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Chapter 1 Introduction

Purpose and Scope

This Airport Layout Plan and Narrative Report (ALP) has been completed for Swanson Field, in Eatonville, Washington.

An ALP documents a vision for an airport's near and long-term future. It records an airport's existing conditions, compares them with ideal conditions for optimal safety and service, and recommends improvements to help the airport achieve optimal conditions. The ALP may also recommend actions that focus on improving the airport's role in, and impact upon, the community.

This ALP establishes the following items:

- An ALP drawing set, including land use map.
- An inventory of existing features and facilities.
- Identification of existing facilities that do not meet WSDOT/FAA design standards and input on whether these facilities can be improved to meet design standards considering the site's constraints.
- Forecasts of future aviation demand (from WSDOT/LATS Study).
- A determination of new facilities and/or expansion of existing facilities that will be required to accommodate projected demand, including areas of land that may be developed for future beneficial uses.
- A capital improvement program that prioritizes and establishes implementation of proposed development over 5-, 10-, and 20-year time periods.

Funding and Administration

This ALP is sponsored by the Town of Eatonville (Town). Primary funding was supplied by a grant from the Washington State Department of Transportation/Aviation Division (WSDOT/AD) and complies with WSDOT ALP Requirements. It was prepared by HDR Engineering, Inc. (HDR).

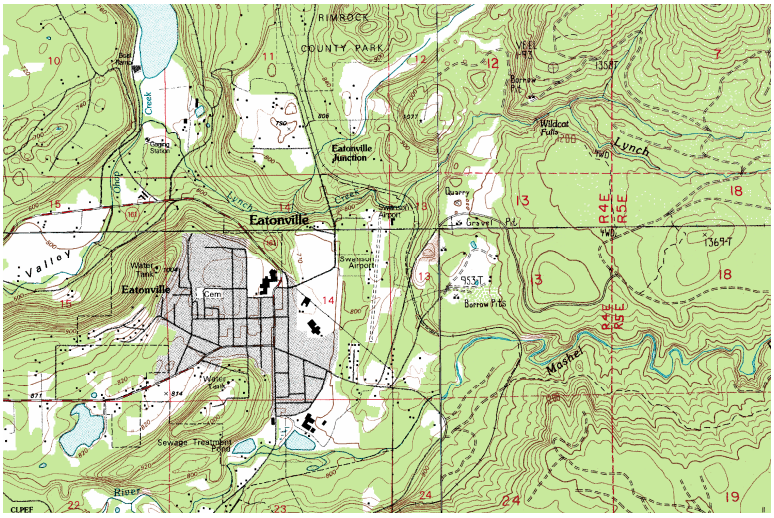
In preparing this ALP, HDR reviewed:

- The Washington State Airport System Plan (WSASP) database.
- The Town of Eatonville *Community Action Plan and Vision Statement*.
- The WSDOT/AD publication, *Economic Impacts of Washington Airports*, prepared by Bucher Willis and Ratliff Corporation in 2001.
- The Washington State Long-Term Air Transportation Study (LATS)

Chapter 2 General Information and Inventory

General

Town of Eatonville



The Town of Eatonville, Washington, sits on the Mashel River, about 25 miles due west of Mount Rainier National Park. A former lumber town, Eatonville has a rural character and is the home to one grocery store, one gas station, one motel, and one "red blinking street light." The Town's Comprehensive Plan describes Eatonville as, "an urban community surrounded by farmlands and forests."

Eatonville is not far from the cities of Tacoma and Puyallup and is included in the Tacoma Metropolitan Statistical Area (MSA). Eatonville can be reached from Tacoma via US Highway 7 and from Puyallup via State Route 161.

Swanson Field is within the Town's corporate boundary.

Climate

At an elevation of roughly 900 feet above sea level, Eatonville's average low temperature during winter months is 32° F and the average high temperature during the summer months is 75° F. Eatonville averages 38.2 inches of precipitation annually.

Socioeconomic Data

Population and Population Projections

At the time of the 2000 census, the population of Eatonville was 2,012. Eatonville experienced 18.5% population growth over the next six years, achieving a population of 2,385 by 2006. No part of the town's population growth was due to annexation.

In 2006, the greater Eatonville area, both inside and outside the town limits, had approximately 4,000 residents. The average household in Eatonville had 2.6 people in 2000, with most households made up of family members.

Economy

In 2000, the average Eatonville commute to work took about 36 minutes, meaning that most residents travel outside the town itself for employment. Of the employment opportunities in town, most are in the government, education, or retail sectors.

Eatonville's Airport and the Economy

In a recent study, WSDOT determined that the annual total economic benefit of having Swanson Field's patrons and visitors in Pierce County, Washington, was equivalent to 4.0 jobs, $75,573 in labor earnings (payroll), and $276,535 in economic activity (sales output).

Economic Development Programs, Tourism Activity and Trends

The Pierce County Tourism Program taxes hotels and other tourist facilities and redistributes the revenue among select towns in unincorporated Pierce County. Eatonville does not participate in this program, and instead directly receives the taxes generated by tourism facilities located within Eatonville.

Land-Use Planning

FAR Part 77 and Airspace Obstruction

According to the Federal Aviation Administration (FAA), Federal Aviation Regulations Part 77 (FAR Part 77) applies to land use in aerospace areas, specifically with regard to obstructions in the airspace around airfields. FAR Part 77 "establishes standards for determining obstructions in navigable airspace" and requires that airport administrators be notified in the case of "certain proposed construction or alteration." It also, "provides for aeronautical studies of obstructions to air navigation, to determine their effect on the safe and efficient use of airspace;" as well as, "for public hearings on the hazardous effect of proposed construction or alteration on air navigation."

Authorizing Legislation

Washington State's Growth Management Act requires that towns, cities, and counties address airport land use compatibility in their community action plans and land use designations:

> *In 1996, the Washington State Legislature passed land use legislation (RCW 36.70.547, RCW 36.70A.510) that requires all cities and counties to adopt comprehensive plan goals, policies and regulations to discourage development of incompatible land uses adjacent to public use airports. Local jurisdictions are also required to consult with aviation interests, including WSDOT Aviation, when adopting comprehensive plan amendments. Communities must address airport land use compatibility as part of their scheduled GMA Updates, subject to the schedule designated by state law.*

In the latest ruling by the Growth Management Hearing Board, dated April 25, 2007, the Town of Eatonville is in compliance with Washington's state law regarding land use planning adjacent to public use airports.

Existing Land Use and Zoning

Swanson Field is located within the incorporated Town of Eatonville, northeast of the downtown area. At this time, the airport abuts the eastern edge of the Town limits, but the area to its east has been designated for future Town growth. The land to the north of the airport, outside of the Town limits, is undeveloped forestland governed by the Pierce County Zoning Authority. The area north of the airport, encompassed within the airport overlay zone, is classified rural R10 and R20, per Pierce County zoning regulations.

The airport and the area immediately surrounding it, roughly 152 acres in all, is referred to as the "Aerospace District" by Town zoning. Within the Aerospace District, lots must be at least 21,500

square feet (about half an acre), the largest minimum lot size mandated by Town zoning requirements. The zoning stipulates that "this district is intended to allow airport related activities such as runway, flight operation, aircraft storage, repair and maintenance, modification, commercial use and residential use." To this end, the following uses are expressly allowed within the Aerospace District:

- Airport and heliport;
- Hangars, fuel depots, aircraft sales and repair facilities, and similar facilities pertaining to aircraft;
- Single-family residential use;
- Commercial use excluding hotels and motels;
- Professional offices;
- Any structure customarily accessory to the above uses shall be permitted;
- Flight instruction;
- Aircraft rental;
- Air taxi service;
- Aircraft and parts manufacturing.
- Other specific uses that have been allowed via conditional use permit.

There are residential structures within the Aerospace District, many with hangars on their lots. At this time, the Town does not allow any new uses in the Aerospace District that are incompatible with Runway Protection Zones. Currently there are no existing structures that are located within the existing Runway Object Free Area. There is one private hangar that appears to be encroaching on the airport parcel owned by the Town. However, this potential encroachment has not been confirmed for the purposes of this report. Title research or parcel mapping by title would be necessary to verify if there are any easements or if property boundaries are accurate as shown. There are existing structures that are encroaching into the FAR Part 77 imaginary surface. There is an existing building structure owned by the Fraternal Order of Eagles (F.O.E.) that is located within the approach RPZ of runway 34, south of the runway end. The parcel on which the F.O.E. is located is privately owned and is zoned General Commercial, per the Town zoning map. See the ALP and supporting plan sheets for location and type of adjacent airport structures and buildings.

The zoned land contiguous to the Aerospace District is intended for low-density single-family residential use (minimum lot size 9,600 sq. ft.), medium density single-family residential use (minimum lot size, 8,400 sq. ft.), and general commercial use (minimum lot size 10,000 sq. ft.)

Within two miles of the airport there are also pockets of land zoned for high-density single-family residential use (minimum lot size 6,000 sq. ft.), downtown commercial use (minimum lot size 5,000 sq. ft.), and mixed use. The area zoned for mixed use to the south of the airport does not stipulate a minimum lot size.

The Aviator Heights plat is located at the southeast edge of the airport. This proposed new housing development, offering hangar availability, has recently been approved for construction on a preliminary plat basis. Currently, no formal application for a building permit to construct single family homes has been submitted to the Town Planning Commission.

In 2006 the Town updated its development regulations to ensure compliance with FAR Part 77 restrictions (EMC 18.04.187). Any proposed structure which would penetrate FAR Part 77 surfaces would require a variance permit to be issued by the Eatonville Board of Adjustment. Prior to making

a variance permit application to the Board of Adjustment, an applicant must first submit Form 7460 to the FAA and must receive a determination of no-hazard or a determination of hazard whereby suggested mitigation of the hazard is provided. If a determination of no-hazard is issued then the Board of Adjustment may approve the variance subject to building permit approval and in accordance with the site plan and height as indicated on Form 7460. If a determination of hazard is issued by the FAA but there are suggested conditions whereby it is determined that the hazard(s) can be sufficiently mitigated, then the Board of Adjustment may approve the variance in accordance with the conditions specified by the FAA in its determination, subject to building permit approval and in accordance with the site plan and height as indicated on Form 7460. If the FAA determines that a proposed structure would be a hazard which cannot be mitigated, then the Board of Adjustment may deny the Variance Permit. The Town is continuing to monitor the effectiveness of its development regulations to ensure that incompatible development adjacent to the airport is prevented.

Comprehensive Plan

The Eatonville Community Action Plan and Vision Statement (Community Action Plan) sets forth a strategic redevelopment strategy that relies, in part, on increased tourism, particularly from those who are heading to or from Mount Rainier. An estimated 500,000 visitors pass through Eatonville annually on their way to or from Mount Rainier. To support this increase in tourism, the Community Action Plan calls for more and better visitor services, as a complement to increased services for residents and a wider job base. Swanson Field, while not mentioned by name in the Community Action Plan, should continue to serve locals and visitors alike, contributing to the overall economic health of the Town.

Eatonville's Comprehensive Plan and Swanson Field

While restrictions on land use are provided within the Aerospace District, the airport is not recognized as a transportation facility or an Essential Public Facility in the Community Action Plan. While the airport as summarized in this ALP has been shown to be a positive contributor to the local economy, that contribution is not recognized or supported by Eatonville's present planning and zoning documents.

Airport Site – General

Eatonville Airport

Currently, Swanson Field is home to 20 aircraft, all single-engine. Occasionally the airport is used by Medivac helicopters; state, county, and military aircraft; and search and rescue operations.

Airport History

Due to limited written information about airport history, input from Town residents and current lifelong airport area residents has been solicited and compiled in this section of the report.

Swanson Field was built in 1952 by volunteer labor. Prior to its construction, pilots would make emergency landings in neighboring fields. Because of this and other needs, combined with a local interest in aviation, the community expressed a need for a

dedicated airport facility. By community recommendation, the airport was named for the Swanson brothers, Eatonville residents and loggers who were instrumental in getting Weyerhaeuser to donate the land for the field. One of the brothers, John Swanson, was also a pilot.

A private air taxi service was operated from Swanson Field from 1969 – 1975. Currently Swanson Field does not host commercial service.

Operational History

Airport operations and management has been accomplished solely by the donation of time, tools, and labor from local airport residents. Based on community input, Charlie Poole, an on-site resident, served as the first FBO from 1968 – 1971. During this time Mr. Poole also provided certified Airframe and Powerplant / Inspection Authorization (A&P/IA) services. From 1971 – present, Mr. Poole has provided A&P/IA on an on-call basis. Aircraft maintenance and service at Swanson Field, as with airport grounds maintenance and other operations described below, are solely provided by volunteer efforts of airport residents and local property owners.

Table 2.1
Estimated Aviation Activity, 2001- 2005*

Year	Operations
2002	2600
2005	6316

*2001, 2003, 2004 data not available.

Airport/City Revenue

Swanson Field is a publicly owned, public use airport encompassing over ten acres within Eatonville town limits. At this time, there are no fees for use of the airport. Instead, the Town pays the airport's expenses, including an annual $4,000 insurance bill, with money from the Town's general fund. Other expenses are unusual, but can occur when the Town matches state grant funds or supports the airport in the event of a lawsuit.

As stated above, maintenance is widely carried out and paid for by volunteers. Similarly, the airport manager is an unpaid, volunteer position.

Airport Classification: The ARC System

According to the WSDOT aviation website, the Airport Reference Code (ARC) "is a coding system developed by the FAA to relate airport design criteria to the operational and physical characteristics of the airplane types that will operate at a particular airport."

The ARC designates the accommodations an airport can offer landing planes. Within the ARC, there is one letter and one Roman numeral: the letter indicates the aircraft approach category and the Roman numeral indicates the airplane design group. Essentially, the ARC provides guidance on how fast planes should approach the airport as well as what types of planes are able to land there.

With an ARC designation of A-I, Swanson Field normally serves single-engine airplanes, but can serve aircraft up to 12,500 pounds. The design aircraft selected for this ALP is a Cessna 182. The Cessna 182 was selected because it comprises the majority of existing based aircraft and because most airport operations originate from locally based aircraft. Based on LATS information, the future design aircraft is anticipated to remain the same. The airport allows only visual take-offs and landings with a minimum approach visibility greater than one mile. Swanson Field fulfills a general aviation role,

currently hosting approximately 6,000 operations per year. In 2002 Swanson field only hosted about 2,600 operations per year. Any take-off or landing is considered an operation (See Table 2.1.)

In 2002, 22 aircraft were based at Swanson Field, and that number was expected to increase somewhat over the decade. In 2006, however, the number of planes based at Swanson Field remained at or around 20 (see Table 2.2).

In the LATS Phase II Technical Memos (June 30, 2007), WSDOT has classified Swanson Field as a Recreational/Remote Airport.

Table 2.2
Aircraft at Swanson Field (2006)

#	Make/Model
1	Cessna 180
2	Cessna 182
1	Maule
1	RV 4
1	RV6
5	Cessna 172
1	Cessna 150
1	Cessna 170
1	Kit Fox
1	Piper J Cub
1	Piper 140
1	Piper Vagabond
1	Luscombe 8C
1	Taylor Craft BC 12P
1	Aero Sport

Environmental Issues

This section describes the environmental issues that exist in the Swanson Field area.

Wetlands

Airstrips in wetland areas should mitigate for habitat destruction. There is one designated wetland located near Swanson Field. This wetland is located adjacent to the north end of the existing runway approximately 50' below the airport elevation.

Wash-down Pad

Wash-down pads may create runoff that degrades water quality in nearby water bodies over time. Swanson Field has no wash-down pad.

Noise

Noise concerns are among the top environmental issues for neighbors of airports. There are currently no noise pollution issues at Swanson Field. There are noise abatement procedures in place that prescribe avoiding over flight of the downtown area.

Underground Storage Tanks

Underground storage tanks may crack with age and leak their contents into the soil. Swanson Field has never had underground storage tanks. A resident within the Aerospace District, however, has an underground storage tank. The condition of the tank is not known and may need to be removed in the future.

Wildlife

Eatonville is located in a mountainous region, near a state park and a national park. According to published airport navigational aids, there have been deer or elk reported on and around the airport. Wildlife strikes at airports pose a liability concern for the airport owner. Fencing around the perimeter of an airport is often used to minimize the potential for wildlife strikes. Because the Town only owns about one third of the airport property and because of other complicated property issues, it is impractical to install wildlife fencing around the airport perimeter at this time. If future property acquisitions allow fencing to be installed, and if it can be installed according to FAA and WSDOT requirements, then fencing should be considered as an option to mitigate potential wildlife strikes. Before fencing is installed, it is recommended that the Town conduct an independent wildlife hazard assessment and hold discussions with WSDOT Aviation officials and the USDA to help determine the range of approved methods for minimizing the potential for wildlife strikes at Swanson Field.

Existing Airport Facilities

Runway

Runway 16/34, the airport's sole runway, is paved with asphalt. It is 3,000 feet long and 36 feet wide. Based on a recent topographic survey of the runway profile, the runway is 845 feet above sea level.

Airfield Pavements

Runway 16/34 at Swanson Field was inspected in August of 1999, two years after its construction. At that time, it received a Pavement Condition Index (PCI) rating of 98. In this index system, a rating of 100 is excellent and the highest possible rating.

The runway's pavement was inspected again as part of the WSDOT data collected for LATS reporting. The Swanson Field Airport 2005 Pavement Management Report documented a 100 PCI rating with anticipated repair needs as preventative maintenance.

A copy of the WSDOT pavement management report is attached as Appendix A.

Structures

Swanson Field does not have a terminal building. According to Town surveys and land use maps, there do not appear to be any privately owned hangars on airport property and there are no hangars on leased airport property. All hangars in the Aerospace District are privately-owned.

Airport maintenance equipment

Swanson Field does not own snow-removal equipment. While it

rarely snows in Eatonville, snowfall does occasionally occur but does not cause the airport to issue a Notice to Airmen (NOTAM) not to land there. Snow landings are up to the pilot's discretion.

Approach

There are trees over 70 feet tall within the approach to the runway. They are located on private property at the north end of the runway and present a hazard to air navigation. These trees are primarily located in a stream buffer adjacent to Lynch Creek which is a salmon bearing stream. There are other trees outside of the Lynch Creek stream buffer which also present hazards to air navigation. See ALP plan sheets and obstruction data tables located in the ALP plan set.

Airport Lighting and Navigation Aids

The runway is marked by basic indicators. There are lights at the runway threshold ends and white lights at runway edges. Medium Intensity Runway lights (MIRL) are manually operated by the airport manager and are typically turned on during the dusk and early evening hours and during the hours at dawn. There are also standard Type II roadway pavement marker reflectors that are mounted at edge of runway pavement.

The airport has a lighted wind cone to determine wind direction. There are currently no electronic navigational aids.

There is no beacon at the airport at this time.

Airport Access Roads and Vehicle Parking

The airport has no paved public parking facility. Public parking is currently allowed within the Airport Road public right–of-way. Presently there is public access to Swanson Field via Airport Road from the west. This road is used primarily for Medivac helicopter to ambulance transfers and for public access. Airport Road is an unimproved substandard public street. There are other airport access points, but all reside on private property and are used by private property owners adjacent to the airport. General public access is prohibited at these locations.

Runway Ownership

The Town of Eatonville currently holds title to only one of the three parcels on which the Swanson Field runway is located. Presently the Town uses the two privately owned parcels based on an unwritten "agreement" between Harold Burlingame, private land owner, and the Town. The only documentation for this "agreement" is an unrecorded Easement dated March 4, 1952, that grants the Town of Eatonville use of Mr. Burlingame's property as an airplane landing and flight strip. See Title Report, Appendix D. The size of Parcel A, owned by the Town of Eatonville, is approximately 2.66 acres. Parcels B and C, owned by Harold Burlingame, are each approximately 6.06 acres. According to Pierce County Assessor's records, the Town of Eatonville is the listed taxpayer for Parcels A and B, and Harold Burlingame is the listed taxpayer for Parcel C.

Through the Fence Operations

Although Through the Fence operations occur at Swanson Field, there are currently no Through the Fence Agreements in place and no user fees are paid to the Town for public use of Swanson Field. Through the Fence operations at Swanson Field include everything from airport maintenance and upkeep, to runway use and hangar access onto airport property from private property locations. Some users enter airport property directly from their hangar locations while others access airport property from private driveways or grassy areas near airport property. It is estimated that airport property is accessed for airport use from approximately 15 different parcels containing 19 individual hangars adjacent to the airport property. The number of individual users is unknown as there is no data documenting private leases of hangar space to other airport users.

It is recommended that Through the Fence Agreements be established between airport users and the Town and that a fee structure be created for these uses. See Chapter 4 below.

Utilities

The key components of utility systems are potable water, water for fire flows, sewer, electric utilities, and telecommunications. These components are all available at Swanson Field.

There is a telephone at the airfield. It is located at the acting airport manager's residence. It is a private telephone.

Aircraft Fuel

The airport does not offer a fueling station for public use. There are privately-owned pumps located on hangar and residential lots within the Aerospace District.

Other Facilities

Major FBO: There is no major Fixed-base Operator at Swanson Field.

Fencing: There is fencing along portions of the private property adjacent to the airport. There is not contiguous perimeter fencing protecting the airport property.

Aircraft Tie-down Facilities: Based on existing airport surveys, there is currently one available public tie-down facility at Swanson Field. There are other known tie-down locations adjacent to the airport, but they are located on private property. Only one location is known to be designated for transient aircraft parking. This location is approximately 118 feet off the center of the runway. If an aircraft is tied down here, there is a good chance it will be encroaching the Object Free Area. The existing tie-downs are within the ultimate Object-Free Area (OFA), making them not viable for future use.

Exhibit 2.1

Airport Signage

The airport has minimal signage. There is no formal inventory of existing airport signs, and most existing airport signage has been fabricated and installed by volunteer labor and materials. Most

airport signage appears to be sub-standard or installed using hardware that is not standard for airport applications (see Exhibit 2.1.) It is recommended that the Town determine FAA requirements for signage at Swanson Field and that new signage be installed to meet these requirements for class A-I airports. See FAA Advisory Circular 150/5340 "Standards for Airport Markings."

Comparison of Existing Conditions to FAA Standards

Runway Object-Free Area (ROFA)

The ROFA is defined as a two dimensional ground area surrounding the runway. The ROFA clearing standard precludes parked airplanes and objects except those whose location is fixed by function such as a navigational aid. The area encompassing the Swanson Field ROFA is in conformance with the FAA standard for 100' each way of centerline and is the only airport property in which the Town has a controlling interest (see Table-2.3)

Runway Safety Area (RSA)

The RSA is defined as a surface surrounding the runway which is prepared or suitable for reducing the risk of damage to airplanes in the event of an undershoot, overshoot, or excursion from the runway. The area encompassing the RSA lateral to the runway, and for the length of the runway, is in conformance with the FAA standard. The 240 feet of RSA off the Runway 34 end is not standard due to irregular grading. The RSA off Runway 16 end is in conformance with the standard for about 50 feet from the end of the runway. After 50 feet the terrain drops off steeply into the Lynch Creek (see Table-2.3).

Runway Length

The existing distance from threshold to threshold is approximately 3,000'. According to FAA data, the Swanson Field runway is able to accommodate 75 percent of the aircraft fleet having a maximum certified takeoff weight of less than 12,500 pounds (see Table-2.3).

Runway Width

At 36 feet, the existing width of the airport's runway is 24 feet less than the FAA standard of 60 feet (see Table-2.3).

Runway Shoulder

The runway shoulder area of 10 feet is in general conformance with the relevant standard (see Table-2.3).

Distance from Runway Centerline to Holdline

The distance from the runway centerline to the hold line at Swanson Field is non existent. There is no land available for a parallel taxiway for this runway. The Town's land ownership is an approximate distance of 100 feet each way of the existing runway centerline, while it is suggested that there be a distance of 125 feet for a compliant hold line (see Table-2.3).

Runway Protection Zone (RPZ)

RPZ's are defined areas on the ground beyond the end of the runway that are controlled from certain uses in order to protect persons and property from collision hazards. Portions of both runway RPZ's are off airport property and not under the control of the Town (see Table-2.3).

Table 2.3

Comparison of FAA standards for A-1 (Small) airport to existing conditions

FAA Standard	Dimension relative to Swanson Field Airport	Existing condition at Swanson Field Airport
Runway length	2,640' (75%) / 3,160' (95%) / 3,750' (100%)	3,000'
Runway width	60'	36'
Runway safety area	120' x 3,480'	120' x 3,290'
Runway object-free area	250' x 3,480'	200' x 3,290'
Shoulder	10'	10'
Taxiway width	25'	N/A
Runway centerline-to holding position marking	125'	N/A
Runway protection zone	250' x 1,000' x 450'	Not controlled
Runway centerline-to-air-craft parking area	125'	N/A

Information Sources

Greater Eatonville Chamber of Commerce webpage:
www.eatonvillechamber.com/aboutarea.htm

Hymel, David. Planning our Future with Smart Growth. *Greater Eatonville Chamber of Commerce Newsletter*. Vol . 8, No. 11.

Eatonville Community Action Plan and Vision Statement. Prepared for the Greater Eatonville Chamber of Commerce and the Town of Eatonville, Washington, by MAKERS architecture and urban design.

J.B. Logston, Eatonville resident.

Charlie Poole, A&P/IA, Swanson Field resident.

The Town of Eatonville Planning Department Current Projects Map. November 2006.

The Town of Eatonville Planning Department Zoning Map. September 13, 2006.

Town of Eatonville official website. http://www.eatonville-wa.gov/

www.eatonville.com

2003 Inventory Update of the Washington State Aviation System Plan.

Central Puget Sound Growth Management Hearings Board Findings.

Long-Term Air Transportation Study (LATS).

Chapter 3 Forecast

General

Comprehensive forecasting of aircraft operations for Swanson Field was not included as part of the scope of this ALP project. Forecasting, and other data for Swanson Field, was obtained by WSDOT as part of their Long-Term Air Transportation Study (LATS) and is included in Appendix B.

The state classifies Swanson Field as a Non-NPIAS "Recreation or Remote Airport"; an airport which serves a narrow scope of general aviation, and signifies that an appropriate level of forecasting is provided by the WSDOT LATS. For Non-NPIAS airports, WSDOT and the FAA predict very limited growth in based aircraft and flight operations, a limited ability to expand undeveloped airport property, and aircraft storage and parking constraints as summarized below.

Operations Capacity

The LATS report provided a capacity assessment that considered annual aircraft operations and airfield capacity, aircraft storage and parking, and undeveloped land available for aviation development. Other variables such as passenger capacity and cargo capacity were also evaluated, but did not pertain to Swanson Field and its uses.

Aircraft Operations

The LATS report showed that a total of 6,315 total operations took place at Swanson Field in 2005 with an Operations Service Capacity, Annual Service Volume (ASV) of 112,500. It forecasted that Year 2030 demand would be approximately 7,015 operations. The percent utilization in 2005 was estimated at 6 percent and was expected to remain unchanged between 2005 and 2030, the forecast year. See Figures 20 and 157 from WSDOT LATS Study in Appendix B.

Aircraft Storage and Parking

The LATS report showed a demand for future aircraft parking and tie-down facilities. The report shows 20 based aircraft and only two tie-down facilities, a 95 percent utilization rate. Year 2030 demand is estimated at 25 based aircraft, creating a shortfall of four storage positions. As stated in Chapter 2 of this Narrative Report, there are very few existing tie-down facilities at Swanson Field and the only existing public tie-down is located within the ultimate ROFA. This emphasizes the need for additional tie-down facilities that comply with FAA and WSDOT regulations and are located outside the ROFA. See Figures 26 and 175 from WSDOT LATS Study in Appendix B.

Undeveloped Land Available for Aviation Development

Undeveloped land capacity in the Puget Sound region was noted in the LATS report as a major constraint on local airports. Twelve of the 27 airports studied either have no land capacity or have not provided land capacity information. It is anticipated that Swanson Field has zero acres of undeveloped land for aviation development. The Town should still actively pursue property acquisitions to improve the safety of the airport runway area, and also pursue any options for acquisition of property for other airport facilities, such as tie-downs and public parking. See Figure 29 from WSDOT LATS Study in Appendix B.

Chapter 4 Facility Requirements

General

The primary objectives of an ALP are to graphically depict an airport's existing facilities, and to graphically depict any additional facilities required to meet WSDOT / FAA standards, the sponsor's requirements, and future aviation demand. This drawing satisfies the sponsor's requirement to maintain an up-to-date ALP at all times.

Early in the development of this ALP Update, we encouraged the sponsor to take this opportunity to consider alternatives that would meet current design standards.

Considering the airport's usage and geographic limitations, ARC A-I has been used for the facility requirements. This section of the Narrative Report will examine each functional area to identify the proposed actions the sponsor should consider to meet these standards. This chapter will also identify projects to enhance the function of the airport to ensure that there are adequate facilities. The analysis of facility requirements has been broken into two sections. The first section looks at the present airfield and general aviation facilities as they comply with dimensional standards. The second section analyzes present facilities and future needs for all installations in relation to existing and projected demands.

FAA Design Standards

The proper ARC for planning and facility design is A-I, for small aircraft only, and is based on facility inventory and existing aeronautical needs. To determine compatibility of existing facilities with A-I standards, calculations of runway length and width and clearance standard dimensions were prepared using AC 150/5300-13 Airport Design, including Changes 1 through 11 and associated FAA computer software. The results of this analysis are presented in Table 4.1.

TABLE 4.1
RUNWAY LENGTH

AIRPORT AND RUNWAY DATA	
Airport elevation	845 feet
Mean daily maximum temperature of the hottest month	76.00 F.
Maximum difference in runway centerline elevation	6 feet
RUNWAY LENGTHS RECOMMENDED FOR AIRPORT DESIGN	
Small airplanes with approach speeds of less than 30 knots	330 feet
Small airplanes with approach speeds of less than 50 knots	870 feet
Small airplanes with less than 10 passenger seats	
75 percent of these small airplanes	2,640 feet
95 percent of these small airplanes	3,160 feet
100 percent of these small airplanes	3,750 feet

REFERENCE: Chapter 2 of AC 150/5325-4A, Runway Length Requirements for Airport Design. FAA "Airport Design" Computer Program, Version 4.2d

The most significant observation made from the data presented in Table 4-1 is that Swanson Field's current runway length of 3,000 feet is greater than a runway length of 2,640 feet which is

recommended for an airfield serving 75 percent of small aircraft. However, it is less than a runway length of 3,160 feet which is recommended for an airfield serving up to 90% of small aircraft.

Table 4.2 presents a summary of significant FAA object clearing criteria and design standards that need to be considered for future improvements made at Swanson Field. As mentioned in the general section of this chapter, one of the key considerations of any airport planning effort is to determine and evaluate the dimensional standards for airfield layout established by the FAA.

TABLE 4.2
DIMENSIONAL STANDARDS

CRITICAL STANDARDS	Existing R/W 16/34	FAA Standards for ARC ARC A-I
Object Clearing Criteria		
Runway Object Free Area (ROFA)		
• Width	200'	250'
• Length Beyond Runway End	50' / 240'	240'
Runway Safety Area (RSA)		
• Width	120'	120'
• Length Beyond Runway End	50' / 240'	240'
Runway Obstacle Free Zone (OFZ)		
• Width	200'	250'
• Length Beyond Runway End	50' / 200'	200'
Design Criteria		
• Runway Width	36'	60'
• Taxiway Width	N/A	25'
• Runway Centerline to Parallel Taxiway Centerline	N/A	150'
• Runway Centerline to Edge of Aircraft Parking	N/A	125'
• Taxiway Centerline to Fixed or Movable Object	N/A	44.5'

Source: AC 150/5300-13, Airport Design including Change 11

The application of object clearing and design standards and criteria establishes airport geometry. The existing ARC for Swanson Field has been identified as A-1. These improvements essentially involve the acquisition of land easements as well as projects to widen the runway.

Runway Object Free Area (ROFA) – In order to meet the standard for the ARC A-I, the ROFA needs to be 250 feet in width and extend 240 feet beyond each runway end.

Runway Safety Area (RSA) – The RSA should be cleared and graded and have no potentially hazardous ruts, humps, depressions, or other surface variations. The standard RSA associated with an A-I classification is 120 feet in width and extends 240 feet beyond each runway end.

Runway Obstacle Free Zone (OFZ) – The runway OFZ is defined as the volume of airspace centered above the runway centerline whose elevation at any point is the same as the elevation of the nearest point on the runway centerline. The standard runway OFZ for airports designed to serve A-I aircraft is 250 feet in width and extends 200 feet beyond each runway end.

Runway Protection Zones (RPZ) –The RPZ is trapezoidal in shape and begins 200 feet from the end of each runway and is sized according to the critical aircraft group and instrument approach characteristics applicable for each runway end. The RPZs associated with Runway 16/34 at Swanson Field are sized to accommodate aircraft within the A-I ARC with only visual approaches. The existing RPZ's inner dimension is 250 feet centered on the runway, the length is 1,000 feet, and the width at the outer end of the trapezoid is 450 feet.

FAR Part 77 – Objects Affecting Navigable Airspace

Airport imaginary surfaces are defined by the FAA in *Federal Aviation Regulation (FAR) Part 77*. Although not technically "design standards," these surfaces are geometric shapes which overlay and surround every airport. These surfaces determine, in part, the approach minima and compliance to standards for each airport. The imaginary surfaces are defined relative to the runway, the established airport elevation, and/or the elevation of the approach end of the runways. Any object, whether natural or man made, which penetrates these imaginary surfaces is defined by the FAA to be an obstruction. All natural or man-made obstructions which penetrate the FAA surfaces should be recommended for obstruction lighting or lowering if removal of the obstruction is not practical.

ALP Set Drawing 2 of 6 (see Appendix C) illustrates the dimensional standards for civil airport imaginary surfaces for Runway 16/34 at the Swanson Field. Small aircraft Part 77, as shown on the Airspace Drawing, relates to the planned airfield configuration for Swanson Field, and therefore depicts facilities that accommodate aircraft in the A-I category. The following describes the *FAR Part 77* imaginary surfaces associated with Swanson Field.

Primary Surface – A surface longitudinally centered on a runway. When the runway has a specially prepared hard surface (paved), the primary surface for a runway designed to accommodate A-I aircraft is 250 feet wide and extends 200 feet beyond each end of that runway. The elevation of any point of the primary surface is the same as the elevation of the nearest point on the runway centerline. The length beyond each runway end at Swanson Field does need to be changed.

Approach Surface – A surface longitudinally centered on the extended runway centerline and extending outward and upward from each end of the primary surface. An approach surface is applied to each end of the runway based on the type of approach available. The inner edge of the approach surface is the same width as the primary surface (250 feet for the existing category) and it expands uniformly to a width of 450 feet at a distance of 1,000 feet from each end of Runway 16/34. The approach surface also rises at a slope away from the runway end. The slopes associated with Runway 16/34 are both 20:1, or the surface rises one foot vertically for every 20 feet horizontally away from each runway end.

Horizontal Surface – A horizontal plane 150 feet above the established airport elevation. The plan dimensions of the horizontal surface are set by arcs from the end of the primary surfaces, which are connected by tangents. The elevation of the Horizontal Surface at Swanson Field is 995 feet above Mean Sea Level (MSL).

Conical Surface – An inclined surface at a slope of 20:1 extending upward and outward from the periphery of the horizontal surface for a horizontal distance of 4,000 feet. The elevation at the outer edge of the conical surface is 1,195 MSL.

Transitional Surface – These surfaces extend outward and upward at right angles to the runway centerline extended at a slope of 7 to 1 from the sides of the primary surface and from the sides of the approach surfaces until these surfaces intersect with the horizontal surface.

Sheet 2 of the Airport Layout Plan drawings (Appendix C) depicts the existing imaginary surfaces associated with the future development of Swanson Field. As shown on this Airport Airspace Drawing, there are many obstructions to Part 77. Most terrain on the east side of the airport penetrates the conical surface and transition surface. At this time there is no plan to modify the terrain to avoid these penetrations.

Recommended Facility Improvements

The Town of Eatonville is a small community with limited funds. The existing adjacent property owners and local airport users volunteer their time and money to maintain Swanson Field. This study and the Town's recently adopted Comprehensive Plan and Development Regulations identify many actions that will need to be taken and improvements that will need to be made before Swanson Field meets all recommended standards for an ARC A-I facility.

The recommendations presented herein will not bring the airport to ARC A-I facility standards, but will improve airport operations and increase safety.

The following section details provide justification for the recommended improvements to be accomplished during the 20-year planning period, 2007-2027.

Airfield Pavements

Runway Length, Width, and Vertical Profile Rehabilitation

Through analysis as part of this study it was determined that there are existing runway deficiencies that do not meet federal and state standards. Some of the major items that are discussed below are runway length, runway width, and substandard line of sight across runway centerline profile.

The existing runway length for Swanson Field is 3,000 feet, which is sufficient to accommodate 75 percent of small general aviation aircraft. As can be seen in Table 4.1, in order to accommodate 100 percent of small general aviation aircraft, a runway length of 3,750 feet is required. The width of 36' is substandard and should be widened to the 60' required.

To promote safer and controlled access to the runway, it is suggested that runway access points be constructed at the mid-point of the runway from the east and west side and at each runway end. These ultimate conditions are shown in the ALP drawing set and are described below under Parallel Taxiway.

The physical terrain surrounding the existing airport and the location of Lynch Creek off the north end of the airport property inhibits any extension of the runway. Cost of construction and environmental impacts make an extension or any relocation of the facility unrealistic for this relatively low activity airport.

The existing runway length does accommodate all aircraft currently based at the airport. Runway rehabilitation (crack seal and seal coat) is shown as short term improvements with widening and overlay in the second five-year Capital Improvement Program (CIP).

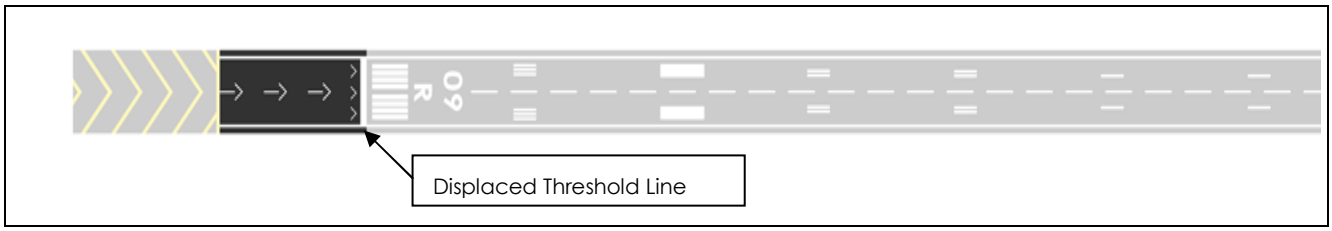
As shown in Plan Sheet 3 of the ALP drawing set, the existing runway vertical profile is currently substandard. As part of the proposed runway widening and rehabilitation mentioned above, it is

suggested that the runway vertical profile be corrected to eliminate line of sight deficiencies. This will require grading and a new pavement section to eliminate the existing sag curve.

Displaced Runway 16 and 34 Thresholds

A displaced runway threshold is defined as a runway threshold located at a point other than the physical beginning or end of the runway. The portion of the runway that is displaced may be used for takeoff but not for landing. Landing aircraft, however, may use the displaced area on the opposite end for roll out. Most often the offset threshold is in place to give arriving aircraft clearance over an obstruction while still allowing departing aircraft the maximum amount of runway available. A displaced threshold may also be introduced if a beginning section of the runway is no longer able to sustain the continuous impact from landing aircraft. Displaced thresholds are marked by arrows at the center line of the runway. A wide white line with arrows pointing in the direction of the runway denotes the end of the threshold and the beginning of the runway (see Figure 4.1). For more detailed information see FAA standard detail AC 150/5340.

FIGURE 4.1
DISPLACED THRESHOLD



The existing runway approaches were evaluated and found substandard as part of this study. In an effort to mitigate the approaches, it is suggested that the Runway 16 threshold be displaced 200 feet in the southerly direction and the Runway 34 threshold be displaced 230 feet in the northerly direction leaving an ultimate threshold to threshold distance of 2,570 feet. This will allow the required runway safety area (RSA) on the north end of the runway to clear the slope to Lynch Creek. Likewise, the displaced threshold on the south end of the runway will allow the required 20:1 (H:V) approach slope to clear the earthen berm, located on private property.

The existing runway pavement limits can remain and this surface can be allowed for runway takeoff distance but not for landing distance as shown in the future declared distances, Table 4.3. The existing runway end cul-de-sac turnarounds can be left in place and maintain their function.

Newly displaced runway threshold ends should be marked appropriately and threshold lighting relocated to new threshold markings as described below in the Lighting and Marking section.

Obstructions to Airspace

Obstructions to airfield airspace are identified in this study. Plan Sheet 2 of the ALP drawing set graphically depicts the horizontal locations of obstruction relative to the airport features. Approximate magnitude of penetrations of Part 77 airspace surfaces are also provided.

The Airport Master Record for Swanson Field shows obstruction clearance slopes for the approaches of both runways as being 4:1. A-1 requirements for the approach slope should be 20:1.

Based on survey information provided for this study, the actual approach slopes are approximately 10:1 for Runway 34 and 0:1 for Runway 16. It is possible that a 20:1 approach slope could be obtained in the ROFA/Primary Surface and along the ridge of Lynch Creek.

Most of the obstructions are located to the east and lateral to the runway. Although the terrain does not penetrate the approach or primary surfaces, there are many terrain penetrations to the conical and horizontal surfaces lateral to the runway. There is a limited amount of terrain and trees on the north end of the runway that penetrate the transitional surface.

Declared Distances

The concept of declared distances is considered applicable to this airfield to accommodate maximum beneficial use. Declared distances are defined as "the distances the airport owner declares available for the airplanes' takeoff run, takeoff distance, accelerate-stop distance, and landing distance requirements."

To be sure that all pilots are aware of any runway limitations that exist at Swanson Field, the airport owner should publish "Declared Distances" consistent with the current runway restrictions and configuration as well as the future runway data. This will allow the airport to advise the pilots or runway length availability for various modes of aircraft operations. See Table 4.3 for current and future declared distance information and calculations.

According to Reference 1, *Airport Design, Appendix 14*, the available distances declared by the airport owner are generally defined as follows:

TORA: Takeoff Run Available – the length of runway declared available and suitable for satisfying takeoff run requirements. The length cannot exceed the runway length.

TODA: Takeoff Distance Available – the TORA plus the length of any remaining runway or clearway beyond the far end of the TORA available for satisfying takeoff distance requirements.

ASDA: Accelerate-Stop Distance Available – the length of runway plus stopway declared available and suitable for satisfying accelerate-stop distance requirements.

LDA: Landing Distance Available – the length of runway declared available and suitable for satisfying landing distance requirements.

Current declared distance calculations (see Table 4.3) are based on a runway length of 3,000 feet with restricted ROFA length and width. There is no stopway or clearway identified for either Runway 16 or 34. There are several restrictions, which include reduced accelerated stop distance available on Runway 16 and reduced landing distance available on both runways. These are due chiefly to close-in terrain and limited property ownership of the facility which precluded full length and width for the object free area.

TABLE 4.3
FUTURE DECLARED DISTANCES

DECLARED DISTANCE LENGTHS (feet)

Aircraft Approach Category……..... A
Airplane Design Group…….... I (Small Airplanes Exclusively)
Runway 16 approach visibility minimums are……..…… visual exclusively
Runway 34 approach visibility minimums are…….. visual exclusively

Runway	**16**	**34**
Runway length……...…	3,000	3,000
Stopway length……..…	0	0
Clearway length…….....	0	0
Runway safety area length beyond the stop end of runway…….	240	240
Runway object free area length beyond the stop end of runway…….	240	240
The following distances are positive in the direction of aircraft operations and negative in the opposite direction:		
Distance from:		
The departure end of runway to the beginning of clearway……	0	0
The departure end of runway to the beginning of departure RPZ……..	-200	-230
The approach end of runway to the start of takeoff……..	0	0
The approach end of runway to the threshold……	200	230
The end of approach RPZ to the approach end of runway……..	200	-30
The following lengths are standard RSA and ROFA lengths:		
Runway safety area length to be provided:		
Beyond the stop end of ASDA……..…..	240	240
Beyond the stop end of LDA……..	240	240
Before the approach end of LDA……..	240	240
Runway object free area length to be provided:		
Beyond the stop end of ASDA……..…..	240	240
Beyond the stop end of LDA……..	240	240
Before the approach end of LDA……..	240	240

The following declared distances are for Approach Category A airplanes of 12,500 pounds or less maximum certificated takeoff weight exclusively.

Runway	**16**	**34**
Takeoff run available (TORA)……..	2,770	2,800
Takeoff distance available (TODA)……..	3,000	3,000
Accelerate-stop distance available (ASDA)……	2,800	2,800
Landing distance available (LDA)……	2,570	2,800
Usable stopway length……	0	0
Distance from the stop end of LDA to runway end……	0	0
Distance from the departure end of TORA to RPZ……..	200	200
Distance from the approach RPZ to the threshold……..	200	200

REFERENCE: Appendix 14 of AC 150/5300-13, Airport Design, including Changes 1 through 11.
FAA "Airport Design" computer program, version 4.2d.

Parallel Taxiway

Because there is no parallel taxiway at Swanson Field, pilots must "back taxi", by using the runway as a taxiway before or after take off or landing operations.

Back-taxi operations are arguably the ultimate runway encroachment. The Town of Eatonville does not own sufficient land and there are buildings existing to prevent a parallel taxiway to be constructed to the appropriate design separation of runway and taxiway. There are no recommendations to provide this improvement. Stub taxiways at midfield and both ends of the runway would help to improve entrance/exit to or from the runway at designated positions. These stub taxiways are shown for the short term CIP.

Aircraft Parking Apron

A parking apron has not been considered for the same reasons as the parallel taxiway. The Town of Eatonville does not control sufficient land to accommodate this facility at Swanson Field.

There has been discussion at Town Planning Commission meetings between Town Planners and private property owners of creating parking on private property. No final solution was agreed upon. If parking areas are constructed on private property, it is suggested that a Through the Fence Operation be initiated. Proper agreements and easements should be signed between private property owners and the Town

The Town should seek funding assistance from WSDOT Aviation to purchase suitable property on which aircraft tie-downs and parking can be installed. There are suitable locations adjacent to the airport property. Recommended locations should be located outside of approach zones and set back adequately so that parked aircraft will not penetrate FAR Part 77 airspace. Proper FAA standards and WSDOT Aviation guidance should be followed when selecting the proper location and designing the tie-down facilities. The Town should acquire at least 1 acre of land to provide three to four public tie-downs. (See Ultimate RPZ Plan and Airport Land Use Drawings in the ALP plan set for possible parcels.) Cost estimates for land acquisition and construction of public tie-down facilities are shown in the CIP (Table 4.4).

Public Access Improvements

The Town should make improvements to Airport Road to ensure better airport access. Currently Airport Road is unimproved and lacks needed roadway surfacing, parking, storm water, and pedestrian safety improvements. In conjunction with upgrading the roadway improvements, the Town should improve the public parking areas within the right-of-way and improve runway access at the terminus of Airport Road for both public and emergency vehicle access. This will help to improve the reliability and safety of ambulance patient transfers at this location.

The ALP drawings have designated a larger turn-out on the Runway 16 end to accommodate Medivac helicopters and search and rescue operations. The west approach to the cul-de-sac turnaround on the Runway 16 end was listed on airport user surveys as the point of access for emergency Airlift Medivac and search and rescue units. To improve the site for emergency personnel, it is suggested that this approach to the runway be widened as part of the runway widening project.

Electronic and Visual Navigational Aids

There is no rotating beacon at Swanson Field. The main purpose of a beacon is to indicate the location of a lighted airport. A rotating beacon is an integral part of an airfield lighting system.

The addition of a rotating beacon is shown as a short term item in the CIP. The beacon would currently have to be located on private property. The Town should negotiate with adjacent property owners to provide an ideal location for a rotating beacon.

The wind cone is lighted and should be sufficient through the planning period.

There is a Segmented Circle marked on the runway pavement. This is a non-standard location for Segmented Circles per FAA guidance. The Segmented Circle should be co-located off the traffic area and centered at the wind cone location as recommended in the FAA AC 150/5340-5C.

Lighting and Marking

The runway at Swanson Field is currently lighted with Medium Intensity Runway Lights (MIRL) for nighttime operations. The lighting system will need to be relocated or replaced with the runway pavement widening project or when the thresholds are displaced and re-marked. Lighting should be positioned adjacent to the new threshold limits. The displaced threshold should be lighted in accordance with FAA Advisory Circular, *Medium Intensity Runway Lighting System and Visual Approach Slope Indicators for Utility Airports*, and AC 150/5340-16B, as amended. The associated costs are included in the the CIP.

When threshold lighting is relocated or replaced at Swanson Field, it should be investigated to determine if a higher grade of approach lighting is an economical option. The installation of Precision Approach Path Indicator (PAPI) lighting is an option to improve the airport's lighting facilities.

The runway markings will be repainted as part of the short term runway rehabilitation plan. At the same time, displaced threshold markings should be required. Newly displaced runway threshold ends should be marked appropriately and be in compliance with FAA Advisory Circular, *Marking of Paved Areas on Airports,* (AC 150/5340-1D, as amended). It is suggested that threshold bars and arrows be marked to clearly alert airport users that the thresholds are displaced.

Fencing and Control

Perimeter fencing to control unauthorized access to the airfield should be encouraged by the Town of Eatonville. Due to the existing arrangements with adjacent property owners having access to the airport, the enforcement of security measures should be stressed. It is emphasized that airport users play the only role in the protection of the airport property, and it is through their efforts that a safe operating environment is assured.

Users should be encouraged to fence and control access through their properties. Fencing cannot be accommodated on existing town-owned property due to its proximity to the Runway Safety Area (RSA) and Runway Object Free Area (ROFA).

Runway Ownership

The Town should acquire title to the remaining parcels on which the runway is located to ensure future WSDOT funding assistance on airport maintenance and capital projects. The current owner on title, Mr. Burlingame, has expressed interest in dedicating these parcels to the town on the condition that they remain under aviation use in perpetuity. The acquisition of these parcels has been listed in the CIP based on fair market value estimate; however, the Town would seek to have these parcels donated for public use.

Through the Fence Agreement

The Town should implement a through the fence agreement for Swanson Field whereby adjacent land owners would be charged annual dues based on lot size, aircraft storage facilities, and /or number of aircraft in a manner that is fair and equitable between benefits derived by airport users operating off airport and the Town of Eatonville. It is recommended that the Town not allow any future access agreements and promote access to localized areas on the airport. Likewise the Town should actively pursue to acquire property adjacent to the airport or within the RPZ areas as they become available.

Tree Obstruction Clearing and Mitigation

Tree Obstructions near Lynch Creek: These trees are primarily located in a stream buffer adjacent to Lynch Creek, which is a salmon bearing stream. It will be necessary for the town to work toward obtaining a runway approach and habitat conservation easement to ensure that the runway remains free of obstructions while also ensuring that this critical salmon habitat is protected. The Town needs to develop a plan for acquiring an approach easement, for removing the hazardous trees, and for performing salmon habitat restoration once the trees have been removed. It is likely that these trees can be replaced with other species which will provide adequate shade and erosion control without growing to a height whereby safety is compromised.

Other Tree Obstructions: There are other tree hazards outside of the Lynch Creek stream buffer which present hazards to air navigation. (See ALP plan set, Appendix C, for obstruction data.) The town should work with willing property owners to have these trees removed and may consider waiving clearing permit fees for this type of tree removal. These trees can be removed with little or no environmental impact.

It is recommended that prior to any tree clearing operation an obstruction survey be completed to assure that all trees that are obstructing any existing or future RPZ and Part 77 surfaces are addressed.

Runway Safety Area Grading Improvements

All runway safety areas should be graded so that they are smooth with no ruts, humps, or other surface variations. This will minimize the risk of personal injury or aircraft damage if there is an overrun or undershoot. An in-ground drainage detention feature was recently installed at the south end of Runway 34, which will need to be re-graded. Although, this is the responsibility of a private developer, it is listed as a project in the CIP for good measure. This project area needs to be properly covered with compactable material and graded to meet RSA requirements.

Local Airport Aid Grant Program

Each year WSDOT's Local Airport Aid Grant Program provides crucial financial assistance to many of the state's 138 public airports. Through its grant program, WSDOT Aviation has leveraged millions of dollars in federal grants by using a relatively minimal amount of state and local match contributions.

Grant dollars can be used toward projects identified in the 20 year CIP (Table 4.4), or for projects to improve any areas of pavement, safety, maintenance, security, and planning. WSDOT Aviation can award up to $250,000 per single grant to an individual sponsor. Any municipality or federally recognized tribe that owns an airport that is open and available for public use can apply. WSDOT requires a minimum local match of 5% cash or in-kind volunteer labor and materials.

WSDOT Aviation typically awards two rounds of grants per biennium. During each round, WSDOT announces the appropriate times to submit applications and provides deadline information. Grant applications and WSDOT staff contact information are available on WSDOT's Grant Program Web site: http://www.wsdot.wa.gov/aviation/Grants/default.htm.

TABLE 4.4: 20 year capital improvement program

Item	Project	Total Cost	WSDOT/ AD	Other Grant Agencies	Volunteer Labor, Materials, & Equipment	Town Share
	2008 - 2013					
1	Airport Beacon	$36,000.00	$34,200.00			$1,800.00
2	Seal & Remark Displaced Thresholds	$84,000.00	$79,800.00			$4,200.00
3	Relocate Threshold lighting	$15,000	$14,250.00			$750.00
4	Add Paved Runway Entrance Stubs	$28,000.00	$26,600.00			$1,400.00
5	Tree Obstruction Removal (Other vegetation/Private Property)	$10,000.00	$9,500.00			$500.00
6	Lynch Creek Tree Obstruction Removal/ Approach and Conservation Easement / Site Restoration / Environmental Documentation	$35,000.00	$33,250			$1,750.00
7	Runway Area Property Acquisition (Burlingame Parcels B &C)	$1,100,000.00	$1,045,000.00			$55,000.00
8	Airport Signage Improvements	$25,000.00	$23,750.00			$1,250.00
	SUB TOTAL 2008 - 2013	**$1,333,000.00**	**$1,266,350.00**			**$66,650.00**
	2013 - 2018					
9	Widen Runway Pavement to 60-ft	$752,000.00	$714,400.00			$37,600.00
10	Relocate Runway MIRL lighting/New Lighting	$152,000.00	$144,400.00			$7,600.00
11	Property Acquisition /Construct Aircraft tie-downs	$225,000.00	$213,750.00			$11,250.00
12	Runway Safety Area Grading Improvements	$10,000.00	$9,500.00			$500.00
13	Airport Road Access Improvements	$250,000.00	$237,500.00			$12,500.00
	SUB TOTAL 2013 - 2018	**$1,389,000.00**	**$1,319,550.00**			**$69,450.00**
	2018 - 2027					
14	Seal & Remark	$84,000.00	$79,800.00			$4,200.00
15	Install PAPI Approach System/power source upgrades	$75,000.00	$71,250.00			$7,950.00
	SUB TOTAL 2018 - 2027	**$159,000.00**	**$151,050.00**			**$7,950.00**
	TOTAL	**$2,881,000.00**	**$2,736,950.00**			**$144,050.00**

All costs are based on 2007 Dollars with no increase for subsequent year. Dollar values have been entered in Table 4.4 for Town Share of 5% of total costs based on cost share allocations by WSDOT Aviation for non-NPIAS airports. This local share can also be provided by contributions of equipment, materials, and labor upon approval from WSDOT-Aviation.

Appendix A – WSDOT Pavement Management Report

Appendix B – Long-Term Air Transportation Study (LATS)Data

Appendix C – ALP Drawings

Appendix D – Airport Ownership Data

Appendix E – FAA Form 7460-1 / AC 70-7460-2K