

# Chapter 8 – Airport Layout Plan





## Chapter 8 – Airport Layout Drawings



### Introduction

The options that were considered for the long-term development of Ken Jernstedt Airfield resulted in the selection of a preferred alternative. The preferred alternative has been incorporated into the airport layout plan drawings, which are depicted in this chapter. The set of airport plans, which is referred to in aggregate as the “Airport Layout Plan” (ALP) has been prepared in accordance with Federal Aviation Administration (FAA) guidelines. The drawings illustrate existing conditions, recommended changes in airfield facilities, property ownership, land use, and obstruction removal. The ALP set is presented at the end of this chapter:

- Sheet 1 – Cover Sheet
- Sheet 2 – Airport Data Sheet
- Sheet 3 – Airport Layout Plan
- Sheet 4 – On-Airport Individual Area Plans
- Sheet 5 – Airport Airspace Plan (FAR Part 77)
- Sheet 6 – Runway Inner Approach Surface / RPZ
- Sheet 7 – Runway 7 Approach Plan and Profile
- Sheet 8 – Runway 25 Approach Plan and Profile
- Sheet 9 – On-Airport Land Use Plan
- Sheet 10 – Off-Airport Land Use Plan
- Sheet 11 – Exhibit “A” Airport Property Plan



The airport layout plan drawings provide detailed information for existing and future facilities. The future improvements depicted in the drawing set are consistent with the airport master plan's updated twenty-year capital improvement program contained in Chapter Seven. The draft ALP drawing set was submitted along with the draft final airport master plan report to FAA for review and approval. The drawings were reviewed by the FAA Seattle Airports District Office (ADO) with additional review coordinated with other FAA offices (Flight Procedures, Flight Standards, etc.). Once approved, the final ALP drawing set were signed by the Port of Hood River and the FAA Seattle ADO. As individual projects are completed, minor "as-built" updates to the ALP drawing may be completed (with FAA coordination) without updating the airport master plan.

The airport layout plan drawings are prepared using AutoCAD® computer-aided drafting software, which allows for easier updating and revision. The drawing files may also be imported into local geographic information systems (GIS) to support land use planning, airport overlay zone mapping, etc.

A brief summary of the individual drawings is provided below:

#### AIRPORT DATA SHEET DRAWING

The Airport Data Sheet drawing contains detailed runway and taxiway dimensions, FAA dimensional standards, wind roses, and other data that is reflected on the sheets in the drawing set.

#### AIRPORT LAYOUT PLAN DRAWING

The Airport Layout Plan (ALP) drawing graphically depicts existing and future airfield facilities. The current length of Runway 7/25 (3,040 feet) is maintained, although the existing paved 580-foot overrun located beyond the west end of the runway is recommended to be designated as a "stopway."

The designation of the existing pavement as a stopway does not increase the published runway length. However, the overall dimension (runway + stopway) would be listed in a declared distance table as "Accelerate-Stop Distance Available (ASDA)" for Runway 25, in the published FAA Airport/Facility Directory (A/FD). By FAA definition, a stopway "*must be a wide as the runway and able to support an aircraft during an aborted takeoff without causing structural damage to the aircraft.*"<sup>1</sup> When the stopway is properly marked, lighted and maintained, and the declared distances are published, the Runway 25 ASDA will increase to 3,620 feet.

Upgraded runway lighting is planned, including the installation of visual guidance indicators (VGI) and runway end identifier lights (REIL) at both runway ends, and replacement of the medium intensity runway lighting (MIRL) system at the end of its useful life near the end of the current twenty-year planning period.

<sup>1</sup> FAA Advisory Circular 150/5300-13A, Paragraph 312



The western section of the south parallel taxiway (Taxiway B) will be shifted approximately 90 feet south to meet the 240-foot Airplane Design Group II (ADG II) dimensional standard for runway and parallel taxiway centerline to centerline separation. The taxiway relocation will require reconfiguration of the south apron (taxilanes and tiedowns) and relocation of the existing fuel storage tanks to accommodate required clearances.

The north and south apron areas will be reconfigured to meet FAA design standards and to accommodate targeted redevelopment and infill development of hangars. New aircraft hangar areas are planned near the northwest and northeast corners of the airport, with additional development identified abutting the south side of the terminal area (currently off airport property). As part of the planned north apron development, a land trade is planned with WAAAM to accommodate more efficient development of hangars, FBO building, access road and vehicle parking. Jeanette Road will provide access to new hangars located near the east end of the north apron.

Future facilities are color-coded (red) to distinguish them from existing facilities. Future facilities are represented in the airport master plan's twenty-year capital improvement program (CIP) as individual projects or project groupings.

#### **ON-AIRPORT INDIVIDUAL AREA PLANS DRAWING**

The On-Airport Individual Area Plans drawing for the landside areas located on both the north and south sides of Runway 7/25 provide additional detail for existing and new facilities. Recommended improvements include reconfigured/expanded aircraft parking on both the north and south aprons; future hangar development on both the north and south sides of the runway; temporary and ultimate aircraft fuel area; access roads and vehicle parking; and land acquisition for future hangar development.

#### **FAR PART 77 AIRSPACE DRAWING**

The FAR Part 77 Airspace drawing depicts the protected airspace defined for Runway 7/25 under Federal Aviation Regulation (FAR) Part 77, *Objects Affecting Navigable Airspace*. The airspace plan drawing depicts plan views of the five “imaginary surfaces” defined in FAR Part 77.25 including the primary, transitional, approach, horizontal, and conical surfaces based on the “ultimate” runway configuration. Profile views of the full runway approach surfaces are also provided; additional plan and profile detail for the approach surfaces is provided on additional drawings in the ALP set. A detailed description of FAR Part 77 airspace surfaces is provided in Chapter Four (Airport Facility Requirements).

Part 77 surfaces should be free of built or terrain obstructions to the greatest extent possible. Objects that penetrate FAR Part 77 surfaces may require action to mark or remove depending on their severity, location, and the feasibility of the action. The drawing includes a table of obstructions with recommended dispositions.



The physical characteristics of the FAR Part 77 surfaces are defined the size of aircraft using the runway and the runway approach capabilities. As noted earlier, no increase in runway length is recommended for the current planning period. The addition of a designated stopway does not affect FAR Part 77 airspace surfaces.

- **Runway 7/25 Approach Surface:** Extend 5,000 feet from both ends of the runway primary surface (see below). The approach surfaces for Runway 7 and 25 have a slope of 20:1, which represents the horizontal distance required for each increment of vertical rise. The approach surfaces are consistent with visual approach capabilities.
- **Primary Surface:** Based on the visual approach standards for “larger-than-utility” runways, the primary surface is 250 feet wide and extends 200 feet beyond each end of the runway. The primary surface is a flat plane of airspace centered on the runway with the same elevation as the nearest point on the runway centerline. For Runway 7/25, the primary surface is 3,440 feet long, 250 feet wide, and is consistent with applicable FAR Part 77 criterion.
- **Runway Transitional Surface:** The runway transitional surfaces extend outward and upward from the outer edges of the primary surface. The transitional surfaces have a slope of 7:1 and extend to an elevation 150 feet above airfield elevation, where they connect to the runway horizontal surface. The 7:1 transitional surface slopes for Runway 7/25 begin 125 feet from runway centerline.
- **Horizontal Surface:** The horizontal surface for Runway 7/25 is drawn from 5,000-foot radii that extend from both ends of the primary surface to form an oval. The horizontal surface is a flat plane of airspace with an elevation 150 feet above airport elevation. For Runway 7/25, the radius of the horizontal surface coincides with the length of the runway approach surfaces.
- **Conical Surface:** The conical surface extends from the outer edge of the horizontal surface at a slope of 20:1 for 4,000 feet. The top elevation of the conical surface is 350 feet above published airport elevation.

#### RUNWAY INNER APPROACH SURFACE / RPZ DRAWING

The Inner Approach Surface and Runway Protection Zone (RPZ) drawing depict detailed plan views of these areas and profile views of the approach surface and threshold siting surface (when used) for each runway end. The drawing depicts obstructions, using a common numbering system from the FAR Part 77 Airspace Plan drawing.



### **RUNWAY APPROACH SURFACE PLAN AND PROFILE DRAWINGS**

The Approach Surface drawings depict plan and profile views of the runway approach surfaces depicted in the FAR Part 77 airspace plan. The drawings provide additional detail in identify obstructions, terrain and other physical features within the approach surfaces. The drawings depict obstructions, using a common numbering system from the FAR Part 77 Airspace Plan drawing.

### **AIRPORT LAND USE PLANS**

The Airport Land Use Plan drawings depict existing comprehensive plan and zoning designations for the airport and surrounding areas, and notes existing airport overlay zoning. Ken Jernstedt Airport is located outside the Hood River city limits and urban growth boundary (UGB) in Hood River County.

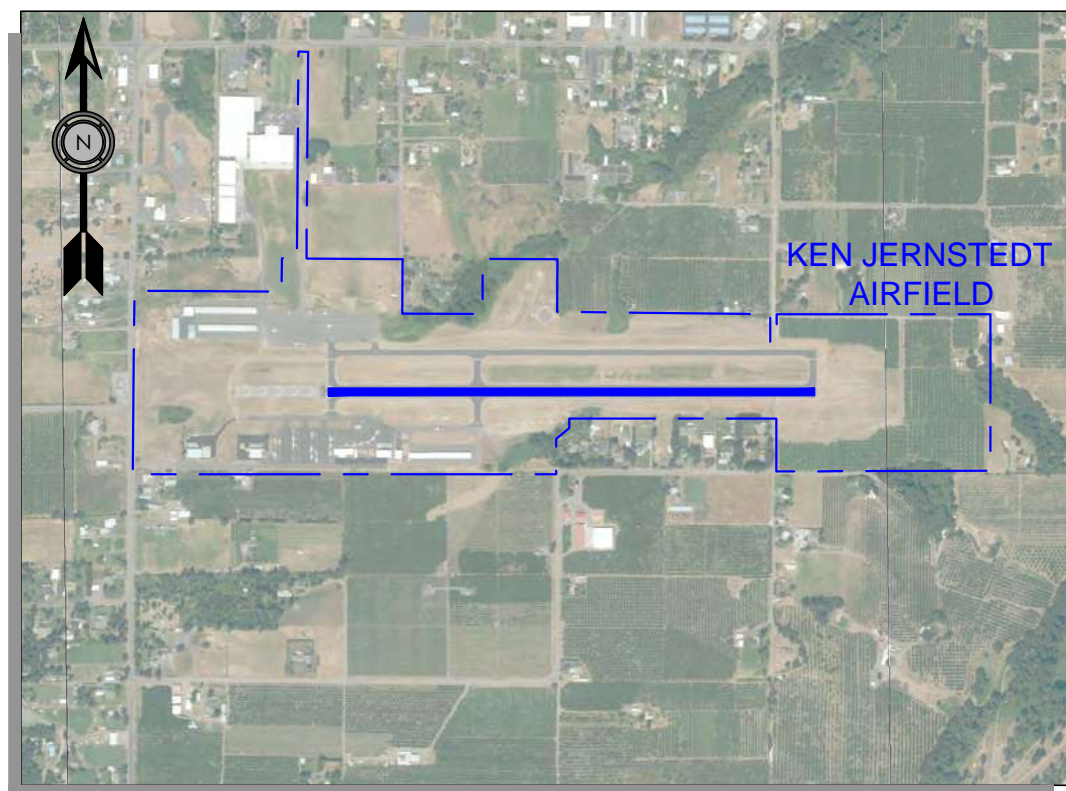
### **EXHIBIT “A” – AIRPORT PROPERTY PLAN**

The Exhibit “A” - Airport Property Plan drawing provides depicts all property owned by the Port of Hood River associated with Ken Jernstedt Airfield. The drawing notes the form of ownership or control (fee simple, avigation easement, etc.) and the date of acquisition per FAA guidelines. The drawing also depicts access easement (“through-the-fence”) locations and land areas planned for acquisition and trade, consistent with the ALP drawing.

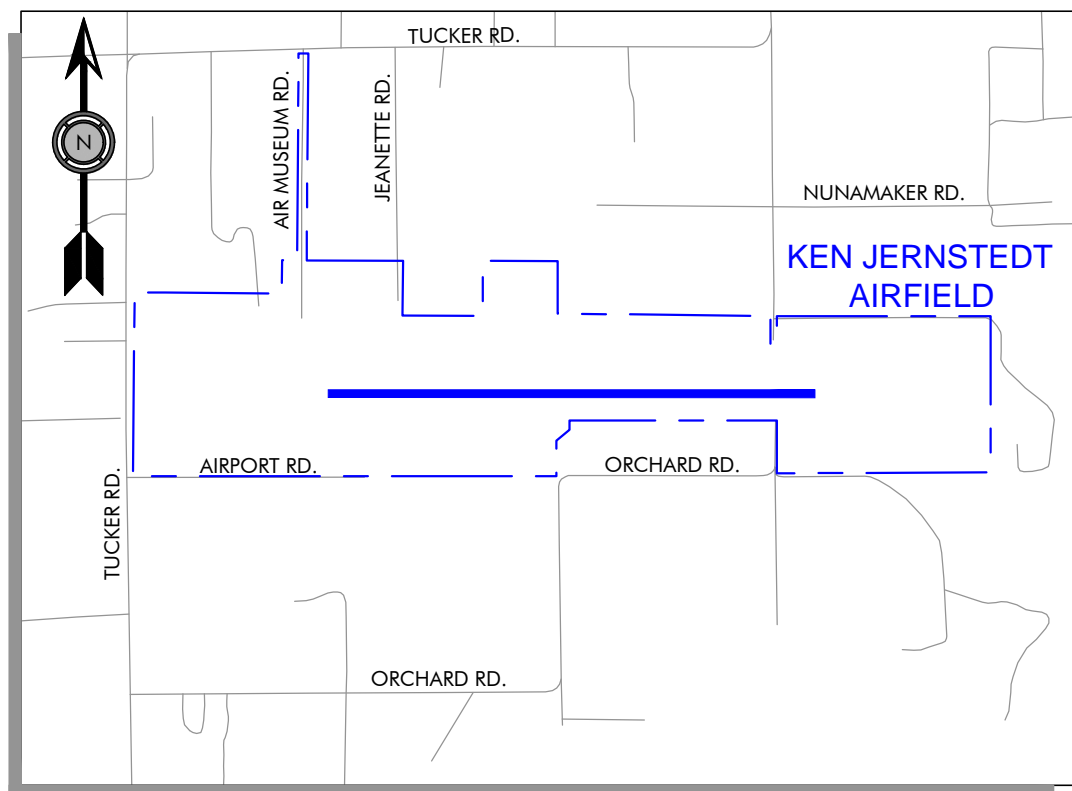


# KEN JERNSTEDT AIRFIELD AIRPORT MASTER PLAN

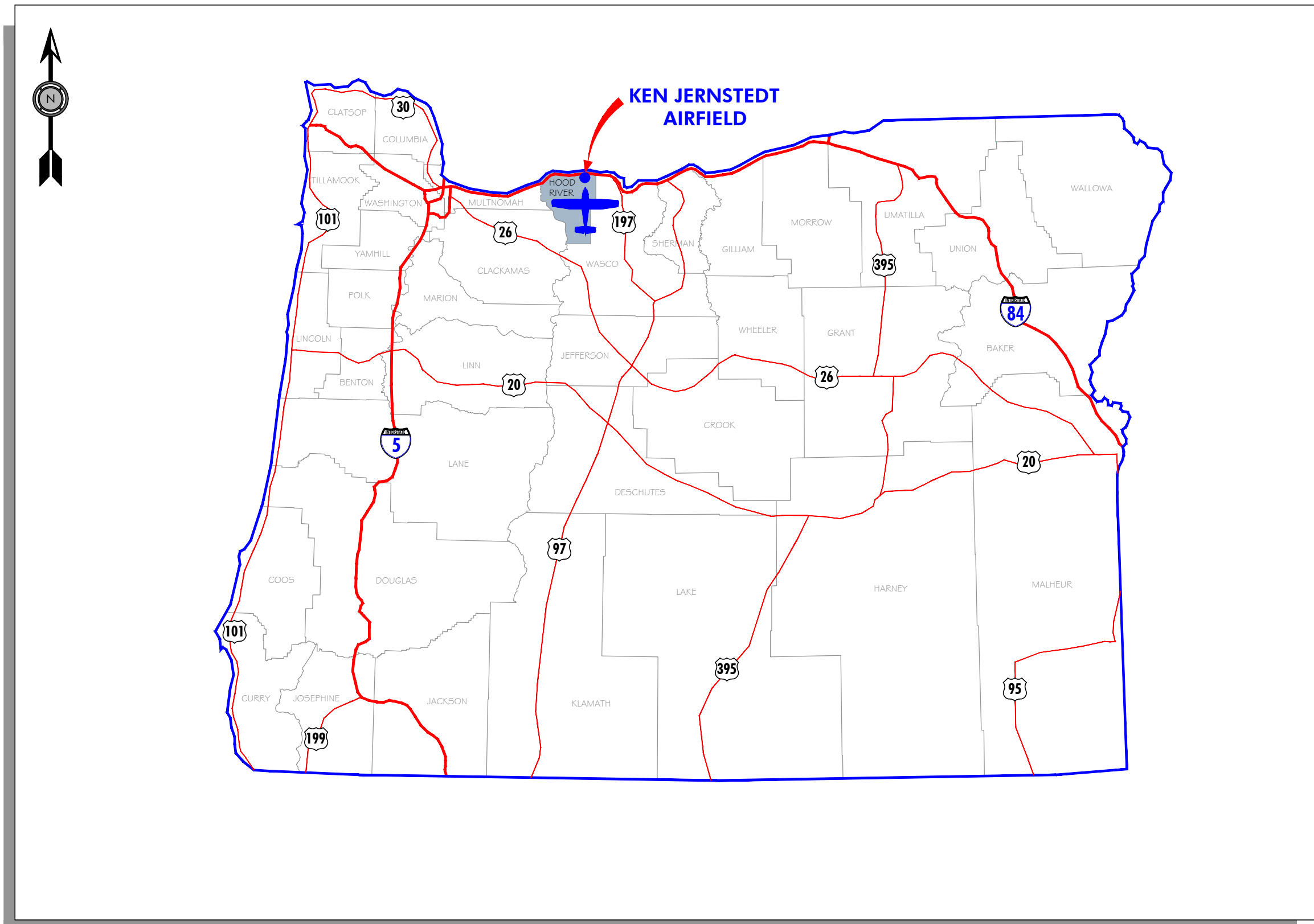
HOOD RIVER, OREGON  
 CWEC PROJECT NO. 1239900901  
 AIP NO. 3-41-0001-012-01  
 MARCH 2018



AERIAL PHOTO



VICINITY MAP



LOCATION MAP

SHEET INDEX

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2	AIRPORT DATA SHEET
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4	ON - AIRPORT INDIVIDUAL AREA PLANS
5	AIRPORT AIRSPACE PLAN (FAR PART 77)
6	RUNWAY INNER APPROACH SURFACE / RPZ
7	RUNWAY 7 APPROACH PLAN AND PROFILE
8	RUNWAY 25 APPROACH PLAN AND PROFILE
9	ON - AIRPORT LAND USE PLAN
10	OFF - AIRPORT LAND USE PLAN
11	EXHIBIT "A" AIRPORT PROPERTY PLAN

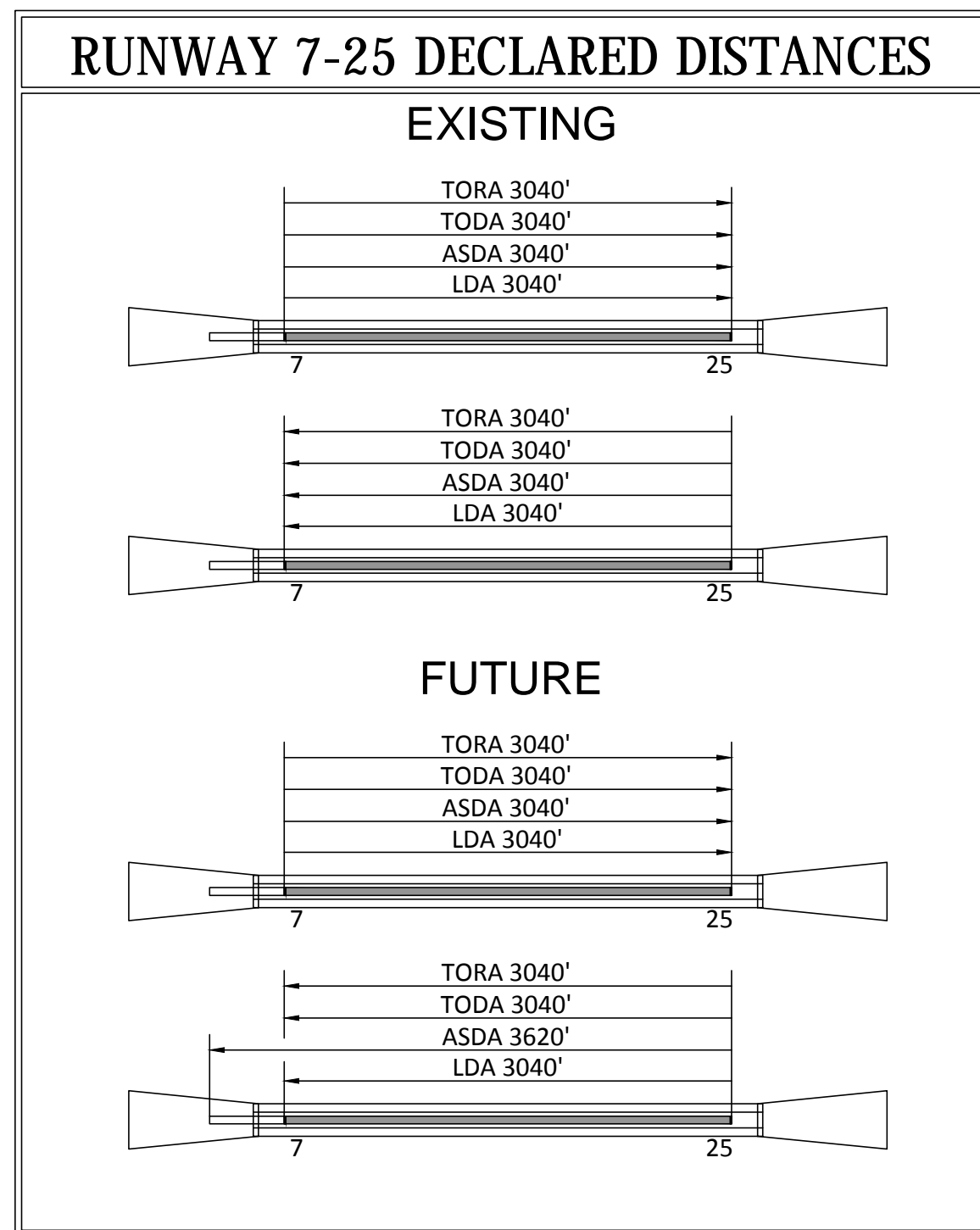
NO.	DATE	BY	APPR	REVISIONS	<p>VERIFY SCALES          BAR IS ONE INCH ON ORIGINAL DRAWING.          0" <span style="background-color: black; color: black;">          </span> 1"          IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.</p>	<p>FEDERAL AVIATION          ADMINISTRATION APPROVAL</p> <p>APPROVAL DATE: _____</p> <p>_____          SIGNATURE</p>	<p>PORT OF HOOD RIVER          APPROVAL</p> <p>APPROVAL DATE: _____</p> <p>_____          SIGNATURE</p>	<p><b>CENTURY WEST</b>          ENGINEERING</p> <p>BEND OFFICE          1020 SW EMKAY DRIVE., #100          BEND, OR 97702          541.322.8962 OFFICE          541.382.2423 FAX</p>	<p><b>KEN JERNSTEDT AIRFIELD</b></p>	<p>FIGURE NO.          -</p>	
										<p>COVER SHEET</p>	<p>SHEET NO.          1 OF 11</p>
<p>DESIGNED BY: DM      DRAWN BY: JLS      CHECKED BY: WMR      SCALE: AS SHOWN</p> <p>DATE: MARCH 2018      PROJECT NO: 12399009.01</p>											

AIRPORT DATA TABLE		
DESCRIPTION	EXISTING	FUTURE
AIRPORT ELEVATION (MSL)	631.14'	SAME
AIRPORT ACREAGE	125	128.6
ARP COORDINATES	LAT. N 45° 40' 22.581" LONG. W 121° 32' 01.885"	SAME
MAGNETIC DECLINATION	15°22'E (2/2016) ANNUAL RATE OF CHANGE 0°8"W	SAME
MEAN MAX. DAILY TEMPERATURE	81° F	SAME
FAA IDENTIFIER	4S2	SAME
DATUM	NAD 83/NGVD 88	SAME

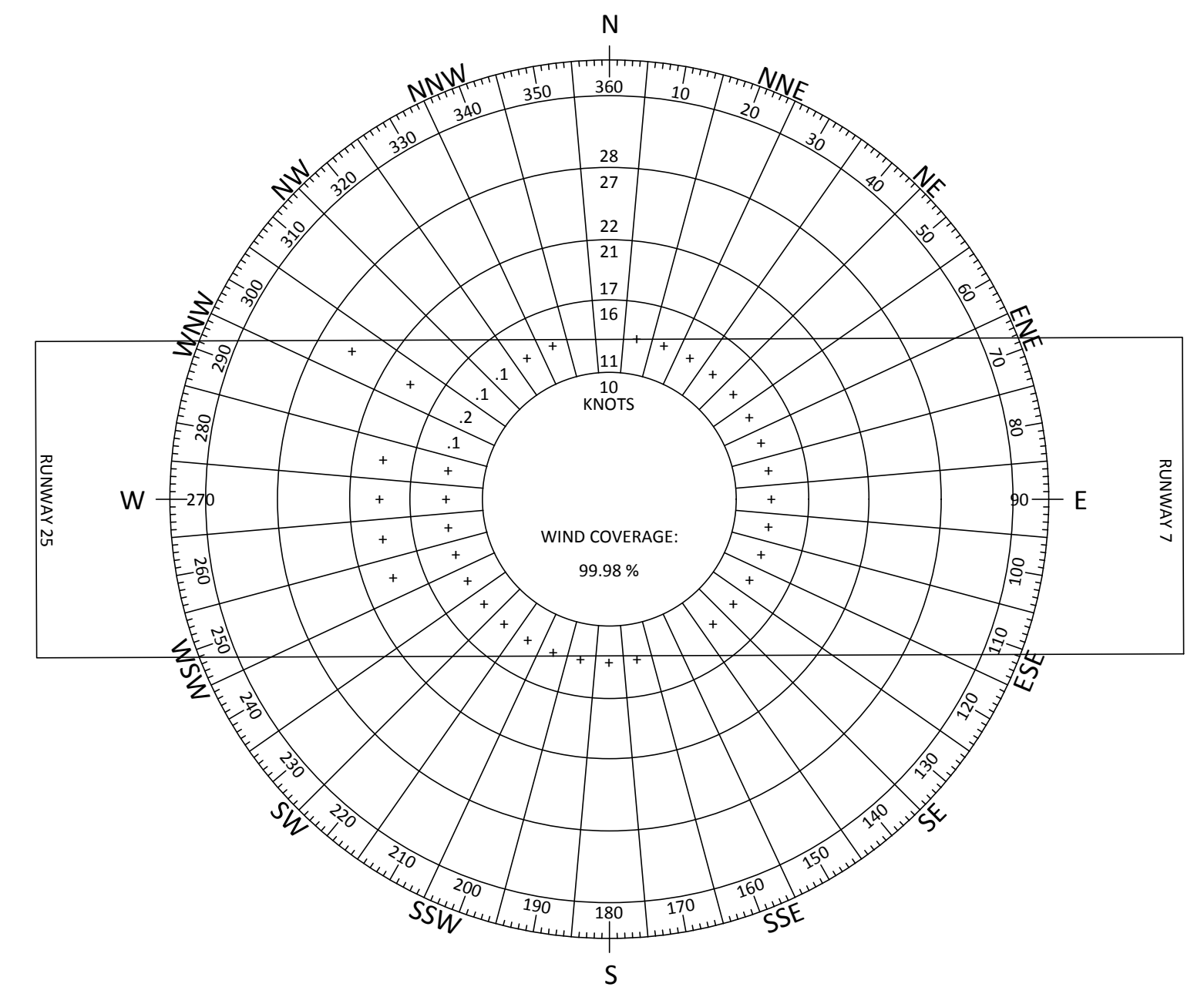
RUNWAY DATA TABLE		
	EXISTING CONDITIONS RUNWAY 7 - 25	FUTURE CONDITIONS RUNWAY 7 - 25
RUNWAY LENGTH AND WIDTH	3040' X 75'	SAME
RUNWAY LIGHTING	MIRL	SAME
RUNWAY PAVEMENT STRENGTH (IN 1000 LBS)	23,000 SW	SAME
RUNWAY PAVEMENT TYPE	ASPHALT	SAME
RUNWAY PERCENT WIND COVERAGE (13 KNOTS)	99.98%	SAME
RUNWAY PERCENT GRADIENT / MAXIMUM GRADE	1.116%	SAME
AIRPORT REFERENCE CODE (ARC)	A-II (SMALL)	B-II (SMALL)
RUNWAY DESIGN CODE (RDC)	A / B-II VIS	A / B-II VIS
FAR PART 77 DESIGNATION	VISUAL	SAME
NPIAS ROLE / SERVICE LEVEL	GENERAL AVIATION	SAME
TERMINAL NAVAIDS	BEACON	SAME
TAXIWAY LIGHTING	REFLECTORS	MITL
TAXIWAY MARKING	VISUAL	SAME
OFZ PENETRATION	YES (SEE NOTE 2)	YES (SEE NOTE 2)

RUNWAY DATA TABLE				
	EXISTING CONDITIONS	EXISTING STANDARD	FUTURE CONDITIONS	FUTURE STANDARD
RUNWAY SAFETY AREA LENGTH AND WIDTH LENGTH BEYOND RUNWAY END	3640' X 150' 300'	3640' X 150' 300'	3640' X 150' 300'	3640' X 150' 300'
OBJECT FREE AREA LENGTH AND WIDTH LENGTH BEYOND RUNWAY END	3640' X 500' 300'	3640' X 500' 300'	3640' X 500' 300'	3640' X 500' 300'
OBSTACLE FREE ZONE LENGTH AND WIDTH LENGTH BEYOND RUNWAY END	3440' X 400' 200'	3440' X 400' 200'	3440' X 400' 200'	3440' X 400' 200'

	EXISTING CONDITIONS		FUTURE CONDITIONS	
RUNWAY END	7	25	7	25
RUNWAY APPROACH CATEGORY	VISUAL	VISUAL	VISUAL	VISUAL
RUNWAY APPROACH SLOPE	PART 77 REQUIRED 20:1	20:1	20:1	20:1
	ACTUAL 20:1	20:1	20:1	20:1
APPROACH VISIBILITY MINIMUMS	≥ 1 MILE	≥ 1 MILE	≥ 1 MILE	≥ 1 MILE
RUNWAY MARKINGS	BASIC	BASIC	BASIC	BASIC
RUNWAY END COORDINATES	LAT. N 45° 40' 21.9" LONG. W 121° 32' 23.3"	N 45° 40' 22.0" W 121° 31' 40.5"	N 45° 40' 21.9" W 121° 32' 23.3"	N 45° 40' 22.0" W 121° 31' 40.5"
INSTRUMENTATION AND APPROACH AIDS	NONE	NONE	SAME	SAME
VISUAL APPROACH AIDS	REIL	REIL	PAPI; REIL	PAPI; REIL
CRITICAL AIRCRAFT (ARC)	CESSNA CARAVAN C208 (A-II) / SCHLEICHER ASW 20 CL (A-II)		CESSNA CARAVAN C208 (A-II) / BEECHCRAFT KING AIR 250 (B-II)	
WINGSPAN	<79 FEET		SAME	
WEIGHT	12,500 LBS		SAME	
APPROACH SPEED	<91 KNOTS		<121 KNOTS	
LENGTH OF HAUL	<500 NAUTICAL MILES		SAME	



- NOTES:**
- 580' PAVED OVERRUN AT WEST END OF RUNWAY TO BE CONVERTED TO STOPWAY. DECLARED DISTANCES TO BE PUBLISHED IN FAA AIRPORT / FACILITY DIRECTORY. FUTURE ACCELERATE-STOP DISTANCE (ASDA) FOR RUNWAY 25 IS 3,620 FEET, ALL OTHER RUNWAY DECLARED DISTANCES ARE 3,040 FEET.
  - GLIDER PARKING ON SOUTH SIDE OF RUNWAY TO BE RELOCATED OUTSIDE OFA; OFF-AIRPORT RESIDENTIAL STRUCTURES (GARAGES, STORAGE BUILDINGS, ETC.) TO BE RELOCATED OUTSIDE OFA WHERE FEASIBLE.



**ALL WEATHER WIND ROSE**

SOURCE : 4S2 AUTOMATED WEATHER  
OBSERVING SYSTEM (AWOS)  
JANUARY 2006 - JULY 2014  
OBSERVATIONS 178,219

CROSSWIND RUNWAY 7/25  
13 KNOTS 99.98%

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PORT OF HOOD RIVER  
APPROVAL

APPROVAL DATE: \_\_\_\_\_

SIGNATURE \_\_\_\_\_



BEND OFFICE  
1020 SW EMKAY DRIVE., #100  
BEND, OR 97702  
541.322.8962 OFFICE  
541.382.2423 FAX

DESIGNED BY: DM	DRAWN BY: JLS	CHECKED BY: VMR	SCALE: AS SHOWN
DATE: MARCH 2018		PROJECT NO: 12399009.01	

**KEN JERNSTEDT AIRFIELD**

**AIRPORT DATA SHEET**

FIGURE NO.

-

SHEET NO.

2 OF 11



### BUILDING/FACILITY KEY

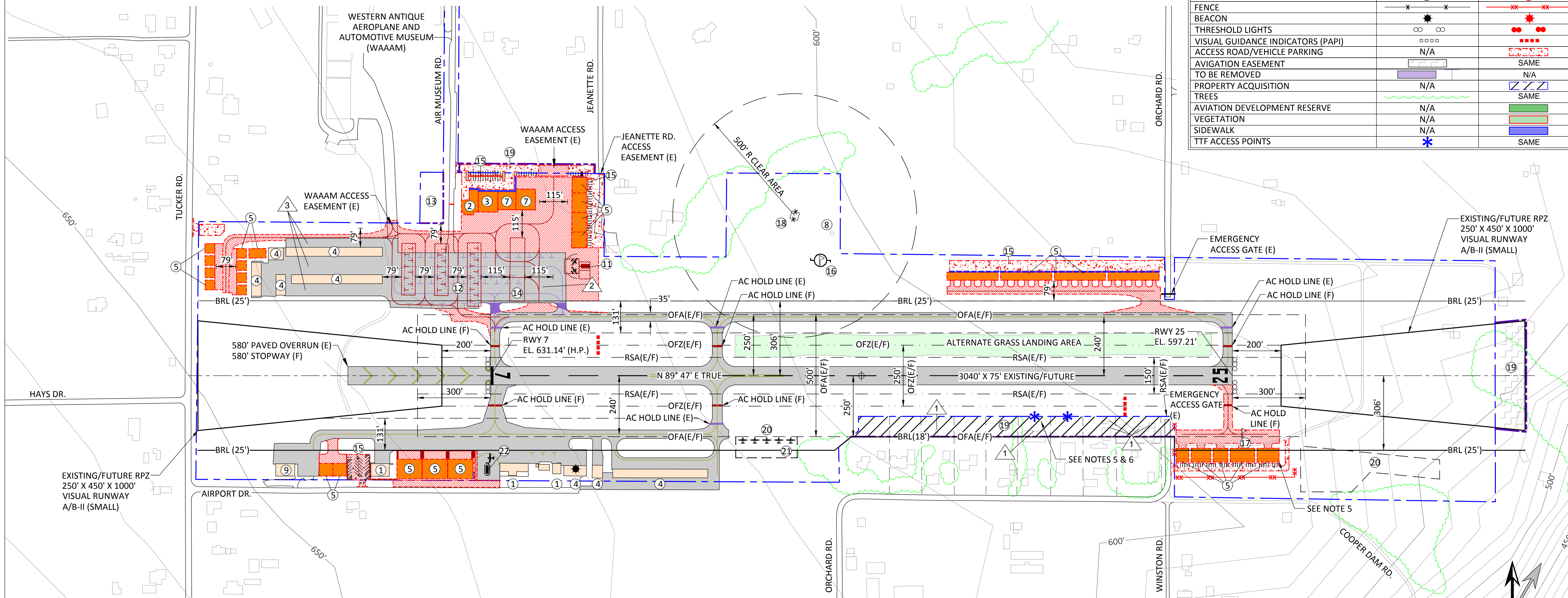
DESCRIPTION	DESCRIPTION
① FBO / MAINTENANCE HANGAR (E)	⑫ TIEDOWN APRON
② FBO BUILDING (F)	⑬ WAAAM OVERFLOW AIRCRAFT PARKING (F)
③ MAINTENANCE HANGAR (F)	⑭ TRANSIENT HELICOPTER PARKING
④ HANGARS (E)	⑮ AUTO PARKING (F)
⑤ BOX HANGARS (F)	⑯ WIND TEE (E)
⑥ MULTI-UNIT HANGARS (F)	⑰ SUPPLEMENTAL WIND TEE (E)
⑦ COMMERCIAL HANGAR (F)	⑱ AWOS (E)
⑧ REGULATOR BUILDING	⑲ PROPERTY TO BE ACQUIRED
⑨ AGRICULTURAL OPS AREAS	⑳ GLIDER STORAGE / PARKING AREA (E/F)
⑩ FUEL LOCATION (E)	㉑ OVERFLOW PARKING AREA (F)
⑪ FUEL LOCATION (F)	㉒ TEMPORARY FUEL LOCATION

### NON STANDARD CONDITIONS

NO.	ITEM	DESCRIPTION	DISPOSITION
①	ROFA	SOUTHEAST SIDE RESIDENCES	FUTURE PROPERTY ACQUISITION
②	TAXILANE OFA APRON	TAXILANE CLEARANCES TO PARKED AIRCRAFT (ADG I & ADG II)	RECONFIGURE APRON
③	TAXILANE OFA (HANGARS)	LESS THAN STD. ADG I CLEARANCES	MODIFY WHERE FEASIBLE

### LEGEND

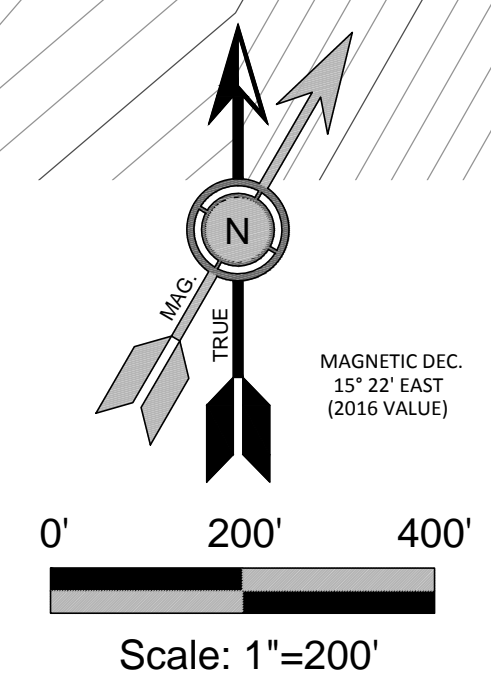
	EXISTING	FUTURE
BUILDINGS	[Symbol]	[Symbol]
AIRFIELD PAVEMENT	[Symbol]	[Symbol]
BUILDING RESTRICTION LINE (BRL)	[Symbol]	[Symbol]
AIRPORT PROPERTY LINE	[Symbol]	[Symbol]
RUNWAY SAFETY AREA (RSA)	[Symbol]	[Symbol]
OBJECT FREE AREA (OFA)	[Symbol]	[Symbol]
OBSTACLE FREE ZONE (OFZ)	[Symbol]	[Symbol]
TAXIWAY OBJECT FREE AREA (TOFA)	[Symbol]	[Symbol]
RUNWAY PROTECTION ZONE (RPZ)	[Symbol]	[Symbol]
GROUND CONTOURS	[Symbol]	SAME
AIRPORT REFERENCE POINT (ARP)	[Symbol]	SAME
RUNWAY END IDENTIFIER LIGHTS (REIL)	[Symbol]	[Symbol]
WIND INDICATOR	[Symbol]	[Symbol]
SEGMENTED CIRCLE WIND INDICATOR	[Symbol]	[Symbol]
FENCE	[Symbol]	[Symbol]
BEACON	[Symbol]	[Symbol]
THRESHOLD LIGHTS	[Symbol]	[Symbol]
VISUAL GUIDANCE INDICATORS (PAPI)	[Symbol]	[Symbol]
ACCESS ROAD/VEHICLE PARKING	N/A	[Symbol]
AVIGATION EASEMENT	[Symbol]	SAME
TO BE REMOVED	[Symbol]	N/A
PROPERTY ACQUISITION	N/A	[Symbol]
TREES	[Symbol]	SAME
AVIATION DEVELOPMENT RESERVE	N/A	[Symbol]
VEGETATION	N/A	[Symbol]
SIDEWALK	N/A	[Symbol]
TTF ACCESS POINTS	[Symbol]	SAME



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#### NOTES:

- STOPWAY (F) AT WEST END OF RUNWAY WILL INCREASE FUTURE ACCELERATE - STOP DISTANCE AVAILABLE (ASDA) FOR RUNWAY 25 TO 3,620 FEET.
- HIGH POINT (SURVEYED) ON RUNWAY IS 631.14' MSL. PUBLISHED AIRPORT ELEVATION (FAA A/FD) TO BE UPDATED FOR CONSISTENCY.
- AIRPORT IS NOT SUBJECT TO 100-YEAR FLOODING.
- FUTURE STOPWAY AT RUNWAY 7 END REQUIRES DECLARED DISTANCES AND STOPWAY DESIGNATION PUBLISHED IN FAA CHART SUPPLEMENT.
- AIRPORT USES DEPICTED ON PARCELS ZONED EFU OR RR ARE SUBJECT TO FUTURE COMPREHENSIVE PLAN MAP AMENDMENT AND REZONE APPLICATION(S) AND DETERMINATION(S) BY HOOD RIVER COUNTY.
- PROPERTY TO BE ACQUIRED TO ALLOW AIRPORT CONTROL OF RUNWAY OBJECT FREE AREA. CONFIGURATION OF PROPERTY TO BE ACQUIRED AND ACCOMMODATION OF EXISTING THROUGH THE FENCE AGREEMENTS WILL BE COORDINATED WITH THE PROPERTY OWNER.



NO.	DATE	BY	APPR	REVISIONS

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**CENTURY WEST ENGINEERING**

BEND OFFICE  
 1020 SW EMKAY DRIVE, #100  
 BEND, OR 97702  
 541.322.8962 OFFICE  
 541.382.2423 FAX

DESIGNED BY: DM  
 DRAWN BY: JLS  
 CHECKED BY: WMR  
 SCALE: AS SHOWN

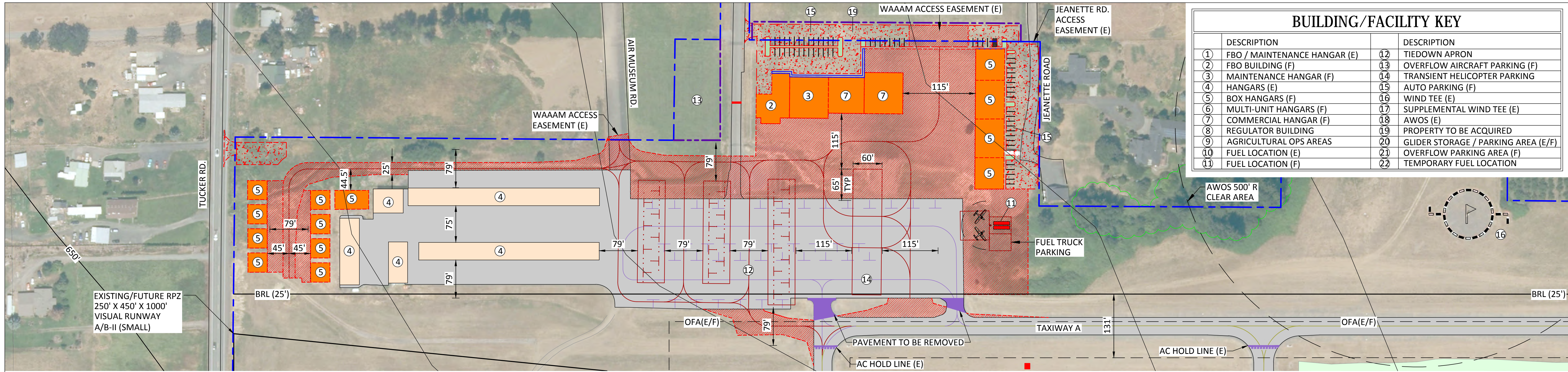
DATE: MARCH 2018  
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**KEN JERNSTEDT AIRFIELD**

AIRPORT LAYOUT PLAN

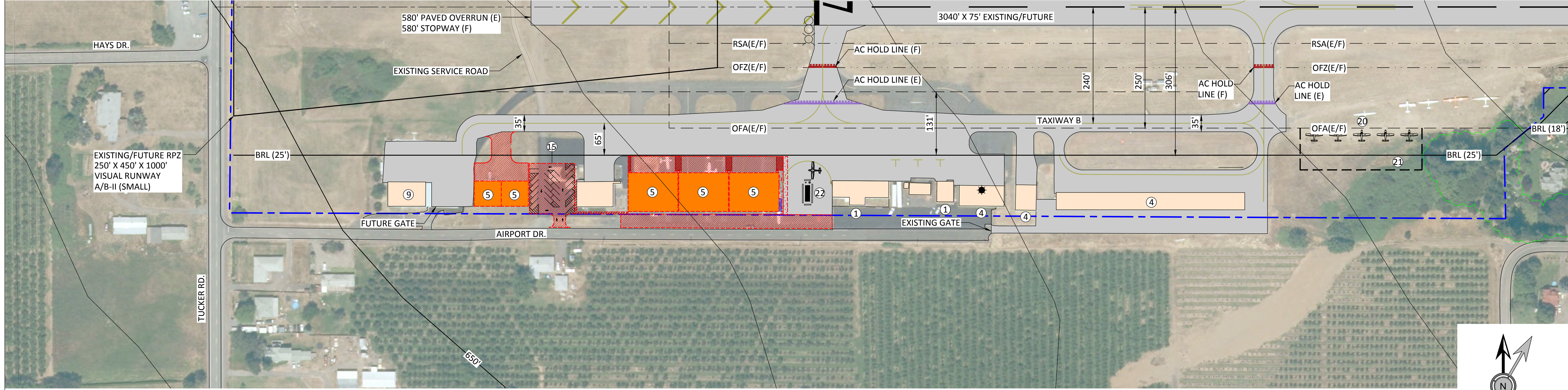
FIGURE NO. -  
 SHEET NO. 3 OF 11





BUILDING/FACILITY KEY			
	DESCRIPTION	DESCRIPTION	
①	FBO / MAINTENANCE HANGAR (E)	⑫	TIEDOWN APRON
②	FBO BUILDING (F)	⑬	OVERFLOW AIRCRAFT PARKING (F)
③	MAINTENANCE HANGAR (F)	⑭	TRANSIENT HELICOPTER PARKING
④	HANGARS (E)	⑮	AUTO PARKING (F)
⑤	BOX HANGARS (F)	⑯	WIND TEE (E)
⑥	MULTI-UNIT HANGARS (F)	⑰	SUPPLEMENTAL WIND TEE (E)
⑦	COMMERCIAL HANGAR (F)	⑱	AWOS (E)
⑧	REGULATOR BUILDING	⑲	PROPERTY TO BE ACQUIRED
⑨	AGRICULTURAL OPS AREAS	⑳	GLIDER STORAGE / PARKING AREA (E/F)
⑩	FUEL LOCATION (E)	㉑	OVERFLOW PARKING AREA (F)
⑪	FUEL LOCATION (F)	㉒	TEMPORARY FUEL LOCATION

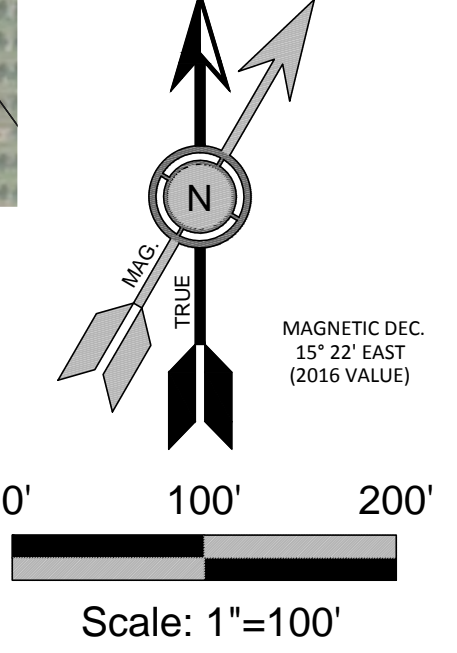
**NORTH APRON**



**SOUTH APRON**

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- NOTES:**
- SEE AIRPORT LAYOUT PLAN (SHEET 3) FOR FULL LEGEND.
  - APL FOR SOUTH APRON IS DEFINED BY TAXIWAY OFA.
  - ALTERNATIVE FUELING LOCATION DEPICTED FOR NORTH APRON WOULD ELIMINATE CO-LOCATED HANGAR SITES.



NO.	DATE	BY	APPR	REVISIONS

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 APPROVAL DATE: \_\_\_\_\_  
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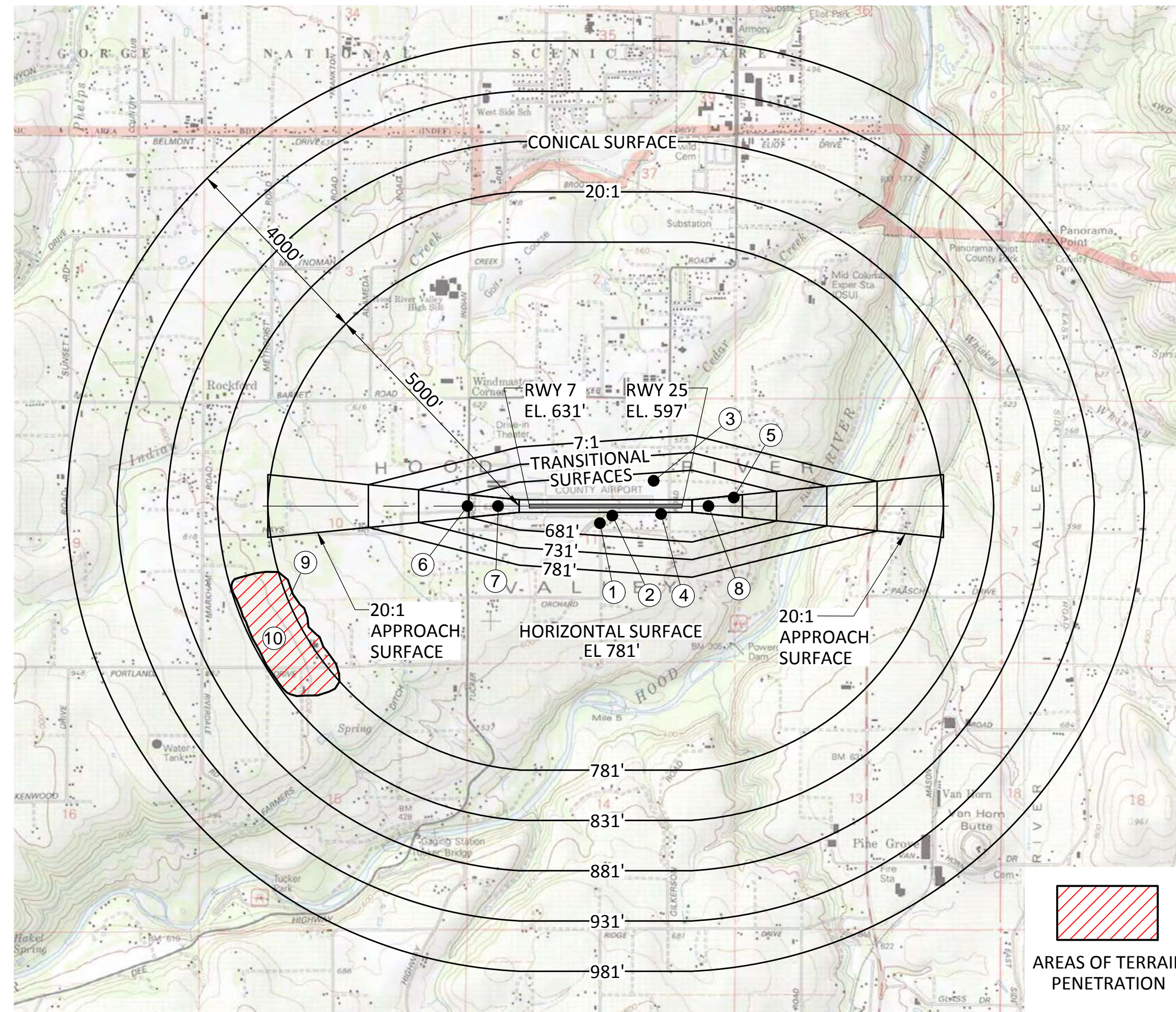
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 BEND, OR 97702  
 541.322.8962 OFFICE  
 541.382.2423 FAX

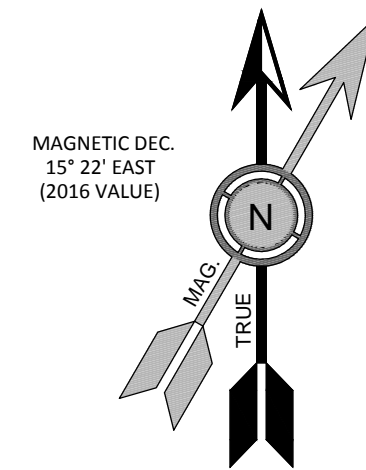
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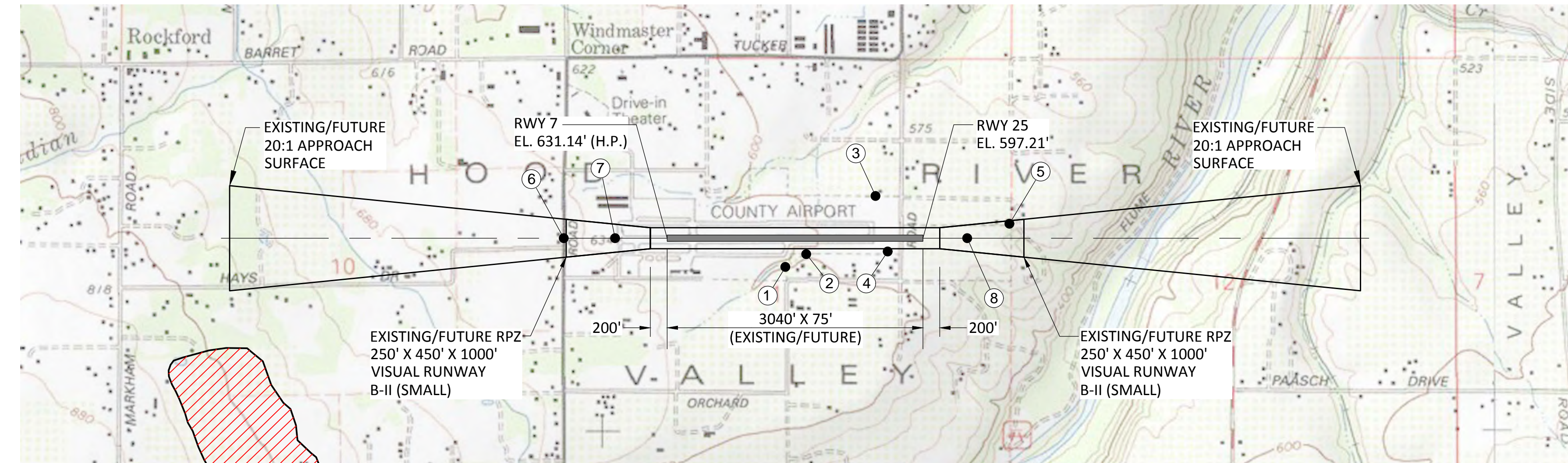


FAR PART 77 PLAN VIEW



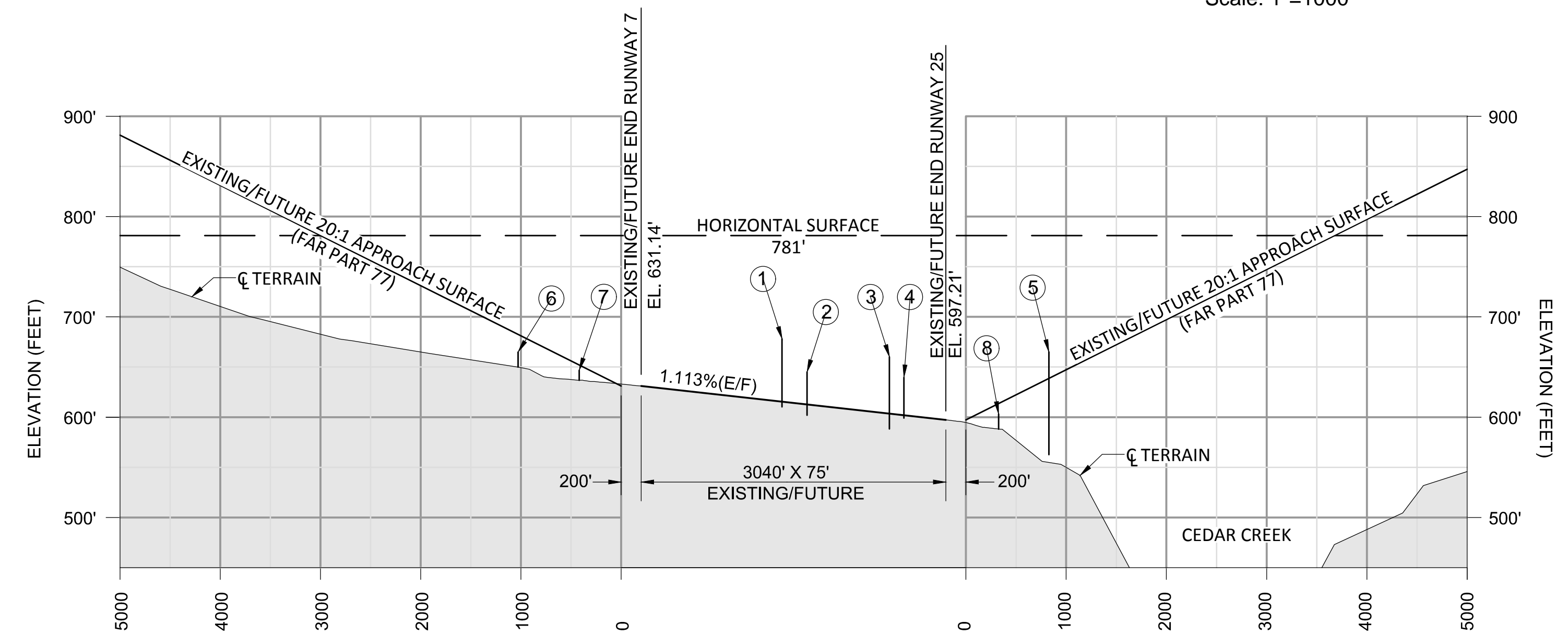
0' 2000' 4000'  
Scale: 1"=2000'

RUNWAY 7/25	
FAR PART 77 DIMENSIONAL STANDARDS	
RUNWAY ULTIMATE LENGTH =	3040'
RUNWAY TYPE =	UTILITY - VISUAL
PRIMARY SURFACE WIDTH =	250'
APPROACH SURFACE INNER WIDTH =	250'
APPROACH SURFACE OUTER WIDTH =	1,250'
APPROACH SURFACE LENGTH =	5,000'
RADIUS OF HORIZONTAL SURFACE =	5,000'
APPROACH SLOPE =	20:1



RUNWAY 7-25 PLAN VIEW

0' 1000' 2000'  
Scale: 1"=1000'



RUNWAY 7-25 PROFILE VIEW

0' 100' 200'  
SCALE OF FEET  
VERTICAL SCALE 1"=100'

0' 1000' 2000'  
SCALE OF FEET  
HORIZONTAL SCALE 1"=1000'

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OBSTRUCTION CHART								
NO.	ITEM	PART 77 SURFACE	MSL ELEV (EST.)	DISTANCE FROM RWY CL	DISTANCE FROM RWY END	AMOUNT OF PENETRATION (ESTIMATED)	AIRPORT PROPERTY	DISPOSITION
1	TREES	TRANSITIONAL	678'	342'	-1405'	-	YES	TOP OR REMOVE
2	TREE	TRANSITIONAL	645'	191'	-1386'	-	NO	TOP OR REMOVE
3	TREE	TRANSITIONAL	660'	501'	-563'	-	NO	TOP OR REMOVE
4	TREES	TRANSITIONAL	639.6'	159'	-418'	-	YES	TOP OR REMOVE
5	TREE W/ ANTENNA	O.C.S., PT77, RPZ	665'	171'	1028'	26'	YES	RELOCATE
6	TUCKER ROAD	APPROACH (RWY 7)	664.8'	0'	1228'	0'	NO	FOR REFERENCE ONLY
7	DIRT ROAD	APPROACH (RWY 7)	646.8'	0'	619'	0'	YES	RELOCATE
8	ORCHARD ROAD	APPROACH (RWY 25)	603'	0'	527'	0'	YES	FOR REFERENCE ONLY
9	TERRAIN	HORIZONTAL	785'	3487' - 1309'	3773' - 4991'	4'	NO	FOR REFERENCE ONLY
10	TERRAIN	CONICAL	835'	1306' - 3776'	3773' - 5924'	4'	NO	FOR REFERENCE ONLY

NO.	DATE	BY	APPR	REVISIONS

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1020 SW EMKAY DRIVE, #100  
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541.382.2423 FAX

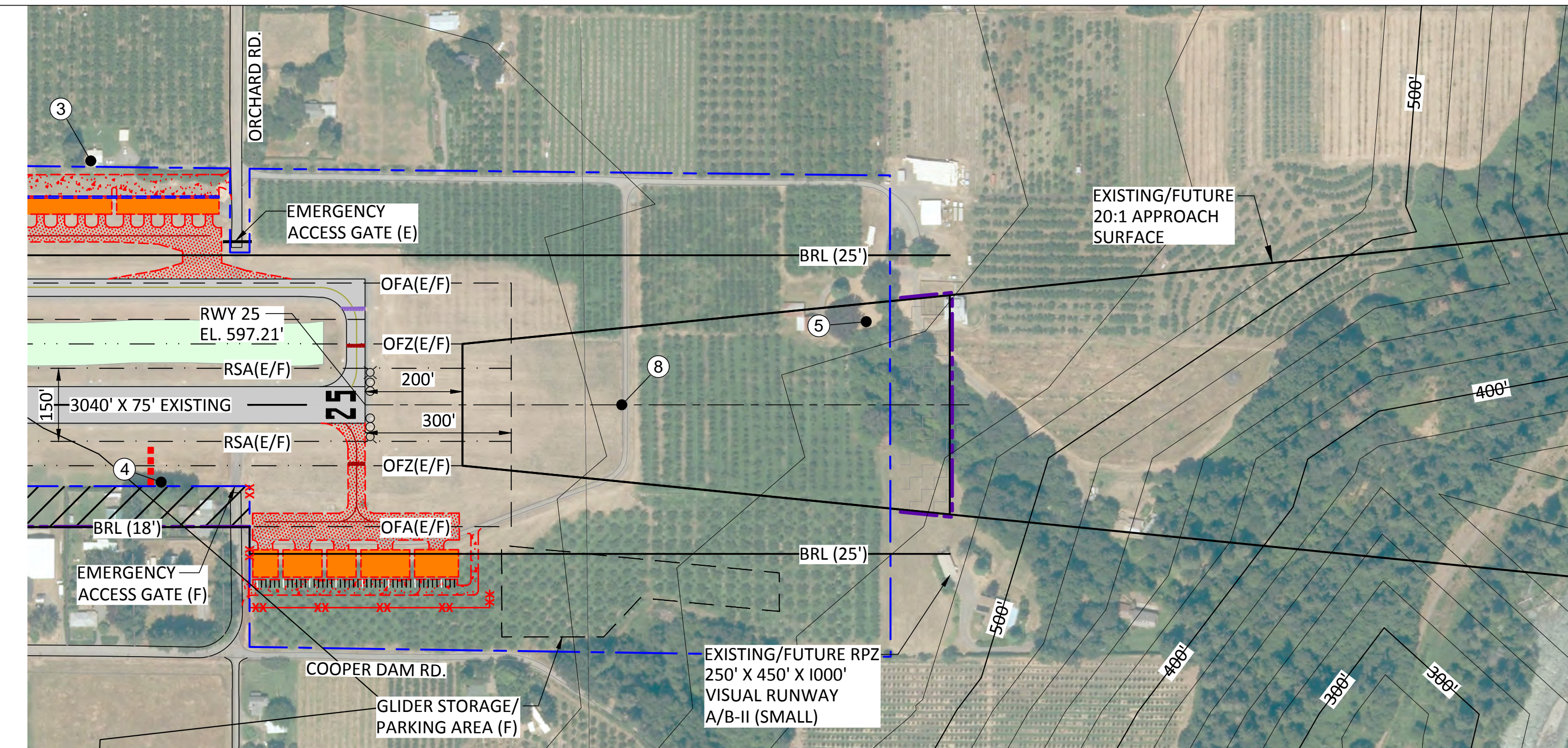
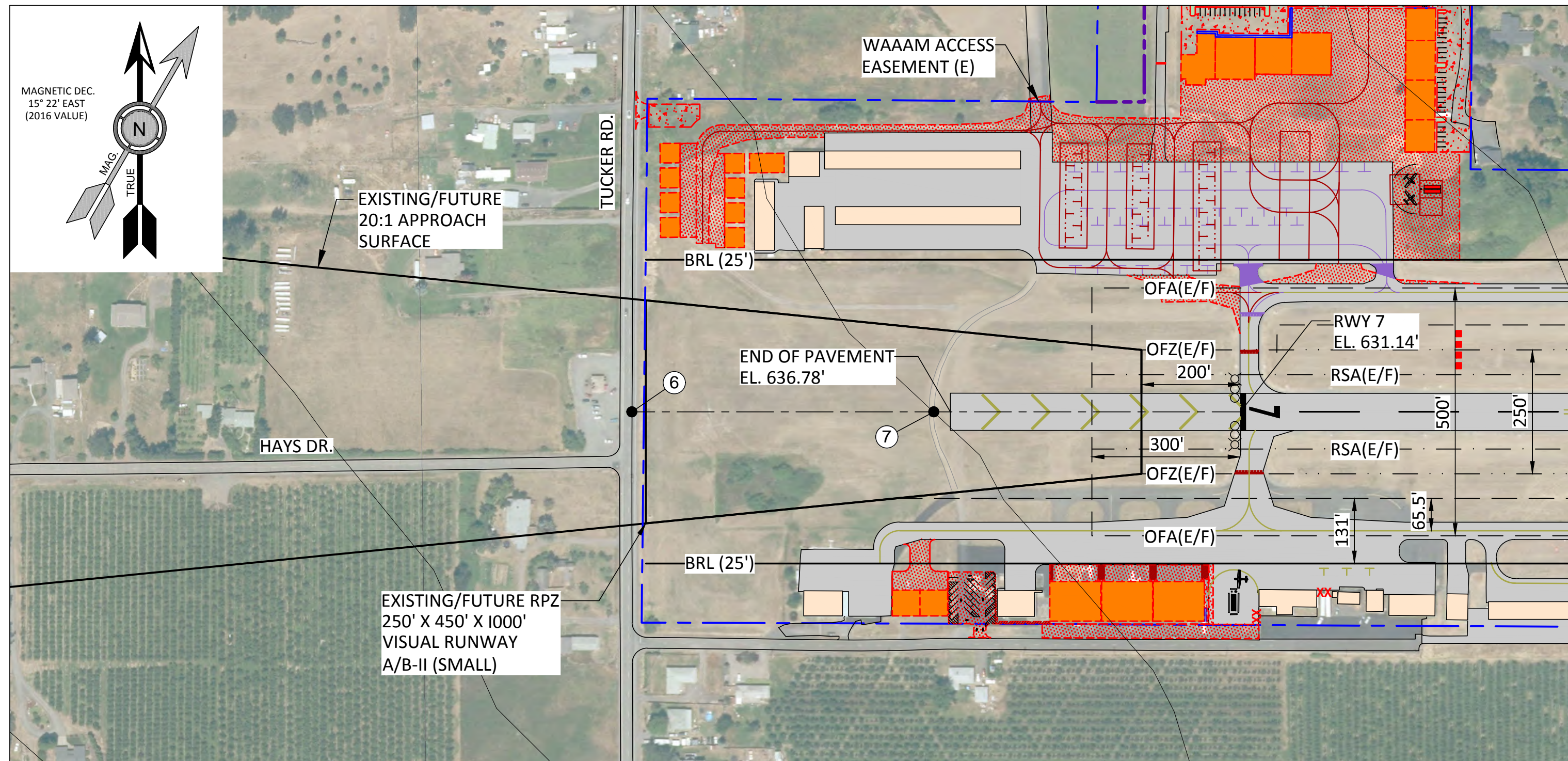
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DRAWN BY: JLS  
CHECKED BY: WMR  
SCALE: AS SHOWN  
DATE: MARCH 2018  
PROJECT NO: 12399009.01

**KEN JERNSTEDT AIRFIELD**

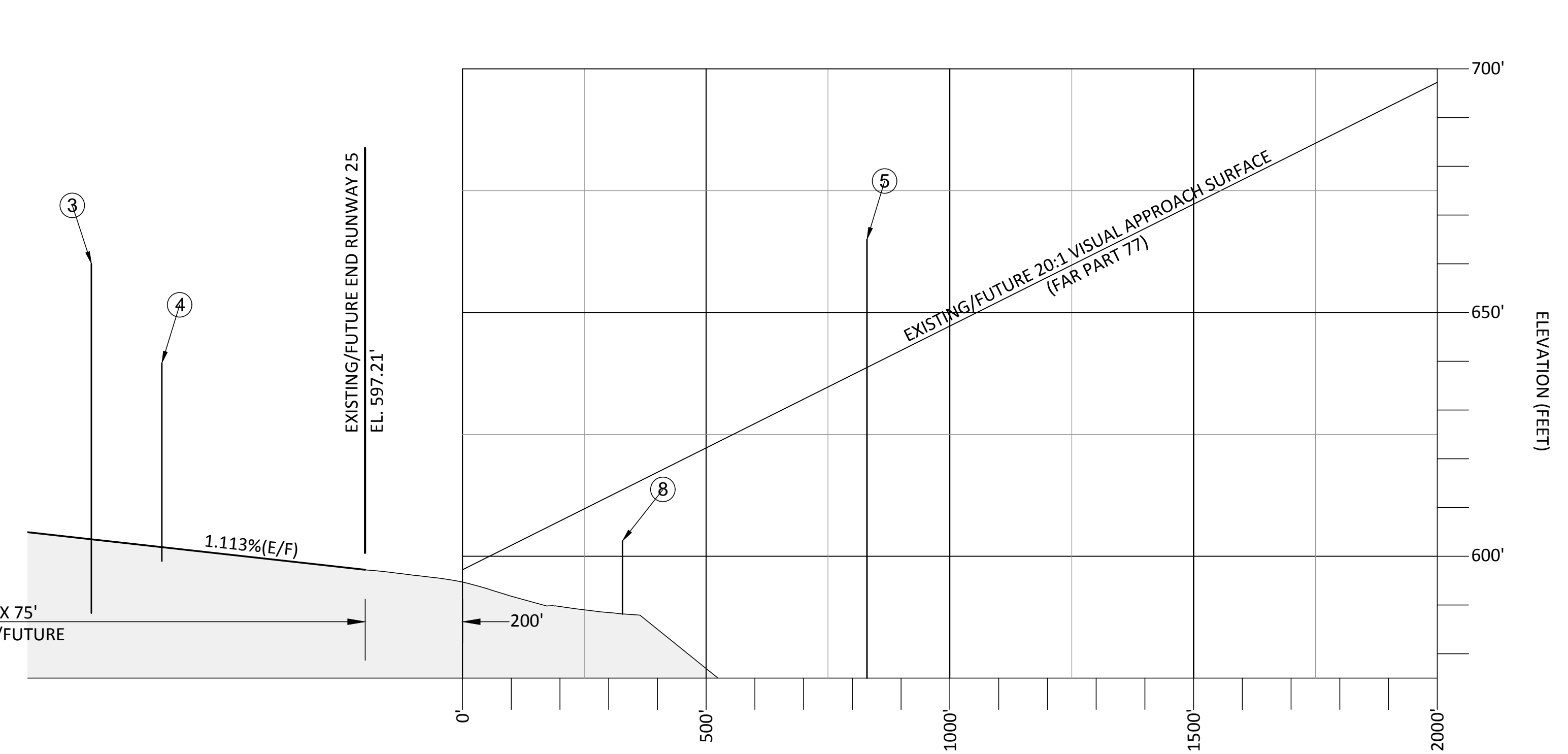
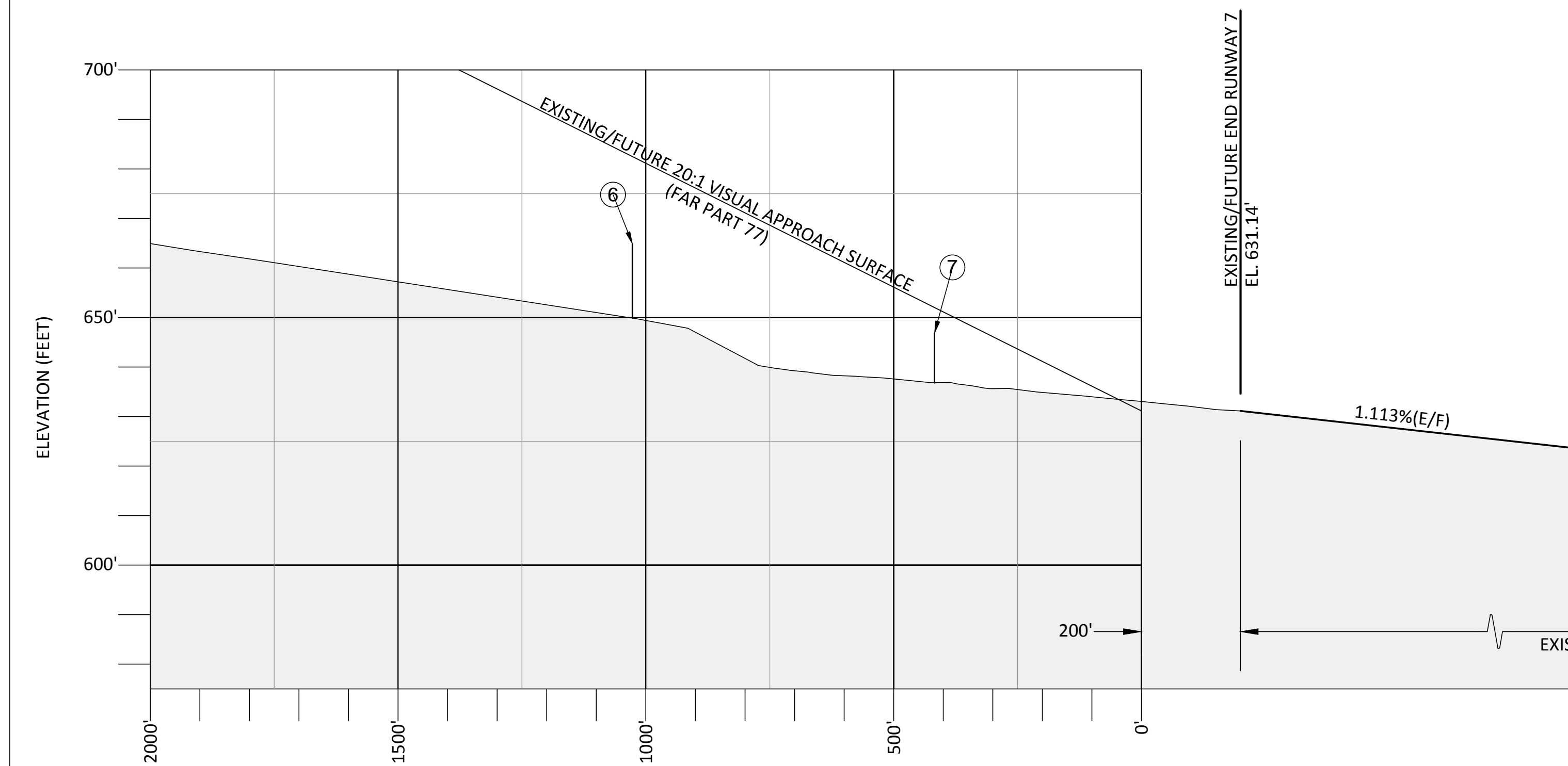
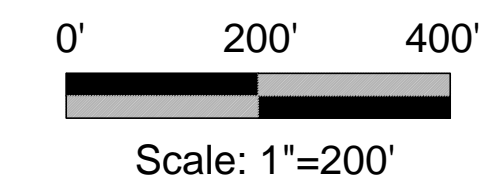
AIRPORT AIRSPACE PLAN (FAR PART 77)

FIGURE NO. -  
SHEET NO. 5 OF 11

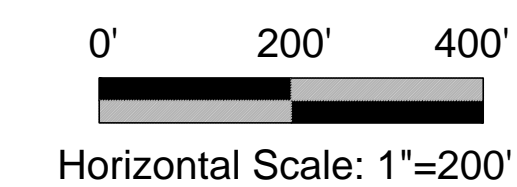




RUNWAY 7-25 PLAN VIEW

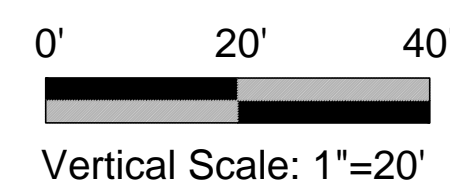


RUNWAY 7-25 PROFILE VIEW



NOTE:  
1. SEE AIRPORT LAYOUT PLAN (SHEET 3) FOR FULL LEGEND.

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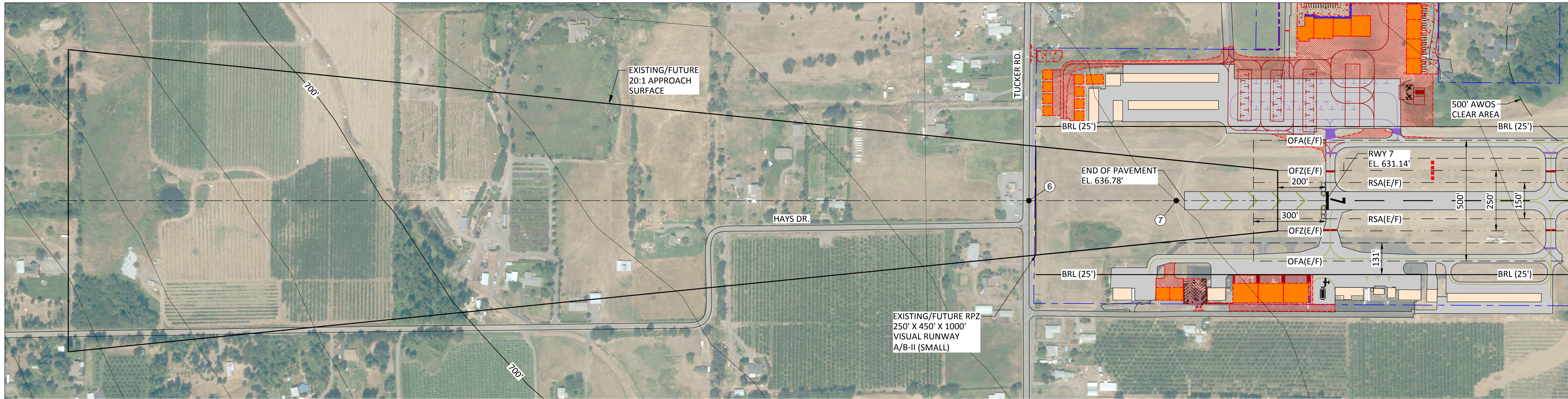
**KEN JERNSTEDT AIRFIELD**

RUNWAY INNER APPROACH SURFACE / RPZ

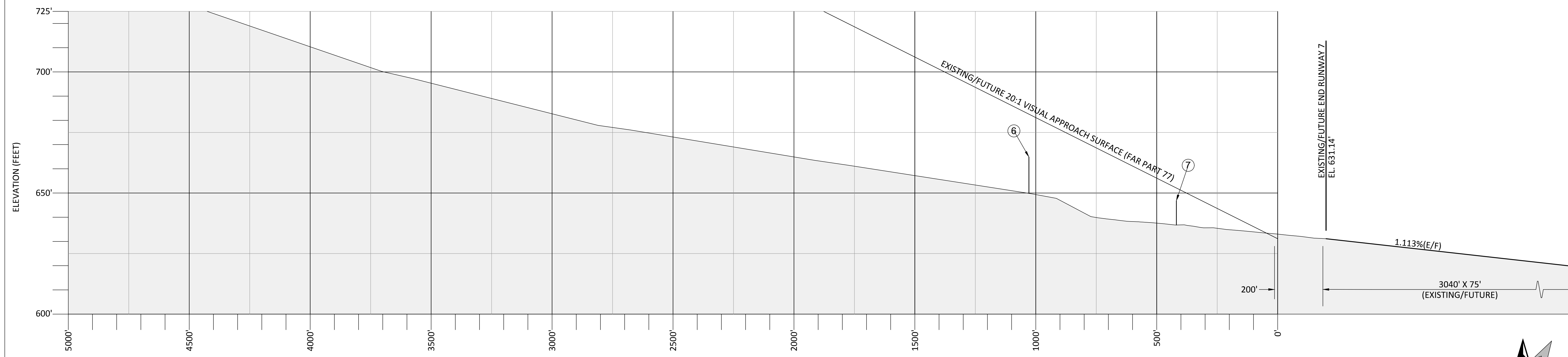
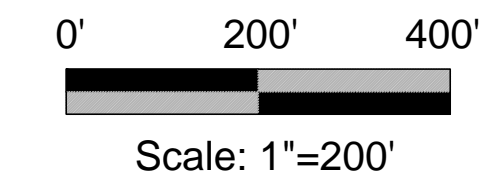
FIGURE NO. -

SHEET NO. 6 OF 11

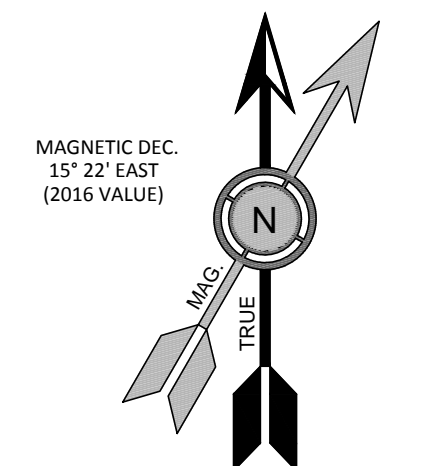
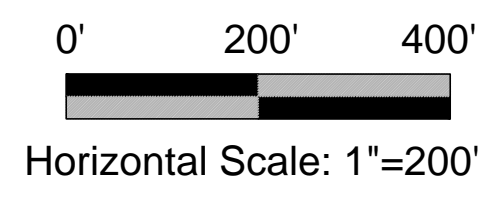
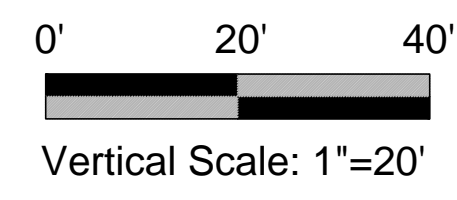




**RUNWAY 7 PLAN VIEW**



**RUNWAY 7 PROFILE VIEW**



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 APPROVAL  
 APPROVAL DATE: \_\_\_\_\_  
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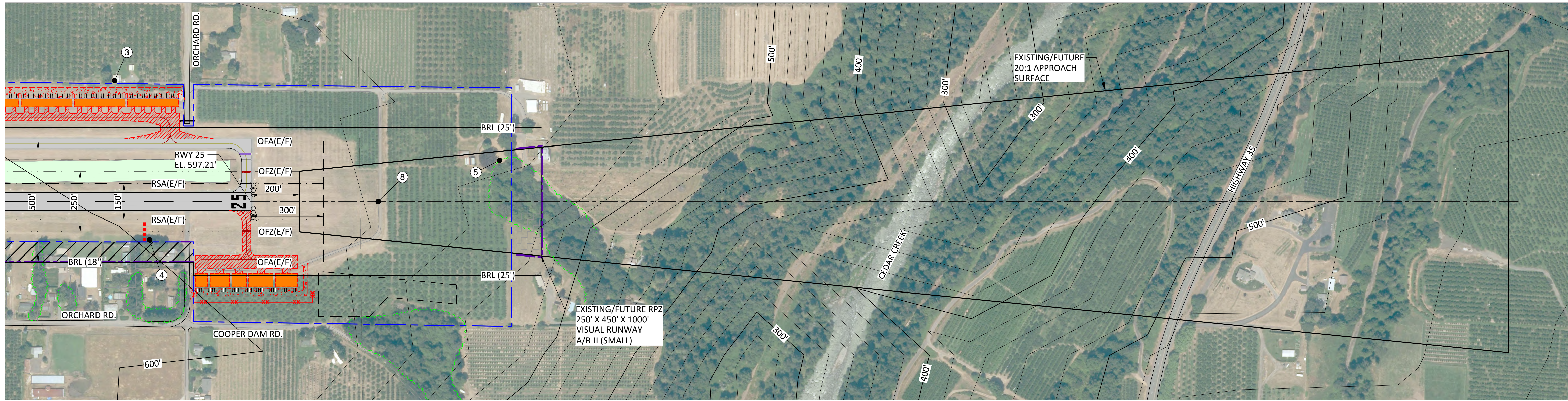
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DATE: MARCH 2018		PROJECT NO: 12399009.01	

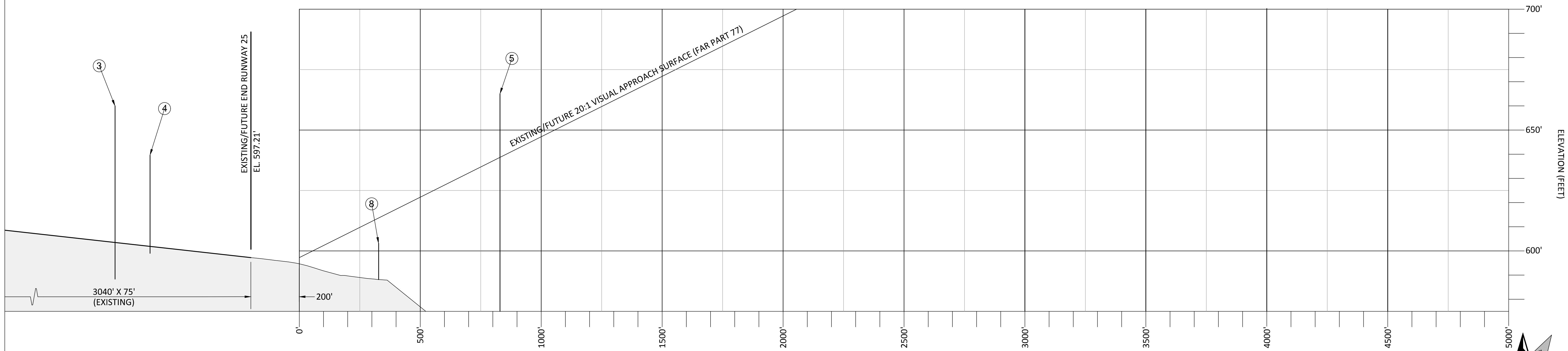
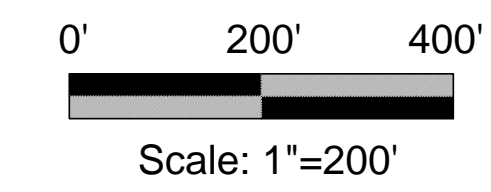
**KEN JERNSTEDT AIRFIELD**  
 RUNWAY 7 APPROACH PLAN AND PROFILE

FIGURE NO.  
 -  
 SHEET NO.  
 7 OF 11

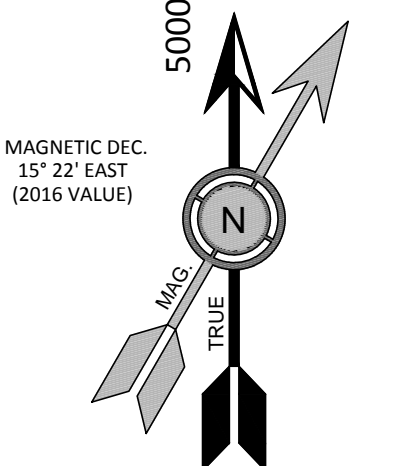
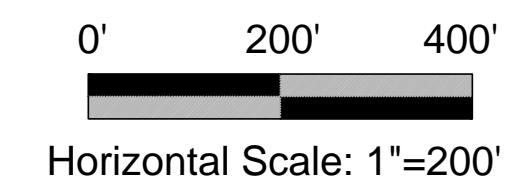
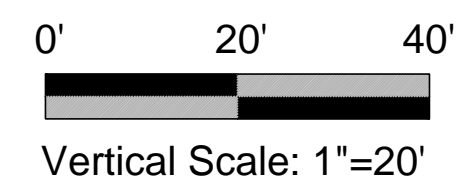




**RUNWAY 25 PLAN VIEW**



**RUNWAY 25 PROFILE VIEW**



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 APPROVAL  
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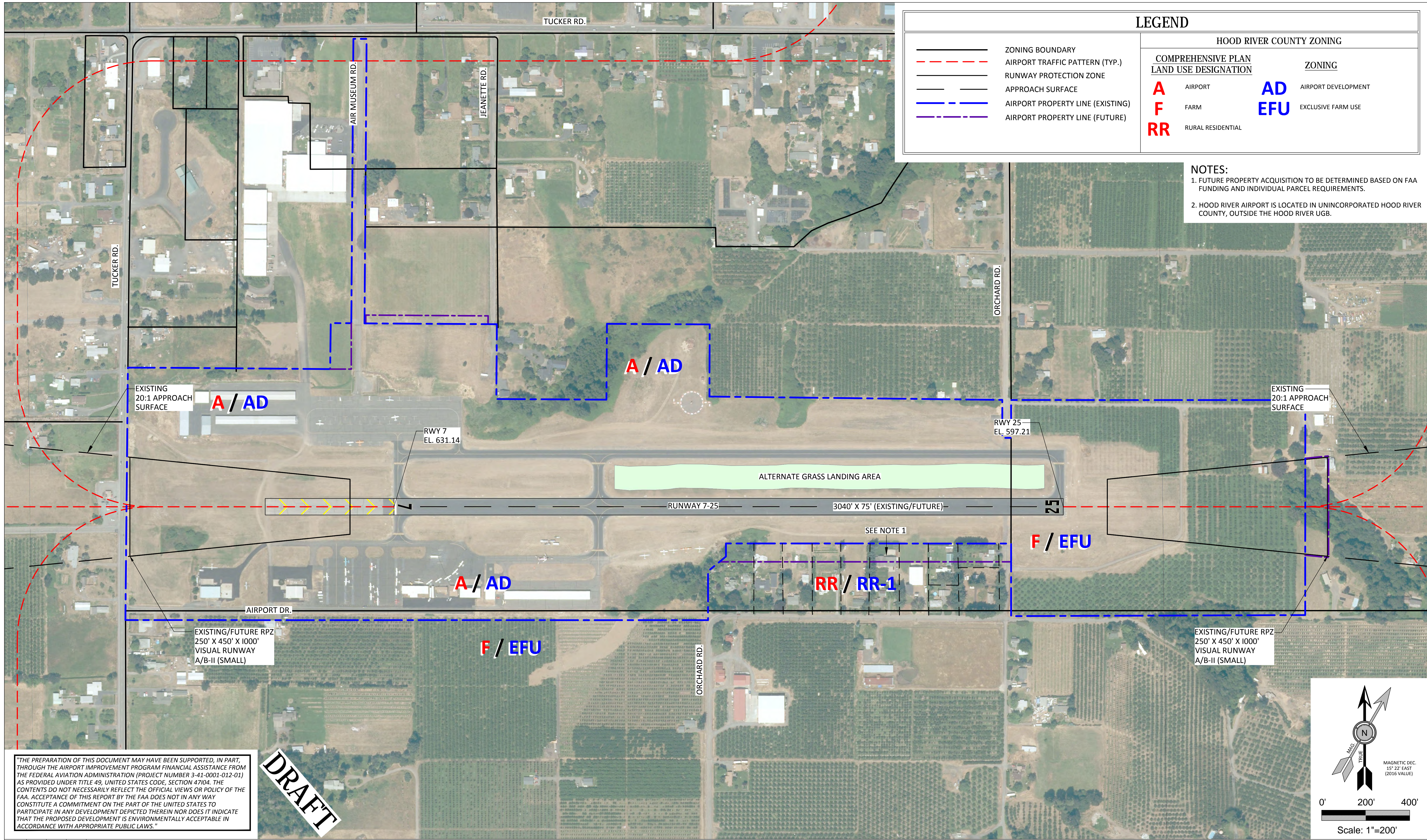
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DATE: MARCH 2018	PROJECT NO: 12399009.01		

**KEN JERNSTEDT AIRFIELD**  
 RUNWAY 25 APPROACH PLAN AND PROFILE

FIGURE NO.  
 -  
 SHEET NO.  
 8 OF 11



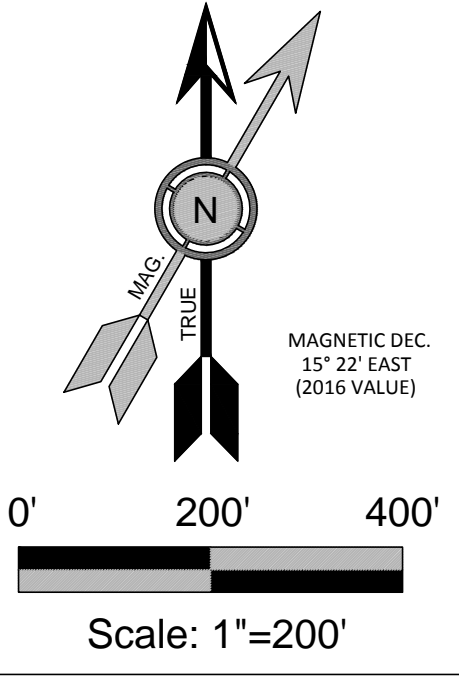


LEGEND		HOOD RIVER COUNTY ZONING	
	ZONING BOUNDARY	<b>COMPREHENSIVE PLAN LAND USE DESIGNATION</b>	
	AIRPORT TRAFFIC PATTERN (TYP.)	<b>A</b>	AIRPORT
	RUNWAY PROTECTION ZONE	<b>F</b>	FARM
	APPROACH SURFACE	<b>RR</b>	RURAL RESIDENTIAL
	AIRPORT PROPERTY LINE (EXISTING)	<b>AD</b>	AIRPORT DEVELOPMENT
	AIRPORT PROPERTY LINE (FUTURE)	<b>EFU</b>	EXCLUSIVE FARM USE

**NOTES:**  
 1. FUTURE PROPERTY ACQUISITION TO BE DETERMINED BASED ON FAA FUNDING AND INDIVIDUAL PARCEL REQUIREMENTS.  
 2. HOOD RIVER AIRPORT IS LOCATED IN UNINCORPORATED HOOD RIVER COUNTY, OUTSIDE THE HOOD RIVER UGB.

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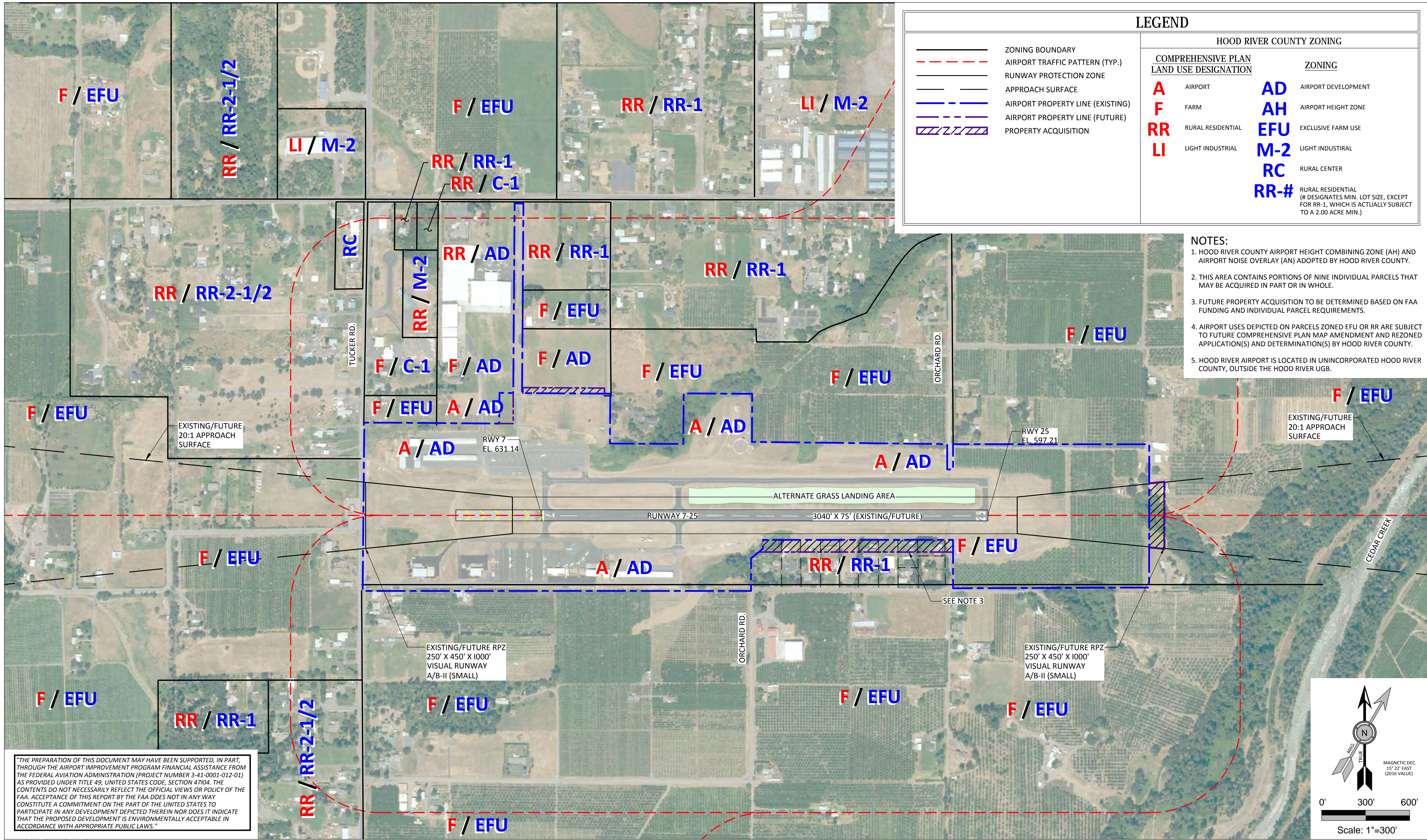
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DATE: MARCH 2018	PROJECT NO: 12399009.01		

**KEN JERNSTEDT AIRFIELD**  
 ON - AIRPORT LAND USE PLAN

FIGURE NO. -  
 SHEET NO. 9 OF 11





**LEGEND**

HOOD RIVER COUNTY ZONING	
COMPREHENSIVE PLAN LAND USE DESIGNATION	ZONING
<b>A</b> AIRPORT	<b>AD</b> AIRPORT DEVELOPMENT
<b>F</b> FARM	<b>AH</b> AIRPORT HEIGHT ZONE
<b>RR</b> RURAL RESIDENTIAL	<b>EFU</b> EXCLUSIVE FARM USE
<b>LI</b> LIGHT INDUSTRIAL	<b>M-2</b> LIGHT INDUSTRIAL
	<b>RC</b> RURAL CENTER
	<b>RR-#</b> RURAL RESIDENTIAL (# DESIGNATES MIN. LOT SIZE, EXCEPT FOR RR-1, WHICH IS ACTUALLY SUBJECT TO A 2.00 ACRE MIN.)

- NOTES:**
- HOOD RIVER COUNTY AIRPORT HEIGHT COMBINING ZONE (AH) AND AIRPORT NOISE OVERLAY (AN) ADOPTED BY HOOD RIVER COUNTY.
  - THIS AREA CONTAINS PORTIONS OF NINE INDIVIDUAL PARCELS THAT MAY BE ACQUIRED IN PART OR IN WHOLE.
  - FUTURE PROPERTY ACQUISITION TO BE DETERMINED BASED ON FAA FUNDING AND INDIVIDUAL PARCEL REQUIREMENTS.
  - AIRPORT USES DEPICTED ON PARCELS ZONED EFU OR RR ARE SUBJECT TO FUTURE COMPREHENSIVE PLAN MAP AMENDMENT AND REZONED APPLICATION(S) AND DETERMINATION(S) BY HOOD RIVER COUNTY.
  - HOOD RIVER AIRPORT IS LOCATED IN UNINCORPORATED HOOD RIVER COUNTY, OUTSIDE THE HOOD RIVER UGB.

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 APPROVAL

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**KEN JERNSTEDT AIRFIELD**










OFF - AIRPORT LAND USE PLAN

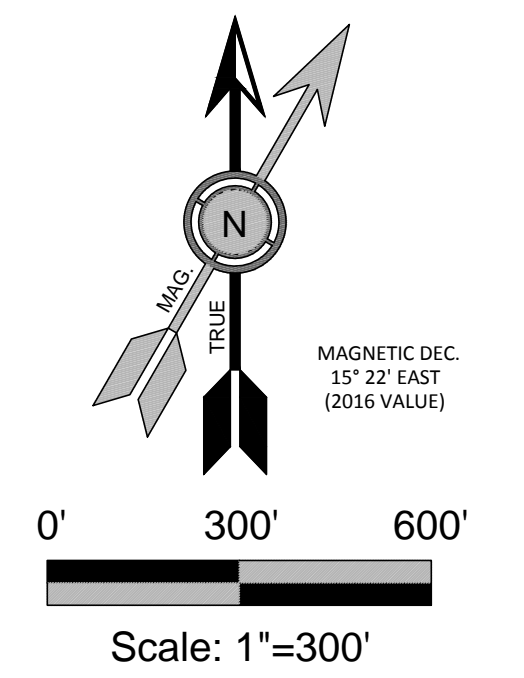
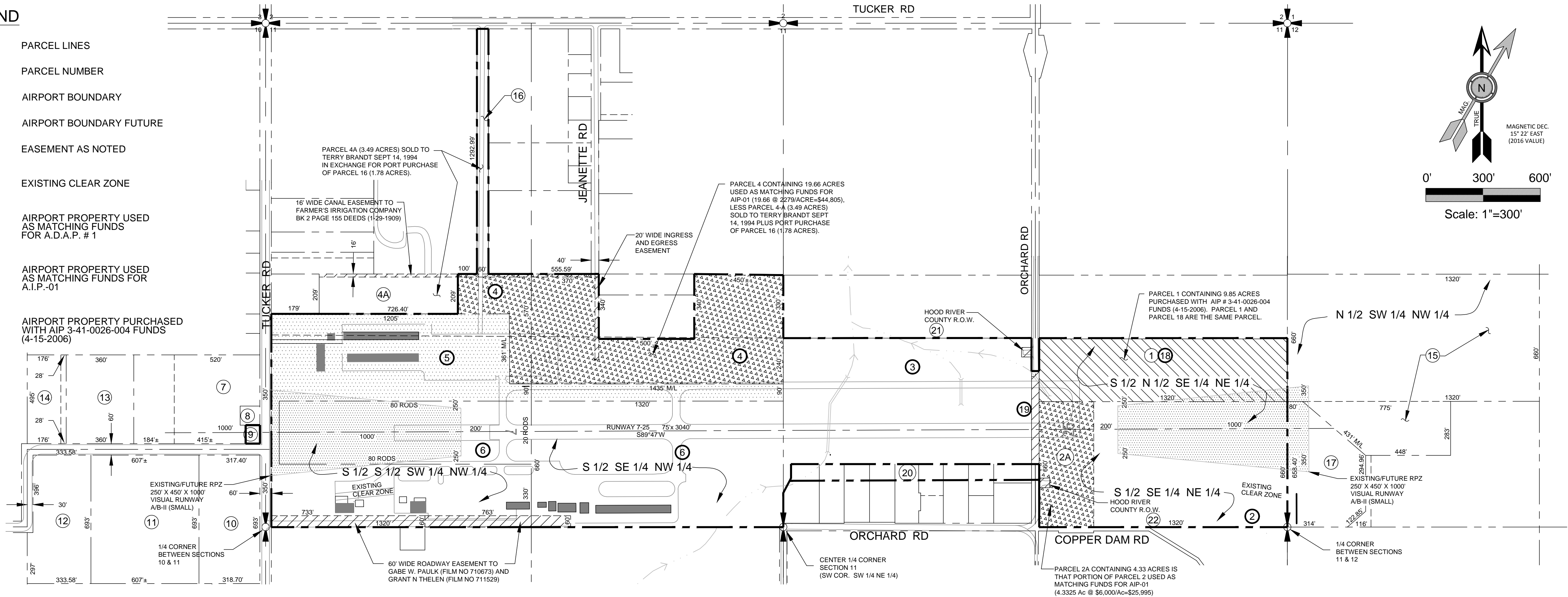
FIGURE NO. -

SHEET NO. 10 OF 11



**LEGEND**

-  PARCEL LINES
-  PARCEL NUMBER
-  AIRPORT BOUNDARY
-  AIRPORT BOUNDARY FUTURE
-  EASEMENT AS NOTED
-  EXISTING CLEAR ZONE
-  AIRPORT PROPERTY USED AS MATCHING FUNDS FOR A.D.A.P. # 1
-  AIRPORT PROPERTY USED AS MATCHING FUNDS FOR A.I.P.-01
-  AIRPORT PROPERTY PURCHASED WITH AIP 3-41-0026-004 FUNDS (4-15-2006)



LAND PARCEL-ACQUIRED FROM	ACRES	RECORDING INFO.		INTEREST	FEDERAL AGREEMENT	NOTES
		DATE	FILM REC. NO.			
① HOOD RIVER COUNTY	9.85±	7-29-76	761560	AVIGATION EASEMENT		SAME PARCEL AS PARCEL 18
② GLENN W. & V. PAULINE MARSH (PARCEL 2 & 2A) (CORRECTION DEED) (PARCEL 2 & 2A)	-----	2-7-78	780240	FEE	AIP-01 (4.33 AC)	
		2-23-78	780375	-----		
③ PARCEL 2A	4.3325±	PART OF PARCEL 2	PART OF PARCEL 2	PART OF PARCEL 2	PART OF PARCEL 2	PORTION OF PARCEL 2 USED AS MATCHING FUNDS FOR AIP-01
④ HOOD RIVER COUNTY (CORRECTION DEED)	-----	7-13-76	761445	FEE		
		1-30-79	790198	-----		
⑤ EUGENE E. & TALIAHAE WRIGHT (PARCEL 4)	3.49±	6-3-86	860957	FEE	AIP-01 (19.66 AC)	
⑥ PORT OF HOOD RIVER (PARCEL 4A)	3.49±	9-14-94	950265	FEE		PARCEL 4A SOLD TO TERRY BRANDT
⑦ EUGENE E. & TALIAHAE WRIGHT	3.49±	5-2-79	790949	FEE	ADAP # 1 (15.12 AC)	
⑧ HOOD RIVER COUNTY	0.31±	7-13-76	761445	FEE		
⑨ HOOD RIVER COUNTY	2.61±	7-29-76	761560	AVIGATION EASEMENT		
⑩ PATSY M. ROTH FORMERLY KNOWN AS PATSY M. GRUNKE	0.23±	7-22-77	771700	AVIGATION EASEMENT		PARCEL PURCHASED 1-03-00
		1-03-00	20000021	FEE		
⑪ ROBERT E. & MATTIE M. SHERRILL	4.84±	8-8-77	771829	AVIGATION EASEMENT		
⑫ ROBERT E. & MATTIE M. SHERRILL	4.81±	8-8-77	771829	AVIGATION EASEMENT		
⑬ ROBERT E. & MATTIE M. SHERRILL	4.81±	8-8-77	771829	AVIGATION EASEMENT		
⑭ HOOD RIVER COUNTY	3.85±	7-29-76	761560	AVIGATION EASEMENT		
⑮ MERIDENE TAYLOR	2.81±	7-20-77	771678	AVIGATION EASEMENT		
⑯ GEORGE & HISAKO TAMURA	24.2±	-----	-----	-----		
⑰ FORREST E. & NAOMI M. ORCUTT	5.0±	9-14-94	950266	FEE		
⑱ TED & SHIRLY EKKER	5.0±	-----	-----	-----		
⑳ TERRY BRANDT	9.85±	4-15-06	20051903	FEE	PURCHASED UNDER AIP-004 (9.85 AC)	SAME PARCEL AS PARCEL 1
㉑ HOOD RIVER COUNTY	.66±	10-8-12	2012043	FEE	AIP-006 (0.66 AC)	ORCHARD RD. VACATION
㉒ MULTIPLE OWNERS (9 PARCELS)	TBD	-	-	FEE	TBD	RUNWAY OFA

PROPERTY DISPOSAL	ACRES	RECORDING INFO.		INTEREST	FEDERAL AGREEMENT	NOTES
		DATE	FILM REC. NO.			
㉑ R.O.W. DEDICATION FOR HOOD RIVER CO.	.065±	10-8-12	21203236	ROAD EASEMENT	(.065 AC)	R.O.W. DEDICATED TO HOOD RIVER CO.
㉒ R.O.W. DEDICATION FOR HOOD RIVER CO.	.065±	10-8-12	21203236	ROAD EASEMENT	(.065 AC)	R.O.W. DEDICATED TO HOOD RIVER CO.

**NOTES:**

- THE SECTIONAL INFORMATION ON THIS DRAWING IS A COMPILATION OF VARIOUS SOURCES AND DOES NOT CONSTITUTE A RECORD OF SURVEY.
- A CERTIFIED LAND SURVEY OF AIRPORT PROPERTY BOUNDARY IS RECOMMENDED TO VERIFY TOTAL AIRPORT ACREAGE.

"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 3-41-0001-012-01) 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."

NO.	DATE	BY	APPR	REVISIONS

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

FEDERAL AVIATION ADMINISTRATION APPROVAL  
APPROVAL DATE: \_\_\_\_\_  
SIGNATURE \_\_\_\_\_

PORT OF HOOD RIVER APPROVAL  
APPROVAL DATE: \_\_\_\_\_  
SIGNATURE \_\_\_\_\_

**CENTURY WEST ENGINEERING**

BEND OFFICE  
1020 SW EMKAY DRIVE, #100  
BEND, OR 97702  
541.322.8962 OFFICE  
541.382.2423 FAX

DESIGNED BY: DM	DRAWN BY: JLS	CHECKED BY: WMR	SCALE: AS SHOWN
DATE: MARCH 2018	PROJECT NO: 12399009.01		

**KEN JERNSTEDT AIRFIELD**

EXHIBIT "A" AIRPORT PROPERTY PLAN

FIGURE NO. -  
SHEET NO. 11 OF 11

**Chapter 9 – Airport Land Use Compatability**







## Chapter 9 – Airport Land Use Compatibility

*This chapter was prepared jointly by Century West Engineering and BergerABAM, a member of the Century West airport master planning team.*

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### Introduction

The following chapter summarizes land use regulations affecting airport development in Hood River County (County). Land uses, compatibilities, and jurisdictional responsibilities applicable to the Ken Jernstedt Airfield (airport) are discussed below using federal, state, and local regulations. The analysis of nearby land uses is intended to identify potential opportunities and restrictions to airport expansion onto surrounding lands.

The airport is considered a public use airport and is operated by the Port of Hood River (Port). The airport is located approximately one mile south of the City of Hood River urban growth boundary (UGB) in Hood River County, Oregon. Ken Jernstedt Airfield has a “**Category IV - Community General Aviation**” airport designation in the current Oregon Aviation Plan.<sup>1</sup> The defined function of Category IV airports is to accommodate general aviation users and local business activities. This typically includes a variety of piston- and turbine-engine fixed wing aircraft and helicopters.

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<sup>1</sup> Oregon Aviation Plan (Oregon Department of Aviation, 2007)



## Government Roles in Airports

### FEDERAL

The Code of Federal Regulations (CFR) permits the FAA to influence land-use decisions within airport boundaries by approving airport layout plans, and by providing grants to help fund local airport improvements consistent with FAA guidelines. These grants can be used to maintain unobstructed airspace and support aeronautical function. In order to meet FAA guidelines and prevent the obstruction of local airspace, local authorities also adopt regulations limiting the height and the proximity of structures on adjacent lands.

Land use decisions at local airports are administered by local decision-making procedures and determinations are provided by local jurisdictions. Although the FAA does not influence local decisions directly, the agency plays a technical advisory role for local authorities.

Under CFR 14, Part 77, the FAA is permitted to review proposals affecting land uses in close proximity to airports under the Form 7460-1 Notice of Construction or alteration process. This process allows the FAA to address airspace compatibility based on proposed obstructions and/or penetrations of protected airspace by nearby land uses. During this process, the FAA reviews Federal Aviation Regulations (FAR) Part 77, which deals with the safe, efficient use, and preservation of the navigable airspace, terminal instrument procedure surfaces, visual runway traffic patterns, and visual navigation aids, such as lighting systems (e.g. VASI, PAPI, etc.). Developers proposing structures in violation of these air surfaces are issued a Determination of Presumed Hazard to Air Navigation for the consideration of local authorities. If a structure is determined not to violate this airspace, a determination of no objection is issued. The determinations issued by the FAA through the 7460-1 process are not relevant to the compatibility of nearby land uses, but are instead based on the proposed action's penetration of airspace above designated elevations.

The codified regulations of local jurisdictions should include the following language to recognize the FAA's role in local land use policy: "nothing in this chapter shall diminish the responsibility of project proponents to submit a Notice of Construction or Alteration to the Federal Aviation Administration if required in accordance with FAR Part 77, Objects Affecting Navigable Airspace."

Land use guidance for airport-related noise regulations is provided by FAR Part 150. This federal regulation was developed to support the Airport Noise and Capacity Act of 1990 and defines noise policy by setting operating curfews and aircraft restrictions with the intent of standardizing noise controls.



## OREGON STATE

The Oregon Department of Land Conservation and Development (DLCD) administers statewide aviation regulations under Chapter 660 Division 13 of the Oregon Administrative Rules (OARs). The DLCD encourages and supports the continued operation and vitality of Oregon airports. The agency seeks to improve the local economy by ensuring the continued operation of airports according to OAR 660-013-0010(1) and OAR 660-013-0010(2). Under statewide administrative rules, local jurisdictions are required to adopt airport compatibility requirements for public use airports (OAR 660-013-0080).

OARs implement Chapter 836 of the Oregon Revised Statutes (ORS) – Airports and Landing Fields – in support of regulating statewide aviation activities. Statewide airport expansion and land use activities are regulated under ORS 836.600 to 836.630 – Local Government Airport Regulations. Oregon statutes are intended to encourage and support the continued operation of local airports because they are considered a matter of statewide concern.

### ORS 836.608 - Airport operation as a matter of state concern; local planning documents to recognize airport location; limitations on use; expansion of facility

Local governments are required to recognize airports and their locations in planning documents that establish airport land use regulations on land within designated airport jurisdictions and limit land uses on airport property.

### ORS 836.610 - Local government land use plans and regulations to accommodate airport zones and uses

According to this statewide statute, local governments are required to amend land use regulations and comprehensive plans consistent with airport regulations set by the DLCD (ORS 836.16 to 836.619).

### ORS 836.616 - Rules for airport uses and activities

This code section sets further guidelines for land uses within the boundaries of state-designated airports.

### ORS 836.623 - Local compatibility and safety requirements more stringent than state requirements; criteria; water impoundments; report to federal agency; application to certain activities

This code section permits local governments to develop regulations more stringent than required by the DLCD, with the exception of water impoundments.

## LOCAL

Hood River County is responsible for administering land use decisions on the airport and within the airport's immediate vicinity. In order to govern airport land uses, the County has integrated the airport master plan within the Hood River County Comprehensive Plan (the comprehensive plan) and zoning ordinances.



## COMPREHENSIVE PLAN

The current Hood River County Comprehensive Plan was adopted on February 21, 1984 to influence and direct land use and development activities within the county, and to ensure compliance with statewide planning goals established by the Land Conservation and Development Commission (LCDC). The comprehensive plan establishes land use designations and is composed of background reports that contain inventories, detailed information, and analyses to ensure compliance with each statewide planning goal. Background reports that protect and guide the development of lands both on and in the vicinity of the airport include Goal 2 (Plan Designations and Acreages) and Goal 12 (Transportation).

### Goal 2 - Land Use Planning

The Goal 2 Background Report defines each land use designation established in the comprehensive plan. The “**Airport**” designation, included in Section H, is intended to recognize and maintain the existing airport, its related uses, and allow for future expansion. Lands designated Airport are areas to be built upon or committed to airports and related uses, including areas for expansion or infill, and adjacent areas where surrounding resource lands lack higher density development. The Airport designation is implemented with the Airport Development Zone (AD) and the Airport Height Zone (AH). Parcels or lots designed for airport use have no minimum size, but County development provisions for the AD zone must be met. Land use designations in the vicinity of the airport include “Farm,” “Rural Residential,” and “Light Industrial.”

A detail map (Enlargement C - Hood River UGA) from the 1984 Comprehensive Plan depicts the outer edge of the AH zone extending over the City of Hood River’s southern city limits and a large area within the UGB. The remaining portion of the AH zone extends over unincorporated Hood River County. It is noted that the AH zone depicted on the 1984 map was amended in 2009 (Ordinance #295) as part of the update of the airport layout plan that downsized the airspace defined for Ken Jernstedt Airfield to reflect existing/future visual approach capabilities. The amended AH zone has a smaller footprint and extends northward beyond Fairview Drive and Pacific Avenue, approximately 1.7 miles north of the airport, partially within the Hood River city limits and UGB.

### Goal 12 - Transportation

Section K of the Goal 12 Background Report was amended to include the airport, airport-related zoning districts, and the airport master plan. The airport serves the forest and fruit industries, two significant drivers of the local economy. Section B of the Goal 12 Background Report states the transportation system should be well balanced and include air transportation.



## ZONING ORDINANCE

Hood River County Codes (HRCCs) implement the comprehensive plan by designating local zoning districts. Zones that pertain to airport-related land uses comply with OARs and federal aviation regulations as required by law. The airport and its immediate vicinity are subject to the airport development (AD) zone (HRCC Article 33), airport height combining (AH) zone (HRCC Article 34), and two overlay zones – the airport noise (AN) overlay zone (HRCC Article 37) and the local health hazard (HH) overlay zone (HRCC Article 47). Local zoning districts and overlays are shown on Attachment A. Please note that Attachments A and B are out of date. These attachments do not reflect the current runway location after its eastward shift in 2009. Attachments A and B are included in **Appendix B**.

### HRCC Article 33 – Airport development zone (AD)

The purpose of this zone is to protect airport facilities from incompatible land uses. This code section outlines permitted and conditionally permitted uses, limitations of uses, and dimensional standards in the AD zone.

### HRCC Article 34 – Airport height combining zone (AH)

The AH zone is intended to protect public safety and welfare and property close to the Ken Jernstedt Airfield and Cascade Locks State Airport by restricting the heights of surrounding land uses. This zone regulates various types of air space obstruction and other hazards which may interfere with safe takeoffs and landings.

### HRCC Article 37 – Airport noise overlay zone (AN)

The AN overlay zone regulates construction standards close to the airport. These rules apply in areas of 65 or greater Noise Decibel Levels (NDL) and regulate noise level reduction standards required by the Oregon Airport Planning Rule (OAR-660-013-0080[1][b]).

### HRCC Article 47 – Health hazard overlay zone (HH)

Although the airport is located within the HH overlay zone, this overlay is not specific to airport development. The HH overlay is incorporated in areas declared to be public health hazards as a result of inadequate sewage disposal. The purpose of the overlay is to design and construct sanitary sewer systems to the minimum size necessary to serve the health hazard area.

## AIRPORT AND SURROUNDING ZONING

The airport is zoned AD with adjacent lands consisting primarily of exclusive farm use (EFU). Land uses in these areas include agriculture (primarily orchards) and agriculture-related structures. Other uses in the vicinity of the airport include residential dwellings. Area businesses include airport-related and non-



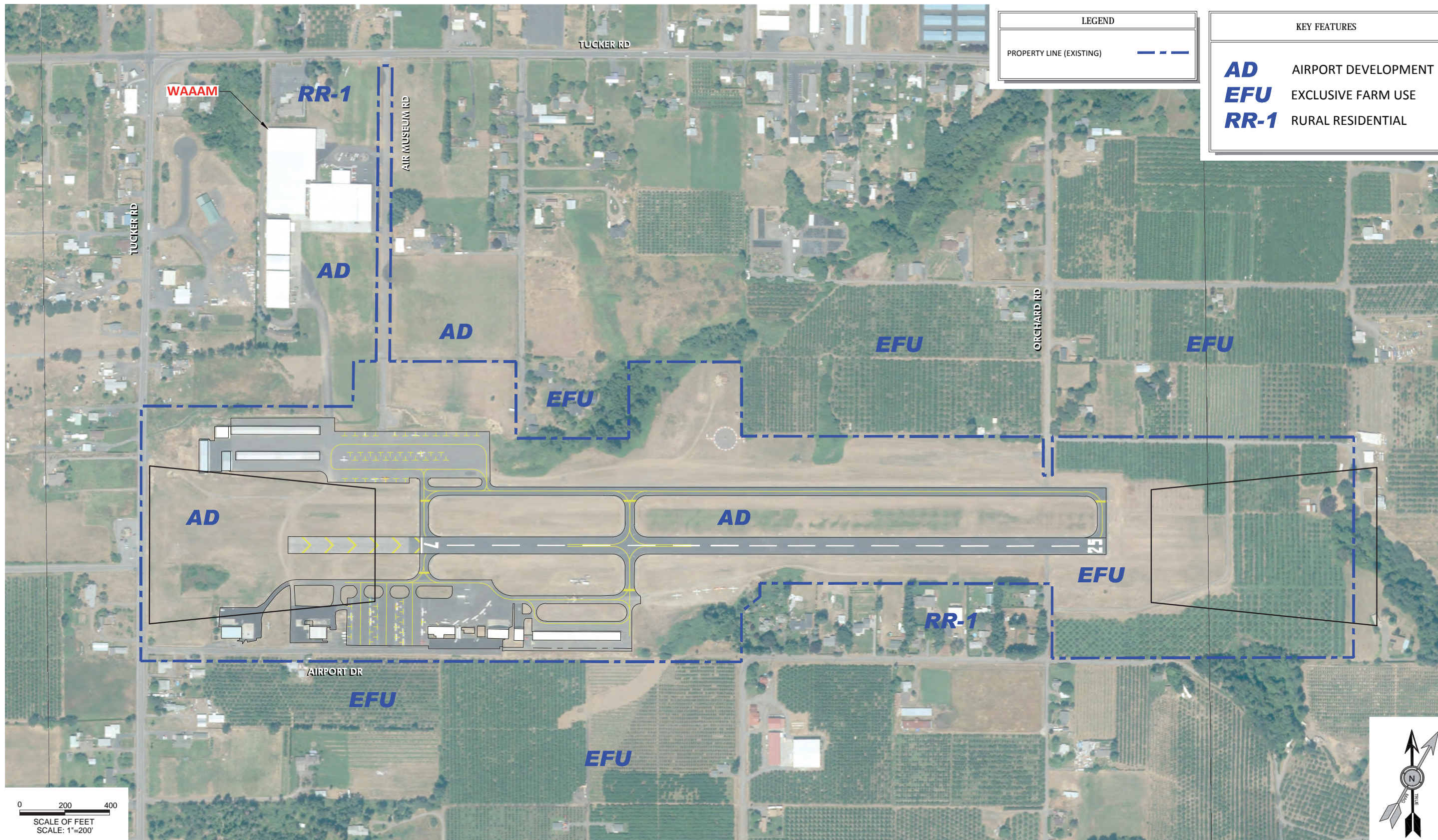


airport related commercial uses served by Airport Road and Highway 281. Additionally, the area includes public uses such as the Western Antique Aeroplane and Automobile Museum (WAAAM). Uses west of Highway 281 include an auto service station and the Twin Peaks Restaurant.

The AD zone is focused primarily on airport development and is located adjacent to four County zoning districts. They include the EFU, commercial (C-1), rural residential (RR), and light industrial (M-2) zones. Because these areas border the airport, they may be of interest for airport expansion. Of these adjacent designations, the M-2 zone does not permit airport development. Attachment A shows the current County zoning and overlays in the airport's vicinity.

**Figure 9-1** depicts current land use and zoning for the airport vicinity.





LEGEND	
PROPERTY LINE (EXISTING)	---

KEY FEATURES	
<b>AD</b>	AIRPORT DEVELOPMENT
<b>EFU</b>	EXCLUSIVE FARM USE
<b>RR-1</b>	RURAL RESIDENTIAL







### AIRPORT DEVELOPMENT (AD)

The airport is located on approximately 95 acres of land zoned AD and EFU (see following section regarding EFU-zoned area of airport). The purpose of this zone is to protect airport facilities from incompatible uses, provide land for future airport expansion, and preserve adjacent lands for future air-related commercial and light industrial uses. Therefore, expansion onto lands zoned AD can accommodate airport growth. Uses allowed outright within this zone include those specific to functioning airports, and the County has allocated portions of the airport's vicinity for airport development. The AD zone permits uses also allowed in the M-2 and industrial (M-1) zones with an approved County conditional use permit. These uses include manufacturing, repairing, compounding, processing, packing or storage, and wholesale distributing facilities. Airport expansion into M-2 is not currently allowed. Any plans to expand into the M-2 zone may require rezoning to AD, or an M-2 zone text amendment to allow airport uses.

### COUNTY ZONING AMENDMENT - 2009

The County approved a zoning revision in May 2009 that conditionally permits public airports to expand onto lands zoned EFU (comprehensive plan amendment 08-0116). The Port requested this amendment to Article 7 of the HRCC to permit a 550-foot eastward runway shift recommended in the 2009 Ken Jernstedt Airfield Master Plan. In order to accommodate the runway shift, the Port acquired parcels 1000 and 1100 located east of the existing runway. A conditional use under HRCC 7.40(Y) is recommended for any future airport expansions onto EFU lands.

### Exclusive Farm Use (EFU)

Zoning in the vicinity of the airport consists primarily of EFU. EFU-designated parcels east of Highway 281 and within a quarter mile of the airport total approximately 288 acres. Local land use regulations (HRCC 7.40[Y]) conditionally permit the expansion of airports. A rezone can also be requested; however, a Goal 3 (Agricultural Lands) exception and public hearings will be required. Oregon Statewide Planning Goal 3 protects EFU lands from non-farm uses to prevent the loss of land for agriculture, an industry vital to Oregon's economy. Therefore, rezoning EFU lands with high value crops (orchards) is difficult to justify, and is not recommended.

### Commercial (C-1)

Airports and airport-related development are not typically located within the commercial zone (C-1). In fact, airport development is considered a conditionally permitted use on these lands (HRCCs 21.10[A], 12.20[A], and 10.20[A]). Parcels zoned for C-1 activities are located north of the airport between Highway 281 and WAAAM. These parcels total approximately 14 acres and generally contain retail and professional service establishments unrelated to functioning airports. The businesses close to the airport include the All Animal Hospital and Fastenal.



### Rural Residential (RR)

The RR zone is designated for residential development outside the City of Hood River urban growth boundary. Parcels zoned RR are intended to maintain a semi-rural atmosphere for the development of residential lands. Consistent with these intentions, priority is given to residential uses first, with agricultural as an accessory use.

Airports are permitted conditionally within the RR zone per HRCC 15.40(F). Residential development and airports are not usually considered compatible land uses. Airports and their vicinities contain elevated noise levels resulting from inbound and outbound air traffic. High levels of noise are typically not considered suitable environments for residential development, however some neighbors are airport users and enthusiasts that elect to reside proximate to the airport. Therefore, the Port should consider residential impacts and compatibility if it elects to consider airport expansion onto adjacent residential lands. Lands zoned RR total approximately 50 acres north of the airport (south of Highway 281) and 9 acres south of the runway.

### Light Industrial (M-2)

The M-2 zone does not permit airport expansion. The M-2 zone is intended to provide lands for manufacturing or other industries which, because of their characteristics, can be permitted in relatively close proximity to residential, commercial, and farm zones. Generally, uses permitted within this zone consist of manufacturing, assembly, warehousing, and related businesses. Although light industrial uses are permitted conditionally on lands zoned AD, airports are neither permitted nor permitted conditionally within this zone. If the Port chooses to pursue airport expansion onto M-2 lands, an amendment to the zoning ordinance to include airport development as a permitted or conditional use is required. Alternatively, the Port could request a zone change to AD, airport development. Parcels zoned M-2 are located north of the airport but south of Highway 281 and total approximately 7 acres.

## **OVERLAY DISTRICTS**

### Airport Height Combining Overlay (HRCC Article 34)

The AH overlay is a 3-D overlay of imaginary height restrictive surfaces. These surfaces are located adjacent to the airport and extend approximately 2 miles north, south, east, and west of the airport. The height limitations of the overlay, described in HRCC Article 34, are intended to prevent objects from entering the traveled way of incoming and exiting aircraft. These code provisions apply to all land located within the AH overlay (see Attachment A). A detailed discussion of each air-related surface follows below.



### Primary Surface

The primary surface is centered longitudinally on the runway. It extends 200 feet beyond each end of the runway and extends 125 feet from runway centerline on each side.

### Approach Surface

The approach surface slopes 20 feet outward for each foot upward (20:1). It begins at the same elevation of as the end of the primary surface. The approach surface extends horizontally 5,000 feet from the end of the runway primary surface.

### Transitional Surface

The slopes of the transitional surface extend 7 feet outward for each foot upward (7:1). The slope begins at the same elevation as the primary surface and the approach surface, and extends to a height of 150 feet above the airport.

### Horizontal Surface

The horizontal surface extends 5,000 feet from the center of each runway end. It begins where the transitional surface reaches a vertical height of 150 feet.

### Conical Surface

The conical surface slopes 20 feet outward for each foot upward (20:1). It extends 4,000 feet from the beginning of the periphery of the horizontal surface. Its elevation increases from 150 feet to 350 feet above the airport's elevation.

### Runway Protection Zone

The runway protection zone (RPZ) extends 1,000 feet from the ends of the runway (beginning 200 feet beyond the runway threshold) and is the trapezoidal shape centered on the extended runway centerline. The inner width of the RPZ is the same as the width of the primary surface. The outer width of the RPZ is a function of the type of aircraft and specified approach visibility associated with the runway end.

### Airport Noise Overlay (HRCC Article 37)

The airport noise overlay (AN) circles the outside of the airport approximately 250 feet from the edge of the runway. Uses permitted in the underlying base zone are permitted in the AN overlay with the exception of new schools, music venues, amphitheatres, and zoos. If new structures are proposed in this overlay, additional construction standards to mitigate noise are required. These standards vary depending





on the proposed use or redevelopment. The permissible NDLS in the AN overlay range from 65 to 75. Please see Attachment B for further details on noise overlay zone locations and standards.

#### Health Hazard Overlay (HRCC Article 47)

The airport and adjacent lands are located within a health hazard overlay (HH) zone. The HH overlay is located approximately three-quarters of a mile northwest, northeast, and southwest of the airport. As stated in HRCC 47.10, “the purpose of the [HH zone] is to ensure that sewer systems installed in areas declared as public health hazards, as a result of a sewage problem, are designed and constructed to the minimum size necessary to serve the health hazard area and are restricted to those uses specifically allowed under the current Oregon Administrative Rules regarding Goal 11.” HH zones are a basis for extending sanitary sewer service outside the City of Hood River urban growth boundary. Although this overlay will not directly impact airport expansion, it does provide precedent for extra-territorial utility expansion in the airport vicinity. Short of a health hazard caused by failing septic systems, it is unclear if utility extensions can be provided to serve airport growth on County lands.

#### **ZONE CHANGE**

The Port may request a County zone or text change amendment to potentially permit airport expansion on all lands not zoned AD. However, a request to rezone EFU land is not recommended given that an exception to Statewide Planning Goal 3 (Agricultural Lands) would be difficult to justify.

A Goal exception requires notice to DLCD, public hearings, and approval from the Hood River County Planning Commission and the Board of County Commissioners. The Port would need to demonstrate that the land subject to the Goal exception is either (1) physically developed to the extent that it is no longer available for uses allowed by the Goal or (2) is irrevocably committed to uses not allowed by the applicable Goal because existing adjacent uses and other relevant factors make uses allowed by the applicable Goal impracticable. Lands zoned EFU and located adjacent to the airport would not easily meet this criteria. They are considered high value farm land (orchards). Therefore, a zone change from EFU to AD airport development is not recommended at this time.

## **Summary and Recommendations**

Hood River County’s comprehensive plan and zoning provisions were developed proactively to support the airport. Many of the zoning designations in the vicinity of the airport permit airport-related development outright, or allow it through the conditional use process. The exception to this standard is the M-2 zone, which does not permit or conditionally permit airport development.



The following strategies may be considered to support airport-related expansion:

- Request a conditional use permit consistent with HRCC 7.40(Y) for any airport uses proposed on EFU lands;
- A rezone of EFU lands to AD, airport development is not recommended. A rezone of these lands will require a Statewide Goal 3 (Agricultural Lands) exception;
- If appropriate, the Port may consider rezoning a portion of adjacent rural residential parcels to airport development if airport expansion onto residential lands is deemed necessary by the Port;
- If airport uses are proposed on M-2 lands, a rezone to AD, airport development, or a text amendment change to allow airport uses in the M-2 zone would be required;
- Review comprehensive plan land use goals and policies periodically for their compliance with Oregon land use regulations and consistency with the current airport master plan and airport layout plan; and
- Update the Hood River County planning maps and GIS webmaps with current FAA approved airport layout plan drawing set.

# Chapter 10 – FAA Compliance Review and Solid Waste Recycling Plan





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## Chapter 10 – FAA Compliance Review and Solid Waste Recycling Plan

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### Introduction

This chapter discusses the elements associated with the operation and management of Ken Jernstedt Airfield, as a federally obligated airport. The Federal Aviation Administration (FAA) encourages airport sponsors to establish and implement programs that promote sound operating practices and ongoing compliance with regulatory requirements. The FAA currently recommends that compliance be addressed during the airport planning process through the review of airport plans and documents including: an approved Airport Layout Plan, Exhibit "A" Property Map, airport ordinance, zoning ordinances, rules and regulations, minimum standards, airport budgets, leases, easements, permits, and other documents.

Airport compliance review is ultimately the responsibility of the FAA and the findings in the Master Plan represent a snapshot of the specific point in time when the Master Plan was prepared. The review presented in this document is not all encompassing, and does not serve as a substitute for FAA's ultimate oversight role.

### Port of Hood River Compliance

The Port of Hood River maintains a high degree of control over the operation of Ken Jernstedt Airfield. The port meets all applicable financial reporting and record keeping requirements. They employ a variety of "best practices" including: periodic review of market rates and fees, land appraisals, formal



procurement and contracting practices, coordination with adjacent land owners (navigation easements), local government (land use planning, zoning), state government (airport overlay zoning, environmental agencies, etc.), and tribal government.

## FAA Compliance Overview

A management program based on the FAA's "Planning for Compliance" guidance and the adoption of additional airport management "Best Practices" is recommended to address FAA compliance requirements and avoid noncompliance, which could have significant consequences.

Airport management "Best Practices" are developed to provide timely information and guidance related to good management practices and safe airport operations for airport managers and sponsors. The practices outlined herein are designed for use by the Port of Hood River for evaluating and improving their current and future operation and management program.

Airport sponsors must comply with various federal obligations through agreements and/or property conveyances, outlined in **FAA Order 5190.6B**, Airport Compliance Manual. The contractual federal obligations a sponsor accepts when receiving federal grant funds or transfer of federal property can be found in a variety of documents including:

- Grant agreements issued under the Federal Airport Act of 1946, the Airport and Airway Development Act of 1970, and Airport Improvement Act of 1982. Included in these agreements are the requirement for airport sponsors to comply with:
  - Grant Assurances;
  - Advisory Circulars;
  - Application commitments;
  - FAR procedures and submittals; and
  - Special conditions.
- Surplus airport property instruments of transfer;
- Deeds of conveyance;
- Commitments in environmental documents prepared in accordance with FAA requirements; and
- Separate written requirements between a sponsor and the FAA.

Land use compliance and compatible land use planning is often a significant compliance issue for airports. Compliance and suggested best practices are discussed under the following subheadings in this chapter:

- Airport Compliance with Federal and State Grant Assurances;
- Environmental Compliance;
- Airport User Compliance; and
- Other Airport Operational Policies and Procedures.





## Airport Compliance with Grant Assurances

As a recipient of both federal and state airport improvement grant funds, the Port of Hood River is contractually bound to various sponsor obligations referred to as "Grant Assurances", developed by the FAA and the Oregon Department of Aviation. These obligations, presented in detail in federal and state grants and state statute and administrative codes, document the commitments made by the airport sponsor to fulfill the intent of the grantor (FAA and State of Oregon) required when accepting federal and/or state funding for airport improvements. Failure to comply with the grant assurances may result in a finding of noncompliance and/or forfeiture of future funding. Grant assurances and their associated requirements are intended to protect the significant investment made by the FAA, State, and Port to preserve and maintain the nation's airports as a valuable national transportation asset, as mandated by Congress.

### FAA GRANT ASSURANCES

The FAA's Airport Compliance Program defines the interpretation, administration, and oversight of federal sponsor obligations contained in grant assurances. The Airport Compliance Manual defines policies and procedures for the Airport Compliance Program. Although it is not regulatory or controlling with regard to airport sponsor conduct, it establishes the policies and procedures for FAA personnel to follow in carrying out the FAA's responsibilities for ensuring compliance by the sponsor.

The Airport Compliance Manual states the FAA Airport Compliance Program is: "...designed to monitor and enforce obligations agreed to by airport sponsors in exchange for valuable benefits and rights granted by the United States in return for substantial direct grants of funds and for conveyances of federal property for airport purposes. The Airport Compliance Program is designed to protect the public interest in civil aviation. Grants and property conveyances are made in exchange for binding commitments (federal obligations) designed to ensure that the public interest in civil aviation will be served. The FAA bears the important responsibility of seeing that these commitments are met. This order addresses the types of commitments, how they apply to airports, and what FAA personnel are required to do to enforce them."

To better understand the intent of the FAA Compliance Program, it is important to understand the FAA's goals for a national airport system. The national airport system is currently known as the National Plan of Integrated Airport Systems (NPIAS), which has historic origins dating back to the 1946 Federal Airports Act. The airport system has evolved through several legislative updates in concert with changes in the organization and scope of the FAA. The NPIAS was adopted as part of the Airport and Airway Development Act of 1982, replacing the National Airport System Plan (NASP), created by earlier legislation. There are approximately 2,500 general aviation airports and 800 commercial service airports in the NPIAS.



According to the FAA, cooperation between the FAA, state, and local agencies should result in an airport system with the following attributes:

- Airports should be safe and efficient, located at optimum sites, and be developed and maintained to appropriate standards;
- Airports should be operated efficiently both for aeronautical users and the government, relying primarily on user fees and placing minimal burden on the general revenues of the local, state, and federal governments;
- Airports should be flexible and expandable, able to meet increased demand and accommodate new aircraft types;
- Airports should be permanent, with assurance that they will remain open for aeronautical use over the long term;
- Airports should be compatible with surrounding communities, maintaining a balance between the needs of aviation and the requirements of residents in neighboring areas;
- Airports should be developed in concert with improvements to the air traffic control system;
- The airport system should support national objectives for defense, emergency readiness, and postal delivery;
- The airport system should be extensive, providing as many people as possible with convenient access to air transportation, typically not more than 20 miles of travel to the nearest NPIAS airport; and
- The airport system should help air transportation contribute to a productive national economy and international competitiveness.

FAA Airport Improvement Program (AIP) grant assurances are summarized and categorized in **Table 10-1**. While sponsors should understand and comply with all grant assurances, there are several assurances that are common and recurring issues for airport sponsors throughout the country. These are summarized in more detail below. A complete description of current AIP grant assurances is provided in **Appendix C**. It is important to note that the assurances (and corresponding numbers) are applied to non-airport sponsors undertaking noise compatibility program projects and planning agency sponsors. These can also be found in the AIP under grant assurances.



**TABLE 10-1: SUMMARY OF FAA AIP GRANT ASSURANCES (AIRPORT SPONSOR ASSURANCES 3/2014)**

GRANT ASSURANCE NO.	GENERAL AIRPORT	PROJECT PLANNING / DESIGN & CONTRACTING	AIRPORT OPERATIONS AND LAND USE	DAY TO DAY AIRPORT MANAGEMENT	PROJECT CONSTRUCTION	LEASES & FINANCIAL	OTHER
1. General Federal Requirements							
2. Responsibility and Authority of the Sponsor							
3. Sponsor Fund Availability							
4. Good Title							
5. Preserving Rights and Powers							
6. Consistency with Local Plans							
7. Consideration of Local Interest							
8. Consultation with Users							
9. Public Hearings							
10. Metropolitan Planning Organization							
11. Pavement Preventative Maintenance							
12. Terminal Development Prerequisites							
13. Accounting System, Audit, and Record Keeping Requirements							
14. Minimum Wage Rates							
15. Veteran's Preference							
16. Conformity to Plans and Specifications							
17. Construction Inspection and Approval							
18. Planning Projects							
19. Operations and Maintenance							
20. Hazard Removal and Mitigation							
21. Compatible Land Use							



GRANT ASSURANCE NO.	GENERAL AIRPORT	PROJECT PLANNING / DESIGN & CONTRACTING	AIRPORT OPERATIONS AND LAND USE	DAY TO DAY AIRPORT MANAGEMENT	PROJECT CONSTRUCTION	LEASES & FINANCIAL	OTHER
22. Economic Nondiscrimination							
23. Exclusive Rights							
24. Fee and Rental Structure							
25. Airport Revenues							
26. Reports and Inspections							
27. Use by Government Aircraft							
28. Land for Federal Facilities							
29. Airport Layout Plans							
30. Civil Rights							
31. Disposal of Land							
32. Engineering and Design Services							
33. Foreign Market Restrictions							
34. Policies, Standards and Specifications							
35. Relocation and Real Property Acquisition							
36. Access by Intercity Bus							
37. Disadvantaged Business Enterprises							
38. Hangar Construction							
39. Competitive Access							

As the airport sponsor, the Port of Hood River is responsible for the direct control and operation of Ken Jernstedt Airfield. Familiarity with, proper monitoring and implementation of sponsor obligations and FAA grant assurances, is key to maintaining compliance. The Airport Compliance Manual and ongoing communication with the [FAA Northwest Mountain Region Compliance Office](#) are both excellent resources for the airport sponsor when addressing policy and compliance.





## DURATION

The terms, conditions, and assurance of a grant agreement with the FAA remain in effect for the useful life of a development project, which is typically 20 years from the receipt of the last grant. However, terms, conditions, and assurances associated with land purchased with federal funds do not expire.

The airport sponsor should have a clear understanding of and comply with all assurances. The following sections describe the selected assurances in more detail.

### Project Planning, Design and Contracting

#### *Sponsor Fund Availability (Assurance #3)*

Once a grant is given to an airport sponsor, the receiving sponsor commits to providing the funding to cover their portion of the total project cost. Currently this amount is ten percent of the total eligible project cost, although it may be higher depending on the particular project components or makeup. Once the project has been completed, the receiving airport also commits to having adequate funds to maintain and operate the airport in the appropriate manner to protect the investment in accordance with the terms of the assurances attached to and made a part of the grant agreement.

#### *Consistency with Local Plans (Assurance #6)*

All projects must be consistent with city and county comprehensive plans, transportation plans, zoning ordinances, development codes, and hazard mitigation plans. The airport sponsor and planners should familiarize themselves with local planning documents before a project is considered to ensure that all projects follow local plans and ordinances.

In addition to understanding local plans, airport sponsors should be proactive in order to prevent noncompliance with this assurance. The airport sponsor should assist in the development of local plans that incorporate the airport and consider its unique aviation related needs. Sponsor efforts should include the development of goals, policies, and implementation strategies to protect the airport as part of local plans and ordinances.

#### *Accounting System Audit and Record Keeping (Assurance #13)*

All project accounts and records must be made available at any time. Records should include documentation of cost, how monies were actually spent, funds paid by other sources, and any other financial records associated with the project at hand. Any books, records, documents, or papers that pertain to the project should be available at all times for an audit or examination.



## General Airport Assurances

### *Good title (Assurance #4)*

The airport owner must have a Good Title to affected property when considering projects associated with land, building, or equipment. Good Title means the sponsor can show complete ownership of the property without any legal questions, or show it will soon be acquired.

### *Preserving Rights and Powers (Assurance #5)*

No actions are allowed, which might take away any rights or powers from the sponsor, which are necessary for the sponsor to perform or fulfill any condition set forth by the assurance included as part of the grant agreement. If there is an action taken or activity permitted that might hinder any of those rights or powers it should be discontinued. An example of an action that can adversely affect the rights and powers, of the airport is a Through-the-Fence (TTF) activity. TTF activities allow access to airport facilities from off-airport users. In many instances, the airport sponsor cannot control the activities of those operating off the airport resulting in less sponsor control. This loss of control can potentially have an adverse impact on airport users. For example, TTF operators may not pay the same rates and charges as on-airport users, resulting in an unfair competitive advantage for business and users located off-airport.

### *Airport Layout Plan (ALP) (Assurance #29)*

The airport should at all times keep an up-to-date ALP, which should include current and future boundaries, facilities/structures, locations of non-aviation areas, and existing improvements. No changes should be made at the airport to hinder the safety of operations; also no changes should be made to the airport that is not in conformity with the ALP. Any changes of this nature could adversely affect the safety, utility, or efficiency of the airport. If any changes are made to the airport without authorization the alteration must be changed back to the original condition or the airport will have to bear all cost associated with moving or changing the alteration to an acceptable design or location. Additionally, no federal participation will occur for improvement projects not shown on an approved ALP.

### *Disposal of Land (Assurance #31)*

Land purchased with the financial participation of an FAA Grant cannot be sold or disposed of by the airport sponsor at their sole discretion. Disposal of such lands are subject to FAA approval and a definitive process established by the FAA. If airport land is no longer considered necessary for airport purposes, and the sale is authorized by the FAA, the land must be sold at fair market value. Proceeds from the sale of the land must either be repaid to the FAA, or reinvested in another eligible airport improvement, or noise compatibility project. Land disposal requirements typically arise when a community is building a new airport and the land on which the airport was located is sold with the proceeds used to offset costs of the new airport. In general, land purchased with FAA funds is rarely sold by a sponsor.



## Airport Operations and Land Use

### *Pavement Preventative Maintenance (Assurance #11)*

Since January 1995, the FAA has mandated that it will only give a grant for airport pavement replacement or reconstruction projects if an effective airport pavement maintenance-management program is in place. The program should identify the maintenance of all pavements funded with federal financial assistance. The report provides a pavement condition index (PCI) rating (0 to 100) for various sections of aprons, runways, and taxiways; including, a score for overall airport pavements.

### *Operations and Maintenance (Assurance #19)*

All federally funded airport facilities must operate at all times in a safe and serviceable manner. The airport sponsor should not allow for any activities that inhibit or prevent this. The airport sponsor must always promptly mark and light any hazards on the airport, and promptly issue Notices to Airmen (NOTAMs) to advise of any conditions that could affect safe aeronautical use. Exceptions to this assurance include when temporary weather conditions make it unreasonable to maintain the airport. Further, this assurance does not require the airport sponsor to repair conditions that have happened because of a situation beyond the control of the sponsor.

### *Compatible Land Use (Assurance #21)*

Land uses around an airport should be planned and implemented in a manner that ensures surrounding development and activities are compatible with the airport. To ensure compatibility, the sponsor is expected to take appropriate action, to the extent reasonable, including the adoption of zoning laws to guide land use in the vicinity of airports under their jurisdiction. Incompatible land uses around airports represents one of the greatest threats to the future viability of airports.

## Day to Day Airport Management

### *Economic Non-Discrimination (Assurance #22)*

Any reasonable aeronautical activity offering service to the public should be permitted to operate at the airport as long as the activity complies with airport established standards for that activity. Any contractor agreement made with the airport will have provisions making certain the person, firm, or corporation will not be discriminatory when it comes to services rendered including rates or prices charged to customers. Provisions include:

- All FBOs on the airport should be subject to the same rate fees, rentals, and other charges;
- All persons, firms, or corporations operating aircraft can work on their own aircraft with their own employees;



- If the airport sponsor at any time exercises the rights and privileges of this assurance they will be under all of the same conditions as any other airport user would be; and
- The sponsor can establish fair conditions that need to be met by all airport users to make the airport safer and more efficient.

The sponsor can prohibit any type, kind, or class of aeronautical activity if it is for the safety of the airport. An example of an activity that may be considered for prohibition is sky diving. It is important to point out that the FAA will review such prohibitions and will make the final determination as to whether or not a particular activity type is deemed unsafe at the airport based on current operational dynamics.

#### *Exclusive Rights (Assurance #23)*

Exclusive rights at an airport are often a complicated subject usually specific to individual airport situations. The assurance states the sponsor “will permit no exclusive right for the use of the airport by any person providing, or intending to provide, aeronautical services to the public...” However, there are exceptions to this rule. If the airport sponsor can prove that permitting a similar business would be unreasonably costly, impractical, or result in a safety concern, the sponsor may consider granting an exclusive right. To deny a business opportunity because of safety, the sponsor must demonstrate how that particular business will compromise safety at the airport. Exclusive rights are very often found in airport relationships with fixed base operators (FBO). However, exclusive rights can also be established with any other business at the airport, which could assist in the operation of an aircraft at the airport. If an unapproved exclusive rights agreement exists, it must be dissolved before a future federal grant can be awarded to the airport.

If a sponsor is contemplating denial of a business use at the airport, it is strongly encouraged that they contact their FAA Airport Districts Office (ADO) in order to ensure they have all necessary information and that denial of access is not going to be seen as unjust discrimination. For more in depth information on exclusive rights reference Advisory Circular 150/5190-6, "Exclusive Rights at Federally Obligated Airports."

#### Leases and Finances

##### *Fee and Rental Structure (Assurance #24)*

Simply put, the fee and rental structure at the airport must be implemented with the goal of generating enough revenue from airport related fees and rents to become self-sufficient in funding day to day operational needs. The airport sponsor should routinely monitor its fee and rental structure to ensure reasonable fees are being charged to meet this goal. Common fees charged by airports include fuel flowage, tie-down, landing fees, and hangar rent.



### *Airport Revenue (Assurance #25)*

All airport revenue and local taxes on aviation fuel should be used toward the operating costs of the airport, the local airport system, or other local facilities that are owned by the same owner of the airport, which will directly affect air transportation passengers, property, or for noise mitigation on or off airport property. In other words, revenue generated by airport activities must be used to support the continued operation and maintenance of the airport. Use of airport revenue to support or subsidize non-aviation activities or functions of the sponsor is not allowed and is considered revenue diversion. Revenue diversion is a significant compliance issue subject to cause scrutiny by the FAA.

## **Other FAA Compliance Requirements**

### **THROUGH-THE-FENCE AGREEMENTS (TTF)**

According to **Advisory Circular 150/6190-7**, Minimum Standards for Commercial Aeronautical Activities, the FAA defines through-the-fence as “those activities permitted by an airport sponsor through an agreement that permits access to the public landing area by independent entities or operations offering an aeronautical activity or to owners of aircraft based on land adjacent to, but not part of, the airport property. The obligation to make an airport available for the use and benefit of the public does not impose any requirement for the airport sponsor to permit ground access by aircraft from adjacent property.” The FAA discourages through-the-fence access since it can create a problem for the airport sponsor to control aviation activities on and around the airport, and create economic discrimination.

There are nine residential properties located on the southeast corner of the airport and one parcel located on the north side of the airport, immediately adjacent to the airfield. Of these ten parcels, two have active RTTF agreements with the Port of Hood River. The two parcels with the RTTF agreements include small conventional aircraft storage hangars. Aircraft owners on these lots have direct access to the runway through a grass field. The RTTF agreements currently in place with the Port of Hood River allow access from these lots to the airfield in accordance with FAA TTF guidelines. **Figure 10-1** (South Residential Through-the-Fence Parcels) depicts the location of the existing south residential lots and active hangars.

Five large conventional hangars are located adjacent to the northwest corner of the airport and have direct access to the north tiedown apron via a paved access taxiway. These hangars are part of the Western Antique Aeroplane & Automobile Museum and are for aircraft and automobile storage and display. The Port of Hood River does not presently have a through-the-fence agreement in place with WAAAM. It is recommended that the Port work with the FAA and WAAAM to establish an acceptable through-the-fence agreement. One residential lot located near the east end of the north apron has an easement providing access to the airfield. The easement is currently not in use and no through-the-fence agreement is in place. A copy of the Port’s standard through-the-fence agreement is included in **Appendix D**.





### Federal Requirements and Policies

“On March 14, 2011, FAA amended Grant Assurance 5, Preserving Rights and Powers, to prohibit new residential through-the-fence access arrangements and published an interim policy to address existing residential through-the-fence access.”

On February 14, 2012, the FAA Modernization and Reform Act was signed into law (P.L. 112-95). “Section 136 of this law permits general aviation airport sponsors, as defined in the statute, to enter into residential through-the-fence agreements with property owners or associations representing property owners. This must be a written agreement that requires the property owner to: <sup>1</sup>

- Pay access charges that the sponsor determines to be comparable to those fees charged to tenants and operators on-airport making similar use of the airport;
- Bear the cost of building and maintaining the infrastructure the airport sponsor determines is necessary to provide access to the airfield from property located adjacent to or near the airport;
- Maintain the property for residential, noncommercial use for the duration of the agreement;
- Prohibit access to the airport from other properties through the property of the property owner; and
- Prohibit any aircraft refueling from occurring on the property.

**Existing Mixed-Use Properties:** “The FAA is aware of some existing residential through-the-fence agreements that permit the co-location of homes and aeronautical businesses (mixed-use properties). In these cases, FAA will require airport sponsors to execute two separate agreements with the homeowner. One agreement must address the duration, rights, and limitations of the homeowner’s residential through-the-fence access, and the second agreement must be consistent with FAA’s current policies on commercial through-the-fence activities and ensure the off-airport business does not result in unjust economic discrimination for on-airport aeronautical service providers.”

**Authorized Access:** Section 136 states “residential property owners must prohibit access to the airport from other properties through the property of the property owner. The FAA interprets this as a prohibition on unauthorized access to the airport; this condition does not necessarily prescribe a scenario in which all residential through-the-fence users must have their own dedicated access point to enter the airport. Compliance with this condition will require that access agreements stipulate that residential through-the-fence access agreement holders are prohibited from permitting unauthorized users (any individual not a party to an access agreement with the airport sponsor) to pass through or ‘piggy back’ on

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<sup>1</sup> FAA Compliance Guidance Letter 2013-01-FAA Review of Existing and Proposed Residential Through-the-Fence Access Agreements (July 16, 2013)



their access in order to enter the airport. The FAA expects airport sponsors to establish their own policies, restrictions, and/or requirements to be imposed on fly-in guests who taxi from the airport to visit off-airport residents.”

Potential residential Through-the-Fence impacts include violations to:<sup>2</sup>

- Grant Assurance 5, Rights and Powers by making it difficult for an airport sponsor to control airport access and use its property;
- Grant Assurance 19, Operations and Maintenance by limiting a sponsor’s ability to ensure safe airport operations;
- Grant Assurance 21, Compatible Land Use by weakening a sponsor’s ability to address incompatible land uses;
- Grant Assurance 22, Economic Nondiscrimination by creating unjustly discriminatory conditions for tenants on the airport;
- Grant Assurance 23, Exclusive Rights by granting an exclusive right; and
- Grant Assurance 24, Fee and Rental Structure by affecting a sponsor’s ability to be self-sustaining.

The FAA may consider the following for issues of noncompliance:

- Decline to invest discretionary AIP funds at the airport;
- Place the airport into pending non-compliance status;
- Issue a formal finding of non-compliance, preventing the airport sponsor from receiving entitlement or discretionary AIP funds; and
- Remove the airport from the NPIAS System.

### Conclusion

The airport sponsor is obligated to report to the FAA Airports Division any existing arrangements that grant access to the airport from off-airport areas, including a description of the circumstances. It is then up to the Regional Airports Division to determine if the agreement is accepted or in violation of federal regulations.

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<sup>2</sup> FAA Compliance Updates by Steve Engebrecht (September 23, 2014)  
([http://www.faa.gov/airports/airport\\_compliance/residential\\_through\\_the\\_fence/](http://www.faa.gov/airports/airport_compliance/residential_through_the_fence/))



14  
OWNER  
PASQUALE & JACQUIE L  
BARONE  
1.23 ACRES  
COUNTY ZONE : RR-1  
PARCEL : 02N10E11A-2100

12  
OWNER  
AMIT & GAIL  
DAGAN  
0.89 ACRES  
COUNTY ZONE : RR-1  
PARCEL : 02N10E11A-2001

11  
OWNER  
DEBRA K  
KING  
0.93 ACRES  
COUNTY ZONE : RR-1  
PARCEL : 02N10E11A-2000

13  
OWNER  
SHANE & SANDRA  
OSTLER  
0.93 ACRES  
COUNTY ZONE : RR-1  
PARCEL : 02N10E11A-2002

10  
OWNER  
TIMOTHY J U-2 ET AL  
O'DONNELL  
0.97 ACRES  
COUNTY ZONE : RR-1  
PARCEL : 02N10E11A-1900

9 \*  
OWNER  
WILLIAM E & REBECCA J ET  
VEATCH  
0.92 ACRES  
COUNTY ZONE : RR-1  
PARCEL : 02N10E11A-1800  
RTTF

8 \*  
OWNER  
JEREMY J & KARA CHRISTINE  
YOUNG  
0.94 ACRES  
COUNTY ZONE : RR-1  
PARCEL : 02N10E11A-1600  
RTTF

7  
OWNER  
LYLE L & MARES  
THORNTON  
0.50 ACRES  
COUNTY ZONE : RR-1  
PARCEL : 02N10E11A-1400

6  
OWNER  
NANCY E & PEPITONE  
HUBERT  
0.45 ACRES  
COUNTY ZONE : RR-1  
PARCEL : 02N10E11A-1300



\* EXISTING THROUGH THE FENCE USE AGREEMENT IN PLACE







### OTHER FEDERAL CONTRACTING AND PROCUREMENT DOCUMENTS

When an airport sponsor accepts an FAA AIP grant, they agree to adhere to all applicable federal contracting and procurement requirements. Adherence to advisory circulars is required for use in AIP funded projects. Included in each grant request is a federal funding checklist that identifies the requirements an airport should consider before accepting the grant. The following items are noted in the checklist:

- ALPs should be up to date;
- Exhibit A Property Map may need to be updated if acquiring additional property;
- Land Inventory may need to be updated if land has been recently acquired with federal assistance;
- Airports must hold good title to the airport landing area;
- Appropriate signage and markings must be in place;
- Runway Protection Zones and approach surface deficiencies must be identified and steps to address deficiencies must be noted;
- Runway Safety Areas must meet FAA standards if planning a runway project;
- Disadvantaged Business Enterprise program goals must be met on projects of more than \$250,000;
- Procedures should be in place to handle bid protests;
- Open AIP grant projects need to be identified;
- Project closeout forms must be submitted within 90 days of work completion;
- A “Certification of Economic Justification” must be included for routine pavement maintenance projects;
- A “Revenue Generating Facility Eligibility Evaluation” must be completed for hangar construction or fueling facilities;
- A “Reimbursable Agreement” and “Non-Fed Coordination” must be completed for navigational aid projects; and
- A “Relocation Plan” must be completed if a project requires residences or businesses to be relocated.



## SPECIAL CONDITIONS

In addition to the standard grant assurances discussed above, the state or the FAA may require “Special Conditions” to individual grants, which supplement or expand the standard grant assurances. Special Conditions are unique to an individual airport and can be project or administrative in nature. Airport sponsors need to be aware of such conditions that may be applied to their airport.

## MULTI-JURISDICTIONAL CHALLENGES

In some instances, airports are jointly owned and operated by more than one airport sponsor. In other instances, airports may be located within multiple jurisdictions. While the official airport sponsor is ultimately responsible for adherence with grant assurances, the actions, or inactions of surrounding jurisdictions may impact the airport sponsor’s ability in meeting its obligations. This is particularly true with land use compatibility issues around airports. As a result, it is important in either circumstance that all jurisdictions affected by the airport understand the operational needs and complexities of having an airport within its jurisdiction. Mutual agreements addressing airport operational or land use protection needs, or other cooperative measures are recommended by all jurisdictions to both protect the functionality of the airport and the safety and well-being of airport users and neighbors.

# Solid Waste Recycling Plan

## Introduction

This section of the chapter discusses solid waste generation at the Airport and what recycling options are used and available. The layout of this section is outlined below:

- Waste Audit;
- Recycling Feasibility;
- Plan to Minimize Solid Waste Generation;
- Operational and Maintenance Requirements;
- Waste Management Contracts;
- Potential for Cost Savings or Revenue Generation; and
- Future Development and Recommendations.





## Waste Audit

Minimal waste is generated on site due to the size of the Hood River Airport. Sources of waste on site include private conventional hangars and T-hangars, the commercial hangars, the Classic Wings Aero Services FBO and, while not currently available, agricultural spraying operations.

Hood River Garbage and Recycling currently provides trash and recycling hauling service for the Airport FBO. All other Airport tenants are responsible for their own solid waste disposal and recycling.

### WASTE DISPOSAL

As noted above, the Port of Hood River contracts with Hood River Garbage and Recycling solely for disposal of solid waste and recycling generated by the FBO. This contract provides for commingled recycling including aluminum, tin cans, plastic containers, paper, glass, and cardboard. Trash is picked up every Wednesday in a 1 1/2-yard container and hauled to The Dalles landfill. Commingled recycling is provided as is glass recycling. Two 14-gallon recycling bins are provided and recycling materials are picked up every other Wednesday. These waste materials are hauled to The Dalles landfill located about 34 miles west of the airport. The remaining tenants are responsible for taking care of their own waste disposal and recycling. No State or Federal requirements apply to the waste generated.

The Port has also developed a “Facility Management Plan for the Agricultural Spraying Operations at the Ken Jernstedt Airfield,” identifying the specific procedures for handling solid waste generated by those operations. At this time, however, there is no agricultural spraying operation located on the field.

The Port requires that the following best management plan guidelines be implemented for handling of pesticides by the agricultural spraying operator (excerpted from the Facility Management Plan dated May 16, 2011):

- All pesticides and pesticide spray solutions must be stored under dry conditions;
- Containers must be identified with proper EPA container labeling and manufacturers’ use instructions;
- Products must be stored in their original containers unless they are a mixed spray solution (which must be appropriately labeled);
- The storage location must be a locked building with an impervious floor;
- No storage of pesticide products is allowed outside of the hangar under any circumstances;
- An inventory of pesticides is required to be posted in the building along with each product’s *material safety data sheet* and updated as the inventory changes through product use or product addition;



- Spill kits must be present, readily accessible, and clearly marked;
- The spray applicator/lessee shall provide the fire department with a list of the types of pesticides and quantities located at the lease site annually. If significant changes in the quantity or types of pesticides occur, the spray applicator/lessee immediately shall provide the fire department with an updated inventory list;
- Incompatible chemicals will not be stored together;
- An Emergency Response Plan is required; and
- No storage of spray product outside of the hangar is allowed except for brief periods when mixing, loading, and rinsing operations are underway as part of an active, daily spraying operation.

#### Mixing of Spray Solutions:

- Pesticide labels shall be reviewed prior to opening containers to assure that the spray applicator/lessee is familiar with the current directions for the product's use and handling;
- Mixing shall be conducted on an impervious surface that facilitates rapid spill cleanup and prevents any migration to the environment. The mixing process is required to be done only under the awning so that any pesticide residue is not mobilized by later precipitation;
- No storage of spray product outside of the hangar is allowed except for during the day when mixing, loading, and rinsing operations are underway as part of an active, daily spraying operation (that is, when the facility is attended);
- Pesticide containers are required to be, at a minimum, triple rinsed and the rinsate added to the spray solution. Container disposal is discussed in the section titled Waste Disposal, below; and
- Only enough spray solution shall be mixed to accommodate a single day's flight operation.

#### Loading of Spray Solutions:

- Loading from the mixing tote to the aircraft's spray tanks must be done on an impervious surface. The existing roll-over flexible containment pad must be placed over the impervious surface and beneath the aircraft's tanks and spray booms to catch any leaks or drips;
- Absorbent pads (or drip buckets) are required to be placed under any hose connections found between the tank, the pump, and the aircraft; and
- Leaks and spills encountered during this loading operation must be cleaned up immediately.



### Equipment Cleanup:

- Upon parking the aircraft after the rinse flight, any dripping solution from the spray booms (or other drips) must be captured in drip pans and not allowed to contaminate the ramp or parking area.

### Pesticide Waste Disposal:

Any wastes generated during cleanup that are contaminated with a pesticide and that cannot be properly used for the intended purpose of that pesticide (e.g., spraying onto the appropriate crop) must be properly disposed according to applicable regulations.

### Spills and Cleanup:

Any spills (including hose leaks or other drips) that occur during the facility's operation (e.g., storage, mixing, and loading procedures) must be immediately cleaned up to prevent pesticides from entering the nearby soil, surface water, and groundwater. The spray applicator/lessee must have an Emergency Response Plan (ERP) prepared; the ERP shall be readily accessible at all times; and the spray applicator/lessee must train staff on the ERP's implementation. Methods of stopping the spill and containing the liquid (such as constructing temporary soil berms) shall be identified in the ERP.

### Waste Disposal:

Should a spill occur, any pesticide wastes created by the cleanup must be placed in an appropriate container and labeled "pesticide wastes" and marked with the date the waste was generated. The name of the pesticide shall be included on the label. This also is necessary for any other pesticide-contaminated materials that are designated as wastes.

Empty pesticide containers must be at least triple rinsed before they can be designated as nonhazardous and disposed of in a landfill or recycled. Paper bags need to be cut open and completely emptied before being landfilled. Burning paper bags is NOT an option! Plastic containers, after being punched with holes to prevent reuse, shall be either landfilled or recycled. Metal containers must be punctured (small containers) or the top and bottoms removed from larger containers before being crushed and recycled (or landfilled). Glass containers, after rinsing, shall be either recycled or landfilled. Some containers can be returned to the manufacturer for reuse. The manufacturer should be contacted prior to compromising the container.



### **MAINTENANCE WASTE**

Another source of waste is generated by maintenance activities (yard debris). The infield lawn is not watered however the turf runway is irrigated. Turf areas of the airfield are mowed by Port staff once or twice per month. All lawn clippings are left in place.

WAAAM conducts a number of events throughout the year, including an annual fly-in that is held the weekend after Labor Day, each September. However, these WAAAM events are held off-airport resulting in no unique, short-term spikes in waste generated on the Airport.

### **CONSTRUCTION WASTE**

Any waste and debris during construction would have to be removed at the Contractor's expense.



## Recycling Feasibility

Currently, recycling services available to tenants at the Airport are: aluminum, tin cans, plastic containers, paper, glass, and cardboard. The Dalles landfill can accept solid waste items beyond those accepted at the Airport, and the Hood River County website provides a list of local contacts for other recyclable items.

### CURRENT PRACTICES

According to OAR 340-090-0040, cities with a population greater than 4,000 residents must establish some sort of recycling option. The U.S. Census Bureau estimated the population of the City of Hood River to be 7,379 persons in 2013. With a population exceeding the 4,000-person threshold, the City is required to provide weekly receptacles, collection service, or an education and promotion program to its residents. However, the Hood River Airport is located in Hood River County and is owned by the Port of Hood River.

The Port has contracted with Hood River Garbage and Recycling to accommodate solid waste generated by FBO operations and to handle their recyclables. Individual airport hangar tenants are responsible for contracting for solid waste disposal and recycling of materials generated in each hangar. Hood River Garbage and Recycling provides services for commingled recycling. Disposal of any non-standard recyclables will also be the tenant's responsibility and can be delivered to The Dalles landfill.

## Plan to Minimize Solid Waste Generation

Oregon's 1991 Recycling Act set a goal for each county to recycle a certain percentage of their total waste generated. This Act required each county to recycle specific percentages of their total waste generated by 1995. Revised statewide and individual county material recovery goals were established in 2001, under HB 3744. The revised goal for Hood River County's recovery rate was set at 25% for 2005 and 2009.

The statutes also established programs whereby the County can implement efforts to reduce solid waste generation and earn "credits" toward recovery rates mandated by the state of Oregon. In 1997, House Bill 3456 created three programs that a watershed—in this case, Hood River County—can choose to implement:

- Waste Prevention Program;
- Reuse Program; and
- Residential Composting Program.

For each program, a two percent "credit" can be obtained by creating an education or promotional campaign and adhering to at least two components listed by the Oregon Department of Environmental Quality (ODEQ). Up to six percent can be deducted from the County's material recovery and waste generation rate if the County decides to participate in all three programs (ODEQ no date). Hood River





County was one of eighteen counties within the state of Oregon to receive recovery credits allowable as of 2013. Hood River County is required to maintain a 25 percent recovery rate (2009) and currently (2013) maintains a recovery rate of 39.4%, including the six percent credit. Hood River County does not currently have a policy to eliminate wasteful practices or require departments to buy reusable, recyclable, or repairable products and supplies.

#### **METHODS TO REDUCE SOLID WASTE**

Because little waste is produced at the Airport, there are limited opportunities to reduce solid waste generation. However, the Airport should still have a goal to reduce the amount of solid waste generated. Even though the Airport is not responsible for waste generated by hangar tenants, informational brochures on recycling opportunities developed by the County could be distributed to all of the hangar tenants to encourage them to recycle their waste.

#### **PHYSICAL CONSTRAINTS**

While Hood River County has a mainly rural population, there are no significant constraints as Hood River Garbage and Recycling is a solid waste transfer station and recyclable materials receiving center.

### **Operational and Maintenance Requirements**

Operational and maintenance requirements at the Airport are minimal. The Port of Hood River is responsible for the costs associated with mowing the turf areas of the airfield. The turf runway is irrigated and turf areas are mowed between once or twice per month with the grass clippings left in place. (Approximately 25% of the lawn's total fertilizer needs are provided by the grass clippings, creating a healthy turf environment - Starbuck 1999).

### **Waste Management Contracts**

Leases provided by the Port were reviewed for information regarding waste and recycling. The hangar leases do not provide specific guidelines with regard to solid waste disposal and recycling. Communications with Port staff (e-mail from Anne Medenbach, July 29, 2015) indicated that tenants are responsible for their own hangar waste and no mention of the opportunity for recycling is included in these leases. No hauling or landfill contracts were available.

To promote recycling opportunities, language could be added to the hangar leases encouraging tenants to use the services of Hood River Garbage and Recycling approximately 2 – 1/2 miles from the Airport and to be conscientious of any waste generated in their hangars.



## Potential for Cost Savings or Revenue Generation

The potential for cost savings to the Port is limited since individual tenants are responsible for costs associated with solid waste disposal and recycling.

Revenue generation is also limited due to the small amount of waste generated. Any potential for additional revenue would accrue to the individual tenants since they contract with the waste disposal and recycling provider.

## Future Development and Recommendations

### FUTURE DEVELOPMENT

Future development projects at the Airport include FBO/Terminal construction, tenant improvements, landside and airside facility development, and rehabilitation projects. The demolition and waste associated with each of these projects would be the responsibility of the Contractor performing the work. It is assumed that the demolition waste would be taken to the County Landfill.

A periodic review of the Airport's solid waste plan needs to be implemented to allow for future development.

### RECOMMENDATIONS

#### Immediate

An immediate recommendation would be to continue with the existing practice of leaving lawn clippings in place, which saves money on disposal fees at the transfer station while preserving the aesthetics of the infield area.

#### Short-Term

A short-term recommendation would be to add a statement into hangar leases advising tenants of the recycling options available through Hood River Garbage and Recycling and to encourage tenants to recycle and minimize waste. Additionally, informational brochures on recycling opportunities developed by the Tri-County Waste and Recycling Program could be distributed to all of the hangar tenants to encourage them to recycle their waste. Copies of brochures are attached in **Appendix E**.

#### Ongoing

An ongoing recommendation would be to reevaluate the Airport's solid waste plan, especially after any development has occurred. An increase in hangars may increase the amount of waste generated and glass recycling—among other items—may become warranted.



### Modifications to Specifications

Language in construction contract documents could be added that encourages the Contractor to recycle waste at Hood River Garbage and Recycling and to minimize waste caused by construction activities as much as practical.

## References

Tri- County. No date. “Solid Waste” Website: <http://www.tricountyrecycle.com/>

County of Hood River Solid Waste Ordinance (Solid Waste Ordinance). *Ord 115, 1981; 2001*

*Hood River County Health and Safety, Section 8.08.120 Disposal of Refuse and Solid Waste,*  
Website: [http://www.co.hood-river.or.us/vertical/sites/%7B4BB5BFDA-3709-449E-9B16-B62A0A0DD6E4%7D/uploads/Nuisances\\_Code\\_Chapter\\_8.08\\_-\\_Health\\_and\\_Safety\\_Code.pdf](http://www.co.hood-river.or.us/vertical/sites/%7B4BB5BFDA-3709-449E-9B16-B62A0A0DD6E4%7D/uploads/Nuisances_Code_Chapter_8.08_-_Health_and_Safety_Code.pdf)

Oregon Department of Environmental Quality (ODEQ). No date. “Waste Prevention and Reduction.”  
Website: <http://www.deq.state.or.us/lq/sw/twopercent/index.htm>

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Starbuck, Christopher J. Department of Horticulture. University of Missouri-Columbia. 1999. “Grass Clippings, Compost and Mulch: Questions and Answers.” Website.

<http://extension.missouri.edu/explorepdf/agguides/hort/g06958.pdf>

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### Port of Hood River – Waste and Recycling

<http://www.tricountyrecycle.com/managing-my-materials/recycle/recycling-home/recycle-home-hood-river>

<http://www.wasteconnections.com/>

<http://ci.hood-river.or.us/pageview.aspx?id=39061>

Household Hazardous Waste Management Plan

<http://www.tricountyrecycle.com/about-us>



## Population

<http://quickfacts.census.gov/qfd/states/41/4134900.html>

## Waste Reduction and Reuse

<http://www.tricountyrecycle.com/managing-my-materials/reuse>