Wasilla Airport

ALP update

ALP Narrative

Prepared for:

City of Wasilla
290 E Herning Ave.
Wasilla, AK 99654

Prepared by:

HDL ENGINEERING Consultants

202 W Elmwood Avenue
Palmer, Alaska 99645

March 2017

Table of Contents

1.0 EXECUTIVE SUMMARY

Area Background

The City of Wasilla is located in the Matanuska Susitna Borough in South Central Alaska, approximately 25 air miles northeast of Anchorage. Average annual average temperatures range from low of 27.3°F to high of 46.5 °F, for an average of 36.9°F. The average annual precipitation is 17 inches, with 52 inches of snowfall.

Existing Airport Facilities

The Wasilla Airport (IYS) is located three miles west of downtown Wasilla and is located within but on the western edge of the City limits. The Alaska Department of Transportation and Public Facilities (DOT&PF) constructed IYS in 1992 with funding from the Federal Aviation Administration (FAA). The airport was constructed to replace a sub-standard gravel airstrip located in downtown Wasilla. Upon completion of the new airport, ownership was conveyed to the City of Wasilla. The runway, taxiways, and aprons were paved in 1999. The 2017 National Plan of Integrated Airport Systems (NPIAS) classify IYS as a local General Aviation Airport (GA). The airport property is a 370-acre parcel of land owned via fee simple title by the City of Wasilla and dedicated for airport use.

The airport has one 3,700-foot by 75-foot paved designated Runway 4/22 and a 1,690-foot by 60-foot gravel STOL runway 4S/22S. The STOL runway is parallel to the main runway, and is located within the object free area of Runway 4/22 so parallel operations are not allowed. Taxiways A, B, C, D, H, N, O, P, Q are 35-foot wide and maintained to allow passage of B-II aircraft.

There are four aprons at Wasilla airport. Apron A is approximately 180 feet by 640 feet (115,200 square feet) providing 14 electrified tie-down spaces. Apron B is approximately 621 feet by 655 feet (406,755 Square feet). Apron C is approximately 456 feet by 522 feet (238,032 square feet) and Apron D approximately 369 feet by 522 feet (192,618 square feet). These aprons are all used for the movement, parking, and loading/unloading of small GA aircraft, Apron C and D is also used by larger commercial aircraft.

Runway 4/22 is marked with non-precision approach markings and equipped with medium intensity edge lighting, runway end identifier lights, and precision approach path indicators. The airfield has a segmented circle with primary windcone and two supplemental wind cones. An automated weather observation station (AWOS) is installed at the airport providing certified weather. RNAV GPS approaches are available for both runway 4 and 22.

Self-serve 100LL and Jet A fuel is provided by ACE fuels/Crowley.

2.0 AVIATION ACTIVITY AND FORECAST

Introduction

Aviation activity is forecast for a 20-year planning horizon. Aviation activity at IYS has historically been single engine general aviation (GA) aircraft with some twin-engine GA and helicopter traffic, and occasional commercial activity. For more details see the 2017 Wasilla Airport Aviation Activity Forecast .

Operations and enplanement data are not recorded at Wasilla airport because there is no tower. Operations are computed using the GRA model and based aircraft, and compared to other area airports for reasonableness. Based aircraft at IYS was 149 for 2016.

Aviation activity is changing and growing. The last forecast was completed in 2009 as a part of the update to the Airport Master Plan. Since then, one air cargo company (Transnorthern Aviation) has negotiated long-term leases for three lease lots. GA activity and based aircraft has also grown. Although the flight school that was operating from Wasilla airport closed when the instructor retired, the airport is actively used for flight training. Hageland Aviation operates its aviation maintenance facility at Palmer, and occasionally use the airport for practice instrument approaches and equipment checks because of its convenience. The State Department of Forestry continues to operate a wide range of larger aircraft from its headquarters in Palmer. During periods of high winds in Palmer, Forestry temporarily relocates smaller aircraft and helicopters to Wasilla, Big Lake or Willow airports to support firefighting activity.

Critical Aircraft, ARC, & RDC

Wasilla Airport was originally constructed to airport reference code (ARC) B-II standards. Presently, the critical aircraft is the B-I group of aircraft. Activity with B-II and A-III aircraft does not reach the 500 operations annually; however, B-II activity includes the Lifemed King Airs, which makes it a good candidate for continued use of B-II as the ARC. We recommend that the airport continue to be designed and maintained to approach reference code (APRC) B-II-4000 and departure reference code (DPRC) B-II standards.

Aircraft Operations

Annual operations are estimated using based aircraft and the “Model for Estimating General Aviation Operations at Non-Towered Airports using Towered and Non-Towered Airport Data” (GRA, Inc., July 2001). Using the above analysis, the following levels of operations were estimated for 2016 (base year): total fixed-wing operations 37,454; helicopter operations 340; and total operations 37,794.

Passenger Enplanements

There are currently no air taxi operators based at the airport. Table 2-1 shows reported chartered passenger services to and from Wasilla by certified air carriers between 2006 and 2016. Enplanements vary significantly from year to year depending on whether air taxis are using the airport. Enplanements for 2016 are estimated to be zero so they are no projections in this forecast.

Table 2-1. Wasilla Enplanements

Year	Enplanements
2006	384
2007	7
2008	0
2009	105
2010-12	0
2013	208
2014	35
2015	22
2016	-

Based Aircraft and fleet mix

Aircraft based at the Wasilla airport has been increasing since 1998. Table 2.2 shows both historic and estimated future based aircraft at the Wasilla Airport. Currently 149 aircraft are based at IYS. Using a 3.0% annual growth rate that number is forecast to increase to 230 in 2031.

Table 2.2 - Historical and Projected Fixed Wing, Based Aircraft

Year	Tie Downs	Growth Rate
1998	35	
1999	42	20.0%
2000	55	31.0%
2001	80	45.5%
2002	112	40.0%
2010	123	1.1%
2016	149	3.0%
2021	*173*	3.0%
2026	*199*	3.0%
2031	*230*	3.0%

Table 2.3 - FLEET MIX Current Fixed Wing Aircraft at IYS

Manufacturer	Model
Cessna	206
Maule	M-7-260
McDonnell Douglas	MDC-DC-3
Piper	PA-32-260
Grumman	HU-16 Albatross
Beech	E50 Twin Bonanza
Piper	PA-23 Aztec
Republic	RC-3 Seabee
Piper	PA-32R-300

Aviation forecast

See the 2017 Wasilla Airport Aviation Activity prepared by HDL Engineering Consultants for forecast details. Table 2.4 provides a summary of the current and expected aviation activity for the airport.

Table 2-4. Aviation Activity Forecast Summary

	Specified Base Year:	2016		Growth Rate:	3%	
	Forecast Operations per Year					
	2016	2021	2026	2031	2036	2041
FIXED WING OPERATIONS						
ITINERANT						
Commuter/Air Taxi/Cargo	**390**	**570**	**721**	**829**	**953**	**1,098**
Total Military Operations	**32**	**34**	**37**	**42**	**47**	**53**
GA, Itinerant	18,426	19,532	21,361	24,763	28,707	33,279
TOTAL ITINERANT OPERATIONS	**18,848**	**20,136**	**22,119**	**25,634**	**29,707**	**34,431**
LOCAL						
Total Commercial Operations	**180**	**191**	**209**	**242**	**280**	**325**
GA , Local	18,426	19,532	21,361	24,763	28,707	33,279
TOTAL LOCAL OPERATIONS	**18,606**	**19,913**	**21,778**	**25,247**	**29,268**	**33,930**
TOTAL FIXED WING OPERATIONS	**37,454**	**40,049**	**43,897**	**50,881**	**58,975**	**68,360**
HELICOPTER OPERATIONS						
Commuter/Air Taxi	300	318	348	403	468	542
Military	40	42	46	54	62	72
TOTAL HELICOPTER OPERATIONS	**340**	**360**	**394**	**457**	**530**	**614**
TOTAL OPERATIONS	**37,794**	**40,409**	**44,292**	**51,338**	**59,506**	**68,974**
Instrument Operations	**1,843**	**1,953**	**3,291**	**2,136**	**2,476**	**2,871**
Based Aircraft						
Single Engine (nonjet)	140	162	188	218	253	293
Multi Engine (nonjet)	6	6	7	8	9	11
Jet Engine	0	0	0	0	0	0
Helicopter	3	3	3	4	5	5
Other	0	0	0	0	0	0
TOTAL BASED AIRCRAFT	**149**	**172**	**199**	**230**	**267**	**309**

3.0 AIRPORT DEVELOPMENT ALTERNATIVES

The 2013 master plan evaluated several alternatives, some of which included development of seaplane facilities at Jacobsen Lake or Lucille Creek. The master plan considered the future role of the airport and the type of aviation activity it should serve. The preferred alternative suggests serving the community with an emphasis on supporting a business park, and attracting more air cargo and air carrier traffic. The preferred alternative recommends the following:

- Develop adjacent, non-aviation revenue areas into an attractive business/commerce park with adjoining regional sports complex
- Construct a rail maintenance facility north of the museum
- Construct an airplane campground to serve itinerant traffic
- Expand apron areas north across West Aviation Avenue
- Expand the SREB building at the airport and purchase additional SRE
- Construct a STOL runway
- Construct a new airport access road
- Construct a future commuter rail station in the vicinity of a future passenger terminal building and commercial apron
- Expand apron areas for additional tie-downs, T-hangars, hangars, and airport-related businesses
- Extend the runway to approximately 5,000 feet, and extend the RPZ accordingly, to handle commuter passenger aircraft and business jets
- Install REILs and a PAPI for Runway 21
- Extend water and sewer service to the airport to accommodate existing and planned facilities
- Extend Taxiway C

For more details see the Master Plan.

4.0 PREFERRED ALTERNATIVE

Since 2013, a few of these projects have been constructed including the airport access road, PAPI for Runway 22, and a STOL runway improvements. The rail and seaplane base development improvements in the preferred alternative were determined by the City to be premature or not feasible and were not carried forward with the preferred alternative.

The following project list provides the City's airport capital improvement plan and describes the projects anticipated for the 20-year planning horizon. This plan is updated occasionally to re-prioritize projects to reflect changing conditions and is used to seek FAA funding. The AIP codes for Wasilla projects are: 3-02-0417-XX-20XX. The recommended development plan is divided into three phases which are Near-Term (0 to 5 years), Mid-Term (5 to 10 years), and Long-Term (10 to 20 years) and is summarized in Table 1 below.

Table 4-1. Capital Improvement Plan, Wasilla Municipal Airport

		AIP	Status	Project Cost	EA
1.	Security Improvements - Phase II	Y	2017	…..	
2.	General Aviation Apron E Expansion - Phase I	y	2018	3,418,000	
3.	Taxiway K, Heliport and Lease Lot Development - Phase I	Y	2018	5,336,400	
4.	Acquire Property	Y	2019	1,007,100	
5.	Pavement Maintenance (3-5 years)	Y	2020	727,800	
6.	Complete and Pave General Aviation Apron E Expansion - Phase II	Y	2022	3,725,300	
7.	Complete Taxiway K, Heliport and Lease Lot Development - Phase II	Y	2022	5,444,300	
8.	Runway Overlay (8-10 years)	Y	2025	2,245,500	
9.	Runway Extension to 4,000 ft	Y	2025	1,976,600	
10.	Airport Water and Sewer (Non FAA Funded)	N	2027	6,264,900	
11.	Pilot/ Passenger Facility	Y	2028	2,584,100	
12.	Runway Extension to 5,100 and ILS Equipment	N	2037	13,666,600	
.					
Phase I (0 to 5 Years)					
	Subtotal Phase I			**$21,351,800**	
Phase II (5 to 10 Years)					
	Subtotal Phase II			**$9,517,400**	
Phase III (10 to 20 Years)					
	Subtotal Phase III			**$15,643,200**	
	Subtotal FAA Projects All Phases			$24,919,800	
	Total All Phases			**$46,512,400**	

1. *Security Improvements Phase II.* This project consists of the second phase of security improvements including installation of gate controllers and operators at Gates C and D, and fiber optic communication cables.

2. *General Aviation Apron Expansion - Phase I.* This project would be constructed in two phases and includes the expansion of the GA apron east of Apron D. The proposed Apron E would be 510'x 365'. Phase I would begin in 2018. Materials excavated for this project will be used as fill in areas east of the runway see project 3, and south of the runway see project 9. The cost for this work includes creating a soil disposal area and a haul road for access. Excess excavation will be disposed of offsite when all onsite disposal areas are filled.

3. *Taxiway K, Heliport and Lease Lot Development - Phase I.* This project includes extending interlink Taxiway H and construction of Taxiway K and an Apron south of RW 22. This project would be constructed in two phases and would be built partially with material excavated from item 1 and 3. Proposed Taxiway is 2,000' by 35'. It is anticipated that fill material required for this project will

be generated during the GA Apron Expansion. The cost for this work includes construction of a gravel pad with power for 5 acres of lease lot, taxiway, helipad and an access road from South Mack Road to proposed Taxiway K.

4. *Acquire Property.* This project acquires additional land to expand and protect runway protection zones located off both ends of Runway 4-22.

5. *Pavement Maintenance (3-5 years)*. This project includes crack-sealing areas of pavement in poor condition.

6. *Complete and Pave General Aviation Apron Expansion - Phase II.* This project would be Phase II of Item 1 and includes the expansion of the GA apron. Approximately XX cubic yards of material will be excavated. Useable excavation from this project would be used for Phase II of item 2. Work would include paving, lighting and striping.

7. *Complete Taxiway K, Heliport and Lease Lot Development - Phase II*. This project includes extending interlink Taxiway H and construction of Taxiway K and an Apron south of RW 21. This project will be constructed from material excavated from item 6. Remaining work from Phase I of item 2 will be completed through this project.

8. Runway Overlay (8-10 years). This project will overlay the existing runway pavement within the next 8-10 years. This work would include pavement markings.

9. *Runway Extension.* This work would include extending the existing runway by 300' to 4,000' in the near term. Work would include RSA grading, paving, lighting and striping.

10. *Airport Water and Sewer*. This project includes construction of water and sewer system extensions to lease lots. This work includes construction of backbone sewer mains, sewer lift stations, water mains and fire hydrants to improve fire flows at the airport.

11. *Pilot/ Passenger Facility.* This project includes construction of a new Pilot/ Passenger Terminal Building. The work would include site development, paving, parking, lighting and construction of a terminal building for passenger service.

12. *Runway Extension and ILS Equipment.* This work would include extending the existing runway by an additional 1,100' to an overall length of 5,100' in the future. Work would include RSA grading, paving, lighting and striping. This project is not eligible for FAA AIP grant funding. Future airport use may justify grant funding for this expansion.

5.0 MODIFICATIONS TO STANDARDS

The ALP does not identify any modifications to standards.

6.0 OBSTRUCTION SURFACES

Vegetation (primarily trees) currently penetrates Part 77 airspace surfaces at several locations. Part 77 Surface Proposed Improvement: tree removal to eliminate Part 77 airspace penetrations. Vegetation clearing and tree removal includes removing penetrations in the Runway 4/22 approach and transitional surfaces would be part of other improvement projects at the airport. Other objects penetrating Part 77 airspace surfaces that are considered non-essential to aircraft navigation would also be removed or lowered.

7.0 RUNWAY PROTECTION ZONE

Aviation Avenue is in the Runway 22 approach RPZ. The Alaska Railroad is in the northwest corner of the Runway 22 approach RPZ. Neither of these are at elevations that result in traffic being obstructions.

8.0 PRELIMINARY IDENTIFICATION OF ENVIRONMENTAL FEATURES

Introduction

The City of Wasilla, Wasilla Airport Master Plan Update was prepared by USKH in 2013. An environmental overview was prepared as part of the master plan and was not included in this project. Below is a summary of the environmental overview prepared for the master plan.

Airport improvement projects will be developed in phases over the next 20 years as funding becomes available from FAA. The environmental overview represents a very brief preliminary analysis of environmental concerns and constraints that could affect the airport improvement. Some proposed airport improvements may require NEPA documentation, either in the form of EAs or environmental impacts statements (EIS). FAA Guidelines require all proposed actions, unless categorically excluded, to provide an EA. The EA is used to determine if the potential impacts are significant. If the potential impacts are significant, an EIS is required.
The table below is a summary of impact categories for the projects included in the Capital Improvement Plan.

Table 8-1. Potentially Impacted Categories

	Acquire Property	Pilot/Passenger Facility	Apron and Access Road	Runway / Taxiway Extension	Water and Sewer	Apron E Development	Taxiway K and Heliport	East Apron Development
Biotic Resources	✓	✓	✓	✓		✓	✓	✓
Coastal Zone			✓	✓			✓	
Compatible Land Use	✓							
Construction Impacts		✓	✓	✓	✓	✓	✓	✓
Floodplains				✓			✓	
Historic Properties	✓	✓	✓	✓	✓	✓	✓	✓
Noise				✓			✓	
Water Quality		✓	✓	✓	✓	✓	✓	✓
Wetlands			✓	✓	✓		✓	

Air Quality

IYS lies within the Cook Inlet Intrastate Air Quality Control Region. The airport area is considered a Class II attainment area (ADEC, 2010), which means air pollution levels for airborne concentrations of criteria pollutants do not exceed the National Ambient Air Quality Standards (NAAQS).

Impacts to air quality under the proposed development projects would be short-term, resulting from airborne dust and construction equipment operations during construction activities. The proposed development projects are not anticipated to increased emissions of U.S. Environmental Protection Agency (EPA) criteria pollutants, nor exceed the maximum allowable increases for particulate matter that is 10 micrometers or less in size (PM-10), nitrogen dioxide, and sulfur dioxides.

Biotic Resources

IYS provides habitat for a variety of biotic resources. The mixed birch and spruce forest that surrounds the perimeter of the airport provides habitat for a variety of wildlife. There are no State of Alaska designated critical wildlife habitat areas near the airport boundary.

Birds

Forests and wetlands surrounding the developed airport area provide habitat for a variety of passerines. Some projects would require fill in wetlands and the removal of trees for the new approach surfaces. Nesting habitat would be lost; however, this will increase aviation safety. There is ample habitat in the local area to compensate for any losses from construction activities or permanent development.

Fish Habitat and Anadromous Fish Streams

Lucille Creek flows along the southern boundary of the IYS property. The Alaska Department of Fish and Game Catalog of Anadromous waters identifies Lucille Creek (Stream No.:247-50-10330-2050-3030) as supporting coho and sockeye salmon. Any work with impact Lucille Creek will entail consultation with ADF&G through the Title 16 Fish Habitat Permit process. Additionally, the National Marine Fisheries Service should be consulted to assess impacts to Essential Fish Habitat (EFH).

Mammals and Furbearers

The existing perimeter of the airport is fenced, blocking large mammal access to the airport facilities. The proposed development includes fencing the future development areas.

Coastal Barriers

There are no designated coastal barriers in Alaska.

Coastal Zone Management

Although the Alaska Coastal Management Program expired on July 1, 2011, potential impacts to coastal zone resources will be considered when assessing the proposed actions.

Compatible Land Use

There is mixed land use around IYS, including commercial, residential, and rural residential (RR). Several large parcels bordering the airport property have not been developed and are zoned RR. Residential zoning is not compatible with the development of the airport.

Parcels outside City Limits that border Airport property are not zoned. FAA grant programs require that airport sponsors work to ensure compatible land use in the area surrounding the airport. For Wasilla, this would require that the City acquire additional property and change its land use designation to ensure compatible land uses. If appropriate land use controls are not implemented, it is likely that a future environmental document will find certain airport projects are not compatible with airport operations. Noise and safety issues for residential structures may be avoided if land use surrounding the perimeter changes to reflect future plans for airport expansion. A common method for airport sponsors to comply with grant assurances for compatible land use is to turn FAR Part 77 airspace surfaces into hazard easements or height zoning maps that are adopted by the city council or local government.

Construction Impacts

Most of the proposed development projects would involve impacts to air quality, noise, fish habitat, and water quality from the use of heavy equipment and moving construction materials. There would be temporary environmental impacts during the construction of the proposed seaplane base because of the type of construction and dredging that would be needed to implement this project. During construction, best management practices (BMPs), implementation of a storm water pollution prevention plan (SWPPP), compliance with the Matanuska-Susitna Borough storm water permitting requirements (currenly being developed), compliance with USACE Section 404 permit stipulations, and ADEC Section 401 Certification stipulations under the Clean Water Act would mitigate these impacts.

DOT Section 4 (f) Resources

No state or federal recreation areas, wildlife refuges, critical habitat areas, or parks are within the IYS project area. Preliminary research of the surrounding area found there may be some historical sites eligible for listing under the National Historic Preservation Act that will need to be further examined.

Federally Listed Endangered or Threatened Species

Protected Species
During the preparation of an environmental document, in compliance with NEPA, additional consultation under Section 7 of the Endangered Species Act will be completed with the U.S. Fish and Wildlife Service (USFWS).

Bald Eagles
Bald Eagles are protected by the Bald Eagle Protection Act. A walking survey of the airport property on March 25, 2016, by the project team did not identify any existing eagle nests. Further consultation with USFWS will be completed as part of the NEPA process for environmental documentation.

Energy Supplies, Natural Resources, and Sustainable Design

Potential construction materials and mineral sites have not yet been identified. There are numerous material sites accessible by highway and rail in the project vicinity.

Environmental Justice

Environmental Justice ensures that no low income or minority population bears a disproportionate burden of effects resulting from Federal actions. The majority (85 percent) of people living in the City of Wasilla are Caucasian and 90 percent live above the poverty line (Division of Community and Regional Affairs, 2000 data).

Farmlands

Alaska does not contain any prime or unique farmland as defined by the Natural Resources Conservation Service (NRCS). The Matanuska Soil and Water Conservation District has identified Farmlands of Local Importance based on soil types; however, the project area does not contain any soil types identified as soils of local importance (NRCS, 2010).

Floodplains

The City of Wasilla participates in the National Flood Insurance Program. According to the Federal Emergency Management Agency (FEMA) Map Panel 0200219675C for the City of Wasilla, Lucille Creek, which is south of the airport property, is Flood Zone A.

Zone A corresponds to the 1 percent annual chance floodplains that are determined in the study by approximate methods of analysis. Because detailed hydraulic analyses are not performed for such areas, no base flood elevation or depths are shown within this zone.

Extending the runway could encroach on the floodplain, and constructing the seaplane base by realigning Lucille Creek would change the floodplain. It is anticipated that these projects would require flood hazard permits and hydraulic analyses to understand their impacts.

Hazardous Materials, Pollution Prevention, and Solid Waste

IYS was constructed on undeveloped land in 1992. A search of the ADEC contaminated sites database indicates that there are no open contaminated sites within the project area. Further consultation will be made with ADEC during the environmental documentation for the NEPA process to determine if there are any recent investigations not found in the historical database. Any proposed property acquisition will require completion of a Phase I EDDA.

Historic and Archeological Resources

A record search of the Alaska Heritage Resource Survey (AHRS) was performed on May 11, 2010, to determine if cultural resources are present in the project area. The notes in the AHRS files report that there are some areas near the perimeter of the property that need a thorough investigation by a cultural resource specialist prior to any changes in the land use.

Consultation for Section 106 of the National Historic Preservation Act would be conducted with the SHPO and the local Tribe to determine if there are any historic properties in the airport project area.

Induced Socioeconomic Impacts

Many residents of the City of Wasilla are able to enjoy the lifestyle of a small rural setting and commute to Anchorage for employment. Upgrading IYS is essential to meet the forecasted population growth in the area. The expansion meets the public desire for access to remote areas and the increasing demand for commuter service from Wasilla to Anchorage.

Improvements to the airport would benefit area businesses and increase economic activity. It would provide more opportunities for aviation-related business and could help stimulate other tax base employment. The airport improvements would not move or shift the existing population patterns. The Taxiway D extension would eliminate Beacon Street, and airport access from West Museum Drive would be provided by extending Crosswind Court (see Figure A6, Appendix A). Land acquisition to support the runway extension and the proposed seaplane base would remove potential property taxes from the City tax base; however, lease lot and seaplane slip rental fees are anticipated to offset any losses.

Light Emission and Visual Effects

IYS is currently located in a fairly undeveloped area. It is visible from the Curtis D. Menard Memorial Sports Center on South Mack Drive. It is also visible from adjacent residential lots surrounding the western boundary. The existing runway and taxiways have medium intensity edge lighting. The edge lighting would be extended when the runway and the taxiways are extended. This lighting may become visible to residences that had previously been unable to see them, because the visual barrier may be removed due to vegetation clearing or moving the lighting system closer.

The runway extension project would also include adding REILs, which are directional. This means that they point toward incoming aircraft, and therefore point away from the nearest residences. It is unlikely that the additional lighting will be noticeable. All lighting systems are pilot activated by radio frequency upon approach to the airport. This minimizes the lighting during low light or no light conditions. The proposed projects are not anticipated to significantly alter light emissions or the appearance of the airport.

Noise

Airport noise is often a controversial environmental impact. Development actions that change runway configurations, aircraft operations and movements, and aircraft types using the airport may affect existing and future noise levels. Currently, IYS does not have any large commercial air carriers or commuter airlines serving the community. The majority of aircraft operations currently come from smaller local air taxi services, charter airlines, and small air cargo businesses. According to interviews with air carriers providing service to the airport, aircraft operations at this facility are expected to increase by approximately 3 percent by 2030. There is also additional growth anticipated from charter services serving various sporting events at the nearby Curtis D. Menard Memorial Sports Center in Wasilla.

The proposed development (specifically the runway extension), development of a seaplane base, and/or development of a helicopter landing area, would increase aircraft operations and change the types of aircraft using the airport, thus increasing noise. For instance, the extension of Runway 3-21 to 5,100 feet and establishment of an ILS precision approach would qualify the airport as a weather alternative for ANC. This would likely result in an increase in noise from the larger aircraft that would be able to utilize the longer runway. A heliport or seaplane base would likely increase or change the current noise levels at IYS. Although Wasilla does not meet the thresholds of significance for a Part 150 study, a basic noise analysis should be conducted for development as part of the EA.

Currently, noise contours lie entirely within airport boundaries. This means that existing noise levels at the IYS are compatible with surrounding residential lands. A noise analysis may be required for involve helicopter landing areas.

Social Impacts

Land acquisition for airport projects includes land zoned for RR development, but no existing residences would be impacted. No disproportionate impacts to children's environmental health or safety are anticipated.

Solid Waste

According to the MSB public works website, the closest solid waste facility to the airport is over 5 miles away which exceeds FAA's safety buffer to separate wildlife attractant of at least 10,000 feet from airports.

Water Quality

IYS is located north of Lucille Creek. Lucille Creek is not listed as an impaired waterbody on the ADEC 303(d) List of Impaired Waterbodies (ADEC, 2010). Lake Lucille is currently listed impaired for low dissolved oxygen, however, it is approximately 1-mile upstream of IYS and therefore the proposed actions are not expected to impact the lake. No public drinking water or sewer is currently available at the airport.

Impacts to water quality may occur when fill is placed into wetland areas. Placement of fill could increase siltation, sedimentation, and suspended solids, impacting water quality. After the fill has been placed and stabilized, this effect would diminish. Operation of a seaplane base could result in the release of contaminants via spills to the groundwater which could eventually transfer pollutants into Lucille Creek.

Since the majority of the airport development project requires more than 1-acre of ground disturbing activities, coverage under the APDES Construction General Permit would be required. Impacts to water quality during construction would be minimal and temporary.

No public drinking water or sewer is currently available at the airport, although the proposed landside improvements would include bringing water and sewer utilities to the airport to provide upgrades for passenger facilities. These improvements would eliminate onsite wastewater disposal (septic) and reduce the likelihood of groundwater contamination of public or private drinking water sources.

Wetlands

According to USFWS National Wetland Inventory (NWI) mapping in the vicinity of IYS, wetlands occur on all sides of the airport and within the footprint of some of the proposed airport development projects. Wetlands provide a variety of functions, including water quality improvement, buffering of flood waters, and wildlife habitat. The wetlands adjacent to Lucille Creek also provide a buffer from pollutants and sediment contained in storm water runoff from airport surfaces.

Projects that would place permanent fill into wetlands include constructing the runway extension, heliport, and Taxiway K. Water and sewer construction would likely include temporary impacts to wetlands. A wetland delineation would be completed to determine the acreage of potential wetland impacts during development of airport improvements. Permits would be required from USACE for any impacts to wetlands or waters of the U.S.

Wild and Scenic Rivers

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

Cumulative Impacts

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

Wildlife Hazard Management Issues review

A Wildlife Hazard Management Issues review was not included in the project scope. FAA can require that airport operators prepare a Wildlife Hazard Management Plan when specific triggering events occur at or near an airport. Part 139.337 discusses the specific events that trigger an assessment. These include: air carrier aircraft experiencing multiple wildlife strikes; air carrier aircraft experience substantial damage from striking aircraft; air carrier aircraft experiences engine ingestion of wildlife, or; wildlife or a size or in numbers, capable of causing an event is observed to have access to airport flight pattern or aircraft movement area.

Wasilla Airport is surrounded by a perimeter fence that blocks access for large mammals to the airport facilities. No wildlife strikes have been reported such that FAA has deemed a Wildlife Hazard Assessment necessary for the airport. There are no known Bald Eagles nests on the airport property. The airport is minimizing bird habitat by actively pursuing elimination of standing water on the airport, grass and brush are also managed to reduce nesting habitat for birds.

9.0 DECLARED DISTANCES

Declared distances have not been implemented at Wasilla Airport, the following table gives the declared distances for Runway 4 and Runway 22.

Table 9.1 - Declared Distances

	Runway 4			Runway 22		
	Existing	Near term	Ultimate	Existing	Near term	Ultimate
Take Off Run Available (TORA)	3,700’	4,000’	5,100'	3,700’	4,000’	5,100'
Take Off Distance Available (TODA)	3,700’	4,000’	5,100'	3,700’	4,000’	5,100'
Accelerate Stop Distance Available (ASDA)	3,700’	4,000’	5,100'	3,700’	4,000’	5,100'
Landing Distance Available (LDA)	3,700’	4,000’	5,100'	3,700’	4,000’	5,100'

Appendix A – Grant History

History of Previous Capital Improvement Projects

The table below gives a grant history of AIP projects completed at Wasilla Airport

Table A-1. Summary of Previous Wasilla Airport Improvement grants

Year	AIP #	Improvement	Estimated Cost
1990	001	Acquire Land for Development and Approaches	2,056,300
1992	002	Construct and Light Runway, Taxiways; Construct Access Road	3,801,700
1992	003	Decommission Old Airport; Provide Relocation Assistance	925,900
1992	004	Acquire Snow Removal Equipment; Construct Equipment Storage Building	499,500
1998	005	Construct Runway (Design Only)	102,800
1999	006	Construct Runway Phase II (Paving); Install Fencing	1,037,300
2001	007	Conduct Master Plan Study	407,100
2003	008	Construct Security Improvements, Phase I	264,300
2005	009-	GA Apron, Taxiway, and Lease Lot Development, Phase I (design)	200,000
2005	010	GA Apron, Taxiway, and Lease Lot Development, Phase I (construction)	2,000,000
2006	011	GA Apron, Taxiway, and Lease Lot Development, Phase II	287,400
2007	012	GA Apron, Taxiway, and Lease Lot Development, Phase II (construction)	4,049,000
2008	013	Construct Parallel Taxiway and STOL Runway	2,397,700
2009	014	Expand SRE Building and Security Improvements, Phase II	1,400,000
2009	015	Aeronautical survey for WAAS approach	200,000
2009	015	Update Airport Master Plan Study	275,000
2010	016	Construct Apron D, Phase 1	1,016,000
2011	017	Acquire Snow Removal Equipment	780,000
2011	018	Construction of Apron D, phase 2	1,173,800
2011	019	Conduct Environmental Study Phase 1	189,400
2014	020	Acquire Safety Equipment and/or Fencing	598,400
		Total	$ 22,261,395

Appendix B – Aviation Forecast

Wasilla Airport

ALP update

Aviation Forecast

Prepared for:

City of Wasilla

290 E Herning Ave.

Wasilla, AK 99654

Prepared by:

HDL ENGINEERING Consultants

202 W Elmwood Avenue

Palmer, Alaska 99645

March 2017

Table of Contents

1.1 Forecast

Aviation activity is closely tied to the economy and population growth. The City of Wasilla and the Mat-Su Borough have been experiencing steady growth since the 1980s. The area's growth rate is driven by the ongoing shortage of land in the Anchorage bowl, availability of developable land in the valley, lower real estate prices, lower property taxes, the ability to live in the valley and commute to Anchorage, and the area's excellent outdoor recreational opportunities.

1.2 Historical Population Trends

From 2000 to 2013, Wasilla's population increased from 5,588 to 8,621 in 2013, a growth rate of 3.39% per year. During the same period, the Mat-Su Borough population, considered the fastest growing region in Alaska, grew from 59,322 to 95,195, a growth rate of 3.71% per year. During the 45-year period between 1960 and 2005, Wasilla and the Mat-Su Borough populations grew at a rate of 3.43% and 6.09% per year, respectively. For the past 45 years, the area has grown faster than the state. See Table 1-1.

Table 1-1. Population Growth Rates

Period		Population	Average Annual Growth Rate
2000 to 2013 (recent 13 years)	Wasilla	5,588 to 8,621 [1]	3.39%
	Mat-Su Borough	59,322 to 95,195 [1]	3.71%
	State of Alaska	627,963 to 736,399 [2]	1.23%
1960 to 2005 (45 years)	Wasilla	122 to 8,351 [1]	9.85%
	Mat-Su Borough	5,188 to 74,041 [1]	6.09%
	State of Alaska	226,167 to 666,946 [2]	2.43%

Source: 1. United States Census Bureau, http://quickfacts.census.gov/qfd/states/02000.html.
2. State of Alaska Department of Labor and Workforce Development, Research and Analysis, http://laborstats.alaska.gov/pop/popest.htm

1.3 Population Growth Projections

In December of 2009, the University of Alaska's Institute of Social and Economic Research (ISER), projected that between 2010 and 2035 population in the Mat-Su Borough would grow on average between 5.03% and 0.93% depending on a wide range of economic factors. See Table 1-2. The BASE CASE of 3.06% average population growth in the Mat-Su Borough is based on oil development in the outer continental shelf in 2021, a natural gas pipeline in 2019, development of Livengood, Donlin Creek and Pebble mines, US inflation at 2.5%, and modest US economic recovery.

Table 1-2. Average Growth Rate Projections 2010-2035 (ISER, 2009)

	Wage and Salary Jobs	Population	Households
	HIGH CASE		
State	1.98 %	1.99 %	2.10 %
Anchorage	1.46 %	1.23 %	1.33 %
Mat-Su	5.65 %	5.03 %	5.15 %
	BASE CASE		
State	1.06 %	1.11 %	1.24 %
Anchorage	.74 %	.78 %	.90 %
Mat-Su	3.69 %	3.06 %	3.19 %
	LOW CASE		
State	.28 %	.30 %	.44 %
Anchorage	.26 %	.26 %	.40 %
Mat-Su	.89 %	.93 %	1.07 %

The State of Alaska Department of Labor and Workforce Development produces resident population projections for Alaska. See Table 1-3. The trend for the Mat-Su Borough is for consistent growth in population due to natural increases and in-migration.

Table 1-3. Population Projections (Alaska DOL)

	2012	2017	2022	2027	2032	2037
			Population			
State of Alaska	732,298	770,417	806,479	839,191	868,902	897,034
Anchorage Borough	298,842	313,348	326,612	338,059	347,870	356,584
Matanuska-Susitna Borough	93,801	105,617	117,845	130,254	142,615	154,692
			Annual Growth Rate			
State of Alaska		1.02%	0.92%	0.80%	0.70%	0.64%
Anchorage Borough		0.95%	0.83%	0.69%	0.57%	0.50%
Matanuska-Susitna Borough		2.40%	2.22%	2.02%	1.83%	1.64%

1.4 Aviation Activity

Aircraft operations and enplanement data is not available at this airport because there is no tower. Annual operations are estimated using based aircraft and the "Model for Estimating General Aviation Operations at Non-Towered Airports using Towered and Non-Towered Airport Data" (GRA, Inc., July 2001).

Aviation activity is growing and the fleet mix is changing. The last forecast was completed in 2009 as a part of the update to the Airport Layout Plan. Since then, one air cargo company (Transnorthern Aviation) has negotiated three long-term leases with the City. Transnorthern Aviation currently operates from the Ted Stevens Anchorage International. Currently they use their facilities in Wasilla to perform light maintenance and to store aircraft. In conversations with their operations manager and chief pilot, they have indicated no immediate plans to increase activity in Wasilla, and that the current runway length only allows Transnorthern to take off with reduced cargo loads with their Super DC-3. A runway extension to 4,000 feet would allow heavier loads in the DC-3's and an expansion to 5,000 would allow them to operate other portions of their fleet from Wasilla, should costumer demand arise.

Currently, the airport has no active flight school, the one flight school that was operating from Wasilla airport closed when the instructor retired. Hageland Aviation operates its aviation maintenance facility at Palmer, and will occasionally use the field in Wasilla for instrument approaches and instrument equipment checks. The State Department of Forestry occasionally uses Wasilla during periods of high winds in Palmer to relocate their helicopters to Wasilla, Big Lake or Willow airports; whichever is most convenient for their firefighting operations.

1.5 Based Aircraft

An accurate accounting of based aircraft forms the basis of forecasting general aviation (GA) operations in Section 1.6. Fixed-wing based aircraft were determined from City tie-down lease records and visual inspection as of June 2016, discussions with leaseholders and Wasilla Public Works staff. A total of 149 fixed-wing based aircraft were on the field, including 124 aircraft counted on the aprons and 25 aircraft indicated by public works staff as stored in hangars. This count does not include transient operations. Table 1-4 shows the historical and projected fixed wing-based aircraft for Wasilla. In addition, three rotor wing aircraft are based at Wasilla.

Table 1.4 - Historical and Projected Fixed Wing, Based Aircraft

Year	Tie Downs	Growth Rate
1993-97	No Data	
1998	35	
1999	42	20.0%
2000	55	31.0%
2001	80	45.5%
2002	112	40.0%
2010	123	1.1%
2016	149	3.0%
2021	*173*	3.0%
2026	*199*	3.0%
2031	*230*	3.0%

1.6 Operations

Forecasting of non-general aviation (GA) operations was accomplished by reviewing US Department of Transportation (USDOT), FAA, and US Census data; and by mailed surveys, personal interviews. GRA model. Forecasting GA operations for 2016 (base year) was accomplished using Equation 13 from the "Model for Estimating General Aviation Operations at Non-Towered Airports Using Towered and Non-Towered Airport Data" (GRA, Inc., July 2001) as follows:

OPS = -571 + 355*BA - 0.46*BA2 + 40,510*%in100mi + 3,795*VITFSnum + 0.001*POP100 - 8,587*WACAORAK + 24,102*POP25/100 + 13,674*TOWDUM

- BA = based aircraft at the airport
- BA2 = the square of based aircraft at the airport
- %in100mi = based aircraft as a percentage of total based aircraft at GA airports within a 100 mile radius
- VITFSnum = number of 14 CFR Part 141 certified flight schools at the airport
- POP100 = population within a 100 mile radius of the airport
- WACAORAK = adjustment factor if state is WA, CA, OR, or AK (=1 if so)
- POP25/100 = ratio of population within 25 miles over population within 100 miles of the airport
- TOWDUM = adjustment factor if a control tower is present (=1 if so)

Based aircraft for GA model was calculated using based aircraft = 149. %in100mi was determined by finding the based aircraft (from the 5010) at airports within 100 miles of Wasilla, then summing those values and comparing the based aircraft at Wasilla to the total. The VITFSnum for Wasilla is 0, since

there are no Part 141 flight schools at Wasilla. POP100 was determined using the Missouri Census Data Center website, which allows you to find the 2010 Census population within a specified radius of any point in the United States. POP100 was increased by the 3.5% total annual population growth between 2010 and 2013 for Alaska. POP25 was determined using the same method. The WACAORAK variable is 1, since Alaska is included in this list of states. Finally, the TOWDUM value was 0 since there is no control tower at the airport. Using these values, the equation yielded an estimated 37,794 GA operations for the Wasilla Municipal Airport in 2016. The calculation sheet is shown in Appendix B.

GA operations were split 50%-50% local-itinerant. After conversations with Alaska Army National Guard, military operations were estimated to 72 for 2016 and split 60% Blackhawks, 10% King Airs, and 30% Shorts 330s. Air carriers and air taxis were assumed to be captured in the cargo operator's surveys.

Using the above analysis, the 2016 (base year) total fixed-wing operations are estimated to be 37,454, helicopter operations are estimated to be 340, and total operations are estimated to be 37,794. See Table 1-5. A detailed breakdown of the forecast is provided in Appendix A

An average annual growth rate of 3.0% was applied to the base year data to project aviation activity for the 20-year planning period. The 3.0% growth rate for this forecast is slightly lower than the City of Wasilla's recent population growth rate of 3.37% for the past 13 years, lower than the MSB's recent growth rate of 3.71%, about the same as ISERs BASE CASE scenario of 3.06% and above the Alaska Department of Labor's projected growth rate of 2.4% for the Mat-Su Borough.

Table 1-5. Aviation Activity Forecast Summary

	Specified Base Year: 2016			Growth Rate: 3%		
	Forecast Operations per Year					
	2016	2021	2026	2031	2036	2041
FIXED WING OPERATIONS						
ITINERANT						
Commuter/Air Taxi/Cargo	**390**	**570**	**721**	**829**	**953**	**1,098**
Total Military Operations	**32**	**34**	**37**	**42**	**47**	**53**
GA, Itinerant	18,426	19,532	21,361	24,763	28,707	33,279
TOTAL ITINERANT OPERATIONS	**18,848**	**20,136**	**22,119**	**25,634**	**29,707**	**34,431**
LOCAL						
Total Commercial Operations	**180**	**191**	**209**	**242**	**280**	**325**
GA , Local	18,426	19,532	21,361	24,763	28,707	33,279
TOTAL LOCAL OPERATIONS	**18,606**	**19,913**	**21,778**	**25,247**	**29,268**	**33,930**
TOTAL FIXED WING OPERATIONS	**37,454**	**40,049**	**43,897**	**50,881**	**58,975**	**68,360**
HELICOPTER OPERATIONS						
Commuter/Air Taxi	300	318	348	403	468	542
Military	40	42	46	54	62	72
TOTAL HELICOPTER OPERATIONS	**340**	**360**	**394**	**457**	**530**	**614**
TOTAL OPERATIONS	**37,794**	**40,409**	**44,292**	**51,338**	**59,506**	**68,974**
Instrument Operations	**1,843**	**1,953**	**3,291**	**2,136**	**2,476**	**2,871**
Based Aircraft						
Single Engine (nonjet)	140	162	188	218	253	293
Multi Engine (nonjet)	6	6	7	8	9	11
Jet Engine	0	0	0	0	0	0
Helicopter	3	3	3	4	5	5
Other	0	0	0	0	0	0
TOTAL BASED AIRCRAFT	**149**	**172**	**199**	**230**	**267**	**309**

1.7 Enplanements

Wasilla Municipal Airport has no scheduled air service because of its proximity to nearby Ted Stevens Anchorage International Airport located 42 miles away. Reported chartered passenger services to and from Wasilla by certified air carriers between 2006 and 2016 is shown in Table 1-6. As is shown in the table, enplaned air taxi passengers vary significantly from year to year, with no distinguishable pattern, this is related to the fact that no air taxi carrier is based in Wasilla. For this reason, enplanements are not considered in this forecast. Should air taxi service be established, the forecast should be revised to include enplanements.

Table 1-6. Wasilla Enplanements (FAA Air Carrier Activity Information System Database)

Year	Enplanements
2006	384
2007	7
2008	0
2009	105
2010	0
2011	0
2012	0
2013	208
2014	35
2015	22
2016	-

1.8 Comparison with Other Forecasts

The 2003 Wasilla Airport master plan estimated 37,581 operations for 2017 using their growth rate of 3%. The 2012 Wasilla Airport master plan estimated 57,400 operations for 2014 using 140 based aircraft. The 2014 Birchwood Airport FAA terminal area forecast estimated 70,188 using 465 based aircraft. The 2016 Palmer Airport master plan estimated 34,083 total operations for 2014 using 137 based aircraft. This forecast estimates total operations at Wasilla as 37,794 for year 2016.

1.9 Comparison with the APO TAF

FAA Office of Aviation Policy and Planning (APO) provides forecasts of aviation activity at public airports. The APO terminal area forecast (TAF) for Wasilla Municipal Airport was obtained through their website and Table 1-7 shows the comparison between the current airport forecast and the TAF published by APO.

The difference between this forecast and the APO TAF is likely due to the differences in the accuracy of the source data. This forecast is based on site visits, research, interviews, and a deeper study of the specific activity at the Wasilla Airport. The source of the APO TAF data is 5010 data with no anticipated growth for operations.

Table 1-7. Comparison of Airport Forecast and Terminal Airport Forecast

	Airport Forecast (year)	Airport Forecast (AF)	Terminal Airport Forecast (TAF)
Passenger Enplanements			
Base Yr.	2016	22	200
Base Yr. +5 yrs.	2021	26	210
Base Yr. +10 yrs.	2026	30	221
Base Yr. +15 yrs.	2031	34	232
Base Yr. +20 yrs.	2036	40	244
Commercial Operations			
Base Yr.	2016	390	1,042
Base Yr. +5 yrs.	2021	1,122	1,042
Base Yr. +10 yrs.	2026	1,293	1,042
Base Yr. +15 yrs.	2031	1,491	1,042
Base Yr. +20 yrs.	2036	1,721	1,042
Total Operations			
Base Yr.	2016	37,794	24,200
Base Yr. +5 yrs.	2021	50,184	24,200
Base Yr. +10 yrs.	2026	58,168	24,200
Base Yr. +15 yrs.	2031	67,423	24,200
Base Yr. +20 yrs.	2036	78,153	24,200

1.10 Conclusions

Based on the estimated 72 operations for Runway Design Code (RDC) B-II and 248 operations for RDC A-III aircraft for the base year 2016 and the expected growth, see detailed forecast in Appendix A, we recommend that Runway 4-22 improvements continue to be designed to RDC B-II standards. While the current use does not support RDC B-II as design aircraft. The airport has seen an interest in serving larger aircraft at the airport as is demonstrated by Transnorthern Aviation entering into long term leases of three lots at the airport. If development on the east side of the runway were to be based on RDC B-I separation standards, this would limit larger aircraft in the future. The total annual aircraft operations are estimated to be 78,153 during the 20-year planning period, which falls well below the airport capacity of 130,000 annual operations.

References

Federal Aviation Administration. Air Carrier Activity Information System Database. http://www.faa.gov/airports/planning_capacity/passenger_allcargo_stats/passenger

Federal Aviation Administration. Office of Aviation Policy and Planning (APO) terminal area forecast (TAF). Wasilla and Birchwood Airports. https://aspm.faa.gov/main/taf.asp

Goldsmith, Scott., HDR Alaska, Inc., and Northern Economics. Economic and Demographic Projections for Alaska and Greater Anchorage 2010–2035. December 2009.

Howell, David. Alaska Population Trends 2012 to 2042, June 2014.

State of Alaska. Department of Labor and Workforce Development, Research and Analysis Section.

Appendix A – Detailed Aviation Forecast

WASILLA AIRPORT (IYS) AVIATION FORECAST

Specified Base Year: 2016 Growth Rate: 3%

	ARC	Forecast Operations per Year 2016	2021	2026	2031	2036	2041
PASSENGER ENPLANEMENTS							
Commute/Air Taxi							
Grasshopper Aviation		22	26	30	34	40	46
Everts Alaska		0	0	0	0	0	0
Total Enplanements		**22**	**26**	**30**	**34**	**40**	**46**
FIXED WING OPERATIONS							
ITINERANT							
Commuter/Air Taxi/Cargo							
Department of Natural Resources							
Aerocommander (Shrike) 500	B-II	20	21	23	27	31	36
Pilatus PC-7	A-I	20	21	23	27	31	36
DHC-2 Beaver	A-I	10	11	12	13	16	18
Everts Alaska							
McDonnell Douglas DC-6	B-III	0	0	52	60	70	81
Embraer EMB120 Brasilia	B-II	0	0	412	478	554	642
Curtiss Wright C-46	B-III	0	0	12	14	16	19
FedEx							
ATR-72	B-III	0	0	8	9	11	12
Transnorthern Aviation							
MD Super DC-3	A-III	48	48	48	48	48	48
Beechcraft 99	B-I	0	0	0	0	0	0
Metroliner III	B-II	0	0	0	0	0	0
TN operations stated if runway extended							
MD Super DC-3	*A-III*	*0*	*160*	*185*	*215*	*249*	*289*
Former Bush Air Cargo operations							
MD Super DC-3	*A-III*	*200*	*212*	*232*	*269*	*312*	*361*
Hagelund Aviation Services/Era							
Cessna F406 Twin Caravna	B-I	28	30	32	38	44	51
Cessna 208B Caravan	A-II	24	25	28	32	37	43
Beech 1900	B-II	20	21	23	27	31	36
Piper PA-31 Navajo	B-I	20	21	23	27	31	36

Commercial operations cont.	ARC	2016	2021	2026	2031	2036	2041
Lifemed Alaska							
King Air B200	B-II	0	0	8	9	11	12
Total Commercial Operations		**390**	**571**	**1,122**	**1,293**	**1,491**	**1,721**
Military							
Alaska Army National Guard							
C-12 King Air	B-II	12	13	14	15	16	17
Sherpa C-23/ Shorts	B-II	20	21	23	27	31	36
Total Military Operations		**32**	**34**	**37**	**42**	**47**	**53**
GA, Itinerant	A-I	10,397	11,021	12,053	13,973	16,198	18,778
TOTAL ITINERANT OPERATIONS		**10,819**	**11,625**	**13,212**	**15,307**	**17,737**	**20,553**
LOCAL							
Commuter/Air Taxi							
Grasshopper Aviation							
Maule M-7/Cherokee 6	A-I	180	191	209	242	280	325
Total Commercial Operations		**180**	**191**	**209**	**242**	**280**	**325**
GA , Local	A-I	31,192	33,064	36,160	41,919	48,596	56,336
TOTAL LOCAL OPERATIONS		**26,635**	**33,445**	**36,577**	**42,403**	**49,157**	**56,986**
TOTAL FIXED WING OPERATIONS		**37,454**	**45,070**	**49,789**	**57,711**	**66,894**	**77,539**
HELICOPTER OPERATIONS							
Commuter/Air Taxi							
Prism Helicopters							
Boeing MD500		150	159	174	202	234	271
Euro AS350 B2/B3		75	80	87	101	117	135
Bell 205		75	80	87	101	117	135

Helicopter operations cont.	**ARC**	2016	2021	2026	2031	2036	2041
Military							
Alaska Army National Guard							
UH-60L Blackhawk		40	42	46	54	62	72
TOTAL HELICOPTER OPERATIONS		**340**	**360**	**394**	**457**	**530**	**614**
TOTAL OPERATIONS		**37,794**	**45,431**	**50,184**	**58,168**	**67,423**	**78,153**
Instrument Operations		**1,040**	**1,102**	**3,291**	**1,205**	**1,397**	**1,620**
Based Aircraft							
Single Engine (nonjet)		140	162	188	218	253	293
Multi Engine (nonjet)		6	6	7	8	9	11
Jet Engine		0	0	0	0	0	0
Helicopter		3	3	3	4	5	5
Other		0	0	0	0	0	0
TOTAL BASED AIRCRAFT		**149**	**172**	**199**	**230**	**267**	**309**

Appendix B –GA Operations Forecast

GA Operations Regression Equation, Equation 13, All 232 Airports, (GRA, Inc., July 2001)

Factor		Variable	Variable for Wasilla	Result
-571	x	1		-571
355	x	BA	149	52,895
-0.46	x	BA2	22,201	-10,212
-40,510	x	%in100mi	0.096565133	-3,912
3,795	x	VITFSnum	0	0
0.001	x	Pop100	418,376	418
-8,587	x	WACAORAK	1	-8,587
24,102	x	Pop25/100	0.322076314	7,763
13,674	x	TOWDUM	0	0
Total OPS				**37,794**

	Variable Definition
OPS	Annual GA Operations at an airport
OPSBA	Annual GA Operations per Based Aircraft (BA) at an airport
BA	Total Based Aircraft at an airport
BA2	Based Aircraft squared, which is included since airport operations tend to increase as the number of based aircraft increases, but at a slower and slower rate
PCI	Per Capita Income in the county in which the airport is located
EMP	Non-agricultural Employment in the airport's county
FAR139	Categorical variable, 1 if airport is certificated for commercial air carrier service, 0 otherwise
WST	Categorical variable, 1 if airport is located in FAA Western Region (excluding Alaska), 0 otherwise
AAL	Categorical variable, 1 if airport is located in Alaska, 0 otherwise
R12	Categorical variable, 1 if airport is located in FAA New England Region or FAA Eastern Region, 0 otherwise
BAE100	Categorical variable, 1 if airport based aircraft is 100 or greater, 0 otherwise
Pop25	Population within 25 miles, by U.S. Census
Pop50	Population within 50 miles, by U.S. Census
Pop100	Population within 100 miles, by U.S. Census
Pop25/100	Ratio of Pop25 to Pop100, proportion, between 0 and 1, by census tract, U.S. Census
Se BA/BA	Single engine based aircraft/all based aircraft, proportion, between 0 and 1, from Terminal Area Forecast (TAF)
TOWDUM	1 if towered airport, 0 otherwise, from TAF
%in50mi	Percentage of based aircraft among based aircraft at GA airports within 50 miles, Proportion, between 0 and 1, from TAF and Mapinfo software
%in100mi	Percentage of based aircraft among based aircraft at GA airports within 100 miles, Proportion, between 0 and 1, from TAF and Mapinfo software
VITFS	Presence or absence of FAR141 certificated pilot school, FAA Flight Standards VITALS database
VITFSnum	Number of FAR141 certificated pilot schools on airport, 1 if FAR141 certificated pilot school present, 0 otherwise, FAA Flight Standards VITALS database
VITFSemp	Number of Employees of FAR141 certificated pilot schools at airport, FAA Flight Standards VITALS database
WACAORAK	1 if state is CA, OR, WA, or AK, 0 otherwise

Appendix C – Wind Analysis

Wind Analysis

Wind data for the time period January 2006 to January 2016 was acquired from the Western Regional Climate Center. The data was analyzed using the Wind Rose tool provided on FAA's Airport GIS website. Wind was analyzed for crosswind at three levels 10.5 knot, 13 knot, and 16 knot. The resulting Wind Rose show that runway 4-22 does not cover 95% of all wind observations at either level studied. The Allowable Crosswind Component for Runway Design Code B-II is 13 knots. During the time period studied, Runway 4-22 provided coverage for 91.64% of the time for the 13kt. crosswind component. FAA Design criteria in AC150/5300-13A Appendix 2 states that when the runway configuration provides less than 95% coverage, a cross wind runway may be considered.

Traffic at Wasilla airport is predominantly General Aviation with majority of traffic occurring during the warmer months of the year. These months also see less of the strong winds that offer a cross wind component exceeding 13 kt. In the ten-year period studied only 1846 observations exceed a 21 kt. wind speed which is considered a strong breeze or higher on the Beaufort Scale. Twenty-three of these observations occurred during the months May through August or about 1.25%. Four times that many observations occurred in September. The remaining 94 percent of observations occurred during the months October through April, the season with much lower traffic volumes. Based on this analysis it was determined that during the high traffic months there is only a small portion of wind events that are strong enough to cause a cross wind component in excess of 13 kt. The recommendation is that no crosswind runway is considered until such a time when there is a strong indication from airport users that a cross wind runway is needed.

During the wind study period, January 2006 to January 2016, 2,495 of 223,539 weather observations were recorded where the visibility was ¾ mile or less. In the study period Wasilla Airport experienced IFR conditions at 1.11% of the time.

Table C-1. Wind Data Table

Runway	10.5 kt.	13 kt.	16 kt.
4/22	88.41	91.64	94.49
4/22 IFR	97.87	98.46	99.17

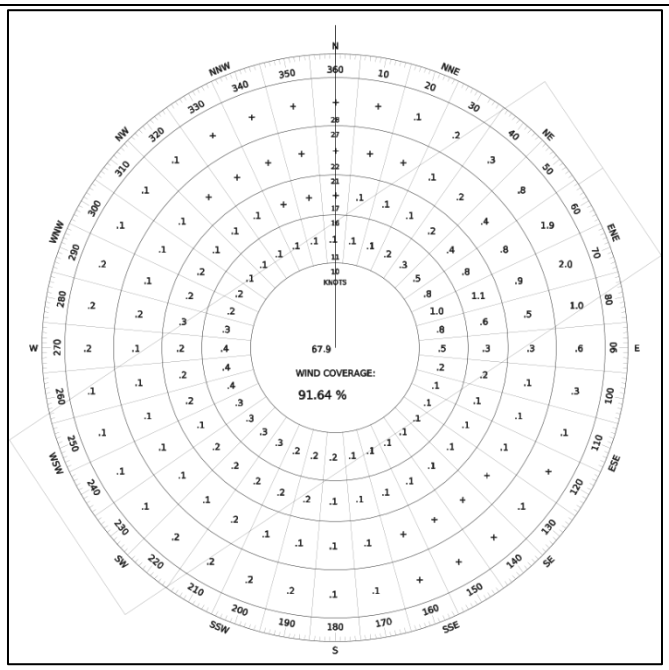

Figure C-1 Wasilla All Weather Wind Rose

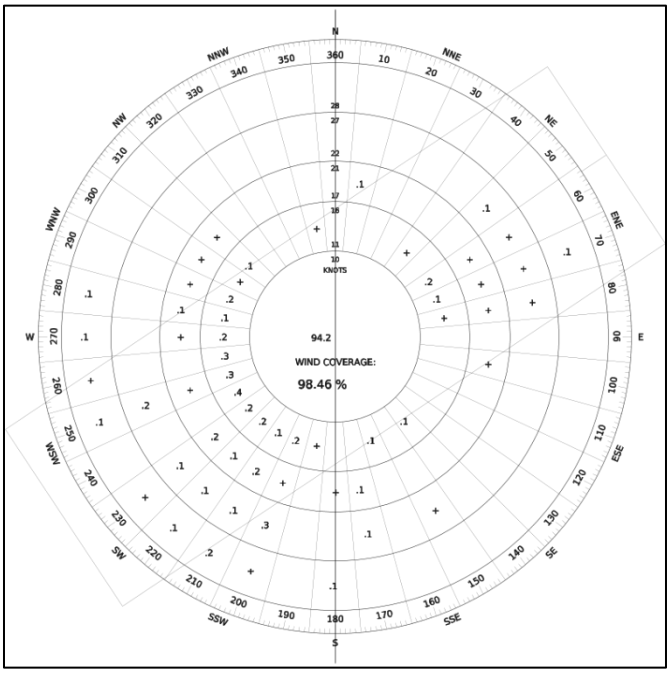

Figure C-2 Wasilla IFR Wind Rose