Chapter One
STRATEGIC ANALYSIS

The objective of this chapter is to determine, through a strategic analysis, the appropriate future role for the Mulino Airport (Airport) within the Portland metro area system of airports. This chapter documents the tasks undertaken for the strategic analysis. The first section defines the current role of the Mulino Airport within the national, state, and Portland metro area systems of airports. In the second section, the roles, activity levels, facilities, services, and development potential of other airports in the Portland metro area are analyzed. The third section summarizes the results of a survey of airport users and aviation service providers in the area regarding the use of the Mulino Airport and its future needs. The chapter ends with analysis conclusions, an evaluation of alternative airport roles, and a recommended future role of the Airport. This recommended role will guide the development of aviation activity forecasts and facility requirements.

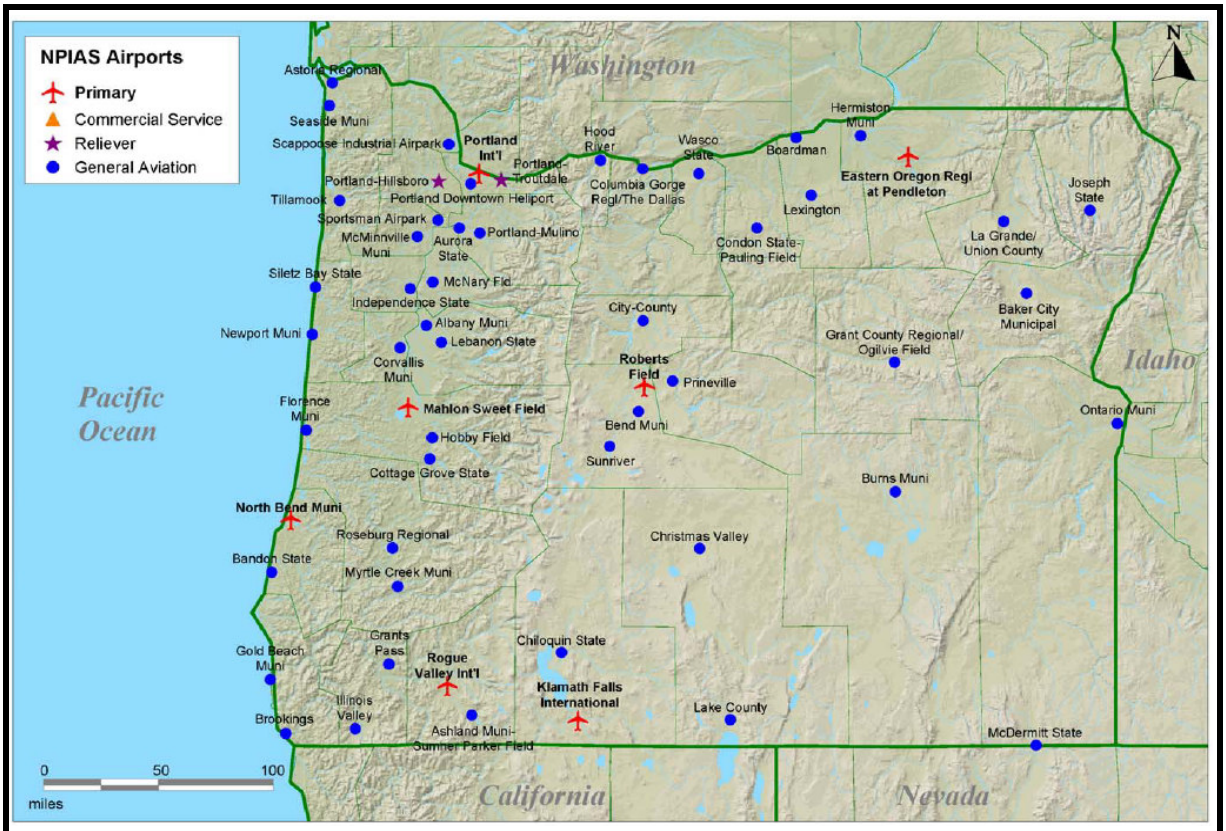
MULINO AIRPORT'S CURRENT ROLE

Mulino Airport's Role within the National System

The Mulino Airport is identified by the Federal Aviation Administration (FAA) as one of 2,558 General Aviation (GA) facilities nationwide and is included within the National Plan of Integrated Airport Systems (NPIAS). GA airports do not have scheduled passenger service. There are several criteria allowing an airport to be included in the NPIAS; however, the general criteria are that the airport has at least 10 based aircraft and is located at least 20 miles (30 minutes drive time) from another NPIAS airport. The Mulino Airport meets the based aircraft criteria; however, the Airport is within 13 miles (approximately 19 minutes drive time) of

another NPIAS airport (Aurora State). This is not unusual; other urban areas with hundreds of based aircraft have NPIAS airports located within 20 miles of each of because the additional airport capacity is needed.

The NPIAS is updated biannually and reported to Congress with a 5-year estimation of Airport Improvement Program (AIP) eligible development. **Exhibit 1A** displays the NPIAS airports within the State of Oregon.



FAA 2005-2009 NPIAS report: Appendix B. (2004, September 30). Retrieved August 16, 2006, from http://www.faa.gov/airports_airtraffic/airports/planning_capacity/npias/ reports/

MULINO AIRPORT	OREGON NPIAS AIRPORTS (2005)	EXHIBIT 1A

Since it is in the NPIAS, the Airport is eligible to receive Federal grants under the AIP. Under the current AIP program, federal grants cover up to 95% of GA airport eligible costs. Eligible costs include planning, development or noise compatibility projects. As part of receiving AIP grants, the Port of Portland (Port) must accept all conditions and obligations under the FAA grant assurances. In general, such assurances require the Port to operate and maintain the Mulino Airport in a safe and serviceable condition, not grant exclusive rights, mitigate hazards to airspace, and use airport revenue properly.[1] In September of 2007, the AIP program will enter

[1] *FAA Airport Improvement Program.* (n.d.). Retrieved August 16, 2006, from http://www.faa.gov/airports_airtraffic/airports/aip/

re-authorization, which may have significant effects on the funding of GA airports such as Mulino Airport.

Mulino Airport's Role within the State of Oregon's System

According to the 2000 State of Oregon Aviation Plan, the Mulino Airport is classified as a Category 4 airport. Category 4 airports serve general aviation and local business, typically have 2,500 or more annual operations, and have at least 10 based aircraft. The Airport is also designated as a Core airport by the State of Oregon, which indicates its significance in the State's network of airports. Core airports are eligible for the State-sponsored Financial Aid to Municipalities (FAM) discretionary grant and Pavement Maintenance Program (PMP). Currently, FAM Grants are awarded annually for an amount not-to-exceed $25,000 for projects including planning, development and capital improvement. The PMP consists of annual funds of up to $1,000,000 dedicated to preserving and maintaining pavements at eligible Oregon airports.

The State of Oregon is currently updating its System Plan and will be providing recommendations on the role the Mulino Airport will fulfill within the State's system. It is not expected for the status of the Mulino Airport to change from its current classification; however, the State may possibly modify the designation requirements for each category.

Mulino Airport's Role within the Portland System

The Port is responsible for providing, among other services, aviation facilities in the Portland metro area, which consists of Clackamas, Washington and Multnomah counties. The Port owns and operates Portland-International (PDX), Hillsboro, Troutdale, and Mulino airports, which are located in these three counties.

PDX serves the greater Portland metro area with extensive international and domestic commercial service. The intent of the Port is to utilize the remaining three airports as reliever airports. Components of this goal are to focus non-scheduled and GA traffic away from the congested airspace near PDX and to provide improved GA access to the overall community. The Mulino Airport was acquired in 1988 by the Port as a GA reliever for PDX, though unlike the Hillsboro and Troutdale Airports, it is not designated by the FAA as a Reliever Airport.

The Clackamas County Reliever Airport Study (1981, August) projected the Mulino Airport would develop in 20 years into a busy airport with hundreds of based aircraft, facilities and services for business jets, more than one fixed base operator (FBO), and an air traffic control tower. The type and amount of growth projected has not occurred. The Airport's FBO ceased operation in 1994 because it was no longer financially viable. Growth in based aircraft has been much slower than forecast in 1981 and the character of aviation at the Airport has not changed from small piston airplanes. Clearly, the Airport has not developed to fulfill the role originally envisioned in 1981.

Management of Mulino Airport by the State of Oregon. Since the Port began operating the Mulino Airport, revenue from the Airport has never covered expenses. That gap has widened in recent years. For this and other reasons, the Port has turned over management of the overall

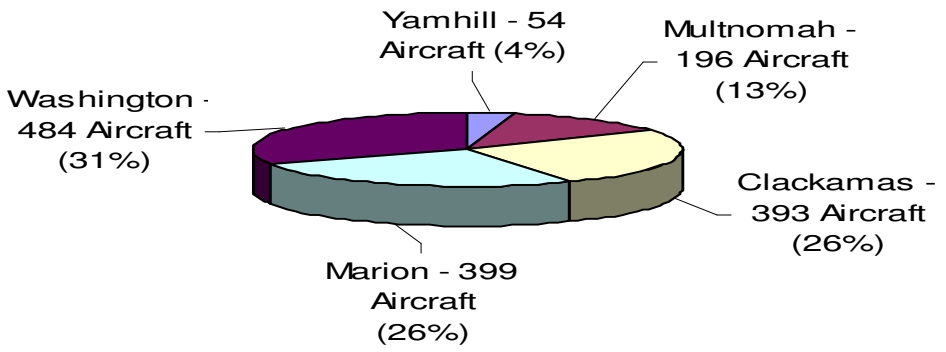
daily airport operations to the Oregon Department of Aviation (ODA). ODA owns and manages the Aurora State Airport, which is approximately 13 miles driving miles west of the Mulino Airport, ODA may be able to administer and maintain the Airport more cost effectively, since maintenance equipment and personnel would be located closer to the Airport. Additionally, ODA's airports, in general, are smaller GA airports similar to the Mulino Airport.

On January 10, 2007, the Port Commission approved a management transfer agreement with the ODA, which became effective on February 1. The Commission approval also included the potential transfer of airport ownership to ODA, if certain financial targets are met. As part of the proposed management agreement, the Port will contribute $80,000 annually to ODA for administrative expenses. The Port has also agreed to fund construction of a new retail card-lock fueling system and two more rows of T-hangars. The Port also committed to completing the Airport's master plan update, which began in July 2006, and a planned drainage project on airport property.

ANALYSIS OF PORTLAND AREA AIRPORTS

To understand the airport market niche that the Mulino Airport serves requires analysis of the other airports in its service area—including a review of the activity levels, facilities, and services available, along with the development potential at those airports. Based on NPIAS criteria, the service area for a GA airport is a 30-minute driving time, or approximately 20 road miles. While the Mulino Airport is situated so that it can serve populations outside the three-county Portland metro area (*e.g.* Marion and Yamhill Counties), the Port's primary interest is how the Airport serves the Portland metro area population as a reliever airport for PDX. It is important to analyze Troutdale and Hillsboro Airports, both located beyond the 30-minute driving time criteria from Mulino, because these airports are included within the Port's system of reliever airports and serve as appropriate benchmarks for evaluating the Mulino Airport and the role it plays in the Port's airport system. As a result, a strategic analysis study area was defined that does not exactly match the service area, but extends approximately 15 minutes drive time to the southeast and up to an hour drive time to the north (see **Exhibit 1B**).

The study area covers portions of Clackamas, Marion, Multnomah, Washington, and Yamhill Counties. **Exhibit 1C** highlights each county's share of based aircraft within the strategic analysis study area. A majority of the airports located within the study area are privately owned for private-use.



MULINO AIRPORT	STRATEGIC ANALYSIS AREA BASED AIRCRAFT BY COUNTY	EXHIBIT 1C

Including Mulino, 40 airports were analyzed and information on each was gathered from available FAA data (Form 5010, Airport Master Records[2]), and the ODA's website[3]. **Table 1A** presents the study area airports in order of vehicular drive time from the Mulino Airport and provides information such as drive time and distance from the Mulino Airport, ownership and use, FAA and State status, based aircraft, runway data, approach data and fuel services. **Table 1B** provides a detailed breakdown of based aircraft and annual aircraft operations at the study airport.

Table 1A reveals 1,526 aircraft are based at the 40 study area airports. Nearly 67% percent of the aircraft are based at public-use, publicly-owned airports and 88% are based at public-use airports, including both public and privately owned. Of the airports studied, only 14 have at least ten based aircraft, four of which are privately owned, private-use. Runway lengths vary between 1,115 to 6,600 feet, while runway widths vary from 20 feet to 150 feet. Over 67% of the runways are not paved. Only seven of the airports have aircraft fueling capabilities.

Ten of the 40 airports are assigned Oregon Airport Categories within the plan. The Mulino Airport and six other airports are Category 4, meaning they:

- Serve general aviation and local business
- Typically have 2,500 or more annual operations, and
- Have at least 10 based aircraft.

Three airports, Aurora State, Hillsboro, and Troutdale, are Category 2. Category 2 airports are business or high activity general aviation airports that accommodate corporate aviation (including business jets and helicopters) in addition to other general aviation activities. They also have 30,000 or more annual operations, of which at least 500 are business related aircraft.

Table 1A lists the Airport Reference Code (ARC) for the four airports that have ARCs designated in their master plans. The ARC is a system designed by the FAA to define airport facility standards appropriate for the aircraft using a particular airport. The ARC identifies the highest performance aircraft the airport was designed for based on its approach speed and

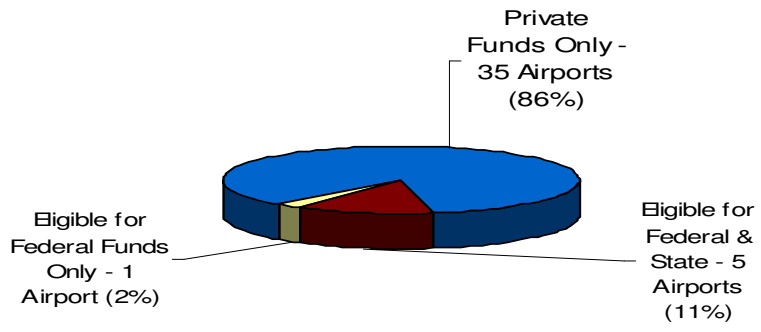
[2] Found at: http://www.gcr1.com/5010Web/
[3] Found at: http://www.oregon.gov/Aviation/index.shtml

wingspan. ARC has two components: Aircraft Approach Category and Airplane Design Group. The ARC for the Mulino Airport is B-II (Aircraft Approach Category B – Airplane Design Group II), which means (it is designed for) aircraft with approach speeds up to 121 knots[4] and wingspans up to 79 feet. The Beech King Air is an example of an ARC B-II aircraft.

Aurora State and Troutdale are also ARC B-II airports. Hillsboro's ARC is C-III, which means it is designed for aircraft with approach speeds up to 141 knots and wingspans up to 118 feet (Gulfstream and other large business jets). The ARCs for the other 36 study airports are not designated, but a review of the based aircraft fleet mix and runway dimensions indicates they would likely not accommodate or meet FAA standards for aircraft larger or faster than the B-I category (approach speed up to 121 knots and wingspan up to 49 feet). Most single and twin-engine piston Beech, Cessna and Piper aircraft are slower and smaller than ARC B-I standards.

Only three of the airports within the study area have instrument approaches – Aurora State, Troutdale, and Hillsboro. At the other airports the runways are visual only, which means that aircraft can only land when the weather is clear. GPS-aided instrument approach procedures have been available for about ten years. Since GPS approaches do not require costly ground-based equipment, such as required by traditional instrument approaches, the number of GA airports changing from visual to GPS aided instrument runways has been growing nationwide. GPS navigation is becoming standard in GA aircraft, although the majority of the GA pilots still fly by Visual Flight Rules (VFR) in visual weather.

Study area airport funding sources are shown in **Exhibit 1D** below. Of the study area airports only five, or 12.5%, are eligible for federal funding, due to their inclusion in the NPIAS. For of those airports (or 10.0%) are eligible for the State's FAM Grant and PMP, since they are designated as core airports. The remaining 35 airports, or 87.5%, must rely solely on private funding. While there are many airports within the study area, few have stable funding for planning and capital development. Facilities like the Mulino Airport play an important function within the study area because they have viable, renewable sources of funding.



MULINO AIRPORT	STRATEGIC ANALYSIS AREA POSSIBLE AIRPORT FUNDING	EXHIBIT 1D

[4] 1 knot = 1.15 miles per hour

Table 1A. Study Area Airport Data

AIRPORT NAME	ID	Drive Time (min.)	Distance & Direction (straight line)	Ownership /Use	NPIAS?	Core?	Oregon Cat. [5]	Based Aircraft	ARC[6]	Rwy Type[7]	Rwy Length/ Width	Rwy Alignment.	Approach.	Fuel
Mulino	4S9	0	0	Port/Pub	Y	Y	4	42	B-II	A	3600 x 100	14 32	Visual	N
Skydive Oregon	OL05	8	4.8 nm S	Pvt/Pvt	N	N	N/A	20	-	A	2900 x 32	18 36	Visual	N
Dietz Airpark	OR40	12	3.6 nm NW	Pvt/Pvt	N	N	N/A	32	-	T	2800 x 60	N / S	Visual	N
Workman Airpark	OR41	12	3.8 nm W	Pvt/Pvt	N	N	N/A	27	-	T	2240 x 100	07 25	Visual	N
Compton	44OR	12	6.2 nm W	Pvt/Pvt	N	N	N/A	3	-	T	2000 x 60	09 27	Visual	N
Aeroacres	OG30	18	5.8 nm N	Pvt/Pvt	N	N	N/A	6	-	T	1800 x 250	04 22	Visual	N
Fairways	OG20	18	6.1 nm NNE	Pvt/Pvt	N	N	N/A	31	-	T/T	2900 x 160[8]	16 34	Visual	N
Skyhill	1OR7	18	6.6 nm NE	Pvt/Pvt	N	N	N/A	1	-	T	2500 x 66	07 25	Visual	N
Bonney Acres	7OR9	18	7.7 nm NE	Pvt/Pvt	N	N	N/A	1	-	T	1300 x 50	06 24	Visual	N
Nielson	2OR0	18	7.8 nm NNE	Pvt/Pvt	N	N	N/A	3	-	T	1150 x 50	09 27	Visual	N
Clackamas Heights	1OR6	18	9.1 nm N	Pvt/Pvt	N	N	N/A	1	-	A/T	2100 x 125	16 34	Visual	Y
Aurora State	UAO	19	8.1 nm W	State/Pub	Y	Y	2	387	B-II	A	5004 x 100	17 35	Non & Prec[9]	Y
Warner's	20OR	22	9.1 nm NE	Pvt/Pvt	N	N	N/A	3	-	T	2640 x 150	17 35	Visual	N
Lenhardt Airpark	7S9	25	7.3 nm WSW	Pvt/Pub	N	N	4	109	-	A	2956 x 45	02 20	Visual	Y
Bruce's	07OR	26	12.1 nm N	Pvt/Pvt	N	N	N/A	1	-	T	1200 x 100	17 35	Visual	N
Mc Gee	67OR	27	11.7 nm W	Pvt/Pvt	N	N	N/A	2	-	T	1960 x 90	16 34	Visual	N
Cub Port	26OR	27	13.2 nm N	Pvt/Pvt	N	N	N/A	2	-	T	900 x 60	16 34	Visual	N
Happy Valley	OL03	27	14.0 nm NNE	Pvt/Pvt	N	N	N/A	3	-	A	2264 x 25	16 34	Visual	N
Mc Gill	OR67	28	10.4 nm NE	Pvt/Pvt	N	N	N/A	1	-	G	1400 x 50	16 34	Visual	N
Beaver Oaks	OR66	28	10.5 nm ENE	Pvt/Pvt	N	N	N/A	9	-	T	1700 x 50	15 33	Visual	N
Valley View	5S9	28	12.2 nm ENE	Pvt/Pub	N	N	4	33	-	A	3780 x 32	16 34	Visual	N
Eagle Nest Ranch	OR65	28	12.7 nm NE	Pvt/Pvt	N	N	N/A	2	-	T	2500 x 80	12 30	Visual	N
Meyer Riverside Airpark	OG34	33	15.0 nm NW	Pvt/Pvt	N	N	N/A	4	-	T	1585 x 100	16 34	Visual	N
Krueger	OR72	33	17.1 nm NE	Pvt/Pvt	N	N	N/A	1	-	T	1300 x 150	16 34	Visual	N
Flying K Bar J Ranch	OR35	33	17.2 nm NE	Pvt/Pvt	N	N	N/A	1	-	T	1450 x 100	17 35	Visual	N
Schmidt	6OR7	33	17.7 nm NE	Pvt/Pvt	N	N	N/A	3	-	T	2300 x 55	07 25	Visual	N
Hollin	7OR7	36	17.1 nm SW	Pvt/Pvt	N	N	N/A	1	-	T	1750 x 80	16 34	Visual	N
Harchenko Industrial	OR38	36	17.1 nm WSW	Pvt/Pvt	N	N	N/A	8	-	A/G	2290 x 75	07 25	Visual	N
Smith Private	29OR	36	19.6 nm SW	Pvt/Pvt	N	N	N/A	1	-	T	2500 x 70	16 34	Visual	N
Flying K Ranch	OR00	38	18.0 nm NW	Pvt/Pvt	N	N	N/A	4	-	T/G	1700 x 20	07 25	Visual	N
Pats Pasture	OR28	38	18.6 nm NW	Pvt/Pvt	N	N	N/A	1	-	T	2100 x 100	E / W	Visual	N
Country Squire Airpark	S48	40	15.4 nm ENE	Pvt/Pub	N	N	4	27	-	A	3095 x 32	07 25	Visual	N
Sportsman Airpark	2S6	40	16.4 nm WNW	Pvt/Pub	Y	N	4	53	-	A	2745 x 50	17 35	Visual	Y
Sandy River	03S	40	18.4 nm NE	Pvt/Pub	N	N	4	24	-	T	2115 x 100	08 26	Visual	N
McKinnon Airpark	OG29	40	19.0 nm NE	Pvt/Pvt	N	N	N/A	4	-	T	3000 x 50	07 25	Visual	N
Auberge Des Fleurs	4OR6	40	19.4 nm NE	Pvt/Pvt	N	N	N/A	3	-	T	1850 x 50	09 27	Visual	N
Stan Jost	74OR	40	19.5 nm WNW	Pvt/Pvt	N	N	N/A	1	-	T	1300 x 80	15 33	Visual	N
Troutdale	TTD	41	19.7 nm NW	Port/Pub	Y	Y	2	196	B-II	A	5399 x 150	07 25	Nonprec	Y
Hillsboro	HIO	52	21.5 nm N	Port/Pub	Y	Y	2	362	C-III	A/A	6600 x 150[8]	12 30	Non & Prec	Y
Stark's Twin Oaks Airpark	7S3	56	24.7 nm NW	Pvt/Pub	N	N	4	113	-	A	2465 x 48	02 20	Vis	Y

[5] www.aviation.state.or.us Oregon Aviation Plan, Executive Summary (2000). See text for explanation.
[6] Airport Reference Code, obtained from individual airport's most recent master plan. See text for explanation.
[7] A= Asphalt, T= Turf, G= Gravel
[8] For airports with multiple runways, largest runway data shown.
[9] Non precision instrument approach (Non) and precision instrument approach (Prec).

Table 1B. Study Area Based Aircraft and Annual Operations

AIRPORT NAME	Single Engine	Multi Engine	Jet	Heli.	Glider	Military	Ultra-Light	Total Based Aircraft	Air Carrier	Air Taxi	GA Local	GA Itinerant	Military	Total Annual Operations
Mulino	40	0	0	0	2	0	0	42	0	0	13,000	8,300	0	21,300
Skydive Oregon	15	1	0	0	0	0	4	20	0	0	0	0	0	NR[10]
Dietz Airpark	30	1	0	0	0	0	1	32	0	0	0	0	0	NR
Workman Airpark	26	1	0	0	0	0	0	27	0	0	0	0	0	NR
Compton	3	0	0	0	0	0	0	3	0	0	0	0	0	NR
Aeroacres	6	0	0	0	0	0	0	6	0	0	0	0	0	NR
Fairways	31	0	0	0	0	0	0	31	0	0	0	0	0	NR
Skyhill	1	0	0	0	0	0	0	1	0	0	0	0	0	NR
Bonney Acres	1	0	0	0	0	0	0	1	0	0	0	0	0	NR
Nielson	3	0	0	0	0	0	0	3	0	0	0	0	0	NR
Clackamas Heights	1	0	0	0	0	0	0	1	0	0	0	0	0	NR
Aurora State	319	27	7	34	0	0	0	387	0	6,190	27,980	39,475	250	73,895
Warner's	2	0	0	0	0	0	1	3	0	0	0	0	0	NR
Lenhardt Airpark	108	1	0	0	0	0	0	109	0	0	1,250	4,750	0	6,000
Bruce's	1	0	0	0	0	0	0	1	0	0	0	0	0	NR
Mc Gee	2	0	0	0	0	0	0	2	0	0	0	0	0	NR
Cub Port	2	0	0	0	0	0	0	2	0	0	0	0	0	NR
Happy Valley	2	0	0	1	0	0	0	3	0	0	0	0	0	NR
Mc Gill	1	0	0	0	0	0	0	1	0	0	0	0	0	NR
Beaver Oaks	9	0	0	0	0	0	0	9	0	0	0	0	0	NR
Valley View	28	4	0	1	0	0	0	33	0	0	1,135	1,830	0	2,965
Eagle Nest Ranch	2	0	0	0	0	0	0	2	0	0	0	0	0	NR
Meyer Riverside Airpark	4	0	0	0	0	0	0	4	0	0	0	0	0	NR
Krueger	1	0	0	0	0	0	0	1	0	0	0	0	0	NR
Flying K Bar J Ranch	1	0	0	0	0	0	0	1	0	0	0	0	0	NR
Schmidt	3	0	0	0	0	0	0	3	0	0	0	0	0	NR
Hollin	1	0	0	0	0	0	0	1	0	0	0	0	0	NR
Harchenko Industrial	6	0	0	2	0	0	0	8	0	0	0	0	0	NR
Smith Private	1	0	0	0	0	0	0	1	0	0	0	0	0	NR
Flying K Ranch	4	0	0	0	0	0	0	4	0	0	0	0	0	NR
Pats Pasture	1	0	0	0	0	0	0	1	0	0	0	0	0	NR
Country Squire Airpark	26	1	0	0	0	0	0	27	0	0	800	1,200	0	2,000
Sportsman Airpark	45	1	0	7	0	0	0	53	0	100	3,875	7,675	0	11,650
Sandy River	14	2	0	2	0	0	6	24	0	0	10,000	1,500	0	11,500
McKinnon Airpark	3	1	0	0	0	0	0	4	0	0	0	0	0	NR
Auberge Des Fleurs	2	1	0	0	0	0	0	3	0	0	0	0	0	NR
Stan Jost	1	0	0	0	0	0	0	1	0	0	0	0	0	NR
Troutdale	177	14	3	2	0	0	0	196	0	4,000	70,000	29,520	1,500	105,020
Hillsboro	244	48	41	29	0	0	0	362	0	8,287	111,250	72,446	870	192,853
Stark's Twin Oaks Airpark	107	1	0	4	0	0	1	113	0	0	5,750	16,445	0	22,195
ALL STUDY AREA AIRPORTS	**1,274**	**104**	**51**	**82**	**2**	**0**	**13**	**1,526**	**0**	**18,577**	**245,040**	**183,141**	**2,620**	**449,378**

Source: FAA Form 5010 (Airport Master Records

[10] Not recorded (NR).

Supplemental information was gathered about the 26 largest airports, which are those reported by the FAA to have at least three based aircraft. Below is a description of these airports. Each description provides, where possible the following:

- The county in which the airport is located
- Total acres
- Accessibility by automobile
- Fuel services
- Instrument approaches
- Expansion potential
- Future development plans
- Hangar availability, rates, and fees
- Any other requirements

Accessibility was judged to be "good" if the airport is a short distance from an interstate of major highway. This information was acquired from available data on the ODA website, FAA Form 5010 and airport owner/manager interviews. At least three attempts were made to contact airport owners or managers. Not all could not be reached.

Mulino. Mulino Airport is located in Clackamas County near Highway 213. Access to the Portland metro area is good; however, direct access to Interstate 5 is poor. The Airport is approximately 275 acres. Other than a pilot's lounge, the Airport does not offer any services. It also does not have an instrument approach. Monthly fees for the Port owned hangars are $125 per month. Privately owned T-hangars rent for $225 per month. Land is available for more hangars. More information on existing facilities will follow in Chapter 2, *Inventory*.

Skydive Oregon Airport. Skydive Oregon is located in Clackamas County, with good access to the Portland metro area. The airport sits on approximately 42 acres. Available records show there are no services offered for the 20 based aircraft. Future plans for the airport are unknown. Aerial photography indicates there may be room for additional hangars.

Dietz Airpark Airport. Dietz is a residential airpark located in Clackamas County, with good access to the Portland metro area. There are 32 aircraft based at the airport. Total airport acreage was not reported on the FAA Form 5010. It was reported there is no room to expand and no more hangar/homes will be developed. There are no services available to the public.

Workman Airpark Airport. Workman is another residential airpark located in Clackamas County. No services are available to the public, but there are a significant number of based aircraft. There are no plans to expand the airport or the number of hangar/homes located there. Acreage was not reported on the FAA Form 5010.

Compton Airport. Located within Clackamas County, Compton Airport is situated on approximately 43 acres. There are three aircraft based on the airfield; however, there are no services available or plans to expand the airport. Access to the Portland Metro is good.

Aeroacres Airport. Also located within Clackamas County, Aeroacres supports six based aircraft. Acreage was not reported on the FAA 5010 Form. There are no services available.

Numerous housing developments are being built close to the airport and airport expansion will not be possible. Portland metro area access is good.

Fairways Airport. Situated on approximately 40 acres within Clackamas County, Fairways supports a significant amount of based aircraft. Aerial photography indicates there is possible land available to develop hangars; however, it is not known if such expansion is planned.

Nielson Airport. With three based aircraft, Nielson Airport is located within Clackamas County. Total acreage was not listed in the FAA Form 5010. Aerial photos suggest that some expansion may be possible.

Aurora State Airport. Aurora State is the closest airport to the Mulino Airport that offers a variety of services. Aurora State is located in Marion County and sits on 144 acres. It is very easily accessible from Interstate 5, which runs north-south through the Willamette Valley. Aircraft maintenance, fuel services (Avgas and Jet Fuel) and flight training are among the many services offered at the airport's three FBOs. Weather information is available from an Automated Weather Observation System (AWOS) and the airport has a Global Positioning System (GPS), instrument landing system localizer (ILS-LOC), and very high frequency omnidirectional range (VOR) approaches. The runway was recently overlaid; however, there are no plans to extend the runway at this time. The ARC is identified as B-II in the most recent Master Plan, indicating the most demanding aircraft with at least 500 itinerant annual operations is a Cessna Citation II or similar aircraft. The largest aircraft using the airport today are Challenger and Embraer 145 jets.

There are 186 hangars at Aurora. The State has land leases ranging from $.04 - $.22 per square foot per month (in comparison, Mulino Airport leases range from $0.8 - $.10 per square foot per month). Private entities build the hangars and charge $400-$800 for monthly hangar rent for small piston aircraft. Tenants are required to have $100,000 of insurance and name the State as an additional insurer. There is a waiting list for hangars but its length is not known. The State does have a small amount of property that will be leased soon for construction of 15 more hangars. South End Airpark is on private property next to the airport and infrastructure construction is occurring now to accommodate five new hangars (50,000 – 100,000 square feet each) for multiple corporate jets.

Warner's Airport. Warner's Airport is located in Clackamas County on approximately 98 acres. Three aircraft are based at the airport. Based on the airport acreage and a review of aerial photos of the airport, it appears growth could occur at the airport.

Lenhardt Airpark Airport. Lenhardt Airpark is situated on approximately 43 acres within Clackamas County. The airport offers Avgas to its many based aircraft and transient users. There are no plans to extend the runway; however, there is room to build 30 more hangars if needed. Aircraft hangar rents are $300 per month for a T-hangar and $350 per month for a traditional box hangar. Hanger lessees must secure additional premises liability insurance for the hangar.

Happy Valley Airport. Situated on approximately 10 acres, Happy Valley Airport is located in Clackamas County. No services are available at the airport. According to the State's 2000 Oregon Aviation Plan, there is no expansion capability at the airport and incompatible land uses exist adjacent to the airport.

Beaver Oaks Airport. Also located within Clackamas County, Beaver Oaks is situated on approximately 27 acres. Access to the Portland metro area is good. There are no services available. There are plans to build an undetermined number of aircraft hangars in the future. Rates for the hangars have not been determined at this time, but will be commensurate with the locale. Additional requirements, such as insurance have not been determined at this time.

Valley View Airport. Valley View Airport sits on approximately 134 acres within Clackamas County. There is good access to the Portland metro area. There are no plans to extend the runway, but there is potential for the runway to be lengthened to 4,000 feet. Currently, there are no hangars available, but there is room to build approximately 40 to 50 hangars and an FBO with fueling capabilities. Hangars currently rent for $155 per month and lessees are only required to sign a liability release and contract. An additional eight to ten homes could be built on-site in the future.

Meyer Riverside Airpark Airport. Meyer Riverside Airpark is located in Washington County and sits on approximately 32 acres. Aerial photos indicate a possibility to add three to five hangar/homes. A hangar/home is a combination of a home that is attached to an aircraft hangar.

Schmidt Airport. Located within Clackamas County, the Schmidt Airport is situated on approximately 3 acres. There are no plans to expand the airport, but expansion is possible. There are no hangars for rent or lease. Access to the Portland metro area is poor.

Harchenko Industrial Airport. Harchenko Industrial is located in Marion County on approximately 28 acres. The airport is used only for agricultural spray application purposes. There is no expansion capability or plans to expand the airport.

Flying K Ranch Airport. Flying K Ranch Airport is located in Washington County on approximately 200 acres. The airport has no expansion capability or plans for development. Hangars are not available for lease or rent. There are no services available to the public.

Country Squire Airpark Airport. Also located in Clackamas County, Country Squire Airpark is situated on approximately 120 acres. The manager reported access to the Portland metro area good. There are no hangars available for rent, but many tie-downs are available. The airport does have expansion capabilities and will build more hangars as demand dictates. Currently, two people are on a waiting list for hangars. The present rate for renting a hangar is $200 per month and the lessee must carry content insurance on the hangar. The southern portion of the airport is neighbored by 400 acres of Bureau of Land Management property and, if needed, the airport could expand the runway to the south to accommodate a 5,000-foot runway.

Sportsman Airpark Airport. Sportsman Airpark is located in Yamhill County on approximately 60 acres, with good access to the Portland metro area. Both Avgas and Jet Fuel

are available. There are no hangars available, but development is in progress for hangars and aviation-related businesses located on the Eastern portion of the airport. Depending on hangar size, rental rates vary from $200 - $250 per month and the airport carries its own hangar insurance coverage.

Sandy River Airport. Sandy River Airport is located on approximately 35 acres in Clackamas County. There are no services available to the public. However, as of September 2006 there is one hangar available for lease. There is demand to add hangars and services, but a plan for expansion has not yet been determined. Hangars at this time rent for $230 - $250 per month depending on size. There are no additional insurance requirements needed for hangar rental. Access to the Portland metro area is good.

McKinnon Airpark Airport. McKinnon Airpark is located in Clackamas County on approximately 80 acres. There are no services available at the airport. Expansion capabilities and development plans are not known.

Auberge Des Fleurs Airport. 60 acre Auberge Des Fleurs is in Clackamas County. There are currently no services available and there does not appear to be any availability for aircraft storage.

Troutdale Airport. 284 acre Troutdale Airport is owned and operated by the Port of Portland as part of its reliever airport system. A variety of services are offered for pilots, including fuel (Avgas and Jet Fuel), maintenance, aircraft rental, and flight instruction. The airport has an air traffic control tower and GPS and non-directional radio beacon (NDB) instrument approaches are available to pilots. The airport's Master Plan Update (2004, October) reports the airport's ARC is B-II. The airport is located 10 miles east of PDX and has excellent access to Interstate 84. As part of the Port's reliever system, the airport attracts GA and recreational traffic.

Hillsboro Airport. The 900 acre Hillsboro Airport is owned and operated by the Port. The airport provides many services, such as fuel (Avgas and Jet Fuel), aircraft maintenance, flight instruction, and aircraft rental. As part of the Port's system of reliever airports, Hillsboro caters to a large and growing volume of corporate air traffic in the area. The Airport Master Plan (2005, June) shows the Hillsboro Airport has a C-III ARC, meaning the most demanding aircraft using the airport would be a Gulfstream or similar. Both precision and nonprecision approaches (ILS, LOC, VOR/distance measuring equipment (DME), and NDB) are available to pilots, as well as a control tower. Access to the Portland metro area is very good.

Stark's Twin Oaks Airpark Airport. Stark's Twin Oaks Airpark is situated on approximately 65 acres in Washington County. There is good access to the Portland metro area. Avgas is available to aircraft flying into the airport. Currently, there are no hangars available. Rent rates vary from $225 - $245 per month depending on hangar size. Those occupying hangars must show hangar keeper insurance as an addition to their aircraft insurance. Plans to build more hangars and expand the aircraft maintenance shop and services are underway.

SURVEY OF AIRPORT USERS

Airport users and other airport stakeholders were surveyed in the summer of 2006. The survey was intended to help determine the role of Mulino Airport, the type and amount of activity that occurs at the Airport and airport improvement needs. A copy of the survey is included in **Appendix C**.

Surveys were distributed at the Annual Mulino Blueberry Pancake Fly-In, the Airport pilot's lounge, and the FBOs at Aurora, Troutdale, and Hillsboro Airports. Additional surveys were sent to all Project Advisory Group (PAC) members, public meeting attendees, Mulino Airport tenants, and Mulino Community Planning Organization (CPO) members. Over 500 surveys were distributed. A response rate of approximately 7% yielded 35 responses. All survey responses are included in **Appendix D**.

Completed surveys were received from pilots in the Tri-County area and two counties in the State of Washington. Seven were from people who are not pilots or who chose not to report aircraft operations information. The majority of respondents own or rent single engine aircraft. Two respondents fly twin engine aircraft and one respondent flies helicopters.

Survey respondents reported nearly 3,000 annual operations (including touch and go) at the Mulino Airport. Of the 18 respondents who own aircraft, only ten base their aircraft at the Airport. Those ten based aircraft represent nearly 600 annual operations. Operations by transient aircraft totaled over 2,300.

Most aircraft not based at the Mulino Airport were located at Troutdale. Aurora State, Hillsboro, and private airports were also airports where survey respondents based their aircraft. Survey respondents who do not base their aircraft at the Mulino Airport were asked why. The most common reason cited was lack of fuel sales, followed by the lack of an FBO, lack of suitable hangars, inconvenient location, and no aircraft maintenance. Other reasons were current airport management, inadequate road structure, lack of flight instruction, and insufficient runway length. Few people cited the cost of hangar rent or the lack of an instrument approach as reasons for not basing at the Mulino Airport.

Survey respondents were also given the opportunity to recommend improvements at the Mulino Airport. Many of the comments reiterated the need for fuel, FBO services, and hangars. Other comments suggested changes in airport management and operation. Interest was also expressed in improving the access to the Airport Café located adjacent to the Mulino Airport. The restaurant is considered by many airport users to be an asset that many airports lack. Comments also included adding an instrument approach, improving the road system, and securing compatible land uses surrounding the Airport. Several comments also suggested incorporating a residential airpark on or near the Airport.

CONCLUSIONS

The Mulino Airport has not grown as projected in previous planning studies, in part, due to the large number of other airports, particularly private airports that are available in the area. Another

reason for not meeting projected growth forecasts has been the airports lack of aviation services. When the Mulino Airport FBO closed, fuel sales ended and planned hangar development did not occur – factors that have discouraged both based and transient aircraft activity.

The ability of private airports to serve the area's aviation demand will decrease in the future. Many of the airports within the study area are not planning to expand their services or facilities. Only six of the airports indicate they will expand in the near future and only one airport has a hangar available. Urban development is starting to encroach on some of these airports. As the value of land for residential and other uses increases, private airport closures tend to become more likely. An example is the recent (July 2006) closure of Evergreen Field in Vancouver, Washington. Evergreen Field had 165 based aircraft.

Private airports generally lack funding sources to purchase land to protect their airports from approach surface obstructions and encroachment from non-compatible land uses. They also lack the advantage of a publicly owned airport, which is entitled to certain land use and airspace protections from both state and federal law.

The same urban growth that threatens private airports also fuels aviation demand. Because the Airport is publicly-owned, is eligible for federal funds, and has land available for hangar development, it seems inevitable demand will increase at the Mulino Airport. The timing for such demand and resultant development is dependent on many factors. One factor affecting private airport closures and population growth in the area is the residential and commercial real estate market, which in turn, is affected by interest rates, economic cycles, and many other factors. GA activity is also subject to changing market conditions. GA activity rises and falls with economic cycles and is affected by changes in legislation, regulation, and tax structures. Most recently, soaring fuel costs have discouraged recreational flying. While knowing exactly when demand will materialize is difficult, Mulino Airport may be well situated to accommodate increase aviation demand, especially as local private airports close and and population growth increases.

Federal grant assurances will not allow the Mulino Airport to discriminate against any type of aviation (aircraft type or aviation purpose) except for reasons associated with safety (*e.g.*, bearing strength of the runway, wingspan limitations imposed by airfield geometry). However, it is possible for a public airport owner to focus facility and service development towards serving desired types of aviation. A well-defined airport role will help guide deliberate and financially responsible development.

ALTERNATIVE ROLES

The Mulino Airport could expand to accommodate business aviation in higher performance turboprop and turbojet, business-class aircraft. However, current air service market conditions appear to make demand for this unlikely. Nearby Aurora State Airport, which has better road access to population centers and existing facilities and services for business aviation is more likely to serve this market in the short term.

The Mulino Airport could downsize to focus on serving smaller, lighter, less costly aircraft used mostly for recreation (*e.g.*, light-sport aircraft and ultra-lights). It could also be converted into a residential airpark. However, it is not advisable to reduce the assets of the Airport, including its capability to handle aircraft with wingspans up to 79 feet, because few airports within the study area can accommodate aircraft that large.

Instead of full conversion to a residential airpark, land on or near the Airport could be developed into an airpark, as some survey respondents suggested. An airpark would generate airport revenue, including revenue from off-airport aircraft owners who would pay a through-the-fence charge for taxiway access to the Airport. However, a residential airpark may not be the most appropriate use of airport property. Residential airparks typically include detached single-family homes, so that airpark land does not have very a high volume of aircraft storage capacity. Considering the possibility that the number of aircraft in the area will grow as the area population and the potential of aircraft relocating to base at the Airport from private airports grows, it may be more beneficial to build a higher density of hangars on the Airport than is possible at a residential airpark. In addition, the FAA discourages through-the-fence operations at NPIAS airports and federal grant assurances regarding the use of land and facilities may hinder residential airpark development.

RECOMMENDATIONS

The Port intends to serve the public in the best way possible by accommodating aviation demand in the strategic analysis area. The Port and the FAA also want the Airport to be financially self-sufficient.

It is recommended the Mulino Airport continue to serve the type of aircraft it has historically served—small (maximum gross takeoff weight of 12,500 pounds), mostly single engine piston aircraft. The current Mulino ARC for Mulino Airport is B-II, exemplified by the Beech King Air. As shown from the survey and the types of based aircraft at the study area airports, the majority of aircraft located in the area can be served by the Mulino Airport. Larger, faster, and heavier aircraft are better served elsewhere, such as at the Aurora State Airport.

Another important recommendation of this strategic analysis regards an instrument approach. Area pilots are not demanding an instrument approach at the Mulino Airport. It is assumed the apparent lack of interest is caused by a few factors, these include:

1. When compared to the other needs at the Airport, an instrument approach is a lower priority.
2. A non-precision approach is located at nearby Aurora State Airport, and
3. Few general aviation pilots are instrument-rated.

However, despite the current low interest, the Port should be familiar with the broader trend in developing instrument approaches. Having a network of all-weather public airports is a safety benefit and goal for the national and state aviation systems. It is recommended that the Port consider establishing an instrument approach to at least one runway at the Mulino Airport. The Port has undergone the initial steps to receive a GPS approach, including a request to FAA, and

surveying and obstruction removal. Through an ODA System Planning Grant, an obstruction survey was completed for the Mulino Airport in 1994. The FAA is currently using this information for GPS approach calculation. Additionally, the Port has undertaken an aggressive obstruction removal program to survey and remove obstructions in the approach to Runway 32, both on property owned by the Port and land not owned by the Port, but where avigation easements have been obtained.

For the Airport to realize improved utilization, more landside services are needed and will be addressed in this master plan. Fueling, aircraft maintenance, and additional hangar capacity are the major needs. Developing a residential airpark at the Airport will be investigated to substantiate demand and feasibility. In addition, the Port should coordinate with Clackamas County and the Oregon Department of Transportation to improve future access to the airport.

The Mulino Airport should continue to serve the GA community as a reliever for PDX. Aviation forecasts, facility requirements, and airport development alternatives prepared later in the master planning process will further evaluate the appropriate ARC for the Mulino Airport.