

**MULINO STATE AIRPORT
ENVIRONMENTAL ASSESSMENT AND PRELIMINARY
DESIGN FOR AIRPORT IMPROVEMENTS**

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**MULINO STATE AIRPORT
ENVIRONMENTAL ASSESSMENT AND PRELIMINARY DESIGN FOR
AIRPORT IMPROVEMENTS
MULINO, OR**

This environmental assessment becomes a Federal document when evaluated, signed, and dated by the responsible FAA official.

**Sean Edward
Callahan** Digitally signed by Sean
Edward Callahan
Date: 2019.08.12 11:13:03
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Responsible FAA Official

Date

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Chapter 1 - Purpose and Need for Proposed Action

This Environmental Assessment (EA) is prepared in accordance with *Federal Aviation Administration (FAA) Order 1050.1F, Environmental Impacts: Policies and Procedures*, and *FAA Order 5050.4B, National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*. The documents prescribe policies and procedures for the FAA for implementing the NEPA of 1969, as amended, and the regulations of the Council on Environmental Quality (CEQ), 40 Code of Federal Regulations (CFR) Parts 1500-1508. The EA is an informational document intended for use by decision makers and the public. As such, it represents a disclosure of relevant environmental information regarding the proposed action.

The Federal Aviation Administration FAA is requesting that an Environmental Assessment (EA) be conducted to evaluate the potential impacts of the proposed airport improvements that have been included in the most recent five-year capital improvement program for the Mulino State Airport.

1.1 Mulino State Airport Background

The Oregon Department of Aviation (ODA) owns and operates Mulino State Airport (referred to as the Airport or Mulino). The Port of Portland previously owned and operated the Airport until 2007. It has been in continuous aviation use since its initial construction as a small private airstrip in 1949. The Airport is located adjacent to the hamlet of Mulino within Clackamas County. The Airport was identified as a reliever airport to other Port of Portland airports in the 1981 *Clackamas County Reliever Airport Study*. The Port of Portland constructed new airfield facilities including a paved runway, taxiways, taxilanes, apron, lighting, site improvements, drainage, storm water, and utilities over a four-year period from 1988 to 1992. The Airport is located north of the Molalla River, 260 feet above mean sea level (MSL). As of 12/7/17, the Airport has 64 based aircraft with an estimated 21,300 total annual operations.¹ The airports fleet mix includes single-engine piston aircraft, gliders, and helicopters.

The Airport is classified as general aviation in the National Plan of Integrated Airport Systems (NPIAS) defined by the Federal Aviation Administration (FAA). These types of airports are typically near larger population centers and provide communities with access to local and regional markets.²

A location and vicinity map for the Airport is provided in **Figure 1-1**

¹ FAA 5010-1 Airport Master Record Form: FAA Airport/Facility Directory (A/FD) Northwest U.S.

² Report to Congress, National Plan of Integrated Airport Systems (NPIAS) 2017-2021

1.2 Airport Existing Conditions

The Airport is categorized as an FAA Airport Reference Code (ARC) B-II.

- Aircraft Approach Category (AAC) “B” refers to aircraft approach speeds up to 121 knots (139 miles per hour)
- Airplane Design Group (ADG) “II” refers to aircraft with wingspans between 49 feet and 79 feet, with a tail height between 20 feet and 30 feet

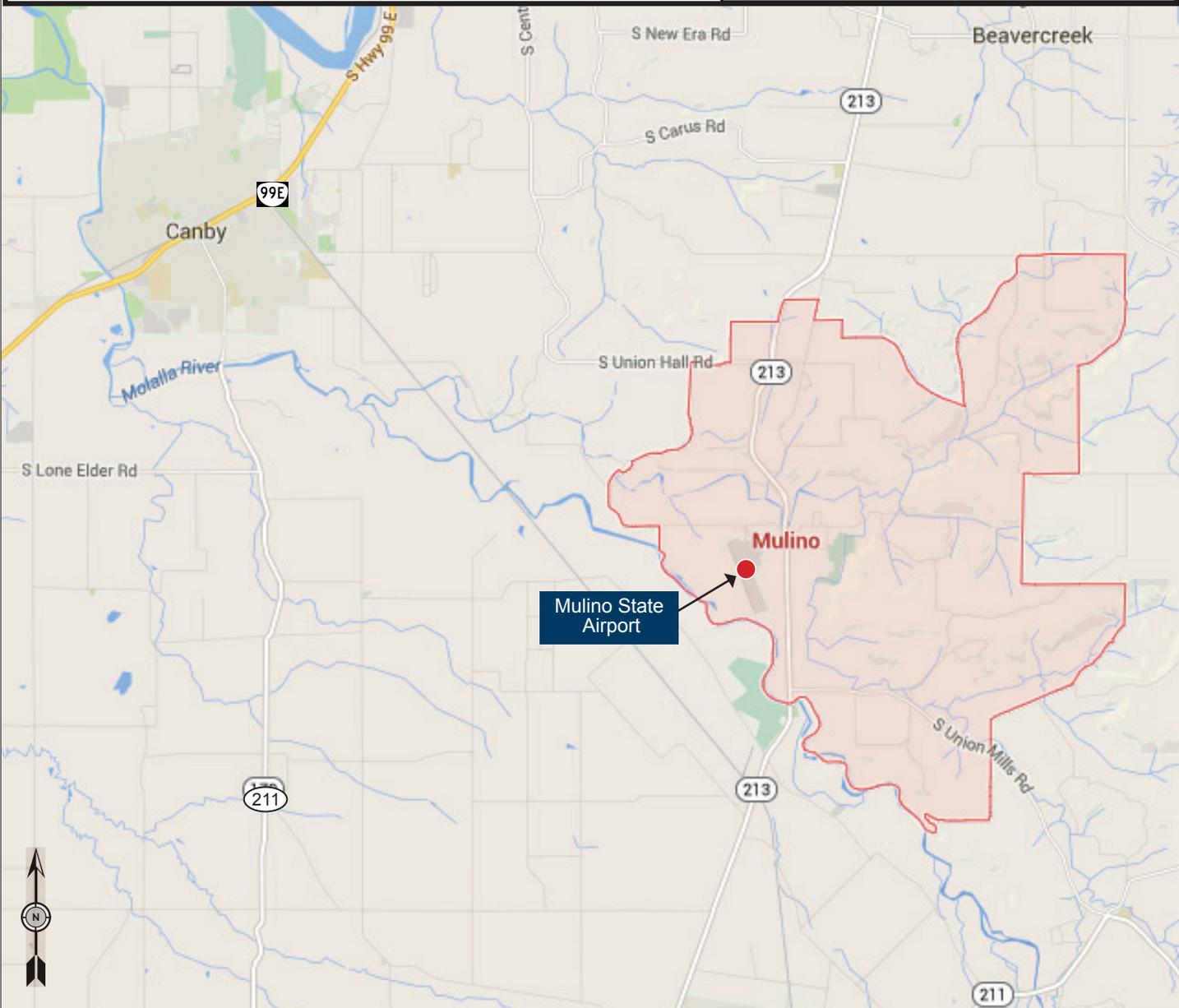
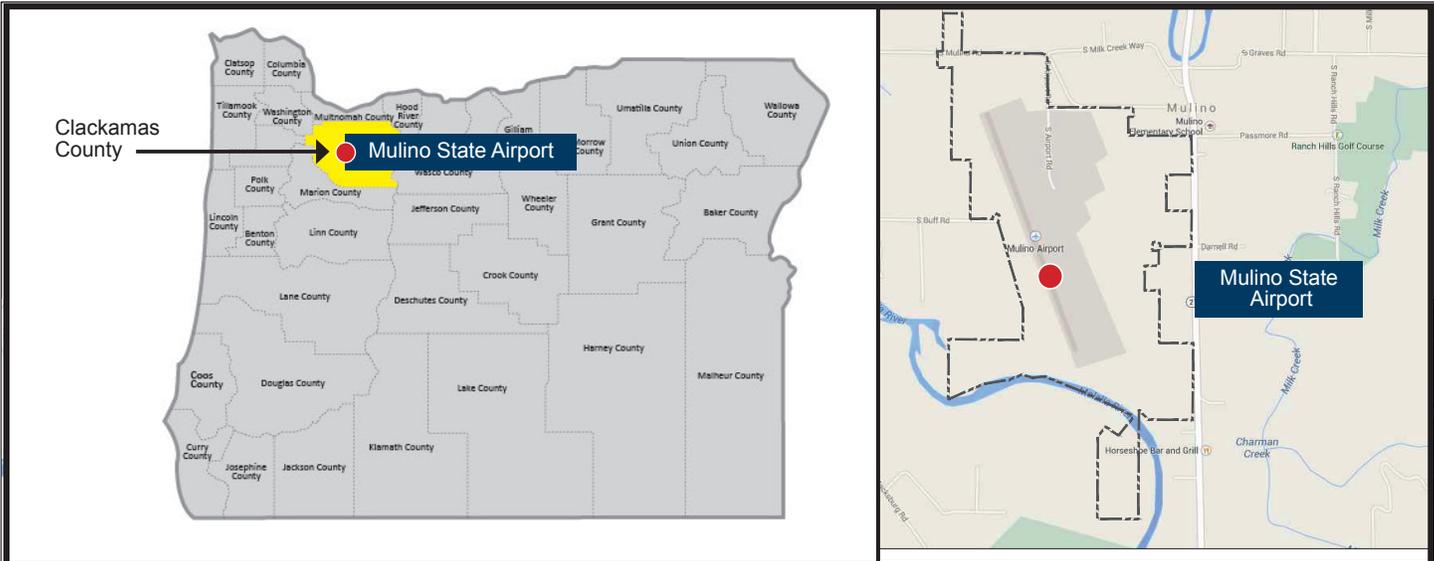
The Airport has one runway (Runway 14-32) that is oriented in an approximate north/south direction (140-320 degree magnetic heading). Runway 14-32 is 3,425 feet long and 100 feet wide with an asphalt surface. The published weight bearing capacity is 12,000 pounds for aircraft equipped with a single wheel landing gear configuration. The 2015 pavement inspection gave the runway a PCI rating of 86. The runway is equipped with medium intensity runway lights (MIRL) and precision approach path indicator (PAPI) lights. The runway has basic (visual) markings on both ends, consistent with current visual approach capabilities.

The Airport has one full-length parallel taxiway (Taxiway A) on the east side of the runway, which is 40 feet wide with a runway-taxiway separation of 400 feet and is equipped with medium intensity taxiway edge lights (MITL). There are three, 90-degree, runway exit taxiways (Taxiway A1, A2, and A3) that vary from 40 feet to 50 feet wide. The taxiway system provides access to all existing landside development on the east side of the airport. The 2015 pavement inspection rated the parallel taxiway with a PCI between 79 and 89 (based on five locations). The runway exit taxiways have minimum PCI ratings of 81 and 83.

The Airport has one apron area, east of the existing Fixed Base Operator (FBO) with approximately 16 small airplane tiedowns.³

The Airport does not have an air traffic control tower. The traffic pattern for both runway end directs all aircraft to the west side of the runway, right traffic for Runway 14 and left traffic for Runway 32. The traffic pattern altitude for fixed-wing aircraft is 1,000 feet above ground level (1,260 feet MSL). The Airport does not have any published instrument approach procedures.

³ Mulino State Airport 2016 Airport Master Plan, Chapter 2 Airport Inventory



There are no ground based navigational aids located on the airport. However, numerous ground based navigation aids are located within 30 nautical miles of the airport. The nearest facilities include the Newberg VOR/DME (Very High Frequency Omni-Directional Range and Distance Measuring Equipment) located 18 miles northwest of the airport and the LAKER NDB (non-directional beacon), located 20 nautical miles north.

The Airport does not have an automated weather observation system (AWOS) located on the airport. The nearest weather observation is located at Aurora State Airport eight miles to the west.

Figure 1-2 depicts the existing airfield facilities.

1.3 FAA Design Standards

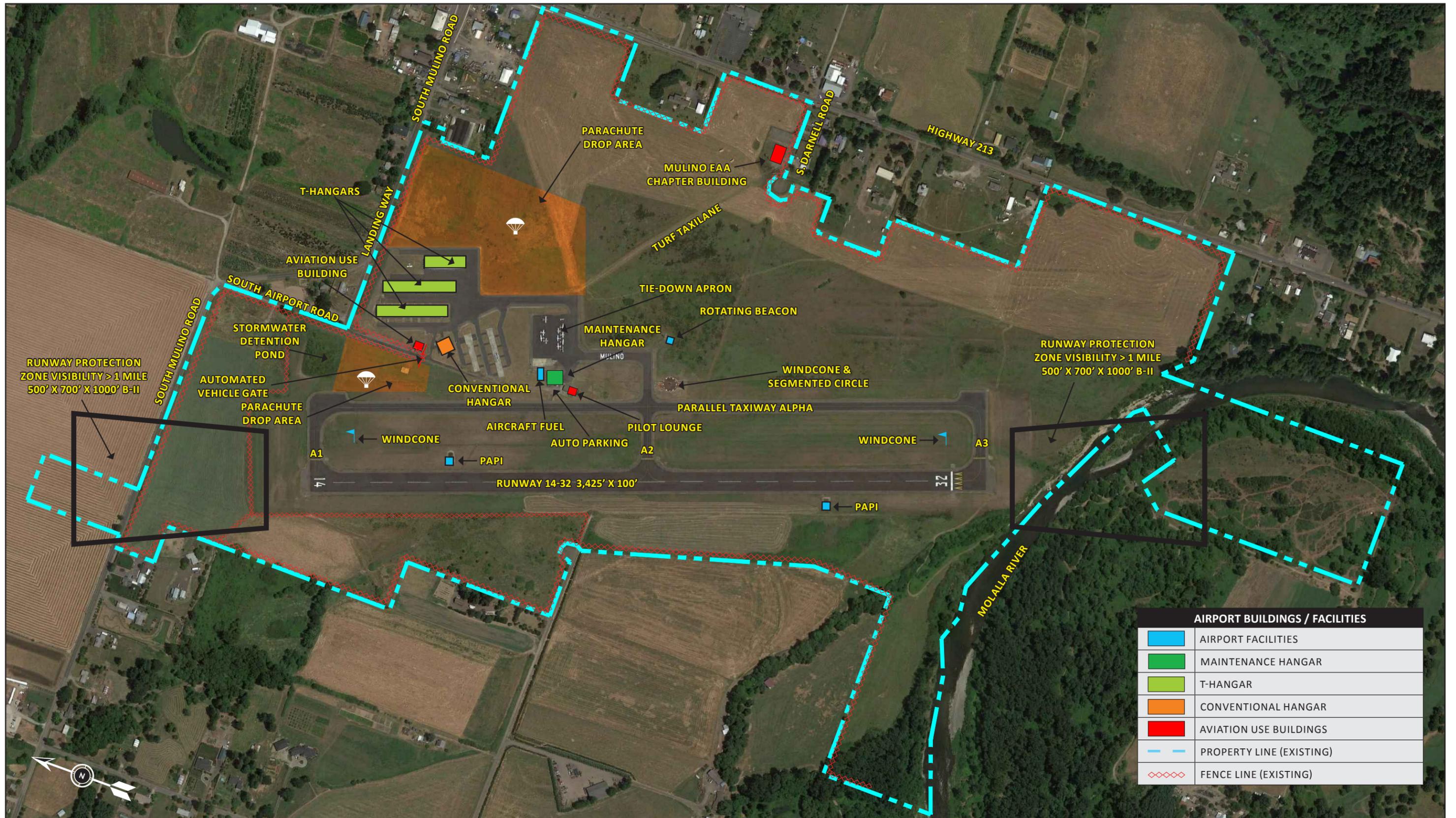
Table 1-1 provides a summary of Airport runway dimensional standards, which can be found in the FAA *Advisory Circular 150/5300-13A, Airport Design*.

TABLE 1-1: FAA RUNWAY REQUIRED DIMENSIONAL STANDARDS

	EXISTING RUNWAY 14-32	FUTURE RUNWAY 15-33*
Aircraft Approach Category (AAC)	B	B
Airplane Design Group	I	II
Runway Width**	60 feet	75 feet
Runway Safety Area (RSA) Width	150 feet	150 feet
Runway Object Free Area Width	500 feet	500 feet
RSA Length beyond RW end	240 feet	300 feet
* Due to Earth's shifting magnetic field, runway numbers must periodically be updated.		
** Existing runway width (100 feet) exceeds FAA minimum width		

1.3.1 Runway Safety Area

The FAA defines Runway Safety Area (RSA) as “A defined surface surrounding the runway prepared or suitable for reducing the risk of damage to airplanes in the event of an undershoot, overshoot, or excursion from the runway.” Runway safety areas are most commonly used by aircraft that inadvertently leave (or miss) the runway environment during landing or takeoff.



By FAA design standard, the Runway Safety Area shall be:

- (1) cleared and graded and have no potentially hazardous ruts, humps, depressions, or other surface variations;
- (2) drained by grading or storm sewers to prevent water accumulation⁴;
- (3) capable, under dry conditions, of supporting snow removal equipment, aircraft rescue and firefighting equipment, and the occasional passage of aircraft without causing structural damage to the aircraft; and
- (4) free of objects, except for objects that need to be located in the runway safety area because of their function. Objects higher than 3 inches above grade should be mounted with frangible couplings of the lowest practical height with the frangible point no higher than 3 inches. Other objects such as manholes, should be constructed at grade. In no case should their height exceed 3 inches.

The RSA for Runway 14-32 is 150 feet wide and extends 300 feet beyond runway end. The existing RSA meets the FAA dimensional and surface condition standards along the sides and Runway 32 end; however, the RSA beyond the Runway 14 end does not meet current grading standards as identified by a FAA site compliance inspection and will require improvements as discussed within this environmental assessment.

The grading standards of the RSA beyond the runway end for an AAC “B” airport are:

- For the first 200 feet beyond the runway end, the longitudinal grade must be 0 to 3 percent sloping downward from the runway end
- Beyond the 200 feet from the runway end, the allowable longitudinal grade is +/- 5 percent as long as no portion of the RSA ground level penetrates the approach surface, and
- Transverse grades are +/- 5 percent

1.3.2 Fencing

The FAA indicates that “perimeter fencing could be installed to preclude inadvertent entry of people or animals on the Airport.”

The Airport currently has three-foot tall wire field fencing surrounding the airport perimeter with an automated vehicle gate located on the main access road and padlocked swing

⁴ Note: It would follow that wetlands should not be allowed in the runway safety area.

gates located in various locations around the airport perimeter. Fencing is recommended to increase security and protect the airfield from potential wildlife conflicts. Typical airport fencing consists of six- to eight-foot high chain link topped with three-strand barbed wire.

1.3.3 Part 77 Surface

Federal Air Regulation (FAR) Part 77.25, Objects Affecting Navigable Airspace, defines airport imaginary surfaces, which are established to protect the airspace immediately surrounding airports, associated runways, and designated helicopter landing areas. The airspace and ground areas surrounding a runway should be free of obstructions (i.e., structures, parked aircraft, trees, etc.) to the greatest extent possible to provide a safe operating environment for aircraft. A portion of The Part 77 surface includes a primary surface, a transitional surface, and approach surfaces. These three components are described in further detail below. A summary of all FAR Part 77 airspace surfaces surrounding the Mulino State Airport is shown in **Table 1-2**.

1.3.3.1 Primary Surface

The primary surface is a rectangular, flat plane of airspace longitudinally centered on the runway, with the same elevation as the nearest point on the runway centerline. The primary surface for paved runway extends 200 feet beyond each runway end, where it connects to the inner portion of the runway approach surfaces. The primary surface should be free of any penetrations, except items with locations fixed by function, in which case they shall be mounted on frangible couplings. The primary surface of Runway 14-32 currently meets the requirements of FAR Part 77.25

1.3.3.2 Transitional Surface

The transitional surface is located at the outer edge of the primary surface and is represented by a plane rising perpendicularly at a slope of 7 to 1 to an elevation 150 feet above the airport elevation. The transitional surface connects to the horizontal surface and the sides of the runway approach surfaces at common elevations. For Runway 14-32, the transitional surface begins 500 feet from the runway centerline, in both directions.

1.3.3.2 Approach Surface

The approach surface extends longitudinally along the runway centerline, beginning at the end of the primary surface. The existing approach surfaces of both Runway 14 and Runway 32 are visual approaches. The visual approach surface rises at a slope of 20 to 1 and is 500 feet wide where it begins at the end of the primary surface and flares to a width of 1,500 feet at a distance of 5,000 feet from the end of the primary surface. As

identified in the 2017 AGIS survey, the approach surfaces of Runway 14-32 are obstructed by trees that are proposed for removal.

A visual approach is flying by sight alone without any assistance from lateral guidance equipment. The pilot needs to have at least 3 miles of visibility, the bottom of the clouds shall be no lower than 1000 feet and the path of the plane is free of any clouds.

A non-precision approach is an approach that uses instruments that provide lateral guidance, but not vertical guidance. Non-precision approaches make use of ground beacons, which transmit the relative location of the beacon to the aircraft receiver that the pilot uses to determine the lateral location of the aircraft to the beacon.

A non-precision instrument approach is planned for Runway 32 in the future. This approach surface would have a slope of 34 to 1 beginning at the end of the primary surface, and would flare to a width of 4,000 feet at a distance of 10,000 feet.

Figure 1-3 depicts draft 2018 Airport Master Plan Update Approach Plan and Profile

Figure 1-4 depicts the proposed study areas covered by the EA.

A summary of the FAR Part 77 airspace surfaces surrounding the Mulino State Airport is shown in **Table 1-2**.

TABLE 1-2: FAR PART 77 AIRSPACE SURFACES⁵

AIRSPACE ITEM	RUNWAY 14/32 OTHER THAN UTILITY NON-PRECISION INSTRUMENT RUNWAY APPROACH VISIBILITY MINIMUMS AS LOW AS 3/4-MILE	OBSTRUCTION
Width/Length of Primary Surface	1,000 feet*/200 feet beyond both ends of runway * Width based on approach visibility minimums as low as 3/4-mile. Existing primary surface is 500' wide.	No
Transitional Surface	7:1 Slope to 150 feet above runway	Yes, trees*
Horizontal Surface Elevation/Radius	150 feet above airport elevation/10,000 foot radius centered on each runway end	Yes, trees & terrain
Approach Surface Length	Existing- 5,000 feet (Rwy 32 & Rwy 14) Future- 10,000 feet (Rwy 32 Future);	Yes, trees
Approach Surface Slope	Existing- 20:1 (Rwy 32 & Rwy 14 – Visual) Future- 34:1 (Rwy 32 – NPI Vis. \geq 3/4 mile)	Yes, trees

⁵ 2016 Mulino State Airport Master Plan, Chapter 4 Airport Facility Requirements and Chapter 7 Airport Airspace Plan (Part 77)

Approach Surface Width at End	Existing- 1,500 feet (Rwy 32 & Rwy 14 – Visual) Future- 4,000 feet (Rwy 32 – NPI Vis. \geq ¼ mile)	No
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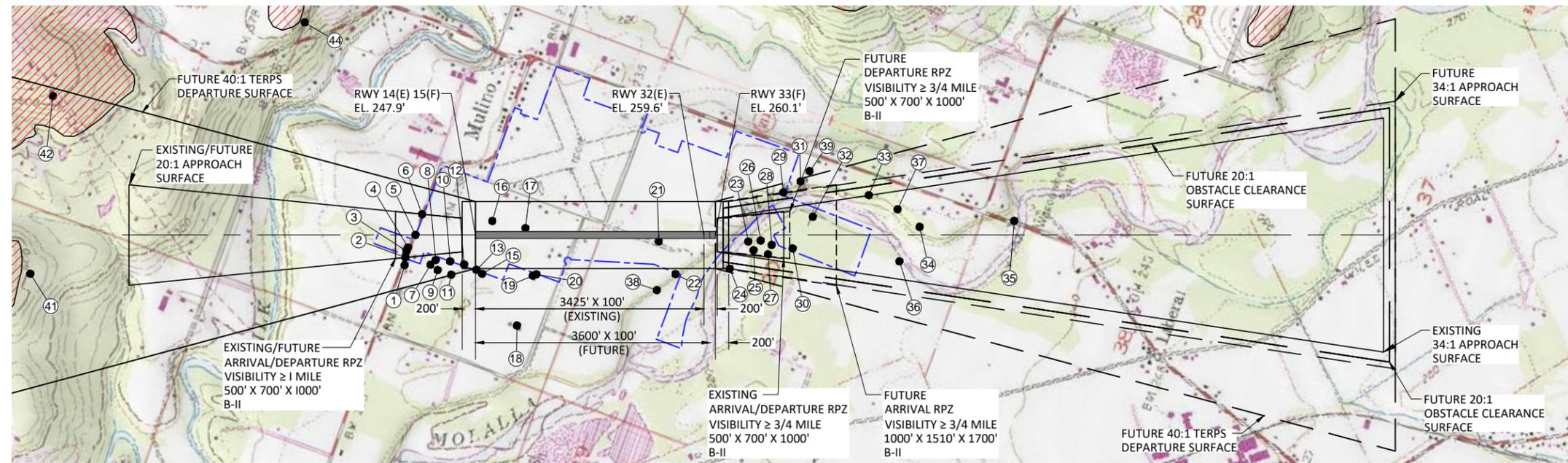
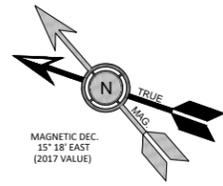
* Trees in the Transitional Surface were not addressed in this Environmental Assessment

1.4 Description of Proposed Action

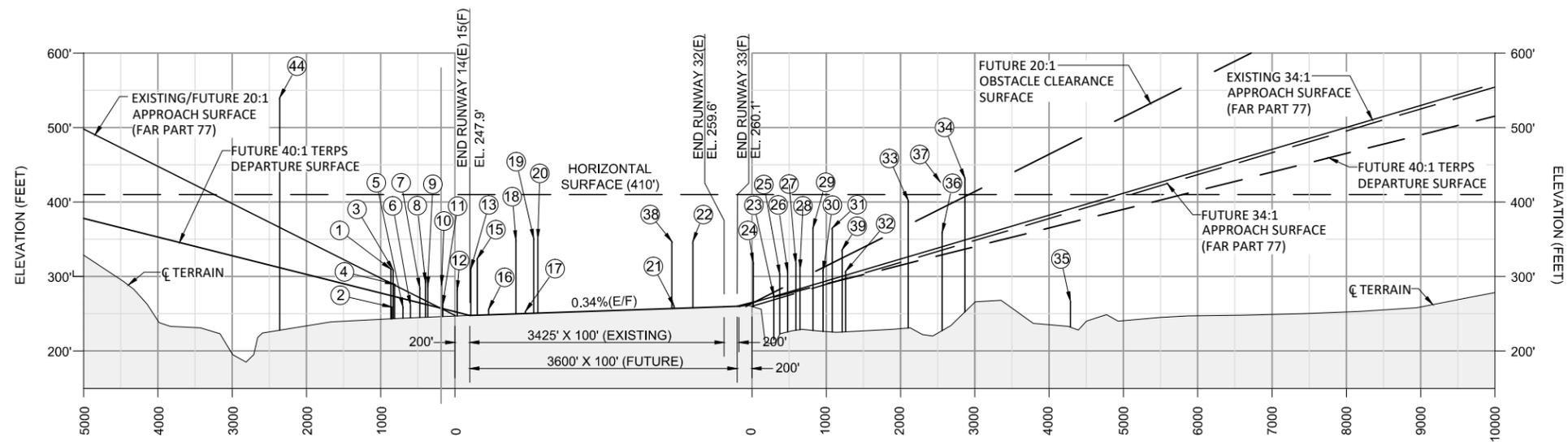
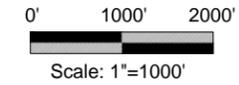
The Oregon Department of Aviation, owner and operator of the Mulino State Airport, proposes to implement various safety improvements and eliminate existing deficiencies regarding the runway safety area, obstructions, and fencing. The proposed action/s has been identified as:

- Perform grading improvements to correct non-standard RSA conditions associated with the Runway 14 end (2019 construction);
- Remove obstructions (trees) in the Runway 14-32 approach and transitional surfaces (2019 construction); and
- Install fencing (2020 construction).

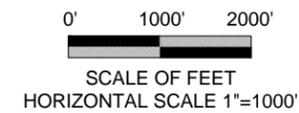
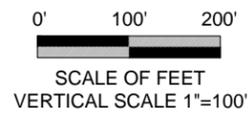
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RUNWAY 14-32(E) 15-33(F) PLAN VIEW



RUNWAY 14-32(E) 15-33(F) PROFILE VIEW



"THE PREPARATION OF THIS DOCUMENT MAY HAVE BEEN SUPPORTED, IN PART, THROUGH THE AIRPORT IMPROVEMENT PROGRAM FINANCIAL ASSISTANCE FROM THE FEDERAL AVIATION ADMINISTRATION (PROJECT NUMBER 3-41-0072-012) AS PROVIDED UNDER TITLE 49, UNITED STATES CODE, SECTION 47104. THE CONTENTS DO NOT NECESSARILY REFLECT THE OFFICIAL VIEWS OR POLICY OF THE FAA. ACCEPTANCE OF THIS REPORT BY THE FAA DOES NOT IN ANY WAY CONSTITUTE A COMMITMENT ON THE PART OF THE UNITED STATES TO PARTICIPATE IN ANY DEVELOPMENT DEPICTED THEREIN NOR DOES IT INDICATE THAT THE PROPOSED DEVELOPMENT IS ENVIRONMENTALLY ACCEPTABLE IN ACCORDANCE WITH APPROPRIATE PUBLIC LAWS."

NOTES:

1. COMPLETE OBSTRUCTION CHART IS LOCATED ON SHEET 5, AIRPORT AIRSPACE PLAN (FAR PART 77).
2. DISTANCES FOR NOTED OBSTRUCTIONS ARE BASED ON THE ULTIMATE RUNWAY CONFIGURATION. DIMENSIONS INCLUDE 200' DISTANCE FROM RUNWAY END TO BEGINNING OF APPROACH.

FIGURE 1-3

NO.	DATE	BY	APPR	REVISIONS

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING. 0" 1" IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

FEDERAL AVIATION
ADMINISTRATION APPROVAL
APPROVAL DATE: _____
SIGNATURE _____

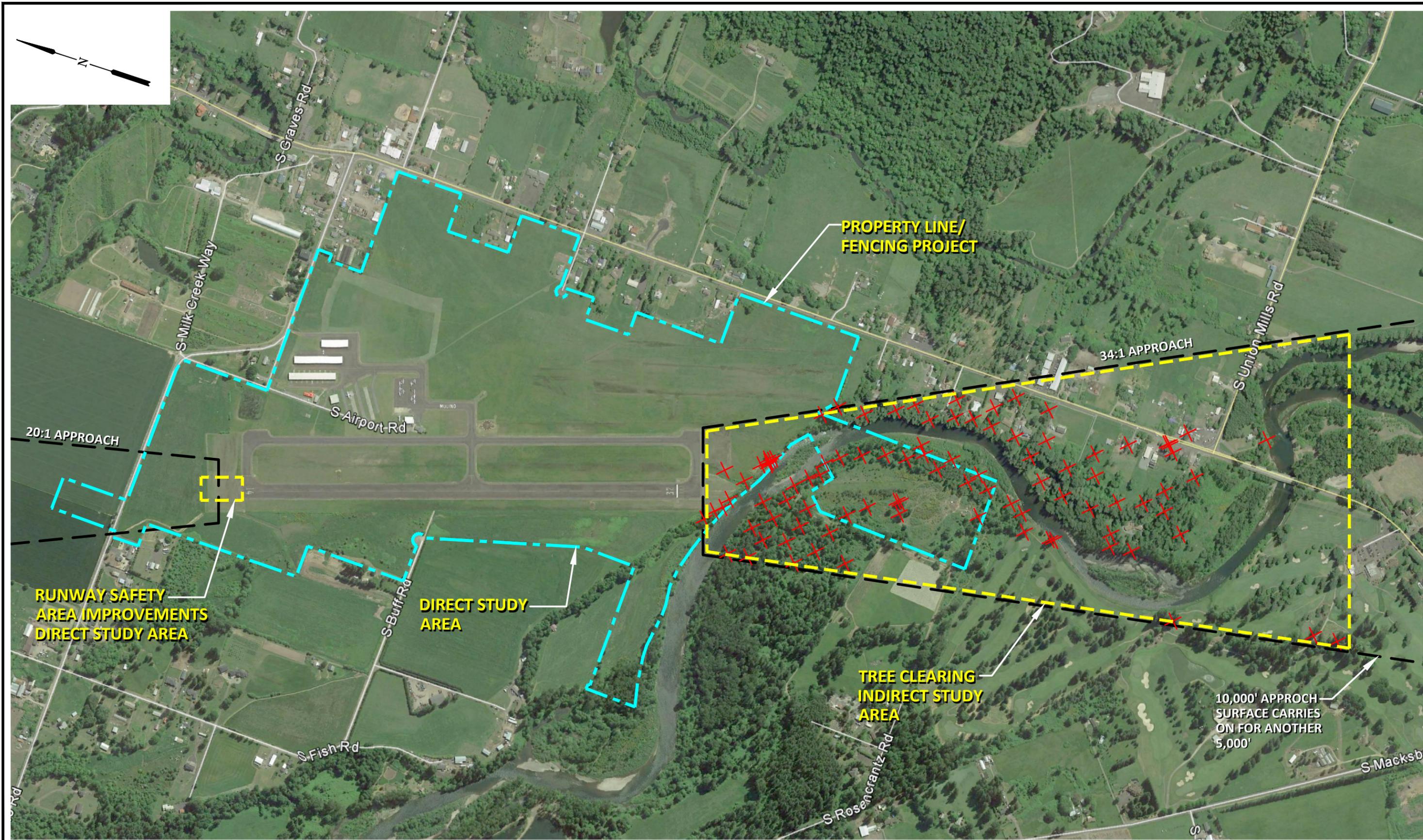
OREGON DEPARTMENT OF AVIATION
APPROVAL
APPROVAL DATE: _____
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DATE: APRIL 2017	PROJECT NO: 4009705501		

MULINO STATE AIRPORT
AIRPORT AIRSPACE PLAN (FAR PART 77)

FIGURE NO. -
SHEET NO. 6 OF 10



ENVIRONMENTAL ASSESSMENT
FIGURE 1-4

**MULINO STATE AIRPORT
STUDY AREAS**



1.5 Purpose and Need for the Proposed Action

The purpose of the Proposed Action is to eliminate existing safety deficiencies and non-standard conditions at the Airport. The Runway 14 RSA requires earthwork grading to meet current RSA standards for Airplane Design Group (ADG) II. The trees will be removed to eliminate airspace penetrations. Fencing is recommended to increase security and protect the airfield from potential wildlife conflicts.

Runway 14 RSA Grading - The grades beyond the Runway 14 threshold do not currently meet RSA grading standards. The Runway 14 RSA requires earthwork grading to meet current RSA standards for Airplane Design Group (ADG) II. This project will include earthmoving, grading, drainage structure removal and installation, as well as seeding.

PART 77 Obstruction Mitigation - The 2008 Airport Master Plan and the most recent AGIS survey performed for the Airport identified obstructions (trees) in the approach and transitional surfaces for Runway 14-32. Included in these obstructions are trees that are located outside of Airport property and adjacent the Molalla River. The trees in the approach surface will be removed to eliminate airspace penetrations.

Airport Fencing - The Airport currently has three-foot wire field fencing surrounding the airport with an automated vehicle gate located on the main access road and padlocked swing gates located in various locations around the airport. Fencing is recommended to increase security and protect the airfield from potential wildlife conflicts. The proposed airport fencing will be a six- to eight-foot high chain link with three-strand barbed wire.

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Chapter 2 - Alternatives

This chapter provides an overview of each alternative considered to address the Purpose and Need of the airport improvements. The two alternatives considered as part of the Environmental Assessment are:

- **Alternative 1** – No action (maintains existing conditions)
- **Alternative 2** – Remove approach surface obstructions, perform runway safety area grading improvements, and install new perimeter fencing along existing Airport boundary.

A detailed description of each alternative is provided within this chapter and a description of the necessary improvements required to develop each alternative.

2.1 Alternative 1 – No Action

The no action alternative maintains the existing facilities and capabilities, without investing in facility improvements to address safety concerns related to obstructions in the approach surfaces, non-standard runway safety area grades, and inadequate security fencing. The existing airfield conditions would remain unchanged from the present conditions, and the airport would essentially be operated in a “maintenance-only” mode.

The primary result of this no-action alternative would be the inability of the airport to provide needed safety improvements including correcting non-standard runway safety area grades, removing obstructions in the Runway 14-32 approaches, and providing secure perimeter fencing. Future aviation activity in this area would eventually be constrained by the safety and operational limits of the existing airport facilities and obstructions.

Alternative 1 can be visualized in the Existing Conditions depicted in Figure 1-2.

2.2 Alternative 2 – Remove Obstructions, Perform RSA Grading Improvements, and Replace Existing Perimeter Fencing

Alternative 2 includes various safety improvements and eliminates existing deficiencies to the runway safety area (RSA), approach obstructions, and fencing. The elements included in Alternative 2 are as follows:

- Perform grading improvements of the Runway 14 RSA (2019 construction);
- Remove obstructions (trees) in the Runway 14-32 approaches (2019 construction, see figure 2-2); and

- Install perimeter fence (2020 construction).

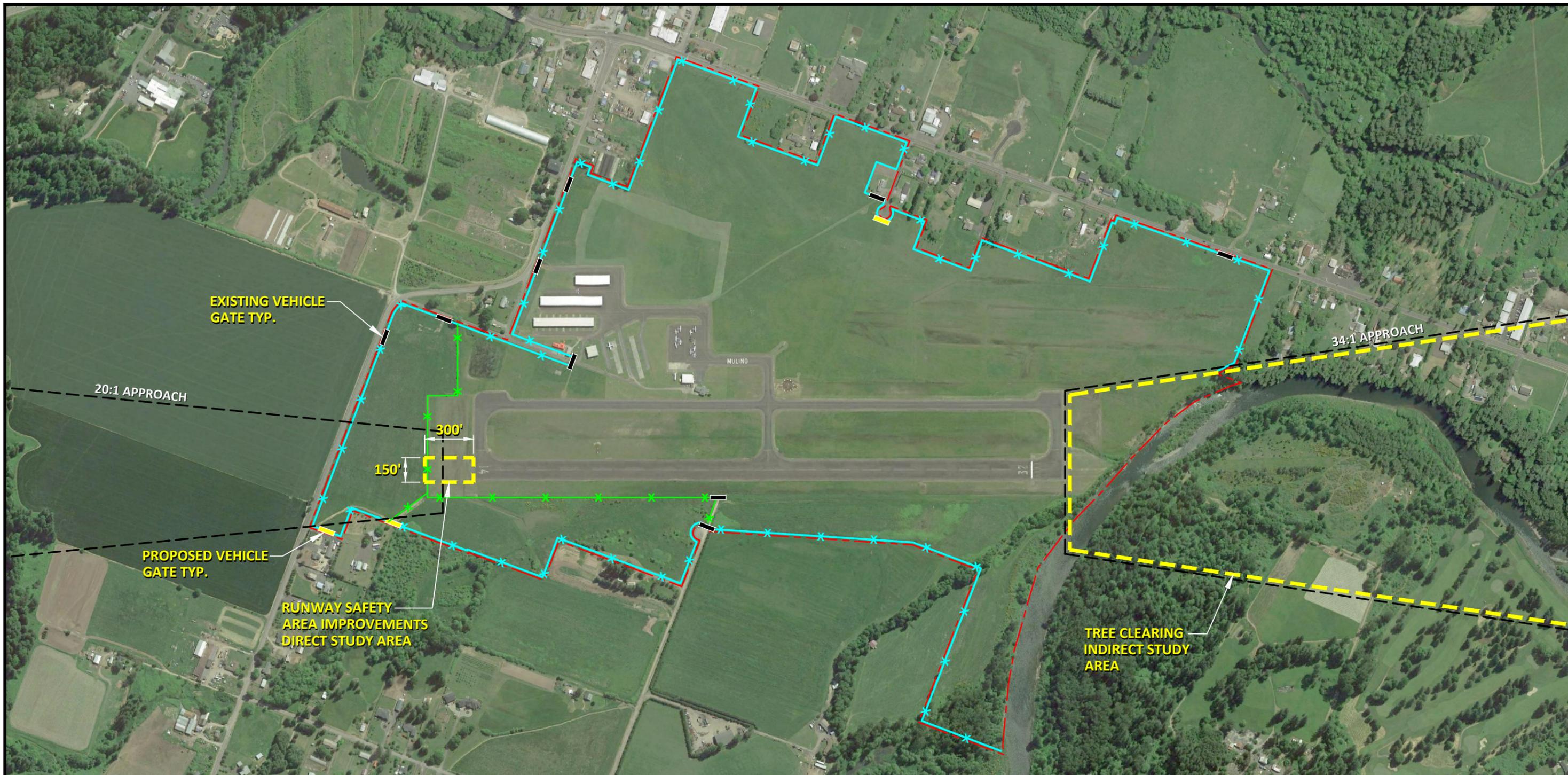
The grades beyond the Runway 14 threshold do not currently meet RSA grading standards. The RSA was not constructed correctly and now holds water and has created a wetland, which the FAA does not allow in RSAs and could pose a danger to aircraft that fail to stay on the pavement. Alternative 2 includes earthwork to bring the RSA into compliance with current RSA standards for Airplane Design Group (ADG) B-II. In conjunction with the earthwork and grading, the RSA improvements would also include improvements to the drainage system.

The recent AGIS survey identified many trees that obstruct the Runway 14-32 approach surfaces and the PAPI obstacle clearance surfaces (OCS). The proposed obstruction mitigation would remove these trees to eliminate airspace penetrations to the following surfaces: Runway 14 20:1 approach (close-in obstructions), Runway 14 PAPI OCS (close-in), Runway 32 existing 20:1 approach, Runway 32 future 34:1 approach, and Runway 32 PAPI OCS.

Alternative 2 also includes improvements/upgrades to the airport perimeter fencing. The airport currently has four-foot wire field fencing with an automated vehicle gate located on the main access road and padlocked swing gates located in various locations around the airport perimeter. The proposed fencing would be a six- to eight-foot high chain link with one-foot tall barbed wire to replace the existing field fencing in its current location. The fence would provide a security upgrade and serve as a deterrent to wildlife accessing the airport,

The primary results of this alternative would be an improved runway safety area that meets current grading standards, as well as improved safety for aircraft during the approach phase of flight. Additionally, the mitigation of obstructions within the approach surfaces would ensure the Sponsor complies with FAR Part 77 requirements. The proposed perimeter fencing would also improve safety on the airfield.

Alternative 2 is depicted in Figure 2-1.



LEGEND

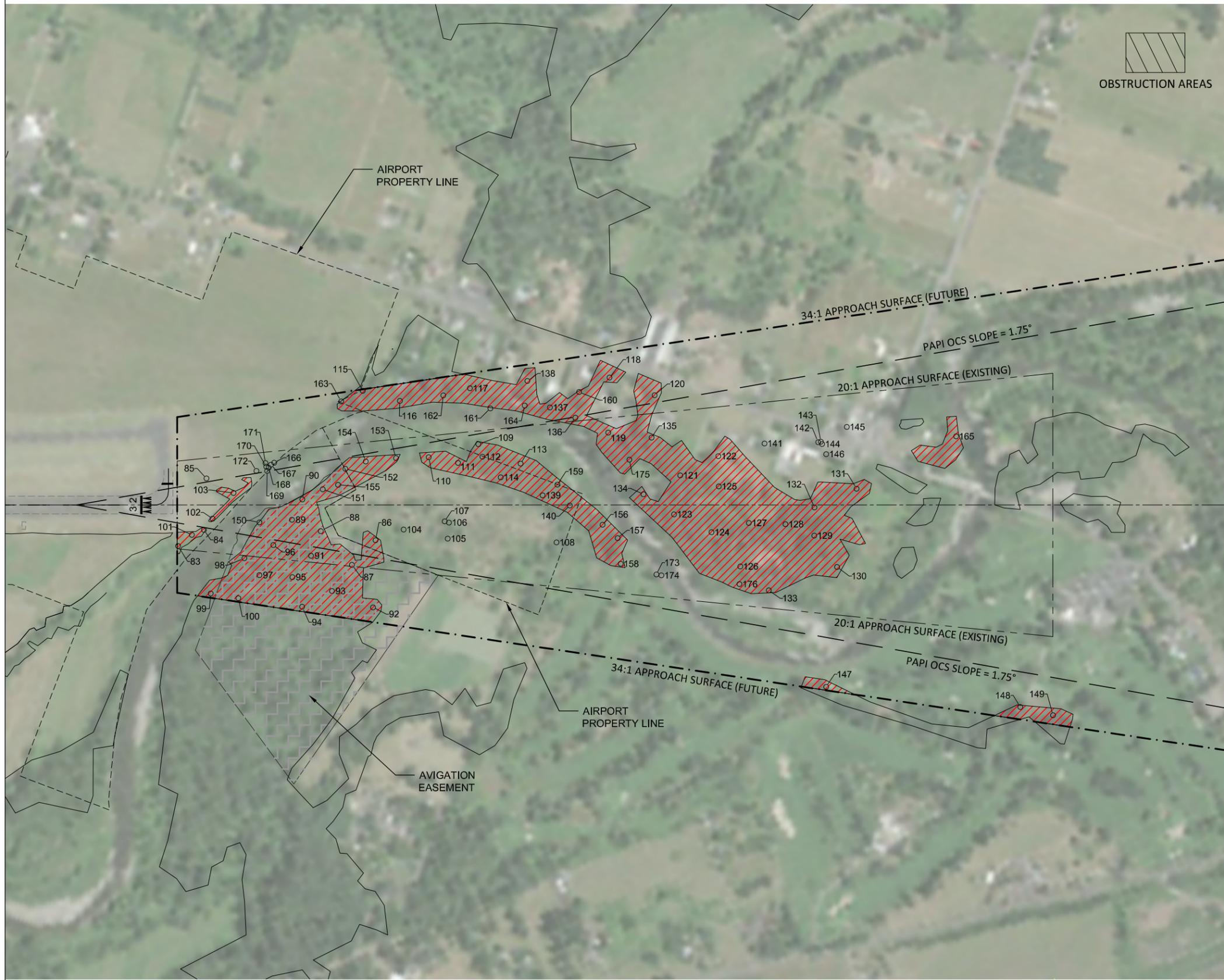
- - - AIRPORT PROPERTY LINE
- x x PROPOSED 6' TALL CHAIN LINK SECURITY FENCE WITH 1' TALL BARBED WIRE STRANDS.
- x x EXISTING 3 STRAND FENCE
- EXISTING VEHICLE GATE
- PROPOSED VEHICLE GATE

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ALTERNATIVE 2
FIGURE 2-1

**MULINO STATE AIRPORT
AIRPORT SECURITY IMPROVEMENTS**

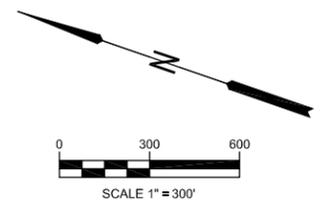





OBSTRUCTION AREAS

NOTES:

1. PAPI OBSTACLE CLEARANCE SURFACE (OCS): THE OCS BEGINS 300 FEET IN FRONT OF THE PAPI SYSTEM AND IS 2 LINES EXTENDING OUT 4 STATUTE MILES AND EACH LINE DIVERGING FROM CENTERLINE BY 10 DEGREES. THE OCS IS PROJECTED INTO THE APPROACH ZONE ONE DEGREE LESS THAN THE AIMING ANGLE OF THE LIGHT UNIT FURTHEST FROM THE RUNWAY FOR AN L-881 SYSTEM.
2. 20:1 APPROACH: SURFACE BEGINS 200' AWAY FROM THE THRESHOLD, ON THE APPROACH SIDE, AT THE SAME ELEVATION AS THE RUNWAY END. THE SURFACE IS A TRAPEZOID WITH THE SIDE CLOSEST TO BE THRESHOLD BEING 500 FEET WIDE AND AN OUTER WIDTH OF 1,500 FEET, SEPARATED BY 5,000 FEET. THE SURFACE IS ANGLED AT A 20:1 SLOPE.
3. 34:1 APPROACH: SURFACE BEGINS 200' AWAY FROM THE THRESHOLD, ON THE APPROACH SIDE, AT THE SAME ELEVATION AS THE RUNWAY END. THE SURFACE IS A TRAPEZOID WITH THE SIDE CLOSEST TO BE THRESHOLD BEING 1,000 FEET WIDE AND AN OUTER WIDTH OF 4,000 FEET, SEPARATED BY 10,000 FEET. THE SURFACE IS ANGLED AT A 34:1 SLOPE.
4. OBSTRUCTION AREAS MAY CONTAIN MORE OBSTRUCTIONS THAN THE POINTS SHOWN. FURTHER SURVEY WILL BE REQUIRED TO DETERMINE THE EXTENT OF THE REMOVAL IN THESE AREAS.
5. OBSTRUCTIONS BASED ON DATA OBTAINED FROM AGIS SURVEY PERFORMED BY MILLER CREEK FOR WHPACIFIC.
6. SEE SHEET 3 FOR OBSTRUCTION TABLES.



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**MULINO STATE AIRPORT - OBSTRUCTION EVALUATION
RUNWAY 32 END APPROACH OBSTRUCTIONS**

FIGURE NO.

2-2

2.3 Preferred Alternative

Alternative 2 was selected as the preferred alternative by ODA to ensure the RSA and approach surfaces are appropriately maintained to meet State and Federal standards and adequate security fencing is provided for airfield facilities.

2.4 Discretionary Actions and Permits

The Preferred Alternative may require the following:

- Negotiate access and remediation for tree removal with surrounding property owners

Chapter 3 – Affected Environment and Environmental Consequences

This chapter analyzes the environmental impacts of the Preferred Alternative and the No Action Alternative. Each of the resource categories were analyzed by the affected environment, environmental consequence, and mitigation measure, if applicable, to determine if the No Action Alternative or Preferred Alternative have any impacts.

3.1 Air Quality

Environmental Science Associates (ESA) in their *Mulino State Airport Air Quality and Greenhouse Gas Emissions (Task 4.1)* technical memorandum dated June 13, 2018 provided information on Air Quality. The document is included in **Appendix A**.

3.1.1 Affected Environment

The project area for air quality is defined as the air basin that includes the Hamlet of Mulino and the Airport. The Oregon Department of Environmental Quality (DEQ) and the U.S. Environmental Protection Agency (EPA) regulates air quality in Mulino. The EPA has established the National Ambient Air Quality Standards (NAAQS) for six common air pollutants: carbon monoxide (CO), ozone (O₃), particulate matter, lead (Pb), sulfur dioxide (SO₂), and nitrogen dioxide (NO₂), and regulates permissible levels of the pollutants in the air for human health and safety. DEQ has adopted the standards set by EPA.⁶

For each of the six criteria pollutants, NAAQS are defined as a maximum concentration above which adverse effects on human health may occur. When air quality in an area exceeds NAAQS, it is designated as a nonattainment area. The Mulino Airport and the surrounding areas are not located within a NAAQS Non-Attainment or Maintenance area. Because the project is not located within an Non-Attainment area for NAAQS, the No Action or Preferred Alternative are not subject to requirements addressing the State Implementation Plan or the General Conformity provisions under the Clean Air Act.

3.1.2 Environmental Consequences

Implementation of the Preferred Alternative would result in temporary and localized air emissions from activities that are typically associated with construction. These emissions would originate from the operation of equipment for construction of the projects found in the Preferred Alternative. The work associated with tree removal may include chainsaws, masticators, grinders, skid steer loaders, and log trucks. The work associated with the

⁶ EPA 2018. Criteria Air Pollutants. NAAQA Table. Available at <https://www.epa.gov/criteria-air-pollutants/naaqs-table>.

Runway Safety Area (RSA) Grading may include excavators, graders, roller compactors, and haul trucks. Heavy construction equipment used at the site would emit exhaust containing carbon monoxide (CO), nitrous oxide (NO_x), volatile organic compounds (VOCs), and particulate matter. Operation of this equipment could also result in increased dispersion of dust and particulate matter during tree removal and hauling of materials. In addition, temporary odors will occur during paving operations.

Implementation of the preferred alternative will not increase the operational capacity of the Airport in such a way as to increase air emission above *de minimis* thresholds, therefore the potentially affected environment will be limited to the immediate vicinity and the effects will only be temporary during construction and are not expected to significantly impact or alter air quality.

3.1.3 **Mitigation Measures**

With the No Action Alternative, the construction of the proposed improvements at the airport would not occur, and therefore no impacts to air quality over existing conditions would occur.

For construction of the Preferred Alternative projects, Best Management Practices (BMPs) would be used during construction to minimize any air quality impacts. The BMPs would include seeding disturbed soils, maintaining construction vehicles appropriately, using reduced speeds on unpaved roads, providing a construction access area, using water trucks to control dust, suspending certain construction activities during high wind conditions, and covering disturbed areas with stabilizing materials as needed, dependent on ambient meteorological conditions. These BMPs would help ensure the Preferred Alternative would not cause significant, construction-related air quality effects.

No significant impacts to air quality as a result of operations would occur with the Preferred Alternative. Therefore, no mitigation measures are necessary.

3.2 **Biological Resources**

Information on Biological Resources is from the technical memorandum, *No Effect Letter: Mulino Airport Improvement Projects* dated February 12, 2019, by ESA. The full memo can be found in **Appendix B**.

3.2.1 *Affected Environment*

The existing Airport consists of a north-south runway (Runway 14-32), parallel taxiway, aircraft parking, fuel facilities, navigational aids, airplane hangars, airport businesses, and vehicle parking areas. Current land use surrounding the airport consists of transportation corridors, commercial and residential development, a golf course, and agricultural fields.

The Airport is situated on a high terrace north of the Molalla River with elevations ranging from 245 feet above sea level (asl) at the north end to 265 feet at the south end. The Molalla River, a tributary of the Willamette River, bisects Airport property into northern and southern study parcels. The project area also includes the Arrowhead Golf Course and several privately owned lots along the Molalla River. Cover types in the project area include mowed grassland adjacent to the runway and taxiways, grazed pastures, row crops, floodplain forests, upland forests, landscaped areas at the golf course and residential lots, and emergent, scrub-shrub and forested wetlands.

Habitat types found in the project areas, relevant to the list of species, may occur in the action area include: upland grassland, palustrine emergent wetlands and scrub-shrub/forested wetlands; floodplain forests and upland forests. Grassland consists primarily of non-native pasture and turf grasses and was found in airport infields, adjacent agricultural parcels and residential properties to the south. Emergent wetlands on Airport property consisted primarily of hydrophytic pasture grasses and weedy forbs. Forested/scrub-shrub wetlands in the action area consist of reed canarygrass, Himalayan blackberry, black cottonwood, and Oregon Ash. The upland forests located on the Molalla River terrace are a mix of native conifers, cottonwood, and western red cedar. Red alder, immature black cottonwood, shrubby willows, and several exotic species in the groundcover dominate the forests within the Molalla River floodplain. Many of the shrubs and trees throughout the action area are native, but the groundcover generally consists of weedy forbs and grasses with the exception of portions of the forested floodplain along the Molalla River.

Table 3-1 below shows species listed under the Endangered Species Act (ESA) that do occur, or may occur, within the area surrounding the project site.

Table 3-1: ESA-Listed Species with the Potential to Occur in Project Vicinity

Species Common Name (Scientific Name)	Federal ESA Listing Status	State ESA Listing Status
Northern spotted owl (<i>Strix occidentalis caurina</i>)	Listed Threatened	Threatened
Streaked-horn lark (<i>Eremophila alpestris strigata</i>)	Listed Threatened	None.
Oregon Chub (<i>Oregonichthys crameri</i>)	None	Sensitive-Critical
Chinook Salmon: Upper Willamette River ESU, spring run (<i>Oncorhynchus tshawytscha</i>)	Listed Threatened	Sensitive-Critical
Steelhead: Upper Willamette River ESU, winter run (<i>O. mykiss brevivostris</i>)	Listed Threatened	Sensitive
Pacific Lamprey (<i>Lampetra tridentata</i>)	Species of Concern	Sensitive
Fender's Blue Butterfly (<i>Icaricia icarioides fender</i>)	Endangered	Endangered
Bradshaw's Desert-parsley (<i>Lomatium bradshawii</i>)	Endangered	Endangered
Kincaid's Lupine (<i>Lupinus oreganus</i>)	Threatened	Threatened
Nelson's Checker-mallow (<i>Sidalcea nelsoniana</i>)	Threatened	Threatened
Water howellia (<i>Howellia aquatilis</i>)	Threatened	Threatened
Willamette Daisy (<i>Erigeron decumbens</i>)	Endangered	Endangered

ESU - Evolutionary Sensitive Unit

3.2.2 **Environmental Consequences**

Under the No Action Alternative, the existing environment and operational conditions within the study are would remain unchanged. Any impacts to biological resources would be related to normal operation and maintenance of the existing airport configuration.

Under the Preferred Alternative, the regrading of the RSA, would regrade the RSA to conform to FAA standards for longitudinal and transverse grading. The obstruction removal portion would remove existing trees mostly on private property and would include some ground disturbances associated with the obstruction removal work. The fencing portion will temporarily disturb the area where the fence is installed. However, the fence will become a permanent travel barrier to land animals for the safety of the flying public.

3.2.2.1 NORTHERN SPOTTED OWL

Northern spotted owls require extensive old growth and mature forests for nesting, roosting, foraging and dispersal. The nearest suitable habitat, which is also designated critical habitat, for northern spotted owls is located over 17 miles to the southeast of the airport in the Cascade Mountain Range (IPaC, 2019). The Airport and immediate vicinity do not contain suitable habitat for the northern spotted owl.

3.2.2.2 STREAKED-HORN LARK

Streaked horned larks (SHLA) are birds of wide-open spaces that lack trees and contain few or no shrubs (USFWS, 2004; USFWS, 2013a). Streaked horned larks are found at several airports in the Willamette Valley and Puget Sound, although no documented occurrences of streaked horned larks are known for the action area. Designated critical habitat for the streaked horned lark excludes all airports (USFWS, 2013b). No streaked horned larks were detected at the Airport during presence/absence surveys in 2018.

Refer to the attached presence/absence memo for more information on methods and timing of the SHLA surveys located in **Appendix B**.

3.2.2.3 OREGON CHUB

Oregon chub is a state listed Sensitive-Critical species with current distribution in the upper Willamette River watershed. This species uses side channel and off-channel habitats within its potential range for all stages of a life cycle.

3.2.2.4 CHINOOK SALMON: UPPER WILLAMETTE RIVER ESU, SPRING RUN

The federally listed upper Willamette River (UWR) chinook salmon are documented as occurring and have designated critical habitat in the Molalla River (StreamNet, 2019; NMFS, 2016). This species uses the Molalla River in the project vicinity primarily for migration to and from their upstream spawning grounds.

3.2.2.5 STEELHEAD: UPPER WILLAMETTE RIVER ESU, WINTER RUN

The federally listed UWR steelhead are documented as occurring and have designated critical habitat in the Molalla River (StreamNet, 2019; NMFS, 2016). This species uses

the Molalla River in the project vicinity primarily for migration to and from their upstream spawning grounds.

3.2.2.6 PACIFIC LAMPREY

The Pacific Lamprey is a Species of Special Concern and uses the Molalla River in the project vicinity primarily for migration to and from their upstream spawning grounds.

3.2.2.7 FENDER'S BLUE BUTTERFLY

Fender's blue butterfly occurs in native prairie habitats where three specific lupine species occur, one of which is Kincaid's lupine. A historical observation of one of these three species, Abram's lupine (*Lupinus albicaulis*), is mapped five miles south of the action area, however, was recorded in 1953 (Oregon Flora Project, 2019). There are no other recorded observations of these three species within 15 miles of the action area. Grasslands in the action area have been disturbed from airport, agricultural and residential development and no native prairie is found on-site.

3.2.2.7 BRADSHAW'S DESERT-PARSLEY

Bradshaw's desert parsley historically occurred on seasonally saturated or flooded prairies, adjacent to creeks and small rivers in the southern Willamette Valley (USFWS, 2018). This species is known to occur in three distinct NRCS mapped soil series, none of which are in the action area. The nearest known observation is approximately 18 miles south of the action area (Oregon Flora Project, 2019). No suitable habitat is located within the project vicinity.

3.2.2.8 KINCAID'S LUPINE

The distribution of Kincaid's lupine species has a close association with native upland prairie and oak savanna sites that are characterized by heavier soils and mesic to slightly xeric soil moisture levels (USFWS, 2018). The nearest known observation of this species is approximately 30 miles west of the action area (Oregon Flora, 2019). No suitable habitat is located within the project vicinity.

3.2.2.9 NELSON'S CHECKER-MALLOW

Nelson's checker mallow primarily occurs in open areas with little or no shade and will not tolerate encroachment of woody species. This species grows in remnant prairie grasslands and some populations occur along roadsides where non-native plants are also present (USFWS, 2018). Field investigations conducted at the action area during spring, summer, and fall 2018 did not identify any individuals in the study area. The nearest known populations are found in Salem, Oregon.

3.2.2.10 WATER HOWELLIA

Water howellia historically occurred within the floodplains of the lower Willamette River and its tributaries and in seasonally inundated areas with organic soils at low elevation (USFWS, 2018). Approximately 6.5 acres of wetlands were identified in the study area, but these aquatic habitats do not provide suitable habitat for water howellia due to past disturbances from grading and introduction of non-native grasses and forbs. Water howellia grows in association with duckweed (*Lemna* spp.), water starworts (*Callitriche* spp.), water buttercup (*Ranunculus aquatilis*), yellow water-lily (*Nuphar polysepalum*), bladderwort (*Utricularia vulgaris*), and pondweeds (*Potamogeton* spp.). Three riverine and depressional wetlands within the Molalla River floodplain totaling 0.65 acres of riverine were mapped in the action area, but no suitable ponded habitat was present in these wetlands. Additionally, no species typically associated with water howellia were observed in the floodplain wetlands. The nearest known observation (Oregon Flora Project, 2019) is at Molalla River State Park in the Willamette River floodplain, approximately 8 miles northwest of the action area.

3.2.2.11 WILLAMETTE DAISY

Willamette Daisy historically occurred in seasonally flooded bottomland and well-drained upland prairies. This is species known to occur in three distinct NRCS mapped alluvial soil series, none of which are in the action area. The nearest known observation is approximately 18 miles south of the action area (Oregon Flora Project, 2019). No suitable habitat is located within the project vicinity.

3.2.2.12 ESSENTIAL FISH HABITAT

The Magnuson-Stevens Fishery Conservation and Management Act (MSA) requires federal agencies to consult with NMFS on activities that may adversely affect Essential Fish Habitat (EFH). The Pacific Fisheries Management Council (PFMC) has designated EFH for the Pacific salmon fishery, federally managed groundfish, and coastal pelagic fisheries. Designated EFH for the Pacific salmon fishery occurs in the Molalla River within the proposed project vicinity.

Ground disturbing activities associated with construction would increase the short-term potential for erosion from the site. To minimize the potential for sediment inputs to leave the site, an erosion and sediment control plan (ESCP) would be prepared and implemented as required by Oregon Department of Environmental Quality (DEQ). The ESCP would document erosion prevention and pollution control BMPs to be employed during construction to prevent the discharge of sediment to surface waters, dispose of construction waste, and prevent and respond to hazardous material releases. It is highly unlikely that erosion-generated sediment from construction activities would reach the

Molalla River. No work would occur below the ordinary high water line of fish-bearing water bodies. Vegetated areas that are temporarily disturbed would be stabilized and groundcover would be reestablished upon completion of construction.

3.2.3 *Mitigation Measures*

The No Action Alternative would not affect any federally-listed endangered or threatened species.

The Preferred Alternative would not affect any federally-listed endangered or threatened species or biological resources. The projects would also have no effect on critical habitat designated for these species due to the lack of in-water and near-water work in the Molalla River, which is designated critical habitat within the action area. The following measures will be implemented to reduce impacts to biological resources:

- For the obstruction removal area, clearing and grading activities resulting in vegetation removal start before the breeding window of March 15th or after August 1st. If construction activities are to take place in areas with potential bird nesting habitat (i.e., in all three land cover types) during the breeding season, the affected areas should be surveyed for nesting activity prior to the removal action. This is to avoid impacting active nests or fledglings that may not yet have the ability to fly.
- BMP to control sedimentation from entering the Molalla River be employed during tree removal, such as avoiding stump removal or ground disturbing activities within 150 feet of the Molalla River.

3.3 *Climate/Greenhouse Gas Emissions*

Information on Climate/Greenhouse Gas Emissions was provided by ESA in their technical memorandum dated June 13, 2018, with subject *Mulino State Airport Air Quality and Greenhouse Gas Emissions (Task 4.1)*. The document is included in **Appendix A**.

3.3.1 *Affected Environment*

On January 12, 2012, FAA issued a memo on how to consider and evaluate greenhouse gases (GHG) and climate in a NEPA document (FAA 2012). FAA did so after the Council on Environmental Quality (CEQ) affirmed that NEPA and its implementing regulations (40 CFR 1500 et. seq.) apply to GHGs and climate. GHGs include carbon dioxide (CO₂), methane (CH₄) NO₂, hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulfur hexafluoride (SF₆) (EPA 2017).

Research has shown there is a direct correlation between fuel combustion and GHG emissions. In terms of U.S. contributions, the General Accounting Office (GAO) reports

that “domestic aviation contributes about 3 percent of total carbon dioxide emissions, according to EPA data,” compared with other industrial sources including the remainder of the transportation sector (20 percent) and power generation (41 percent) (GAO 2009). The International Civil Aviation Organization (ICAO) estimates that GHG emissions from aircraft account for roughly 3 percent of all anthropogenic GHG emissions globally (Melrose 2010). Climate change due to GHG emissions is a global phenomenon, so the affected environment is the global climate (EPA 2009).

3.3.2 Environmental Consequences

Although there are no federal standards for aviation-related GHG emissions, it is well-established that GHG emissions can affect climate (Massachusetts vs EPA 2007). The CEQ has indicated that climate should be considered in NEPA analyses.

Under the No Action Alternative, the described project activities would not occur and no impacts over existing conditions would occur.

The Preferred Alternative is anticipated to have minimal changes regarding airport-related GHG emissions over what is currently forecasted under the No Action Alternative. Construction related activities would result in some GHG emissions including CO, CO₂ and NO₂. However, these GHG emissions would be temporary and localized in nature. Under the Preferred Alternative, the projects would neither change the airport layout or aircraft circulation patterns on the airport, nor increase aircraft traffic or emissions from aircraft, ground support equipment/vehicles, or stationary sources. Therefore, the Preferred Alternative would have no significant impact related to GHG emissions.

3.3.3 Mitigation Measures

No mitigation associated with GHG emissions would be necessary.

3.4 Coastal Resources

The Airport is not within a coastal zone management area or coastal barrier zone. As such, coastal zone management and coast barriers are not applicable to the No Action and Preferred Alternatives and were not analyzed.

3.5 Department of Transportation Act, Section 4(f)

3.5.1 *Affected Environment*

Section 4(f) of the Department of Transportation (DOT) Act of 1966 (49 U.S.C. Section 303) describes that lands which are publicly owned lands, used for public parks, recreational areas, wilderness area, or historic site are protected from development.

An approximate one (1) mile radius surrounding the airport was defined as a study area to investigate any other potential Section 4(f) lands within the vicinity of the Airport.

The following 4(f) lands have been identified within one (1) mile of the Airport. No other parks, recreation areas, or wilderness areas are within a one-mile radius of the Airport. Potential historic and cultural resources are discussed further in section 3.8 of this report.

- Mulino Elementary School, 0.1 mile east
- Wagonwheel Park, 0.9 mile southeast

3.5.2 *Environmental Consequences*

Under the No Action Alternative, there would be no changes to the airport and therefore no impacts to any sites that may be afforded protection under Section 4(f) would occur.

Proposed development would not affect the use of properties afforded protection under Section 4(f). There is no anticipated direct or indirect impact to any public parks, recreation areas, wilderness areas, or historic sites.

3.5.3 *Mitigation Measures*

The No Action Alternative and the Preferred Alternative would not affect any Section 4(f) properties. No mitigation is necessary.

3.6 Farmlands

The Farmland Protection Policy Act (FPPA) was passed under the Agriculture and Food Act of 1981 to minimize the impact that federal programs have on the unnecessary and irreversible conversion of farmland to nonagricultural uses. According to the FPPA, farmland is classified as either “prime farmland, unique farmland, or farmland of statewide or local importance.”

The study area involves ODA owned land and private lands beneath the Runway 32 approach surface of the Airport. There are areas zoned EFU farmlands located on Airport

property. The private properties located within the Runway 32 approach surface, where trees are to be removed, contains property that is zoned Exclusive Farm Use (EFU) and Rural Residential Farm Forest 5 Acre (RRFF-5). The land designated EFU is mostly the Arrowwood Golf Course. The proposed obstruction removal will not alter or effect the existing use of the land. A Zoning Map of the Airport is included in **Appendix C**.

3.7 Hazardous Materials, Solid Waste, and Pollution Prevention

3.7.1 *Affected Environment*

Hazardous materials are regulated under the Resource Conservation and Recovery Act (RCRA) and various other federal and state regulations. In the state of Oregon, hazardous materials are regulated by the Oregon Department of Environmental Quality (DEQ).

There are no nearby EPA current clean-up areas within 1 mile of the Airport.

Solid waste from Clackamas County is handled at the Metro South Facility transfer station located in Oregon City. The Metro South Facility is located approximately 6 miles north of the airport.

3.7.2 *Environmental Consequences*

Under the No Action Alternative, the action would not produce any additional hazardous material, solid waste, and/or pollution.

All of the work associated with the RSA grading project is contained entirely within the existing airport property. As there are no identified hazardous material sites located within the airport property, this portion of the Preferred Alternative will not generate any new or impact any existing hazardous materials. All of the work for the obstruction removal project will generate wood waste associated with the removal of trees. The waste may be minimized by grinding and mulching of the woody material like stumps and branches that is not a useful wood products. The obstruction removal will not remove any trees in any clean-up sites. All of the work associated with the fencing project will occur on the Airport property line. The waste associated with this portion of the Preferred Alternative will be steel metal scrap and may be recycled at a local metal recycler.

Solid waste would be generated by removal, demolition and construction activities related to the Preferred Alternative. Material unsuitable for construction that cannot be recycled, including organics, would be hauled to the Metro South Transfer Station.

3.7.3 *Mitigation Measures*

The No Action Alternative would not impact any hazardous material sites, solid waste and pollution.

The Preferred Alternative would not require any measures to mitigate impacts related to hazardous materials. If any soil contamination and/or a spill results from construction or is found during construction, remediation will occur prior to resuming construction.

The Preferred Alternative would not have any impacts on solid waste. No mitigation is necessary.

3.8 Historical and Archaeological Resources

3.8.1 *Affected Environment*

Information on the original historical and archaeological resource is from the *Cultural Resource Survey of the Mulino State Airport Environment Assessment, Clackamas County, Oregon* provided by Archaeological Investigations Northwest, Inc. (AINW), dated February 27, 2018. The document is included in **Appendix D**.

AINW completed cultural resource study of the project's Areas of Potential Effect (APEs). AINW conducted a pedestrian survey of the project's Area of Potential Effects (APE). The 240-acre APE encompasses the location of planned airport improvements (Figure 2) as well as locations identified for obstruction removal (Figure 2). The APE is primarily located on state-owned land. However, a small portion of the APE along the bank of the Molalla River is located on privately owned land. This privately owned area was not surveyed for archaeological or historic resources due to landowner access issues.

AINW reviewed archaeological site and survey records in the Oregon Archaeological Records Remote Access (OARRA) system maintained by the Oregon State Historic Preservation Office (SHPO), and materials in the AINW library to determine if cultural resources have been identified in or near the project APE and to determine whether cultural resource surveys have been previously conducted in or near the APE.

3.8.2 *Environmental Consequences*

Pedestrian survey was conducted for the Preferred Alternative APE, on November 27 and December 4, 2017.

One archaeological resource (17/2634-1) was identified during the pedestrian survey. The resource consisting of remnants of the Willamette Valley Southern Railway, an electric railroad line for passenger service, which extended on a north-south alignment

through Mulino on its route between Oregon City and Mt. Angel between 1915 and 1933; freight service along the railroad line continued until 1938. The railroad line remnants include a downgrading trench cut into the landscape on the north side of the Molalla River at the location of the former railroad trestle approach on the former railroad alignment. This downward grade appears to have been created to better coincide with the substantially lower elevation of the south side of the Molalla River in comparison to the north side of the river. Other observed features associated with the railroad line include two concrete remnants of the former trestle within the Molalla River, a remnant of the railroad grade now used as a gravel road on the south side of the Molalla River, and a remnant cobble-covered levee segment on the south side of the Molalla River adjacent to the railroad alignment likely used for the protection of the grade from flood waters. A remnant pole was also found adjacent to the railroad grade on the south side of the river that may have been used to support the overhead electrical cables for the railroad line. This site may be a candidate for listing in the Nation Report of Historical Places (NRHP).

In addition to site 17/2634-1, three areas were identified where additional archaeological investigations may be needed within the surveyed APE. The areas include terrace landforms on the north and south sides of the Molalla River (Areas 1 and 2) (Figure 3). These terrace landforms are characteristic of the type of setting where many pre-contact archaeological sites have been identified in the general vicinity of the APE. A third identified area consists of the eastern portion of the cow pasture at the north end of the APE. The cow pasture is to the west of a previously identified pre-contact site that was observed during a 1980 survey for the Molalla airport but was never formally recorded on a site form (Woodward 1980) (Figure 3). The eastern portion of the cow pasture has a higher probability of containing artifacts given its proximity to this site and the fact that it has been impacted by airport development to a lesser degree than other nearby portions of the APE.

In addition to the three identified areas, there is an area on the eastern bank of the Molalla River that will need to be surveyed once landowner access is granted or during construction.

3.8.3 Mitigation Measures

The No Action Alternative would not have any impact on historical or archaeological resources.

The Preferred Alternative may have impacts on historical or archaeological resources. There is no resources in the area of the RSA regrading.

The removal area south of the river is considered to have a high probability for previously undocumented archeological resources along the Molalla River shoreline. It is recommended that an Inadvertent Discovery Plan (IDP) be developed and followed by construction personnel during all ground-disturbing activities. The IDP would provide a protocol and contact list in the event that an unanticipated discovery is made. A qualified archeological monitor should be present during any project-related ground disturbing activity that takes place in the area of the Molalla River or around the recorded boundaries of previously documented sites.

In the areas associated with the railway line, the areas of the railway line should be marked with enough flagging or construction fencing to demarcate the area. Trees in the area should be surveyed and marked. Any trees within the demarcation should be cut at the base and felled to minimize impacts to the site. Roots shall remain in the ground intact. The fallen trees shall be cut and fallen on site. Picking and loading of the trees shall be done in such a way that the equipment and the methods of removal minimize the disturbance of the ground.

3.9 Compatible Land Use

3.9.1 *Affected Environment*

The Airport property is zoned Rural Area Residential (RA-1), Rural Residential Farm Forest 5 Acre (RRFF-5), and Exclusive Farm Use (EFU) by the County. The County zoning includes provisions for a Public Use Airport and Safety Overlay Zone as defined in Chapter 713 of the Clackamas County Zoning and Development Ordinance. This chapter serves to restrict the intrusion of buildings, rooftop appurtenances, and trees within the approach surfaces and other navigable airspace. The restricted surfaces correspond to Visual/Utility Airports. There is no demarcated Airport Overlay Zone on the Clackamas County zoning map.

County zoning designations surrounding the Airport includes EFU, RRFF-5, RA-1, Rural Area Residential 2 Acre (RA-2), Agricultural Forest District (AGF), Rural Commercial (RC), and Timber District (TBR). Additional land uses in the airport's vicinity include the public rights-of-way of OR Highway 213, Landing Way, Airport Road, and South Mulino Road.

3.9.2 *Environmental Consequences*

The Preferred Alternative will not impact any land use zones.

3.9.3 Mitigation Measures

The No Action Alternative would not have any impact and would not require mitigation.

No mitigation is anticipated for the Preferred Alternative because all proposed improvements meet existing zoning and airport overlay requirements.

3.10 Natural Resources and Energy Supply

3.10.1 Affected Environment

The Airport uses fuel to power aircrafts, natural gas for heating, and electricity to power buildings and runway and taxiway lighting. Portland General Electric provides electricity to the Airport. The Mulino Water District provides water. Northwest Natural Gas provides natural gas. There is one 12,000-gallon AvGas aircraft fuel facility on the airport.

3.10.2 Environmental Consequences

The No Action Alternative would not change the consumption of fuel, natural gas, or electricity.

The short-term impacts of the Preferred Alternative will require the consumption of fuel and electricity to power construction equipment. Materials for construction: such as water, aggregate, concrete, hot mix asphalt, steel, and other related resources will be consumed by construction activities. Fuel for construction activities will be purchased off-site.

There will be no long-term impacts of the Preferred Alternative on local natural resource and energy supplies.

3.10.3 Mitigation Measures

No mitigation associated with Natural Resources and Energy Supply would be necessary.

3.11 Noise and Noise-Compatible Land Use

3.11.1 Affected Environment

A noise study will not be conducted for the airport as it has an Airport Reference Code of B-I. The FAA guidance contained in Order 1050.1F says that “no noise analysis is needed for projects involving Design Group I and II airplanes (wingspan less than 79 feet) in Approach Categories A through D (landing speed less than 166 knots) operating at airports whose forecast operations in the period covered by the NEPA document do not

exceed 90,000 annual propeller operations (247 average daily operations) or 700 annual jet operations (2 average daily operations).”

The current airport operations do not exceed 90,000 operations and the forecast operations according to the FAA Airport Master Record, 04/25/2019 effective date, Mulino State Airport had 21,300 operations for the 12 months ending 07/08/2018.

3.11.2 Environmental Consequences

The No Action Alternative would not change the noise levels or the compatibility of the local Land Use.

The Preferred Alternative will not increase aircraft traffic and therefore noise levels will not increase due to this action. There will be no long-term noise impacts of the Preferred Alternative on the local area.

3.11.3 *Mitigation Measures*

No mitigation associated with Noise and Noise-Compatible Land Use would be necessary. The current airport operations do not exceed 90,000 operations and the forecast operations according to the FAA Airport Master Record, 04/25/2019 effective date, Mulino State Airport had 21,300 operations for the 12 months ending 07/08/2018.

3.12 Socioeconomics, Environmental Justice, and Children’s Environmental Health and Safety Risk

3.12.1 *Affected Environment*

3.12.1.1 SOCIOECONOMIC ENVIRONMENT

Table 3-2 below shows the population of Clackamas County and the Census County Division (CCD) of Mulino based on each census from 1990 to 2010. Based on this data, Clackamas County and the CCD of Mulino experienced growth over the last two decades. The population of Clackamas County experienced growth of nearly 34.8% and the CCD of Mulino experienced growth of nearly 3.1% during the 1990 to 2010 period. 2010 was the first year that the Census Bureau listed the population of Mulino as a Census Designated Place (CDP). Most recent data factors list the data for Mulino per the CDP. In Table 3-2, the CCD and the CDP are both listed to show the correlation between the data.

Table 3-2: Historical Population Trends

Year	Clackamas County	% Change	Mulino, CCD	% Change	Mulino, CDP
2010	375,992	+11.1	4,637	+2.6	2,103
2000	338,391	+21.4	4,521	+0.5	N/A
1990	278,850		4,499		N/A

Source: Oregon: 2010 Population and Housing Unit Counts, US Census Bureau

Table 3-3 below shows a more detailed breakdown of annual population within the Clackamas County between 2012 and 2017. Population data for the CDP of Mulino is also shown in Table 3-3 between 2011 and 2013. The Clackamas County has seen steadily increasing population as the population of Portland metropolitan area steadily increases. The data shows a robust increase in the County population, which indicates a positive long term growth forecast.

Table 3-3: Recent Population Trends

Year	Clackamas County	% Change	Mulino, CDP	% Change
2017	413,000	+2.0	2,744	-1.9*
2016	404,980	+1.9	2,797	+5.1
2015	397,385	+1.5	2,661	+15.0
2014	391,525	+1.4	2,314	+6.4
2013	386,080	+1.2	2,175	-12.0
2012	381,680	-	2,472	-

* Population Data for Mulino, CCD from 2011-2016 could not be found

Source: Portland State University Population Research Center

Based on this data, the Mulino area has experienced growth since 1990. The population in Clackamas County experienced approximately 11.1% growth between 2000 and 2010, and the CCD of Mulino population grew 2.6% over the same time-period.

Data from the 2013-2017 American Community Survey 5-Year Estimates from the US Census Bureau were analyzed to determine other socioeconomic factors including housing supply, range of incomes, and economic activity in the CDP of Mulino (US Census Bureau 2010). In 2010, the CDP of Mulino had an estimated 810 total housing units with a 4.7% vacancy rate. Approximately 85.4% of housing units were owner-occupied, and 14.6% of housing units were rented. According to the 2006-2010 American Community Survey, 5-Year Estimates, the median household income in 2010 was \$71,546, and the mean household income was \$81,971. Approximately 0.3% of the population had a total household income less than \$10,000, and approximately 3.7% of the population had a total household income greater than \$200,000. The employed population “16 years and over” of the Mulino CDP was 1,012 in 2010. Of the employed population, approximately 66.6% worked in the private sector, 19.0% worked in the government sector, and 14.4% were self-employed.

The work associated with the Preferred Alternative will not cause significant disruption to the community; no significant impacts to socioeconomic activities are anticipated.

3.12.1.2 ENVIRONMENTAL JUSTICE

The Environmental Justice analysis is intended to consider the potential for Federal actions to have a disproportionate and adverse impact on low-income and minority populations and is required to comply with Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* (59 FR7629, February 11, 1994). The analysis requires that low-income and minority populations be identified to assess whether adverse human health or environmental impacts would result from the Preferred Alternative and are disproportionately borne by these groups. This analysis complies with Executive Order 12898 previously listed and the Department of Transportation (DOT) Order 5610.2, *Order to Address Environmental Justice in Minority Populations and Low-Income Populations*.

Order 5610.2(a) defines that a disproportionately high and adverse effect on minority and low-income populations occur when the adverse effect is predominately borne by a minority population and/or low-income population or is appreciably more severe or greater in magnitude than the adverse effect that will be suffered by the non-minority population and/or non-low-income population. It requires Federal agencies to avoid any disproportionate impacts to achieve environmental justice to the greatest extent practicable.

An evaluation of the population and ethnic distributions in the project area and community was conducted. 2010 US Census data were analyzed to identify minority populations in

the vicinity of the proposed project area. The data were broken down into two categories: Clackamas County and CDP of Mulino. The Airport is within the CDP of Mulino.

The Department of Transportation Order 5610.2(a) defines minority as any individual who is:

- Black
- Hispanic or Latino
- Asian American
- American Indian and Alaskan Native (AIAN)
- Native Hawaiian and other Pacific Islander (NHPI)

Table 3-4 below shows the percentage of each race by geographic area.

Table 3-4: 2010 Minority Population Data

Geographic Area	Race						Hispanic or Latino (of any race)
	African American	Asian	AIAN	NHPI	Other	2 or More	
Clackamas County	0.8%	3.7%	0.8%	0.2%	3.1%	3.2%	7.7%
CDP of Mulino 50450	0.2%	0.4%	1.0%	0.0%	0.5%	1.8%	2.8%

Source: US Census Bureau 2010 Interactive Map

Low-Income Population

The Department of Transportation Order 5610.2(a) defines low-income as an individual or family whose median household income is at or below the Department of Health and Human Services poverty guidelines. US Census 2010 data were analyzed to identify the percentage of the population living in poverty in the area. As noted in **Table 3-5**, low income population in the county accounts for 6.6 percent of the overall population.

Table 3-5: Population in Poverty

Geographic Area	Population Poverty Estimate
State of Oregon	11.6%
Clackamas County	6.6%

Source: US Census Bureau 2010 Poverty Status in 1999 of Individuals

3.12.1.3 CHILDREN'S ENVIRONMENTAL HEALTH AND SAFETY RISK

According to the *Department of Transportation Order 1050.1F and Executive Order 13045*, the FAA is directed to identify and assess environmental health risks and safety risks that the agency has reason to believe could disproportionately affect children. Environmental health risks and safety risks include risks to health or to safety that are attributable to products or substances that a child is likely to come into contact with or ingest, such as air, food, drinking water, recreational waters, soil, or products they might use or be exposed to.

The closest school to the airport is: Mulino Elementary School (0.1 miles east).

3.12.2 Environmental Consequences

No changes in population patterns or growth, disruption of existing communities or neighborhoods, displacement of existing populations, or relocation of residents or businesses is associated with either the No Action Alternative or the Preferred Alternative. No impacts are anticipated to the income or economic activity in the greater Mulino area. As a result, no socioeconomic impacts are expected with either phase of the Preferred Alternative.

The Environmental Justice review is intended to assess if the proposed project causes impacts that are disproportionately high and adversely affect minority and low income populations. Impacts are significant if they are predominately borne by a minority population or low income population and is more severe or of greater magnitude than the adverse effect suffered by the population as a whole. Further, the analysis requires the consideration of risks to children related to environmental health and safety risks.

3.12.2.1 NO ACTION ALTERNATIVE

The No Action Alternative would not cause any adverse human health or environmental effects to the general population or specifically defined population segments including minority, low-income, or children.

3.12.2.2 PREFERRED ALTERNATIVE

The Preferred Alternative would not result in a disproportionate impact on any minority or low-income population. The Preferred Alternative would not result in a disproportionate impact on children. The regrading of the RSA would take place entirely within the airport property and is 0.54 miles from Mulino Elementary; the fencing project will occur on the Airport property line and at one point will be 0.03 miles from Mulino Elementary; and the obstruction removal areas will be at least 0.75 miles from Mulino Elementary.

3.12.3 *Mitigation Measures*

The No Action Alternative would not result in a disproportionate impact to minority or low-income individuals or children.

Based on the analysis conducted, the Preferred Alternative is not anticipated to result in disproportionate impacts to minority or low-income individuals or children. Subsequently no mitigation measures related to environmental justice are needed.

3.13 Visual Effects

3.13.1 *Affected Environment*

Lighting on the airfield includes a rotating beacon, medium intensity runway edge and threshold lights. Existing buildings have exterior lighting.

3.13.2 *Environmental Consequences*

The No Action Alternative will not have any effect on light emissions or changes to views.

The improvements proposed in the Preferred Alternative will provide similar uses to current structures at the Airport. No additional lighting is proposed.

3.13.3 *Mitigation Measures*

No mitigation measures would be required with the No Action Alternative.

The Preferred Alternative will use building materials and colors which are similar to existing structures in order to provide a blending effect with the existing views of the airport.

3.14 Water Resources

Information regarding water resources is from the technical memorandums prepared by ESA titled *Mulino State Airport Improvements; Water Resource Delineation Report* dated February 2018, *Mulino State Airport Runway Protection Zone Wetland Reconnaissance* dated January 19, 2019, and *Mulino State Airport; Wetland Impacts and Mitigation* dated January 31, 2019. The documents are included in **Appendix E**.

3.14.1 Affected Environment

According to the Federal Aviation Administration's (FAA) 1050.1F Desk Reference, Chapter 14, water resources include surface water, groundwater, floodplains, and wetlands, which are vital to society and important for providing drinking water and in supporting recreation, transportation and commerce, industry, agriculture, and aquatic ecosystems.

3.14.1.1 SURFACE WATERS AND WETLANDS

Wetlands and waters of the United States are regulated by the federal government under Section 404 of the Clean Water Act (Act) of 1977. The Act requires consideration of the impacts of dredge and fill activities on wetlands, as well as on their functions and values. Other impact considerations include habitat fragmentation, drainage, the effects of runoff (erosion, flooding, sedimentation, etc.), hydrologic modifications, and temporary disturbances incurred during construction activities. The Act created a federal regulatory plan to control the discharge of dredged or fill materials into wetlands and other waters of the United States. If the potential development projects affect waterways or wetlands the projects will require permits from the U.S. Army Corps of Engineers (USACE) as well as the Oregon Department of State Lands (DSL), under Section 404 of the Act, with the USACE handling the day-to-day activities.

In addition, Section 401 of the Act requires any applicant for a federal license or permit to conduct any activity that may result in any discharge into the navigable waters to obtain a 401 water quality certification from the Oregon Department of Environmental Quality (DEQ) prior to federal permit being issued.

A combination of a water resources delineation and a windshield survey of the North and South study areas, dependent on site access, was conducted. The North and South areas were separated by the Molalla River. For the properties where access was allowed,

a water resources delineation was conducted. For sites where access was not allowed or not accessible, a windshield survey was conducted. Portions of South study areas were not surveyed during the field investigation nor the windshield survey due to either no permission to access, posted no trespassing signs, or locked gates at time of survey. The study areas accessed were evaluated for signs of wetland conditions including swales or low spots, hydrophytic vegetation, or indicators of wetland hydrology such as saturation or ponding.

A total of 6.23 acres of wetland was delineated in the field using routine delineation methods. Additionally, 13.9 acres of a perennial river (Molalla River) was delineated, along with 1.07 acres of a potentially jurisdictional stormwater pond. The majority of these potential jurisdictional features are located in the north study area (6.94 acres). The majority of the water resources mapped by this delineation extend well outside of the survey area.

All wetland documentation is included in **Appendix E**.

3.14.1.2 FLOODPLAINS

Based on flood insurance rate maps developed by the Federal Emergency Management Agency (FEMA), no 100-year floodplain is mapped within the RSA regrading site. In the obstruction removal area near the Molalla River, the 100-year floodplain is present along the river. The flood insurance rate map (FIRM) showing the flood risk of the project area is included in **Appendix F**.

3.14.1.3 GROUNDWATER

Protection of groundwater in Oregon occurs at the federal, state, and local levels through various agencies. Oregon administers many federal programs, including the Clean Water Act, Safe Drinking Water Act, and Resource Conservation and Recovery Act among others. In addition to federal laws, Oregon has its own state laws and regulations relating to groundwater protection, and Clackamas County regulates groundwater through local ordinances.

Most water used in the watershed comes from wells drilled into aquifers in Willamette Silt and alluvial deposits, which are on top of less permeable volcanic and sedimentary rock. There are 3 drinking water wells listed on the Department of Water Quality "Oregon Drinking Water Protection Program." The nearest groundwater well is the Mulino Water District Well #3, which is located 0.4 miles southeast of Runway 14.

3.14.1.4 WILD AND SCENIC RIVERS

No wild and scenic rivers are designated within the study area.

3.14.2 *Environmental Consequences*

3.14.2.1 SURFACE WATERS AND WETLANDS

The proposed RSA grading will be constructed with approximately 50 cy of cut and 750 cy of fill material. The two wetlands (Wetland 5a and 5b) in the immediate vicinity of the proposed RSA have a total area of 0.192 acre.

The proposed obstruction removal involves tree removal within or in close proximity to three freshwater wetlands and the Molalla River. Tree removal in wetland areas and adjacent to the Molalla River is expected to involve cutting trees at ground level and leaving the stumps in place.

The fencing improvements would require installing zinc coated steel fence with posts set in concrete every 10 feet. The concrete post blocks would have an approximate surface area of 3 square feet (sf) and 3-foot depth. The fence centerline would be cleared to a minimum width of five feet on each side and would be installed one foot off the property line. The temporary impact area from trucks, a tracked mini excavator, and manual labor would be a 12 feet wide offset from the property line. All holes and disturbance remaining after post and stump removal would be refilled with native substrate, compacted with tampers, and restored with a grass seed mix similar to existing conditions.

3.14.2.2 FLOODPLAINS

There are floodplain areas designated by FEMA within the southern obstruction removal area, adjacent to the Molalla River. There is a small area of obstructing trees within the floodplain, The Obstruction Removal in the southern obstruction removal area will not have impacts to floodplains.

The other areas of the Preferred Alternative will not be performed within floodplains.

3.14.2.3 GROUNDWATER

There are three (3) ground water drinking water sources near the airport. The closest is 0.4 miles southeast of the airport and the others are 0.8 miles to the northeast and 0.95 miles to the southeast of the airport. However, there are no construction activities that will affect the groundwater. Appropriate BMPs during construction will be in place.

3.14.2.4 WILD AND SCENIC RIVERS

Because there are no wild and scenic rivers within the study site, the Preferred Alternative would have no impacts to wild and scenic rivers.

3.14.3 Mitigation Measures

3.14.3.1 SURFACE WATERS AND WETLANDS

The proposed RSA grading would be constructed with approximately 50 cy of cut and 750 cy of fill material. The two wetlands (Wetland 5a and 5b) in the immediate vicinity of the proposed RSA have a total area of 0.192 acre. The conversion of approximately 0.005 acres of palustrine emergent (PEM) wetlands to a vegetated RSA that sheds stormwater runoff would likely not adversely affect function of these two wetlands or adjacent water resources at the Airport.

In the obstruction removal area, trees will be removed in potential wetland areas. Prior to removal, those potential areas must be delineated to confirm the presence of wetlands. If wetlands are present, the trees are to be removed with hand tools and either cut and left fallen in place or cut and dragged out of the wetland area. No vehicular traffic is to be permitted in the delineated wetland areas. Stumps are to remain in place and no further ground disturbance is to take place. Appropriate construction BMPs will be placed to restrict sediment migration during the obstruction removal. This action does not require action or permits from DSL or USACE. The action may require grading permits from Clackamas County.

The proposed concrete blocks for the fence post footings would result in a small increase of impervious surface area; however, the 3 square foot blocks would be spaced at a minimum of 10 feet and stormwater runoff would be infiltrated on-site. The additional impervious surfaces would likely not adversely affect function of wetlands at or adjacent to the Airport.

3.14.3.2 FLOODPLAINS

The RSA grading area would not impact any floodplains. No mitigation is necessary.

The obstruction removal area will have a portion of the obstruction removal within the floodplain associated with the Molalla River. Appropriate BMPs must be placed prior to any removal to stop the any sediment migration during obstruction removal. The trees are to be cut flush to the ground and the stumps are to remain. There is no permanent structures to be constructed within the floodplain, therefore no mitigation is required.

The fence construction would not impact any floodplains. No mitigation is necessary.

3.14.3.3 GROUNDWATER

The Preferred Alternative will not result in a direct impact to groundwater.

3.14.3.4 WILD AND SCENIC RIVERS

The Preferred Alternative would not impact any Wild or Scenic River. No mitigation is necessary.

3.15 Cumulative Impacts

3.15.1 Summary of Past Projects

Table 3-6 below lists major projects that have occurred in the last ten years at the Airport.

Table 3-6: Past Projects List

Year	Project Description
2014	Airport Master Plan
2013	Obstruction Removal

3.15.2 Summary of Concurrent Projects

One Airport project that is expected to occur concurrent with the Preferred Alternative. ODA is planning on installing and upgrading the Airport water supply. The NEPA investigation will be performed during the design of the water line.

3.15.3 Summary of Future Projects

Table 3-7 below list projects that are planned in the reasonably foreseeable future.

Table 3-7: Future Project List

Year	Project Description
2019	Obstruction Removal Project and RSA grading
2021	Wildlife/Security Fencing Construction
2022	Taxiway rehabilitation

In addition to the projects shown in the table above, hangars may be developed along the existing taxilanes as demand warrants. These hangars will be constructed in areas that were investigated for this Environmental Assessment. There will be no impacts to wetlands, threatened or endangered species, or cultural resources and therefore no

foreseeable cumulative impacts to the direct or indirect study areas. The 2019 and the 2021 projects are part of the Proposed Action in this Environmental Assessment.

3.15.4 Summary of Resource Category Impacts

Resource category impacts are only analyzed for significant impacts associated with the Preferred Alternative and its cumulative impact with past, concurrent, and reasonably foreseeable projects at the Airport. Because the Preferred Alternative has the potential for temporary impacts due to construction and air quality/green-house gases, the potential for cumulative impacts is summarized below.

Construction Impacts

The Preferred Alternative, when considered with other past, present, and reasonably foreseeable future projects, may have a cumulative impact if construction activities were to occur concurrently. Potential impacts caused by construction activities include impacts from dust, noise, GHG, air pollution, and water pollution. However, the impacts are assumed to be minor and temporary in nature, and will be mitigated with appropriate construction BMPs. The combination of concurrent projects and the Preferred Alternative would likely still result in minor impacts if construction BMPs are implemented.

Air Quality/Green House Gas

The cumulative impact of the Preferred Alternative on the global climate when added to other past, present, and reasonably foreseeable future actions is not currently scientifically predictable. Aviation has been calculated to contribute approximately 3 percent of global carbon dioxide (CO₂) emissions; this contribution may grow to 5 percent by 2050.

Wetlands

The Preferred Alternative will not have wetland impacts from grading and fill material. When considered with other past, present, and reasonably foreseeable future projects, there will not be potential wetland impacts resulting from future development on the airfield as well. The impacts from the preferred alternative from obstruction removal will be negligible, since the trees will be removed by hand tools and no ground disturbance will occur and there will be no net loss of wetlands.

Chapter 4 – Public Review Process

The Oregon Department of Aviation (ODA) solicited written public comments on the Draft Environmental Assessment of Airport Improvements pursuant to FAA Order 1050.1F. The public review period was conducted from August 21, 2019 through September 20, 2019. Notices were published in the Molalla Pioneer requesting public comment on the Draft EA, and informing the public of the project. The published notices are included in Appendix G of this report.

The Draft EA was available for viewing through multiple outlets. Hard copies of the Draft EA were available for viewing during normal business hours at the ODA Office and the FAA Seattle Airports District Office. An electronic copy of the Draft EA was posted on the ODA website.

