% crosswind coverage	98% crosswind coverage	None
<b>RW 16-34 (ARC B-III)</b>			
Length	4,550 to 6,700 ft*	6,008 ft	None
Width	100 ft	100 ft	None
Safety Area	300 ft wide 600 ft beyond RW ends	300 ft wide 300 ft beyond RW ends	Extend RSA 300 ft
Object-Free Area	800 ft wide 600 ft beyond RW ends	675 ft wide 600 ft beyond RW ends	Remove trees, leave fence
Obstacle-Free Zone	400 ft wide 200 ft beyond RW ends	400 ft wide 200 ft beyond RW ends	None
RPZ	500 ft x 700 ft x 1,000 ft	500 ft x 700 ft x 1,000 ft	None
<b>RW 16G-34G (ARC A-I)</b>			
Length	--	1,560 ft	None
Width	60 ft	60 ft	None
Safety Area	120 ft wide 240 ft beyond RW ends	120 ft wide 240 ft beyond RW ends	None
Object-Free Area	120 ft wide 240 ft beyond RW ends	120 ft wide 240 ft beyond RW ends	None
Obstacle-Free Zone	120 ft wide 200 ft beyond RW ends	120 ft wide 200 ft beyond RW ends	None
RPZ	250 ft x 450 ft x 1,000 ft	250 ft x 450 ft x 1,000 ft	None
<b>RW 9-27 (ARC B-II)</b>			
Length	3,300 ft	3,617 ft	None
Width	75 ft	75 ft	None
Safety Area	150 ft wide 300 ft beyond RW ends	150 ft wide 200 ft beyond RW ends	Extend RSA 100 ft
Object-Free Area	500 ft wide 300 ft beyond RW ends	425 ft wide 50 to 200 ft beyond RW ends	Widen and extend ROFA
Obstacle-Free Zone	400 ft wide 200 ft beyond RW ends	400 ft wide 200 ft beyond RW ends	None
RPZ	500 ft x 700 ft x 1,000 ft	500 ft x 700 ft x 1,000 ft	Acquire property
<b>Taxiways</b>			
Runway-Taxiway Separation	RW9-27 240 ft	RW9-27 200 ft	None

Component	Identified Need or FAA Standard	Existing Condition	Corrective Action
	RW16-34 300 ft	RW16-34 425 ft	
Object-Free Area	RW9-27 131 ft RW 16-34 186 ft	RW9-27 131 ft RW 16-34 145-186 ft	Re-grade TW C
Connector taxiways	One near midpoint of gravel RW	None	Add connector to gravel RW
<b>Miscellaneous</b>			
Tie-downs	105 to 140** tie-downs	130 tie-downs	0 to 10 tie-downs
T-Hangars	70 to 105** units	~40 units	30 to 60 units
Aprons	42,000 sq yds for general aviation 25,000 sq yds for large aircraft	88,000 sq yds north apron 51,000 sq yds south apron	None
Pavement Condition	PCI > 70	RW16-34 PCI=58 Aprons PCI=71 to 81 Taxiways PCI=59 to 100	Repave RW16-34, aprons, and taxiways
Lighting	MIRL/MITL	MIRL/MITL	None
Markings	RW9-27 Nonprecision RW16-34 Nonprecision	RW9-27 Visual RW16-34 Nonprecision	Add markings to RW9-27
Helicopter Facilities	Public helipad	None	Add helipad
<b>Airspace and Approaches</b>			
Part 77 Airspace	Free of obstructions	Trees, fences, mountains	Remove
Instrument Approaches	Precision approach	Non-precision GPS	Survey and develop approaches
Nav aids	None	WAAS	None
Weather Reporting	ASOS/AWOS	ASOS	None
<b>Landside</b>			
Buildings and Lease Lots	Industrial, private lots	Industrial available, private lots limited	Add lease lots
Access Roads	Public access	No road between north and south aprons	Add road
Public Parking	As required	None required	None
Land Acquisition	Ownership of RPZs Other compatible use	Partial RPZs Undeveloped land	Acquire RPZs and other land
Utilities	As required	Not available at all lease lots	Expand to new lease lots
<b>Operations</b>			
Maintenance Facilities	As required	Sufficient	As needed
Equipment	As required	Sufficient	As needed
Security and Fencing	Secure facilities	Secure facilities	None
Snow Storage	Adequate storage	Inadequate storage	Add storage

\* Depends on useful load and percent of fleet accommodated.

\*\* Depends on the number of T-hangars constructed.

AWOS = Automated Weather Observing System

MIRL = medium-intensity runway light

MITL = medium-intensity taxiway light

WAAS = Wide-Area Augmentation System



## **6.0 ALTERNATIVES**

Based on discussions with airport users and the city staff, a series of airport development alternatives was developed. The alternatives for Palmer Airport were developed with three purposes in mind:

- Meeting safety standards
- Economic development at the airport
- Compatible land use

Each alternative represented a development scenario that would likely meet the development and safety needs of the airport over the next twenty years. Because a variety of projects is included in each alternative, each alternative would be implemented over a number of years with first priority being given to safety items and items related to instrument approaches. Other projects would be constructed as demand and funding dictate.

Three alternatives were developed to provide the city with an appropriate level of development depending on the extent and type of demand for additional airport growth and depending on the preferences of the city for compatibility with the surrounding community. The three alternatives are:

- Alternative A - General Aviation Emphasis
- Alternative B - Mix of General Aviation and Commercial Activity
- Alternative C - Commercial and Industrial Emphasis

Each of these alternatives and the projects that comprise it are described below.

### **6.1 Alternative A. General Aviation Emphasis**

#### **6.1.1 Safety-Related Projects**

This alternative includes several projects to address safety items. These safety-related projects are shown in Figure 15 and include:



**Key Features:**

- Wildlife hazard assessment
- Regrading of area between Runway 16 and parallel taxiway
- Property acquisition within easement at end of Runway 9
- Tree removal in multiple locations
- Relocate Golf Course fence





**Wildlife hazard assessment.** Due to the large number of migratory waterfowl transiting the area, a wildlife hazard assessment would be performed and, if necessary, a wildlife management program would be implemented. It is anticipated that the primary hazard would be from geese and cranes that congregate on the large field immediately to the northwest of the airport. This land is being considered for acquisition by the airport as part of this plan.

**Re-grading of the area between the end of RW 16 and the parallel taxiway.** The grass area between the runway and parallel taxiway is inside the ROFA and should not be higher than the centerline of the runway. This item would remove the small hill between the runway and taxiway at the end of RW 16.

**Property acquisition within easement at end of RW 9.** This item is already underway by the city. When combined with the other parcels inside the RPZ that are already owned by the city, this item would secure ownership of most of the RPZ for RW 9.

**Tree removal.** There are multiple groups of trees that penetrate Part 77 airspace or object-free areas on the airport. Although no obstruction survey has been done for the airport, some trees are obvious penetrations. This item includes an obstruction survey and removal of those trees that penetrate the Part 77 airspace.

The trees at the northeast corner of the airport likely would be removed all the way to the airport boundary. Trees in the park at the north end of the airport have already been determined to be obstructions and some of these trees have been topped. However, there is a restriction on cutting these trees due to their location in a park. The city would continue to explore options for removal of these trees.

There are also several trees in the approach to RW 9 that appear to be obstructions. Some of the trees on the large lease lots south of RW 9 are obstructions. There is a small patch of trees on the west side of the golf course driving range that are not obstructions, but have been mentioned by pilots as a hazard. There may be a few trees that are obstructions along the river bank at the end of RW 27. Conducting an obstruction survey would allow a more informed decision on which trees should be removed and could allow for better weather minimums for the existing instrument approaches.

**Modify golf course fence.** The existing fence for the golf course is too close to the east side of RW 16-34. This fence penetrates both the ROFA and Primary Surface and should be either 400 feet from the runway centerline or no higher than the runway centerline. This item would move the fence 125 feet farther east and would affect two golf course fairways north of RW 27 and one fairway south of RW 27. In the past, FAA has asked that the fence be moved, but the fence was not identified as an obstruction on the most recent airport survey. Movement of the fence would adversely impact revenue generated by the golf course for the airport and the community.

**Update compass rose.** This item would update the compass rose on the south apron. Because magnetic declination is changing rapidly in Alaska, compass roses should be updated every few years.

#### 6.1.2 Capacity Enhancement Projects

In addition to the safety items described above, this alternative also includes projects intended to expand general aviation in the northwest corner of the airport and to use the existing large lease lots south of RW 9 for general aviation development. T-hangars and an expanded apron would be constructed on the west side of the airport near the FSS. Each of these items is shown in Figure 16 and described in more detail below:

**General aviation expansion.** This item consists of purchasing undeveloped property adjacent to the northwest corner of the airport and developing lease lots for general aviation businesses. A portion of Airport Road would be relocated and a tree buffer would be planted along the road. Existing aprons and lease lots would be expanded to the west. Land to the west of the Forestry facility could be used as either apron space or for non-aviation uses. Forestry has expressed a desire for additional space for non-aviation activities (vehicle maintenance) that are related to their mission.

**Property acquisition.** This alternative does not include any property acquisition other than the general aviation acquisition described in the previous paragraph.



Key Features:

- GA expansion to northwest of Airport
- No other property acquisition
- One helipad
- Hangar development on existing apron
- GA development south of Runway 9
- Gravel taxiway
- Extension of Gulkana Street
- Seasonal ski strip
- No change to Golf Course



Figure 16: Alternative A  
 General Aviation Emphasis  
 Palmer Municipal Airport Master Plan





**Helicopter facilities.** There is a need for public helicopter facilities on the airport. Forestry currently operates multiple helicopter parking spaces adjacent to their lease lot. This area would be added to their lease area. Also, one option for a public helipad would be to construct a facility at the northeast corner of the airport. This would allow all helicopter operations to stay on the north end of the airport away from populated areas. Other options for helipads would be on the unused taxiway just south of the FSS or in the triangle area just south of the existing T-Hangar area. Both of these options would allow approaches that are parallel with a runway and separated from fixed-winged aircraft parking. However, neither of these locations is near fuel and other general aviation businesses. There is also a possibility that helicopter operations on the old taxiway might affect the nearby weather station.

**Hangars.** Pilots have expressed a desire for inexpensive hangars to block wind on the parking apron. This alternative includes two different layouts of hangars in the area between the maintenance building and the FSS. The intent is that the city would construct inexpensive shelter hangars (perhaps without doors) on or near the apron and that commercial developers could construct larger, more expensive T-hangars on the area southwest of the FSS. There is also likely a market for private, bulk hangars to be shared by multiple aircraft and these would be located directly south of the maintenance building. Depending on the number of apron tie-downs displaced by hangars, it may be necessary to expand the apron to the south of the FSS building.

**West side lease lots.** The large, undeveloped area on the south side of RW 9 is essentially the only leasable space on the airport. In this alternative, this area would be leased for general aviation businesses similar to those along the north apron. Pilots have stated that the trees in this area should be removed to reduce turbulence on RW 9 and removing the trees would also have the effect of making these lots more marketable. The installation of gravel fill and utilities on these lots would also make them more marketable. A parallel taxiway would be installed along the south side of RW 9 to allow access to these lots.

**Gravel taxiway.** Several pilots expressed a desire for a gravel taxiway near the midpoint of the gravel runway. First, it would allow pilots of the smallest planes to exit the runway without taxiing all the way to the far end.

**Extension of Gulkana Street.** There is no easy way to drive from the north end of the airport to the south end. The most direct route would be to extend Gulkana Street to Cope Industrial near the Fire Department. The problem with this idea is that the Part 77 height limit at the nearest point to RW 9 would be only about five feet and the FAA requires that roads have a clearance of 15 feet. Therefore, the road would need to either be placed farther west or be placed in a depression about ten feet deep for a short distance.

**Seasonal ski strip.** This item would develop a seasonal ski strip on the east side of the end of RW 34. Tie-down space would be on the golf course and vehicular access to the ski strip would be through the existing golf course access gate. This concept would provide a dedicated parking area and strip for ski aircraft without affecting snow removal efforts on the remainder of the airport.

## **6.2 Alternative B - Mix of General Aviation and Commercial Activity**

This alternative is similar to Alternative A with two notable differences. These differences are described below and shown in Figure 17.

**Property acquisition.** Other than property already designated for acquisition in Alternative A, there are several other undeveloped parcels of land adjacent to the airport. Because of the airport's close proximity to the city and because of rapid residential development in the area, it is recommended that the airport acquire as much nearby undeveloped property as possible. This land would act as a buffer against future incompatible development. Only compatible development, such as aviation, recreational, commercial, light industrial, and agricultural would be allowed in these areas.

The other option for controlling land use in these areas would be to modify the zoning of these parcels. However, much of the undeveloped land south of the airport is outside the Palmer city limits and would have to be annexed prior to zoning.

Parcels to be acquired might include land to the northeast of the airport between the Old Glenn Highway and the Matanuska River, land to the west of the airport north of RW 9, and land south of the airport along Outer Springer Loop Road.

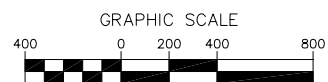


**Key Features:**

- GA expansion to northwest of Airport
- Property acquisition for compatible land use near airport
- Hangar development on existing apron
- One helipad
- Commercial development south of Runway 9
- No change to Golf Course



**Figure 17: Alternative B  
Mix of GA & Commercial Activity  
Palmer Municipal Airport Master Plan**





**Aviation campground.** This project would develop an aviation campground on newly acquired property just north of RW 9. The campground would consist of a gravel taxiway through the existing grove of trees.

**West side lease lots.** In contrast to Alternative A, this alternative would use the existing large lease lots south of RW 9 for large commercial development similar to the south apron. These lots would be cleared, filled with gravel, and prepared for leasing.

### **6.3 Alternative C - Commercial and Industrial Emphasis**

This alternative includes all of the elements of Alternative B with the significant addition of additional large lease lots on the property currently occupied by the golf course. This alternative is shown in Figure 18 and described below.

**Commercial development on east side of airport.** This item would relocate most of the existing golf course and develop large commercial lease lots in the southeast corner of the airport. It is likely that the golf course would be moved to an area south of Outer Springer Loop Road. Large lease lots with taxiway access to the airfield would be developed as a long-term option once all other lease areas on the airport have been fully leased.

### **6.4 Instrument Approach Alternatives**

As part of this master plan a preliminary feasibility study was performed to evaluate alternatives for obtaining a precision approach for the airport. It is anticipated that any future precision approach to the airport would be based on GPS and Wide-Area Augmentation System (WAAS), so the analysis focused on these types of approaches. Although these approaches are not in common use by general aviation and smaller commercial aircraft in Alaska, they may be available and usable in the near future.

The preliminary feasibility study found that required navigation performance (RNP) and localizer performance with vertical guidance (LPV) precision approaches may be feasible, but with restrictions. The primary restriction will be that such procedures will be limited to aircraft in Approach Category B with missed approach airspeeds of less than 185 knots. This restriction is required to allow small radius turns in order to avoid terrain obstructions to the north and south of the airport.



**Key Features:**

- GA expansion to northwest of Airport
- Property acquisition for compatible land use near airport
- Hangar development on existing apron
- One helipad
- Commercial development south of Runway 9
- Aviation development on Golf Course
- Golf Course apron



**Figure 18: Alternative C**  
**Commercial and Industrial Emphasis**  
**Palmer Municipal Airport Master Plan**





Another potential issue is that Class E airspace might be required down to the surface if any precision approaches are implemented. The current Class E airspace for Palmer has a radius of six miles, has a bottom altitude of 700 feet above ground level, and covers multiple private airstrips. If Class E were implemented down to the surface, these private strips would have to contact air traffic control prior to entering or leaving the area. This would likely be very unpopular with pilots that currently use these strips.

Depending on the type of approach developed, an approach lighting system may be required. Such a system would extend outward from the approach end of a runway or runways to a distance of approximately 2,400 feet. Due to lack of available space for a lighting system to the west, north, and east of the airport, the mostly likely location for a lighting system would be to the south of the airport along the east side of Inner Springer Loop Road.

The following figures compare possible approaches for Category B and other larger aircraft. More information about these approaches can be found in Appendix C.

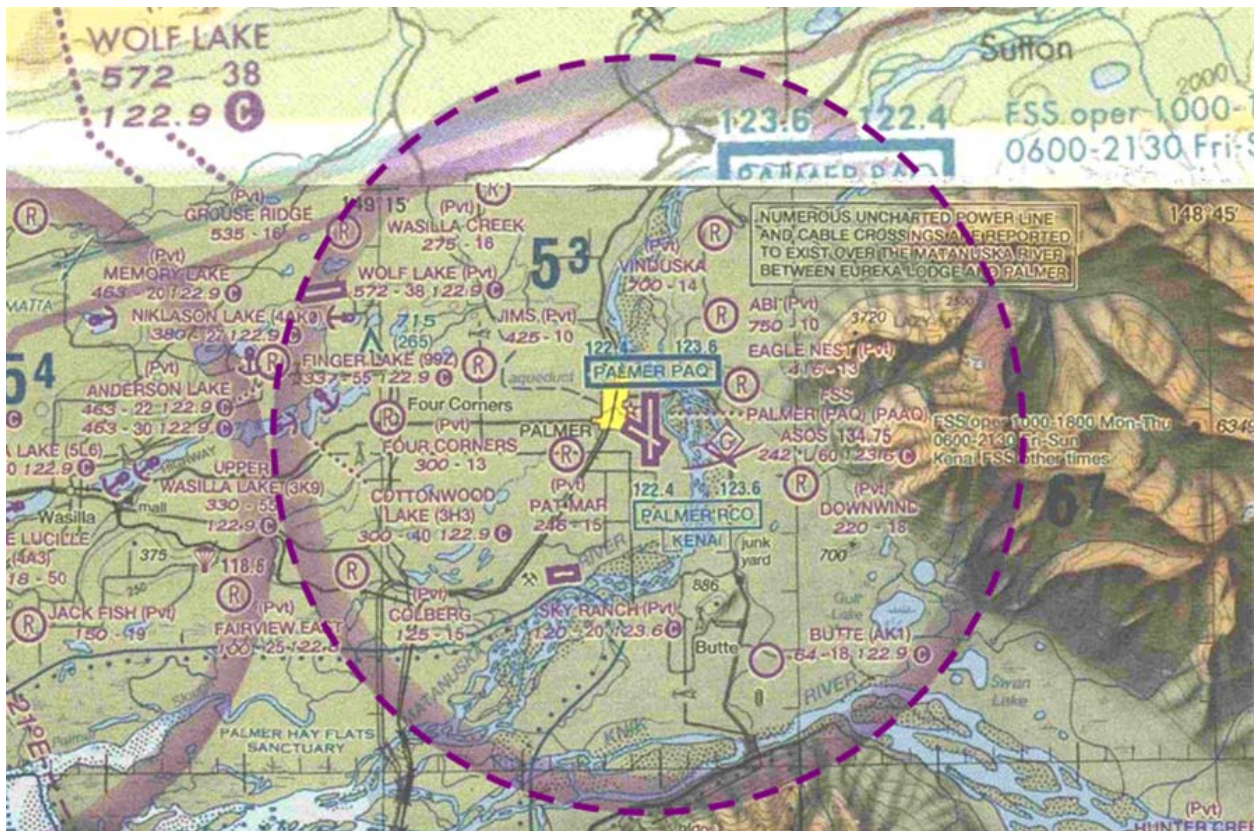


Figure 19: Potential Class E Airspace to the Surface



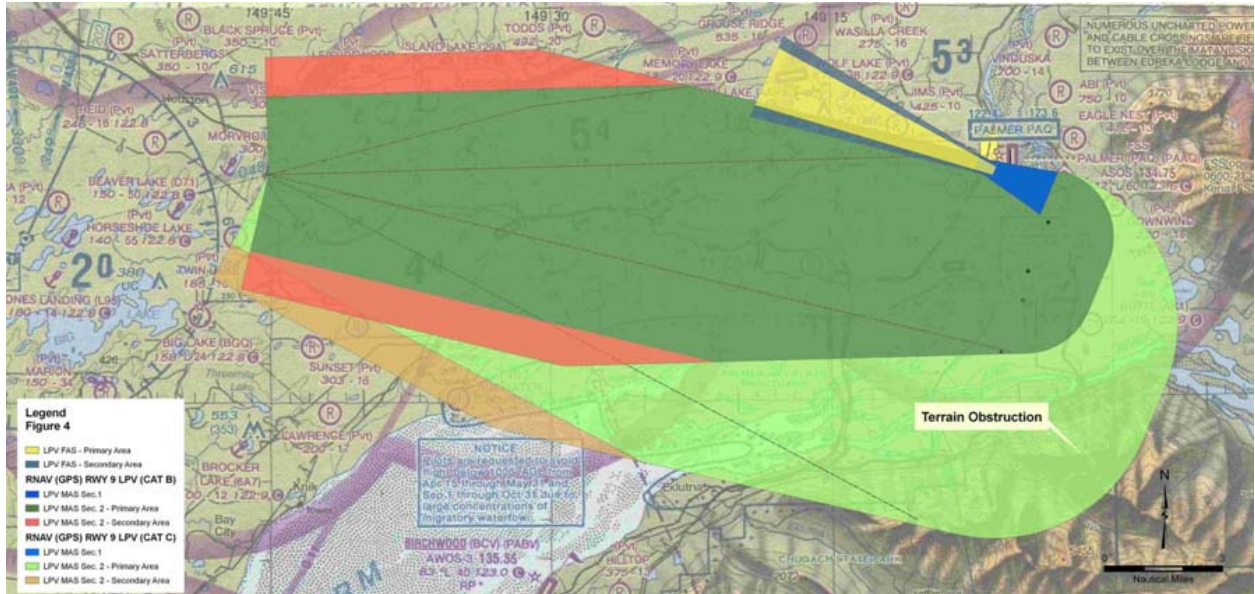


Figure 20: Potential Localizer Performance With Vertical Guidance Approaches (LPV)

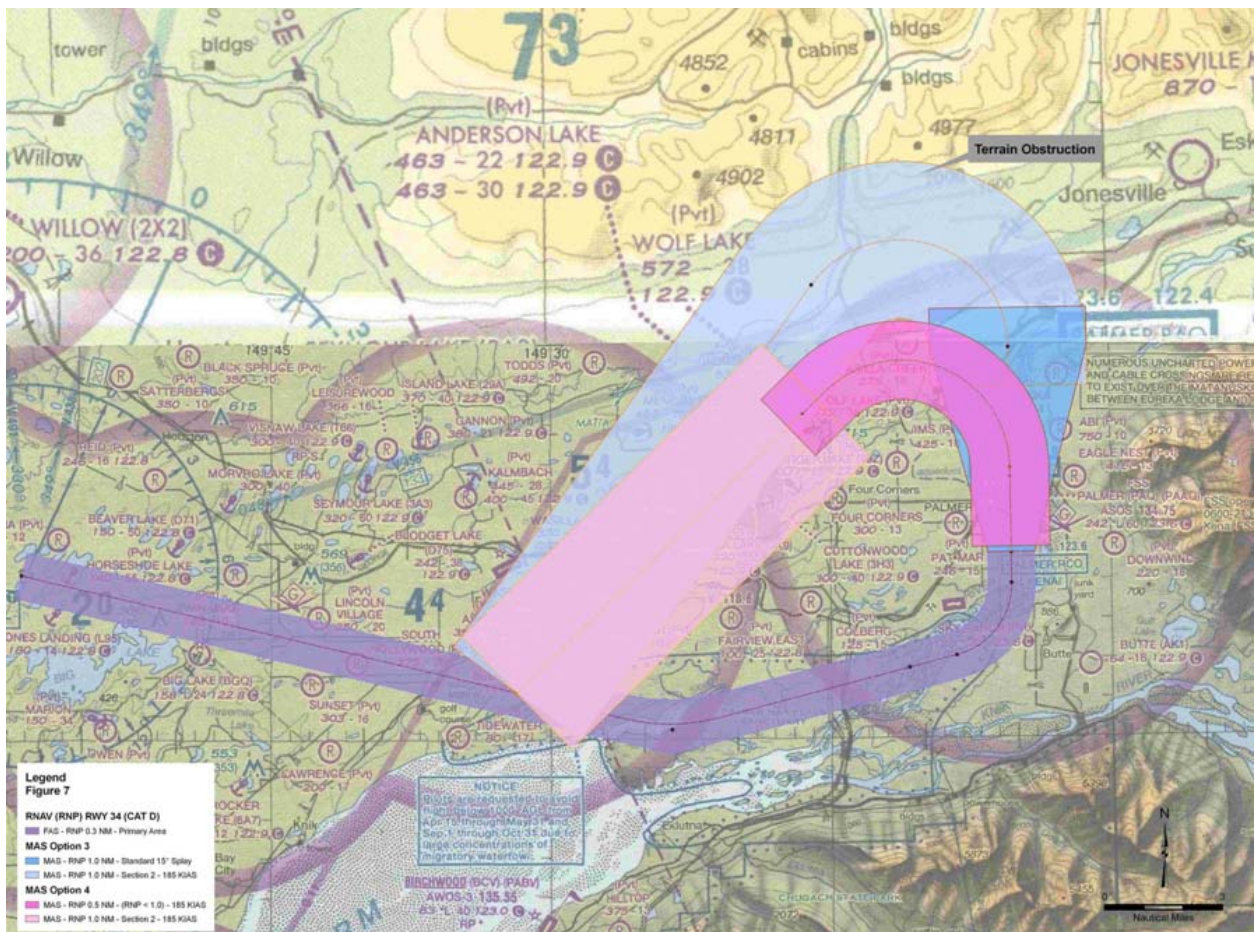


Figure 21: Potential Special Required Navigation Performance Approaches (RNP)

## 7.0 ENVIRONMENTAL OVERVIEW

This section provides a preliminary environmental overview for the Palmer Airport Master Plan. The resource categories examined in this document are those recommended by the *FAA Environmental Desk Reference for Airport Actions* (FAA, 2007). The categories in the *Desk Reference* are used in anticipation that an Environmental Assessment or Environmental Impact Statement of various projects in this plan will be prepared in the future.

The following excerpt from FAA Order 5050.4B *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions* (2006) lists items that are considered Federal Actions and would invoke the NEPA process. Some projects included in this plan that meet the definition of “Federal Action” will be eligible for a categorical exclusion and will not require the preparation of an Environmental Assessment (EA) or Environmental Impact Statement (EIS).

From FAA Order 5050.4B, Section 9.g:

**Federal Action.** For FAA Office of Airports, a Federal action may include one or more of the following:

- (1) Conditional, unconditional, or mixed approval of Federal funding for airport planning and development projects, including separate funding of plans and specifications for those projects.
- (2) Conditional, unconditional, or mixed approval of a location for a new, public use airport.
- (3) Conditional, unconditional, or mixed approval of a first-time or changed Airport Layout Plan (ALP).
- (4) Authorizing an airport sponsor to impose and use passenger facility charges.
- (5) Conditional, unconditional, or mixed approval of an airport sponsor’s request under 49 USC, section 47125, to use or transfer Federally-owned land to carry out an action under 49 USC Chapter 471, Subchapter I, at a public-use airport or to support the airport’s operations.

- (6) Conditional, unconditional, or mixed approval of an airport sponsor's request to release airport land from a Federally-obligated, public-use airport when the land would be used for non-aeronautical purposes.
- (7) Conditional, unconditional, or mixed approval of the use of a facility as public-use airport when the facility becomes available under the Surplus Property Act.
- (8) Approving noise compatibility programs under Code of Federal Regulations 14 CFR, Part 150.
- (9) Approving an airport sponsor to restrict the use of Stage 3 aircraft at public-use airports under 14 CFR Part 161.
- (10) Issuing a Part 139 certification.
- (11) Conditional, unconditional, or mixed approval of funding for measures in an FAA-approved Wildlife Hazard Management Plan or approving ALP changes to accommodate those measures.

The following table is based on FAA Order 5050.4B and summarizes the types of projects normally eligible for a categorical exclusion and those that normally require an EA or EIS. Any project that has a significant impact in any of the standard analysis categories discussed in the following sections will likely require either an EA or EIS.



**Table 20: Types of Environmental Analysis Required**

<b>Type of Environmental Document</b>	<b>Examples of Projects</b>
Categorical Exclusion (always)	<ul style="list-style-type: none"> <li>• Grants for planning or environmental work</li> <li>• ALP approval</li> <li>• Preparation of noise exposure maps</li> <li>• Safety equipment for airport certification (snow removal)</li> <li>• Purchase of security equipment</li> </ul>
Categorical Exclusion (if no extraordinary circumstances)	<ul style="list-style-type: none"> <li>• Airfield improvements</li> <li>• Fill deposits into previously excavated non-aquatic areas</li> <li>• Heliport at an existing airport</li> <li>• On-airport measuring devices, segmented circles, and landing aids</li> <li>• Vegetation, berms, or sound walls to reduce noise</li> <li>• On-airport obstruction treatment (land grading or tree trimming activities for Part 77 requirements)</li> <li>• Small aircraft parking ramps, vehicular parking areas, and garages</li> <li>• Build or maintain fencing</li> <li>• Wildlife Hazard Management Plan implementation</li> </ul>
Environmental Assessment	<ul style="list-style-type: none"> <li>• Helicopter facilities that cause a DNL1.5 dB increase over noise sensitive areas within the 65 DNL contour</li> <li>• Land acquisition that is highly controversial</li> <li>• Project that would convert land protected under the Farmland Protection Act to non-agricultural use</li> <li>• Dredging or filling of any waterway or wetland that requires a USACE permit</li> </ul>
Environmental Impact Statement	<ul style="list-style-type: none"> <li>• An environmental assessment signaling a significant impact</li> <li>• A new commercial service airport in a metropolitan statistical area</li> <li>• A new runway in an metropolitan statistical area</li> </ul>

Source: FAA Order 5050.4B

## 7.1 Air Quality

The Palmer area lies within the Cook Inlet Intrastate Air Quality Control Region. According to Alaska Administrative Code 18 AAC 50, the Palmer area is considered a Class II area (State of Alaska Department of Environmental Conservation [DEC], 2005). As such, there are maximum allowable increases for particulate matter 10 micrometers or less in size (PM-10), nitrogen dioxide, and sulfur dioxide. Activities in these areas must operate in such a way that they do not exceed listed air quality controls for these compounds.

A gradual increase in aviation traffic is expected in the future and more vehicle emissions would be expected as a result. Any project that significantly increased emissions would likely require an environmental analysis.

## **7.2 Biotic Resources**

*Migratory Birds:* Although there is no designated or proposed critical habitat in the immediate area, cranes and geese use an agricultural grain field that lies adjacent to the airport. Use of the grain field by the birds in such close proximity to the airport is considered incompatible with airport activities according to FAA AC 150/5200-33.

*Fish Habitat and Anadromous Fish Streams:* A review of the Alaska Department of Fish and Game Atlas to the Catalog of Water Important to the Spawning, Rearing, or Migration of Anadromous Fishes identified the Matanuska River (Stream 247-50-10220) and associated tributaries as anadromous. The Matanuska River in the vicinity of Palmer was identified as providing spawning habitat for Chum, Coho, and Sockeye.

## **7.3 Coastal Barriers**

There are no designated coastal barriers in Alaska.

## **7.4 Coastal Zone Management**

Palmer lies within the MSB Coastal District and would need to comply with the local district enforceable polices and the Statewide Standards of the Alaska Coastal Management Plan. A formal Coastal Consistency Review of the project would be required for any future work at the airport.

## **7.5 Compatible Land Use**

FAA grant assurances require that airport sponsors work to ensure compatible land use in the area surrounding an airport. For Palmer, this would seem to require that the airport work to acquire buffer zones around the airport and work with the MSB to ensure that land south of the airport is developed in a manner compatible with airport operations.

If appropriate land use controls are not implemented, it is likely that a future environmental document will find that certain airport projects are not compatible with the surrounding community and some future airport development may be blocked as a result. Areas most likely to develop in a manner incompatible with airport operations include farmland and forests to the south, west, and northeast of the airport.

## 7.6 Construction Impacts

All alternatives would involve minor construction impacts to air quality, noise, and water quality from the use of heavy equipment and the moving of construction materials. Best management practices, the implementation of a storm water pollution prevention plan, compliance with the United States Army Corps of Engineers (USACE) Section 404 Permit stipulations, the Alaska Coastal Management Plan Alternative and Measures recommended by DNR, and the Section 401 Certification stipulations recommended by the DEC under the Clean Water Act would mitigate these impacts.

## 7.7 Section 4(f) Resources

No State or Federal Recreation Areas, Wildlife Refuges, Critical Habitat Areas, or parks are known to be present in the project area. However, the presence of local parks and historical sites that may be eligible for listing under the national historic preservation act will need to be further examined. Local parks that exist in the area and might be considered a 4(f) resource include:

- A municipal golf course located on the east side of the airport. This golf course could be impacted as a result of moving the fence to clear the ROFA boundaries and through possible development of lease lots.
- The Matanuska River Park located to the north of the airport. Currently, trees immediately north of the runway are continuously topped in order to maintain safe approach and takeoff air space.
- The City of Palmer maintains an Arboretum to the west of the airport property.

## 7.8 Federally Listed Endangered or Threatened Species

*Protected Species.* Additional consultation under Section 7 of the Endangered Species Act will be performed with the United States Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service during the preparation of an environmental document, in compliance with the NEPA.

*Bald Eagles.* Bald Eagles are protected by the Bald Eagle Protection Act. Within two miles of the project site are three Bald Eagle Nest Locations (USFWS, 2008b):

- Nest 5, located approximately 0.7 miles northeast of the airport, last noted inactive in 2005.
- Nest 7, located approximately 1.7 miles southeast of the airport, last noted as active in 2005.
- Nest 8, located approximately 1.9 miles southeast of the airport, last noted inactive in 2005.

## **7.9 Energy Supplies, Natural Resources, and Sustainable Design**

Potential material sites and energy suppliers have not yet been identified.

## **7.10 Environmental Justice**

Environmental justice ensures that low-income or minority populations do not bear a disproportional burden of effects from Federal action. Based on the 2000 Census, the majority of people living in Palmer are Caucasian (88%) and live above the poverty line (87%) (Division of Community and Regional Affairs, 2008).

## **7.11 Farmlands**

There are no prime or unique farmlands in Alaska (Natural Resources Conservation Service, 2008). However, The Palmer Soil and Water Conservation District has identified Farmlands of Local Importance based on soil types. The project area contains two soil types identified as soils of local importance:

- Bodenbug silt loam, 0 to 3% slopes.
- Bodenbug silt loam, silty substratum, 0 to 3% slopes.

## **7.12 Floodplains**

The City of Palmer participates in the National Flood Insurance Program. According to the FEMA Map Service Center, the airport property is generally enclosed within Zone C of the Matanuska River floodplain (Community Panel 0200219725D). The southeastern corner of the east-west runway is potentially within 100 feet or so of Zone A.

Zone A corresponds to the 1-percent annual chance floodplains that are determined in the Flood Insurance Study by approximate methods of analysis. Because detailed hydraulic analyses are not performed for such areas, no Base Flood Elevations or depths are shown within this zone. Zone C corresponds to areas outside the 1-percent annual chance floodplain.

### **7.13 Hazardous Materials, Pollution Prevention, and Solid Waste**

Several sites are present in the Palmer area and listed on the DEC Contaminated Sites database (DEC, 2008). The two closest contaminated sites are:

- 767 South Gulkana Street. Contaminated soil was detected during the removal of a 500-gallon fuel tank. Cleanup has been completed and the site has been closed.
- 801 Airport Road. A leaking fuel tank was reported at the airport at the MatSu Flying company. Cleanup has been completed and the site has been closed.

Additionally, fueling occurs on the northwest side of the airport, and an old fueling station is present, but inactive at this time. Fuel, lubricants, and other hazardous materials are likely on site and used in support of aviation activities.

### **7.14 Historic and Archeological Sites**

The Alaska Heritage Resource Survey records were reviewed on November 3, 2008, to determine if any cultural resources are present in the project area. There are numerous Alaska Heritage Resource Survey sites located adjacent to and in the vicinity of the airport, most of which are associated with the Matanuska Colony Community Center. The Matanuska Colony Community Center is a district that consists of 18 major buildings, one site, and two structures. The buildings and structures are associated with the Matanuska Colony Project, a New Deal Rural Rehabilitation Program.

Consultation in accordance with Section 106 of the National Historic Preservation Act should be conducted with the State Historic Preservation Office and local tribal entities to determine whether any airport projects are likely to affect any historic properties.

### **7.15 Induced Socioeconomic Impacts**

It is not expected that airport improvements will result in significant shifts in patterns of population movement and growth, public service demands, or changes in business and economic activities. The only major impacts off the airport would be the acquisition of land to ensure a buffer around the airport. A portion of this land may be developed for aviation lease lots, but most land acquired off the airport would remain undeveloped as a buffer.

### **7.16 Light Emissions and Visual Effects**

The airport is currently located near downtown Palmer and is visible from the school and graveyard across the Old Glenn Highway. It is also visible from adjacent farmlands, the Palmer Golf Course, residents living along Outer Springer Loop, and residents on the Lazy Mountain hillside. None of the proposed projects would significantly alter light emissions or the appearance of the airport.

### **7.17 Noise**

Based on the forecast developed for the Master Plan, the number and size of aircraft at the airport is expected to increase slightly during the next twenty years. However, annual operations are expected to be well below the FAA threshold for noise analysis of 90,000 annual adjusted propeller operations or 700 annual adjusted jet operations; therefore no noise analysis would be required for any alternative per FAA Order 1050.1E.

Although a formal noise analysis is not required, the airport has received noise complaints in the past and will likely receive even more in the future as undeveloped land near the airport becomes developed. The most likely areas for incompatible development are south and west of the airport. These areas are mostly agricultural, but are either unzoned or zoned for residential. The city should work to purchase parcels immediately adjacent to the airport or to ensure that development in these areas is compatible with airport operations.

A special issue is the noise impact of helicopters in the area. The Forestry facility at the north end of the airport operates a multi-helicopter landing area for about four months during the year. Occasionally, other helicopters land on the north and south aprons. The airport should work to develop helicopter operating procedures that minimize the impact to the surrounding community.

### **7.18 Social Impacts**

Although the Charter Academy School, Palmer Junior Middle School, and Matanuska Christian School are located within one-third mile from the airport, no disproportionate impacts to children's environmental health or safety are anticipated.

### **7.19 Solid Waste**

Two solid waste facilities are located in the Palmer area (DEC, 2008):

- Alaska Demolition Palmer Inert Waste, an active non-municipal monofill, just south of the fairgrounds in Palmer, Alaska. Section 8, Township 17 North, Range 2 East, Seward Meridian.
- Anderson Garbage Service, a retired Class 2 landfill located 2.5 miles southwest of Palmer in Sec 18 T, 17N, R2E, Seward Meridian.

### **7.20 Water Quality**

No public or private drinking water source is involved in any of the proposed improvements. The city well at the southwest corner of the airport will likely not be affected by any of the proposed airport improvements. Per Alaska's 2008 Integrated Water Quality Monitoring and Assessment Report, the Matanuska River is impaired by residues from a landfill.

### **7.21 Wetlands**

USFWS National Wetland Inventory maps indicate that there are no wetlands on the airfield, but several wetland areas are nearby (USFWS, 2008b). The wetland areas are located:

- North of the airport in the Matanuska River Park.
- Southeast of the airport in the Palmer Golf Course area.
- West of the airport in the agricultural area.

### **7.22 Wild and Scenic Rivers**

A review of the National Park Service Wild and Scenic Rivers website indicated that there are no wild and scenic rivers located within the project area.

### **7.23 Cumulative Impacts**

A thorough review of cumulative impacts of airport improvement projects will be assessed during the future NEPA document. These impacts include items that by themselves are fairly minor, but, when combined with other minor impacts from other projects on the airport, become more important.



## **8.0 STRENGTHS, WEAKNESSES, OPPORTUNITIES, AND THREATS ANALYSIS**

In order to help the planning team focus on the strengths and weaknesses of the Palmer Airport, the team developed an analysis of the strengths, weaknesses, opportunities, and threats to the airport. This analysis is summarized as bullet points below:

### **8.1 Strengths**

- 6,009-foot paved and lighted main runway
- 3,617-foot paved and lighted crosswind runway
- 1,560-foot gravel-surfaced ski/tundra tire runway
- Parallel taxiway network
- Competent Airport Manager
- Jet fuel and aviation gasoline services
- Aircraft maintenance and repair services
- FAA Flight Service Station
- Paved parking space available for both light and heavy aircraft
- Lease land available for near-term development of hangars and other facilities for both light and heavy aircraft
- T-hangar and (future) aircraft shelter building space available
- Direct on-airport access to the Alaska Railroad
- Close proximity of off-airport commercial and retail services
- Local area amenities attractive to airport-based employees
  - Lower-cost housing as compared to Anchorage or Fairbanks
  - Mild climate
  - Good schools
- Wide variety of recreational activities available in the area
- Good airport security with regular police patrols

## 8.2 Weaknesses

- Lack of straight-in IFR approach/departure
- Reputation for strong local winds
- Reputation for delayed or inconsistent snow removal
- Existence of residential land close to the airport (potential future noise impacts)
- Existence of a golf course occupying the entire east side of the airport (a challenge to long-term future aviation facility expansion)
- Lack of a progressive airport organizational structure
- Lack of an aggressive, supportable airport marketing plan
- Airport located on east edge of the Mat-Su Valley population center
- Airport located too close to Anchorage to attract scheduled air service
- Current airport revenue levels limit maintenance and operation options
- Public recreation facilities north, east, and south of Runway 16-34 complicate the removal of trees for safe aircraft approach and departure
- Occasional fog that closes the airport to aircraft operations

## 8.3 Opportunities

- Attracting air carrier and corporate aircraft maintenance bases and other aviation support businesses as the Anchorage area airport land availability shrinks and land development costs escalate
- Attracting more based light aircraft via the construction of aircraft shelter buildings
- Acquiring vacant land adjacent to the airport for future airport expansion and noise buffering
- Relocating the golf course south of the airport and developing a taxiway for direct aircraft access to the clubhouse
- Developing the southeast quadrant of the airport as an air industrial park

- Increasing airport revenue through the leasing of available airport land

#### **8.4 Threats**

- Future expansion of the Birchwood and Wasilla airports
- Shift of the Mat-Su Valley population center westward and southward away from Palmer
- Future construction of a major public airport/floatplane base in the Knik/Goose Bay/Big Lake area
- Construction of a Knik Arm Crossing, which would likely increase the magnitude of the Valley population shift away from Palmer and accelerate the development of a new public airport/floatplane base in the south borough area
- Potential for the aggressive development of the Willow Airport for many of the same purposes as Palmer, but with an existing, expandable floatplane base, straight-in runway approaches, and no high-wind reputation
- Competition for airport tenants from state-operated airports in the Mat-Su Valley where more liberal and predictable leasing policies are the rule
- Competition by private airstrips in the vicinity may draw light aircraft away from Palmer

## 9.0 RECOMMENDATIONS AND CAPITAL IMPROVEMENT PROGRAM

Based on extensive feedback and discussion with airport tenants, airport management, the Airport Advisory Council, and the Palmer City Council, Alternative B (without moving the golf course fence) is recommended for development at the Palmer Municipal Airport. This modified alternative will provide for a balance of general aviation and commercial development while preserving compatibility with the local community including the Palmer Golf Course. The fence would remain in its current location because the relocation of the fence would significantly harm the airport's ability to cover its operating costs by reducing golf course lease revenue paid annually to the airport.

Other routine maintenance projects, such as runway resurfacing, will also require FAA funding and have been added to the Capital Improvement Program. These projects were not originally included in the discussion of Alternatives because they either repair or replace existing facilities.

The following sections provide a brief description of each project in the Capital Improvement Program and an approximate cost for planning purposes. More detailed cost estimates are included in an appendix. Projects are divided into short, medium, and long-term development timeframes. These development timeframes are for planning only and projects may be implemented at any time as needs and funding dictate.

### 9.1 Short-Term Projects (0 to 5 years)

**Wildlife hazard assessment.** Project would assess the hazard from wildlife on the airport, particularly from the large flocks of geese and cranes that frequent a field adjacent to the airport. If necessary, a wildlife management program would be implemented. Assessment would be conducted by the USDA Wildlife Services in accordance with AC 150/5200-33B *Hazardous Wildlife Attractants on or Near Airports*.

Estimated cost: \$50,000

**Repave RW 16-34.** This project would resurface RW 16-34 in its existing configuration. The project would also include resurfacing of TW A. Resurfacing of the aprons would only be included in this project if sufficient funding is available. The following cost estimate does not include pavement for the aprons.

Estimated cost: \$7,290,000

**Re-grading of the area between the end of RW 16 and the parallel taxiway.** This project would remove the small hill between the runway and taxiway at the end of RW 16. It is anticipated that this would be done as part of the runway resurfacing project listed above.

Estimate cost: \$312,000

**Property acquisition within RPZ at end of RW 9.** This item is already underway by the city. Therefore no cost estimate is provided.

**Obstruction survey and tree removal.** This item includes an obstruction survey and removal of those trees that penetrate the Part 77 airspace. Because the airport may make a decision to remove some trees without performing a survey, separate cost estimates are provided for the survey and tree removal.

Estimated survey cost: \$345,000

Estimated tree removal cost: \$321,000

**Update compass rose.** This project would update the compass rose on the south apron. Because magnetic declination is changing rapidly in Alaska, compass roses should be updated every few years.

Estimated cost: \$1,000

**Property acquisition for general aviation expansion.** This project would acquire undeveloped land west of Airport Road and north of the end of RW 9 for future general aviation development. This is necessary in the short term because this property is zoned residential and may be developed in the near future in a manner incompatible with airport operations. A quick purchase

would create a buffer along the west side of the airport and allow for future planned airport expansion and reduce wildlife hazards on the property.

Estimated cost: \$1,886,000

**Property acquisition south of Inner Springer Loop Road.** This project would acquire property adjacent to the airport just to the south of Inner Springer Loop Road. This property would be acquired to ensure continued land use compatibility with the airport. This property is currently outside of the city limits and beyond the jurisdiction of the airport to control land use. The most likely future use for this land if not acquired by the airport is residential development.

Estimated cost: \$500,000

**Helipad.** This project would construct a helipad on the old taxiway directly in front of the FSS. This helipad should be sized to accommodate an H-60 size helicopter. The helipad should be oriented so that helicopters approach from the north and the south. FAA should be consulted to ensure that the downwash from helicopters at this location does not adversely affect the ASOS weather station to the south.

Estimated cost: \$96,000

**Shelter hangars on apron.** This project would construct a number of inexpensive, open shelter hangars on the existing Apron A just north of the FSS. The initial number of hangars built will depend on the level of interest from local pilots, but it is anticipated that at least two ten-unit hangars could be built initially. Additional hangars would be added as needed.

Estimated with two ten-unit buildings: \$1,722,000

**Preparation of large commercial lease lots.** This project would prepare the large lease lots along the south side of RW 9 by removal of peat and the placement of fill. Although a cost estimate is provided below, it may be possible to have a portion of this work performed at reduced cost as part of another airport or city construction project. Fill placement could be accomplished by using these lease lots as a fill waste site.

Estimated cost: \$7,364,000

**Expansion of large aircraft apron.** This project would expand the large aircraft apron on the south side of the airport. The apron would be expanded 800 feet to the north of the existing apron to allow future development of nearby lease lots.

Estimated cost: \$4,942,000

**Gravel taxiway near midpoint of gravel runway.** This project would construct a short connector taxiway between the midpoint of RW 16G-34G and TW A.

Estimated cost: \$202,000

**Develop aviation campground.** This project would develop a basic campground for aircraft on land acquired as a buffer against residential development on the west side of the airport. The anticipated location of this campground would be on undeveloped property directly north of the end of RW 9. This project would include construction of a gravel taxiway and removal of some trees.

Estimated cost: \$383,000

**Seasonal ski strip.** This project would develop a seasonal ski strip on the east side of the end of RW 34. Tie-down space would be on the golf course and vehicular access to the ski strip would be through the existing golf course access gate.

Estimated cost: \$18,000

**Instrument approach feasibility study.** This project would perform a detailed analysis along with the FAA of options for RNP and LPV instrument approaches for Palmer Airport. A preliminary study conducted for this Master Plan indicates that such approaches might be feasible for Approach Category B aircraft as special procedures approaches. This feasibility study would only be conducted after the obstruction survey project is completed.

Estimated cost: \$50,000

## 9.2 Medium-Term Projects (6 to 10 years)

**Development of RNP and LPV approaches.** This project would formally request the development of several instrument approaches from FAA pending the outcome of the feasibility study discussed above.

Estimated cost: \$115,000

**General aviation lease lots in northwest corner of airport.** This project would develop additional general aviation lease lots on land to be acquired at the northwest corner of the airport. Development would include lease lots, apron expansion, access roads, and a tree buffer to the west. Project would require relocating a portion of Airport Road and installing utilities.

Estimated cost: \$11,324,000

**Expand apron to the south of FSS.** This project would expand Apron A to the south of the FSS to TW J. This apron expansion would replace tie-down spaces lost to hangar construction on the existing Apron A. This apron would also potentially provide a tie-down area for ski planes that need access to the nearby gravel runway.

Estimated cost: \$2,976,000

**Construct parallel taxiway along south side of RW 9-27.** This project would construct a partial parallel taxiway along the south side of RW 9-27 from the end of RW 9 to TW A. This taxiway would provide access to lease lots along the south side of the runway.

Estimated cost: \$3,157,000

**Acquisition of buffer property to the south and northeast of the airport.** This is anticipated to be an ongoing project as funds and land become available. This project would acquire land directly adjacent to the south and northeast of the airport to ensure compatible land use and to preserve space for long-term airport growth.

Estimated cost: \$6,950,000



**Resurface aprons.** This project would resurface all existing aprons outside of lease lot boundaries. This would not include the large apron inside the DNR Division of Forestry lease lot.

Estimated cost: \$8,640,000

### **9.3 Long-Term Projects (11 to 20 years)**

**Extension of Gulkana Street.** This project would extend Gulkana Street south to Cope Industrial Way. The new extension would need to deviate slightly to the west or be placed in a depression to ensure 15 feet of clearance between the road and the Part 77 approach surface for RW 9.

Estimated cost: \$3,029,000

**Acquisition of buffer property to the south and northeast of the airport.** This is a continuation of the ongoing process of acquiring buffer land as funds and land become available. This project would acquire land directly adjacent to the south and northeast of the airport to ensure compatible land use and to preserve space for long-term airport growth.

Estimated cost: \$4,650,000

**Airfield paving project.** This project would resurface the airfield in approximately twenty years. It is anticipated that new pavements recently installed will need repaving or major maintenance in approximately twenty years.

Estimated cost: \$15,282,000

### **9.4 Summary of Capital Improvement Program**

The following table summarizes the planned Capital Improvement Projects for the Palmer Municipal Airport. This table includes an estimate of the participation of FAA and DOT&PF based on current funding policies. These policies are subject to change and funding for any particular project should be discussed individually with each funding agency.

**Table 21: Summary of Capital Improvement Program**

<b>Project</b>	<b>FAA Share (95%)</b>	<b>State Share (2.5%)</b>	<b>City Share (2.5%)</b>	<b>Total Estimated Cost</b>
<b>Short Term Projects</b>				
Wildlife Hazard Assessment	\$0	\$0	\$50,000	\$50,000
Repave RW 16-34	\$6,926,000	\$182,000	\$182,000	\$7,290,000
Re-grade area at end of RW 16	\$296,000	\$8,000	\$8,000	\$312,000
Property acquisition RW 9 RPZ	\$323,000	\$9,000	\$9,000	\$340,000
Obstruction survey	\$328,000	\$9,000	\$9,000	\$345,000
Tree removal	\$305,000	\$8,000	\$8,000	\$321,000
Update compass rose	\$0	\$0	\$1,000	\$1,000
Property acquisition for general aviation expansion	\$1,792,000	\$47,000	\$47,000	\$1,886,000
Property acquired south of Inner Springer Loop Road	\$475,000	\$13,000	\$13,000	\$500,000
Helipad	\$91,000	\$2,000	\$2,000	\$96,000
Shelter hangars on apron	\$861,000	\$430,500	\$430,500	\$1,722,000
Preparation of large commercial lease lots	\$0	\$0	\$7,364,000	\$7,364,000
Expansion of large aircraft apron	\$4,695,000	\$124,000	\$124,000	\$4,942,000
Gravel taxiway near midpoint of gravel runway	\$192,000	\$5,000	\$5,000	\$202,000
Develop aviation campground	\$0	\$0	\$383,000	\$383,000
Seasonal ski strip	\$0	\$0	\$18,000	\$18,000
Instrument approach feasibility study	\$0	\$0	\$50,000	\$50,000
<b>Short-Term Total</b>	<b>\$16,284,000</b>	<b>\$837,500</b>	<b>\$8,703,500</b>	<b>\$25,822,000</b>
<b>Medium Term Projects</b>				
Development of RNP and LPV approaches	\$115,000	\$0	\$0	\$115,000
General Aviation lease lots in northwest corner of airport	\$7,145,900	\$188,050	\$3,990,050	\$11,324,000
Expand apron to the south of FSS	\$2,827,000	\$74,000	\$74,000	\$2,976,000
Construct parallel taxiway along south side of RW 9-27	\$2,999,000	\$79,000	\$79,000	\$3,157,000
Acquisition of buffer property to the south and northeast of the airport	\$6,603,000	\$174,000	\$174,000	\$6,950,000
Resurface aprons	\$8,208,000	\$216,000	\$216,000	\$8,640,000
<b>Medium-Term Total</b>	<b>\$27,897,900</b>	<b>\$731,050</b>	<b>\$4,533,050</b>	<b>\$33,162,000</b>
<b>Long Term Projects</b>				
Extension of Gulkana Street	\$0	\$0	\$3,029,000	\$3,029,000
Acquisition of buffer property to the south and northeast of the airport	\$4,418,000	\$116,000	\$116,000	\$4,650,000
Airfield paving project	\$14,518,000	\$382,000	\$382,000	\$15,282,000
<b>Long Term Total</b>	<b>\$18,936,000</b>	<b>\$498,000</b>	<b>\$3,527,000</b>	<b>\$22,961,000</b>
<b>GRAND TOTAL</b>	<b>\$63,117,900</b>	<b>\$2,066,550</b>	<b>\$16,763,550</b>	<b>\$81,945,000</b>

## **APPENDIX A**

### **Public Involvement**



# Palmer Municipal Airport Master Plan Update

## Public Meeting #1

December 12, 2007, 7:00 p.m. ■ Palmer City Hall

The City of Palmer has hired DOWL Engineers to update the Palmer Municipal Airport Master Plan over the next ten months. This project will include a review of facility needs, airport operation and management practices, and marketing opportunities. The initial goals of the Master Plan update are to:

- Identify facility needs
- Develop alternatives for future airport development
- Evaluate compatible land use near the airport
- Evaluate airport operation and management practices
- Determine the economic impact of the airport
- Develop a market analysis to encourage growth at the airport

### The Master Plan update will consist of the following elements:

- Inventory of existing facilities
- Forecast of aviation activity
- Facility requirements for future airport development
- Analysis of development alternatives
- Capital improvement program
- Overview of environmental impacts
- Review of leasing program
- Review of airport regulations
- Economic impact analysis
- Market analysis

### Master Plan schedule:

- Inventory and Forecast – December 2007
- Leasing Program – January 2008
- Facility Requirements and Alternatives – April 2008
- Operation and Management Options, Market Analysis – April 2008
- Environmental Issues, Capital Improvement Program – June 2008
- Airport Regulations – June 2008
- Draft Report – July 2008
- Final Report – August 2008

### How Can You Be Involved?

- Attend Public Meetings
- Attend City Council Meetings
- Attend Airport Advisory Board Meetings
- City web site: [www.cityofpalmer.org](http://www.cityofpalmer.org)
- Invite us to meet with you

### Public Meeting #1

The City of Palmer and DOWL Engineers will hold a public meeting to obtain input from airport tenants, users and the general public. This meeting will include a discussion of facility needs, airspace, and airport operation and management practices.

**When:** December 12, 2007, 7:00 p.m.

**Where:** Palmer City Hall



#### Project Contacts

##### City of Palmer

Jane Dale  
231 W. Evergreen Avenue  
Palmer, Alaska 99645  
(907) 761-1311 office ■ (907) 745-3203 fax  
[jdale@palmerak.org](mailto:jdale@palmerak.org)

##### DOWL Engineers

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[tmiddendorf@dowl.com](mailto:tmiddendorf@dowl.com)



## Palmer Municipal Airport Master Plan Update

**December 12, 2007, 7:00pm ■ Palmer City Hall**

The City of Palmer has hired DOWL Engineers to update the Palmer Municipal Airport Master Plan over the next ten months. This project will focus on facility needs, a review of airport management practices, and an analysis of marketing opportunities. The Master Plan update should be complete by August 2008.

### **Public Meeting #1**

The City of Palmer and DOWL Engineers will hold a public meeting to obtain input from airport tenants, users and the general public. This meeting will focus on facility needs, airspace, and airport management.


### **Project Contacts:**

#### **City of Palmer**

Jane Dale - 231 W. Evergreen Avenue - Palmer, AK 99645  
(907) 761-1311 office (907) 745-3203 fax [jdale@palmerak.org](mailto:jdale@palmerak.org)

#### **DOWL Engineers**

Tom Middendorf, Project Manager - 4041 B Street - Anchorage, Alaska 99503  
(907) 562-2000 office (907) 563-3953 fax [tmiddendorf@dowl.com](mailto:tmiddendorf@dowl.com)



## Public Meeting #1

December 12, 2007  
Palmer City Hall

7:00 – 7:30	Open House
7:30 – 8:30	Presentation
8:30 – 9:00	Comments & Questions



## Overview

- What is an Airport Master Plan?
- Initial issues
- Schedule
- How can you be involved?
- Comments and questions





## What is an Airport Master Plan?

- 20 year development plan
- Shows airport, FAA, and tenant facilities
- Required for Federal funding
- Report explains recommendations
  - Master Plan Report
  - Business Plan Report
- Airport Layout Plan shows concept plans




## Why Update the Master Plan?

- Required by FAA
- Long-term plan for economic growth
- Economic benefit to the community
  - Properly manage the airport
  - Plan our improvements
  - Maintain the infrastructure
  - Facilitate economic growth
- Develop responsibly to mitigating impacts such as lawsuits
  - Incompatible land use and noise
  - Preserve funds for upgrades, maintenance, equipment




## Goals of the Master Plan

The initial goals of the Master Plan update are to:

- Identify facility needs
- Develop alternatives for future airport development
- Evaluate compatible land use near the airport
- Evaluate airport operation and management practices
- Determine the economic impact of the airport
- Develop a market analysis to encourage growth at the airport




## Master Plan Steps


The Master Plan update will consist of the following steps:

- Inventory of existing facilities
- Forecast of aviation activity
- Facility requirements for future airport development
- Analysis of development alternatives
- Capital improvement program
- Overview of environmental impacts
- Review of leasing program
- Review of airport regulations
- Economic impact analysis
- Market analysis




 **Facility Issues**


- Trees
  - Approaches to RW 9, 16, and 34
- Runways
  - Gravel strip
  - Sailplanes
  - Golf course fence
  - Floatplane pond?
- Apron
  - Terminal or FBO needed?
  - Additional apron space
  - Lighting and aircraft plug-ins







 **Facility Issues**

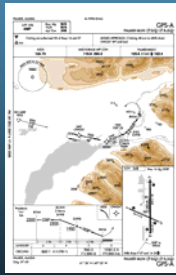
- Roads
  - Around end of RW 9
- Miscellaneous
  - Compass rose on south apron
  - Picnic/viewing area
  - Vehicles on airfield
- Helicopters
  - Patterns and operations
  - Public helipad
  - Helicopter parking






 **Airspace and Approaches**



- Existing GPS Approach (Circling)
  - Being revised and will be republished soon
  - Minimums low enough?
- Planned GPS Approach RW 9
  - Lack of survey may increase minimums
  - Runway length
- Future Approaches
  - ILS, LPV
  - 5-6 mile Class E control zone to ground





 **Airspace and Approaches**

- Operational issues
  - Radio use in pattern
  - Frequency of Butte Muni
  - Simultaneous operations on gravel runway



 **Operation and Management**

- Role of the airport
  - GA, business, industrial?
- Economic Development
  - Winds
    - Need for hangars or shelters?
    - What type? Where?
  - City and Borough aircraft tax
  - Availability of lease lots
  - Appearance of airport
  - Promotion and marketing
  - Aviation industrial park
  - Restaurant





 **Operation and Management**

- Leasing Program
  - Streamline the application process
  - Update the lease forms
    - Rate adjustments
    - Indemnity and insurance
  - Improve lease administration and enforcement
    - Uniform treatment of tenants
    - Compliance with leases & FAA rules
  - Modify lease term policy to encourage development
  - Update rates and fees








## Operation and Management

- Other Management Issues
  - Management structure
  - Update airport regulations
  - Airport fund
    - Maintain self-sufficient airport
  - Compliance with federal grant requirements
  - Compatible land use and zoning
    - Airport zoning
    - Adjacent land
  - Security
  - Snow removal
  - Fire protection





## Environmental and Community Issues

- Noise
  - Complaints may lead to lawsuits
  - Compatible land use and zoning
- Property Acquisition
  - Compatible land use
  - Future expansion
  - RW 9 Runway Protection Zone
- Environmental Permits





## Schedule


Inventory, Forecast, Economic Impact... January 2008  
 Leasing Program..... January 2008  
 Facility Requirements and Alternatives.. April 2008  
 Operation and Management Options,  
 Market Analysis..... April 2008  
 Environmental Issues,  
 Capital Improvement Program..... June 2008  
 Airport Regulations..... June 2008  
 Draft Report..... July 2008  
 Final Report..... August 2008






## How Can You Be Involved?

- Public Meetings
- Airport Advisory Board Meetings
- City Council Meetings
- City web site: [www.cityofpalmer.org](http://www.cityofpalmer.org)
- Contact Information:

<b>City of Palmer</b>	<b>DOWL Engineers</b>
Jane Dale, Airport Manager	Tom Middendorf, Project Manager
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## Other Issues or Questions?



**Palmer Airport Master Plan  
Public Meeting #1 Notes  
Palmer City Hall  
December 12, 2007**

SUBJECT: Public Meeting Number 1  
Palmer Airport Master Plan  
DATE: December 12, 2007  
LOCATION: Palmer City Hall  
ATTENDANCE: 10 people, consulting staff, and Jane Dale, Airport Mgr  
MATERIALS: Slide presentation and map of airport  
AGENDA: 7:00-7:30 Open house  
7:30-8:30 Presentation  
8:30-9:00 Questions and comments

**OPEN HOUSE:**

The meeting started with a brief open house where project staff discussed various airport issues with the attendees. Two maps of the airport were available to the attendees. Due to the small number of attendees, the open house ended about 7:15 and the presentation began.

**PRESENTATION:**

Tom Middendorf and John Jones of DOWL Engineers and Steve Pavish of Northern Horizon gave a slide presentation that explained what an airport master plan and business plan are, why the Palmer Airport Master Plan is being updated, and provided a short summary of key issues identified so far. They also provided a project schedule and took comments from the attendees.

**COMMENT SUMMARY:**

The following comments were provided by the meeting attendees. Responses from DOWL are provided in italics where applicable.

- A Palmer resident who is not an airport tenant noted a desire for more airport economic development and to take advantage of overflow business from Anchorage.
- An airport neighbor commented that she would prefer more “good” airport development over more residential development on the vacant property between her home and the airport.
- Has the airport fence that is an obstruction been an issue so far? *Yes, it violates some FAA safety standards and the FAA has noted it several times. There have been no accidents involving the fence so far, but it only takes one accident to become a problem.*

- Interest in the idea of a floatpond in Palmer and possibly on the airport. Not sure if it's feasible, but it should be considered. Consider putting it in the river.
- Some amphibians currently use the airport. Some floatplanes launch from a towed trailer.
- Several comments in support of additional pilot campground/picnic facilities, with bicycles pilots could borrow to get around town, and sidewalk leading to town. Is popular in Fairbanks and Lower 48. Would draw more visitors to Palmer. Palmer is a good location for such a facility.
- Other pilot facilities were also supported, at a minimum a place to get out of the weather, make a phone call, and use the restroom. Cannot always rely on an FBO for such facilities.
- Transients have trouble knowing where to get gas on the airport.
- Existing runway approaches are useful but enhancements are needed. Existing approach is a "circling approach" and often arrive at RW 34 too high due to minimum descent altitude of 860'. Must often fly down RW 34 and then circle around the pattern to land.
- One commenter suggested that a circling approach more aligned with RW 9 would be very useful because it would allow an easier choice of RW 9, RW 16, or RW 34. *FAA is currently finalizing a GPS approach to RW 9 and it should be published in the next 6 months.*
- Several commenters stated that the final segment of the existing approach brings planes landing on RW 34 over new houses at 400' altitude and this may annoy the homeowners. Should consider educating pilots about this or implementing a more precise approach that would take aircraft on final approach more to the east.
- RW 27 seldom used. RW 27 would be a good preferred approach for helicopters who would stay out of the way of fixed wing traffic and would stay over river and not annoy folks except a small amount of overflight over the golf course.
- If Palmer has increased potential use for aircraft maintenance, wouldn't these maintenance companies need a precision approach? *Yes, Hageland, for example, has asked for improved approaches and they have on-board equipment that could fly the approach, unlike some general aviation users.*
- Would Class E airspace associated with a precision approach extend into high traffic routes going to the Knik Glacier and other areas? *We have not drawn this Airspace yet but will look into it.*
- The Palmer Airport is frequently IFR during winter due to river fog. This fog is very localized near the river and often does not affect other areas several miles to

the west. If fog at the airport causes the Class E control zone to be in effect, this could adversely affect other areas to the west that are not IFR.

- Consider tie down areas near the end of runway 9 and in the trees to protect from winds. This would also be fairly close to town for transient pilots who are without ground transportation.
- Economics should govern the type of aviation users Palmer goes after. Airport needs businesses like Hageland and will benefit from the avionics and other ancillary businesses that will be stimulated by their presence. Be sure to have small lease lots without apron frontage for some of these ancillary businesses.
- General aviation tie downs are needed, but are a lower priority than attracting commercial aviation activity. Weather limits tie down demand.
- Palmer could be a transportation hub to ship goods to the bush, but you will need a precision approach.
- Provide space for industrial park and general aviation.
- Preferred arrival and departure corridors/routes should be mapped to enhance noise abatement. Pilots should be educated on the preferred procedures.
- If the City aircraft tax is an irritant and it makes very limited money for the City, consider eliminating it to attract more traffic.
- If needed, consider making a special deal to encourage development of a restaurant on the airport. A restaurant would attract transient traffic. Consider ways to make the golf course restaurant more convenient for pilots.
- What are some of the FAA grant requirements for leases? *Equal treatment, non-discrimination, and good business practices.*
- Does the FAA set lease terms. *No, but they want them to be based on sound business principles and for lease terms to be applied uniformly among tenants.*
- Is the Forestry tenant's insurance handled by the State? *Yes, they are self insured.*
- What is the timetable for any upcoming changes to leases? *In general, they could be adjusted over the next year.*
- Airport security has greatly improved since the fence was installed, even though gates are still open. There used to be non-aviation vehicles on the airfield.
- There are some existing City restrictions on private lots near the end of Runway 9, as of 5 years ago. *We think that might be from the existing aviation easement.*

- The Master Plan should investigate fuel storage needs over the next 20 years, including the need for bulk fuel storage. *DOWL will plan to discuss this issue with this person one-on-one since he has specific knowledge of fuel needs.*
- Aviation lease lots should be bigger to account for vehicle parking and fueling facilities.
- Likes the idea of predictability and stability in the lease application process and in the lease. Constant changes are not good for business. *Also some flexibility is needed, in some cases.*
- Airport owners need to know that fair market value can go both down and up as the economy changes. *Agreed.*
- Please put meeting handouts on the Palmer web site.
- Is the Matanuska River stable or eroding near the airport and how would this affect future plans?
- Likes the carport hangar concept as a low cost way to protect from wind and weather. Likes idea of using trees to protect from wind.

The meeting concluded about 9:00 and some informal discussion of issues continued after the meeting ended.

#### ATTACHMENTS:

Presentation



# PALMER MUNICIPAL AIRPORT MASTER PLAN UPDATE

MASTER PLAN UPDATE

SIGN IN SHEET • December 12, 2007  
Public Meeting No. 1

PLEASE PRINT


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Kit Jones	3180 N. Saagull Palmer	745-7393	Kitwjones@yahoo.com
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JOHN F. IGGS	137 ARCTIC AV, PALMER	745-6988	gme@mtaonline.net
Jim Colberg	7055 E. MAT. TRAIL RD, Palmer	745 4406	







# Airport Advisory Commission

February 14, 2008  
Palmer City Hall



## Overview

- What is an Airport Master Plan?
- Forecast
- Initial issues
- Schedule
- Public involvement
- Comments and questions


## What is an Airport Master Plan?

- 20 year development plan
- Shows airport, FAA, and tenant facilities
- Required for Federal funding
- Report explains recommendations
  - Master Plan Report
  - Business Plan Report
- Airport Layout Plan shows concept plans




## Why Update the Master Plan?

- Required by FAA
- Long-term plan for economic growth
- Economic benefit to the community
  - Properly manage the airport
  - Plan our improvements
  - Maintain the infrastructure
  - Facilitate economic growth
- Develop responsibly to mitigating impacts such as lawsuits
  - Incompatible land use and noise
  - Preserve funds for upgrades, maintenance, equipment




## Goals of the Master Plan

The initial goals of the Master Plan update are to:

- Identify facility needs
- Develop alternatives for future airport development
- Evaluate compatible land use near the airport
- Evaluate airport operation and management practices
- Determine the economic impact of the airport
- Develop a market analysis to encourage growth at the airport





## Master Plan Steps

The Master Plan update will consist of the following steps:



- Inventory of existing facilities (done)
- Forecast of aviation activity (done)
- Facility requirements for future airport development (underway)
- Analysis of development alternatives
- Capital improvement program
- Overview of environmental impacts
- Review of leasing program (done)
- Review of airport regulations
- Economic impact analysis (underway)
- Market analysis







## Preliminary Forecast

- Average population growth
  - Palmer 4%, Borough 6.4%
- Local economy
  - Government, Services, Healthcare, Tourism
  - Bed tax growth rate: 20-40% in 1990s, 6-19% in 2000s
- Annual change in operations 2003-2006
  - Air carrier, 0%
  - Air taxi, steady growth at 5%
  - General Aviation, down 9%
  - Military, down 15%
  - Overall, average annual decrease of 8%

## Preliminary Forecast


- 2007 Estimated Activity at Palmer
  - Based Aircraft: 120
  - Operations: ~ 29,000
  - Instrument Approaches: 120
- Factors increasing activity:
  - Population growth, Anchorage spillover, tourism
- Factors decreasing activity:
  - High costs, more roads, recent decline at Palmer
  - Private strips, airparks

## Preliminary Forecast

- Forecast: 0% to 3% growth/year over 20 years
- 3% Forecast Summary

Category	2007	2027
Based Aircraft	120	210
Total Operations	29,000	50,000
Instrument Approaches	120	200
Peak Month Operations	6,500	11,500
Peak Hour Operations	35	60




## Facility Issues

- Trees
  - Approaches to RW 9, 16, and 34
- Runways
  - Gravel strip
  - Sailplanes
  - Golf course fence
  - Floatplane pond?
- Apron
  - City planning a pilot lounge
  - Additional apron space
  - Lighting and aircraft plug-ins






## Facility Issues

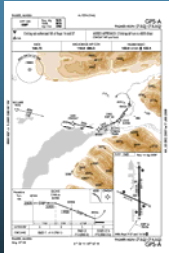

- Roads
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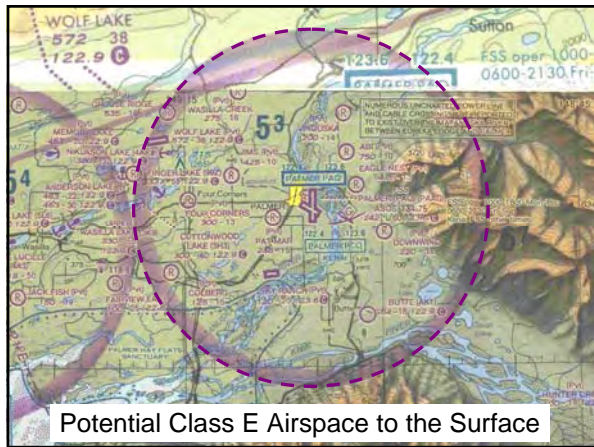
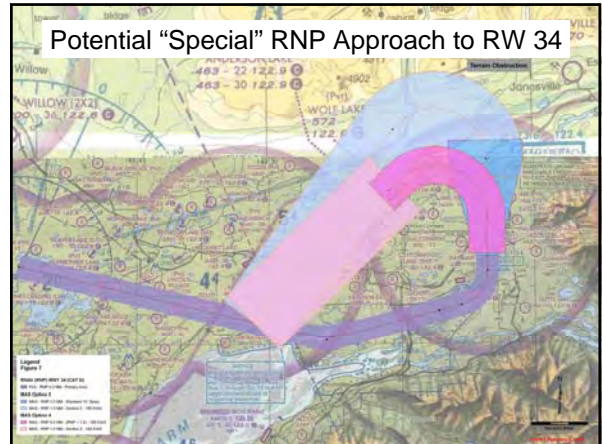
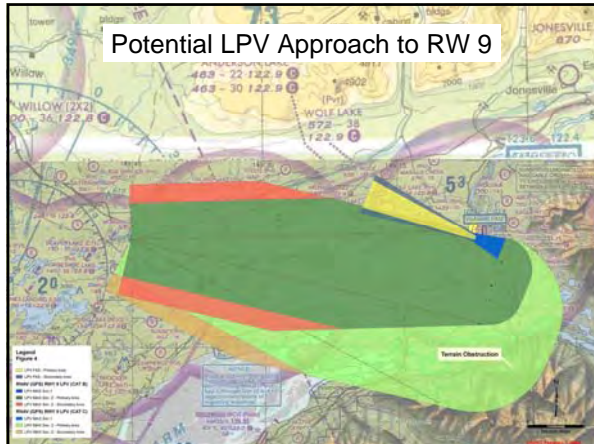


## Airspace and Approaches

- Existing GPS Approach (Circling)
  - Being revised and will be republished soon
  - Minimums low enough?
- Planned GPS Approach RW 9
  - Lack of survey may increase minimums
  - Runway length
- Future Approaches
  - ILS not feasible
  - RNP & LPV maybe in a few years
  - 5 mile controlled airspace to ground





### Airspace and Approaches

- Operational issues
  - Noise abatement procedures
  - Radio use in pattern
  - Frequency of Butte Muni
  - Simultaneous operations on gravel runway




**DOWL**  
DOWNSIDE OPERATIONAL SERVICES

### Operation and Management

- Role of the airport
  - GA, business, industrial?
- Economic Development
  - Winds
    - Need for hangars or shelters?
    - What type? Where?
  - City and Borough aircraft tax
  - Availability of lease lots
  - Appearance of airport
  - Promotion and marketing
  - Aviation industrial park
  - Restaurant



**DOWL**  
DOWNSIDE OPERATIONAL SERVICES

### Operation and Management

- Leasing Program
  - Streamline the application process
  - Update the lease forms
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    - Uniform treatment of tenants
    - Maintain eligibility for FAA grants
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**DOWL**  
DOWNSIDE OPERATIONAL SERVICES





## Operation and Management

- Other Management Issues
  - Management structure
  - Update airport regulations
  - Maintain eligibility for FAA grants
  - Airport fund
    - Maintain self-sufficient airport
  - Compatible land use and zoning
    - Airport zoning
    - Adjacent land
  - Snow removal and storage
  - Security
  - Fire protection





## Environmental and Community Issues

- Noise
  - Complaints may lead to lawsuits
  - Compatible land use and zoning
- Property Acquisition
  - Compatible land use
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## Schedule

Inventory, Forecast, Economic Impact... January 2008  
 Leasing Program..... January 2008  
 Facility Requirements and Alternatives.. April 2008  
 Operation and Management Options,  
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 Draft Report..... July 2008  
 Final Report..... August 2008






## Public Involvement


- Public Meetings
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- City Council Meetings
- City web site: [www.cityofpalmer.org](http://www.cityofpalmer.org)
- Contact Information:

<p><b>City of Palmer</b></p> <p>Jane Dale, Airport Manager        231 W. Evergreen Avenue        Palmer, Alaska 99645        (907) 761-1311 office        (907) 745-3203 fax        jdale@palmerak.org</p>	<p><b>DOWL Engineers</b></p> <p>John Jones, Transportation Planner        4041 B Street        Anchorage, Alaska 99503        (907) 562-2000 office        (907) 563-3953 fax        jjones@dowl.com</p>
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## Other Issues or Questions?



## Special City Council Meeting

February 19, 2008  
Palmer City Hall



## Overview

- What is an Airport Master Plan?
- Forecast
- Initial issues
- Schedule
- Public involvement
- Comments and questions





## What is an Airport Master Plan?

- 20 year development plan
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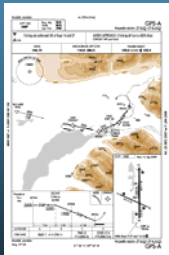

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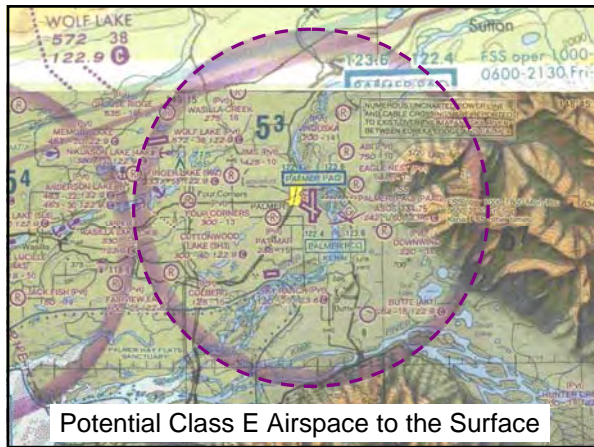
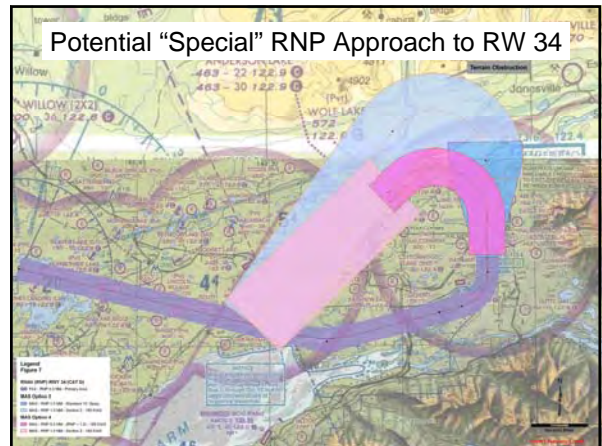
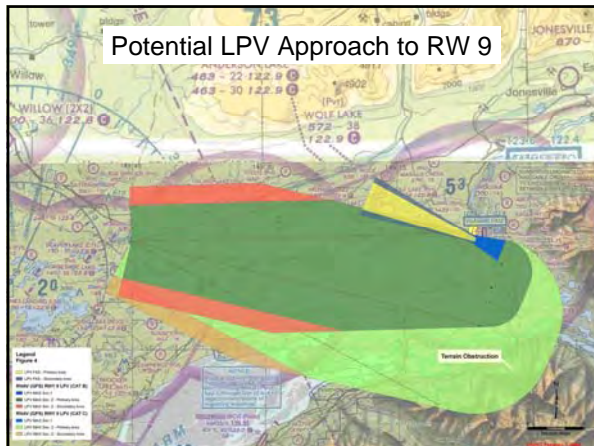




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## Operation and Management

- Other Management Issues
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## Other Issues or Questions?



# Airport Advisory Commission

April 24, 2008  
Palmer City Hall



## Overview

- Project Update
- Economic Impact
- Business Plan
- Development Alternatives
- Schedule
- Public involvement
- Comments and questions





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## Master Plan Steps

**The Master Plan**

- Inventory of existing facilities (done)
- Forecast of aviation activity (done)
- Facility requirements for future development (done)
- **Development alternatives (underway)**
- Capital improvement program
- Overview of environmental impacts

**The Business Plan**


- Review of leasing program (done)
- Economic impact analysis (done)
- **Review of management and regulations (underway)**
- Market analysis




## Economic Impact

- Impacts include:
  - Activities of businesses related to aviation at the Palmer Airport even if they are not located at the Airport.
  - Capital projects at the Palmer Airport.
- Jobs created = 166 full-time equivalents.
- Payroll created = \$7.7 million.
- Business revenue created = \$15.5 million






## Business Plan

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- Airport Business Plan Overview
- Airport Operating Philosophy
- Steps to Achieving the City's Objectives




## Business Plan

---


- Maintain the City's FAA grant eligibility
- Establish an effective airport organizational structure
- Upgrade airport maintenance & operations
- Eliminate on-airport zoning
- Streamline leasing administrative procedures
- Update airport rates and fees
- Update airport leasing policies and documents
- Update airport operating regulations
- Adopt a short and long range airport development plan
- Market the airport

## Business Plan

---

- Maintain Eligibility for Federal Airport Improvement Grants
  - City leadership - Familiar with the Airport Assurances
  - Airport Manager - Competent in FAA airport policies and regulations
  - Airport Manager – Annual eligibility briefing
  - City's annual audit




## Business Plan

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- Effective Organization for the Airport
  - Reconstituted Airport Commission
  - Full-time Airport Manager
  - Enhanced Airport Manager authority




## Business Plan

---

- Upgrade Airport Maintenance and Operations
- Eliminate On-airport Land Use Zoning
- Streamline Leasing Administrative Procedures
  - Lease application process
  - Building permit process





## Business Plan

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- Airport Rates and Fees
  - Non-aeronautical land rental rates
  - Aeronautical land rental rates
  - Airport revenue shortfall surcharge








## Business Plan

---


- Airport Revenue Shortfall Surcharge
  - Surcharge limit
  - Surcharge calculation
  - FAA revenue & expense definitions
  - Flow of funds
    - Airport operating costs
    - Airport revenue bond payments
    - Airport operating cost reserve (10% of annual ops. budget)
    - Airport capital improvement reserve (10% of annual ops. budget.)
    - Remaining revenue > capital improvement reserve account

## Business Plan

---

- Land Rental Rate Summary
  - Determine FMR
  - Non-aviation rent = FMR
  - Aviation rent = 50% of FMR or \$0.06 per square
  - Shortfall surcharge to all aeronautical land users
    - Surcharge limit = 25% of the annual rent
    - Surcharge + rent can't exceed FMR
    - FAA expense / revenue definition
    - Flow of funds




## Business Plan

---

- Other Rents and Fees
  - Agricultural land rent
  - Tie-down fees
  - Transient light aircraft parking
  - Heavy aircraft parking
  - Fuel fees
  - Through the fence operations
  - Railroad spur use fees
  - Landing fees




## Business Plan

---


- Land Leasing Policies and Documents
  - Competent, consistent, predictable, and reasonable
  - Lease term based on lessee investment
  - Rent reevaluation and adjustment
  - Insurance and indemnity
  - Reversion of lessee improvements to the City
  - Assignment and subleasing
  - Lease lot size and configuration
  - Lease agreement form




## Business Plan

---

- Airport Regulations
  - Clarification
  - Updating


## Preliminary Forecast

---

- Forecast: 0% to 3% growth/year over 20 years
- 3% Forecast Summary
 

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Peak Hour Operations	35	60

\* Assumes development of new approaches



### Facility Requirements

Component	Identified Need or FAA Standard	Existing Condition	Corrective Action
<b>Runway 16-34 (ARC B-III)</b>			
Safety Area	300 ft wide 600 ft beyond RW end	300 ft wide 300 ft beyond RW end	Extend RSA 300 ft
Object Free Area	800 ft wide 600 ft beyond RW end	675 ft wide 600 ft beyond RW end	Remove trees and fence
<b>Runway 9-27 (ARC B-II)</b>			
Safety Area	150 ft wide 300 ft beyond RW end	150 ft wide 200 ft beyond RW end	Extend RSA 100 ft
Object Free Area	500 ft wide 300 ft beyond RW end	425 ft wide 50-200 ft beyond RW end	Widen and extend ROFA
Runway Protection Zone	500 ft x 700 ft x 1000 ft	500 ft x 700 ft x 1000 ft	Acquire property
<b>Taxiways</b>			
Object Free Area	RW9-27 131 ft RW 16-34 186 ft	RW9-27 131 ft RW 16-34 145-186 ft	Regrade TW C
Connector taxiways	One near midpoint of gravel RW	None	Add connector to gravel RW

**DOWL ENGINEERS**

### Facility Requirements

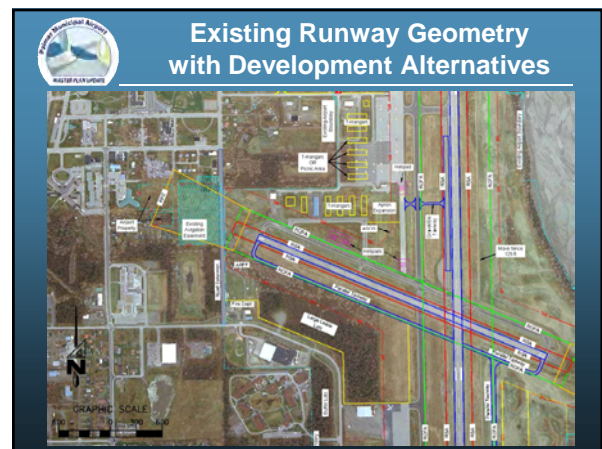
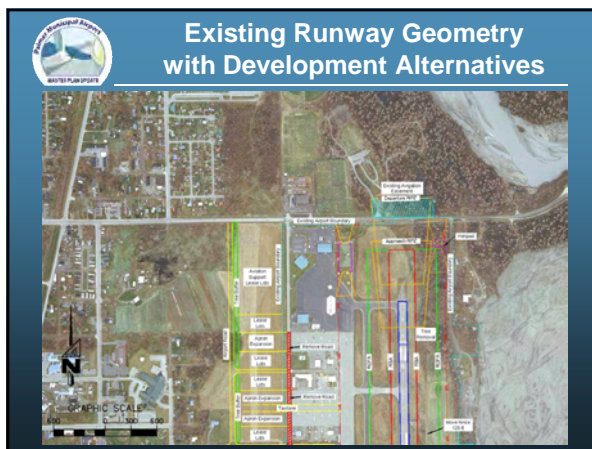
Component	Identified Need or FAA Standard	Existing Condition	Corrective Action
<b>Miscellaneous</b>			
Tiedowns	105-140** tiedowns	130 tiedowns	0-10 tiedowns
T-Hangars	70-105** units	~40 units	30-60 units
Helicopter Facilities	Public helipad	None	Add helipad
<b>Airspace and Approaches</b>			
Part 77 Airspace	Free of obstructions	Trees, fences, mountains	Remove trees, fences
Instrument Approaches	Precision approach	Non-precision GPS	Develop approaches
<b>Landside</b>			
Buildings and Lease Lots	Industrial, private lots	Industrial available, Private lots limited	Add lease lots
Land Acquisition	Ownership of RPZs Other compatible use	Partial RPZs Undeveloped land	Acquire RPZs and other land
<b>Operations</b>			
Snow Storage	Adequate storage	Inadequate storage	Add storage

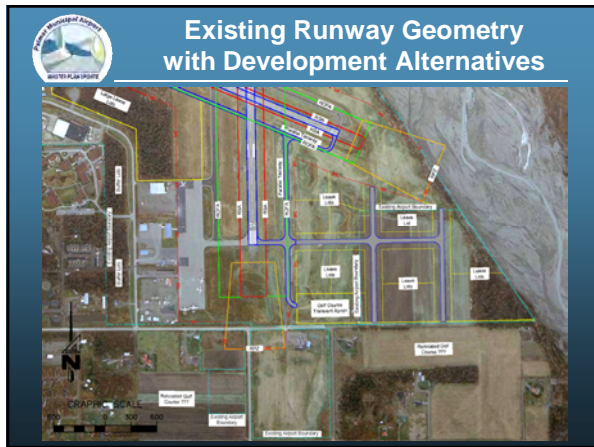
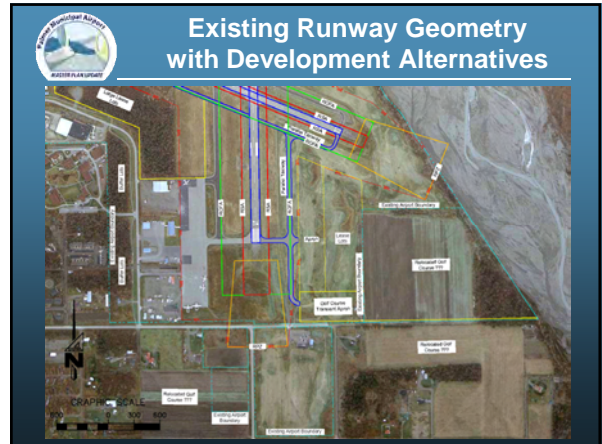
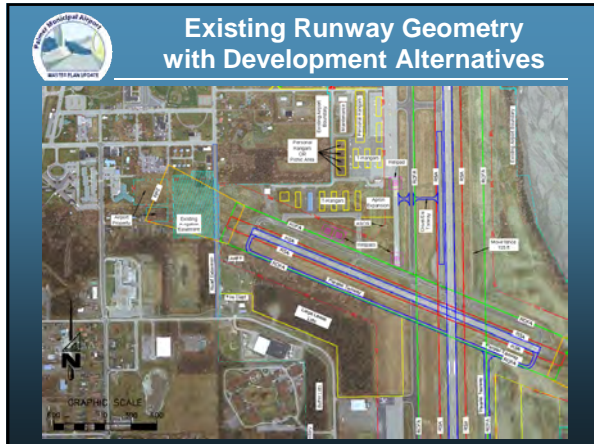
**DOWL ENGINEERS**

\*\* Depends on number of T-hangars constructed

- ### Facility Requirements
- Other items to consider:
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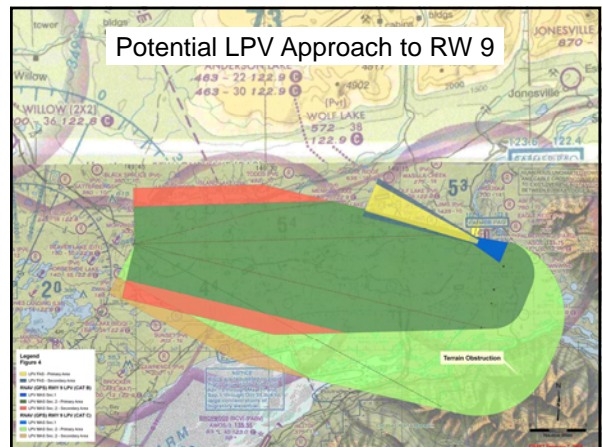
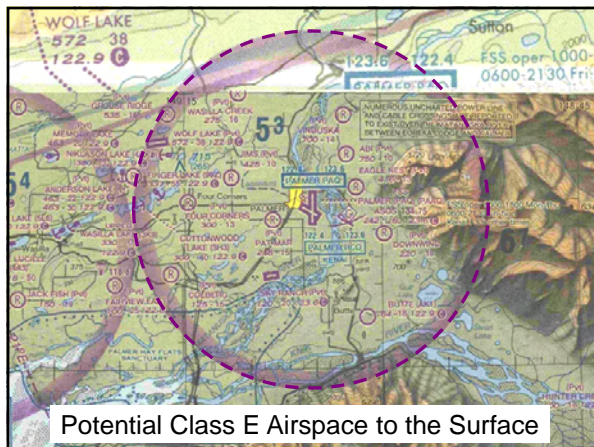
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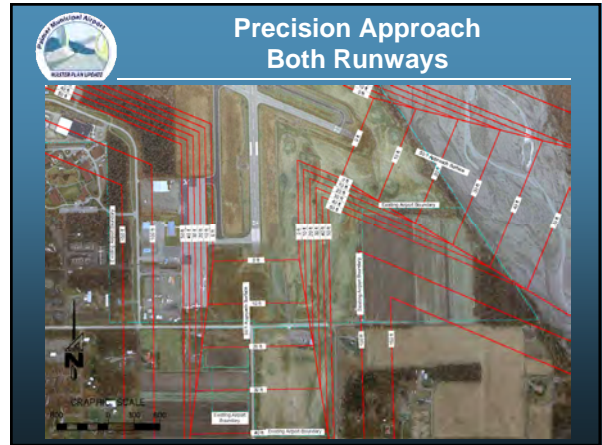
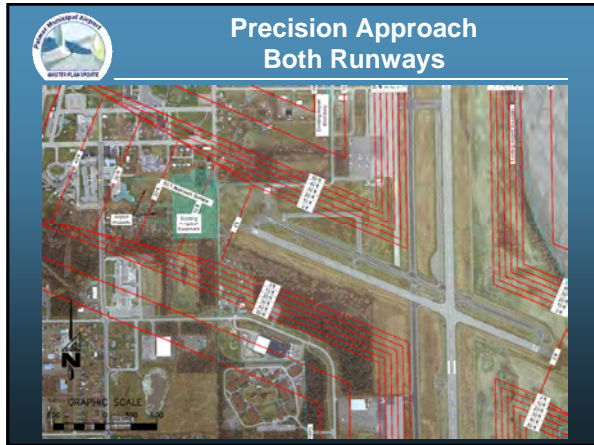
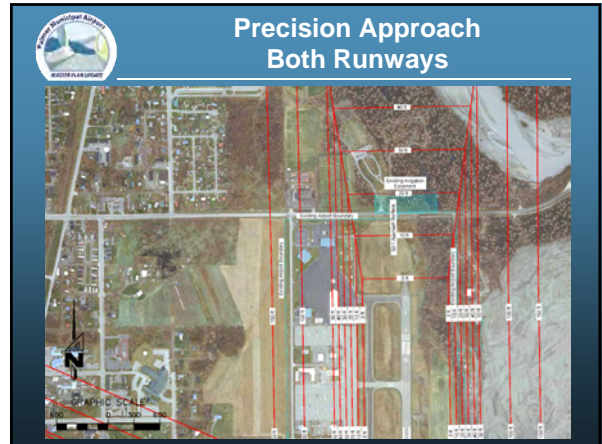
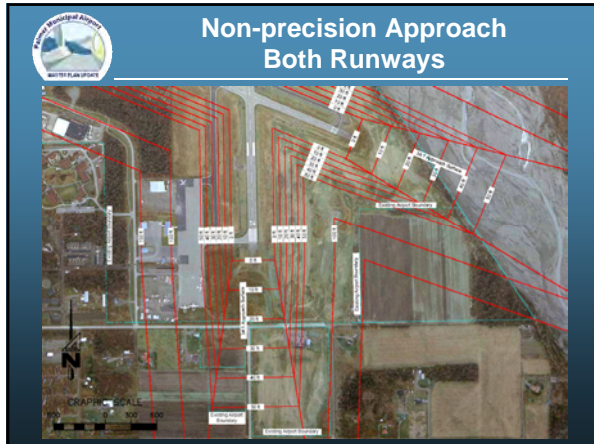
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### Next Steps

- Alternatives
  - Airport Advisory Commission May 2008
  - City Council May 2008
- Select preferred alternatives
- Draft new airport regulations
- Develop marketing ideas
- Cost estimates and environmental issues



### Schedule

Inventory, Forecast, Economic Impact...	January 2008
Leasing Program.....	January 2008
Facility Requirements and Alternatives..	April 2008
Operation and Management Options, Market Analysis.....	April 2008
Environmental Issues, Capital Improvement Program.....	June 2008
Airport Regulations.....	June 2008
Draft Report.....	July 2008
Final Report.....	August 2008







## Public Involvement

- Public Meetings
- Airport Advisory Commission Meetings
- City Council Meetings
- City web site: [www.cityofpalmer.org](http://www.cityofpalmer.org)
- Contact Information:

### City of Palmer

Jane Dale, Airport Manager  
 231 W. Evergreen Avenue  
 Palmer, Alaska 99645  
 (907) 761-1311 office  
 (907) 745-3203 fax  
[jdale@palmerak.org](mailto:jdale@palmerak.org)

### DOWL Engineers

John Jones, Transportation Planner  
 4041 B Street  
 Anchorage, Alaska 99503  
 (907) 562-2000 office  
 (907) 563-3953 fax  
[jjones@dowl.com](mailto:jjones@dowl.com)



## Other Issues or Questions?







# Airport Advisory Commission

May 29, 2008  
Palmer City Hall

**MASTER PLAN UPDATE**



## Master Plan Steps

**The Master Plan**

- Inventory of existing facilities (done)
- Forecast of aviation activity (done)
- Facility requirements for future development (done)
- **Development alternatives (underway)**
- Capital improvement program
- Overview of environmental impacts


**The Business Plan**

- Review of leasing program (done)
- Economic impact analysis (done)
- **Review of management and regulations (underway)**
- Market analysis




## Economic Impact

- Impacts include:
  - Activities of businesses related to aviation at the Palmer Airport even if they are not located at the Airport.
  - Capital projects at the Palmer Airport.
- Jobs created = 166 full-time equivalents.
- Payroll created = \$7.7 million.
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## Preliminary Forecast

- Forecast: 0% to 3% growth/year over 20 years
- 3% Forecast Summary


Category	2007	2027
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<b>Taxiways</b>			
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<b>Landside</b>			
Buildings and Lease Lots	Industrial, private lots	Industrial available, Private lots limited	Add lease lots
Land Acquisition	Ownership of RPZs Other compatible use	Partial RPZs Undeveloped land	Acquire RPZs and other land
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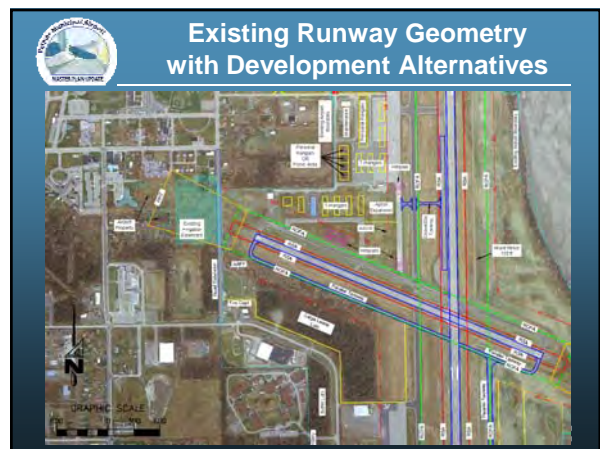
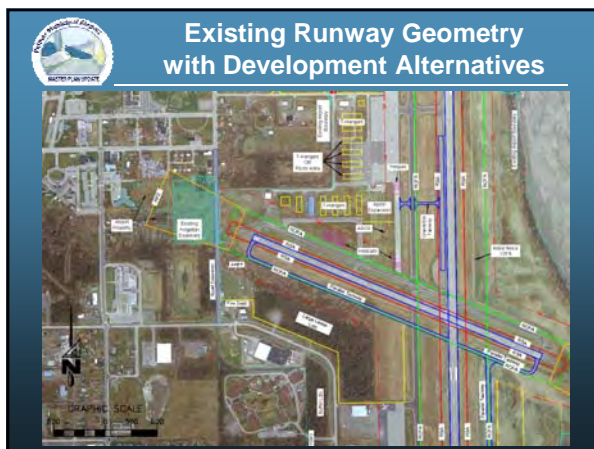
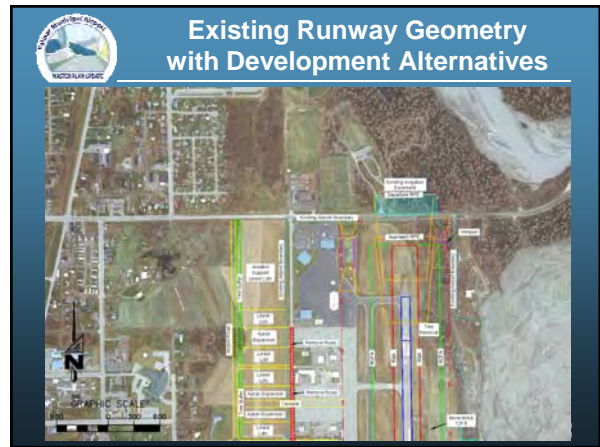
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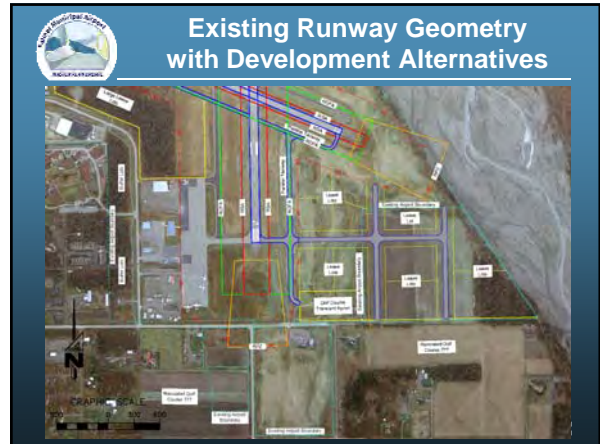
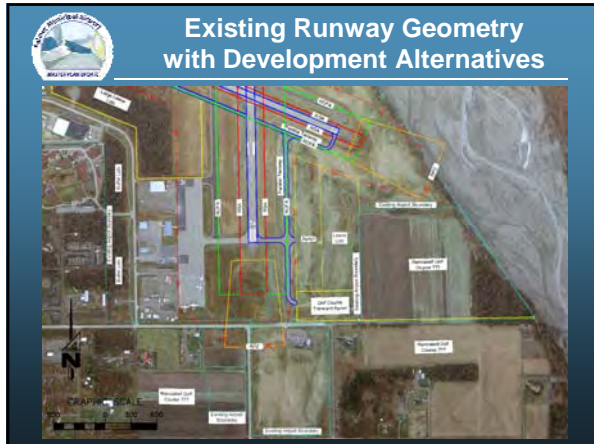
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**Key Issues for Alternatives**

- Acquisition of property west of airport
  - General aviation expansion (Snodgrass property)
- Location for helicopter facilities
- Future of golf course
  - Fence too close to runway (short term)
  - Development of lease lots (long term)
- Acquisition of property south of airport
  - Development of lease lots (long term)
  - Compatible land use (long term)



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### Next Steps

- Alternatives
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### Schedule

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## Other Issues or Questions?





## City Council Meeting #2

July 15, 2008  
Palmer City Hall



### Overview

- Project Update
- Economic Impact
- Business Plan
- Development Alternatives
- Schedule
- Public involvement
- Comments and questions





### What is an Airport Master Plan?

- 20 year development plan
- Shows airport, FAA, and tenant facilities
- Required for Federal funding
- Report explains recommendations
  - Master Plan Report
  - Business Plan Report
- Airport Layout Plan shows concept plans




### Why Update the Master Plan?

- Required by FAA
- Long-term plan for economic growth
- Economic benefit to the community
  - Properly manage the airport
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  - Maintain the infrastructure
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### Master Plan Steps

The Master Plan

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## SWOT Analysis - Strengths

1. 6,009-foot paved & lighted main runway;
2. 3,617-foot paved & lighted crosswind runway;
3. 1,560-foot gravel-surfaced ski / tundra tire runway;
4. Parallel taxiway network;
5. Competent Airport Manager
6. Jet fuel & aviation gasoline services;
7. Aircraft maintenance & repair services;
8. FAA Flight Service Station;
9. Paved parking space available for both light and heavy aircraft;
10. Lease land available for near-term development of hangars & other facilities for both light & heavy aircraft;



## SWOT Analysis - Strengths

11. T-hangar & (future) aircraft shelter building space available;
12. Direct on-airport access to the Alaska Railroad;
13. Close proximity of off-airport commercial & retail services;
14. Local area amenities attractive to airport-based employees:
  - Lower-cost housing as compared to Anchorage or Fairbanks;
  - Mild climate;
  - Good schools;
  - Wide variety of recreational activities available in the area;
15. Good airport security with regular police patrols.



## SWOT Analysis – Weaknesses

1. Lack of straight-in IFR approach / departure;
2. Reputation for strong local winds;
3. Reputation for delayed or inconsistent snow removal;
4. Existence of residential land close to the airport (potential future noise impacts);
5. Existence of a golf course occupying the entire east side of the airport (a challenge to long-term future aviation facility expansion);
6. Lack of a progressive airport organizational structure;
7. Lack of an aggressive, supportable airport marketing plan;
8. Airport located on east edge of the Mat-Su Valley population center;



## SWOT Analysis – Weaknesses

9. Airport located too close to Anchorage to attract scheduled air service;
10. Current airport revenue levels limit maintenance and operation options:
  - Public recreation facilities north, east, and south of Runway 16 – 34 complicate the removal of trees for safe aircraft approach and departure.
11. Occasional fog that closes the airport to aircraft operations.



## SWOT Analysis - Opportunities

1. Attracting air carrier and corporate aircraft maintenance bases and other aviation support businesses as the Anchorage area airport land availability shrinks and land development costs escalate;
2. Attracting more based light aircraft via the construction of aircraft shelter buildings;
3. Acquiring vacant land adjacent to the airport for future airport expansion and noise buffering;
4. Relocating the golf course south of the airport and developing a taxiway for direct aircraft access to the clubhouse;
5. Developing the southeast quadrant of the airport as an air industrial park;
6. Increasing airport revenue through the leasing of available airport land.



## SWOT Analysis - Threats

1. Future expansion of the Birchwood & Wasilla airports;
2. Shift of the Mat-Su Valley population center westward & southward away from Palmer;
3. Future construction of a major public airport / floatplane base in the Knik / Goose Bay / Big Lake area;
4. Construction of a Knik Arm Crossing, which would likely increase the magnitude of the Valley population shift away from Palmer and accelerate the development of a new public airport / floatplane base in the south borough area;





## SWOT Analysis - Threats

5. Potential for the aggressive development of the Willow Airport for many of the same purposes as Palmer, but with an existing, expandable floatplane base, straight-in runway approaches, and no high-wind reputation;
6. Competition for airport tenants from state-operated airports in the Mat-Su Valley where more liberal and predictable leasing policies are the rule;
7. Competition by private airstrips in the vicinity may draw light aircraft away from Palmer.



## Marketing Program

1. Implement Business Plan recommendations.
2. Upgrade the airport's web site.
3. Develop airport information booklets and Power Point presentations specifically focused on targeted industries and interest groups.
4. Directly approach air carriers and major corporations that operate aircraft via personal visits by the Airport Manager.
5. Establish a regular presence at aviation, oil, mining, and construction industry trade shows in Alaska;



## Marketing Program

6. Use industry-targeted advertising in Alaskan trade publications.
7. Aggressively promote Palmer as a location for the development of single-owner personal use hangars.
8. Aggressively promote Palmer as a location for the development of condominium hangar facilities.
9. Directly approach light aircraft and light aircraft parts manufacturers.



## Marketing Program

10. As light aircraft shelter buildings become available, directly contact aircraft user groups.
11. Aggressively promote stories in area news outlets of all significant airport events.
12. Organize local businesses and develop Palmer as a location for aviation leadership meetings.



## Business Plan

- Airport Business Plan Overview
- Airport Operating Philosophy
- Steps to Achieving the City's Objectives



## Business Plan

- Maintain the City's FAA grant eligibility
- Establish an effective airport organizational structure
- Upgrade airport maintenance & operations
- Eliminate on-airport zoning
- Streamline leasing administrative procedures
- Update airport rates and fees
- Update airport leasing policies and documents
- Update airport operating regulations
- Adopt a short and long range airport development plan
- Market the airport





## Business Plan

---

- Maintain Eligibility for Federal Airport Improvement Grants
  - City leadership - Familiar with the Airport Assurances
  - Airport Manager - Competent in FAA airport policies and regulations
  - Airport Manager – Annual eligibility briefing
  - City's annual audit




## Business Plan

---

- Effective Organization for the Airport
  - Reconstituted Airport Commission
  - Full-time Airport Manager
  - Enhanced Airport Manager authority




## Business Plan

---


- Upgrade Airport Maintenance and Operations
- Eliminate On-airport Land Use Zoning
- Streamline Leasing Administrative Procedures
  - Lease application process
  - Building permit process




## Business Plan

---



- Airport Rates and Fees
  - Non-aeronautical land rental rates
  - Aeronautical land rental rates
  - Airport revenue shortfall surcharge

## Business Plan

---


- Airport Revenue Shortfall Surcharge
  - Surcharge limit
  - Surcharge calculation
  - FAA revenue & expense definitions
  - Flow of funds
    - Airport operating costs
    - Airport revenue bond payments
    - Airport operating cost reserve (10% of annual ops. budget)
    - Airport capital improvement reserve (10% of annual ops. budget.)
    - Remaining revenue > capital improvement reserve account

## Business Plan

---

- Land Rental Rate Summary
  - Determine FMR
  - Non-aviation rent = FMR
  - Aviation rent = 50% of FMR or \$0.06 per square
  - Shortfall surcharge to all aeronautical land users
    - Surcharge limit = 25% of the annual rent
    - Surcharge + rent can't exceed FMR
    - FAA expense / revenue definition
    - Flow of funds





## Business Plan

- Other Rents and Fees
  - Agricultural land rent
  - Tie-down fees
  - Transient light aircraft parking
  - Heavy aircraft parking
  - Fuel fees
  - Through the fence operations
  - Railroad spur use fees
  - Landing fees





## Business Plan

- Land Leasing Policies and Documents
  - Competent, consistent, predictable, and reasonable
  - Lease term based on lessee investment
  - Rent reevaluation and adjustment
  - Insurance and indemnity
  - Reversion of lessee improvements to the City
  - Assignment and subleasing
  - Lease lot size and configuration
  - Lease agreement form




## Business Plan

- Airport Regulations
  - Clarification
  - Updating





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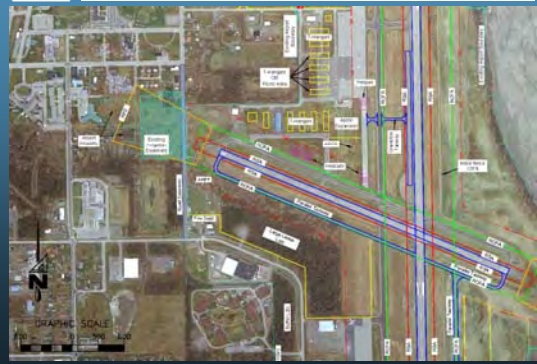
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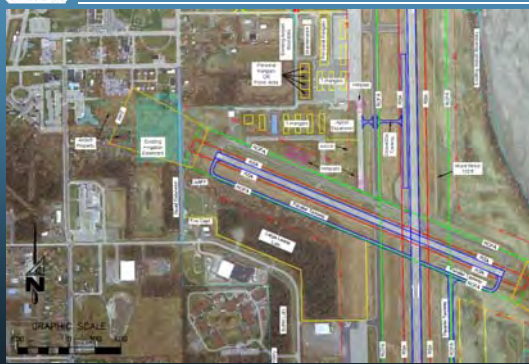
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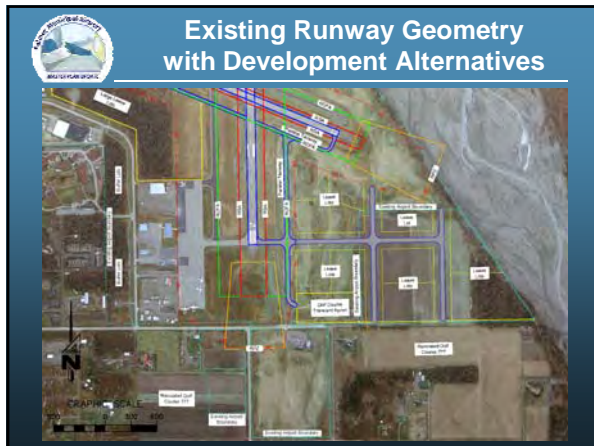
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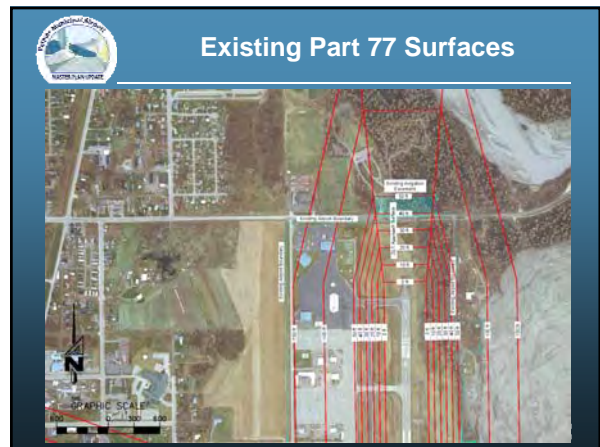
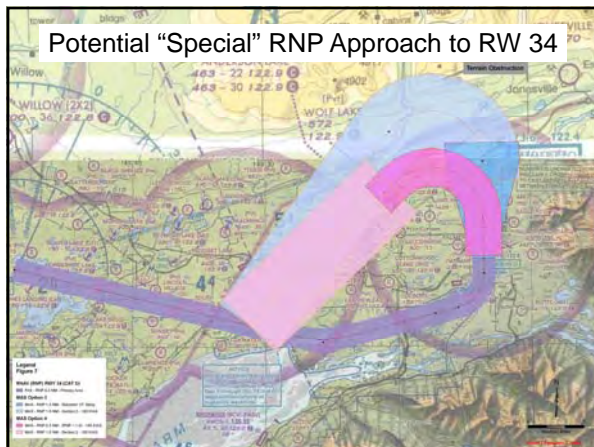
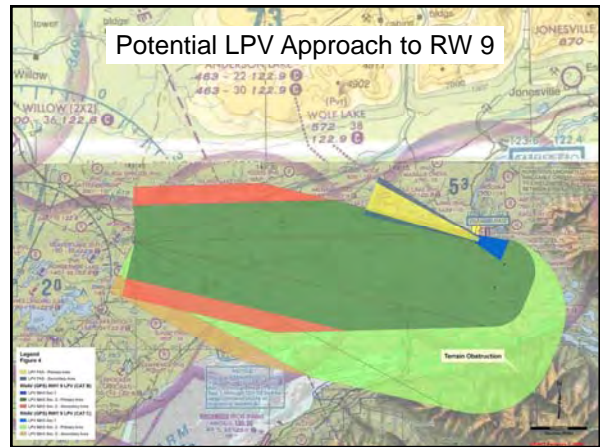
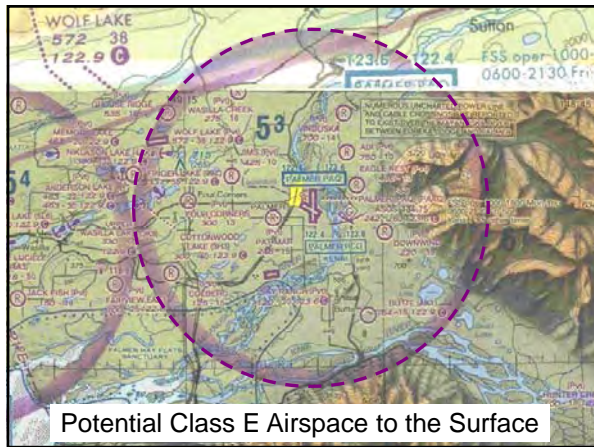


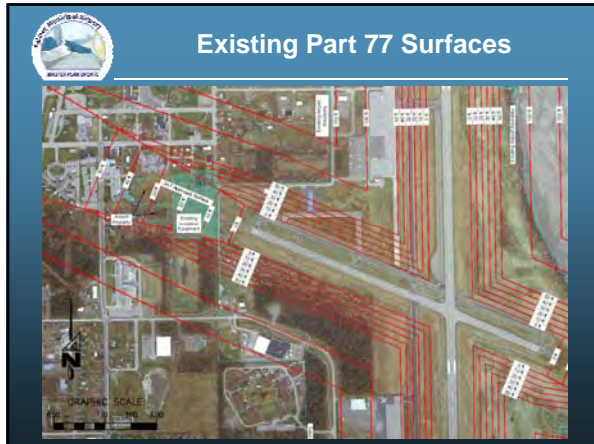


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Two small inset maps show broader geographic context. The DOWL logo is in the bottom right corner.





### Schedule for Next Steps

Choose Preferred Alternatives	
City Council Meeting #3.....	August 2008
Environmental Issues,	
Capital Improvement Program.....	September 2008
Airport Regulations.....	September 2008
Draft Report.....	October 2008
Final Report.....	November 2008





### Public Involvement

- Public Meetings
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### Other Issues or Questions?





## Airport Commission Meeting #4

September 25, 2008  
Palmer City Hall



### Overview

- Project Update
- Economic Impact
- Future Vision for the Airport ?
- Business Plan
- Development Alternatives
- Schedule
- Public involvement


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  - Activities of businesses related to aviation at the Palmer Airport even if they are not located at the Airport.
  - Capital projects at the Palmer Airport.
- Jobs created = 166 full-time equivalents.
- Payroll created = \$7.7 million.
- Business revenue created = \$15.5 million





## Future Vision for the Airport ?

- City must make a fundamental decision about the direction of the airport:
- General Aviation emphasis
- GA with some Commercial
- GA with Commercial and Industrial emphasis



## Future Vision for the Airport ?

- Implications of this decision:
  - Amount and type of businesses and jobs
  - Amount and type of construction
  - Compatibility with surrounding neighborhoods
  - Long-term growth of the airport
    - Some options may not be available in the future



## SWOT Analysis - Strengths

1. 6,009-foot paved & lighted main runway;
2. 3,617-foot paved & lighted crosswind runway;
3. 1,560-foot gravel-surfaced ski / tundra tire runway;
4. Parallel taxiway network;
5. Competent Airport Manager
6. Jet fuel & aviation gasoline services;
7. Aircraft maintenance & repair services;
8. FAA Flight Service Station;
9. Paved parking space available for both light and heavy aircraft;
10. Lease land available for near-term development of hangars & other facilities for both light & heavy aircraft;



## SWOT Analysis - Strengths

11. T-hangar & (future) aircraft shelter building space available;
12. Direct on-airport access to the Alaska Railroad;
13. Close proximity of off-airport commercial & retail services;
14. Local area amenities attractive to airport-based employees:
  - Lower-cost housing as compared to Anchorage or Fairbanks;
  - Mild climate;
  - Good schools;
  - Wide variety of recreational activities available in the area;
15. Good airport security with regular police patrols.



## SWOT Analysis – Weaknesses

1. Lack of straight-in IFR approach / departure;
2. Reputation for strong local winds;
3. Reputation for delayed or inconsistent snow removal;
4. Existence of residential land close to the airport (potential future noise impacts);
5. Existence of a golf course occupying the entire east side of the airport (a challenge to long-term future aviation facility expansion);
6. Lack of a progressive airport organizational structure;
7. Lack of an aggressive, supportable airport marketing plan;
8. Airport located on east edge of the Mat-Su Valley population center;



## SWOT Analysis – Weaknesses

9. Airport located too close to Anchorage to attract scheduled air service;
10. Current airport revenue levels limit maintenance and operation options:
  - Public recreation facilities north, east, and south of Runway 16 – 34 complicate the removal of trees for safe aircraft approach and departure.
11. Occasional fog that closes the airport to aircraft operations.







## SWOT Analysis - Opportunities

1. Attracting air carrier and corporate aircraft maintenance bases and other aviation support businesses as the Anchorage area airport land availability shrinks and land development costs escalate;
2. Attracting more based light aircraft via the construction of aircraft shelter buildings;
3. Acquiring vacant land adjacent to the airport for future airport expansion and noise buffering;
4. Relocating the golf course south of the airport and developing a taxiway for direct aircraft access to the clubhouse;
5. Developing the southeast quadrant of the airport as an air industrial park;
6. Increasing airport revenue through the leasing of available airport land.



## SWOT Analysis - Threats

1. Future expansion of the Birchwood & Wasilla airports;
2. Shift of the Mat-Su Valley population center westward & southward away from Palmer;
3. Future construction of a major public airport / floatplane base in the Knik / Goose Bay / Big Lake area;
4. Construction of a Knik Arm Crossing, which would likely increase the magnitude of the Valley population shift away from Palmer and accelerate the development of a new public airport / floatplane base in the south borough area;



## SWOT Analysis - Threats

5. Potential for the aggressive development of the Willow Airport for many of the same purposes as Palmer, but with an existing, expandable floatplane base, straight-in runway approaches, and no high-wind reputation;
6. Competition for airport tenants from state-operated airports in the Mat-Su Valley where more liberal and predictable leasing policies are the rule;
7. Competition by private airstrips in the vicinity may draw light aircraft away from Palmer.



## Marketing Program

1. Implement Business Plan recommendations.
2. Upgrade the airport's web site.
3. Develop airport information booklets and Power Point presentations specifically focused on targeted industries and interest groups.
4. Directly approach air carriers and major corporations that operate aircraft via personal visits by the Airport Manager.
5. Establish a regular presence at aviation, oil, mining, and construction industry trade shows in Alaska;



## Marketing Program

6. Use industry-targeted advertising in Alaskan trade publications.
7. Aggressively promote Palmer as a location for the development of single-owner personal use hangars.
8. Aggressively promote Palmer as a location for the development of condominium hangar facilities.
9. Directly approach light aircraft and light aircraft parts manufacturers.



## Marketing Program

10. As light aircraft shelter buildings become available, directly contact aircraft user groups.
11. Aggressively promote stories in area news outlets of all significant airport events.
12. Organize local businesses and develop Palmer as a location for aviation leadership meetings.







## Business Plan

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- Airport Business Plan Overview
- Airport Operating Philosophy
- Steps to Achieving the City's Objectives




## Business Plan

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- Maintain the City's FAA grant eligibility
- Upgrade airport maintenance & operations
- Eliminate on-airport zoning
- Streamline leasing administrative procedures
- Update airport rates and fees
- Update airport leasing policies and documents
- Update airport operating regulations
- Adopt a short and long range airport development plan
- Market the airport

## Business Plan

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- Maintain Eligibility for Federal Airport Improvement Grants
  - City leadership - Familiar with the Airport Assurances
  - Airport Manager - Competent in FAA airport policies and regulations
  - Airport Manager – Annual eligibility briefing
  - City's annual audit




## Business Plan

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- Upgrade Airport Maintenance and Operations
- Eliminate On-airport Land Use Zoning
- Streamline Leasing Administrative Procedures
  - Lease application process
  - Building permit process




## Business Plan

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- Airport Rates and Fees
  - Non-aeronautical land rental rates
  - Aeronautical land rental rates
  - Airport revenue shortfall surcharge





## Business Plan

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- Airport Revenue Shortfall Surcharge
  - Surcharge limit
  - Surcharge calculation
  - FAA revenue & expense definitions
  - Flow of funds
    - Airport operating costs
    - Airport revenue bond payments
    - Airport operating cost reserve (10% of annual ops. budget)
    - Airport capital improvement reserve (10% of annual ops. budget.)
    - Remaining revenue > capital improvement reserve account





## Business Plan

- Land Rental Rate Summary
  - Determine FMR
  - Non-aviation rent = FMR
  - Aviation rent = 50% of FMR or \$0.06 per square
  - Shortfall surcharge to all aeronautical land users
    - Surcharge limit = 25% of the annual rent
    - Surcharge + rent can't exceed FMR
    - FAA expense / revenue definition
    - Flow of funds




## Business Plan

- Other Rents and Fees
  - Agricultural land rent
  - Tie-down fees
  - Transient light aircraft parking
  - Heavy aircraft parking
  - Fuel fees
  - Through the fence operations
  - Railroad spur use fees
  - Landing fees





## Business Plan

- Land Leasing Policies and Documents
  - Competent, consistent, predictable, and reasonable
  - Lease term based on lessee investment
  - Rent reevaluation and adjustment
  - Insurance and indemnity
  - Reversion of lessee improvements to the City
  - Assignment and subleasing
  - Lease lot size and configuration
  - Lease agreement form




## Business Plan

- Airport Regulations
  - Clarification
  - Updating





## Preliminary Forecast

- Forecast: 0% to 3% growth/year over 20 years
- 3% Forecast Summary

Category	2007	2027
Based Aircraft	120	210
Total Operations	29,000	50,000
Instrument Approaches	120	400*
Peak Month Operations	6,500	11,500
Peak Hour Operations	35	60

\* Assumes development of new approaches




## Facility Requirements


Component	Identified Need or FAA Standard	Existing Condition	Corrective Action
<b>Runway 16-34 (ARC B-III)</b>			
Safety Area	300 ft wide 600 ft beyond RW end	300 ft wide 200 ft beyond RW end	Extend RSA 300 ft
Object Free Area	800 ft wide 600 ft beyond RW end	675 ft wide 600 ft beyond RW end	Remove trees and fence
<b>Runway 9-27 (ARC B-II)</b>			
Safety Area	150 ft wide 300 ft beyond RW end	150 ft wide 200 ft beyond RW end	Extend RSA 100 ft
Object Free Area	500 ft wide 300 ft beyond RW end	425 ft wide 50-200 ft beyond RW end	Widen and extend ROFA
Runway Protection Zone	500 ft x 700 ft x 1000 ft	500 ft x 700 ft x 1000 ft	Acquire property
<b>Taxiways</b>			
Object Free Area	RW9-27 131 ft RW 16-34 186 ft	RW9-27 131 ft RW 16-34 145-186 ft	Regrade TW C
Connector taxiways	One near midpoint of gravel RW	None	Add connector to gravel RW





### Facility Requirements

Component	Identified Need or FAA Standard	Existing Condition	Corrective Action
<b>Miscellaneous</b>			
Tiedowns	105-140** tiedowns	130 tiedowns	0-10 tiedowns
T-Hangars	70-105** units	~40 units	30-60 units
Helicopter Facilities	Public helipad	None	Add helipad
<b>Airspace and Approaches</b>			
Part 77 Airspace	Free of obstructions	Trees, fences, mountains	Remove trees, fences
Instrument Approaches	Precision approach	Non-precision GPS	Develop approaches
<b>Landside</b>			
Buildings and Lease Lots	Industrial, private lots	Industrial available, Private lots limited	Add lease lots
Land Acquisition	Ownership of RPZs Other compatible use	Partial RPZs Undeveloped land	Acquire RPZs and other land
<b>Operations</b>			
Snow Storage	Adequate storage	Inadequate storage	Add storage

\*\* Depends on number of T-hangars constructed




- ### Facility Requirements
- Other items to consider:
    - Sailplanes
    - Pilot lounge
    - Aircraft plug-ins
    - Compass rose on south apron
    - Picnic/viewing area
    - Noise abatement procedures
  - These items may depend on which other development options are chosen
- 

- ### Alternatives
- Series of ideas to meet long-term need
    - 20 year plan
  - Focus on:
    - Meeting safety standards
    - Economic development at the airport
    - Compatible land use
  - Development will be phased
    - Safety items should be addressed first
    - Instrument approaches could affect some items
- 

- ### Alternatives
- Future of Golf Course is sensitive issue
    - Key part of community quality of life
    - Economic driver in community
    - Located on airport property
    - Located on prime lease space adjacent to the runway
  - Master Plan team proposes a work session to focus on land southeast of runways
- 

- ### Safety and Standards Issues
- Regrading of area between Runway 16 and parallel taxiway
  - Property acquisition within easement at end of Runway 9
  - Tree removal in multiple locations
  - Relocate Golf Course fence
- 



### Alternative A General Aviation Emphasis

- GA expansion to northwest of Airport
- No other property acquisition
- Hangar development on existing apron
- One helipad
- GA development south of Runway 9
- No aviation development on Golf Course





### Alternative B Mix of GA and Commercial

- GA expansion to northwest of Airport
- Property acquisition for compatible land use near airport
- Hangar development on existing apron
- One helipad
- Commercial development south of Runway 9
- No aviation development on Golf Course








### Alternative B Mix of GA and Commercial




### Alternative C Commercial & Industrial Emphasis


- GA expansion to northwest of Airport
- Property acquisition for compatible land use near airport
- Hangar development on existing apron
- One helipad
- Commercial development south of Runway 9
- Aviation development on Golf Course
- Golf Course apron




### Alternative C Commercial & Industrial Emphasis








### Alternative C Commercial & Industrial Emphasis

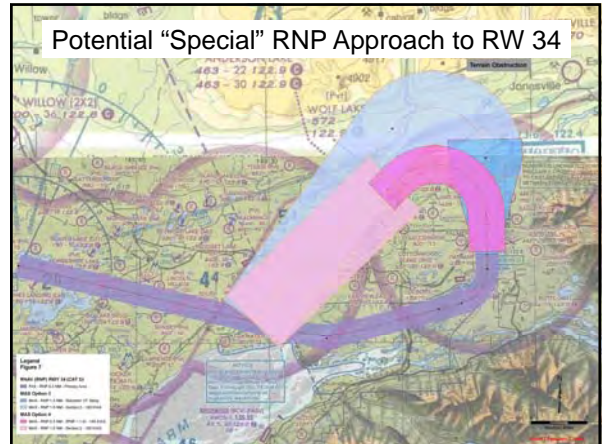
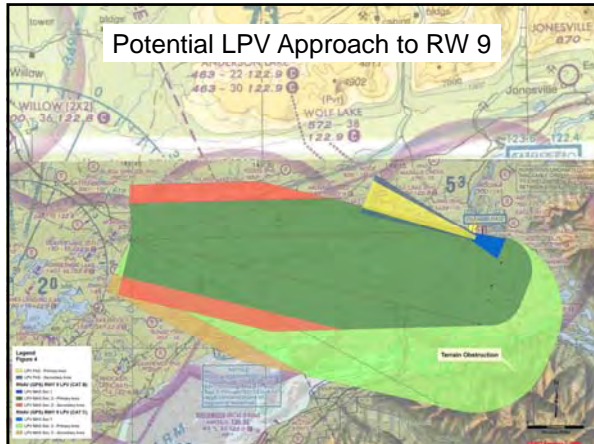
### Airspace and Approaches

- Existing GPS-A Approach
  - Visibility - Circling
  - Height above threshold - 618 feet
- Existing GPS Approach RW 9
  - Visibility – 1 mile
  - Height above threshold - 593 feet
- Better survey might lower minimums for both approaches
- Future Approaches
  - RNP & LPV maybe in a few years
  - 5 mile controlled airspace to ground

Potential Class E Airspace to the Surface





**Future Vision for the Airport ?**

- City must make a fundamental decision about the direction of the airport:
- Alt A - General Aviation emphasis
- Alt B - GA with some Commercial
- Alt C - GA with Commercial & Industrial emphasis



**Schedule for Next Steps**

Choose Preferred Alternatives.....	October 2008
Environmental Issues and Capital Improvement Program.....	November 2008
Airport Regulations.....	November 2008
Draft Report.....	December 2008
Final Report.....	January 2009



**Public Involvement**



- Airport Advisory Commission Meetings
- City Council Meetings
- Web: [www.cityofpalmer.org](http://www.cityofpalmer.org) OR [www.palmerairport.org](http://www.palmerairport.org)

• Contact Information:

<b>City of Palmer</b>	<b>DOWL Engineers</b>
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231 W. Evergreen Avenue	4041 B Street
Palmer, Alaska 99645	Anchorage, Alaska 99503
(907) 761-3271 City Hall	(907) 562-2000 office
(907) 745-0930 fax	(907) 563-3953 fax
<a href="mailto:cgates@palmerak.org">cgates@palmerak.org</a>	<a href="mailto:jjones@dowl.com">jjones@dowl.com</a>



**Other Issues or Questions?**



# Airport Master Plan Development Alternatives

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- **Safety and Standards Issues**
  - Regrading of area between Runway 16 and parallel taxiway
  - Property acquisition within easement at end of Runway 9
  - Tree removal in multiple locations
  - Relocate Golf Course fence 125 feet east
- **Alternative A – General Aviation Emphasis**
  - GA expansion to northwest of Airport
  - No other property acquisition
  - Hangar development on existing apron
  - One helipad
  - GA development south of Runway 9
  - No aviation development on Golf Course
- **Alternative B – Mix of GA and Commercial**
  - GA expansion to northwest of Airport
  - Property acquisition for compatible land use near airport
  - Hangar development on existing apron
  - One helipad
  - Commercial development south of Runway 9
  - No aviation development on Golf Course
- **Alternative C – Commercial & Industrial Emphasis**
  - GA expansion to northwest of Airport
  - Property acquisition for compatible land use near airport
  - Hangar development on existing apron
  - One helipad
  - Commercial development south of Runway 9
  - Aviation development on Golf Course
  - Golf Course apron





# Airport Master Plan Overview

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- **Key Master Plan Issues:**
  - Vision for the Airport?
    - GA, Commercial, or a mix?
  - Obstructions (trees, fences, etc.)
  - T-hangars
  - Helicopter facilities
  - Instrument approaches
  - Commercial lease lots
  - Compatible land use
  - Snow storage
  
- **Key Business Issues:**
  - Economic Impact Analysis
  - Review of leasing program
  - Review of airport management and regulations
  - Analysis of Strengths, Weaknesses, Opportunities, and Threats (SWOT)
  - Market analysis and strategies
  
- **Feel free to contact us:**

Chris Gates, Airport Manager  
City of Palmer  
231 W. Evergreen Avenue  
Palmer, AK 99645  
907-745-3271  
cgates@palmerak.org  
www.palmerairport.org



## **APPENDIX B**

### **Wind Data**

**Palmer Municipal Airport  
Crosswind Coverage 1998-2007**

All Weather

Wind Speed	RW 16-34	RW 9-27	Combined
10.5 knots	93.31	92.63	98.08
13 knots	96.1	95.86	98.93
16 knots	98.09	97.72	99.44
20 knots	99.29	98.42	99.8

VFR

Wind Speed	RW 16-34	RW 9-27	Combined
10.5 knots	93.11	92.41	98.07
13 knots	96.03	95.77	98.95
16 knots	98.09	97.7	99.46
20 knots	99.31	98.43	99.82

IFR

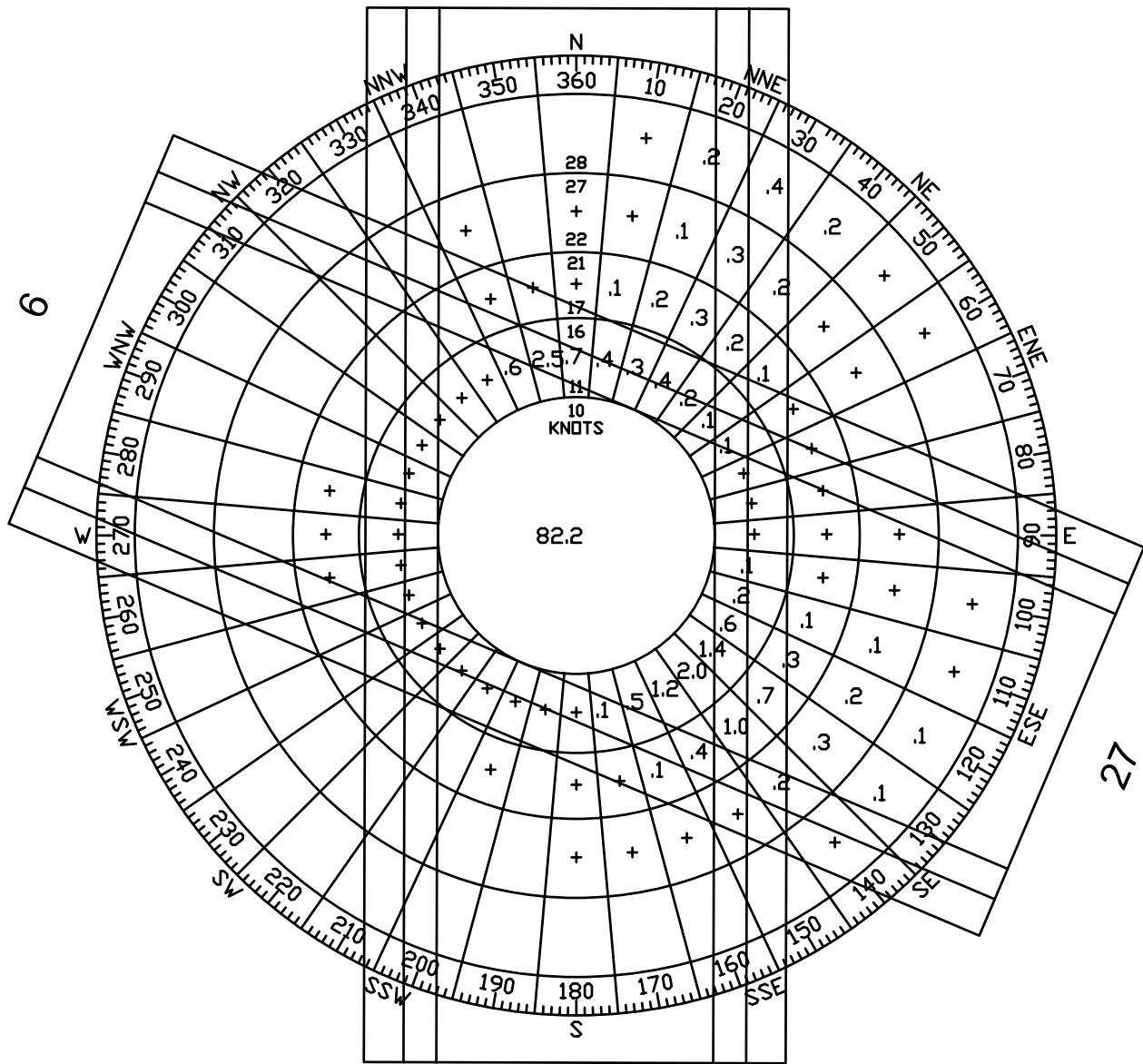
Wind Speed	RW 16-34	RW 9-27	Combined
10.5 knots	96.85	96.47	98.19
13 knots	97.26	97.41	98.59
16 knots	97.94	98.12	98.94
20 knots	98.86	98.3	99.39

Low IFR

Wind Speed	RW 16-34	RW 9-27	Combined
10.5 knots	99.53	99.79	100
13 knots	99.69	99.9	100
16 knots	99.86	100	100
20 knots	99.87	100	100



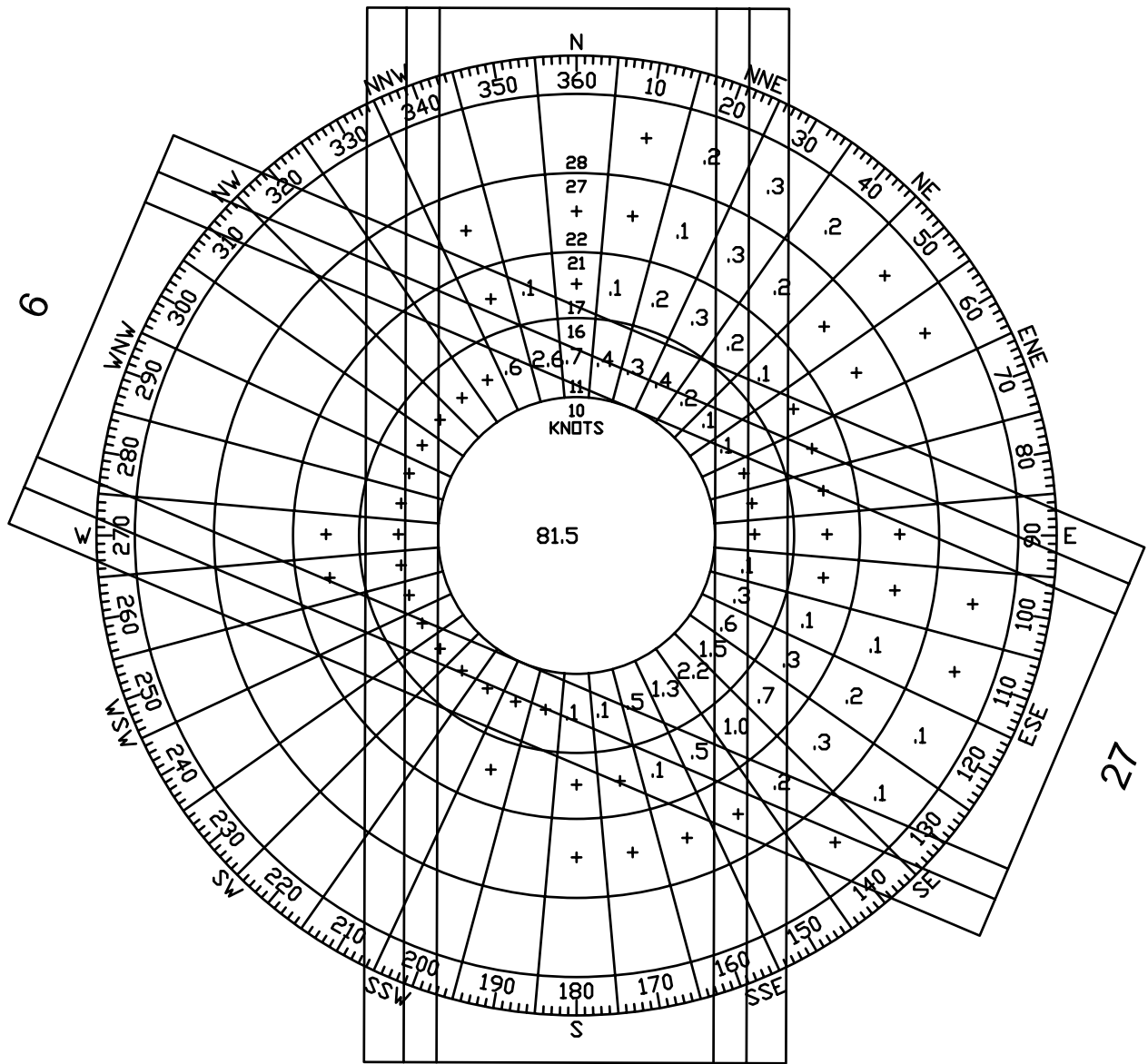
91



34

Palmer Municipal Airport  
All Weather Windrose  
1998-2007

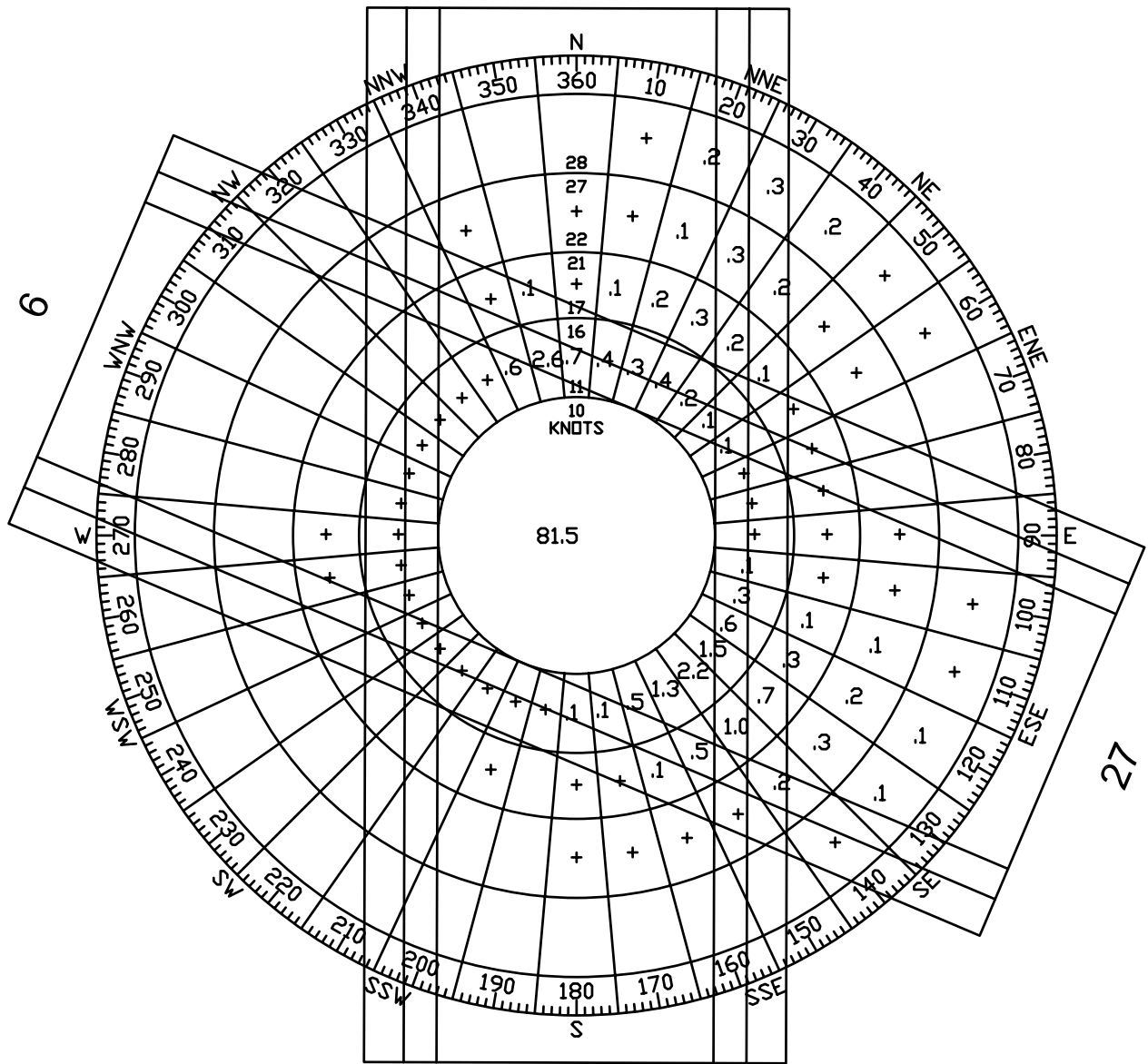
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34

Palmer Municipal Airport  
VFR Windrose  
1998-2007

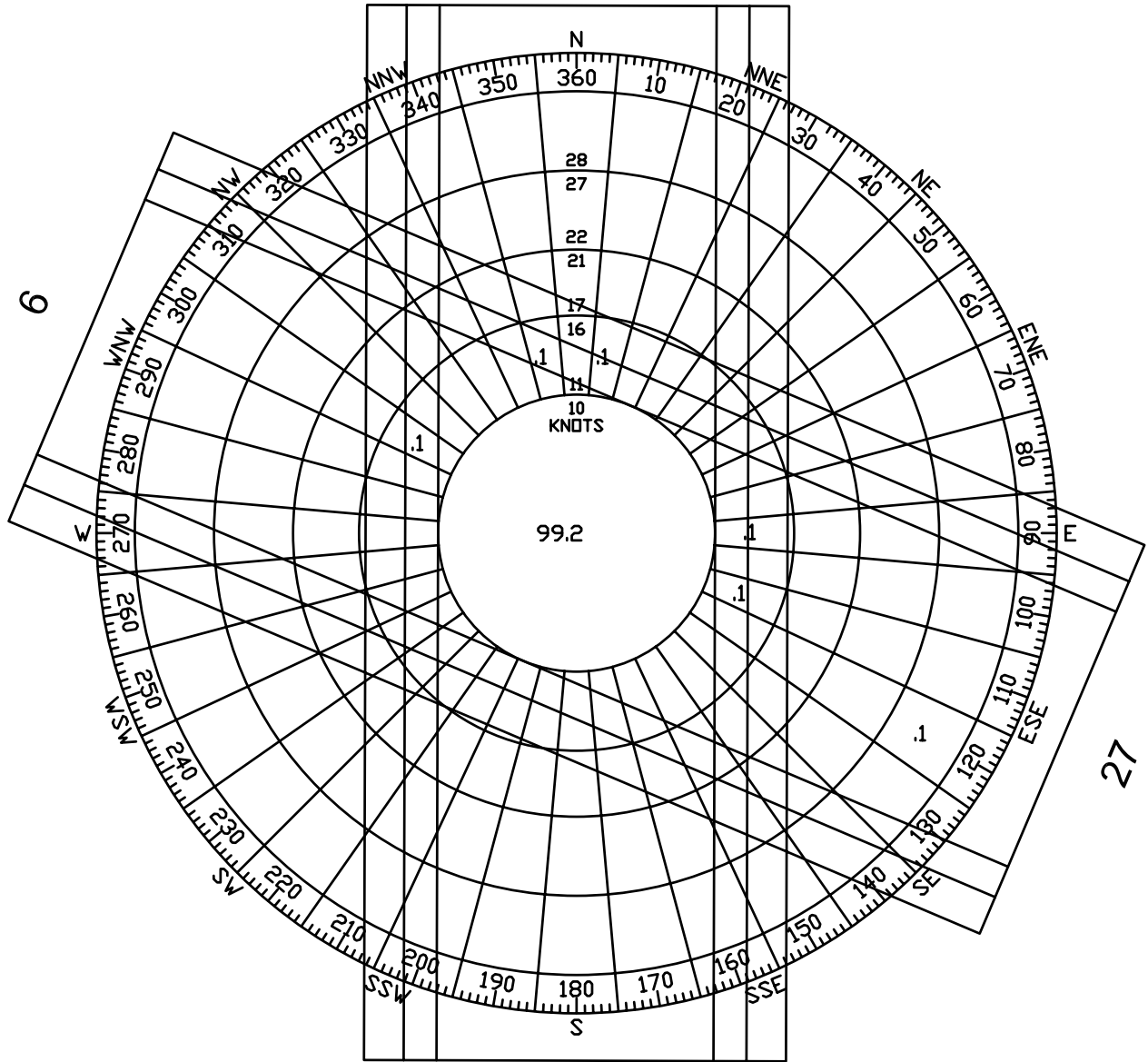
91



34

Palmer Municipal Airport  
IFR Windrose  
1998-2007

91



34

Palmer Municipal Airport  
Low IFR Windrose  
1998-2007

STATION: PALMER MUNICIPAL, AK STA-NUM: 70274 ANNUAL PERIOD OF RECORD: 1998-2007

UNITS	OBSERVATIONS OF WIND SPEEDS										AVERAGE SPEED				
	H O U R L Y		4- 5	6- 8	9-11	12-14	15-17	18-21	22&GR		TOTAL	PCT	KNOTS	MPH	MPS
MPH	0- 2	3- 3	8-12	13-18	19-24	25-31	32-38	39-46	47&GR						
KNOTS	0- 3	4- 6	7-10	11-16	17-21	22-27	28-33	34-40	41&GR						
DIRECTION															
1	315	1003	808	275	40	8	3			2452	3.2	6.9	8	3.6	
2	255	620	420	269	132	101	92	29	2	1920	2.5	10.2	11.8	5.3	
3	212	461	282	281	218	209	179	95	6	1943	2.5	14.1	16.2	7.3	
4	187	409	198	169	141	151	109	58	4	1426	1.9	12.9	14.9	6.6	
5	193	386	157	77	39	19	10	6		887	1.2	7.2	8.3	3.7	
6	238	403	149	39	10	4	1			844	1.1	5.5	6.3	2.8	
7	219	472	152	34	5					882	1.1	5.3	6	2.7	
8	270	417	190	27	4					908	1.2	5.2	6	2.7	
9	260	513	262	35	5	4				1079	1.4	5.6	6.4	2.9	
10	249	546	357	87	25	8	2			1274	1.7	6.4	7.4	3.3	
11	301	579	436	192	96	40	8			1652	2.1	7.7	8.9	4	
12	377	733	622	448	232	158	47	5		2622	3.4	9.8	11.2	5	
13	346	703	838	1103	538	244	70	4		3846	5	11.5	13.3	5.9	
14	334	672	789	1579	749	136	10			4269	5.5	11.6	13.4	6	
15	317	595	476	945	344	29				2706	3.5	10.2	11.8	5.3	
16	271	514	278	374	81	4				1522	2	8	9.2	4.1	
17	294	529	173	108	21	1				1126	1.5	5.9	6.8	3	
18	236	593	140	37	3	1				1010	1.3	5.2	5.9	2.7	
19	183	403	110	14						710	0.9	5	5.7	2.6	
20	143	311	83	6	1					544	0.7	4.9	5.6	2.5	
21	121	320	100	1						542	0.7	4.9	5.6	2.5	
22	139	434	170	5						748	1	5.3	6.1	2.7	
23	143	559	300	10						1012	1.3	5.6	6.4	2.9	
24	167	463	272	10						912	1.2	5.5	6.4	2.9	
25	100	320	177	18						615	0.8	5.7	6.6	2.9	
26	85	239	107	15	3					449	0.6	5.7	6.5	2.9	
27	68	156	66	14	4					308	0.4	5.7	6.5	2.9	
28	66	100	57	5	1					229	0.3	5.2	6	2.7	
29	52	86	32	6						176	0.2	5.1	5.9	2.6	
30	56	60	26	3						145	0.2	4.8	5.6	2.5	
31	67	65	26	2						160	0.2	4.7	5.4	2.4	
32	67	95	47	7						216	0.3	5.2	5.9	2.7	
33	160	269	143	22						594	0.8	5.4	6.2	2.8	
34	261	1229	1507	441	15	1				3454	4.5	7.3	8.4	3.8	
35	495	3159	4002	1905	38					9599	12.5	7.8	9	4	
36	530	1917	1573	532	13	3				4568	5.9	6.8	7.8	3.5	
CALM	19729										19729	25.6			
TOTAL	27506	20333	15525	9095	2758	1121	531	197	12	77078	100	6.1	7	3.2	
PERCENT	35.7	26.4	20.1	11.8	3.6	1.5	0.7	0.3	0	100					
PCT ALL OBS	35.7	26.4	20.1	11.8	3.6	1.5	0.7	0.3	0	77078	100				
CEIL/VIS:	ALL														
PRES WEA:	ALL														
HOURS:	ALL														
DISKETTE FILE NAME:	AN70274A.PRN														

% GREATER THAN 10 KNOTS	17.9
% GREATER THAN 21 KNOTS	2.5



## **APPENDIX C**

### **Instrument Approach Feasibility**

**DRAFT Approach Minimums Analysis**  
Palmer Municipal Airport  
Master Plan Update  
February 7, 2008

The primary purpose of this analysis was to determine the feasibility of lowering instrument approach minimums for instrument flight rule (IFR) operations at the Palmer Municipal Airport (PAQ). As a result of the inherent operating limitations afforded by conventional area navigation (RNAV) GPS procedures in the Palmer, AK airspace, the most feasible alternatives for improving instrument approach operations relies on the more advanced operational capabilities afforded by performance-based operations. Performance-based operations, or Required Navigation Performance (RNP) procedures, place navigational accuracy requirements on aircraft and aircrew in order to fly in areas that would otherwise be inaccessible.

The capability to operate aircraft using RNP criteria appears to be the most feasible alternative for those operators able to invest in the equipment and training required. The potential benefits of investing in RNP certified systems will be to realize operating at lower approach minimums. For Palmer, the most potential is for approaches to Runway 34. Moreover, any operator investing in RNP certified systems can realize operational advantages at other airports within the region with the anticipated growth in development of RNP approach procedures.

**Existing Approach Procedures**

In general, the high-terrain that surrounds three sides of the airport limits the options available to procedure designers to develop approach procedures with very low minimums (see Figure 1). Currently, the Airport has a non-precision GPS approach procedure, but with circling only minimums. Yet it is typically preferred to have an instrument approach procedure with straight-in minimums. Accordingly, the FAA has developed a new non-precision GPS approach procedure to Runway 9 with straight-in minimums. The new procedure is currently in the flight check stage of the process. Table 1 lists the existing minimums for the two procedures.

Table 1						
Runway	Approach Category HATh/HAA and VIS Minima			Approach Aid	GPA	TCH
	A	B	C			
<b>9</b>	593-1	593-1 1/2	593-1 3/4	LNAV MDA*	3.06	30
	618-1	678-2**	678-2 1/4**	CIRCLING*	-	-
<b>GPS-A</b>	612-1	712-2**	772-2 1/2**	CIRCLING	-	-

HATh = Height Above Threshold or HAA Height Above Airport (Circling Minimums)

\* Original (Prototype), currently at Flight Check

\*\* Airport Remarks: Runway 9-27 closed to aircraft over 12,500 lbs

The new GPS procedure will be published with only a line of minimums for lateral navigation (LNAV). Publication of a line of minimums for a GPS procedure utilizing vertical guidance, either lateral navigation with vertical capability (LNAV/VNAV) or a precision procedure with localizer performance and vertical guidance (LPV) will require a precision approach obstruction survey, although development of these procedures is uncertain due to the terrain obstructions in the missed approach segment.

Runway 9 will therefore be the only runway with a straight-in GPS procedure. Otherwise, straight-in GPS procedures cannot be developed for Runways 16, 27, or 34 because the high terrain underlying the final approach segments will not allow for stabilized descents.

However, with GPS, advanced avionics, and flight management systems, it is possible to successfully design turning missed approach procedures in terrain-challenged operating environments. By placing precise requirements on aircraft navigation positioning, turn rates, and/or speeds, an aircraft and crew can be certified to fly the new RNP procedures that utilize these technologies. For Palmer, the most potential is for approaches to Runway 34.

## **Future Approach Procedures**

### **GPS-A/RNAV (GPS)-A**

The final approach course for the current GPS-A procedure is aligned 35 degrees from the runway centerline. As a result, the procedure is for a circling only approach. Straight-in landings are normally designed for final approach course alignments that do not exceed 30 degrees. The FAA has updated the procedure and renamed it according to the current naming convention. The revised RNAV (GPS)-A procedure will now be aligned 43 degrees from the runway centerline to provide relief from mountain terrain obstructions and eliminate the existing stepdown fix in the intermediate segment (see Figure 2). Also shown in Figure 2 is the terrain obstruction that precludes development of a straight-in procedure.

### **RNAV (GPS) LNAV, LNAV/VNAV, and LPV**

The FAA has also developed a new non-precision approach procedure (lateral-only navigation, or LNAV) to Runway 9 for aircraft approach categories A-D (see Figure 3). The procedure is a straight-in procedure with non-precision minimums. A precision procedure with vertical guidance (localizer performance with vertical guidance, or LPV) does appear possible for Runway 9. LPV procedures require WAAS navigation, which is available for most of Alaska. However, an LPV procedure will probably be limited to aircraft approach categories A and B (see Figure 4). Approach minimums for category C and D aircraft appear unlikely because of terrain obstructions in the missed approach segment. If an LPV approach is desired, a precision approach obstruction survey according to 405 standards is required.

Figure 5 depicts an LPV approach to Runway 27 at the maximum 3.0 degree offset from runway centerline. While the LPV final approach segment appears to clear the terrain obstructions (excluding worst-case vegetation and adverse obstacle assumptions), the initial and intermediate segments are not clear and therefore an LPV to Runway 27 does not appear possible.

### **RNAV (RNP) SAAAR**

An RNAV (RNP) basic approach procedure is the standard public-use RNP procedure type. However, due to the constrained airspace in Palmer for approach and missed approach areas, any future RNP procedures will necessarily require designing routes of flight that incorporate constant radius-to-fix (RF) turns, which is an advanced RNP capability. Advanced RNP procedures have special aircraft and aircrew authorization requirements (SAAARs, or “Specials”). In addition to

criteria for arc-based course alignments, RNP SAAARs allow for non-standard climb gradients (i.e., greater than the standard 200'/NM), which are not currently possible for standard public-use procedures. Figure 4 shows an RNP SAAARs approach to Runway 34.

SAAARs have an initial RNP level of 0.3 that requires aircraft to fly within a containment area of +/- 0.3 NM of flight track. The lateral obstacle protection buffer for these procedures is twice as wide, or 2x RNP, which is +/- 0.6 NM. Therefore, the overall OEA along the flight track is therefore 4x RNP, or 1.2 NM, and parallels the route of flight (see Figure 4). For PAQ, an RNP level of 0.3 is satisfactory for the initial, intermediate, and final approach segments. For the missed approach segment, the RNP level is 1.0, so the total OEA width is 4x 1.0 NM, or 4 NM, which is relatively wide, and thus the limiting criteria for PAQ.

Figure 6 shows two options for SAAARs missed approach segments for approach category D aircraft. Option 1 depicts the standard construction to RNP level 1.0, which results in terrain obstructions. The approximate climb rate to clear the terrain is 1000'/per NM, which exceed the allowable climb rate of 425'/NM. Options 2a and 2b show initial missed approach segments with RNP < 1.0, but is limited in length to a distance that is proportional to the amount the RNP level is less than 1.0. In other words, very narrow RNP containment is allowed in order to clear obstructions, but the distances at those levels will decrease as the containment narrows.

There are two RNP levels for Option 2a and 2b, which are 0.7 and 0.8 respectively. Option 2a illustrates that reducing the RNP value from 1.0 to 0.7 is neither narrow enough to avoid the terrain obstruction nor long enough before RNP level 1.0 is reached. Option 2b shows that by slightly increasing the RNP level from 1.0 to 0.8 there is a corresponding extension of the relatively narrower segment. Nonetheless, the segment is still not sufficiently narrow to avoid the terrain.

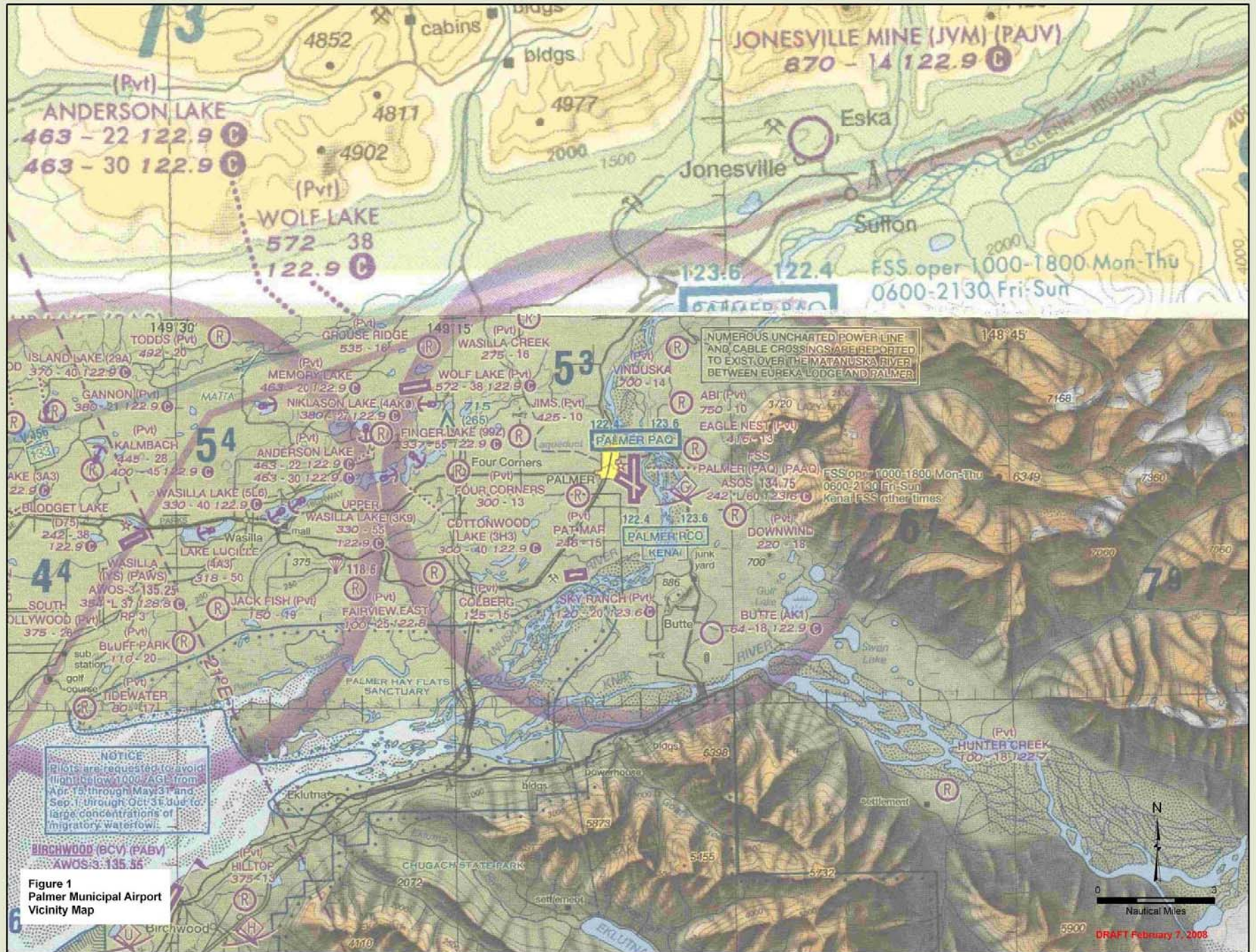
However, it appears possible to construct an RNP SAAARs approach to Runway 34 by restricting the airspeed of the missed approach to 185 KIAS, which is the minimum restricted speed. The standard missed approach airspeed for category D aircraft is 265 KIAS. Figure 7 shows two options for a speed-restricted missed approach segment. Option 3 is the standard construction to RNP level 1.0 that does not clear terrain, while Option 4 shows an initial missed approach RNP of 0.5 that does clear the terrain obstruction clearance. Specifying both a 185 KIAS speed restriction on category D aircraft and an initial missed approach RNP of 0.5 NM is sufficient to clear the terrain and is a potential solution for an instrument approach procedures to be developed for Runway 34.

It also seems possible to have an RNP SAAARs approach to Runway 27 if RF turns are used in the final approach segment as with the Runway 34. However, while there appears to be sufficient lateral and vertical terrain clearance, the terrain may mask GPS signal reception at lower altitudes. Thus, RADAR or a multilateration system that supplements aircraft positioning may also be required to conduct approaches that pass through any part of the valley.

## **Conclusion**

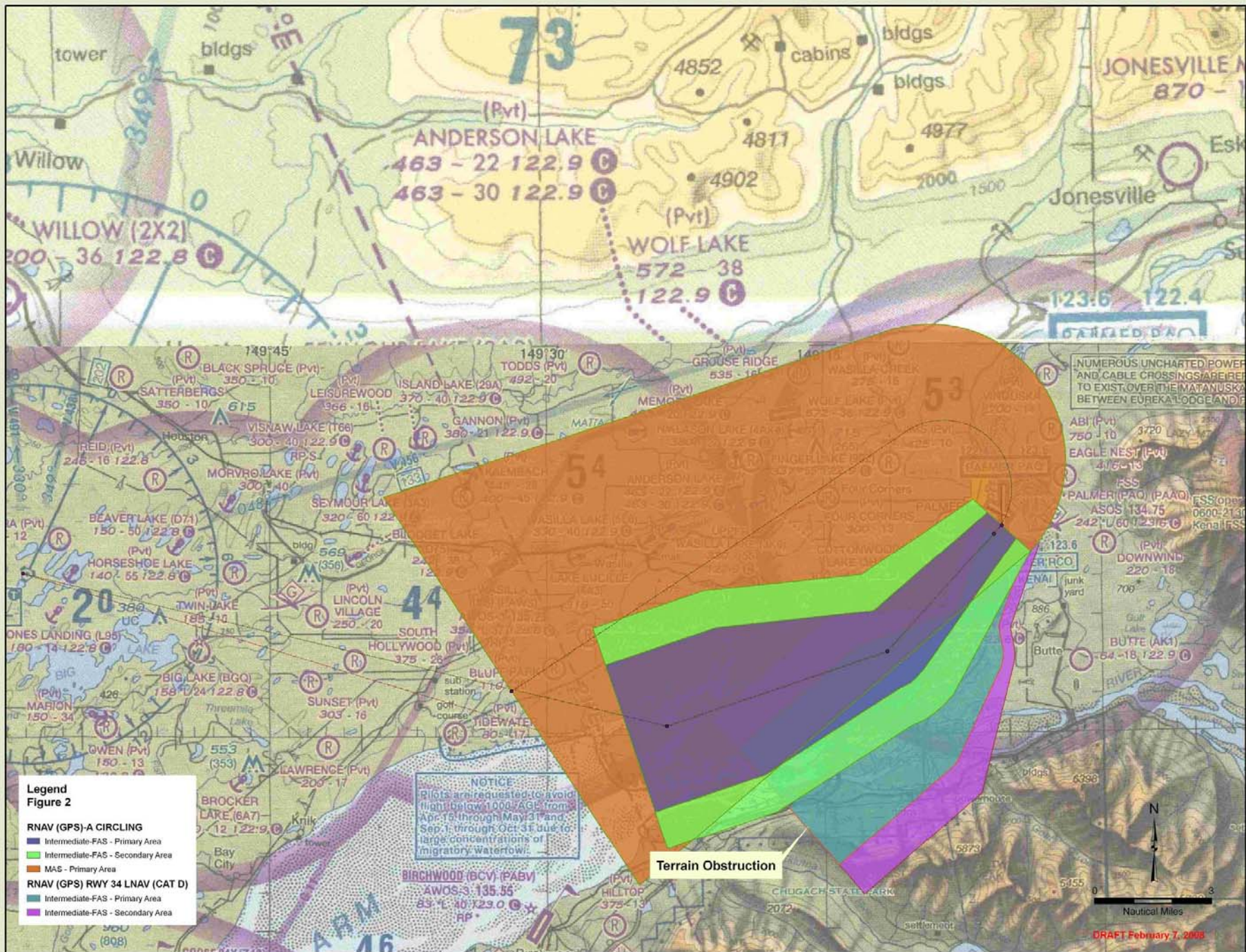
In general, the RNAV (GPS) LNAV approach to Runway 9 and the RNAV (GPS)-A circling approaches are the best procedures possible at PAQ without the development of advanced, performance-based procedures utilizing the GPS system.



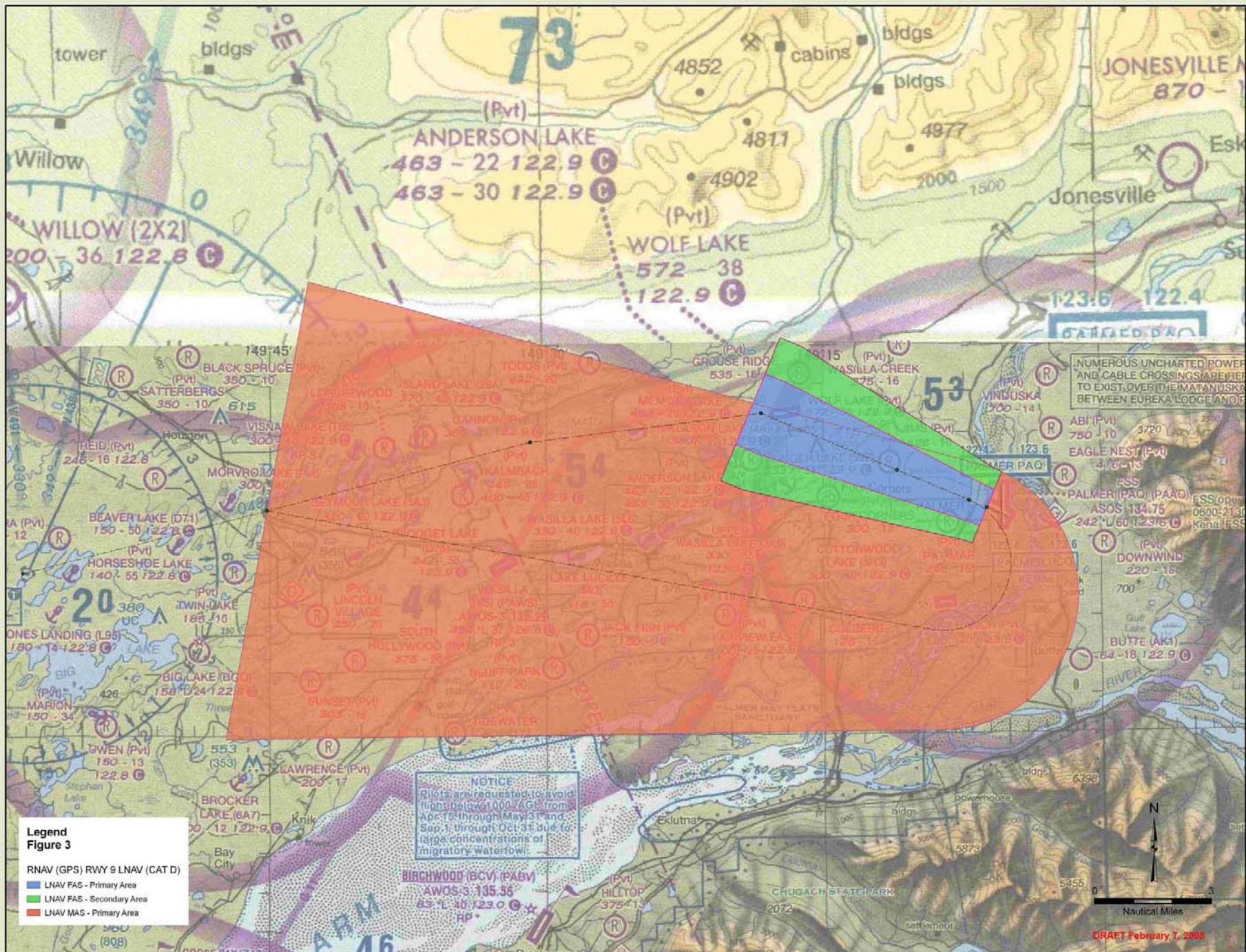


**Figure 1**  
Palmer Municipal Airport  
Vicinity Map

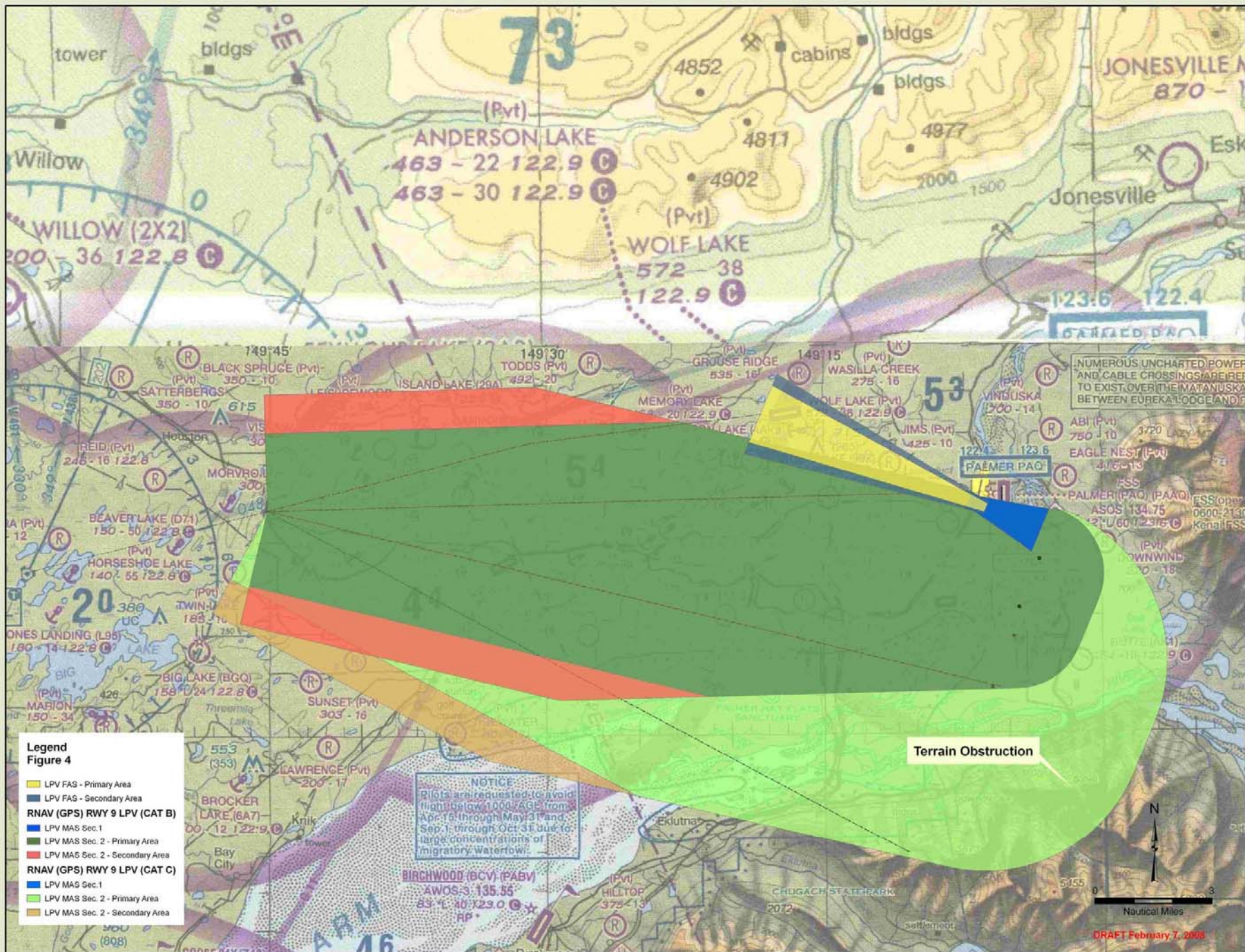




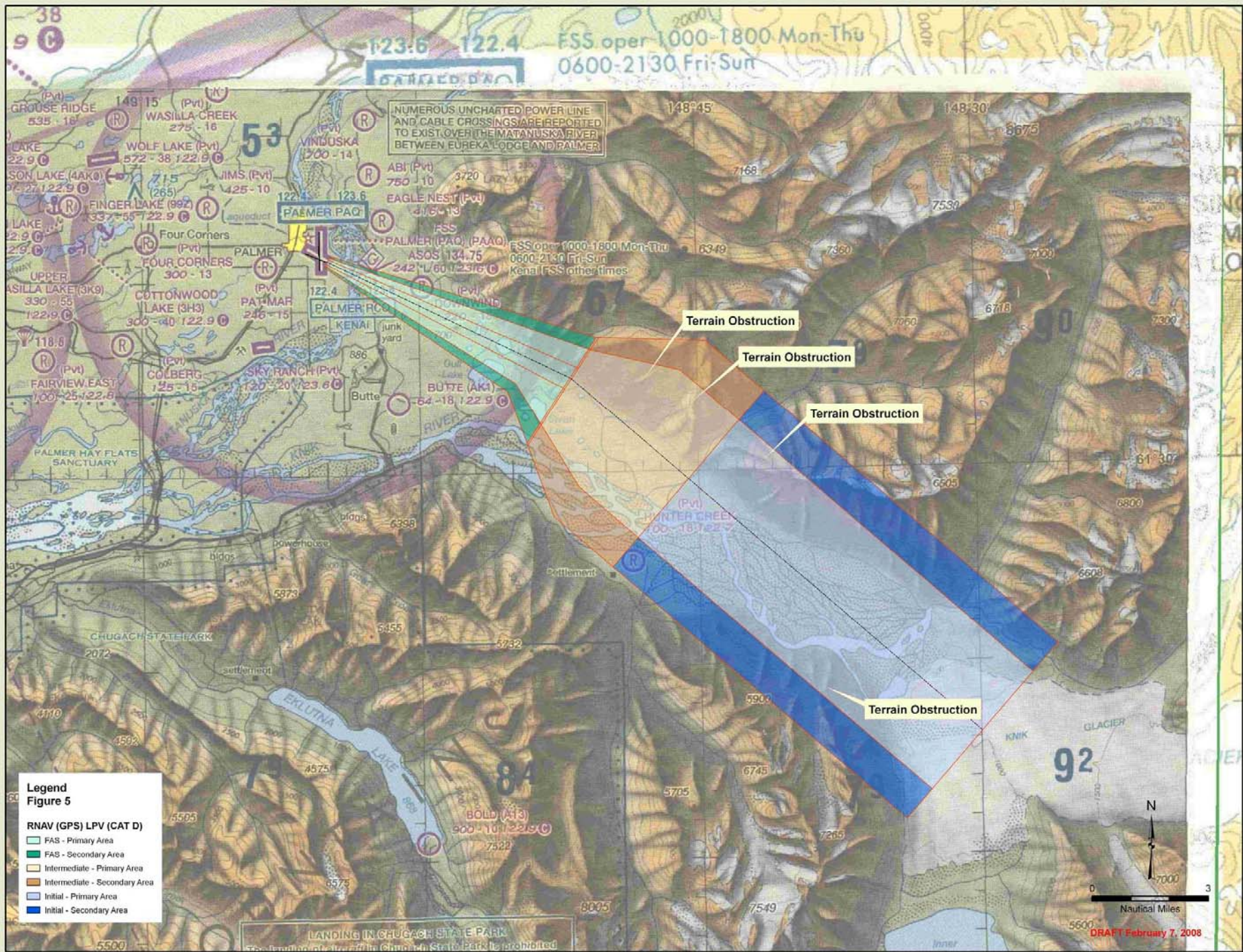




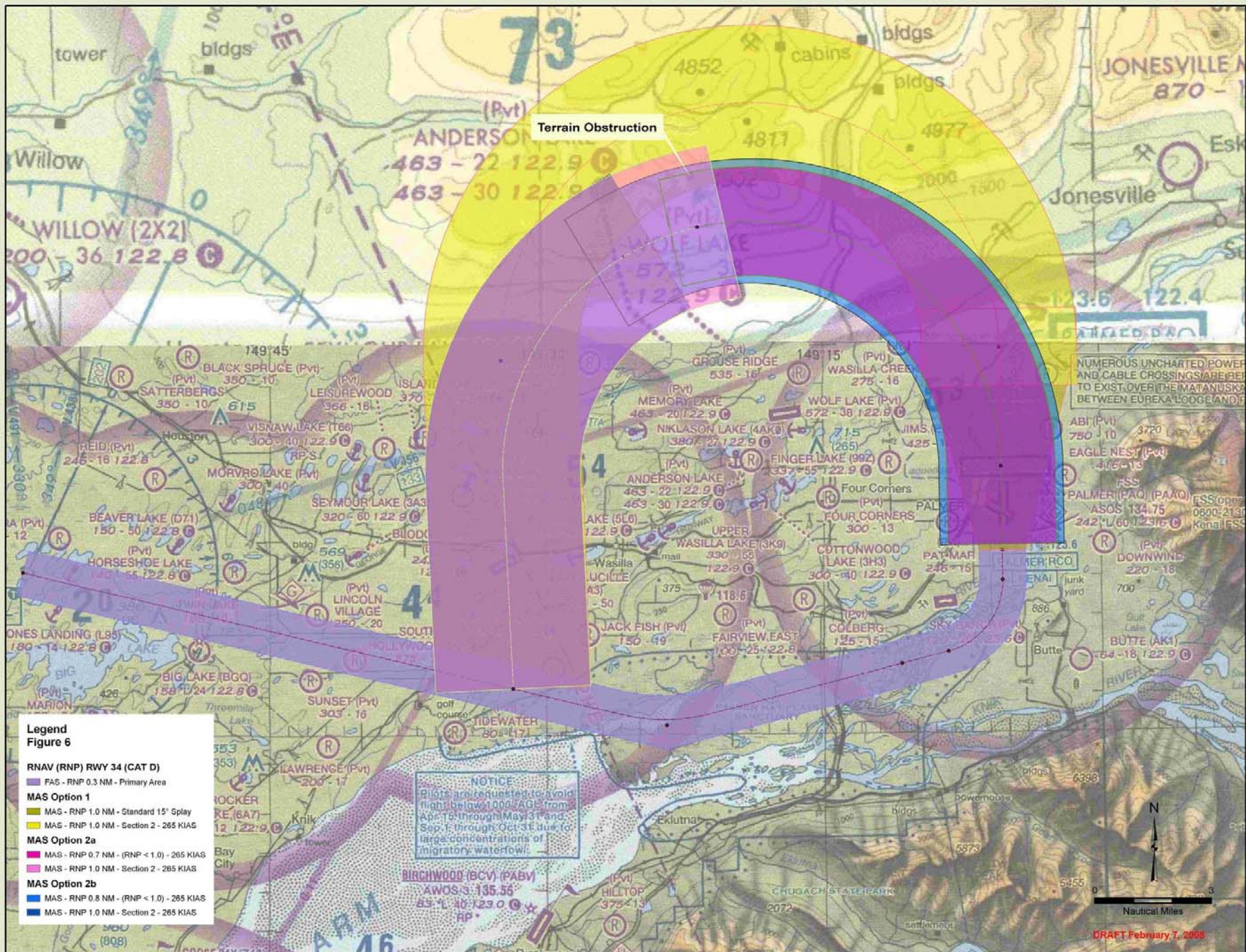




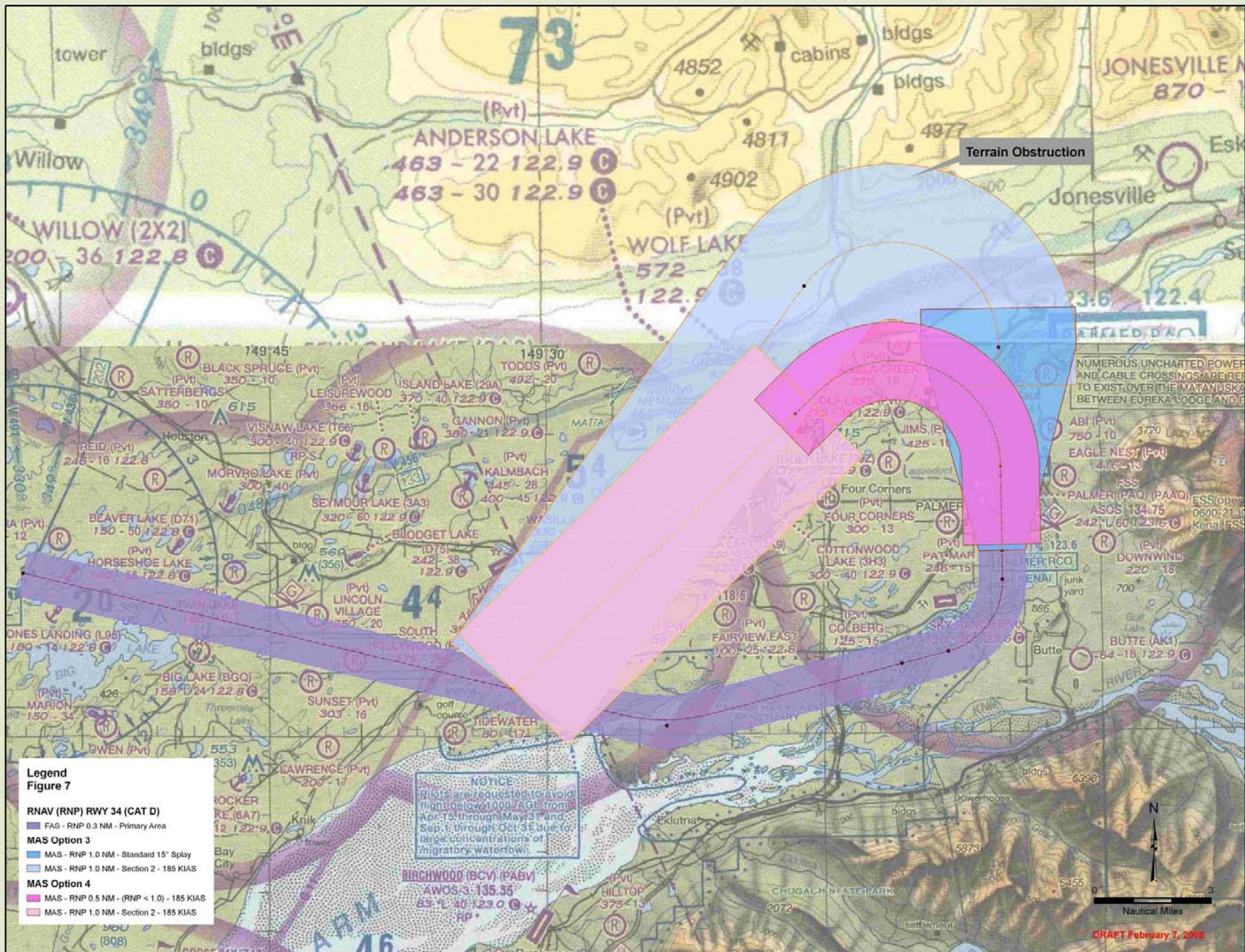












## **APPENDIX D**

### **Cost Estimates**

**Palmer Municipal Airport 2009 Master Plan  
CIP Cost Estimate**

**CIP Summary**

**Palmer Airport Master Plan - April 2009**

<b>Project</b>	<b>FAA Share</b>	<b>State Share</b>	<b>City Share</b>	<b>Total</b>
<b>Short Term Projects</b>				
Wildlife Hazard Assessment	\$0	\$0	\$50,000	\$50,000
Repave Runway 16-34	\$6,926,000	\$182,000	\$182,000	\$7,290,000
Regrade area at end of Runway 16	\$296,000	\$8,000	\$8,000	\$312,000
Property acquisition Runway 9 RPZ	\$323,000	\$9,000	\$9,000	\$340,000
Obstruction survey	\$328,000	\$9,000	\$9,000	\$345,000
Tree removal	\$305,000	\$8,000	\$8,000	\$321,000
Update compass rose	\$0	\$0	\$1,000	\$1,000
Property acquisition for GA expansion	\$1,792,000	\$47,000	\$47,000	\$1,886,000
Property acquisition south of Inner Springer Loop Road	\$475,000	\$13,000	\$13,000	\$500,000
Helipad	\$91,000	\$2,000	\$2,000	\$96,000
Shelter hangars on apron	\$861,000	\$430,500	\$430,500	\$1,722,000
Preparation of large commercial lease lots	\$0	\$0	\$7,364,000	\$7,364,000
Expansion of large aircraft apron	\$4,695,000	\$124,000	\$124,000	\$4,942,000
Gravel taxiway near midpoint of gravel runway	\$192,000	\$5,000	\$5,000	\$202,000
Develop aviation campground	\$0	\$0	\$383,000	\$383,000
Seasonal Ski Strip	\$0	\$0	\$18,000	\$18,000
Precision instrument approach feasibility study	\$0	\$0	\$50,000	\$50,000
<b>Short Term Total</b>	<b>\$16,284,000</b>	<b>\$837,500</b>	<b>\$8,703,500</b>	<b>\$25,822,000</b>
<b>Medium Term Projects</b>				
Development of RNP and LPV approaches	\$115,000	\$0	\$0	\$115,000
General Aviation Lease Lots in Northwest Corner of Airport	\$7,145,900	\$188,050	\$3,990,050	\$11,324,000
Expand apron to the south of FSS	\$2,827,000	\$74,000	\$74,000	\$2,976,000
Construct parallel taxiway along south side of Runway 9-27	\$2,999,000	\$79,000	\$79,000	\$3,157,000
Acquisition of buffer property to the south and northeast of the airport	\$6,603,000	\$174,000	\$174,000	\$6,950,000
Resurface aprons	\$8,208,000	\$216,000	\$216,000	\$8,640,000
<b>Medium Term Total</b>	<b>\$27,897,900</b>	<b>\$731,050</b>	<b>\$4,533,050</b>	<b>\$33,162,000</b>
<b>Long Term Projects</b>				
Extension of Gulkana Street	\$0	\$0	\$3,029,000	\$3,029,000
Acquisition of buffer property south and northeast of airport	\$4,418,000	\$116,000	\$116,000	\$4,650,000
Airfield paving project	\$14,518,000	\$382,000	\$382,000	\$15,282,000
<b>Long Term Total</b>	<b>\$18,936,000</b>	<b>\$498,000</b>	<b>\$3,527,000</b>	<b>\$22,961,000</b>
<b>CIP Totals</b>	<b>\$63,117,900</b>	<b>\$2,066,550</b>	<b>\$16,763,550</b>	<b>\$81,945,000</b>



**Palmer Municipal Airport 2009 Master Plan  
CIP Cost Estimate**

**Wildlife Hazard Assessment**

<b>Pay Item</b>	<b>Description</b>	<b>Quantity</b>	<b>Unit</b>	<b>Unit Price</b>	<b>Item Cost</b>
	Assessment only (Not including plan development)	1	LS	\$ 50,000	\$ 50,000
Subtotal					\$ 50,000
Contingency (15%)					\$ -
Design					\$ -
Environmental					\$ -
Construction Engineering (10%)					\$ -
Construction Management (4%)					\$ -
<b>Total</b>					<b>\$ 50,000</b>

**Palmer Municipal Airport 2009 Master Plan  
CIP Cost Estimate**

**Repave Runway 16-34**

<b>Pay Item</b>	<b>Description</b>	<b>Quantity</b>	<b>Unit</b>	<b>Unit Price</b>	<b>Item Cost</b>
G-100	Mob/Demob (10%)	1	LS	\$ 500,000	\$ 500,000
G-130	Engineers Field Office and Lab	1	LS	\$ 20,000	\$ 20,000
G-135	Constr. Survey By Contractor	1	LS	\$ 50,000	\$ 50,000
P-162	Pavement Cold Planing	600000	SF	\$ 0.50	\$ 300,000
P-401	Hot Mix Asphalt	22200	TON	\$ 100	\$ 2,220,000
P-401	Asphalt Cement (7%)	1554	TON	\$ 1,200	\$ 1,864,800
P-603	Bituminous Prime Coat	200	TON	\$ 1,200	\$ 240,000
P-620	Runway Markings	1	LS	\$ 100,000	\$ 100,000
P-630	Pavement Grooving	1	LS	\$ 100,000	\$ 100,000
<b>Subtotal</b>					<b>\$ 5,394,800</b>
Contingency (15%)					\$ 809,220
Design					\$ 200,000
Environmental					\$ 10,000
Construction Engineering (10%)					\$ 539,000
Construction Management (4%)					\$ 337,000
<b>Total</b>					<b>\$ 7,290,000</b>



**Palmer Municipal Airport 2009 Master Plan  
CIP Cost Estimate**

**Regrade Runway 16-34 End**

<b>Pay Item</b>	<b>Description</b>	<b>Quantity</b>	<b>Unit</b>	<b>Unit Price</b>	<b>Item Cost</b>
G-100	Mob/Demob (10%)	1	LS	\$ 25,000	\$ 25,000
G-135	Constr. Survey By Contractor	1	LS	\$ 20,000	\$ 20,000
P-152	Unclassified Excavation	17000	CY	\$ 9	\$ 153,000
P-152	Embankment	500	CY	\$ 10	\$ 5,000
P-156	Temp Erosion and Pollution Control	1	LS	\$ 10,000	\$ 10,000
P-156	Erosion and Pollution Control, Admin	1	LS	\$ 5,000	\$ 5,000
<b>Subtotal</b>					<b>\$ 218,000</b>
Contingency (15%)					\$ 32,700
Design					\$ 20,000
Environmental					\$ 5,000
Construction Engineering (10%)					\$ 22,000
Construction Management (4%)					\$ 14,000
<b>Total</b>					<b>\$ 312,000</b>

**Palmer Municipal Airport 2009 Master Plan  
CIP Cost Estimate**

**Property Acquisition Within RPZ at End of Runway 9**

<b>Pay Item</b>	<b>Description</b>	<b>Quantity</b>	<b>Unit</b>	<b>Unit Price</b>	<b>Item Cost</b>
	Right of Way	8	AC	\$ 340,000.00	\$ 340,000
Subtotal					\$ 340,000
Contingency (15%)					\$ -
Design					\$ -
Environmental					\$ -
Construction Engineering (10%)					\$ -
Construction Management (4%)					\$ -
<b>Total</b>					<b>\$ 340,000</b>

**Palmer Municipal Airport 2009 Master Plan  
CIP Cost Estimate**

**Obstruction Survey**

<b>Pay Item</b>	<b>Description</b>	<b>Quantity</b>	<b>Unit</b>	<b>Unit Price</b>	<b>Item Cost</b>
	Survey By Contractor	1	LS	\$ 250,000	\$ 250,000
	Aerial Orthophoto	1	LS	\$ 50,000	\$ 50,000
Subtotal					\$ 300,000
Contingency (15%)					\$ 45,000
Design					\$ -
Environmental					\$ -
Construction Engineering (10%)					\$ -
Construction Management (4%)					\$ -
<b>Total</b>					<b>\$ 345,000</b>

**Palmer Municipal Airport 2009 Master Plan  
CIP Cost Estimate**

**Obstruction and Tree Removal**

<b>Pay Item</b>	<b>Description</b>	<b>Quantity</b>	<b>Unit</b>	<b>Unit Price</b>	<b>Item Cost</b>
G-100	Mob/Demob (10%)	1	LS	\$ 25,000	\$ 25,000
G-135	Constr. Survey By Contractor	1	LS	\$ 20,000	\$ 20,000
P-151	Clearing and Grubbing	42	AC	\$ 5,000	\$ 210,000
	Selected Tree Removal	50	EA	\$ 200	\$ 10,000
T-901	Seeding	1	LS	\$ 10,000	\$ 10,000
Subtotal					\$ 275,000
Contingency (15%)					\$ 41,250
Design					\$ -
Environmental					\$ 5,000
Construction Engineering (10%)					\$ -
Construction Management (4%)					\$ -
<b>Total</b>					<b>\$ 321,000</b>

**Palmer Municipal Airport 2009 Master Plan  
CIP Cost Estimate**

**Repaint Compass Rose**

<b>Pay Item</b>	<b>Description</b>	<b>Quantity</b>	<b>Unit</b>	<b>Unit Price</b>	<b>Item Cost</b>
P-620	Runway Markings	1	LS	\$ 10,000	\$ 10,000
Subtotal					\$ 10,000
Contingency (15%)					\$ 1,500
Design					\$ -
Environmental					\$ -
Construction Engineering (10%)					\$ -
Construction Management (4%)					\$ -
<b>Total</b>					<b>\$ 12,000</b>



**Palmer Municipal Airport 2009 Master Plan  
CIP Cost Estimate**

**Property Acquisition for General Aviation Expansion**

<b>Pay Item</b>	<b>Description</b>	<b>Quantity</b>	<b>Unit</b>	<b>Unit Price</b>	<b>Item Cost</b>
	Right of Way	41	AC	\$ 40,000.00	\$ 1,640,000
Subtotal					\$ 1,640,000
Contingency (15%)					\$ 246,000
Design					\$ -
Environmental					\$ -
Construction Engineering (10%)					\$ -
Construction Management (4%)					\$ -
<b>Total</b>					<b>\$ 1,886,000</b>

**Palmer Municipal Airport 2009 Master Plan  
CIP Cost Estimate**

**Helipad**

<b>Pay Item</b>	<b>Description</b>	<b>Quantity</b>	<b>Unit</b>	<b>Unit Price</b>	<b>Item Cost</b>
G-100	Mob/Demob (10%)	1	LS	\$ 5,000	\$ 5,000
G-135	Constr. Survey By Contractor	1	LS	\$ 10,000	\$ 10,000
P-620	Helipad Markings	1	LS	\$ 10,000	\$ 10,000
L-100	Helipad Edge Lighting	1	LS	\$ 20,000	\$ 20,000
<b>Subtotal</b>					<b>\$ 45,000</b>
Contingency (15%)					\$ 6,750
Design					\$ 30,000
Environmental					\$ 5,000
Construction Engineering (10%)					\$ 5,000
Construction Management (4%)					\$ 4,000
<b>Total</b>					<b>\$ 96,000</b>

**Palmer Municipal Airport 2009 Master Plan  
CIP Cost Estimate**

**Shelter Hangars on Apron**

<b>Pay Item</b>	<b>Description</b>	<b>Quantity</b>	<b>Unit</b>	<b>Unit Price</b>	<b>Item Cost</b>
G-100	Mob/Demob (10%)	1	LS	\$ 120,000	\$ 120,000
G-130	Engineers Field Office and Lab	1	LS	\$ 20,000	\$ 20,000
G-135	Constr. Survey By Contractor	1	LS	\$ 25,000	\$ 25,000
P-156	Temp Erosion and Pollution Control	1	LS	\$ 25,000	\$ 25,000
P-156	Erosion and Pollution Control, Admin	1	LS	\$ 10,000	\$ 10,000
P-620	Taxilane Markings	1	LS	\$ 25,000	\$ 25,000
	Hangar Buildings (10 units per building)	2	EA	\$ 500,000	\$ 1,000,000
Subtotal					\$ 1,225,000
Contingency (15%)					\$ 183,750
Design					\$ 100,000
Environmental					\$ 10,000
Construction Engineering (10%)					\$ 123,000
Construction Management (4%)					\$ 80,000
<b>Total</b>					<b>\$ 1,722,000</b>

**Palmer Municipal Airport 2009 Master Plan  
CIP Cost Estimate**

**Preparation of Large Commercial Lease Lots**

<b>Pay Item</b>	<b>Description</b>	<b>Quantity</b>	<b>Unit</b>	<b>Unit Price</b>	<b>Item Cost</b>
G-100	Mob/Demob	1	LS	\$ 500,000	\$ 500,000
G-135	Constr. Survey By Contractor	1	LS	\$ 50,000	\$ 50,000
P-152	Unclassified/Muck Excavation	280000	CY	\$ 9	\$ 2,520,000
P-152	Embankment	280000	CY	\$ 10	\$ 2,800,000
P-156	Temp Erosion and Pollution Control	1	LS	\$ 50,000	\$ 50,000
P-156	Erosion and Pollution Control, Admin	1	LS	\$ 25,000	\$ 25,000
T-901	Seeding	1	LS	\$ 10,000	\$ 10,000
<b>Subtotal</b>					<b>\$ 5,955,000</b>
Contingency (15%)					\$ 893,250
Design					\$ 50,000
Environmental					\$ 25,000
Construction Engineering					\$ 100,000
Construction Management (4%)					\$ 341,000
<b>Total</b>					<b>\$ 7,364,000</b>

DRAFT

Expansion of large aircraft apron

Pay Item	Description	Quantity	Unit	Unit Price	Item Cost
G-100	Mob/Demob (10%)	1	LS	\$ -	\$ -
G-130	Engineers Field Office and Lab	1	LS	\$ 20,000	\$ 20,000
G-135	Constr. Survey By Contractor	1	LS	\$ 100,000	\$ 100,000
P-152	Unclassified Excavation	53000	CY	\$ 9	\$ 477,000
P-152	Embankment	53000	CY	\$ 10	\$ 530,000
P-154	Subbase Course (30")	22000	CY	\$ 15	\$ 330,000
P-156	Temp Erosion and Pollution Control	1	LS	\$ 50,000	\$ 50,000
P-156	Erosion and Pollution Control, Admin	1	LS	\$ 25,000	\$ 25,000
P-400	Crushed Aggregate Base Course (12")	8900	CY	\$ 40	\$ 356,000
P-401	Hot Mix Asphalt	8900	TON	\$ 100	\$ 890,000
P-401	Asphalt Cement (7%)	623	TON	\$ 1,200	\$ 747,600
P-603	Bituminous Prime Coat	60	TON	\$ 1,200	\$ 72,000
P-681	Geotextile Fabric	27000	SY	\$ 5	\$ 135,000
T-901	Seeding	1	LS	\$ 10,000	\$ 10,000
Subtotal					\$ 3,742,600
Contingency (15%)					\$ 561,390
Design					\$ 30,000
Environmental					\$ 5,000
Construction Engineering (10%)					\$ 374,000
Construction Management (4%)					\$ 229,000
<b>Total</b>					<b>\$ 4,942,000</b>



**Palmer Municipal Airport 2009 Master Plan  
CIP Cost Estimate**

**Gravel Taxiway**

<b>Pay Item</b>	<b>Description</b>	<b>Quantity</b>	<b>Unit</b>	<b>Unit Price</b>	<b>Item Cost</b>
G-100	Mob/Demob (10%)	1	LS	\$ 15,000	\$ 15,000
G-135	Constr. Survey By Contractor	1	LS	\$ 25,000	\$ 25,000
P-152	Unclassified Excavation	1700	CY	\$ 9	\$ 15,300
P-152	Embankment	2000	CY	\$ 10	\$ 20,000
P-156	Temp Erosion and Pollution Control	1	LS	\$ 15,000	\$ 15,000
P-156	Erosion and Pollution Control, Admin	1	LS	\$ 5,000	\$ 5,000
P-400	Crushed Aggregate Base Course (12")	550	CY	\$ 40	\$ 22,000
L-858	Airport Signs	1	EA	\$ 4,200	\$ 4,200
T-901	Seeding	1	LS	\$ 5,000	\$ 5,000
<b>Subtotal</b>					<b>\$ 126,500</b>
Contingency (15%)					\$ 18,975
Design					\$ 25,000
Environmental					\$ 10,000
Construction Engineering (10%)					\$ 13,000
Construction Management (4%)					\$ 9,000
<b>Total</b>					<b>\$ 202,000</b>

**Palmer Municipal Airport 2009 Master Plan  
CIP Cost Estimate**

**Aviation Campground**

<b>Pay Item</b>	<b>Description</b>	<b>Quantity</b>	<b>Unit</b>	<b>Unit Price</b>	<b>Item Cost</b>
G-100	Mob/Demob (10%)	1	LS	\$ 25,000	\$ 25,000
G-135	Constr. Survey By Contractor	1	LS	\$ 25,000	\$ 25,000
D-701	24" Corrugated Pipe	50	LF	\$ 70	\$ 3,500
P-151	Clearing and Grubbing	2	AC	\$ 5,000	\$ 10,000
	Selected Tree Removal	50	EA	\$ 200	\$ 10,000
P-152	Unclassified Excavation	4500	CY	\$ 9	\$ 40,500
P-152	Embankment	5000	CY	\$ 10	\$ 50,000
P-156	Temp Erosion and Pollution Control	1	LS	\$ 10,000	\$ 10,000
P-156	Erosion and Pollution Control, Admin	1	LS	\$ 5,000	\$ 5,000
F-162	Fencing	2000	LF	\$ 40	\$ 80,000
T-901	Seeding	1	LS	\$ 5,000	\$ 5,000
Subtotal					\$ 264,000
Contingency (15%)					\$ 39,600
Design					\$ 25,000
Environmental					\$ 10,000
Construction Engineering (10%)					\$ 26,000
Construction Management (4%)					\$ 18,000
<b>Total</b>					<b>\$ 383,000</b>

**Palmer Municipal Airport 2009 Master Plan  
CIP Cost Estimate**

**Seasonal Ski Strip**

<b>Pay Item</b>	<b>Description</b>	<b>Quantity</b>	<b>Unit</b>	<b>Unit Price</b>	<b>Item Cost</b>
	Minor grading	1	LS	\$ 10,000	\$ 10,000
F-162	Fencing	100	LF	\$ 40	\$ 4,000
Subtotal					\$ 14,000
Contingency (15%)					\$ 2,100
Design					\$ -
Environmental					\$ -
Construction Engineering (10%)					\$ 1,000
Construction Management (4%)					\$ 1,000
<b>Total</b>					<b>\$ 18,000</b>

**Palmer Municipal Airport 2009 Master Plan  
CIP Cost Estimate**

**Precision Instrument Approach Feasibility Study**

<b>Pay Item</b>	<b>Description</b>	<b>Quantity</b>	<b>Unit</b>	<b>Unit Price</b>	<b>Item Cost</b>
	Approach Study	1	LS	\$ 50,000.00	\$ 50,000
Subtotal					\$ 50,000
Contingency (15%)					\$ -
Design					\$ -
Environmental					\$ -
Construction Engineering (10%)					\$ -
Construction Management (4%)					\$ -
<b>Total</b>					<b>\$ 50,000</b>

**Palmer Municipal Airport 2009 Master Plan  
CIP Cost Estimate**

**Precision Instrument Approach Design**

<b>Pay Item</b>	<b>Description</b>	<b>Quantity</b>	<b>Unit</b>	<b>Unit Price</b>	<b>Item Cost</b>
	Custom Instrument Approach Design	1	LS	\$ 100,000.00	\$ 100,000
Subtotal					\$ 100,000
Contingency (15%)					\$ 15,000
Design					\$ -
Environmental					\$ -
Construction Engineering (10%)					\$ -
Construction Management (4%)					\$ -
<b>Total</b>					<b>\$ 115,000</b>



**Palmer Municipal Airport 2009 Master Plan  
CIP Cost Estimate**

**General Aviation Lease Lots in Northwest Corner of Airport**

**Road/Utilities Cost Estimate**

<b>Pay Item</b>	<b>Description</b>	<b>Quantity</b>	<b>Unit</b>	<b>Unit Price</b>	<b>Item Cost</b>
G-100	Mob/Demob (10%)	1	LS	\$ 350,000	\$ 350,000
G-135	Constr. Survey By Contractor	1	LS	\$ 50,000	\$ 50,000
P-152	Unclassified Excavation	20000	CY	\$ 9	\$ 180,000
P-152	Embankment	13000	CY	\$ 10	\$ 130,000
P-154	Subbase Course (30")	8500	CY	\$ 15	\$ 127,500
P-156	Temp Erosion and Pollution Control	1	LS	\$ 50,000	\$ 50,000
P-156	Erosion and Pollution Control, Admin	1	LS	\$ 25,000	\$ 25,000
P-400	Crushed Aggregate Base Course (12")	3500	CY	\$ 40	\$ 140,000
P-401	Hot Mix Asphalt	1700	TON	\$ 100	\$ 170,000
P-401	Asphalt Cement (7%)	119	TON	\$ 1,200	\$ 142,800
P-603	Bituminous Prime Coat	17	TON	\$ 1,200	\$ 20,400
P-681	Geotextile Fabric	10000	SY	\$ 5	\$ 50,000
	Electrical Service Extension	1	LS	\$ 300,000	\$ 300,000
	Water/Sewer Extension	1	LS	\$ 1,000,000	\$ 1,000,000
T-901	Seeding	1	LS	\$ 10,000	\$ 10,000
	Removal of Existing Roadway	5000	SY	\$ 5	\$ 25,000
	Trees	50	EA	\$ 200	\$ 10,000
<b>Subtotal</b>					<b>\$ 2,780,700</b>
Contingency (15%)					\$ 417,105
Design					\$ 100,000
Environmental					\$ 50,000
Construction Engineering (10%)					\$ 278,000
Construction Management (4%)					\$ 176,000
<b>Total Road/Utilities Cost</b>					<b>\$ 3,802,000</b>

**Apron Cost Estimate**

<b>Pay Item</b>	<b>Description</b>	<b>Quantity</b>	<b>Unit</b>	<b>Unit Price</b>	<b>Item Cost</b>
G-100	Mob/Demob (10%)	1	LS	\$ -	\$ -
G-130	Engineers Field Office and Lab	1	LS	\$ 20,000	\$ 20,000
G-135	Constr. Survey By Contractor	1	LS	\$ 50,000	\$ 50,000
P-152	Unclassified Excavation	85000	CY	\$ 9	\$ 765,000
P-152	Embankment	57000	CY	\$ 10	\$ 570,000
P-154	Subbase Course (30")	35000	CY	\$ 15	\$ 525,000
P-156	Temp Erosion and Pollution Control	1	LS	\$ 50,000	\$ 50,000
P-156	Erosion and Pollution Control, Admin	1	LS	\$ 25,000	\$ 25,000
P-400	Crushed Aggregate Base Course (12")	14000	CY	\$ 40	\$ 560,000
P-401	Hot Mix Asphalt	14000	TON	\$ 100	\$ 1,400,000
P-401	Asphalt Cement (7%)	980	TON	\$ 1,200	\$ 1,176,000
P-603	Bituminous Prime Coat	140	TON	\$ 1,200	\$ 168,000
P-681	Geotextile Fabric	42000	SY	\$ 5	\$ 210,000
F-162	Fencing	2500	LF	\$ 40	\$ 100,000
<b>Subtotal</b>					<b>\$ 5,619,000</b>
Contingency (15%)					\$ 842,850
Design					\$ 100,000
Environmental					\$ 50,000
Construction Engineering (10%)					\$ 562,000
Construction Management (4%)					\$ 348,000
<b>Total Apron Cost</b>					<b>\$ 7,522,000</b>

**Palmer Municipal Airport 2009 Master Plan  
CIP Cost Estimate**

**Expand North Apron Near FSS**

<b>Pay Item</b>	<b>Description</b>	<b>Quantity</b>	<b>Unit</b>	<b>Unit Price</b>	<b>Item Cost</b>
G-100	Mob/Demob (10%)	1	LS	\$ 200,000	\$ 200,000
G-130	Engineers Field Office and Lab	1	LS	\$ 20,000	\$ 20,000
G-135	Constr. Survey By Contractor	1	LS	\$ 50,000	\$ 50,000
P-152	Unclassified Excavation	29000	CY	\$ 9	\$ 261,000
P-152	Embankment	19000	CY	\$ 10	\$ 190,000
P-154	Subbase Course (30")	12000	CY	\$ 15	\$ 180,000
P-156	Temp Erosion and Pollution Control	1	LS	\$ 10,000	\$ 10,000
P-156	Erosion and Pollution Control, Admin	1	LS	\$ 5,000	\$ 5,000
P-400	Crushed Aggregate Base Course (12")	5000	CY	\$ 40	\$ 200,000
P-401	Hot Mix Asphalt	4800	TON	\$ 100	\$ 480,000
P-401	Asphalt Cement (7%)	336	TON	\$ 1,200	\$ 403,200
P-603	Bituminous Prime Coat	48	TON	\$ 1,200	\$ 57,600
P-681	Geotextile Fabric	14000	SY	\$ 5	\$ 70,000
L-858	Airport Signs	1	EA	\$ 4,200	\$ 4,200
L-861	Apron Edge Lights	10	EA	\$ 1,450	\$ 14,500
T-901	Seeding	1	LS	\$ 5,000	\$ 5,000
<b>Subtotal</b>					<b>\$ 2,150,500</b>
Contingency (15%)					\$ 322,575
Design					\$ 100,000
Environmental					\$ 50,000
Construction Engineering (10%)					\$ 215,000
Construction Management (4%)					\$ 138,000
<b>Total</b>					<b>\$ 2,976,000</b>

**Palmer Municipal Airport 2009 Master Plan  
CIP Cost Estimate**

**Parallel Taxiway on South Side of Runway 9-27**

<b>Pay Item</b>	<b>Description</b>	<b>Quantity</b>	<b>Unit</b>	<b>Unit Price</b>	<b>Item Cost</b>
G-100	Mob/Demob (10%)	1	LS	\$ 200,000	\$ 200,000
G-130	Engineers Field Office and Lab	1	LS	\$ 20,000	\$ 20,000
G-135	Constr. Survey By Contractor	1	LS	\$ 100,000	\$ 100,000
P-152	Unclassified Excavation	21000	CY	\$ 9	\$ 189,000
P-152	Embankment	11000	CY	\$ 10	\$ 110,000
P-154	Subbase Course (30")	9000	CY	\$ 15	\$ 135,000
P-156	Temp Erosion and Pollution Control	1	LS	\$ 25,000	\$ 25,000
P-156	Erosion and Pollution Control, Admin	1	LS	\$ 10,000	\$ 10,000
P-400	Crushed Aggregate Base Course (12")	3500	CY	\$ 40	\$ 140,000
P-401	Hot Mix Asphalt	3500	TON	\$ 100	\$ 350,000
P-401	Asphalt Cement (7%)	245	TON	\$ 1,200	\$ 294,000
P-603	Bituminous Prime Coat	35	TON	\$ 1,200	\$ 42,000
P-620	Taxiway Markings	1	LS	\$ 50,000	\$ 50,000
P-681	Geotextile Fabric	65000	SY	\$ 5	\$ 325,000
L-108	Misc. Cabling	5400	LF	\$ 15	\$ 81,000
L-110	Conduit	5400	LF	\$ 15	\$ 81,000
L-858	Airport Signs	2	EA	\$ 4,200	\$ 8,400
L-861	Taxiway Edge Lights	30	EA	\$ 1,450	\$ 43,500
T-901	Seeding	1	LS	\$ 5,000	\$ 5,000
<b>Subtotal</b>					<b>\$ 2,208,900</b>
Contingency (15%)					\$ 331,335
Design					\$ 200,000
Environmental					\$ 50,000
Construction Engineering (10%)					\$ 221,000
Construction Management (4%)					\$ 146,000
<b>Total</b>					<b>\$ 3,157,000</b>

**Palmer Municipal Airport 2009 Master Plan  
CIP Cost Estimate**

**Buffer Property to South and Northeast of Airport**

<b>Pay Item</b>	<b>Description</b>	<b>Quantity</b>	<b>Unit</b>	<b>Unit Price</b>	<b>Item Cost</b>
	Buffer real estate	150	AC	\$ 40,000.00	\$ 6,000,000
Subtotal					\$ 6,000,000
Contingency (15%)					\$ 900,000
Design					\$ -
Environmental					\$ 50,000
Construction Engineering (10%)					\$ -
Construction Management (4%)					\$ -
<b>Total</b>					<b>\$ 6,950,000</b>

**Palmer Municipal Airport 2009 Master Plan  
CIP Cost Estimate**

**Repave Aprons**

<b>Pay Item</b>	<b>Description</b>	<b>Quantity</b>	<b>Unit</b>	<b>Unit Price</b>	<b>Item Cost</b>
G-100	Mob/Demob (10%)	1	LS	\$ 500,000	\$ 500,000
G-135	Constr. Survey By Contractor	1	LS	\$ 25,000	\$ 25,000
P-401	Hot Mix Asphalt	33000	TON	\$ 100	\$ 3,300,000
P-401	Asphalt Cement (7%)	2310	TON	\$ 1,200	\$ 2,772,000
P-603	Bituminous Prime Coat	100	TON	\$ 1,200	\$ 120,000
P-620	Apron Markings	1	LS	\$ 25,000	\$ 25,000
Subtotal					\$ 6,742,000
Contingency (10%)					\$ 674,200
Design					\$ 100,000
Environmental					\$ 50,000
Construction Engineering (10%)					\$ 674,000
Construction Management (4%)					\$ 400,000
<b>Total</b>					<b>\$ 8,640,000</b>



**Palmer Municipal Airport 2009 Master Plan  
CIP Cost Estimate**

**Extend Gulkana Street**

<b>Pay Item</b>	<b>Description</b>	<b>Quantity</b>	<b>Unit</b>	<b>Unit Price</b>	<b>Item Cost</b>
G-100	Mob/Demob (10%)	1	LS	\$ 200,000	\$ 200,000
G-130	Engineers Field Office and Lab	1	LS	\$ 20,000	\$ 20,000
G-135	Constr. Survey By Contractor	1	LS	\$ 50,000	\$ 50,000
P-152	Unclassified Excavation	38000	CY	\$ 9	\$ 342,000
P-152	Embankment	22000	CY	\$ 10	\$ 220,000
P-154	Subbase Course (30")	9000	CY	\$ 15	\$ 135,000
P-156	Temp Erosion and Pollution Control	1	LS	\$ 10,000	\$ 10,000
P-156	Erosion and Pollution Control, Admin	1	LS	\$ 5,000	\$ 5,000
P-400	Crushed Aggregate Base Course (12")	3700	CY	\$ 40	\$ 148,000
P-401	Hot Mix Asphalt	4400	TON	\$ 100	\$ 440,000
P-401	Asphalt Cement (7%)	308	TON	\$ 1,200	\$ 369,600
P-603	Bituminous Prime Coat	35	TON	\$ 1,200	\$ 42,000
P-620	Traffic Markings	1	LS	\$ 20,000	\$ 20,000
P-681	Geotextile Fabric	11000	SY	\$ 5	\$ 55,000
L-858	Roadway Signs	1	LS	\$ 5,000	\$ 5,000
T-901	Seeding	1	LS	\$ 10,000	\$ 10,000
Subtotal					\$ 2,071,600
Contingency (15%)					\$ 310,740
Design					\$ 200,000
Environmental					\$ 100,000
Construction Engineering (10%)					\$ 207,000
Construction Management (4%)					\$ 140,000
<b>Total</b>					<b>\$ 3,029,000</b>

**Palmer Municipal Airport 2009 Master Plan  
CIP Cost Estimate**

**Buffer Property to South and Northeast of Airport (Phase II)**

<b>Pay Item</b>	<b>Description</b>	<b>Quantity</b>	<b>Unit</b>	<b>Unit Price</b>	<b>Item Cost</b>
	Buffer real estate	100	AC	\$ 40,000.00	\$ 4,000,000
Subtotal					\$ 4,000,000
Contingency (15%)					\$ 600,000
Design					\$ -
Environmental					\$ 50,000
Construction Engineering (10%)					\$ -
Construction Management (4%)					\$ -
<b>Total</b>					<b>\$ 4,650,000</b>

**Palmer Municipal Airport 2009 Master Plan  
CIP Cost Estimate**

**Repave Airfield**

<b>Pay Item</b>	<b>Description</b>	<b>Quantity</b>	<b>Unit</b>	<b>Unit Price</b>	<b>Item Cost</b>
	Repave Runway 16-34	1	LS	\$5,400,000.00	\$ 5,400,000
	Repave Runway 9-27	1	LS	\$3,000,000.00	\$ 3,000,000
	Repave Parallel Taxiways	1	LS	\$3,000,000.00	\$ 3,000,000
Subtotal					\$ 11,400,000
Contingency (15%)					\$ 1,710,000
Design					\$ 300,000
Environmental					\$ 25,000
Construction Engineering (10%)					\$ 1,140,000
Construction Management (4%)					\$ 707,000
<b>Total</b>					<b>\$ 15,282,000</b>

## **APPENDIX E**

### **Environmental References**

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## **APPENDIX F**

### **Special Addendum White Paper: Recommendations Regarding Administrative and Operating Policies**

## **AIRPORT OPERATING POLICY RECOMMENDATIONS**

To ensure that the airport is operated in compliance with FAA policies and industry practices, DOWL HKM and Northern Horizon conducted a review of airport operating policies and regulations. Based on that review and inputs from the public and the City staff, a series of recommendations was developed for the airport. The following section summarizes these operating policy recommendations that are intended to support the City's two primary airport goals:

- Make the airport as financially self-sufficient as possible; and
- Make the airport a center for, and a driver of, economic development in the community.

### **Maintain the City's Eligibility for Airport Grants**

To maintain eligibility for federal airport grant funds:

- The City Manager, the City Council, City Attorney, City Finance Director, City Public Works Director, the Airport Commission, and others within the City's policy or leadership team, who have dealings with, or connection to, the airport, should familiarize themselves with the general requirements of FAA Airport Assurances;
- The Airport Manager should maintain competency in the requirements of
  - The Airport Assurances;
  - FAA Order 5100.38B (the FAA's Airport Improvement Program Handbook);
  - The FAA Policy Concerning the Establishment of Airport Rates and Fees (1996); and
  - The FAA Policy Concerning the Use of Airport Revenue (1999).
- At least once annually, in conjunction with the City of Palmer annual audit, the Airport Manager should provide a report to the City Manager on the status of the City's eligibility for federal airport grants, including a description of any issues that might jeopardize the City's eligibility and recommendations for their resolution.
- The City should continue to specifically address current FAA compliance concerns.
- When the City's annual financial audit is performed, the auditor should be directed to assess and certify the City's current compliance with the financial requirements of FAA airport grants.

## **Upgrade Airport Maintenance and Operations**

In the immediate future, the City should continue its integrated services approach with the Public Works department to optimize procedures that will assure timely snow removal and other airport maintenance that is required for the safety, regulatory, and commerce needs of the airport.

In the long-term future, if an increase in the technical complexity of the airport warrants, the City should consider a gradual shift to increased management/operational specialization for the airport.

## **Ensure Consistent On-Airport Land Use Zoning**

The Airport Manager should work with the Planning and Zoning Commission to hold public hearings to present and approve land use zoning for the airport that is consistent with the land uses approved by the FAA as the Palmer Municipal Airport - Airport Layout Plan.

## **Streamline Administrative Procedures and Airport Property Leasing**

### Application Process

The City Council should pursue changes to its Code to allow establishing airport leasing criteria for lease approvals and denials, and allow the delegation of leasing authority, according to those criteria, to the City Manager. Custom leases, or proposed leases that do not meet the pre-approved criteria would continue the present course requiring direct approval by the Palmer City Council on a case-by-case basis.

### Lease Term Policy

For establishing the terms for new airport leases, the City should adopt a sliding scale of \$15,000/year, beginning at six years of term and running to a maximum of 30 years. Lease applications proposing little or no improvements would be granted a term of not more than five years. Improvement investments made by a lessee during the term of a lease could be applied to the sliding scale and used to extend the lease term back up to the 30-year maximum, if the City determined that the premises wouldn't be needed for airport facility expansion within the lease extension period. Similarly, the term of a renewal for an expiring lease would be based on the improvements the lessee proposes to add to the premises (if no additional improvements are proposed, the maximum renewal would be five years).

The following is an investment versus term table reflecting this concept:

**Table 1: Investment Versus Lease Length**

<b>Applicant's True Investment (dollars)</b>	<b>Term of Years</b>
15,000	6
30,000	7
45,000	8
60,000	9
75,000	10
90,000	11
105,000	12
120,000	13
135,000	14
150,000	15
165,000	16
180,000	17
195,000	18
210,000	19
225,000	20
240,000	21
255,000	22
270,000	23
285,000	24
300,000	25
315,000	26
330,000	27
345,000	28
360,000	29
385,000	30

Rent reevaluation and adjustment

Change the rent adjustment process and the lease provisions to reflect:

- Maintain a revenue shortfall surcharge system for those receiving a less than fair market lease rate;
- Establish rent adjustment intervals of not less than five years; and
- Use an airport-wide appraisal approach to setting rental rates

### Insurance and indemnity recommendations

- The City should adopt a comparative fault indemnity provision for airport leases.
- The City should continue to evaluate matching State of Alaska – Rural Airport insurance requirements.

### Reversion of lessee improvements

The City should consider abandoning the existing policy for the reversion of lessee improvement to the City at the end of the lease in favor of the lessee retaining ownership for the purpose of selling improvements to successor lessees, or, at the city's option, either removing or transferring improvements to the city if they cannot be sold within 120 days of the lease termination.

### Lease assignment and subleasing recommendations

The City should consider changing its assignment and subleasing policies, as follows:

- Drop the \$500 charge for processing an assignment or sublease.
- Treat all lease assignments as novations, in which the assignee assumes all the obligations of the lease and the former lessee is released from any further connection with the lease.
- Drop the restriction on increasing sublease rent.
- Drop the requirement for the lessee to assign sublease rent to the City.

## **Update Airport Rates and Fees**

### Non-Aeronautical Land Rental Rates

The City is required by its grant acceptance promises to the FAA to charge fair market rent (FMR) for all leases involving non-aeronautical uses. The City should base the rent for all non-aeronautical leases on an appraisal.



### Aeronautical Land Rental Rates

Establish, by appraisal, the FMR for aeronautical use land on the airport:

- Adopt a rental rate that is discounted below FMR (the amount of the discount should be calculated to result in a rate that is equal to, or lower than, those of competing airports without jeopardizing Palmer's financial self-sufficiency);
- Provide for an annual airport operating cost surcharge prorated to each permit for an aircraft tie-down space and each lease for aeronautical land on a square-footage basis (with the surcharge only to be charged if airport revenues do not cover airport operating costs); and
- Charge the aeronautical FMR rate to lessees who do not want the possibility of surcharges between lease adjustment dates.

### Land Rental Rate Policy Details

The following summarizes the land rental rate recommendations:

- Have the FMR for both the aeronautical and non-aeronautical land uses on the airport determined by a real estate appraiser. (The appraisal for non-aeronautical uses should include a determination of the FMR for agricultural use lands.)
- Charge all non-aeronautical lessees a rental rate equal to the FMR for non-aeronautical land uses.
- Adopt an aeronautical rental rate that is equal to the FMR for aeronautical land uses and charge that rate to all lessees that choose not to be involved in the rent discount/revenue shortfall surcharge program. If the FMR determined by the airport appraisal is drastically higher or lower than the current \$0.06-per-square-foot rate, the City should consider adopting a transition rate between the current rate and the FMR with an eye toward adopting full FMR within five years.
- Provide for an annual revenue shortfall surcharge to recover the difference between airport revenue and operating costs during the previous fiscal year by prorating the shortfall amount to all aeronautical land users (land lessees, tie-down permittees, etc.) on a square-footage basis, except land lessees that choose to pay FMR under.

- Limit the surcharge to a maximum of 25% of the annual rent charged under the lease or permit.
- In the case of leases, the combined surcharge and existing rent could not exceed FMR (or the transition rate, if one is adopted).
- Adopt the FAA Policy Concerning the Use of Airport Revenue to define airport revenue and expenses for the surcharge system.

#### Agricultural Rental Rate

The City's existing agricultural land rental rates are comparable to those charged by the state. The City should verify that the existing agricultural rates for the airport are consistent with agricultural FMR, as determined in the airport-wide appraisal and make adjustments, as needed to achieve FMR.

#### Tie-Down Rent Rate

- Leave the existing tie-down rental rate of \$25 per month unchanged, provided the revenue shortfall surcharge system recommendation is adopted and applied to the tie-down rental program.
- Because electrified spaces will be more valuable, especially in the winter, the City should charge \$35 per month for a tie-down space with access to separately metered electricity (with the tie-down user paying power consumption costs).
- The Aircraft tax paid at Palmer stands as a big difference between Palmer and competing airports. The City should consider repealing its existing tax on aircraft based at the airport and advertise the repeal among pilot groups.

#### Transient Parking and Heavy Aircraft Parking Fees

- Adopt a first-day-free policy for all transient aircraft parking.
- Adopt the overnight method for charging for transient parking
- Increase transient parking for small GA planes to \$5 per day.
- Regarding heavy aircraft, replace the existing fee program with a system that:
  - Uses the aircraft's certificated maximum gross takeoff weight as the basis of the fee;

- Defines heavy aircraft as an aircraft with a certificated maximum gross takeoff weight of 6,000 pounds or more; and
- Adopts a daily rate of \$2 per 1,000 pounds certificated maximum gross takeoff weight with no minimum charge.

### Fuel Fees

In the airport industry, a fixed cents-per-gallon fuel flowage fee is the standard. Repeal the sales tax on aviation fuel; and, if the sales tax is repealed, adopt a fuel flowage fee of \$0.05 per gallon.

### Through-the-Fence Operations

The through-the-fence operations (taxiing aircraft across the airport boundary) that have occurred at the airport in the past have been extremely infrequent and have used airport access gates and roads.

If the City authorizes a through the fence operation in the future for regular or frequent use, the authorization should be in the form of a written permit and charge a fee equal to the state's annual boundary crossing fee rate (currently \$1,240).

### Railroad Spur Use Fee

No fee for use of the airport spur as long as the Alaska Railroad continues to maintain this section of track.

### Landing Fees

No other airport in the Matanuska-Susitna Valley area charges landing fees. No landing fee is recommended.

### **Update Airport Operating Regulations**

In addition to the lease application form and the lease document, a potential lease applicant should be able to easily access information on the City's lease application review procedures, approval criteria, development requirements, term criteria, rates and fees, and airport rules. These subjects could be summarized on the City's web site or explained by the Airport Manager. However, the best way to express this information in a way that confirms consistency and

predictability in the mind of the potential applicant is to write them all into the airport's regulations.

The City's current airport regulations cover only airport rules, and in a somewhat bleak, authoritarian tone, at that. It is unlikely that reading the existing regulations and the current lease form would engender much optimism or enthusiasm in the mind of potential lease applicants.

The state's airports offer an even more daunting set of regulations, but every detail of the state's criteria and procedures for processing lease applications, setting lease terms, adjusting rent, assigning leases, development standards, and insurance requirements are all spelled out in the state's airport regulations. The current rents and fees, and airport rules are all there, too. The regulations apply to both the applicant and the state, so they provide some predictability for the leasing program. By reading the state's regulations, a business person applying for a lease at a state airport can know, in advance, not only the essentials of the entire process, but also the rules that the state, itself, must follow in that process.

The state's airport regulations are intended to apply to a system of over 250 airports of all sizes, so they are considerably more exhaustive in content and volume than is necessary for an airport like Palmer. But, it would be to the City's advantage in attracting more businesses and aircraft to the airport to implement a more comprehensive set of airport regulations than are currently in place.

The City's existing airport regulations are also in need of updating and clarification. For example, the existing impound regulation is incomplete in that it doesn't include impound notice procedures and time periods, provide for emergency impound, or address impound fees. An example of the clarity issue, the word "designated" is used in several places without explaining who makes the designation and how.

### **Implementation Time Frame**

The following general time frame is recommended for the implementation of the operating policy changes presented in this section:

*Near Term (within next 12 months):*

- Adopt recommendations to preserve FAA grant eligibility

- Continue to improve airport maintenance under integrated services approach
- Adopt airport zoning recommendations- to match airport zoning with the Airport Layout Plan
- Adopt recommendations for updating/streamlining airport leasing procedures
- Adopt clarified, comprehensive, and updated Airport regulations
- Adopt new land rental rates, as recommended
- Implement aircraft tie-down program recommendations
- Implement transient aircraft parking program recommendations
- Implement fuel fee recommendations

*Long Term (in next 20 years):*

- Shift to operational specialization at the airport as technical complexity warrants

### **Organization and Management**

Organizationally, the airport currently falls directly under the office of the City Manager. Day-to-day operations fall under the responsibility of a part time Airport Manager. The City has an Airport Commission that serves as an advisory panel on airport-related issues. Ultimately, the final authority for all significant airport and City decisions rests with the City Manager and the City Council.

The Airport Manager is the only airport employee. Other City departments contribute administrative and operational services needed for the airport, including:

- Finance (accounts payable and receivable; budget; payroll);
- Public Works (maintenance and repair services; construction);
- Public safety (fire and police) and
- Planning (City Executive Staff).

There is considerable mutual cooperation between the Airport Manager and the other City departments. The Airport Manager has the ability to present priority recommendations directly to the City Manager who arbitrates the balance of City resources between City departments



consistent with goals and objectives established by the Palmer City Council. The process works well and eliminates the dominance of any one group or department from establishing its opinion of public interest at the expense of the overall health of the City of Palmer as determined by its elected City Council. City resource allocations require continuous balancing of competing objectives to keep costs under control while providing essential public services. In Palmer the airport is, and must be, a part of that on-going balancing effort in order to continue to be an asset to the City.

### Potential Organizational Changes over Time

#### *Integrated Services Concept*

Airport users in Palmer obtain the benefit of using executive, management, maintenance and administrative services from other departments only when they are specifically needed, and only from staff who are already well trained and managed. These benefits increase operating efficiencies, insure that common community goals are met, and save airport users and the City of Palmer significant cost. Therefore, the City should continue to optimize and operate the airport under an integrated services concept where other City departments provide executive, administrative, accounting, maintenance, and other specialized skills and services to the airport on an as-needed basis.

In the long term future, if an increase in the technical complexity of the airport warrants, the City should consider a gradual shift to increased management/operational specialization for the airport.

#### *Building Permit Process*

Plans are submitted to the Building Department and require review by the Airport Manager. No changes to the existing process are recommended.

