

CHAPTER A.

Inventory of Existing Conditions

INTRODUCTION. Olympia Regional Airport is a vital part of the national airport system, as well as an integral component of the southern Seattle-Tacoma Metropolitan Area transportation infrastructure within Thurston County. The Airport, which is designated as a General Aviation (GA) facility by the FAA's National Plan of Integrated Airport Systems (NPIAS), represents a significant regional economic asset and supports numerous aviation-related businesses and facilities.

The most recent planning document for Olympia Regional Airport (i.e., the *Airport Layout Plan Update*) was completed in 2003, with the Airport Layout Plan Drawing Set being planned to reflect "as-built" construction projects in 2010. During the intervening years, changes within the aviation industry and local conditions necessitate updating the master plan to ensure Olympia Regional Airport's continued development. The focus of this Master Plan Update (MP Update) will be on the total aviation facility and its environs, with the overall planning goal being the development of an aviation facility that can accommodate future demand and that is not significantly constrained by its environs. This initial *Inventory of Existing Conditions* chapter will examine three basic elements involved with the existing and future development of Olympia Regional Airport. These elements are: the airport facilities (runways, taxiways, aircraft parking aprons, hangars, maintenance facilities, ground access, etc.); the relationship between the airport and airspace system; and, the airport environs.

Subsequent chapters will detail the Airport's forecasts of aviation activity, the ability of airport facilities to safely and efficiently meet the needs associated with the forecast aviation activity, the compatibility of the Airport with surrounding land uses, and recommended future development within and around airport property. This MP Update is intended to provide a comprehensive evaluation of the Airport, and result in a long-term facilities and operational plan for the Airport.

Due to specific environmental issues related to the existence of sensitive habitat and species on the Airport, as defined by the Washington State Department of Fish and Wildlife (WDFW), a separate Planning Memorandum has been prepared in conjunction with this MP Update that

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includes an expanded critical areas/sensitive habitats and species environmental inventory assessment. The initial goal of the Planning Memorandum was to attain agreed upon agency mitigation recommendations between WDFW and the Port of Olympia for the existing sensitive habitat and species located on the Airport for any projects that may require mitigation. However, during the intervening time period, the U.S. Fish and Wildlife Service (USFWS) issued two proposed rules (October and December 2012) to elevate the status of the Taylor's checkerspot butterfly from candidate to endangered species, the streaked horned lark from candidate to threatened species, and four subspecies of the Mazama pocket gopher from candidate to threatened species. The effects of the proposed federal rule on Olympia Regional Airport and other airports in the region are still being determined by the Federal Aviation Administration (FAA). Therefore, the Planning Memorandum will provide foundation information and guidance for developing details of the implementing protocols and processes.

As illustrated in the following figure, entitled *AIRPORT LOCATION MAP* the Airport is located near the southern limits of Puget Sound, adjacent to the Interstate 5 (I-5) corridor, and serves the general aviation requirements of the State Capital facilities in Olympia and the southern Seattle-Tacoma Metropolitan Area.

Airport Role and Facilities

Olympia Regional Airport currently serves the general aviation needs of the community by providing many aviation-related services, including: business-related flying, recreational flying, fixed wing and helicopter flight training, air charters, air ambulance, aircraft rentals, maintenance and sales, aerial surveillance and various state aviation facilities (i.e., Washington State Patrol, WDFW, and the Washington State Department of Natural Resources), along with other aviation-related activities.

The Airport, which is owned and operated by the Port of Olympia, is classified as a *General Aviation* airport by the FAA's NPIAS and designated as a *Regional Service Airport* by the Washington State Department of Transportation Aviation Division (WSDOT Aviation). The management of Olympia Regional Airport is directly correlated with its designated role, which influences both Capital Improvements Programming and revenue generation opportunities.

As shown in Figure A2, entitled *AIRPORT VICINITY MAP*, Olympia Regional Airport is located near the southern boundary of the City of Tumwater Urban Growth Area, approximately 4.5 miles south of the Olympia Central Business District, and 57 miles southwest of Seattle Tacoma





FIGURE A1
Airport Location Map

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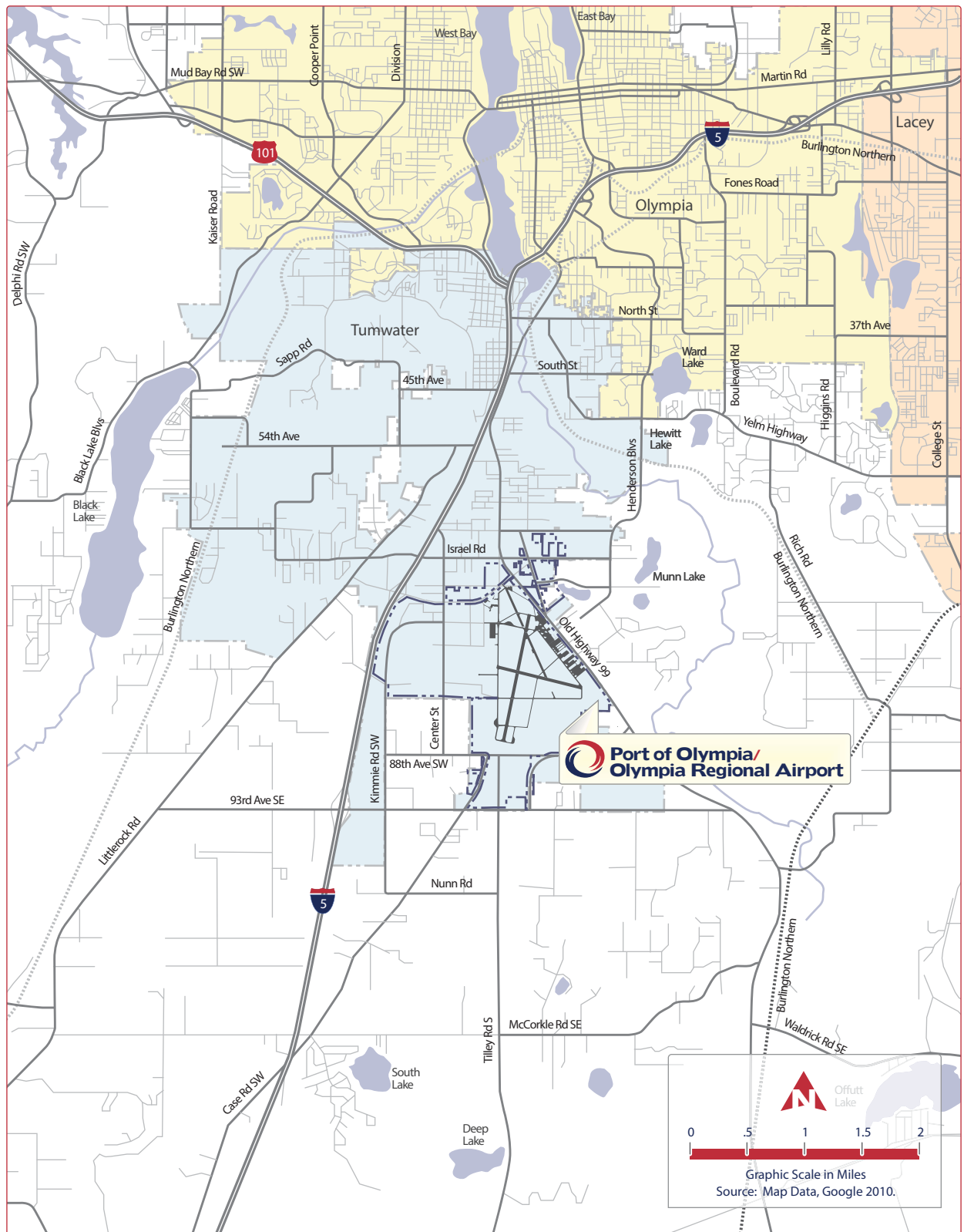


FIGURE A2
Airport Vicinity Map

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International Airport. I-5 is located approximately one mile west of the Airport and provides direct access to the Seattle-Tacoma Metropolitan Area to the north, as well as Portland, Oregon located approximately 110 miles to the south.

Airside Facilities

Olympia Regional Airport is operated with two runways. The primary runway is oriented in a general north-south direction, and is supported by a system of parallel and connecting taxiways. The second is a crosswind runway, oriented in a general east-west direction, also having a parallel taxiway system and supporting taxiway connectors. Figure A3, entitled *EXISTING AIRPORT LAYOUT*, provides a graphic presentation of the existing airport facilities. Additional airport information includes:

- **Airport Reference Point:** Latitude N 46° 58' 09.86" and Longitude W 122° 54' 09.16"
- **FAA Site Number:** 26327.A
- **Airport Elevation:** 208.7 feet above mean sea level (AMSL)
- **Acreage:** 1,572 acres
- **Mean Normal Temperature of hottest month:** 77.2° F (July).

Runways

Runway 17/35. Runway 17/35, the Airport's primary runway is 5,501 feet in length and 150 feet in width. The runway is constructed of asphalt that is grooved, and has gross weight bearing capacities of 75,000 pounds single wheel, 94,000 pounds dual wheel, and 142,000 pounds dual tandem wheel main landing gear configuration. In addition, the runway offers four public-use instrument approach procedures, which are described in a later section of this document. A runway shift project was completed in 2005 for runway safety area (RSA) compliance, and the center section of the runway was reconstructed in 2008 for runway line-of-sight compliance. Therefore, the existing runway pavement is in excellent condition. The runway is equipped with High Intensity Runway Lights (HIRLs) and four-light Precision Approach Path Indicators (PAPIs) located on the left-hand side of each runway end. Additionally, Runway 17 has a 1,400-foot Medium Intensity Approach Lighting System with Runway Alignment Indicator Lights (MALSR) and a localizer located off the Runway 35 end. Runway 17/35 has precision instrument runway markings on the north end and non-precision instrument runway markings on the south end. Runway 17 provides standard *left hand* traffic patterns, while Runway 35 specifies *right hand* patterns.



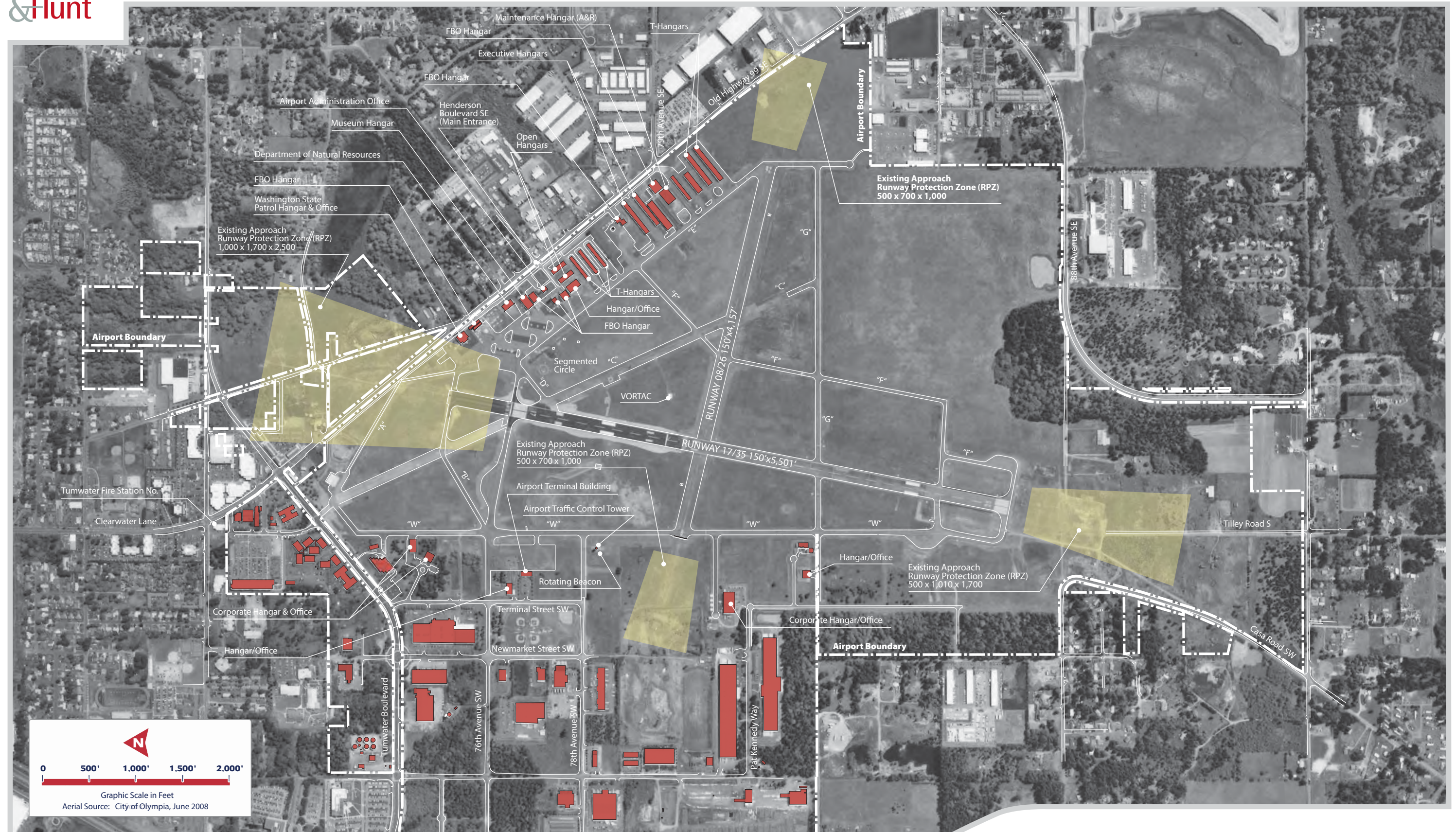


FIGURE A3
Existing Airport Layout

Runway 08/26. Runway 08/26, the Airport's crosswind runway, is 4,157 feet in length and 150 feet in width, and there are current plans to reduce the width to 75 feet. The runway is constructed of asphalt that is in poor condition, and has gross weight bearing capacities of 30,000 pounds single wheel, 45,000 pounds dual wheel, and 90,000 pounds dual tandem wheel main landing gear configuration. This runway provides only visual approach capabilities, is not equipped with runway edge lights, and has basic runway markings. In addition, Runway 08 specifies *right hand* traffic patterns, while Runway 26 provides standard *left hand* patterns.

Taxiways

In addition to Runways 17/35 and 08/26, the airside facilities at the Olympia Regional Airport consist of a taxiway system that provides access between the runway surfaces and the landside aviation use areas.

Taxiway "E". Taxiway "E" is the primary partial parallel taxiway serving the north end of Runway 17/35 and the east end of Runway 08/26 from the east side of the Airport. This taxiway is constructed of asphalt and provides direct connections to Taxiways "B", "D", "F", and "G". This taxiway is 50-feet in width north of Taxiway "F" and rated to 94,000 pounds dual wheel pavement loading supporting Runway 17/35 traffic. The south half of the taxiway is 35-feet in width south of Taxiway "F" and rated to a 30,000 pound single wheel pavement loading in support of Runway 08/26 traffic. In addition, this taxiway has a sub-surface storm water collection system located along the west edge of the taxiway. To assist with visibility during nighttime use, this taxiway is also equipped with edge reflectors.

Taxiway "F". Taxiway "F" is the partial parallel taxiway system that links Taxiway "E" and the east side of the Airport with the south end of Runway 17/35. This taxiway, which is constructed of asphalt that is in good condition and varies in width from 35 to 40 feet, is also equipped with edge reflectors.

Taxiway "W". Taxiway "W" serves as the west side parallel taxiway serving Runway 17/35 and also provides direct access the west end of Runway 08/26. This taxiway, which is constructed of asphalt, is 50 feet in width, considered in good condition, and equipped with Medium Intensity Taxiway Lights (MITLs).

Taxiway "G". Taxiway "G" serves as the south side parallel taxiway serving Runway 08/26 and also links the south end of Taxiway "E" with Taxiway "W". This taxiway, which is constructed of asphalt, is 50 feet in width, considered in poor condition, and equipped with edge reflectors.



A brief summary description of the taxiway system supporting each runway is presented in the following tables.

Table A1
Runway 17/35 Taxiway System

Taxiway	Type	Location	Width	Condition	Lighting/ Signage
Taxiway "E"	Partial Parallel/Connector	East Side	50'	Excellent	None/Yes
Taxiway "F"	Partial Parallel/Connector	East Side	35'	Good	None/Yes
Taxiway "B"	Connector	East Side/West Side	50'	Excellent	Yes/Yes
Taxiway "D"	Connector	East Side	40'	Good	None/Yes
Taxiway "W"	Parallel	West Side	50'	Excellent	Yes/Yes
Taxiway "G"	Connector	South Side	50'	Poor	No/Yes
Taxiway "L" (west)	Connector	West Side	50'	Excellent	Yes/Yes
Taxiway "L" (east)	Connector	West Side	50'	Excellent	None/Yes
Taxiway "A"	Connector	West Side	50'	Good	Yes/Yes
Taxiway "C"	Connector	East Side	35'	Poor	None/Yes

Source: November 2009 Airport Layout Plan, Airport Staff, and WSDOT Airport Facilities and Services Report.

Table A2
Runway 08/26 Taxiway System

Taxiway	Type	Location	Width	Condition	Lighting/ Signage
Taxiway "E"	Partial Parallel/Connector	South Side	35'	Excellent	None/Yes
Taxiway "F"	Connector	North & South Side	35'	Poor	None/Yes
Taxiway "W"	Connector	West Side	50'	Excellent	Yes/Yes
Taxiway "G"	Parallel	South Side	50'	Poor	None/Yes
Taxiway "C"	Connector	North Side	35'	Poor	None/Yes

Source: November 2009 Airport Layout Plan, Airport Staff, and WSDOT Airport Facilities and Services Report.

Landside Facilities

The largest existing landside development area at the Airport consists of a linear layout, running parallel with Old Highway 99 SE, along the east side of the Airport. These facilities include Fixed Base Operator (FBO) facilities, maintenance hangar facilities, aircraft parking aprons, general aviation aircraft storage hangars, Airport Administration Offices, State Aviation

Facilities, aviation museum facilities, fuel storage facilities, and access roadways. In addition, existing landside facilities, consisting of a passenger terminal complex, corporate aviation businesses, aircraft maintenance and repair facilities, office and hangar facilities, and the Airport Traffic Control Tower (ATCT), are located on the west side of the Airport.

The layout and location of the various airport buildings and hangar types were illustrated in Figure A3, entitled *EXISTING AIRPORT LAYOUT*. A detailed view of the terminal/hangar development areas, which includes building numbers that are keyed to Table A1, is also presented on the following illustrations, entitled *EXISTING EAST SIDE DEVELOPMENT AREA DETAIL* and *EXISTING WEST SIDE DEVELOPMENT AREA DETAIL*.

Commercial Aviation & General Aviation Facilities. The Airport is served by two full-service Fixed Based Operators (FBOs), which operate from five aviation service hangars located on the east side of the Airport. Each of the operators provide direct access to Taxiway “E”, and offer a variety of aircraft storage options, flight services and support, as well as aviation fueling. There are also several Aviation Service Operators (ASOs) located on the east and west sides of the Airport that provide specialty aviation maintenance and services. In addition, a large commercial helicopter flight service/maintenance facility and heliport is located adjacent to airport property, just south of the Runway 26 approach end (additional information is provided in later sections).

The majority of the Airport’s general aviation facilities are currently concentrated along Taxiway “E” and consists of a variety of T-hangars, executive hangars, and apron tiedown positions. At present, there are thirteen individual hangar structures, providing a total of 116 covered, or enclosed parking positions, including a total of 36 designated tiedown positions on the apron. The following table, entitled *AIRPORT BUILDING & HANGAR FACILITIES*, provides generalized inventory information about the hangars and associated support buildings located on the Airport. In addition, detail plans of the existing east side and west side aviation development areas are presented on the following figures, entitled *EXISTING EAST SIDE DEVELOPMENT AREA DETAIL* and *EXISTING WEST SIDE DEVELOPMENT AREA DETAIL*.





FIGURE A4
Existing East Side Development Area Detail

FIGURE A5
Existing West Side Development Area Detail

Table A3

AIRPORT BUILDING & HANGAR FACILITIES

Building #	Building & Hangar Type	Ownership	Number of Bays	Hangar Size	Condition/Status
1	Hangar/Office (WA State Patrol)	Port	---	85' x 110'	Good
2	FBO Terminal/Maintenance Hangar (Glacier Aviation)	Private	---	60' x 145'	Good
3	Hangar/Office (WA State DNR)	State	---	60' x 125'	Good
4	Museum Hangar	Private	---	90' x 145'	Good
5	FBO Hangar (Glacier Aviation)	Private	---	70' x 100'	Good
6	Airport Administration Office	Port	---	40' x 62'	Good
7	FBO Office (Glacier Aviation)	Port	---	50' x 50'	Good
8	FBO Hangar (Glacier Aviation)	Private	---	75' x 80'	Good
9	Maintenance Hangar (Olympia Avionics)	Port	---	50' x 50'	Good
10	Hangar/Office (Airborne Properties)	Private	---	50' x 175'	Good
11	Patio Hangar (Plane Port)	Port	7	50' x 175'	Good
12	Patio Hangar (Plane Port)	Port	7	50' x 125'	Good
13	T-Hangar "A"	Port	10	35' x 310'	Good
14	T-Hangar "B"	Port	10	35' x 310'	Good
15	T-Hangar "C"	Port	10	35' x 310'	Good
16	FBO Hangar/Office (Jorgensen Air Service)	Private	---	85' x 95'	Good
17	Executive Hangar "D"	Port	7	45' x 425'	Good
18	Executive Hangar "E"	Port	7	45' x 425'	Good
19	Maintenance Hangar/Office	Private	---	100' x 120'	Good
20	T-Hangar "F"	Port	10	35' x 320'	Good
21	T-Hangars "G"	Port	6	60' x 255'	Good
22	Hangar (Peninsula Group, Inc.)	Private	---	70' x 140'	Good
23	Office (Peninsula Group, Inc.)	Private	---	90' x 90'	Good
24	Hangar/Office	Port	---	50' x 120'	Good
25	Airport Terminal Building	Port	---	50' x 120'	Good
26	FAA Air Traffic Control Tower	FAA	---	20' x 20'	Good
27	Hangar/Office (Soloy Corporation)	Private	---	120' x 225'	Good
28	T-Hangar "I"	Port	10	50' x 475'	Good
29	Hangar "M" (Prime Development)	Private	6	75' x 355'	Good
30	Office (Northwest Marine)	Private	---	50' x 105'	Good
31	Hangar (Northwest Marine)	Private	1	50' x 460'	Good
32	T-Hangar "H" (Olympia Condo Hangars)	Port	10	50' x 425'	Good
33	Maintenance Hangar (A & R)	Private	---	120' x 180'	Good
34	Hangar (Craig Properties)	Private	---	75' x 75'	Good

Source: November 2009 Airport Layout Plan and Airport Staff.

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Aprons. There are a number of small aircraft parking aprons at Olympia Regional Airport that are distributed along the flightline within the northeast quadrant of the Airport. As noted above, there are a total of 36 designated tiedown positions for general aviation aircraft on the apron within this area, which does not include numerous paved and unpaved parking positions in the vicinity of the FBOs that are not delineated by markings.

Passenger Terminal Building. The terminal building complex is located within the northwest quadrant of the Airport, directly west of the Runway 17 threshold and west of Taxiway “W”. The facility, which was originally constructed in 1993, includes of a single level structure consisting of approximately 4,800 square feet, and an adjacent parking facility that can accommodate 40 automobiles. The terminal apron area, consisting of 19,500 square yards is provided direct access to each end of Runway 17/35 via Taxiway “W” and Taxiway “B”.

Commercial airline passenger service has been available at the Airport periodically over the years by various carriers and aircraft. Most recently, Big Sky Airlines operated three daily round-trip flights between Olympia and Spokane, utilizing the Fairchild Swearingen Metroliner aircraft, from 2002 to 2004.

Olympic Flight Museum. Established in 1998, the Olympic Flight Museum is located in a large 13,000 square foot hangar on the east side of the Airport. The facility maintains a unique collection of approximately 11 military helicopters and fixed wing aircraft, with most being maintained in flying condition. Flying demonstrations of the collection are showcased each year at the annual Olympic Air Show, as well as during maintenance and patron membership flights, including special events that are held throughout the year.

Airlift Northwest Medevac Facility. According to information obtained from the company website, Airlift Northwest provides air medical services from a total of five bases located within the Pacific Northwest, and Olympia Regional Airport is the basing location for one of their EC135 American Eurocopter high-performance helicopters. This twin-engine helicopter has an operational speed of 160 miles per hour, a range of 150 miles, and is certified for instrument flight in poor weather conditions. Airlift Northwest operates from one of the FBO storage hangars located just south of the Olympic Flight Museum hangar on the east side of the Airport. In addition to hangar storage for the medevac helicopter, the hangar provides office space, lounge, training facilities, and sleeping quarters for the crew of pilots and flight nurses that operate 24/7 from the facility.



Airport Office Building. The current airport management office, consisting of approximately 2,678 square feet, is centrally located on the east side of the Airport, adjacent to the existing general aviation apron area, and includes an adjacent automobile parking area with approximately 15 spaces. The office is staffed by the Airport Director and a Program Assistant who are employees of the Port of Olympia.

Airport Traffic Control Tower (ATCT). The Olympia ATCT is located on the west side of airport property, adjacent to Taxiway “W” and just north of the approach end of Runway 08. This ATCT is a VFR facility that is operated under the Federal Contract Tower Program. The ATCT is operated 12 hours daily, from 8:00 a.m. to 8:00 p.m. The control area for the Olympia ATCT includes a 4.5 mile radius around the airport (not including the extensions for the approach procedures) that extends upward to an altitude of 2,700 feet (i.e., about 2,500 above airport elevation). The actual approach and departure control for the airport is provided by the Seattle Air Route Traffic Control Center (ARTCC) located at Seattle-Tacoma International Airport.

It should also be noted that the Olympia ATCT is one of 149 federal contract towers that is currently being evaluated for closure (at the time of this printing) due to budgetary cuts related federal sequestration legislation.

Aircraft Rescue and Firefighting Facility (ARFF). The Airport does not presently have an Airport Rescue and Fire Fighting (ARFF) facility on the field. However, fire protection services for the facility are provided by the Thurston County Fire District No. 15, with the primary responder being the City of Tumwater Fire Department. Their facility is located about ½-mile north of the Airport’s existing east side general aviation development area. Additional fire protection is also provided by Thurston County Fire District No. 6, located 2 miles southeast of the Airport.

Fuel Storage Facilities. Currently, aviation fuels are stored in a centralized fuel storage area is located at the north end of the airport, south of the intersection of Old Highway 99 SE and Tumwater Boulevard. The fuel farm is owned by the Port of Olympia, and consists of six above ground storage tanks (i.e., three 12,000 gallon Jet-A fuel tanks, two 12,000 gallon Aviation Gasoline (AVGAS) fuel tanks, and one 10,000 gallon AVGAS fuel tank) that were installed in 1996, with space for two additional tanks. The facility, which is in compliance with all current Environmental Protection Agency (EPA) guidelines, is equipped with overflow protection for up to 96,000 gallons.



At present, the Airport's two FBO's are responsible for fuel delivery and dispensing and the Port of Olympia receives a minimum fuel flowage fee of seven cents per gallon of fuel delivered. The fuel sales records for the past five years are presented in the following table, entitled *AIRPORT FUEL SALES, 2005-2012*. As can be noted, there has been a fairly steady decline in both Jet A and AVGAS sales at the Airport over the past several years, with overall fuel sales decreasing by 37.4% at the Airport since 2006.

Table A4
AIRPORT FUEL SALES, 2005-2012

Year ⁽¹⁾	AVGAS (gallons)	Jet A (gallons)	Total (gallons)
2005	138,053.0 (33.6%)	272,594.8 (66.4%)	410,647.8 (100%)
2006	147,463.8 (31.5%)	321,432.4 (68.5%)	468,896.2 (100%)
2007	148,940.1 (32.5%)	309,537.4 (67.5%)	458,477.5 (100%)
2008	138,862.5 (35.7%)	250,055.0 (64.3%)	388,917.5 (100%)
2009	133,729.0 (38.7%)	211,506.7 (61.3%)	345,235.7 (100%)
2010	99,079.0 (30.0%)	231,184.0 (70.0%)	330,263.0 (100%)
2011	87,538.0 (30.7%)	197,930.0 (69.3%)	285,468.0 (100%)
2012	87,867.0 (30.0%)	205,453.0 (70.0%)	293,320.0 (100%)

Source: Port of Olympia fuel records.

Note: ⁽¹⁾Fuel sales are based on calendar year data.

Automated Surface Observing System (ASOS). The Airport is served by an Automated Surface Observing System (ASOS), which is co-located with the existing glide slope antenna serving the approach end of Runway 17. The ASOS is located on the west side of Runway 17/35, and approximately 1,030 feet south of the Runway 17 landing threshold. This facility measures the following weather parameters: visibility, sky condition (cloud amount and height up to 12,000 feet), obstructions to vision (haze, fog), wind (direction, character, and speed), precipitation accumulation, ambient and dew point temperatures, pressure, and basic current weather information (type and intensity for freezing rain, rain, and snow). The ASOS provides a minute-by-minute update to airborne pilots via VHF radio frequency. The radio frequency for the Olympia Regional Airport ASOS is 135.725 MHz.

Off-Airport Landside Facilities

In addition to the various landside aviation facilities described previously, there are additional off-airport aviation facilities (i.e., Northwest Helicopters) that can have a direct impact on the operation of the Airport.

Northwest Helicopters. According to information obtained from the company website, Northwest Helicopters offers flight services, as well as helicopter sales and service from a 15 acre facility located adjacent to the southeast quadrant of the Airport. The site includes a Final Approach and Takeoff (FATO) area, seventeen (17) helicopter parking positions, and four (4) hangars totaling 53,000 square feet of storage workspace. Flight operations to and from the site are handled by the Olympia ATCT. In addition, Northwest Helicopters leases some airport property from the Port that is adjacent to their facility, which provides roadway access to a fixed-wing parking area on the Airport. This parking area is used by customers traveling to the facility via airplane and for freight transfers/shipping.

Existing Ground Access and Parking Facilities

Vehicular Access. Due to the Airport's location within the City of Tumwater and proximity to the City of Olympia, the facility is easily accessible to vehicles utilizing the existing state and federal highway system, as well as a variety of north-south and east-west roadways that provide easy access to the various landside development areas on the Airport. Interstate 5 (I-5), which is located approximately 1.5 miles west of the Airport, provides direct access to the Seattle-Tacoma Metropolitan Area. Access to the Tumwater Central Business District (CBD) from the airport, located less than one (.75) mile to the north, is provided by Old Highway 99 SE, which is classified as a minor arterial road. This roadway also provides direct access to the existing general aviation facilities located within the northeastern quadrant of the Airport.

Tumwater Boulevard, which is classified as a principal arterial, passes along the northern boundary of the Airport, linking I-5 with Old Highway 99 SE. Extending southward from Tumwater Boulevard, the northwest quadrant of the Airport (i.e., the passenger terminal complex and corporate aviation development area) is accessible from either Terminal Street SW or Newmarket Street SW. In addition, the southwest quadrant of the Airport can be accessed from either Center Street SW, (classified as a commercial/industrial collector road) extending southward from Tumwater Boulevard, or Case Road, extending northward from 93rd Avenue SW/S.R. 121, which is classified as a minor arterial. According to transportation improvement recommendations specified in the City of Tumwater 2025 Transportation Plan, the following roadway improvements in the vicinity of the Airport have been identified:

- Widen Old Highway 99 SE (4 or 5 lanes) from Tumwater Boulevard to 88th Avenue SE and improve intersections at Bonniewood Avenue and 79th Avenue SE.



- Widen 93rd Avenue SW/S.R. 121 to 3 lanes from Tiley Road to Kimmie Street.

Parking Facilities. There are several vehicular parking areas associated with the Airport’s landside development (i.e., the terminal building, FBO, maintenance, and aircraft storage facilities) located on the east and west sides of the Airport.

Airspace System/Navigation and Communication Aids

As with all airports, Olympia Regional Airport functions within the local, regional, and national system of airports and airspace. The following narrative provides a brief description of the Airport’s role as an element within these systems.

Air Traffic Service Areas and Aviation Communications

Within the continental United States, there are some 20 geographic areas that are under Air Traffic Control (ATC) jurisdiction. Air traffic services within each area are provided by air traffic controllers in ARTCCs that provide air traffic service to aircraft operating on IFR flight plans within controlled airspace, and primarily during the en route phase of flight. The airspace overlying Olympia Regional Airport is contained within the Seattle ARTCC jurisdiction and this coverage area includes the entire airspace in Washington and portions of Montana, Idaho, Oregon, California and Nevada.

Terminal Radar Approach Control (TRACON) facilities utilize air traffic controllers and radar to direct aircraft during the departure, descent, and approach phases of flight that are transitioning to or from the en route phase of flight. Once an arriving aircraft is within the destination airport’s airspace, and that airport has an ATCT, the aircraft is handed off by the TRACON to the local air traffic controller. At Olympia Regional Airport, Seattle Approach provides approach and departure services for the Airport. Aircraft that are approaching or departing an airport are subject to air space and air traffic control designed to serve one primary purpose, the safe separation of one aircraft from another. There are two basic flight regimes: those operating under Instrument Flight Rules (IFR) that depend on air traffic controllers for separation and those operating under Visual Flight Rules (VFR) that depend primarily on the “see and be seen” principle for separation. Aircraft operating under VFR conditions may contact the ARTCC, the TRACON, or the local ATCT and request traffic advisory services. Traffic advisory service is used to alert pilots of other air traffic known in the vicinity of, or within the flight path of the aircraft.



During the hours that the Olympia ATCT is closed, VFR traffic operating into and out of Olympia Regional Airport should broadcast their intentions on the CTAF/UNICOM frequency.

The primary means of controlling aircraft employed by air traffic controllers is computerized radar systems that are supplemented with two-way radio communications. Altitude assignments, speed adjustments, and radar vectors are examples of techniques used by controllers to ensure that aircraft maintain proper separation.

The specified lateral and vertical separation criterion for aircraft used by controllers is as follows:

- **Lateral Aircraft Separation: three miles (radar environment)**
- **Lateral Aircraft Separation: five miles (non-radar environment)**
- **Vertical Aircraft Separation: 1,000 feet (below 29,000 feet) and 2,000 feet (29,000 feet and above)**

Olympia Regional Airport can be found on the Seattle sectional aeronautical chart. Aviation communication facilities associated with the Airport include an Aeronautical Advisory Station (UNICOM) on frequency 122.95, Common Traffic Advisory Frequency (CTAF) on frequency 124.4, Seattle Approach and Departure on frequency 121.1, Olympia Tower on frequency 124.4, Olympia Ground on frequency 121.6, Olympia Regional Airport ASOS on frequency 135.725, and Flight Service Station (FSS) with remote transmitter and receiver located in Seattle.

Airspace

The airspace within the approach control boundary surrounding Olympia Regional Airport is under the jurisdiction of the FAA Seattle TRACON located at Seattle-Tacoma International Airport (SEA), and aircraft are handed off to local controllers at the Olympia Tower during their final approach to the Airport. The airspace above and surrounding the approach control boundary is under the jurisdiction of the FAA Seattle ARTCC.

The dominant feature of the local airspace surrounding Olympia Regional Airport is the Class C airspace associated with SEA. Olympia Regional Airport is located just outside the southwest boundary of the SEA Class B Airspace. The Class B Airspace is shaped like an upside-down wedding cake and is individually designed to contain all published instrument approach procedures. The SEA Class B Airspace, which has a circular diameter of 40 nautical miles, extends from the surface to 10,000 feet MSL within the inner boundary, with the surface ranging from 1,600 feet to 8,000 feet within the other quadrants. All aircraft that wish to enter Class B



Airspace must obtain clearance from the Seattle TRACON facility and maintain radio contact. Aircraft must also be equipped with an altitude-encoding transponder. The services provided within Class B Airspace, upon establishing radio and radar contact, include aircraft separation within the airspace.

The local airspace surrounding Olympia Regional Airport is designated as Class D airspace, which is tailored to individual airports. Generally, Class D airspace consists of the immediate airspace within a horizontal radius of five statute miles from the geographic center of airports with operating control towers. The Class D airspace at Olympia Regional Airport ranges from the surface to 2,700 feet above the airport elevation (i.e., 2,900 feet AMSL). Class D airspace is in effect whenever the ATCT is operational, which is between 8:00 a.m. and 8:00 p.m. local time at the Airport. In order to operate on the Airport or within Class D airspace, pilots must establish two-way radio communications with air traffic control personnel.

Navigation Aids

A variety of navigational facilities are currently available to pilots around Olympia Regional Airport, whether located at the field or at other locations in the region. Many of these navigational aids are available to en-route air traffic as well. The navigational aids (NAVAIDS) available for use by pilots in the vicinity of the Olympia Regional Airport are VORTAC and NDB facilities.

A VOR/DME system is a Very High Frequency Omnidirectional Range Station with Distance Measuring Equipment transmitting very high frequency signals, 360 degrees in azimuth oriented from magnetic north. This DME equipment is used to measure, in nautical miles, the slant range distance of an aircraft from the navigation aid.

A VORTAC (VHF Omnidirectional Range/Tactical Air Navigation) is a ground-based electronic navigation aid transmitting very high frequency signals, 360 degrees in azimuth oriented from magnetic north, with equipment used to measure, in nautical miles, the slant range distance of an aircraft from the navigation aid. A VORTAC provides VOR azimuth, TACAN azimuth, and TACAN distance measuring equipment (DME) at one site. The Olympia VORTAC (113.4) is located on the airfield. The McChord VORTAC (109.6) is located approximately 20.5 nautical miles northeast of the Airport and the Seattle VORTAC (116.8) is located approximately 25 nautical miles northeast of the Airport.





FIGURE A6

Airspace/NAVAIDS Summary

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A non-directional beacon (NDB) is an L/MF radio beacon transmitting non-directional signals whereby the pilot of an aircraft equipped with direction finding equipment can determine his bearing to or from the radio beacon and track to or from the station. The operation of the NDB is very simple; however, precisely flying an NDB approach can be difficult. Therefore, NDB approach minimums are typically specified higher than other types of non-precision approaches.

The Lacomas NDB (328.0) is located approximately 14.4 NMs east-northeast of the Airport, the Graye NDB (216.0) is located approximately 16.3 NMs northeast of the Airport, the Mason County NDB (348.0) is located approximately 18.3 NMs northwest of the Airport, the Carney NDB (274.0) is located approximately 26.6 NMs north of the Airport, the Kitsap NDB (206.0) is located approximately 31.9 NMs north-northeast of the Airport, and the Dondo NDB (224.0) is located approximately 33.9 NMs northeast of Olympia Regional Airport.

There is also a network of low-altitude published federal airways (i.e., Victor airways) in the vicinity of Olympia Regional Airport also, which traverse the area and span between the regional ground-based VOR/DME and VORTAC equipment. Victor airways include the airspace within parallel lines located four NMs on either side of the airway and extend 1,200 feet above the terrain to, but not including, 18,000 feet AMSL. When an aircraft is flying on a federal airway below 18,000 feet AMSL, the aircraft is operating within Class E airspace. In addition, the Seattle TRACON has designated major approach routes for both north and south flow conditions that overfly Olympia Regional Airport. For north flow conditions, aircraft can overfly the Olympia VORTAC at a 5,000-foot altitude, which compares to a 12,000-foot overflight elevation for south flow conditions. In each case, the “Olympia Arrival” primarily serves traffic from the Portland, San Francisco Bay, and Southern California areas.

There are also several existing visual navigational aids located on the Airport and available to pilots. These include a rotating beacon, located on a water tower northwest of the Airport (south of Tumwater Boulevard and west of New Market Street), a segmented circle located just east of the approach end of Runway 17, and a lighted wind cone located at the south end of Runway 17/35, just east of the run-up apron adjacent to Taxiway “W”. Each end of Runway 17/35 is also equipped with PAPIs, which provide descent guidance for the visual segment of the approach, and are configured for a 3.0-degree glide path angle.

En route VFR traffic operating at Olympia Regional Airport may utilize all of the previously mentioned en route NAVAIDs in addition to dead reckoning and visual navigation. Upon

entering the terminal area the abovementioned visual NAVAIDs provide additional guidance to the runway ends and touchdown zones.

There are presently five published straight-in instrument approach procedures at Olympia Regional Airport, which are listed in the following table entitled *INSTRUMENT APPROACH PROCEDURES*. Each of the procedures has various ceiling and visibility minimums specified, depending on the category of aircraft.

Table A5
INSTRUMENT APPROACH PROCEDURES

Approach	Designated Runway(s)	Ceiling Minimum (AGL)	Visibility Minimums
ILS	Runway 17	207' AGL	½-Mile ⁽¹⁾
GPS (LPV)	Runway 17	383' AGL	¾-Mile ⁽¹⁾
GPS	Runway 35	552' AGL	1-Mile ⁽²⁾ , 1½-Mile ⁽³⁾ , 1¾-Mile ⁽⁴⁾
VOR/DME	Runway 35	552' AGL	1-Mile ⁽²⁾ , 1¼-Mile ⁽³⁾ , 1¾-Mile ⁽⁴⁾

Source: U.S. Terminal Procedures, Northwest (NW), Vol. 1, September 23, 2007 to October 21, 2010.

Notes: ⁽¹⁾ Authorized for use by Category A, B, C, and D aircraft.
⁽²⁾ Category A and B aircraft.
⁽³⁾ Category C aircraft.
⁽⁴⁾ Category D aircraft.

Existing Airport Traffic Pattern & Voluntary Noise Abatement Procedures

Aircraft operating within the airport traffic pattern follow a right hand traffic pattern for Runways 35 and 08, and a standard left hand traffic pattern for Runways 17 and 26. Aircraft separation in the terminal area is maintained visually by pilots. According to information provided on the WSDOT Aviation website (www.wsdot.wa.gov/aviation), the flight pattern altitude for the Airport is 1,000 feet AGL (i.e., 1,209 MSL). The approximate boundary location of these established patterns are presented in the following figure, entitled *EXISTING AIRPORT TRAFFIC PATTERNS*. The existing voluntary noise abatement procedures are presented as follows:

The management of Olympia Airport is committed to aircraft operating procedures which minimize noise impact on airport neighbors. Listed below are voluntary recommended procedures. The Port asks your cooperation so that further restrictions will be unnecessary. It is understood that air traffic control (ATC) instructions and safety considerations may at times

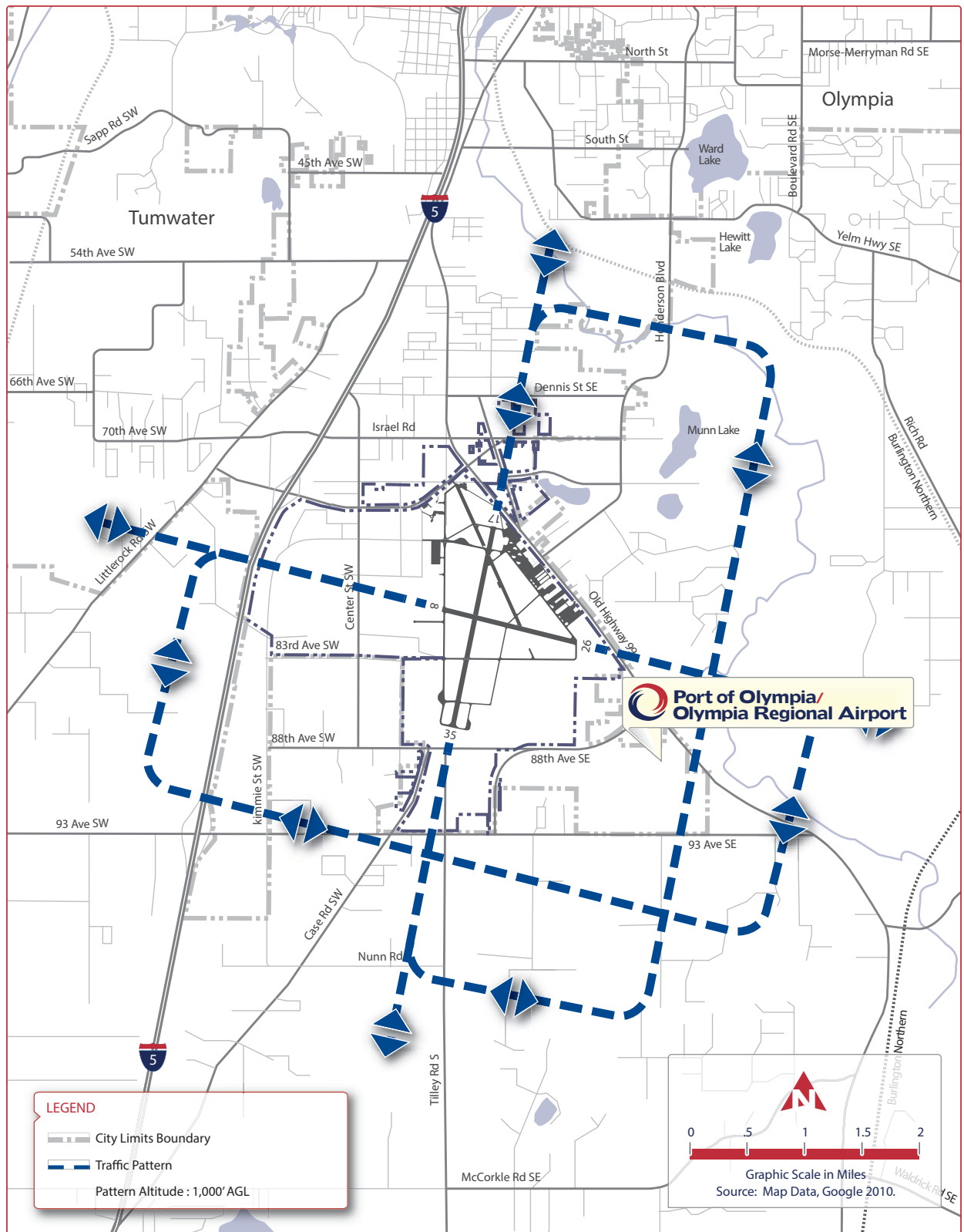


FIGURE A7
Existing Airport
Traffic Patterns

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require deviation from the suggested procedures. Runway 08/26 has been designated as the preferred runway for noise abatement purposes and should be used when conditions permit, otherwise the following will have the least negative impact on our neighbors.

General

A. Approaches

1. Preferred landing runways are 08, 26, and 35

B. Departures

1. Preferred departure runways are 08, 26, and 17
2. Intersection departures are discouraged

C. High Power Engine Run-ups

1. Power plant maintenance testing will only be conducted on a runway, at a runway hold short, Taxiway Charlie, Taxiway Alpha or at the compass rose

Jet/turbo prop and heavy propeller aircraft

A. Standard NBAA noise abatement approach procedures should be used by jet aircraft

B. Approaches

1. Runway 17 VFR approaches fly final at or above ILS glide slope unless otherwise directed at ATC. Maintain at or above 2,000 MSL until intercepting ILS glide slope unless otherwise directed by ATC
2. Practice IFR approaches in VFR conditions
 - a. Avoid circle-to-land maneuvers west of airport
 - b. Missed approaches should maintain runway heading to pattern altitude unless otherwise directed by ATC

C. Departures IFR and VFR

1. Intersection departures are discouraged
2. Climb as rapidly as practicable to 1,500' AGL unless otherwise directed by ATC

D. Miscellaneous

1. Judicious use of maximum reverse propeller pitch or reverse thrust is encouraged
2. No training flights between 10 p.m. and 7 a.m. local time

Light propeller aircraft (single and twin)

A. Approaches – straight-in

1. Runway 17 – If possible, remain above 1200' MSL until over the golf course and above 800' MSL until over the approach lights unless otherwise directed by ATC

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2. Runway 35 – If possible, remain above 1200' MSL until intercepting the VASI unless otherwise directed by ATC
3. Runway 08/26 – Avoid low dragged-in approaches

B. Patterns

1. Hold base and crosswind legs on 17 end close-in to avoid populated area to north; left traffic 17, right traffic 35, unless otherwise directed by ATC
2. Do not make close in left approaches on 35 or on west departures from 17; extend out so crosswind and base leg will not be over Scheller Park, unless otherwise directed by ATC

Helicopters

- A. Helicopter Association International (HAI) recommended noise abatement procedures for all phases of flight should be followed for individual model helicopters.
1. Fly no lower than 1,000 feet AGL, if possible.
 2. Fly on the downwind side of noise sensitive areas, if possible.
 3. Maintain steady flight avoiding large pedal movements.
 4. Fly with the noise sensitive areas on the side opposite the tail rotor.
 5. Fly over less sensitive areas such as highways, greenbelts or non-residential areas.

Airport Environs

Olympia Regional Airport is located in east-central Thurston County, Washington. The majority of airport property is located within the incorporated community of Tumwater, with a small portion of the Airport's Runway 17 RPZ and associated approach surface extending over unincorporated county land. In addition, the southern corporate boundary of the City of Olympia is located approximately four miles north of the Airport. Because the operation of an airport influences surrounding land use, and surrounding land use has an influence on the operation of an airport, it is critical to document the existing and proposed land use types in the area near the Airport.

Therefore, an Airport Influence Area has been identified for this MP Update that is generally bounded by Pinehurst Drive to the north, 101st Avenue to the south, the Deschutes River on the east, and I-5 to the west. These general boundaries surrounding the Airport are illustrated on the following land use and zoning illustrations and the associated text describes the generalized existing land use and existing zoning within the Olympia Regional Airport environs.

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Existing Land Use

The existing land uses in the general vicinity of the Airport, which primarily follow the existing zoning patterns, are defined by the current use of the property. The existing land use for airport property is categorized as *Industrial*, and there is generally an even distribution of mixed use development (i.e., *Commercial*, *Retail*, *Public*, and *Residential* development) located on the north, south and east sides of the Airport. The area directly west of the Airport consists primarily of *Industrial*, and *Commercial* uses associated with the Port's industrial park (i.e., the NewMarket Industrial Campus), with additional *Residential* land uses being located west of I-5. The area directly south of the Airport is categorized as *Industrial*, with a large area of rural *Residential* extending further to the south. The current generalized land use patterns in the vicinity of Olympia Regional Airport, as specified by the City of Tumwater's City-Wide Land Use Map and consultant review of aerial photography are identified in Figure A8, entitled *GENERALIZED EXISTING LAND USE*.

In addition, the Port of Olympia maintains a Comprehensive Scheme of Harbor Improvements that provides guidance for the ongoing redevelopment of Port infrastructure facilities and commercial properties, as well as the specification of Port services. A reassessment/evaluation of the Port's existing 1995 Comprehensive Plan (i.e., the 1995 Comp Plan) was completed in 2005. It should be noted that the Port acquired the Airport and approximately 700 acres of adjacent land in 1963, which was later designated as an industrial development district known as the Thurston Airdustrial Center. This property was re-designated in the 1995 Comp Plan as the Airport and the NewMarket Industrial Campus, with each being divided into sub-districts having corresponding land uses and development standards. The City of Tumwater has since incorporated the Port's *New Market Industrial Campus* sub-districts into their zoning code as the *ARI Airport Related Industry Zone District*, and a map of these zoning boundaries is presented in the Figure A9, entitled *NEWMARKET INDUSTRIAL CAMPUS*.

Existing Zoning

Figure A10, *GENERALIZED EXISTING ZONING MAP*, provides a graphic summary of the land use zoning pattern in the area surrounding the Airport. The area illustrated encompasses portions of the City of Tumwater and unincorporated portions of Thurston County with the map depicting the generalized zoning for each jurisdiction.

Zoning is the public regulation of the use of land. It involves the adoption of ordinances that divide a community into various districts or zones. Each district will allow a certain use of land within that zone, such as residential, commercial, and industrial (and many others). Typical



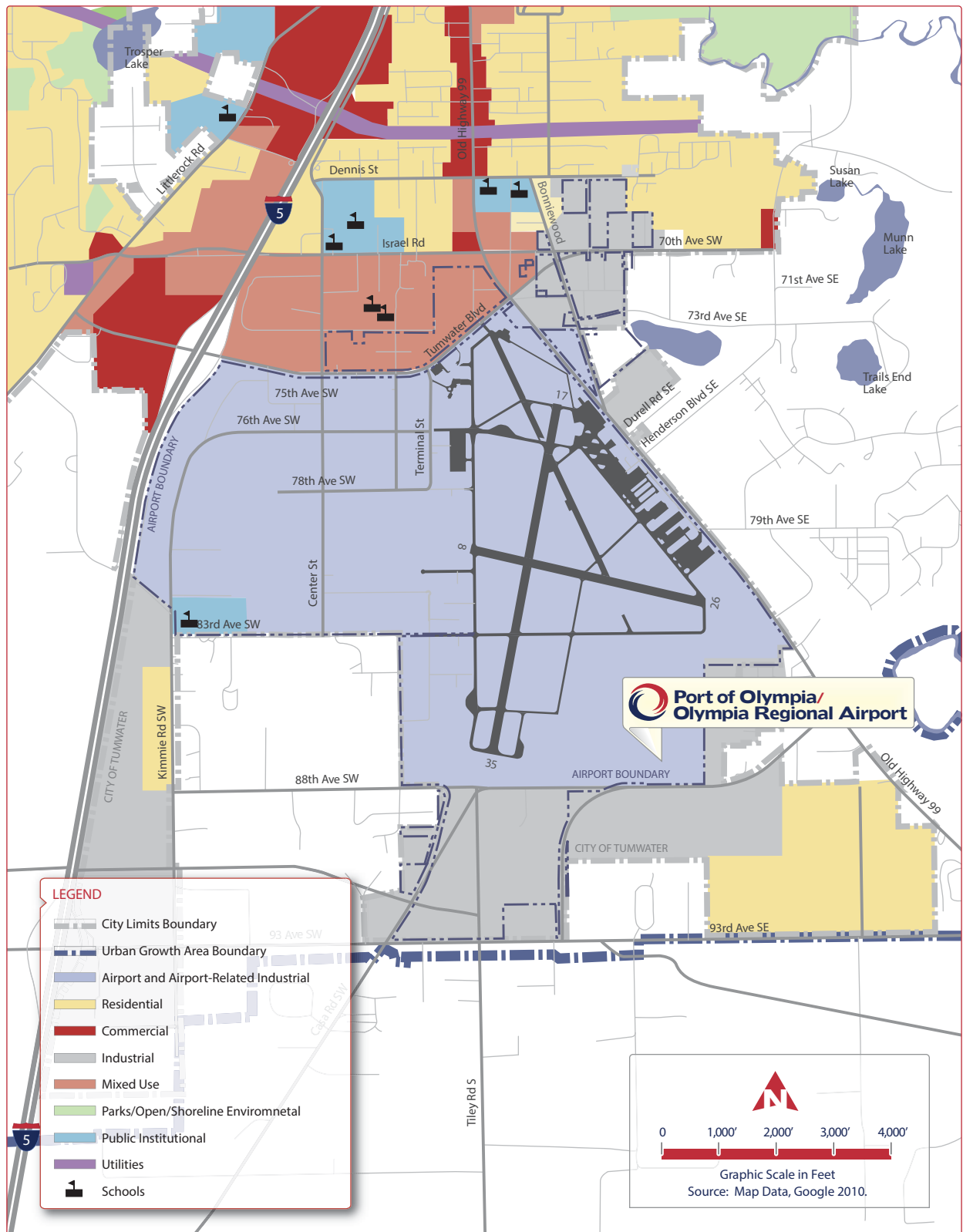


FIGURE A8

Generalized Existing Land Use

Source: The City of Tumwater, Tumwater Planning and Facilities Department, February 2009.

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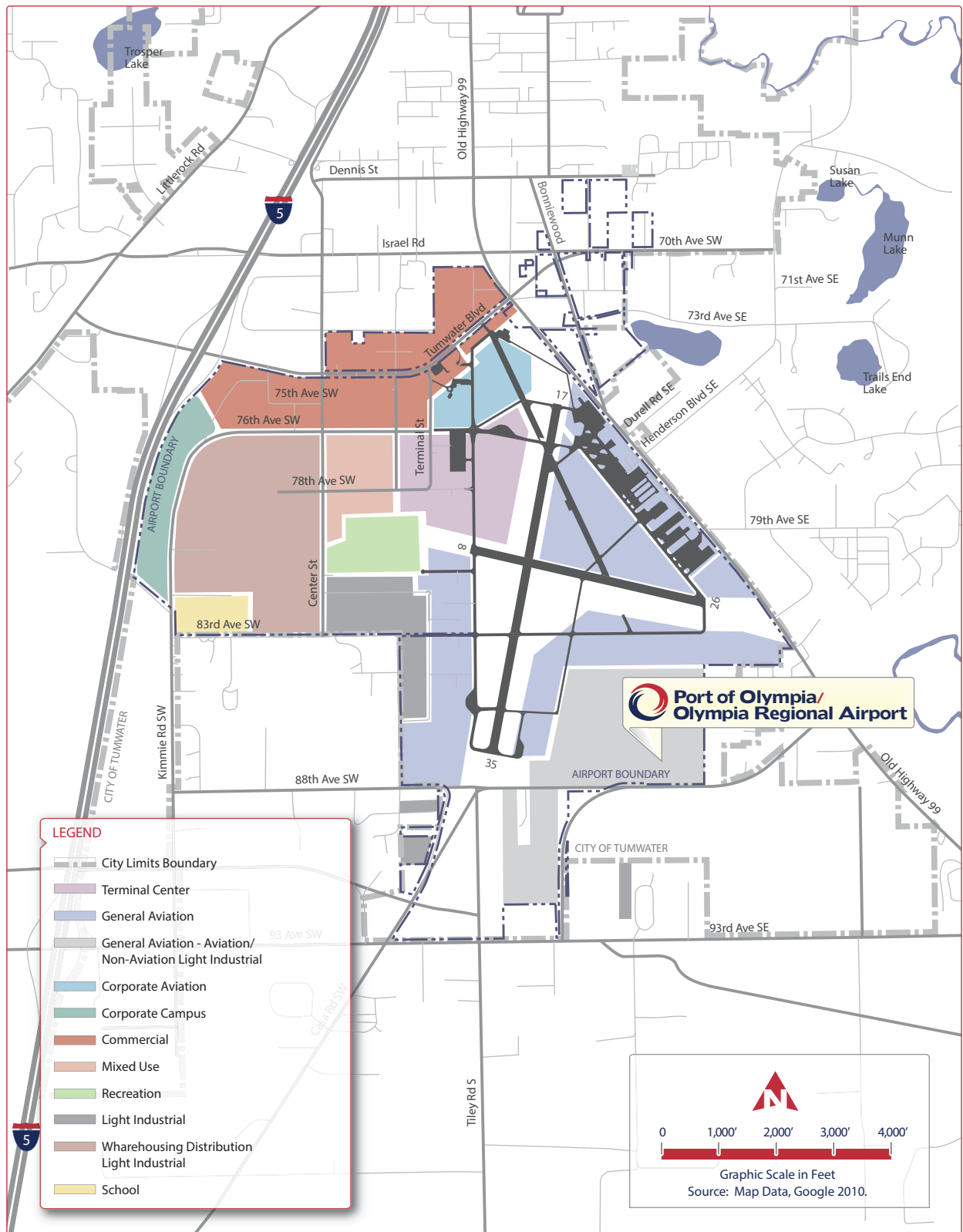


FIGURE A9
New Market
Industrial Campus

Source: The City of Tumwater, Code Publishing Company, July 2010.

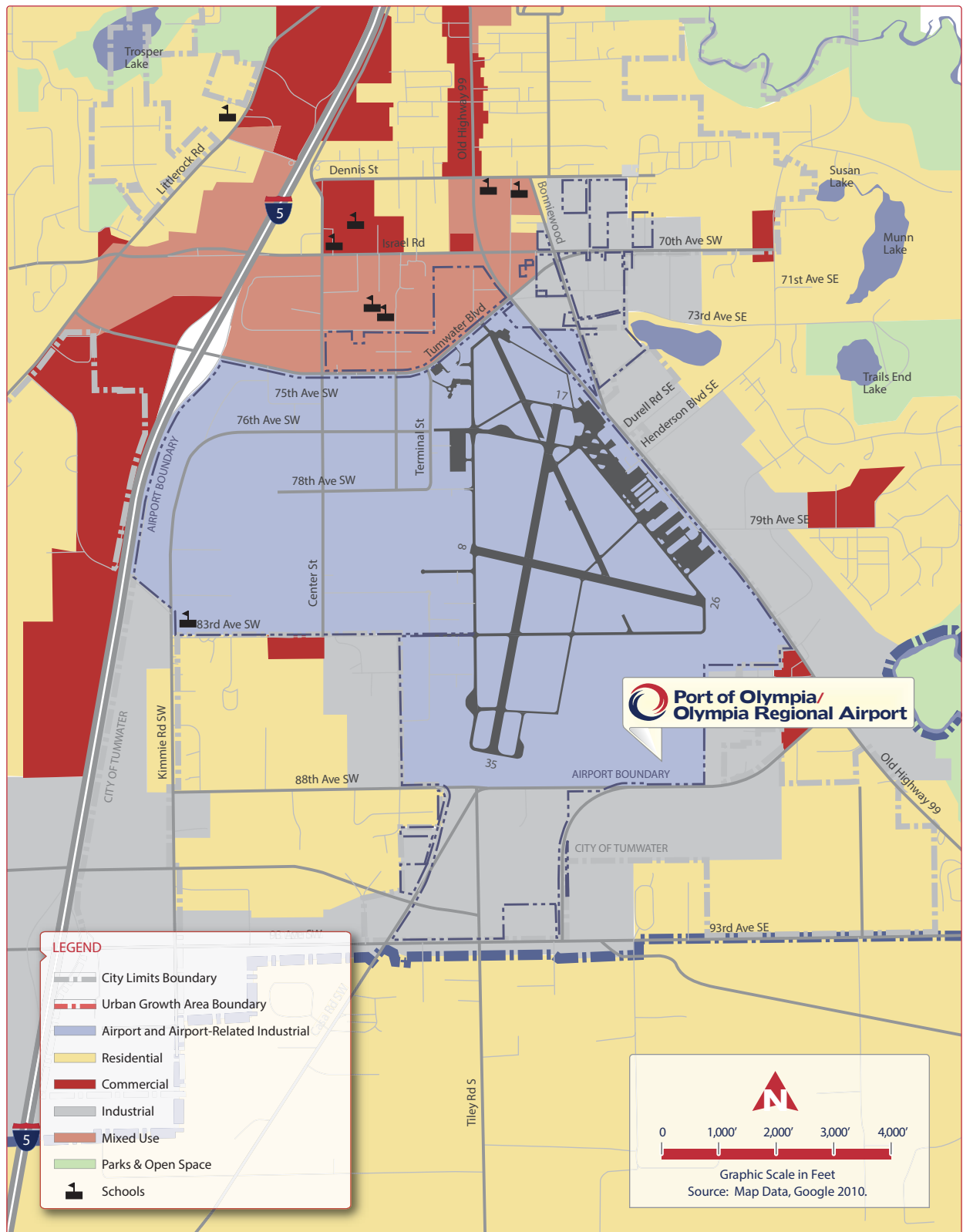


FIGURE A10

Generalized Existing Zoning

Source: The City of Tumwater, Tumwater Planning and Facilities Department, March 2009, and Thurston County GeoData Center, 2010.

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zoning regulations address things such as the height of a building, number of people that can occupy a building, lot area, setbacks, parking, signage, and density.

Review of the existing zoning designations in the vicinity of the Airport (within the City of Tumwater and the unincorporated areas of Thurston County) reveal a general boundary of *Industrial* zoning surrounding the Airport, with the exception of some *Commercial* zoning located along the south side of Tumwater Boulevard within the northwest quadrant of the Airport and some *Residential* zoning adjacent to the southwest quadrant of the Airport. Additional *Residential* zoning is located further east of Industrial zoning along Highway 99, south of 93rd Avenue, west of Interstate 5, and north off Tumwater Boulevard.

In addition, the City of Tumwater has established Airport overlay zoning regulations (i.e., an Airport Overlay Zone) “to protect the viability of Olympia Regional Airport as a significant resource to the community by encouraging compatible land uses and densities, and reducing hazards that may endanger the lives and property of the public and aviation users”. These regulations are specified within Chapter 18.32 of Title 18-Zoning of the Tumwater Municipal Code.

It should be noted that the City of Tumwater and Thurston County do not have an adopted height hazard zoning ordinance for Olympia Regional Airport, based on the Federal Aviation Regulations (FAR) Part 77 “Objects Affecting Navigable Airspace”¹. However, the City of Tumwater has incorporated the height restrictions of FAR Part 77 into the development standards of the underlying zoning districts, and a map providing detailed information on the ground and FAR Part 77 imaginary surface elevations is available for reference in the City’s Community Development Department. In addition, reference is made in the Thurston County Comprehensive Plan that “structures and trees within the airport hazard overlay area should not penetrate airspace surfaces as defined by Title 14 of the Code of Federal Regulations, Part 77, except as necessary and incidental to airport regulations”. Also, due to the length of the extended approach surface boundaries for Runway 17/35, it is recommended that the City of Olympia modify its existing zoning ordinance to regulate the height of objects within the defined FAR Part 77 imaginary surfaces associated with Olympia Regional Airport.

¹ Reference is made in the Thurston County Comprehensive Plan that “structures and trees within the airport hazard overlay area should not penetrate airspace surfaces as defined by Title 14 of the Code of Federal Regulations, Part 77, except as necessary and incidental to airport regulations”.

Future Land Use Planning

The future land use for the area surrounding Olympia Regional Airport is depicted in Figure A11 *GENERALIZED FUTURE LAND USE*. This information was taken from the City of Tumwater's *LAND USE PLAN, 2008 Update* and Thurston County's *Comprehensive Land Use Plan* (amended in 2009).

The plans reflect each of the communities land use decision making process in the region by providing future growth and development guidance for the City of Tumwater and the bordering county land. The plan outlines the long-term future development pattern and sets the regions land use and development policy to guide day-to-day development review decisions.

Additionally, it is an important and effective tool to help manage the growth of communities within the Olympia Metropolitan Area.

In the vicinity of the Airport, this plan generally reflects expanded development of the existing land uses, i.e., *Industrial* and *Commercial* development surrounding the Airport, with all Airport property being categorized as *Airport Related Industry*. There are also numerous areas of *Residential land* use as you move further away from the Airport in all directions, with a large area of rural *Residential* land use being identified south of 93rd Avenue, within an unincorporated portion of the County.

Environmental Review Inventory

The consideration of environmental factors during the airport planning process is an important consideration in the identification and analysis of airport development alternatives and is necessary to provide the airport sponsor with enough information to help expedite any subsequent environmental processing that may be required in support of airport development projects. A brief description of the various impact categories are identified in the text below.

Air Quality

The EPA has established National Ambient Air Quality Standards (NAAQS) for six criteria air pollutants: carbon monoxide (CO), ozone (O₃), particulate matter (PM₁₀), sulfur dioxide (SO₂), oxides of nitrogen (NO_x), and lead (Pb). According to the EPA, Thurston County is designated as an attainment area for all NAAQS. An attainment area meets the national primary or secondary ambient air quality standards for a pollutant. A portion of the County, specifically the Olympia, Tumwater, and Lacey areas, is designated as attainment/maintenance for PM₁₀. An

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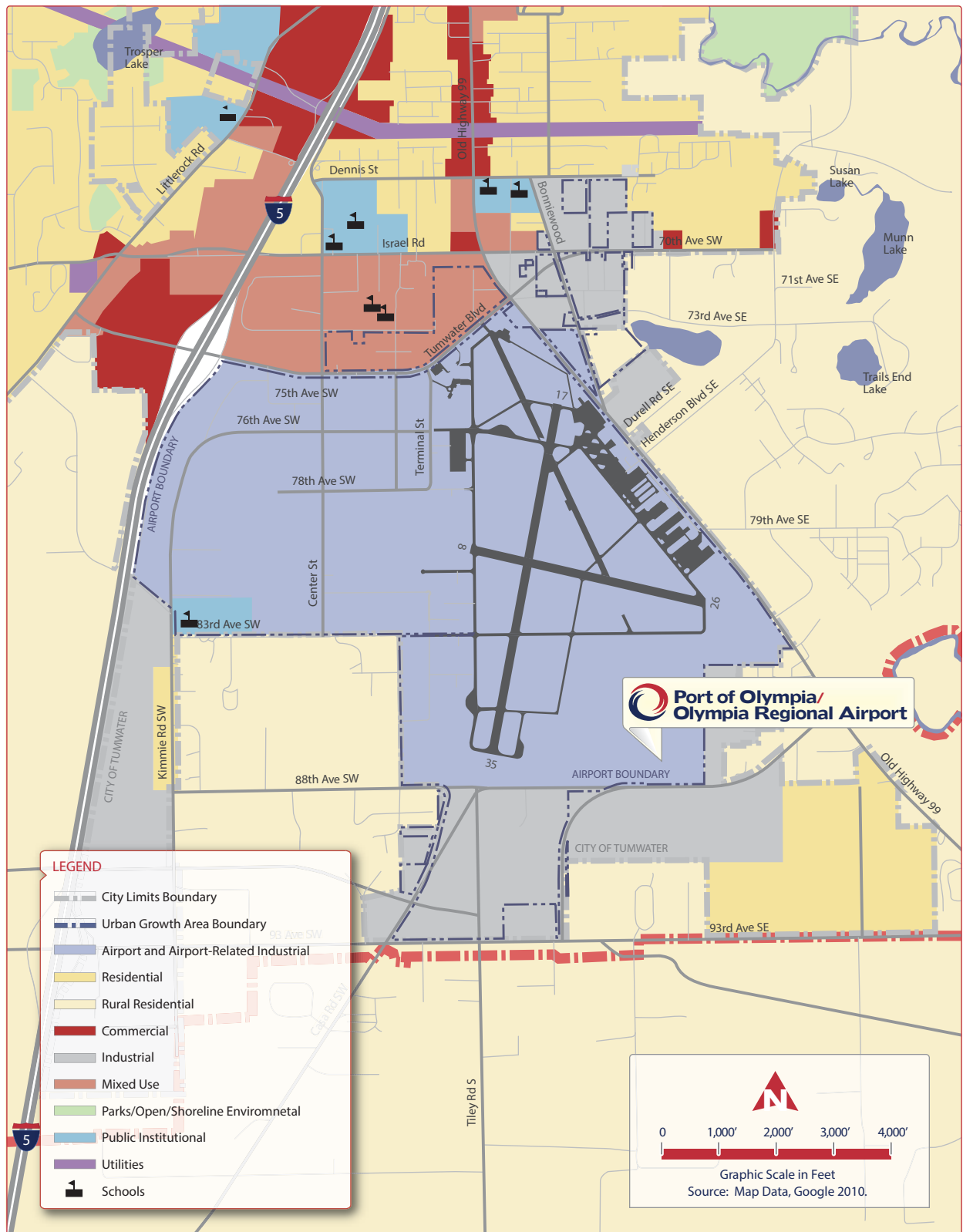


FIGURE A11

Generalized Future Land Use

Source: The City of Tumwater, Tumwater Planning and Facilities Department, February 2009.

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attainment/ maintenance area previously was designated nonattainment, but achieved the standard through implementation of a maintenance plan. The Olympia, Tumwater, and Lacey area was designated as attainment/maintenance on December 14, 2000.

The EPA EnviroMapper indicates there are three facilities near the Airport listed in the Aerometric Information Retrieval System (AIRS) that have operating permits to release air pollutants. Two are currently operating in compliance with all regulatory programs; the other is permanently closed and is either in compliance or meeting compliance schedules with regulatory programs.

Generally, the FAA uses the number of passengers and number of general aviation and air taxi operations as an indicator of NAAQS assessment for specific project implementation. The FAA's *Air Quality Procedures for Civilian Airports and Air Force Bases* states, "If the level of annual enplanements exceeds 1,300,00 (or 2.6 million annual passengers), the level of general aviation and air taxi activity exceeds 180,000 operations per year or a combination thereof, a NAAQS assessment should be considered." The existing and forecast general aviation and air taxi operations (i.e., 66,124 and 86,545) and forecasted maximum enplanements (i.e., 59,280) are below these threshold requirements to perform a NAAQS assessment.

Short-term air quality impacts may be expected from temporary construction activities such as heavy equipment pollutant emissions, fugitive dust resulting from cut and fill activities, and the operation of portable concrete batch plants. Plans and specifications for any airport project will incorporate the provisions outlined in FAA Advisory Circular (AC) 150/5370-10A, *Standards for Specifying Construction of Airports*, which is the FAA's guidance to airport sponsors concerning protection of the environment during construction. Contractors doing work at the Airport will be required to follow guidelines outlined in AC 150/5370-10A to ensure minimal impact due to air pollution.

Farmland

According to the Soil Map for Thurston County, Washington, prepared by the National Resources Conservation Service (NRCS), virtually the entire airport property is comprised of soils considered prime farmland, prime farmland if irrigated, or farmland of statewide importance.

The vast majority of airport property is composed of Nisqually loamy fine sand, 0 to 3 percent slopes. If irrigated, this soil is considered prime farmland. Within the western and southern portions of the Airport, Cagey loamy sand is found, which is also considered prime farmlands if

irrigated. Indianola loamy sand, 0 to 3 percent slopes is found in the southern section of the Airport, which if irrigated is also a prime farmland. Indianola loamy sand, 3 to 15 percent slopes is a farmland of statewide importance and is found in the northern portion of airport property. Finally, small pockets of Yelm fine sandy loam, 0 to 3 percent slopes are located in the northern and southern sections of the Airport. This soil is considered a prime farmland. Figure A12, *SOILS MAP*, shows existing soils located within airport property.

NRCS consultation will be required to determine if the Farmland Protection Policy Act (FPPA) applies to any land converted from non-agricultural use by the proposed projects resulting from this MP Update.

Floodplains

Executive Order 11988 directs federal agencies to take action to reduce the risk of flood loss, minimize the impact of floods on human safety, health, and welfare, and restore and preserve the natural and beneficial values served by floodplains. The Airport is not located within a 100-year floodplain. However, as shown in Figure A13, *FLOODPLAIN MAP*, areas northeast and east of the Airport along the Deschutes River, are located within the 100-year and 500-year floodplains.

Historical, Architectural, Archaeological, and Cultural Resources

Section 106 of the National Historic Preservation Act requires federal agencies, or their designated representatives, to take into account the effects of their undertakings on historic properties, which include archaeological sites, buildings, structures, objects, or districts.

According to the National Park Service's National Register of Historic Places (NRHP), there are 60 historic properties listed in Thurston County. Of these, four are located within the Tumwater City Limits, which include the Capital Boulevard Crossing, the Tumwater Historic District, the Tumwater Methodist Church, and the Union/Pioneer Calvary Cemeteries. The Union/Pioneer Calvary Cemeteries site is located closest to the Airport at approximately 1.2 miles to the northwest. The City of Tumwater Register of Historic Places indicates there are 16 additional sites located within the City having historical significance to either the City or the State. Two of these sites are located on, or in close proximity to the Airport. The first is a historic hangar, currently occupied by the Aviation Division of the State Patrol, that is located on the east side of the Airport (identified as building #1 on Figure A4). The second is an approximate 400 year old tree, known as the Jack Davis Oak, which is located on the east side of the historic hangar described previously.



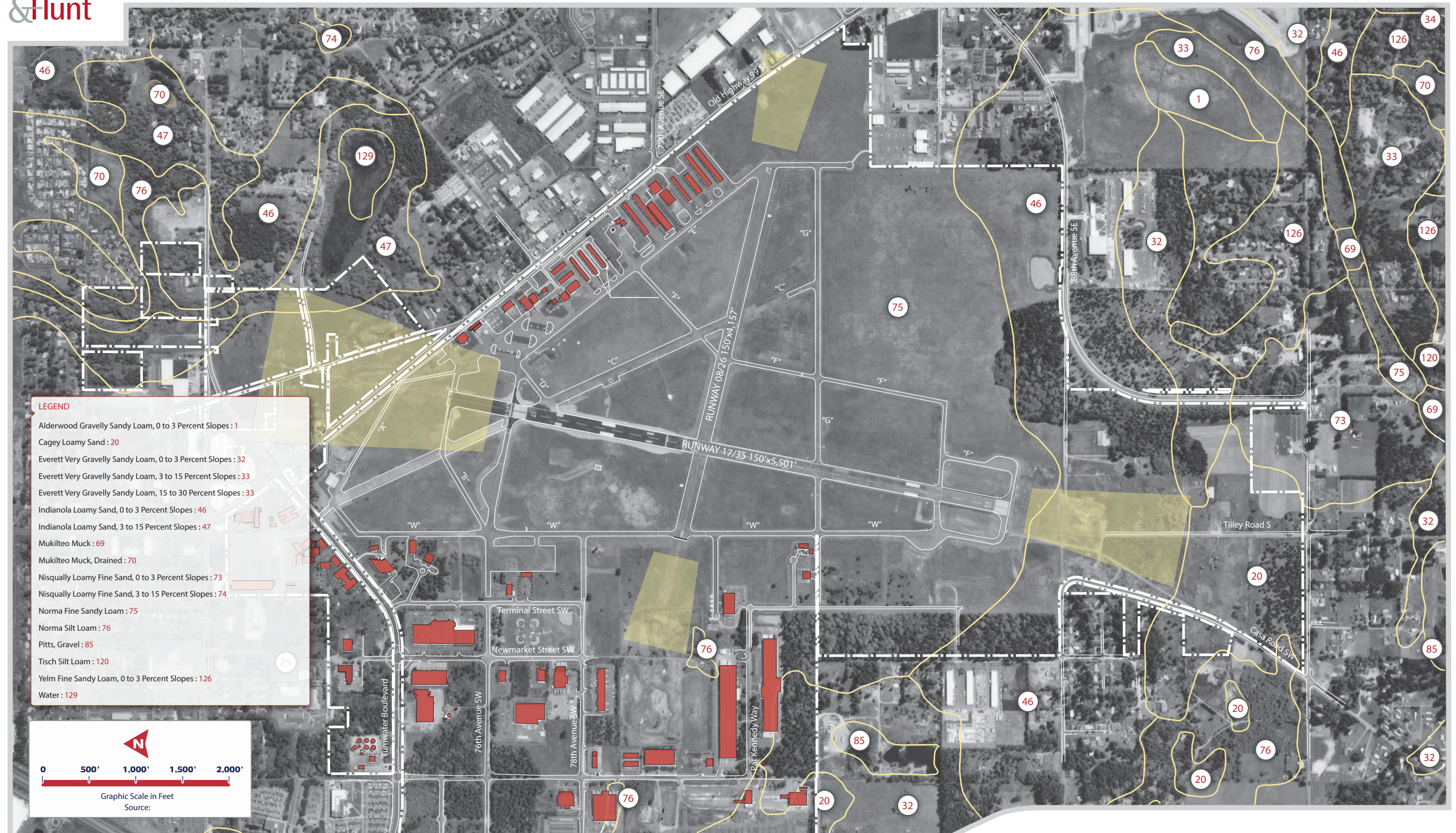


FIGURE A12

Soils Map

Source: Thurston County Development Services, August 2009.

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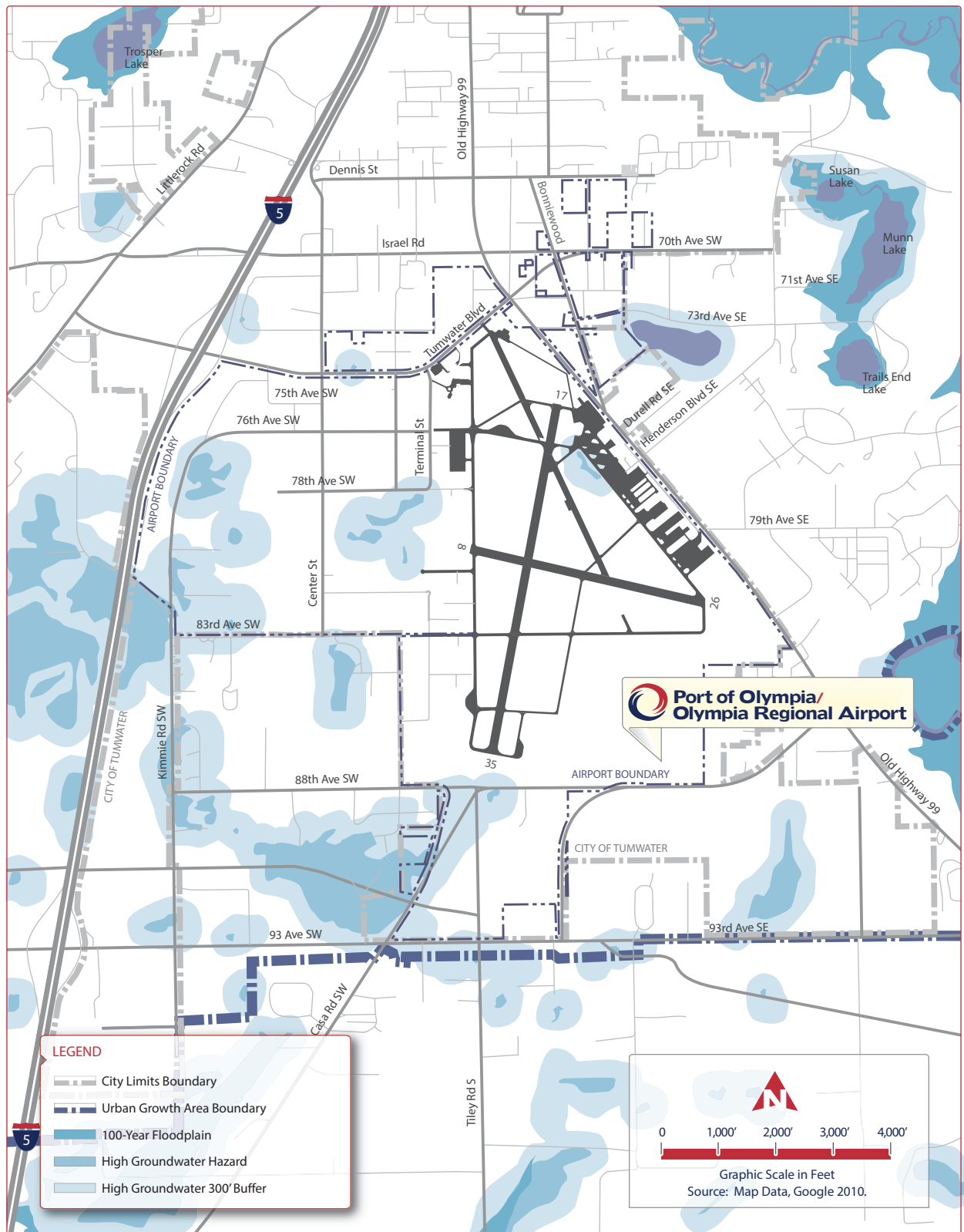


FIGURE A13
Floodplain

Source: The City of Tumwater, Tumwater Planning and Facilities Department, February 2009. Thurston County Development Services, August 2009



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In addition, the Native American Consultation Database (NACD), maintained by the National Park Service, indicates that the Confederated Tribes of the Chehalis River Reservation, the Cowlitz Indian Tribe, and the Nisqually Indian Tribe of the Nisqually Reservation are the Native American Tribes having historical ties and interests in Thurston County.

Noise and Compatible Land Use

Noise is generally defined as unwanted sound and, as such, the determination of acceptable levels is subjective. The basic unit in the computation of day-night sound level (DNL) is the Sound Exposure Level (SEL). An SEL is computed by adding the decibels adjusted dB(A) level for each second of a noise event above a certain threshold. For example, a noise monitor located in a quiet residential area [40 dB(A)] receives the sound impulses of an approaching aircraft and records the highest dB(A) reading for each second of the event as the aircraft approaches and departs the site. Each of these one-second readings is then added logarithmically to compute the SEL.

The computation of DNL involves the adding, weighting, and averaging of each SEL to achieve the DNL level in a particular location. The SEL of any single noise event occurring between the hours of 10:00 p.m. and 7:00 a.m. is automatically weighted by adding 10 dB(A) to the SEL to account for the assumed additional irritation perceived during that time period. All SELs are then averaged over a given time period (day, week, year) to achieve a level characteristic of the total noise environment. DNL levels usually are depicted as grid cells or contours. Grid cells are squares of land of a specific size that are entirely characterized by a noise level. Contours are interpolations of noise levels based on the centroid of a grid cell and drawn to connect all points of similar level. Contours appear similar to topographical contours and form concentric “footprints” about a noise source. These footprints of DNL contours drawn about an airport are used to predict community response to the noise from aircraft using that airport.

Following Sponsor and FAA review/approval of the aviation activity forecasts for this MP Update, a new set of existing and future noise contours will be developed that utilizes the most current noise modeling software and aircraft operational data. These contours will be presented in the *Development Concepts & Alternatives Analysis* chapter of this Study.

Section 4(f) Property

Section 4(f) of the Department of Transportation Act (recodified at 49 USC, Subtitle I, Section 303) provides that no publicly owned park, recreation area, wildlife or waterfowl refuge, or land of a historic site that is of national, state, or local significance will be used, acquired, or affected

by programs or projects requiring federal assistance for implementation. Several parks and trails are located within the airport vicinity and are listed in the following table entitled *PARK AND RECREATION FACILITIES*.

Table A6
PARK AND RECREATION FACILITIES

Facility Name	Distance and Direction From Airport	Facilities
V Street Pocket Park	1.0 mile NNW	Playground and basketball court
Pioneer Park	1.0 mile NNE	Baseball, softball, and soccer fields, volleyball courts, playground, restrooms, and trails
Palermo Pocket Park	1.3 miles N	Playground and basketball hoop
Tumwater Valley Running Path	1.7 miles N	Trail
Millersylvania State Park	2.0 miles S	Camping, fishing, swimming, canoeing, picnic areas, and trails
Barclift Park	2.1 miles NNE	Shelter, picnic areas, playground, half basketball court, tennis court, and trails
Tumwater Falls Park	2.1 miles N	Restrooms and trails
Jim Brown Park	2.3 miles N	Playground, half basketball court, tennis court, and picnic/play areas
Overlook Park	2.4 miles NNW	Scenic overlook and picnic areas
Tumwater Hill Park	2.5 miles NNW	Baseball field, picnic areas, and trails
Tumwater Historical Park	2.7 miles N	Shelter, picnic areas, restrooms, playground, and trails
Kenneydell Park	2.9 miles W	Lodge, shelters, picnic areas, swimming, athletic fields, playgrounds, and trails
Black River-Mima Prairie Glacial Heritage Preserve	3.0 miles W	Closed to public use

Source: City of Tumwater Department of Parks and Recreation, Thurston County Parks and Recreation, and Washington State Parks.

Should the proposed airport development resulting from this MP Update involve more than a minimal physical use or a “constructive use” substantially impairing these or other recreation facilities, and no prudent and feasible alternatives exist that would avoid impacting the properties, then section 4(f) may be applicable. If section 4(f) is applicable, then measures needed to minimize the effects will be determined and implemented through consultation with officials having jurisdiction over the properties.

Threatened and Endangered Species

The Endangered Species Act, as Amended, requires each federal agency to ensure that any action authorized, funded, or carried out by such agency is not likely to jeopardize the continued

existence of any endangered or threatened species or result in the destruction or adverse modification of habitat of such species. According to the USFWS, and included in the following table entitled *THURSTON COUNTY THREATENED, ENDANGERED, AND CANDIDATE SPECIES*, there are 13 federally listed endangered, threatened, or candidate species known to occur within Thurston County. As stated previously, the USFWS has issued two proposed rules to elevate the status of the Taylor's checkerspot butterfly from candidate to endangered species, and the streaked horned lark and three subspecies of the Mazama pocket gophers from candidate to threatened species. Additionally, the table includes three species known to occur on airport property that are listed as a state candidate species by the WDFW. Typically, before any projects could be undertaken, the Airport would need to determine if these threatened and endangered species are located within the proposed project area. If the species are found to be present, and depending on potential impact, an Environmental Assessment (EA) or Environmental Impact Statement (EIS) may have to be prepared prior to project implementation.

Table A7

THURSTON COUNTY THREATENED, ENDANGERED, AND CANDIDATE SPECIES

Group	Common Name	Scientific Name	Status
Amphibians	Oregon spotted frog	<i>Rana pretiosa</i>	Federal Candidate
Birds	Northern spotted owl	<i>Strix occidentalis caurina</i>	Federal Threatened
Birds	Marbled murrelet	<i>Brachyramphus marmoratus</i>	Federal Threatened
Birds	Streaked Horned lark	<i>Eremophila alpestris strigata</i>	Federal Candidate
Birds	Oregon vesper sparrow	<i>Pooecetes gramineus affinis</i>	Proposed Threatened
Butterflies	Mardon skipper	<i>Polites mardon</i>	State Candidate
Butterflies	Taylor's checkerspot	<i>Euphydryas editha taylori</i>	Federal Candidate
Butterflies	Puget blue	<i>Plebejus icarioides blackmorei</i>	Proposed Endangered
Butterflies	Valley silverspot	<i>Speydia zerene bremnerii</i>	State Candidate
Fishes	Bull Trout	<i>Salvelinus confluentus</i>	State Candidate
Flowering Plants	Golden Paintbrush	<i>Castilleja levisecta</i>	Federal Threatened
Flowering Plants	Water howellia	<i>Howellia aquatilis</i>	Federal Threatened
Mammals	Fisher	<i>Martes pennanti</i>	Federal Threatened
Mammals	Olympia pocket gopher	<i>Thomomys mazama pugetensis</i>	Federal Candidate
Mammals	Tenino pocket gopher	<i>Thomomys mazama tumuli</i>	Proposed Threatened
Mammals	Yelm pocket gopher	<i>Thomomys mazama yelmensis</i>	Federal Candidate
			Proposed Threatened

Source: U.S. Fish & Wildlife Service Washington Fish and Wildlife Office, *Listed and Proposed Endangered and Threatened Species and Critical Habitat; Candidate Species; and Species of Concern*, revised August 26, 2010.

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However, it should be noted that the Port of Olympia has had consultation with a WDFW science team regarding a Habitat Management Plan (HMP) that was prepared for the Airport's 5-year development plan in 2006. Official response to the Port's HMP by the WDFW was received in August, 2008 and included recommendations for addressing the presence of five candidate species (i.e., the streaked horned lark, Oregon vesper sparrow, Taylor's checkerspot and Puget blue butterflies, and the Mazama pocket gopher) that are located on the Airport, as well as the existence of prairie vegetation/habitat. The issue of the prairie vegetation is addressed briefly in a later section regarding *Critical Areas*.

Water Quality

The majority of Olympia Regional Airport (i.e., basically north of 88th Avenue) is contained within the Deschutes River watershed. The area to the south is within the Black River watershed. The Deschutes River empties into Capitol Lake about 2.5 miles north of the Airport, which connects to Budd Inlet of Puget Sound. A small creek flows northward from the extreme northeast corner of airport property to the Deschutes River. The Black River is a tributary of the Chehalis River, which empties into Grays Harbor on the Pacific Ocean.

According to the City of Tumwater 2010 Water System Plan, there are six identified wells supplying drinking water to the City with corresponding Wellhead Protection Areas (WHPA) on or near Olympia Regional Airport (see Figure A14 entitled *WELLHEAD PROTECTION AREAS MAP*). A WHPA is a management area defined by modeled capture zones, specific surface and subsurface areas surrounding a municipal water well or well field through which contaminants are likely to move toward and reach such water well or well field within specified time periods. Within WHPAs, the City applies specific prohibitions and limitations to new, expanding, and existing development, and oversees the management and use of hazardous materials that could contaminate groundwater-based drinking water supplies. An Aquifer Protection Area (AQP) is an area naturally more vulnerable to aquifer contamination because of its geological and hydrological conditions. Currently, all lands within Tumwater are contained within an AQP, which requires all development to provide for the general protection of groundwater.

Immediately south of the approach end of Runway 35, Thurston County identifies an area of high ground water hazard. Other high ground water hazard areas on airport property include within the NewMarket Industrial Campus in the western section of the Airport, and just east of the approach end of Runway 17 adjacent to Taxiway E.



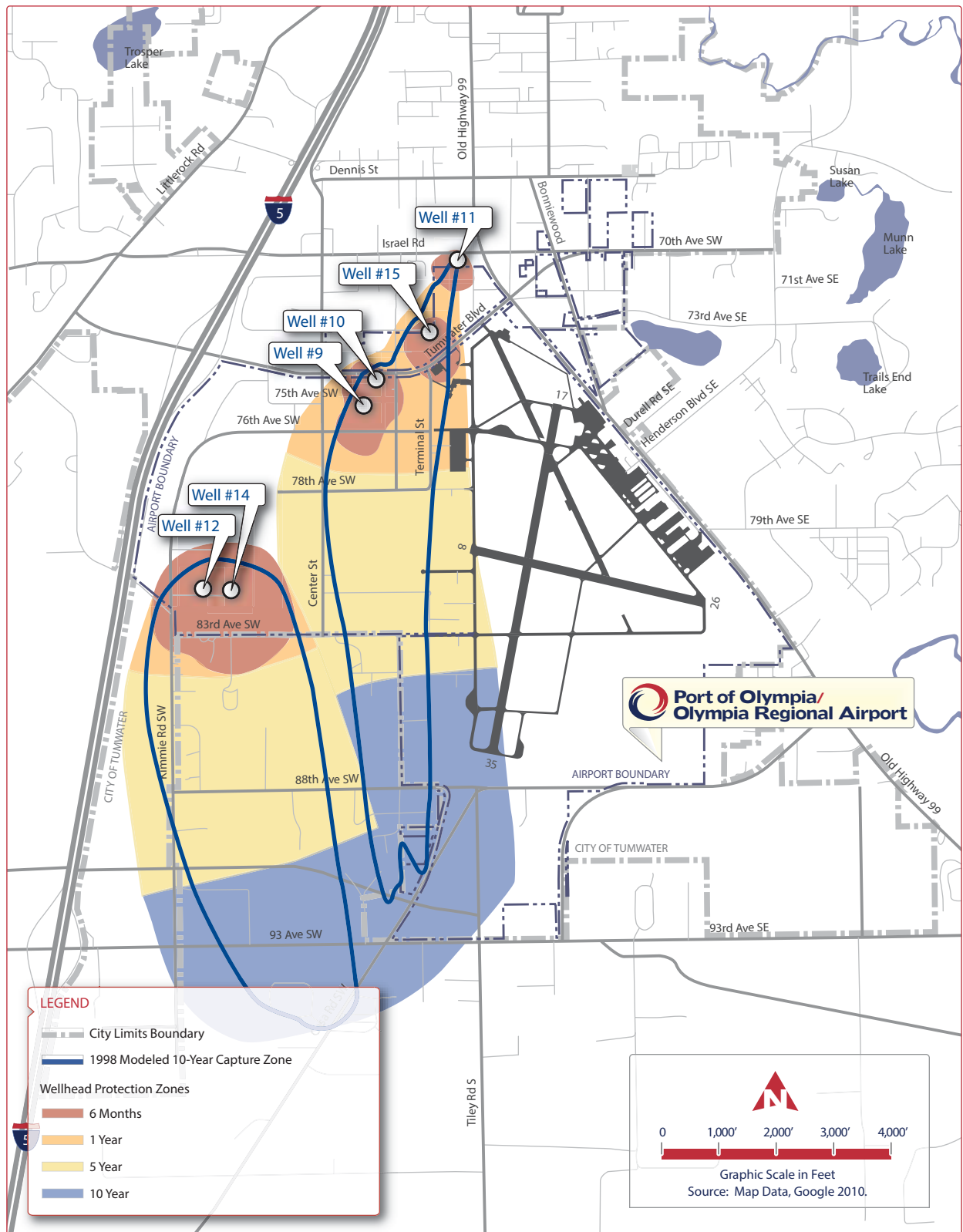


FIGURE A14
Wellhead Protection Areas

Source: The City of Tumwater and PGP.
Wellhead Protection Program, 2010.



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Olympia Regional Airport has in place a Spill Prevention, Control, and Countermeasures (SPCC) Plan, prepared in accordance with 40 Code of Federal Regulations (CFR) Part 112, for the aboveground fuel storage tanks located at the north end of airport property. The SPCC Plan details the facilities and procedures for oil spill prevention, and the preparedness and response to prevent accidental oil discharges into navigable waters and shorelines. Additionally, the Airport has recently constructed four storm water detention facilities, one east of the fuel storage facility, and three at the south end of airport property.

The EPA EnviroMapper indicates there are thirteen facilities within the vicinity of the Airport listed on the Permit Compliance System (PCS) that have been issued National Pollutant Discharge Elimination System (NPDES) permits to discharge waste water into rivers and streams.

Wetlands

Wetlands are defined as areas inundated by surface or groundwater with a frequency sufficient to support vegetation or aquatic life requiring saturated or seasonally saturated soil conditions for growth and reproduction. According to the National Wetlands Inventory, there is a freshwater forested/shrub wetland associated with an unnamed tributary of the Deschutes River located in the northern section of airport property. A sizeable freshwater pond is located northeast of the Airport, between Old Highway 99 SE, Henderson Boulevard SE, and Tumwater Boulevard. Just southeast of Henderson Boulevard and northeast of Old Highway 99 SE, there is a freshwater emergent wetland. The following figure, entitled *WETLANDS MAP*, illustrates the wetlands in the vicinity of the Airport utilizing the National Wetlands Inventory data.

If any proposed projects impact these wetlands, the Airport will coordinate with the U.S. Army Corps of Engineers to determine the extent of the impacts and any mitigation measures, if required. Guidelines outlined in the FAA's AC 150/5370-10A will be required of contractors implementing the projects to minimize the impacts to the environment, including wetlands.

Critical Areas

In addition to the previously described environmental review categories, the State's Growth Management Act (GMA) requires cities and counties to write comprehensive plans and development regulations to manage growth and prevent urban sprawl through the protection of five types of critical areas. These include important fish and wildlife habitat areas, wetlands, critical aquifer recharge areas, frequently flooded areas, and geologically hazardous areas (i.e., bluffs). In response to these GMA requirements, the City of Tumwater has adopted a Conservation Plan, as a part of their Comprehensive Plan, which identifies, protects, and



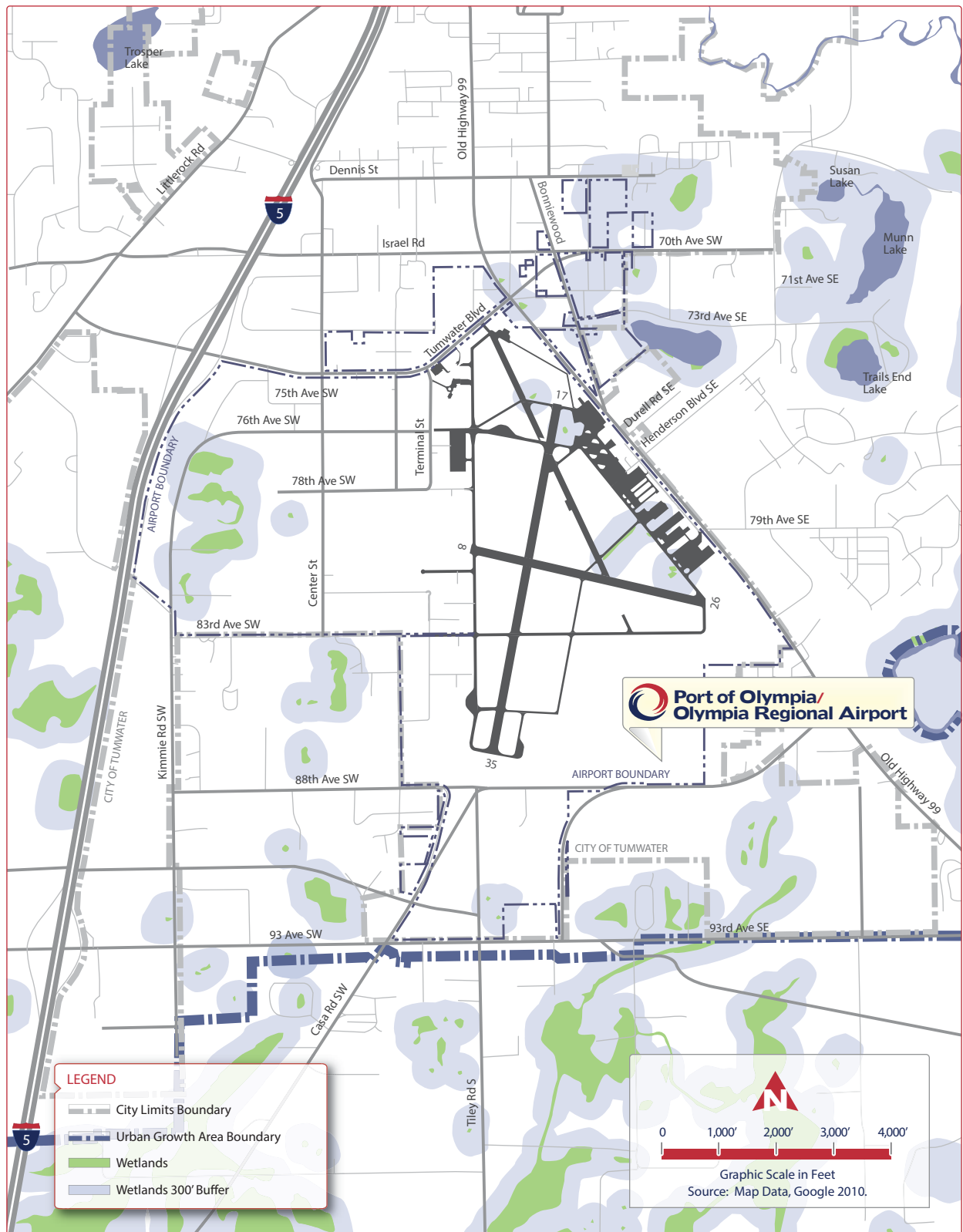


FIGURE A15
Wetlands Map

Source: Thurston County Development
Services, August 2009.

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conserves critical environmental areas and valuable natural resources. The Conservation Plan specifically addresses these topics in the following categories: Natural Resource Land Conservation (consisting of agricultural lands, forest lands, and mineral resource lands) and Critical Areas Protection (consisting of wetlands, aquifer recharge areas, frequently flooded areas, geologically hazardous areas, and fish and wildlife habitat areas). Thurston County is also in the process of updating their Critical Areas Regulations, with a draft amendment being published in July 2010.

Due to the fact that critical wildlife habitat areas have been identified on Airport property (see Figure A16, entitled *PRIORITY HABITAT & SPECIES AREA MAP*), additional analysis and evaluation of this issue, relative to the future development of the Airport, will be documented as an element of this MP Update and included as a separate Planning Memorandum.

Financial Inventory

The primary goal of this task is to gather materials that summarize the financial management of the Airport. In addition, it is important to develop an understanding of the financial structure, constraints, requirements and opportunities for airport activities as related to the development of a capital improvement program. The documents that have been gathered and reviewed for this financial inventory will be used to formulate a reasonable and financially sound Capital Improvement Program (CIP) with which to fund projects identified in this MP Update.

An airport is both a public service and a business, and must be operated as both. Financial assistance to public airports is often provided by the city, county, state, federal, and private sources where available. In return, the Airport provides jobs, promotes development, and supplies economic benefits to the area that it serves, as well as providing a major element of the public transportation system. This is the public service component. From a business standpoint, the Airport has the ability to generate certain revenues and, therefore, the obligation to do so. The most successful and satisfactory method of accomplishing this is through a combination of fair and equitable fees and charges associated with the use of airport facilities. It is a federal requirement that airport generated revenues be used at the Airport. Airport revenues can be derived from leases, rental rates, airfield fees and charges, airlines, cargo operators, and other operating revenue.

In consideration of these issues, Olympia Regional Airport's financial documentation has been gathered and reviewed for calendar years 2005 through 2012 (see Table A8 below). Sources of revenue for the Airport include landing fees, land rents, space and hangar rental, and fuel

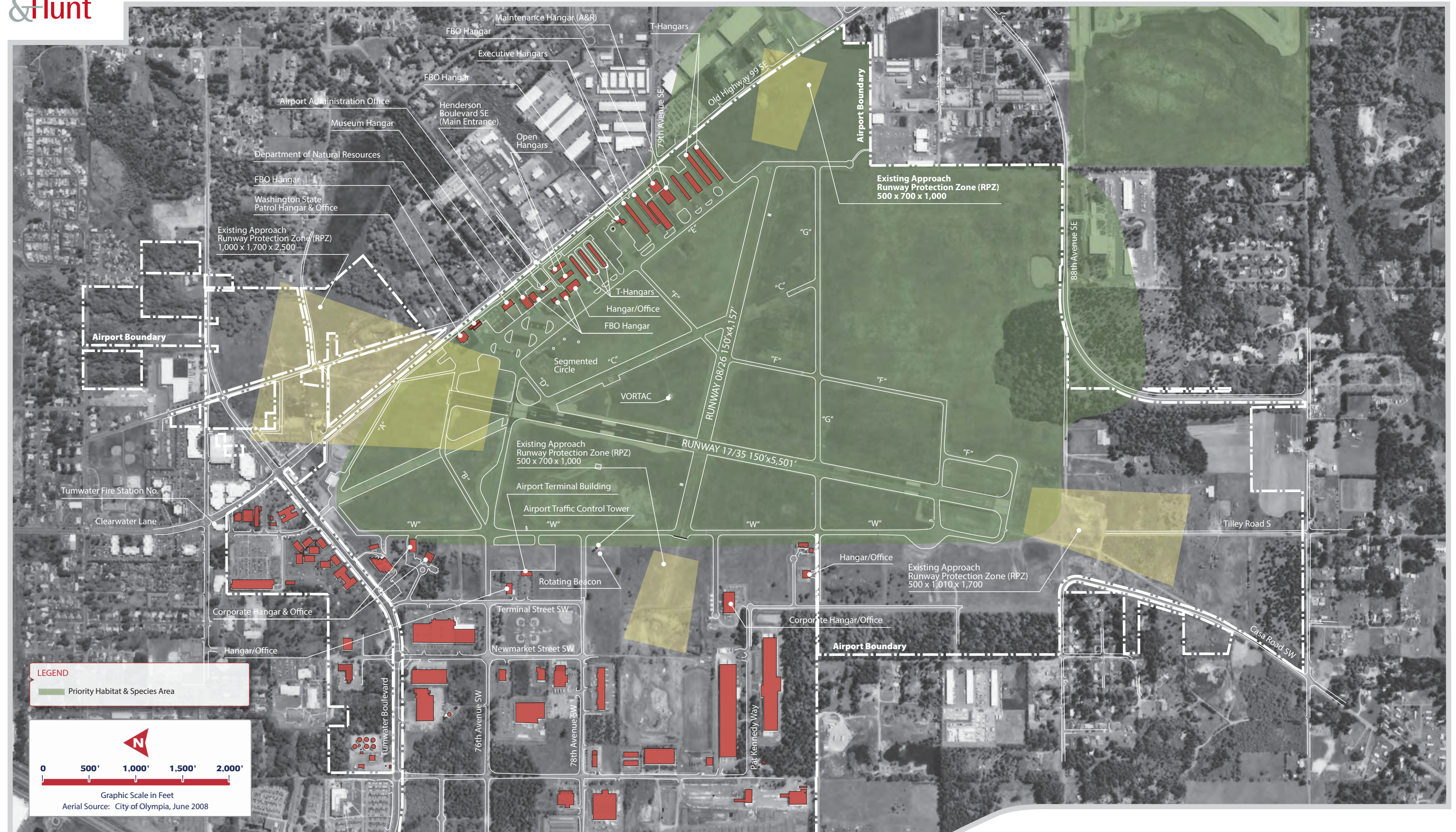


FIGURE A16
Priority Habitat & Species Area

Source: Thurston County Development Services, August 2009.

flowage fees. Major expenditures include salaries, benefits, administrative, utilities, and maintenance and repair of property and buildings. The financial statements indicate that the Airport has been operationally self-supporting, excluding depreciation, for each of the past five years. Additionally, the Airport benefits from revenues generated by the NewMarket Industrial Campus facilities, which the Port of Olympia owns and maintains within the airport property and which they keep a separate set of financial records.

Table A8

REVENUE AND EXPENSE SUMMARY, 2005-2012

Year	Airport Only Revenues	Airport Only Expenses	Industrial Park Only Revenues	Industrial Park Only Expenses	Net Income ⁽¹⁾
2005	\$566,317	\$452,219	\$1,060,811	\$102,286	\$1,072,623
2006	\$593,742	\$480,456	\$1,164,841	\$113,296	\$1,164,831
2007	\$662,957	\$463,187	\$1,399,082	\$121,402	\$1,477,450
2008	\$702,692	\$533,334	\$1,447,538	\$26,151	\$1,590,744
2009	\$764,032	\$527,516	\$1,545,281	\$254,469	\$1,527,328
2010	\$723,650	\$589,511	\$1,574,281	\$159,307	\$1,549,113
2011	\$731,732	\$614,436	\$1,526,677	\$213,541	\$1,430,432
2012	\$764,519	\$599,937	\$1,844,734	\$250,577	\$1,758,739

Source: Port of Olympia financial records.

Note: ⁽¹⁾ Total does not include depreciation and overhead expenses.

In addition, the Airport's 2010-2016 CIP on file with the FAA has also been received and reviewed. The projects, which are detailed in the appendix of this document (see Appendix Three), are primarily associated with taxiway reconstruction/extensions, and pavement maintenance, but also includes projects for this MP Update, vehicle and maintenance equipment, RPZ easement acquisition, and building/hangar maintenance. The current CIP on file with the FAA programs a total estimated expenditure of \$16,490,579 that would be shared between federal, state, and local funding sources for the specified seven-year planning period.

Issues Inventory

Identification of the current and future development issues which may impact the use of a public facility is an important step in the planning process. This is particularly true of an airport where infrastructure investment is great, where the issues are complex, and where the entire airport

facility along with its environs, should be planned in unison to minimize incompatibility between the Airport and its surroundings.

The following list identifies the most significant issues facing Olympia Regional Airport. Some of these issues have been gleaned from the project scoping conducted early in the planning effort, some from specific information gathered during the inventory process, while others relate to general airport planning principles. A goal of this plan is to evaluate these, along with other issues that will arise, and incorporate them into the formulation of the future plans for Olympia Regional Airport.

- **Documentation of the Airport's role in the local economy**
- **Confirmation of the future layout of the Airport's runway & taxiway system**
- **Understanding of existing/future airport demand**
- **Promotion of measures to improve land use compatibility within the airport environs and surrounding communities**
- **Establishment of airport infrastructure development requirements**
- **Updating of the Airport's Capital Improvement Program (costs & schedule)**
- **Calculation of aircraft storage requirements with analysis of current hangar storage demand**
- **Promotion of the financial self-sufficiency of the Airport through the maximization of revenue generation capabilities**



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