

WATERVILLE AIRPORT

AIRPORT LAYOUT PLAN AND NARRATIVE REPORT

JUNE 2007

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Chapter 1: Introduction

This airport layout plan and narrative report (ALP) for Waterville Airport is sponsored by the Port of Douglas County. It examines existing conditions at Waterville Airport, forecasts future aviation activity over a 20-year time period, recommends improvements to ensure that the airport can serve projected demand and identifies sources of funds to pay for those improvements.

This report focuses on:

- The size and layout as well as the existing and planned uses of Waterville Airport.
- The extent to which the airport conforms to Federal Aviation Administration (FAA) design recommendations and, where such recommendations are not met, whether they can be met, considering site constraints.
- Projected facility development and whether that development can be accomplished in conformance with FAA design recommendations.
- Enhancements at Waterville Airport that will increase the airport's value to the community and the surrounding area.

In preparing this ALP, Airside has reviewed the following:

- Washington State Department of Transportation/Aviation Division airport database.
- Federal Aviation Administration (FAA) Form 5010.
- Applied Pavement Technology Inc. pavement report dated February 2006.

Primary funding for this report has been provided by the Washington State Department of Transportation's Aviation Division (WSDOT/AD). It has been prepared by Airside with assistance from a volunteer steering committee seated by the town of Waterville and the Port of Douglas County. Review of the interim report, as well as ongoing technical assistance, has been provided by WSDOT/AD.

This ALP has been prepared according to WSDOT/AD guidelines contained in Appendix E of the aviation division's Grant Procedures Manual.

Table 1: Waterville Airport ALP Steering Committee

Member	Affiliation
Doug Provo	Manager, Port of Douglas County
Phil Johnson	Local aviation business owner
Alan Loeb sack	Commissioner, Port of Douglas County
Dave Barnes	Local business owner
Kasey Edgar	Member, Waterville Town Council
Kim Hunter	Waterville Chamber of Commerce

In writing this report we have followed the guidelines of the *Chicago Manual of Style* and the *AP Stylebook*, the two most widely used stylebooks in American publishing. These stylebooks call for different practices than are sometimes used in these kinds of plans, particularly with respect to capitalization of cities, as well as government agencies and offices.

Chapter 2: Inventory and current activity

2.1 GENERAL

Douglas County

Despite its location in central Washington, Douglas County is largely surrounded by water. The county's western and northern borders are defined by the Columbia River, while its eastern border is marked by Banks Lake. To the south and southeast, Douglas County shares a border with Grant County. Terrain elevations in the county range from 600 feet to more than 4,000 feet above sea level. The majority of the county's land is farmland and orchards. With its 1,820 square miles, Douglas County is the 17th largest county in the state.

Town of Waterville

The farming community of Waterville is located on U.S. Highway 2 and sits at an elevation of 2,622 feet atop the Waterville Plateau in the far western part of the county. The town, which has a population of 1,170, has been the seat of government of Douglas County since 1887.

Climate

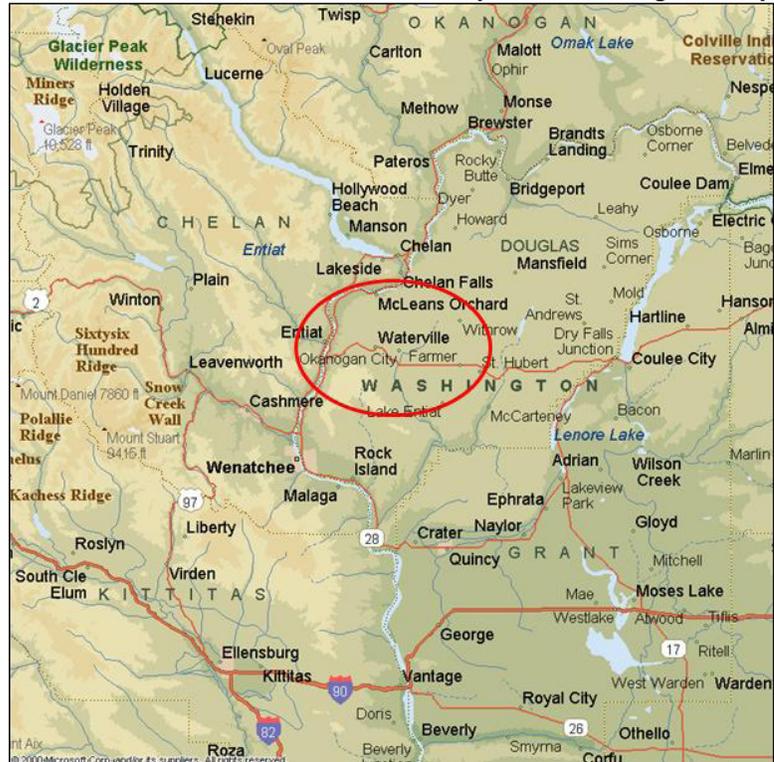
Douglas County has a generally arid climate, with temperatures ranging from a low of approximately 16 degrees Fahrenheit in the winter to a high of approximately 89 degrees in the summer. High temperatures in Waterville average 30 degrees Fahrenheit in January and 82 degrees in July. The town receives an average of 42 inches of snowfall a year and 11 inches of rain per year.

2.2 SOCIOECONOMIC DATA

Population

Douglas County's population has grown steadily over the past 15 years, rising from 26,205 in 1990 to 36,257 in 2006. Currently, Douglas County is the 26th most populous county in the state. The county's population density of 10.6 people per square mile makes it one of the least populous counties in the state. State officials expect the

Map 1: Waterville regional map



county's population to grow to 47,428 by 2025 and the Douglas County Regional Council estimates the county's population growth to be even higher, reaching a total of 53,850 by 2022.

Economy

The economy of Douglas County is based primarily on agriculture. Apples and wheat are the primary crops. Indeed, more than a third of the county's workforce is employed in the agricultural sector. The next highest employment sector is retail sales, which supports less than a third as many jobs as agriculture.

2.3 AIRPORT SITE – GENERAL

Waterville Airport is located on 35.34 acres of property owned by the Port of Douglas County. The airport, which is one-half mile northeast of the center of Waterville and adjacent to the town's boundary, was first used as a landing area in 1924. The airport was owned by the town until 1996, at which time its property was transferred to the Port of Douglas County. All structures on the airport are privately owned.

2.4 LAND-USE AND PLANNING

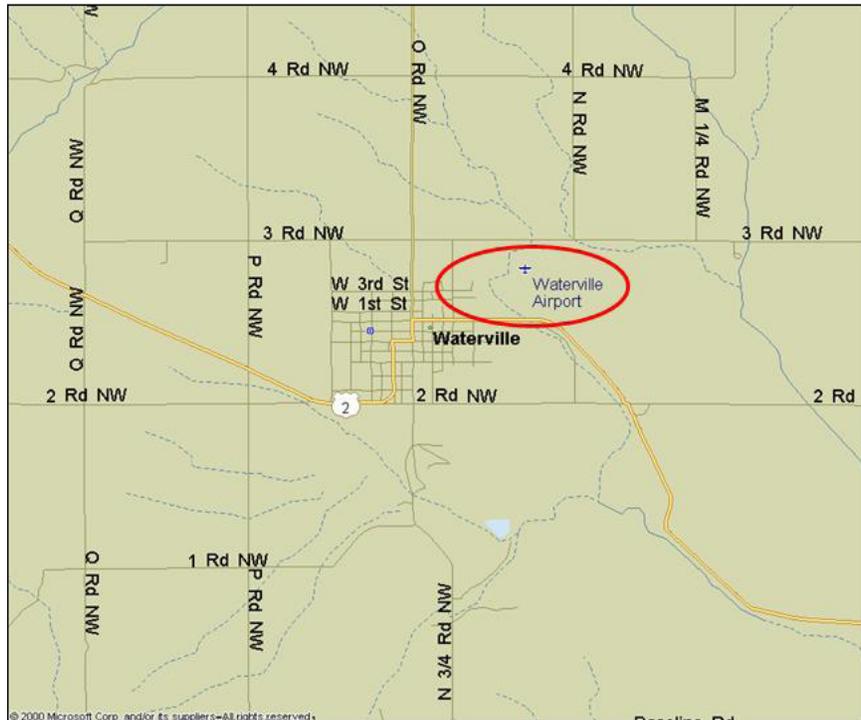
Purpose

This section describes existing land-use, zoning and relevant jurisdictional characteristics on and in the vicinity of Waterville's airport. Recommendations related to these elements are contained in Chapter 4. Additional information is contained in the existing conditions diagram, displayed later in this chapter, and in drawings C1.6 and C1.7 of the airport layout plan drawing set.

Area description

Located in the northeast quadrant of the town, a majority of Waterville Airport is outside corporate limits but within Waterville's urban growth area.

Map 2: Waterville local map



The westernmost airport parcel is incorporated. Douglas County is responsible for unincorporated lands outside of the town of Waterville, while the town has jurisdiction over land use controls, development regulations and zoning for all of the town property including the airport.

Washington Growth Management Act

Chapter 36.70A of the Revised Code of Washington (RCW), titled "Growth Management – Planning by Selected Counties and Cities" (GMA), imposes planning requirements on counties and cities based on their population or rates of population growth. The law, where applicable, requires every county, city and town to adopt comprehensive plan policies and development regulations that will discourage the siting of incompatible uses adjacent to general aviation airports that are operated for the benefit of the general public, whether publicly owned or privately owned.

Douglas County and Waterville have coordinated their planning efforts to provide for planned

growth. Both jurisdictions have comprehensive plans. Waterville’s comprehensive plan is formally recognized as an element of Douglas County’s comprehensive plan. As a result, both jurisdictions identify the same land uses and zoning designations in Waterville’s urban growth area. Both plans provide for agricultural use on unincorporated land for a 20-year planning horizon and designate the airport property and adjacent properties as for public use.

Douglas County Comprehensive Plan

Douglas County’s comprehensive plan recognizes the existence of Waterville Airport but does not contain any policies related to its status as an essential public facility. Also, the county plan does not state that the airport should be protected from incompatible land uses or construction that would erode the usability of airspace near the airport.

The county plan contains two policy statements that generally relate to county airports. These are shown below in italics.

From the Douglas County Comprehensive Plan Transportation Element:

T-7. Ensure that alternative transportation modes, particularly trails for pedestrians and non-motorized users, airport and rail facilities, are identified and considered in the transportation element.

T-8. In reviewing development proposals, and as new and existing roadways are improved and built, safe bicycle and pedestrian systems as well as protection of airport runways and operations will be considered.

Existing land-use characteristics

Waterville Airport is segregated from the residential areas of the community of Waterville. Airport-related and industrial uses surround the airport property to the west and south. Open land

is to the east and north. One parcel directly south of the airport is privately owned and contains a hangar. This property is the home office of Johnson Air Service (JAS) and will be described further in this plan. Douglas County, the town of Waterville and the port district own properties south and west of the airport. Unincorporated land north, south and east of the airport runway is used for agriculture purposes, mostly crop production.

Table 2: Industry sectors

North American Industry Classification System (NAICS) Sector	Establishments	Employees
Agriculture, Forestry, Fishing and Hunting	345	4,129
Mining	0	0
Utilities	0	0
Construction	120	820
Manufacturing	10	209
Wholesale Trade	25	371
Retail Trade	73	1,146
Transportation and Warehousing	19	339
Information	5	48
Finance and Insurance	29	160
Real Estate and Rental and Leasing	25	87
Services	29	196
Federal Government	7	211
State Government	12	132
Local Government	32	1,701
Not Elsewhere Classified	7	45

Source: Covered Employment & Wage Data, First Quarter 2004 Washington State Employment Security Department
 Note: The North American Industry Classification System (NAICS) was developed jointly by the U.S., Canada, and Mexico. It is a comprehensive classification system which groups establishments into industries based on their primary activities, both goods producing and service producing.

Easements

Several easements run through airport property or connect to it. Approximately 650 feet south of the runway’s east end is a water reservoir site for the town of Waterville. From this site, a 50-

foot-wide easement runs north into the airport property allowing access for construction, maintenance, ingress and egress. Also, a 50-foot-wide pipeline easement runs northeast from the southwest part of airport property to a town-owned parcel. It then continues southeasterly to Waterville’s water reservoir site. This easement allows access to the pipeline for construction, maintenance and operation. Lastly, a 30-foot-wide access easement runs along the south side of the runway connecting the parcel owned by Waterville to Douglas County Road Number 9.

Zoning

Land uses and development within the town are regulated by Waterville’s zoning ordinance. In a coordinated effort, Douglas County has zoned airport parcels in Waterville’s urban growth area for the same uses as the parcels that are within the town. All of the airport’s property is zoned industrial. Adjacent parcels south and west are zoned for public use. The public-use district is intended to establish areas for public and semi-public uses and to ensure those uses do not conflict with surrounding uses. In addition to the airport, a variety of uses are permitted, including industrial uses such as recycling centers, institutional uses such as libraries and museums, and public-assembly related uses such as clubs, lodges and community centers. Outside of Waterville and its urban growth area, all properties are zoned “dryland agricultural” under Douglas County’s zoning ordinance. Intended to preserve the county’s agricultural uses as viable commercial operations, predominant zoned uses in this district are grain crop and livestock production. A maximum of one dwelling unit per 20 acres is permitted in this district. Uses that support agricultural operations are permitted.

2.5 RECENT AIRPORT REVITALIZATION

No major infrastructure projects have occurred at Waterville Airport since 1998. In 1997 most paved surfaces at the airport, including the runway, were overlaid with 2 inches of hot-mix asphalt. In 1998 an asphalt seal mixture was applied to the surfaces that were overlaid.

2.6 AIRPORT CLASSIFICATION – THE ARC SYSTEM

Both the Federal Aviation Administration (FAA) and the Washington State Department of Transportation/Aviation Division (WSDOT/AD) use what is termed the “airport reference code,” or ARC system, to categorize airports. The ARC system provides a method for applying dimensional safety and protection standards to airports according to the aircraft those airports generally serve. Dimensional standards include such items as runway-to-taxiway separation distances, sizes of runway safety areas (RSAs) and sizes of runway object-free areas (ROFAs). The ARC system uses the concept of a critical or design aircraft, described as an aircraft that controls one or more airport design features based on the aircraft’s approach speed and wingspan. Five hundred annual itinerant

Table 3: The ARC system

AIRCRAFT APPROACH CATEGORY APPROACH SPEED IN KNOTS			AIRPLANE DESIGN GROUP WINGSPAN IN FEET		
CATEGORY	AT OR MORE THAN	LESS THAN	WINGSPAN	AT OR MORE THAN	LESS THAN
A		91	I		49
B	91	121	II	49	79
C	121	141	III	79	118
D	141	166	IV	118	171
E	166		V	171	214
			VI	214	262

operations are required for an aircraft to be considered the critical aircraft for an airport.

Letter designations from A to E represent five aircraft approach speed categories ranging from less than 91 nautical miles per hour (knots) to 166 knots or more. Roman numeral designations from I to VI represent aircraft wingspans of from less than 49 feet to 261 feet. There is a special designation, used in ARC categories A and B, for airports that serve aircraft weighing less than 12,500 pounds. This designation attaches the term “small” to the ARC letter/numeral combination.

The Washington State Continuous Airport System Plan (WSCASP) database shows Waterville as having an ARC classification of B-I (small). This category includes aircraft with approach speeds of at least 91 nautical miles (knots) per hour and less than 121 knots per hour, wingspans of less than 49 feet and weights under 12,500 pounds. A review of Waterville Airport’s operations conducted for this plan indicates that, except for the airport’s based agricultural operator, it generally serves aircraft in the A-1 and B-I ARC categories and that weigh less than 12,500 pounds.

The airport’s most active aircraft operator is Johnson Air Service (JAS). JAS was founded in 1985 and is based on property that is adjacent to the airport but within the town of Waterville. The company provides comprehensive agricultural spraying services. JAS operates the Eagle spray aircraft, which has an approach speed of approximately 65 knots, a wingspan of 55 feet and a weight of less than 12,500 pounds. This aircraft is, therefore, classified as an A-II (small) in the ARC system.

Except for the Eagles operated by JAS, none of the models of based aircraft or itinerant aircraft uses the airport often enough to meet the FAA’s requirement of 500 annual operations (consisting of a take-off or a landing) for an aircraft to be considered a critical or design aircraft. JAS conducts approximately 2,000 flight operations

Photo 1: JAS Eagle



per year. The Eagle operated by JAS is the largest aircraft in terms of wingspan that uses Waterville Airport. It is identified as the existing and ultimate design aircraft for this plan.

NPIAS

Waterville Airport is not listed on the 2005–2009 National Plan of Integrated Airport Systems (NPIAS) and is, therefore, ineligible to apply for federal grant funds from the FAA. The Washington State Department of Transportation’s Aviation Division is Waterville Airport’s primary source of grant funds.

Wind Coverage

Information regarding prevailing wind is not available from the National Oceanic and Atmospheric Administration (NOAA) for Waterville Airport. Because of the absence

of wind data, a windrose has not been constructed for the airport in this plan. Local observers note that prevailing winds are from the west-northwest and that, as in many areas of Washington State, strong south winds are sometimes experienced. Since the runway is oriented almost directly east-west and prevailing winds are from the west-northwest, pilots using Runway 25 experience varying degrees of right-side quartering cross winds.

Table 4: Airport data

Name	Waterville Airport
Location number	2S5
FAA Designation	26457.*A
Owner	Port of Douglas County
Acreage	35.34 acres
Service level (on the NPIAS system)	General aviation (GA)
Reference code existing	A-II (Small)
Design aircraft	Eagle agricultural aircraft
Elevation	2,640 feet
Reference point (location) NAD83 NAVD88	Latitude: 47 deg. 39' 21.62" N Longitude: 120 deg. 03' 23.27" W
Mean maximum temperature	82.2 degrees (July)
Approach category	Visual
Navigation aids	Wind indicator/rotating beacon
Approach guidance	PAPI – Runway 25
Wind coverage	n/a

2.7 EXISTING AIRSIDE FACILITIES

Paved surfaces

Runway and taxiways

Waterville Airport has a single runway oriented on magnetic headings 070 and 250 degrees (Runway 7/25). It is 2,978 feet long and 50 feet wide. The runway is constructed of asphalt. The

west end of the runway (Runway 7) is marked as a displaced threshold 270 feet from the runway end. Displaced thresholds are marked on runways to provide approach slope clearance over objects.

Objects that are most critical to approach slope clearances are called controlling obstructions. Roads such as the one west of the runway are considered 15-foot high obstructions. Since the displaced threshold was marked on the runway, the road (the controlling obstruction) has been moved west approximately 45 feet. Consequently, the displacement is currently marked 45 feet further east that it needs to be to provide approach clearance over the road.

The approach slope at the Runway 25 end is unencumbered.

A 622-foot parallel taxiway is located on the south side of the west end of the runway. The taxiway's width varies from 80 feet at the west end to 22 feet at the east end. The taxiway's centerline (using the narrowest location of the taxiway as a base line) is 130 feet from the runway's centerline.

At the east end of the parallel taxiway a 533-foot-long, 20-foot-wide taxiway extends perpendicular to the runway in a southerly direction. The taxiway provides access to an aircraft parking area and additional taxilanes. This plan designates the taxiway that is parallel to the runway as Taxiway A and the taxiway that is perpendicular to the runway as Taxiway B.

Aircraft apron

An aircraft parking apron is located east of Taxiway B. It is 209 feet long by 168 feet wide. Ten aircraft parking spaces are installed in an east-west direction along the south side of the apron. Four parking spaces are installed in an east-west direction along the north side of the apron.

Additional paved surfaces

A taxiway connector extends from Taxiway A to the west end of the runway. Two taxilanes

extend from near the south end of Taxiway B in a westerly direction to Johnson Air Service which is off airport property. A 270-foot taxilane extends east from the south end of Taxiway B.

Photo 2: Runway 25 end looking east



An aircraft pullout, commonly called a turn-around, is located at the east end of the runway on its south side. This paved addition to the runway provides room for aircraft to reverse direction.

Paved surfaces condition

Table 5 indicates the condition of paved surfaces at Waterville Airport as reported by Applied Pavement Technology Inc. (APT) in a pavement management report published in February 2006. The table shows both the designations given to pavement sections by APT and pavement designations that have been determined for this plan. A diagram of the paved surface conditions is included further in this section and in the appendix to this plan. Pavement condition index (PCI) numbers indicate overall condition of each section of pavement using a numerical system of 0 (failed) to 100 (excellent).

Pavement markings

Pavement markings at the Runway 25 end consist of runway numerals. At the Runway 7 end are displaced threshold arrows and a threshold bar but there is no runway-end numeral. The runway has a white, dashed centerline. Fog lines line both edges. Taxiway B and taxilanes B1, B2 and B3 have yellow centerlines. There are no hold lines where Taxiway A or Taxiway B connect with the runway.

Airport lighting and navigation aids

Runway lights

The runway is equipped with 26 medium-intensity runway edge lights (MIRLs) and 12 split red/green threshold lights. All lights are mounted on in-ground support stakes.

Taxiway reflectors

A few orange and blue taxiway reflectors are located along taxilanes B1 and B2 and randomly along portions of Taxiway B. There are no other reflectors or lights along the taxiway or taxilane system.

Photo 3: Runway hold-line sign



Paved surfaces diagram

Precision Approach Path Indicator (PAPI)

A Precision Approach Path Indicator (PAPI) system that provides visual glide slope guidance for pilots during landing approaches to runway 25 is located 244 feet from the east end of the runway and 60 feet south of the runway’s centerline. The PAPI system is mounted on non-frangible supports.

Wind indication

Waterville Airport has one lighted wind indicator. It is located on top of the building identified in this plan as Structure 1, which is outside of the airport’s boundary at the southwest side of the facility. There is no other apparent connection between Structure 1’s uses and the airport. An unlighted wind indicator is located on Structure 3, the JAS hangar. An aircraft-shaped wind indicator is located 950 feet from the west end of the runway and 185 feet south of the centerline.

Airport rotating beacon

A rotating beacon is located on top of Structure 3, the JAS hangar.

Light activation

Runway lights are activated by a light sensor and are on at all times of darkness.

Signage

The following signs are installed at Waterville Airport:

- An entry sign indicating that the airport is owned by the Port of Douglas County.
- A runway hold-line sign stating “7” and “25” at a location where Taxiway B connects with the runway.
- Signs on both sides of the runway at approximately its mid-point indicating “1/2 way.” Signs so-marked are used to notify departing and arriving pilots that they have used one-half of the runway.
- A sign located east of Taxiway B near its south end that directs pilots to a pilots’ lounge.

Table 5: Pavement summary

Airport layout plan designation	Applied Pavement Technology Inc. designation	Total square feet	Surface material	Pavement condition PCI 2005
Runway (west section)	R07WV-01	17,250	AC	84
Runway (center and east sections)	R07WV-02	132,500	AC	83
Taxiway A (west section)	A01WV-01	8,400	AC	20
Taxiway A (west/central section)	A01WV-02	9,450	AC	19
Taxiway A (east/central section)	T03WV-01	4,693	AC	21
Taxiway A (east section)	T03WV-02	2,749	AC	52
Taxiway A1 (west end)	T01WV-01	4,485	AC	20
Taxiway B	T02WV-01	11,347	AC	100
Apron (primary area)	A02WV-01	34,937	AC	90
Apron (south area)	A02WV-02	13,397	AC	99
Taxilane B1	T04WV-01	2,488	AC	84
Taxilane B2	T05WV-01	2,440	AC	85
Taxilane B3	T06WV-01	6,141	AC	95
Pull-out (turn-around) – east)	A03WV-01	4,257	AC	95

Notes: PCC = Portland cement concrete, AC = Asphalt cement concrete, ACC = Asphalt overlay on asphalt cement. Source: Applied Pavement Technology Inc.

2.8 EXISTING LANDSIDE FACILITIES

Structures

There are eight existing structures located within the boundary of Waterville Airport. Seven of the structures are on the south side of the runway near its west end. These are south of and adjacent to Taxiway A. The remaining structure is east of Taxiway B near its south end. Due to their close proximity to the airport and, in one case, operational importance to the airport (the JAS hangar), three structures that are outside of the airport’s boundary are also listed in this narrative and depicted on this plan’s drawings. On-airport structures are identified by letters. Off-airport structures are identified by numbers. All on-airport structures are privately owned and on property leased from the Port of Douglas County. A drawing titled “Existing Conditions,” near the end of this chapter, depicts these structures.

Aircraft fuel

A fuel-dispensing system is located on the north side of Structure A, another Johnson Air Service building. The fuel grade available is AVGAS (aviation gas) 100 low-lead. The 5,500-gallon fuel supply tank is located north of Structure 3. A cardlock system is not installed. Pilots rely on Johnson Air Service staff for refueling.

Access road and gates

Vehicle access to the airport is from the south along Airport Access Road, which terminates at a lockable gate at the southern end of Taxiway B. Vehicle parking is not available on airport property but is available along the south side of Johnson Air Service.

Utilities

Power

Electrical power is connected to the airport at the Johnson Air Service building. Airport electrical service items such as runway edge and threshold lights are directed through this panel, which is separate from other JAS electrical items. Airport power is also separately metered.

Telephone

A telephone for visitors’ use is located in the Johnson Air Service building.

Table 6: Structures on and near Waterville Airport

Designation	Use	Size in square feet	Structure Ownership
On-airport structures			
A	Service building (JAS)	900	Private
B	Aircraft hangar	1,000	Private
C	Aircraft hangar	1,000	Private
D	Aircraft hangar	1,200	Private
E	Aircraft hangar	1,600	Private
F	Aircraft hangar	1,800	Private
G	Aircraft hangar	1,800	Private
H	Aircraft hangar	5,000	Private
Off-airport structures			
1	Welding business	11,000	Private
2	Welding business	2,200	Private
3	Johnson Air Service (FBO)	9,600	Private

Water/Sewage

There is no water or sewer service within the boundaries of the airport. Johnson Air Service is connected to the town of Waterville’s water system. JAS installed a septic system in 1993.

Airport maintenance equipment

There is no equipment dedicated to maintenance at Waterville Airport.

Fencing

There is no fencing at Waterville Airport. There is, as mentioned, a lockable gate at the south end of the airport.

Airport maintenance

Waterville Airport is primarily maintained by the Port of Douglas County with assistance from local volunteers.

2.9 COMPARISON OF EXISTING CONDITIONS TO FAA STANDARDS

An important aspect of this planning program is comparison of FAA-recommended standards to existing conditions at Waterville Airport. Dimensional standards published by the FAA are intended to provide an acceptable level of airport safety. This section defines specific FAA standards and relates them to existing conditions. Information related to FAA standards was obtained from FAA Advisory Circular (AC) 150/5300-13.

Airport information is from the WSDOT/AD database and from on-site measurements.

Standards definitions

Runway length – A distance that is adequate to accommodate all aircraft within a specific ARC group.

Runway width – A runway width considered adequate to provide for safe aircraft operations.

Runway safety area (RSA) – A defined rectangular surface centered on a runway prepared or suitable for reducing the risk of damage to airplanes in the event of an undershoot, overshoot or excursion from the runway. Runway safety areas shall be: 1) cleared and graded and have no potentially hazardous ruts, humps, depressions or other surface variations; 2) drained

Table 7: Airport facility data

Airport feature	Information
Runway	
Dimensions	2,978' X 50'
Gradient	0.002 percent (6' over 2,978')
Surface	Asphalt concrete
Pavement strength	
Marking	End numeral Runway 25 only/ center dashed lines/displaced threshold Runway 7 Fog lines
Lighting	Edge (26)/threshold (6 per end)
Taxiway	
Dimensions	622' X 22' – 80' (Taxiway A) 533' X 20' (Taxiway B)
Surface	Asphalt
Marking	Centerline marking, Taxiway B
Reflectors	Partial, Taxiway B
Aircraft aprons	
Dimensions	209' X 168'
Surface	Asphalt concrete
Marking	None
Lighting/reflectors	None
Tie-downs	10 on apron
Fuel system	
Available fuel	AVGAS 100LL
Tank size	5,500 gallons

by grading or storm sewers to prevent water accumulation; 3) capable, under dry conditions, of supporting snow removal equipment, aircraft rescue and firefighting equipment, and the occasional passage of aircraft, without causing structural damage to the aircraft; and 4) free of objects, except for objects that need to be located in the RSA because of their function. Objects higher than 3 inches above grade should

be constructed, to the extent practicable, on low-impact resistant supports (frangible mounted structures) of the lowest practical height with the frangible point no higher than 3 inches above grade.

Other objects, such as manholes, should be constructed at grade. In no case should their height exceed 3 inches above grade. Runway safety areas, including their conditions and their protection, are one of the highest priorities of both the FAA and WSDOT/AD.

Runway object-free area (ROFA) – An area on the ground centered on a runway provided to enhance the safety of aircraft operations by being free of objects, except for objects that need to be located within the ROFA for air navigation or aircraft ground maneuvering purposes.

Runway obstacle-free zone (OFZ) – A defined volume of airspace centered above a runway centerline. The runway OFZ is the airspace above a surface whose elevation at any point is the same as the elevation of the nearest point on the runway centerline.

Shoulder – An area adjacent to the edge of runways, taxiways or aprons providing a transition between pavement and the adjacent surface, support of aircraft running off the pavement, enhanced drainage and blast protection.

Taxiway width – A width considered adequate to accommodate aircraft in an airport's design group.

Taxiway safety area (TSA) - A defined rectangular surface centered on a taxiway prepared or suitable for reducing the risk of damage to airplanes unintentionally departing from the taxiway.

Taxiway object-free area (TOFA) - An area on

the ground centered on a taxiway provided to enhance the safety of aircraft operations by being free of objects, except for objects that need to be located within the TOFA for air navigation or aircraft ground maneuvering purposes.

Runway-to-taxiway separation - A distance between a runway centerline and an adjacent taxiway centerline considered adequate to protect operating aircraft.

Runway-centerline-to-runway-holding-position marking – A distance considered adequate to provide protection between aircraft using an active runway and aircraft waiting for takeoff from that runway.

Runway-centerline-to-aircraft-parking area – A distance considered sufficient to protect operating aircraft, parked aircraft and activities occurring around parked aircraft.

Runway protection zone (RPZ) – RPZs enhance the protection of people and property on the ground. This is achieved through airport owner control over RPZs. Such control includes clearing of RPZ areas of incompatible objects and activities. Control is preferably exercised through the acquisition of sufficient property interest in the RPZ.

Building restriction line – A line that identifies suitable building locations at airports.

2.10 ASSESSMENT OF EXISTING CONDITIONS RELATIVE TO FAA DESIGN STANDARDS

Runway length

Waterville Airport's runway is 2,978 feet long. Considering its elevation above mean sea level (2,640 feet) and the average mean/maximum temperature (82.2 degrees), the airport's runway

would need to be 4,550 feet long or 4,100 feet long to accommodate, respectively, 100 percent or 95 percent of the aircraft in the A-II (small) category. These distances have been determined by using information provided in FAA Advisory Circular 150/5325-4B, Figure 2, a copy of which is in the appendix to this narrative.

Runway width

At 50 feet, the width of the airport's runway is 10 feet less than the FAA standard.

Runway safety area

At Waterville Airport, the FAA recommended runway safety area extends 60 feet on both sides of the runway centerline and extends 240 beyond each end of the runway. Waterville's RSA does not conform with the FAA standard due to the road that is located west of Runway 7 and due to steep reductions in terrain elevation at the Runway 25 end.

The RSA standard length, based on Waterville's runway length, is 3,458 feet. The conforming RSA at the Runway 7 end is 107 feet. There is no conforming RSA at the Runway 25 end. Consequently, the actual RSA length is 3,085 feet, which is 373 feet less than standard.

The portion of the RSA that is to the sides of the runway is in conformance with the RSA standard within the area that is compliant longitudinally with the runway.

Runway object-free area

The FAA-recommended runway object-free area (ROFA) extends 125 feet from centerline on both sides of the runway and then, as with the RSA, extends 240 feet beyond the runway ends. The ROFA at Waterville Airport is not consistent with the ROFA standard at the Runway 7 end due to parked equipment and the previously mentioned road. The Runway 25 end is consistent with the FAA's ROFA standard. The FAA-recommended

ROFA length is 3,458 feet. Available ROFA length at the Runway 7 end is 92 feet. The full 240 feet of ROFA is available at the Runway 25 end. Total ROFA available is 3,310, or 148 feet less than the FAA standard.

Runway obstacle-free zone

The FAA-recommended runway OFZ extends 200 feet beyond each end of the runway. As with the ROFA, the ROFZ extends 125 feet from centerline on both sides of the runway. The FAA-recommended ROFZ is 3,378 feet. The ROFZ at the Runway 7 end is 92 feet. The ROFZ standard is met at the Runway 25 end. The existing ROFZ is therefore 3,270 feet, or 108 feet less than the FAA standard.

Runway shoulder

The runway shoulder area of 10 feet from the runway edge is well-graded and conforms to the relevant standard.

Taxiway width

The width of both Taxiways A and B is 20 feet. This is five feet less than the FAA taxiway width standard of 25 feet.

Taxiway safety area

The taxiway safety area is 49 feet wide, centered on the taxiway. Sufficient space exists around all taxiways for them to be in compliance with this standard. Grading, compaction and, in some areas, addition of fill dirt are necessary for full compliance.

Taxiway object-free area

The taxiway object-free area is 89 feet wide, centered on the taxiway. Taxiways A and B comply with this standard.

Taxiway shoulder

The FAA recommends that an area 10 feet on both sides of taxiways and taxilanes be

compacted and graded. Waterville Airport's taxiway system is complies with this standard, with the exception of both sides of the north part of Taxiway B. In these areas filling, grading and compaction of soils is necessary for full compliance.

Runway-centerline-to-taxiway separation

The FAA standard for category A and B (small) airports is 150 feet from runway centerline to taxiway centerline. The distance between the runway and Taxiway A is 137 feet. This is 13 feet less than the FAA standard.

Runway-centerline-to-runway-holding-position marking

The FAA standard distance from runway centerlines to runway hold lines is 125 feet. There are no runway hold-line locations marked on taxiways as they connect with Waterville's runway.

Runway centerline to aircraft parking

The FAA recommends 125 feet of separation from a runway centerline to an aircraft parking area. Aircraft are occasionally parked within 75 feet of the center of the runway, in between the runway and Taxiway A. When aircraft are parked in this area, this standard is not complied with.

Runway protection zone (RPZ)

The Runway 25 RPZ extends over a steep drop off at the east end of the runway. Property east of the Runway 25 end is unoccupied. It complies with the intent of the RPZ. The Runway 7 RPZ extends over a portion of the Douglas County Fairgrounds. The RPZ

Table 8: Comparison of FAA design standards to existing conditions

FAA design standard	Design standard dimension relative to Waterville Airport	Existing condition at Waterville Airport
Runway length	4,550'/4,100' to accommodate 100/95 percent of A-II (small) fleet	2,978' (1,572'/1,122' less than standard)
Runway width	60'	50' (10' less than standard)
Runway safety area length	3,458'	3,085' (373' less than standard)
Runway safety area width	120'	120' (Meets standard within the area where it meets the length standard)
Runway object free area length	3,458'	3,310' (148' less than standard)
Runway object free area width	250'	250' (Meets standard within the area where it meets the length standard)
Runway obstacle free zone	3,378'	3,270' (108' less than standard)
Runway shoulder	10'	10' (Meets standard)
Taxiway A and B widths	25'	20' (5' less than standard)
Taxiway safety area	49'	49' (Meets standard)
Taxiway object-free area	89'	89' (Meets standard)
Taxiway shoulder	10'	10' (Meets standard)
Runway-to-taxiway separation	150'	137' (13' less than standard)
Runway centerline-to-hold position marking	125'	No markings. Standard not complied with. A runway hold-line sign is located within 75 feet of the runway centerline.
Runway centerline-to-aircraft parking area	125'	Standard is not met when area between runway and Taxiway A is used to park aircraft. Aircraft parked in this area are within 75 feet of the runway centerline
Runway protection zone	250' X 1,000' X 450'	Runway 25 RPZ is compliant as it extends over an empty field. Runway 7 RPZ extends over a portion of the Douglas County Fairgrounds and is not compliant.

Note: Runway length standard computed using average mean/max. temperature of hottest month (82 degrees) and 2,640 mean sea level elevation.

standard is complied with at the Runway 25 end but, depending on use, not at the Runway 7 end. The airport owner, the Port of Douglas County, does not have ownership control of easements restricting the use of property within the RPZ areas.

Reserved for existing conditions drawing.

2.11 INFORMATION SOURCES

Sources of information provided in this chapter include:

- Washington State Department of Transportation/Aviation Division airport database.
- Federal Aviation Administration (FAA) Form 5010.
- Applied Pavement Technology Inc. pavement report dated February 2006.

Chapter 3:

Forecasts

3.1 INTRODUCTION

This chapter forecasts the numbers of based aircraft and annual aircraft operations at Waterville Airport in five-year intervals over a 20-year planning period. A future airport reference code (ARC) based on forecast data is identified.

The forecasting process is an important one for a number of reasons. Primarily, forecasts will help the Port of Douglas County and the town of Waterville plan the airport's future. Understanding future demand will help the port and the town to make informed decisions about airport capital improvements.

Forecasts are also vital to the funding of those improvements. As stated, Washington State Aviation is the Port of Douglas County's primary source of grant funds for Waterville Airport's operational areas. Though the Aviation Division has made considerable progress over the past few years with respect to the grant process and to the amount of funds available, the division continues to have less money than is needed to meet project demands. Consequently, the division must carefully prioritize grants. Forecasts assist WSDOT/AD with these funding decisions.

Capital projects that are necessary to correct conditions that negatively impact safety, as well as projects that maintain investment in infrastructure, especially paved surfaces, should be funded as money is available regardless of forecasts. However, major development that enhances airport operational capability will be made only after careful evaluation of necessity based on logically quantified future need.

Forecasts are also important to organizations interested in financing features of airports that are not generally funded by WSDOT/AD. Both the Washington State Department of

Community Trade and Economic Development (CTED) and the U.S. Department of Commerce's Economic Development Administration offer financial resources for projects, such as utility infrastructure and road construction, that are necessary to support development of airport-related and airport-compatible business on and adjacent to airport property. These entities are interested in funding projects that create jobs and that improve incomes.

It is a primary recommendation of this plan that, after it is published, the port and town update the airport's activity level forecast as conditions indicate it is appropriate to do so. For instance, if a new manufacturing business that operates one or more aircraft moves to the area the resulting increase in based aircraft and annual operations should be added to the forecast and communicated to WSDOT/AD. This will help Waterville Airport maintain its appropriate place on the Aviation Division's priority list. Also, this information will be useful during the next update to this airport layout plan. Forecasting by professionals has become a highly refined art but it is still, in the end, guessing. Tracking and noting actual conditions that alter forecasts help refine this process.

3.2 TERMINOLOGY

Terms used in this section that require definition are:

Aircraft operation: A takeoff or a landing.

Local aircraft operation: Aircraft operating in an airport's traffic pattern or aircraft known to be departing to or arriving from local areas used for flying practice.

Itinerant aircraft operation: All other operations.

3.3 FORECASTING METHODS

To determine the most accurate forecast of future airport operations, this section begins by quantifying existing conditions, including the numbers and types of based aircraft, estimating local and itinerant flight operations, and determining county and local population and other pertinent data. Next, factors that are likely to influence future demand are identified. These factors include population projections for Douglas County over the planning period as well as projections made by federal and state agencies about economic development in the region served by Waterville Airport. Forecast information produced by WSDOT/AD and the FAA is also considered.

Other issues that may impact changes in airport activity are then evaluated. These include: 1) changes to pilot rules recently promulgated by the FAA; and 2) the impacts of airport development.

3.4 EXISTING DATA

Existing published data about based aircraft and annual flight operations are available from three sources: the FAA's Airport Master Record, also called Form 5010, last updated in December 2005; the WSDOT/Aviation Division database, last updated in 2006; and recently published data from the Washington State Long-Term Air Transportation Study (LATS). Information from these sources is shown in tables 9, 10 and 11.

Determination of based aircraft baseline

On-site research indicates that there are 13 based aircraft at Waterville Airport. This is consistent with 5010 data, WSDOT/AD database information and data derived from the LATS process.

Table 9: FAA Form 5010

Fleet Mix Based aircraft 2005		Estimated Operations 2005	
Single-engine	13	GA local	500
Multi-engine	0	GA itinerant	500
Turboprop	0	Air carrier	0
Glider	0	Air taxi	0
Ultralight	0	Commuter	0
Rotorcraft	0	Military	0
Total	13	Total	1,000

Source: FAA Form 5010

Determination of flight operations activity baseline

Itinerant flight operations at Waterville Airport are generated by seasonal agricultural activities, as well as by a variety of visitors, including those coming to county offices or the county

Table 10: WSDOT/AD 2006 database

Fleet Mix			Estimated Annual Operations		
Based A/C	Existing 2005	Projected 2020		Existing 2005	Projected 2020
Single-engine	13	0	GA local	500	500
Multi-engine	0	0	GA itinerant	500	500
Turboprop	0	0	Air carrier	0	0
Glider	0	0	Air taxi	0	0
Ultralight	0	0	Commuter	0	0
Rotorcraft	0	0	Military	0	0
Total	13	13	Total	1,000	1,000

Source: WSDOT/AD.

courthouse. Actual operations at Waterville Airport are difficult to quantify with certainty. For purposes of this plan, it is concluded that the operations level determined by the LATS interview as indicated in Table 10 are accurate. Itinerant operations and based aircraft operations are 1,625 each, for a total of 3,250 operations annually. This activity level is considerably higher than that shown on FAA Form 5010 and in the WSDOT/AD database, which both indicate 1,000 total annual operations.

Table 11: WSDOT/AD LATS

Fleet Mix			Estimated Annual Operations		
Based A/C	Forecast base year 2005	Projected 2030	Operations	Existing 2005	Projected 2020
Single-engine	13	15	GA local	1,625	1,875
Multi-engine	0	0	GA itinerant	1,625	1,875
Turboprop	0	0	Air carrier	0	0
Glider	0	0	Air taxi	0	0
Ultralight	0	0	Commuter	0	0
Rotorcraft	0	0	Military	0	0
Total	13	15	Total	3,250	3,750

Source: WSDOT/AD (LATS)

3.5 FORECASTS

WSDOT/AD

The Long-Term Air Transportation Study forecasts based aircraft and flight operations levels through the year 2030. The LATS program will be developed over the next several years. Preliminary LATS forecasts have, however, been published. Forecasts for Waterville Airport indicate that two additional aircraft will be based at Waterville between now and 2030, and that annual flight operations will grow by 500 operations over the planning period. The growth in flight operations is projected to be evenly divided between local and itinerant operations.

Conclusions based on best WSDOT/AD data

Projections by WSDOT/AD indicate slight growth in Waterville Airport’s based aircraft and flight operations through the year 2030.

Population and income projections

The Washington State Office of Financial Management (OFM), in its intermediate-level estimate, indicates that Douglas County’s population in 2005 was 36,257 and that by 2025 it would increase by 23.6 percent to 47,428. This is slightly lower than growth of 26.1 percent that is projected statewide by the OFM. There is no data that indicates that population in the Waterville

area will grow at a rate in excess of that projected for the county.

Douglas County has experienced relatively steady growth in total personal income over the past several years. According to the U.S. Department of Commerce’s Bureau of Economic Analysis (BEA), personal income is the best available local indicator of general

purchasing power and is, therefore, important to tracking and comparing economic growth. Personal income is the sum of net earnings by place of residence, as well as rental incomes of persons, personal dividend payments, personal interest income and transfer payments. Examples of transfer payments are Social Security payments, Medicare payments, unemployment insurance payments and veterans’ pensions. Personal income is measured before the deduction of personal income taxes and other personal taxes.

Per capita personal income

In 2004 Douglas County had a per capita personal income (PCPI) of \$24,325. This PCPI ranked 30th in the state and was 69 percent of the state average of \$35,041, and 74 percent of the national average of \$33,050. The 2004 PCPI reflected an increase of 5.3 percent from 2003. The 2003-2004 state change was 6.6 percent and the national change was 5.0 percent. In 1994 the PCPI of Douglas County was \$17,094 and ranked 33rd in the state. The 1994-2004 average annual growth rate of PCPI was 3.6 percent. The average annual growth rate for the state was 4.3 percent and for the nation was 4.1 percent.

Total personal income

In 2004 Douglas County had a total personal income (TPI) of \$837,399,000. This TPI ranked

27th in the state and accounted for 0.4 percent of the state total. In 1994 the TPI of Douglas County was \$519,169,000 and ranked 26th in the state. The 2004 TPI reflected an increase of 7.3 percent from 2003. The 2003-2004 state change was 7.9 percent and the national change was 6.0 percent. The 1994-2004 average annual growth rate of TPI was 4.9 percent. The average annual growth rate for the state was 5.8 percent and for the nation was 5.2 percent.

Conclusions about population and income

According to Washington State economists and planners, Douglas County’s population will increase between now and 2025 by approximately 23 percent. Washington State data indicates that the state’s population as a whole will increase by about 26 percent. All available data indicates that Douglas County will experience slow, steady growth at a rate somewhat less than that expected statewide.

Data from the BEA indicate that personal income will also continue to rise in Douglas County. Expected increases, however, are consistent with increases that are projected for Washington State and the rest of the United States.

Table 12: Douglas County population projections

	2005	2010	2015	2020	2025	Total growth
Douglas County	36,257	39,196	42,302	44,920	47,428	23.6%

Source: Washington State Office of Financial Management, 2006.

All available data related to population or personal income indicates that the numbers of based aircraft or level of flight operations will increase by a slight degree in the rural areas of Douglas County over the planning period.

Additional factors

Airport forecasts should take into account specific local conditions and factors other than official population and income projections as long as the information used is logical, reasonable and

credible. The factors included in this section are considered to meet this test. These local conditions and factors relate to:

- Alterations to FAA rules regarding pilots.
- Airport improvements.

Alterations to FAA Rules regarding pilots

Rules recently promulgated by the FAA allow owners of several categories of ultralight aircraft to register those aircraft in a new category called “light sport.” Light-sport aircraft are expected to substantially add to the numbers of based aircraft and flight operations at U.S. airports. It is logical to assume that pilots in this category will, in general, prefer to operate from and near airports such as Waterville that have low activity levels, are non-towered and that have an abundance of adjacent, uncontrolled airspace.

Airport Improvements

Though typical planning procedures call for airport improvements, especially those that increase airport capacity, to be justified by demand it is also logical to assume that such

improvements might in turn have some impact on generating demand. Capital improvements that cause Waterville Airport to be increasingly attractive, efficient and functional may create additional demand.

Discussions held with this plan’s steering committee indicate for example that airport improvements may increase flights conducted by sailplanes. These kinds of operations could also bring groups of visitors to the town for sailplane events.

It is a conclusion of this narrative that alterations to the airport’s layout, operating features and operational capability are likely to have a supportive impact on the aircraft census as well as on based and itinerant activity levels.

Conclusions about additional factors

Both of the factors described in this section are likely to increase usage at Waterville Airport. There is no doubt that recently promulgated FAA rules related to sport aircraft will increase personal, recreational flight activity and that much of this activity will occur at non-towered, rural airports such as Waterville. Finally, the “build it and they will come” theory will probably play a role at Waterville. Improved airport facilities, especially those intended to accommodate visitors, are likely to generate increased use.

Forecast of based aircraft and operations

After taking into consideration WSDOT/AD’s projections, state and federal population

Table 13: Forecast based aircraft 2007-2026

Based A/C by type	2007	2012	2017	2022	2026
SE	13	15	16	17	17
SESP	0	1	2	3	4
ME	0	0	0	0	0
Heli	0	0	0	0	0
Total	13	16	18	20	21

SE = Conventional Single-engine aircraft; SESP = Single-engine sport category aircraft; ME = Multi-engine aircraft; Heli = Helicopter.

Table 14: Forecast annual flight operations 2007-2026

Operations	2007 (1)	2012	2017	2022	2026
Itinerant SE	1,625	1,800	1,900	2,000	2,000
Based aircraft					
SE	1,625	1,800	1,900	2,000	2,000
SESP	0	100	200	300	400
ME	0	0	0	0	0
Heli	0	0	0	0	0
Total operations	3,250	3,700	4,000	4,300	4,400
Average annual increase in total operations		2.8 percent	1.6 percent	1.5 percent	.05 percent

(1) Estimated current; SE = Conventional Single-engine aircraft; SESP = Single-engine sport category aircraft; ME = Multi-engine aircraft; Heli = Helicopter.

and income projections, Waterville’s location, potential airport facility improvements and FAA sport pilot rules, Airside makes the following projections about based aircraft and flight operations activity over the planning period.

Based aircraft

Based aircraft will increase by eight between 2007 and the end of the planning period. All of the additional aircraft will be single-engine. Some of the additional aircraft will be in the sport pilot category.

Flight operations

Aircraft based at Waterville Airport will operate an average of approximately 100 times per year. This is less than the national average. Itinerant operations, currently estimated at 1,625 per year, are expected to increase to 2,000 per year by the end of the planning period.

Tables 13 and 14 indicate growth in based aircraft and flight operations projected by this plan over the planning period.

Chapter 4:

Development alternatives and recommended projects

4.1 INTRODUCTION

This chapter discusses projects that will improve Waterville Airport. Information contained herein is derived from this report's Chapters 2 and 3, data gathered during site visits and suggestions from the ALP steering committee. Recommended improvements at Waterville Airport extend over the 20-year planning period. Projects listed are intended to increase safety, accommodate forecast demand and provide a transportation facility that is efficient and attractive. Information about the timing of projects is at the end of this chapter. Estimated expenses associated with recommendations are contained in Chapter 5.

As stated in Chapter 2, the Eagle agricultural aircraft, which is in the A-II (small) ARC group, is identified as the design aircraft throughout the planning period. Additional kinds of aircraft that may use Waterville Airport are light-sport aircraft and variations of aircraft based on advancing aircraft technologies. Since Waterville is the Douglas County seat, there are occasions when high-performance, single-engine and multi-engine aircraft use the airport. Visits by high-performance aircraft are, however, not routine.

FAA recommendations related to design standards that are contained in Advisory Circular 150/5300-13 "Airport Design" have been applied in this chapter.

4.2 AIRPORT FEATURES

In Chapter 2 we identified several features of Waterville Airport that either fail to meet FAA design standards or that would, if altered, improve airport safety and efficiency. These features include runway length and width as well

as the runway safety and object-free areas at both runway ends. Before addressing these features in development alternatives it is necessary to make a determination about runway length, as it is a fundamental feature that will impact all alternatives.

Runway length

Figure 2-1 in FAA Advisory Circular 150/5325-4B provides a method for determining runway lengths that are adequate to accommodate both 95 percent and 100 percent of what the FAA terms "small airplanes." According to the FAA, small airplanes are those that have certified gross weights of less than 12,500 pounds and that have fewer than 10 passenger seats.

The graph in Figure 2-1 of the advisory circular provides a method for using both temperature and airport elevation to compute runway length calculations as both of these factors affect aircraft performance. According to this graph, which is included in the appendix to this report, runway lengths of 4,100 feet and 4,550 feet are required to accommodate 95 percent and 100 percent, respectively, of the small airplane fleet at Waterville Airport considering the mean temperature of the area's hottest month (82.2 degrees in July) and the mean sea level elevation of 2,640-feet. This means that the airport's runway is 1,122 feet less than that needed for 95 percent of the fleet and 1,572 feet less than that needed for 100 percent of the fleet.

It is a conclusion of this plan that increasing runway length to accommodate 95 percent or all of the small aircraft fleet is not cost-effective due to existing and forecast levels of activity and conditions both east and west of the runway.

Runway width

The FAA standard for runway width is 60 feet. Waterville's runway is 50 feet wide. This plan recommends conforming to the FAA width standard.

4.3 DEVELOPMENT ALTERNATIVES

The size and layout of Waterville airport's property and constraints that exist on all sides of the property limit development alternatives. A major road parallels the runway on its north side. A road and the North Central Washington District Fairgrounds are sited directly west of the airport. Terrain drops off steeply at the east end of the runway and topography is very convoluted south of the runway. Additionally, sufficient property is available within the airport's existing boundary to accommodate forecast growth. Consequently, instead of identifying a number of development alternatives, this section lists improvements to the airport's existing configuration that will enhance safety and efficiency as well as improve the airport's appearance.

Airport safety and efficiency enhancements

Actions recommended by this plan are:

- Relocation of Runway 7 and Runway 25 thresholds to comply with FAA RSA and ROFA recommendations as well as grading and compaction of RSA to conform to FAA standard.
- Maintenance of some paved surfaces; reconstruction of other paved surfaces.
- Reinstallation of runway lights. Relocation of the Runway 25 PAPI and installation of a PAPI for Runway 7.
- Repainting of the runway and taxiway system.
- Installation of two additional runway hold-line signs.
- Installation of taxiway reflectors.
- Installation of direction and feature identification signs.
- Improvement to the fuel system.
- Identification/planning of future hangar sites.
- Reconstruction of hangars as leases expire.
- Clean up and fix up.

4.4 DEVELOPMENT DETAILS

Action 1: Mark appropriate threshold locations

Threshold locations at Waterville's airport should be adjusted by taking into consideration relevant FAA design standards and FAR Part 77 approach surface criteria.

Relevant design standards

As explained in Chapter 2, Waterville Airport does not have a conforming runway safety area (RSA) at either end of the runway nor does it have a conforming runway object-free area (ROFA) at the Runway 7 end.

For airports with the airport reference code category of Waterville's, RSAs extend 60 feet on either side of the runway's centerline. ROFAs extend 125 feet on either side of the runway's centerline. Both the RSA and ROFA extend 240 feet beyond the pavement ends.

Runway Safety Area (RSA)

At the Runway 7 end, the RSA standard is not fully complied with due to the close proximity of a road. The area that is consistent with the standard, or that could be made to be consistent with it, extends to 107 feet from the runway end.

At the Runway 25 end, property that is consistent with, or could be made to be consistent with, the RSA standard begins approximately at the

runway end. East of the runway end, terrain drops off in such a way that it would be difficult to provide a conforming RSA. Since the RSA standard extends 240 feet beyond the runway end, existing conditions are such that 240 feet of non-conforming RSA area exists.

RSA conclusion: Given the runway length of 2,978 feet, the FAA standard RSA length is 3,458 feet. The existing RSA is 3,085 feet or 373 feet less than standard.

Runway Object-Free Area (ROFA)

The ROFA standard does not require a surface that is able to accommodate straying aircraft, as does the RSA standard. Instead, the ROFA standard only requires that terrain, items of equipment, structures, roads, etc., do not rise above the runway's elevation.

ROFA conclusion: The ROFA is consistent with the standard at the Runway 25 end. Parked equipment and a road cause the ROFA to be 148 feet less than standard at the Runway 7 end. The total existing ROFA is 3,310 feet.

FAR Part 77 approach surface criteria

FAA's advisory circular 150/5300-13 in Appendix 2, Table A2-1, the "Approach/Departure Requirements Table," identifies dimensional standards and approach slopes for various airport and runway conditions. Row 2 of that table lists standards for approach ends of runways intended to serve small airplanes with approach speeds of 50 knots (nautical miles per hour) or more in day or night visual conditions. This table indicates that approach slopes for airports such as Waterville may begin at landing thresholds rather than at 200 feet from landing thresholds as is common at many airports.

Recommendation

After considering runway safety area, runway object-free area and approach slope issues at both ends of Waterville's runway and determining

which of these criteria is most critical at each end, the following recommendations are made.

- Relocate the Runway 7 threshold 208 feet from the runway end. Specifically, 148 feet of the relocation is necessary to provide a conforming ROFA. The remaining 60 feet of relocation is necessary to provide approach clearance over the road that is west of the runway. A conforming RSA will also result from this relocation.
- Relocate the Runway 25 threshold 240 feet from the runway end. This will provide a conforming RSA and by applying the standards contained in Appendix 2, Table A2-1, will create a 20:1 approach slope. There are no ROFA issues at the Runway 25 end.

The resulting runway length will be 2,530 feet, or 448 feet less than the current length of 2,978 feet.

It should be noted that runway ends as identified by the WSDOT/AD survey accomplished in 2002 have been used to specify runway ends for this plan and that those runway ends may not coincide exactly with the extent of pavement at either end of the runway.

FAA Form 5010 should be updated to indicate the adjustment to the runway's length.

Action 2: Paved surfaces

Actions that would preserve, and that would in some cases replace, paved surfaces are among the most important capital projects that could be carried out at Waterville Airport. The runway has PCI values of 82 and 84, which indicate, according to Applied Pavement Technology Inc., that preventive maintenance such as crack sealing and seal coating is satisfactory to maintain its integrity. Taxiway B, Taxilanes B1, B2, B3, and the aircraft parking apron also have high PCI values. Preventive maintenance is also sufficient for these areas. Pavement deterioration is insidious and progressive, however. Delaying preventive

maintenance will cause portions of the runway and taxiway system to fail. This will reduce safety and will ultimately increase costs associated with airport ownership.

Taxiway A which extends from the Runway 7 end to Taxiway B has very low PCI values. This area should be reconstructed.

Action 3: Runway lights and PAPI system

When the thresholds are relocated, the runway threshold lights should be moved to coincide with them. This would be a good time to reinstall all runway lights in general aviation base cans. The lights are currently installed on metal stakes. Wiring that serves runway lights mounted on stakes is exposed and tends to deteriorate over time and can result in electrical faults. Base cans protect wiring and, if properly installed with their tops at grade, will reduce the chance of damage to aircraft if they are struck or taxied over. The lighting array should conform to recommendations contained in FAA advisory circular 150/5340-30B or its successor.

While reinstalling the lights, new wiring may need to be installed the entire length of the runway. This action is not recommended at this time but may be necessary depending on the condition of the underground wiring. The Runway 25 PAPI system should be moved to coincide with the relocation of the threshold. The exact location of the relocated PAPI should be determined after consulting the PAPI manufacturer's siting criteria. A new PAPI should be installed at the Runway 7 end. Both PAPIs and their controllers should be mounted on frangible columns supplied by the manufacturer. The existing Runway 25 PAPI presents a strike risk due to the construction of its supports.

Action 4: Markings

Paint all areas of the runway and taxiway system to conform to recommendations contained in FAA Advisory Circular 150/5340-1J or its successor. Markings should include the relocated

thresholds, runway numerals, fog lines, runway and taxiway centerlines and runway hold lines.

Action 5: Runway hold-line signs

Install two additional runway hold-line signs to supplement the existing sign at the remaining locations where aircraft can enter the runway from the taxiway system. Signs need not be FAA-certified but their design and installation should be consistent with relevant FAA advisory circulars.

Action 6: Reflectors

Install taxiway reflectors throughout all taxiway and taxilane areas as well as around the aircraft parking apron.

Action 7: Direction signs

Additional signage both on and off the airport can be used to welcome and assist visitors. On the airport it is recommended that the reverse sides of runway hold-line signs, which are usually left blank, have messages such as "Welcome to Waterville" or "Welcome to the Douglas County Seat," or some variation thereof. Signs directing visiting aircraft to the parking apron and to the visitor's lounge at Johnson Air Service would also be helpful.

Off-airport improved signage leading to the facility and to the center of town would help airport visitors.

Action 8: Fuel system improvements

If warranted by future sales, a card-lock system would improve service to the flying public.

Action 9: Future hangar sites

The airport layout plan and the building area plan (drawings C1.1 and C1.2) indicate locations for future hangar sites north of Taxilane B3. It is anticipated that future hangars will be on property that is leased to those who will construct

and own their hangars. It is recommended that the port generate development standards to ensure that future hangars have a consistent appearance and that the areas around hangars are lighted and landscaped.

Action 10: Reconstruction of existing hangars

Several of the hangars south of Taxiway A are in poor condition. As opportunities arise to take control of them they should be raised and replaced with new hangars that are constructed according to the aforementioned development standards. Lighting and landscaping in this area, which encompasses structures A through G on drawing C1.2, will greatly improve the appearance of the airport. As this area is developed, the port should consider constructing a large hangar that might span two properties and that would be used to contain several aircraft in the light sport category.

Action 11: Clean up/fix up

Much can be done to improve the appearance of the airport. Development standards for new hangars, lighting, signage, and new paving and landscaping will certainly improve the airport. Clearly, the existing visitors' lounge and the Johnson Air Service facility present a positive image. It is recommended that the airport continue to be the focus of a clean-up/fix-up campaign both on airport property and, to the extent possible, on property adjacent to the airport. Waterville is, after all, the county seat and is a facility owned by the Port of Douglas County, which is known for quality development.

Project phasing

Current state regulations do not allow WSDOT/AD to provide grants in excess of \$250,000. It is not anticipated that any project recommended in this plan will exceed that amount. Should the port, however, decide to accomplish major construction projects that

might exceed \$250,000 in capital expenditure it should consider phasing the work in two segments and dividing the work over at least two grants. Major runway reconstruction, as an example, would be divided into design and engineering (Phase 1) and construction (Phase 2).

4.5 DETAIL AND TIMING OF IMPROVEMENTS

This section lists the timing of recommended improvements.

Projects 2007 - 2011

Action items 1 through 7 are important to the safety and efficiency of Waterville Airport and are generally related to each other. It is recommended that these actions be accomplished in the 2007-2011 period.

These actions include: 1) development of a conforming RSA and ROFA; 2) improving paved surfaces; 3) reinstallation of runway lights and installation of a PAPI system; 4) application of pavement markings, installation of runway hold-line signs; 5) installation of taxiway and apron reflectors; 6) and installation of improved signage.

Items 8 through 11 – fuel system improvements, development of future hangar sites, reconstruction of existing hangars and aesthetic improvements, as well as routine maintenance activities – should be accomplished throughout the planning period as possible and as opportunities arise.

4.6 APPROACH SURFACE CONSIDERATIONS

Relocation of thresholds as indicated in Action 1, Section 4.4 will provide 20:1 visual approach slopes to both ends of Waterville Airport's runway.

4.7 HANGAR AND TIE-DOWN DEVELOPMENT

This section relates existing and expected numbers of based and itinerant aircraft to development of aircraft tie-downs and construction of aircraft hangars over the planning period.

Chapter 3 indicates that 13 aircraft are currently based at Waterville Airport and that 21 aircraft are expected to be based at the airport at the end of the planning period. Given winter weather conditions in northern Douglas County, it is assumed that all aircraft that are based at the airport on a full-time basis will be stored in hangars. There is capacity at the airport currently to store approximately 12 aircraft. Building sites exist for another four hangars that could store two aircraft each. This storage capacity (21 hangars), as well as the existing 10 tie-down locations, is sufficient to store both based and visiting aircraft throughout the planning period.

4.8 BUILDING RESTRICTION LINES (BRLS)

Building restriction lines (BRLs) are lines parallel to runways that identify permissible locations for structures. Generally, BRLs are located so that FAR Part 77 transitional surfaces will not be penetrated by planned structures. Maximum structure heights are typically considered to be 15 feet for planning purposes.

Transitional surfaces rise at a ratio of 7:1 (horizontal to vertical) perpendicular to an airport's runway. Outward and upward slopes begin at another FAR Part 77 surface called the "primary surface," which at Waterville Airport is 125 feet from centerline on both sides of the runway. Primary surfaces rise and decrease in elevation with the nearest point of the runway, so differences in runway elevations relative to adjacent proposed building sites must be considered.

It should be noted that FAR Part 77 is not a legal restriction of structure heights. Instead, it is a federal regulation that identifies a method for determining existing and proposed penetrations of airspace and their dispensation. Penetrations are considered by the FAA to be obstructions to navigable airspace unless a study by the FAA determines otherwise. FAA studies may result in one of three conclusions: 1) no objection to the penetration; 2) objection unless mitigation, such as lighting, is accomplished; and 3) objection. FAA airspace determinations are not binding on local jurisdictions since the FAA does not have authority over local zoning. Nevertheless, it is a good idea, and WSDOT/AD policy, to avoid FAR Part 77 penetrations, thus the logic behind showing BRLs on airport plans. FAR Part 77 requires the filing of documents related to proposed construction on and near airports, depending on the height and location of the proposed construction.

BRLs related to both existing and ultimate runway conditions are depicted on the airport layout plan and should be adhered to as new construction is accomplished.

4.9 ZONING AND LAND USE

Forecasting usage and scheduling improvements at Waterville Airport will ultimately prove to be fruitless exercises unless meaningful efforts continue to be employed to protect this facility from encroachment by incompatible uses. Airports in the United States close routinely, not because of a lack of funds to keep them open but because municipalities and counties did not anticipate and address the negative impacts of encroachment and the insidious advance of incompatible land uses. It is easy to overlook the need for airport-protective zoning and land-use planning at rural airports that do not have existing adjacent development. It is at such a time – before action must be taken to reverse incompatible growth – that these issues can be most effectively addressed.

Incompatible pressures on airports come in two forms: 1) those that restrict airspace necessary to maintain operational viability; and 2) those that place incompatible development so close to airports that it becomes a risk to the facility and its neighbors.

Waterville's comprehensive plan contains a number of policies that provide general recommendations for the airport. Recommended actions in this section are consistent with the comprehensive plan and are depicted in drawings C 1.6, titled "Zoning and Land Use," and C 1.7, titled "Exhibit A." The following recommendations are provided, based on existing zoning and land-use characteristics.

Recommendation 1: Rezone airport property

Currently, Waterville Airport's property is zoned industrial under Waterville's zoning ordinance. This district allows a variety of industrial and institutional uses, some of which may be incompatible with the airport. Also, with a wide range of permitted uses, some of the development standards, such as height restrictions and setback requirements, may not be suitable for the airport or adjacent properties. Because of its unique characteristics, the airport property and adjacent properties that are airport related or airport dependent should be rezoned into an airport district that includes regulations specifically related to airport safety and operations.

Recommendation 2: Develop an airport safety overlay district

In addition to an airport district, Waterville, in cooperation with Douglas County, should add an airport safety overlay district to its zoning ordinance. A policy in the transportation section of Waterville's comprehensive plan calls for the development of an "airport impact zone" that will encourage land uses compatible with airport operations. While the underlying zoning of affected properties would not change, an overlay

district would encompass the entire FAR Part 77 imaginary surfaces area and would include height restrictions, building density standards and permitted uses to ensure airport compatibility.

Recommendation 3: Develop regulations and standards for the adjacent fairgrounds

The North Central Washington District Fair is located west of the airport. This facility and its annual events in August are very important to the community and the region. Prior fair events have most likely been planned with impacts to the airport in mind. However, without consideration of airport operations, future fairgrounds improvements and expansion could be detrimental to both airport and operations.

This plan recommends close cooperation between fairgrounds management, the town of Waterville and the Port of Douglas County as fairgrounds activities are planned and as expansion to the facility is considered.

If expansion, alteration or reconstruction of fairgrounds facilities is planned, it may be helpful to adopt strategies that will minimize impacts to airport operations and that will decrease impacts to fair events and activities. Such strategies may include:

- Building designs that use additional soundproofing and sound-attenuating glazing (windows) to reduce the effects of aircraft noise and vibration.
- Orientation of development to the south of the extended centerline of the runway.
- Enhanced life-safety elements including sprinkler systems, exits and other features that are reasonably in excess of building-code standards.

Regulations specific to the fairgrounds should be adopted to promote compatibility. Activities that create smoke and glare as well as upward

lighting can interfere with aircraft and should be addressed in fairgrounds-specific regulations. Also, it is recommended that the FAR Part 77 20:1 approach slope to Runway 7 be considered as any temporary or permanent structure is being planned.

Recommendation 4: Maintain existing county zoning

Land around the airport that is outside of Waterville's corporate limits and urban growth area is zoned by Douglas County for dryland agriculture. This land is currently being used for crop production and is compatible with airport operations. This plan recommends that the zoning for these properties not change. Any proposed zoning changes to these properties should consider the presence of the airport and allow only uses that would not be incompatible with the airport.

Recommendation 5: Plan for additional roadways and consider nearby roadways as 15-foot objects

As future development occurs around the airport, additional access will be required. As developments are reviewed, the placement of roads in proximity to the airport should be considered. FAR Part 77 considers roads of the category anticipated to serve Waterville's future industrial uses as 15-foot objects. Future roads, especially those underlying the FAR Part 77 approach/departure surfaces should be reviewed carefully.

Additional zoning and land-use considerations

Required notice of construction

Federal Air Regulation Part 77.13 requires that notice be given to the FAA of any construction, including roads, that is: 1) 200 feet or more above ground level; or 2) that is within 10,000 feet of the nearest part of a runway that is 3,200 feet long or less, and that breaks a slope of 50:1. Notice may be given by filling out a paper form or by submitted an online form at <https://www.oiaa.faa.gov/oiaa/external/portal.jsp>.

Resources

Both Airside and Washington State Department of Transportation/Aviation Division staffs are very willing to assist the Port of Douglas County, the town of Waterville and Douglas County as they continue to work with zoning and comprehensive plan issues. Airside may be reached at (360) 222-3646. The Aviation Division may be reached at (360) 651-6300. The aviation division's website at www.wsdot.wa.gov/aviation/planning is an excellent resource for land-use and zoning issues.

Chapter 5:

Financial

Chapter 4 contained information about airport improvements that are intended to meet forecast demand and increase safety, utility and efficiency at Waterville Airport. This chapter identifies the cost of those improvements and establishes a plan for paying for them. Also included in this chapter is data related to airport income and expenses.

5.1 GENERAL FINANCIAL INFORMATION

Cost estimates

Project cost estimates are in 2007 dollars. A contingency has been incorporated into major construction projects to cover engineering, administration and unforeseen circumstances. As this portion of this plan is updated, the Port of Douglas County should adjust the 2007-based dollar amounts for inflation. These estimates are for planning purposes. They should not be used as construction cost estimates. The following formulas were applied to estimates for paved surfaces.

Base course and top course rock

Area to be paved in square yards times the depth of compacted rock @ .167 for 2-inch depth and .25 for 3-inch depth.

Class A/B asphalt (ACP)

A yield of 8.25 square yards per ton of asphalt is estimated for a 2-inch mat depth.

Organization

This capital improvement program (CIP) has been organized by scheduling specific projects in four, five-year time periods. As stated in Chapter 4, projects are heavily weighted in the 2007-

2011 time frame. Using this five-year system will provide planning and funding flexibility. It will also allow for periods when grant funds requested by the port may not be available from WSDOT/AD. It is important to review and adjust this CIP at least annually.

Funding sources

This capital improvement program makes assumptions that some funding will be available from sources other than WSDOT/AD. Actual availability of funds as identified herein will depend on a number of factors, including the level of funds available to WSDOT/AD and to other agencies to distribute and the needs of other airports as compared to the needs of Waterville.

Planning ahead

A factor that plays a material role in the successful receipt of grant funds from WSDOT/AD and other sources, such as the Washington State Department of Community Trade and Economic Development, is communication. Granting agencies are more likely to respond positively to grant requests when they are given plenty of advance notice about intentions to apply for funds. This helps granting agencies to do their own advance planning. Informing grant sources of plans three to four years in advance and each year thereafter until funds are requested, is an effective strategy.

Third-party financing

Airports often use third-party financing for development of facilities that are to be used primarily by private businesses or organizations. Projects of this kind include hangars and industrial structures. Some portions of this CIP identify no cost or limited cost to the port or the

town of Waterville because of assumed third-party financing.

Rates and charges

It is very important at Waterville Airport, as with all airport facilities, that careful attention be paid to determinations of rates and charges. Small airports have limited abilities to collect revenue. It is often the case that fees that sponsors of small airports charge for based aircraft tie-downs, land leases, overnight tie-downs, fuel and other services are lower than what might be considered market value. In some cases, fees — with the exception of those associated with fuel — are not charged at all.

Clearly, sponsors of most small airports do not have the ability to collect revenue that is sufficient to pay for major capital improvements. It is important that airport sponsors do their best to maximize revenue while being cognizant of the ability of those engaged in general aviation to pay. In this way, airport sponsors can show that they are doing their best to contribute to the needs of their airports. When establishing rates and charges, airport sponsors should consider the potential of volunteerism. Efforts by individuals who volunteer their time — local pilots, for example — are very important to facilities such as Waterville Airport. It is important, though, to strike a fiscally sound balance between recognizing — applying a value to — volunteer efforts and charging rates that help airports remain financially viable. It is particularly important for the port and the town to carefully consider the value of airport property and property adjacent to the airport as they look forward to growth and major capital improvements. A periodic review of airport-related property lease fees is recommended. Fees should be adjusted to reflect real market conditions.

Financing of this development program

As stated, the Washington State Department of Transportation's Aviation Division is Waterville

Airport's primary source of grant funds for airside improvements. Airside improvements are those that relate to the runway/taxiway system, the aircraft parking apron and navigational aids, including signage. Planning and engineering for projects that are eligible for WSDOT/AD construction grants are also eligible for grant funds. For additional information about eligibility of projects for WSDOT/AD grants, as well as the division's project priority system and application process, see their website. It is located at <http://www.wsdot.wa.gov/aviation/grants/default.htm>. The Grant Procedures Manual can be found under the Grant Program tab.

Grant applications for the next grant cycle following publication of this report were accepted by WSDOT/AD from May through mid-June of 2007. Grants will be announced shortly after July 1, the beginning of Washington State's next biennium.

A draft version of this report was used to formulate a grant request in a timely manner.

The runway safety grant program

WSDOT/AD has a grant program specifically designed to address runway safety-area improvements, especially those improvements that reduce the likelihood of inadvertent runway incursions. Information about this program is included in the appendix to this plan. Projects such as runway hold-line repainting and runway hold-line sign installation — as specified in Chapter 4 — would qualify for funding under this specific program. This is an excellent program that targets a high-priority safety issue.

CTED and EDA

Sources of grant funds for landside-related projects such as structures, roads and utilities are the Washington State Department of Community Trade and Economic Development (CTED) and the United States Department of Commerce/Economic Development Administration (DOC/EDA).

CTED's contact information is:

Washington State Department of Community
Trade and Economic Development
RAAD Building
MS: 42525
128 – 10th Avenue
PO Box 42525
Olympia, WA 98504
Business and Project Development Office
(360) 725-4100

EDA's contact information is:

United States Department of Commerce
Economic Development Administration
Jackson Federal Building, Room 1856
915 Second Avenue
Seattle, WA 98174
(206) 220-7682

5.2 REVENUE AND EXPENSES

For the past several years ground leases have been Waterville Airport's only source of revenue. Funds received during the years 2004–2006 are indicated in Table 15. Expenses are indicated in Table 16. Grants from WSDOT/AD are not included in Table 15.

5.3 RECOMMENDED PROJECTS

This section contains estimated costs of projects over the four, five-year planning periods that are included in Chapter 4. Table 17 provides cost information about specific recommended projects. Table 18 indicates planned sources of funds for the projects. Table 19 recaps expected capital expenditures by five-year phase.

Minor maintenance expenses are not specifically identified.

Table 15: Revenue

Revenue source	2004	2005	2006	Three-year total	Three-year average
Ground leases	\$3,000	\$2,700	\$2,700	\$8,400	\$2,800

Source: Port of Douglas County.

Table 16: Expenses

Expense category	2004	2005	2006	Three-year total	Three-year average
Administration and planning	\$0	\$165	\$9,736	\$9,901	\$3,300
Electricity	\$411	\$470	\$429	\$1,310	\$437
Insurance	\$4,660	\$4,432	\$4,815	\$13,907	\$4,636
Maintenance	\$5,340	\$6,979	\$7,166	\$19,485	\$6,495
Snow removal	\$0	\$0	\$0	\$0	\$0
Total	\$10,411	\$12,046	\$22,146	\$44,603	\$14,868

Source: Port of Douglas County.

Table 17: 20-year capital improvement program details

Item	2007 – 2026 projects	Detail cost
	2007-2011 projects	
A1	RSA and ROFA enhancements Repaint Runway 25 and 7 thresholds - Adjust runway and threshold lighting Grade and compact entire RSA Update FAA 5010 record Subtotal	\$6,000 \$3,000 \$0 \$9,000
A2	Pavement Maintenance – runway and Taxiways B1, B2, B3 and apron A02WV-01 (fix cracks and sealcoat) Apron and Taxiway A reconstruction Engineering and survey Materials testing Grind and re-use existing surface (5,573 SY @ 4.00) Top course rock (930 tons @ \$16.00) Asphalt, Class A/B (675 tons @ \$60.00) Sales tax on materials Subtotal	\$29,375 \$15,000 \$2,000 \$22,292 \$14,880 \$40,500 \$6,213 \$130,260
A3	Install PAPI system Runway 7/reinstall PAPI system Runway 25 Sales tax on one PAPI system Subtotal	\$7,500 \$380 \$7,880
A4	Paint runway and taxiway system Sales tax Subtotal	\$5,000 \$380 \$5,380
A5	Runway hold-line signs (3) Sales tax Subtotal	\$2,500 \$200 \$2,700
A6	Taxiway and apron reflectors (70) Sales tax Subtotal	\$2,450 \$196 \$2,646
A7	Direction and feature identification signs Sales tax Subtotal	\$3,000 \$240 \$3,240
	Total 2007 - 2011	\$161,106
	2012 – 2016 projects	
B1	Improvements to fuel system	\$10,000
B2	Plan future hangar sites	\$5,000
B3	Reconstruction of hangars as leases expire	Unknown
B4	Clean-up/fix-up	Unknown
B5	Conduct paved surface maintenance (crack seal and seal coat)	\$5,000
	Total 2012 - 2016	\$20,000

Table 17: 20-year capital improvement program details (continued)

Item	2007-2026 projects	Detail cost
	2017 – 2021 projects	
C1	Conduct paved surface maintenance (crack seal and seal coat)	\$5,000
	Total 2017 - 2021	\$5,000
	2022 – 2026 projects	
D1	Conduct paved surface maintenance (crack seal and seal coat)	\$5,000
	Total 2022 - 2026	5,000
	Total CIP 2007 - 2026	\$191,106

Table 18: 20-year capital improvement program recommended cost distribution

Item	Project	Total cost	WSDOT/AD	Port of Douglas County	Private or other grant agency	Town of Waterville
2007-2011						
A1	RSA, ROFA, enhancements	\$9,000	\$8,550	\$450	\$0	\$0
A2	Pavement	\$130,260	\$117,234	\$13,026	\$0	\$0
A3	Lighting and PAPI system	\$7,880	\$7,486	\$394	\$0	\$0
A4	Paint markings	\$5,380	\$5,111	\$269	\$0	\$0
A5	Hold-line signs	\$2,700	\$2,565	\$135	\$0	\$0
A6	Reflectors	\$2,646	\$2,513	\$133		
A7	Gen. signs	\$3,240	\$3,078	\$162		
	Subtotal	\$161,106	\$146,537	\$14,569	\$0	\$0
2012-2016						
B1	Fuel system	\$10,000	\$5,000	\$2,500	\$2,500	\$0
B2	Hangar planning	\$5,000	\$0	\$5,000	\$0	\$0
B3	Hangar reconstruction	Unknown	Unknown	Unknown	Unknown	Unknown
B4	Clean-up/fix-up	Unknown	Unknown	Unknown	Unknown	Unknown
B5	Paved surface maintenance	\$5,000	\$4,750	\$250	\$0	\$0
	Subtotal	\$20,000	\$9,750	\$7,750	\$2,500	\$0
2017-2021						
C1	Paved surface maintenance	\$5,000	\$4,750	\$250	\$0	\$0
	Subtotal	\$5,000	\$4,750	\$250	\$0	\$0
2022-2026						
D1	Paved surface maintenance	\$5,000	\$4,750	\$250	\$0	\$0
	Subtotal	\$5,000	\$4,750	\$250	\$0	\$0
	Totals	\$191,106	\$165,787	\$22,819	\$2,500	\$0

Notes to Table 17: Items that relate to paving, signage and lighting projects where aircraft operate assume 95-percent participation from WSDOT/AD.

Table 19: Capital improvement program expenditure by phase

Phase	CIP total cost	WSDOT/AD	Port of Douglas County	Private or other grant agency	Town of Waterville
2007 – 2011	\$161,106	\$146,537	\$14,569	\$0	\$0
2012 – 2016	\$20,000	\$9,750	\$7,750	\$2,500	\$0
2017 – 2021	\$5,000	\$4,750	\$250	\$0	\$0
2022 - 2026	\$5,000	\$4,750	\$250	\$0	\$0
Total	\$191,106	\$165,787	\$22,819	\$2,500	\$0