EUGENE AIRPORT

AIRPORT LAYOUT PLAN

APRIL 2018

DRAFT

Prepared by RS&H for Eugene Airport

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CHAPTER 6

AIRPORT LAYOUT PLAN

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6.1 INTRODUCTION

This chapter presents the Airport Layout Plan (ALP) drawing set, which has been produced as part of this Airport Master Plan Update process. Additional sheets were added compared to the previous ALP set either because ALP requirements have changed since the previous ALP was submitted to the FAA for approval, or by the direction of the Airport to show additional detail in areas not previously shown. The components of this chapter include the purpose of the ALP drawings, compliance with FAA design standards, revisions to the ALP since the previous ALP, and reduced-sized inserts of the preliminary ALP drawing set approved by EUG.

The ALP drawing set serves as a visual representation of the Airport's existing facilities and planned future development. The preferred alternatives and the overall development plan that was derived in **Chapter 4, Airport Development Alternatives**, are included in the ALP, along with any other facility changes that have taken place since the last ALP was created. The drawing set was prepared using several FAA guidelines and checklists, which included the following:

- FAA Advisory Circular 150/5300-13A Change 1, *Airport Design*
- FAA Advisory Circular 150/5070-6B Change 2, *Airport Master Plans*
- FAA ARP SOP 2.00 *Standard Procedures for FAA Review and Approval of Airport Layout Plans (ALPs)*
- FAA ARP SOP 3.00 *Standard Procedures for FAA Review of Exhibit 'A' Airport Property Inventory Maps*

The ALP requires FAA approval, independent of the Master Plan. As such, the review of the ALP drawing set is accomplished through several intermediate steps, including reviews by the Airport, the FAA Airports District Office (ADO), and several other FAA offices involved in the associated airspace review.

The ALP drawing set serves several needs for the Airport, the City of Eugene, Lane County, and the FAA. As presented in the FAA Advisory Circular 150/5070-6B, *Airport Master Plans*, there are five primary functions of the ALP that defines its purpose:

- FAA-approved ALPs are necessary in order to receive financial assistance under the terms of the Airport and Airway Improvement Act of 1982 (AIP), and specific passenger facility charge actions. The maintenance of, and conformity to the plan is a grant assurance requirement upon which Federal funds have been provided to EUG under the AIP program and previous programs. Previous programs include the 1970 Airport Development Aid Program (ADAP) and Federal Aid Airports Program (FAAP) of 1946.
- The ALP creates a blueprint for airport development by depicting proposed facility improvements that are consistent with the strategic vision of the Airport sponsor. They also provide a guideline by which the sponsor can assure that development maintains airport design standards and safety requirements, and is consistent with airport and community land use plans.

- The ALP serves as a public document that is a record of aeronautical requirements, both present and future, and as a reference for community deliberations on land use proposals and budget resource planning.
- The approved ALP provides the FAA with a plan for airport development. This will allow compatible planning for FAA-owned facility improvements at the Airport, and help the FAA to anticipate budgetary and procedural needs. The approved ALP will also give the FAA the information it needs to ensure airspace is protected for planned facility or approach procedure improvements.
- The ALP provides a working tool for use by the airport sponsor, including development and maintenance staff.

6.2 AIRPORT COMPLIANCE WITH FAA DESIGN STANDARDS

The FAA provides airport design standards to ensure safe and efficient airport operations. The primary guidance is contained in FAA Advisory Circular (AC) 150/5300-13A Change 1, *Airport Design*. The master planning process also relies on numerous other FAA and Federal agency documents, including, but not limited to:

- Federal Aviation Regulations Part 77, *Objects Affecting Navigable Airspace*
- FAA Advisory Circular 150/5340-30G, *Design and Installation Details for Airport Visual Aids*
- FAA Advisory Circular 150/5340-1L, *Standards for Airport Markings*
- FAA Order 8260.3C, *United States Standards for Terminal Instrument Procedures*
- FAA Order 8260.19H, Flight Procedures and Airspace
- FAA Order 6850.2B, *Visual Guidance Lighting Systems*
- FAA Order 5200.8, *Runway Safety Area Program*
- Engineering Brief No. 75, *Incorporation of Runway Incursion Prevention into Taxiway and Apron Design*

Since the previous master plan was completed, the FAA has revised the advisory circular related to airport design. The current Advisory Circular, 150/5300-13A, Change 1 *Airport Design*, replaced the advisory circular used in the previous master plan, 150/5300-13 *Airport Design*. Notable changes include, but are not limited to, the introduction of taxiway design group and fillet design changes. These changes in design standards have made portions of the airfield to be non-standard. The proposed development within the 20-year planning period addresses these non-standard conditions and makes the Airport compliant with current FAA design standards by the end of the planning period.

6.3 MODIFICATION TO STANDARDS

The previous Airport Master Plan identified no modification to standards. Since the previous master plan, The FAA has implemented FAA Order 5300.1G *Modifications to Agency Airport Design, Construction and Equipment Standards*, replacing Order 5300.1F. This order establishes the process for initiation, revision, coordination and management of MOS applicable to airport design construction, and equipment procurement projects. Based on the type of modification to standard being submitted, additional Safety Risk Management panels may be required. In addition, any MOS should be submitted to the FAA prior to

review and approval of an ALP. The proposed development within the 20-year planning period meets current FAA design standards, and does not require any MOS to be filed.

6.4 AIRPORT LAYOUT PLAN DRAWINGS SHEETS

The Airport Layout Plan set graphically illustrates the proposed development of the Airport over the 20-year planning period, while also providing general guidance for the ultimate vision. An ALP set is required by the FAA for airports to be considered for future funding, and to be compliant with the airport's Federal Grant Assurances. The complete ALP set for the Eugene Airport consist of the following sheets, defined in the following subsections.

6.4.1 Cover Sheet (Sheet 1)

This sheet denotes the Airport name and an index chronicling the ALP drawing sheets contained in the drawing set. The sheet also provides an airport location and vicinity map, as well as a title block organized to include approval signatures and a history of ALP revisions.

6.4.2 Facilities Layout Plan (Sheet 2)

The Facilities Layout Plan provides an uncomplicated view of existing Airport features including runways, taxiways, runway protection zones, roadways, and boundaries. The limited amount of data included on the sheet allows better visibility and understanding of the primary facilities and their relation to other key features.

6.4.3 Airport Data Sheet (Sheet 3)

This sheet provides data tables containing detailed information about the Airport's existing and anticipated conditions. This sheet also provides critical information about the Airport's runways and safety area dimensions. Major components on this sheet include:

- Airport Data Table
- Runway Data Table
- NGS Monument Data Table
- Declared Distance Table
- Wind Rose Data

6.4.4 Airport Layout Plan Drawing (Sheet 4)

The Airport Layout Plan Drawing is a key document which serves as a graphic representation of existing and future Airport facilities. The future Airport facilities include those that are scheduled to be completed during the planning period, as well as those that make up the Airport's ultimate development. One of the primary purposes of this drawing is to depict those areas that future facilities are planned to be constructed upon so that the associated land can be reserved for future and ultimate use.

The drawing also reflects changes to physical features on and in the vicinity of the Airport that may affect navigable airspace or the ability of the Airport to operate. Development shown on the ALP corresponds to the Airport's Capital Improvement Program (CIP) for the 20-year period. Specifically, the sheet depicts the limits of the Airport property interests, land uses, and configuration of facilities in compliance with

geometric design separation and clearance standards. It also includes a plan view of the FAR Part 77 approach surface for each runway end along with identifying navigational aid (NAVAID) facilities.

Additionally, the ALP drawing includes the dimensional information in order for recommended development to be designed in accordance with FAA planning and design specifications outlined in FAA Advisory Circular 150/5300-13A Change 1, *Airport Design* and 150/5070-6B Change 2, *Airport Master Plans*. Dimensional information aids users of the ALP drawing to determine and plan for adequate separation between future development and existing and future runways, taxiways, taxilanes, and associated airspace. Lastly, the sheet provides a location to chronicle the ALP reviewer and approval stamps/letter(s).

6.4.5 Ultimate Airport Layout Plan Drawing (Sheet 5)

One of the goals of this study was to establish a plan for development beyond the 20 year planning period. In creating solutions for the 20-year planning period, a very long-term outlook is needed in order to establish a vision for the Airport. During the alternatives process, this planning team along with members of airport staff examined each concept to ensure development made in the planning period was in line with the vision of the Airport.

The Ultimate Airport Layout Plan Drawing depicts the configuration of the Airport beyond the 20-year planning period. This drawing is intended to illustrate the long term vision of the Airport. Establishing a vision ensures that development in the planning period will not limit the growth and development toward the Airport vision. Additionally, this sheet is intended to aid in persevering land needed for those developments that are far outside of the planning period.

The ultimate runway length was carried forward from the previous master plan in order to preserve land for future runway development. The ultimate length of Runway 16R-34L is 9,200 feet, and 6,500 feet for Runway 16L-34R.

6.4.6 Air Carrier Terminal Area Plan (Sheet 6)

The Air Carrier Terminal Area Plan sheet is centered on the area surrounding the commercial passenger terminal building. The sheet depicts existing and future facilities as well as dimensional criteria involving runway and taxiway surfaces. Two expansions to the passenger terminal building are shown on this sheet. One of those expansions is a ticketing and baggage expansion on the north side of the building. The other expansion, also on the north side, is a concourse expansion. The concourse expansion is supported with additional apron along with a taxilane (Taxilane K). This concourse expansion is shown as Concourse C on the sheet. The concourse and apron expansion require existing hangars to be removed and located to another location.

Airside improvements shown on the sheet include three aircraft hard stands and a centralized deicing facility with the ability to accommodate three ADG III aircraft are proposed adjacent to the existing location of Taxiway D and K. The location of the deicing facility requires the existing centerfield windcone to be relocated to a new location. It is recommended that traffic indicators be installed when the centerfield windcone is relocated. Finally, a future partial parallel taxiway (Taxiway G) is planned for

adjacent to Taxiway A along with an additional remain-overnight parking (RON) position on the proposed apron, south of Taxiway F.

In regard to landside improvements, the loop road along with the adjacent parking is modified. The airport entrance is reconfigured with a roundabout, and the rental car facility is expanded to the south. Short-term and long-term parking expand within the boundaries of the proposed loop road. A cell phone lot is proposed off of Northrup Drive and the existing employee parking lot will be relocated and expanded to the west. Before the expansion of the employee parking can occur, the existing fuel facility must be relocated to the future location off of Boeing Drive. The future development also programs space for commercial vehicle staging.

6.4.7 South General Aviation Terminal Area Plan (Sheet 7)

The South General Aviation Terminal Area Plan depicts existing and future general aviation facilities on the southern portion of the Airport's developed area, as well as taxiway infrastructure improvement. Upgrades to the segment of the future taxiway between existing Taxiway G and Taxiway H are shown designed to accommodate ADG III aircraft. A future aircraft run up area is shown between Taxiway H and Taxiway A9, adjacent to Taxiway A. The run up is designed to accommodate small piston aircraft, while providing proper ADG III separation for aircraft taxiing on Taxiway A. The placement of the run up area requires the perimeter roadway to be realigned.

The sheet also depicts the preferred location of the future fuel facility. Adjacent to the future fuel facility is a future landside maintenance facility, which is planned to be used primarily for equipment and material storage. The site will include vehicle parking along with an above ground fuel tank, which will serve airport maintenance equipment.

6.4.8 North General Aviation Terminal Area Plan (Sheet 8)

The North General Aviation Terminal Area Plan depicts existing and future general aviation facilities on the northern portion of the Airport, as well as dimensional criteria involving runway and taxiway surfaces. The sheet depicts the future build out of the East General Aviation Ramp (EGAR). Buildings 47, 52, 55, and 57 are displaced because of the apron and concourse expansion. These buildings are relocated and shown as buildings 92, 93, 94 and 95 in the future condition.

During the evaluation process of identifying non-standard conditions on the airfield, the location of Taxiway R was determined to be non-standard. The configuration of Taxiway R and Taxiway B3 allows for direct apron to runway access. The preferred solution to address the non-standard condition was to relocate Taxiway R to the north as shown on this sheet. Similarly, the location of Taxiway B2 was found to increase potential for runway incursion, and is proposed to eventually be relocated to the north.

6.4.9 FAR Part 77 Airspace Surface Drawing (Sheets 9-10)

These scaled drawings identify obstacle identification surfaces for the full extent of all airport development. The surfaces define the limits of recommended land use control for the height of objects surrounding the Airport's FAR Part 77, Imaginary Surfaces. Airspace features corresponding with the runway dimensions are depicted in the ALP Drawing. A digital U.S. Geological Survey map is used as the

base map for the drawings in which each of the FAR Part 77, Subpart C, Imaginary Surfaces (Primary, Approach, Transitional, Horizontal, and Conical) are depicted. These drawings depict the existing and future airspace configuration for the Airport.

The sheets also provide numerical data for all obstructions visually depicted in plan view of the airspace surface drawing. Each obstruction is identified with a description, a top elevation, the surface the object is penetrating, the surfaces' elevation at the penetrating point, the amount of penetration, and a recommended disposition. Obstructions vary from vegetation to man-made objects. Some objects are defined as fixed by function, such as NAVAIDS, because of current sitting requirements and the role they play in ensuring the safe navigation of flight. Potential obstructions are identified by a negative number in the "Part 77 Surface Penetration (+)" column. An example obstruction table is shown in **Table 6-1**. The example shows an object penetrating the Part 77 transitional surface by 29.3 feet, with a proposed disposition to trim the tree.

TABLE 6-1
EXAMPLE OBSTRUCTION TABLE

Obstruction Table							
Object No.	**Object Description**	**Ground Surface Elevation (FT.)**	**Object Top Elevation (FT.)**	**Part 77 Surface Elevation**	**Part 77 Clearance (+ Penetration) (- Clearance)**	**Part 77 Surface Violation**	**Proposed Disposition**
EX.	Tree	380.3	390.6	361.3	29.3	Transitional	Trim

Source: RS&H, 2018

6.4.10 Runway Inner Approach Plan and Profile (Sheets 11-14)

Sheets 11 through 14 provide a plan and profile view of each of the Airport's runway approach surfaces. These sheets provide a more detailed view of the first 5,200 feet for the precision runways, Runway 16R and 16L, and of the first 3,600 feet for the non-precision runways, Runway 34R and 34L. Man-made penetrating obstructions are depicted in blue and identified with a top elevation. Additionally, the runway protection zone, navigational aids, and roadways are identified, and applicable data is provided. Roadways are depicted with a solid line that intersects the extended runway centerline, and dashed lines represent the roadway intersection to the edge of the Part 77 approach surface. Roadways intersecting the edge of the Part 77 surface may be above or below the grade of the extended centerline.

The obstruction analysis performed during this master plan study identified multiple obstructions off of the approach end of Runway 16L, as shown on Sheet 13 of the ALP set. The golf course net penetrates the approach surface. In order to mitigate the obstruction, coordination with the land owner would need to take place in order to determine an efficient solution. The poles that support the netting could be retrofitted with FAA compliant obstruction lights or the net could be shortened to be underneath the approach surface.

In addition, the location of the existing power lines penetrates the transitional surface for Runway 16L. It is recommended that the Airport work with local utility companies to either bury or relocate the existing lines to be underneath all Part 77 surfaces.

6.4.11 Existing On-Airport Land Use Plan (Sheet 15)

The Existing On-Airport Land Use Plan depicts the existing land use and zoning within the airport property boundary. This drawing also depicts noise contour lines at 65 and 75 Day-Night Average Sound Level (DNL). The noise contour lines were generated based on the aircraft fleet mix determined as part of this study, as detailed in **Table 6-2** below. The updated noise contours for 2016 indicate that both the 65 and 75 DNL counters remain within airport property.

TABLE 6-2
AIRPORT FLEET MIX - 2016

		2016		
Aircraft	**Stage**	**Day**	**Night**	**Total**
Q400	3	14	4	18
MD-86	3	4	-	4
EMB-175/190	3	3	1	4
CRJ-200/700/900	3	6	2	8
737-700/900	3	4	-	4
A320	3/4	4	2	6
A319	3/4	2	-	2
Single Engine	-	67	5	72
Twin Engine	-	21	3	24
Jet	-	25	2	27
Total		**150**	**19**	**169**

Source: RS&H Analysis, 2016

Currently, there are seven land uses for Eugene Airport. The most predominant land use is aeronautical. The sheet depicts multiple areas of general aviation and corporate facilities scattered in different areas on the Airport. Commercial terminal operations are between two pockets of general aviation facilities. The existing landside facility is oriented based on the previous runway configuration. Support facilities are located in multiple locations including adjacent to Hollis lane, between the south general aviation area and terminal loop road, and between the terminal and north general aviation area. Generally, the land uses surrounding the Airport are rural residential, agricultural and light to medium manufacturing land uses.

6.4.12 Future On-Airport Land Use Plan (Sheet 16)

One of the focuses of this master plan study was to envision the airport land use pattern beyond the 20-year planning period. The Future On-Airport Land Use Plan redefines parcels of land within the airport property boundary in alignment with the ultimate vision of the Airport.

The master plan process examined existing land uses and determined a strategic plan to utilize the parcels within the Airport's property line to the fullest extent possible. The outcome identified a new land use, Aeronautical/Non Aeronautical Revenue. The land south of Green Hill Road along with a portion of land adjacent to Northrup Drive is revised from aeronautical to Aeronautical/Non-Aeronautical Revenue in the future. Additionally, the commercial terminal land use is expanded. The greenfield site north of Hollis Lane is revised from Aeronautical to General Aviation and General Aviation/Corporate Mix. Support functions

which were north of the terminal building are relocated in the future to the remote landside facility or to the support land use off of Hollis Lane.

The drawing also depicts noise contour lines at 65 and 75 DNL based on the forecast aircraft fleet mix for 2025. **Table 6-3** details the breakdown of the fleet mix which was used to develop the forecasted DNL levels, as discussed in the Forecast Chapter. The 65 DNL is forecasted to extend slightly to the north of the existing airport property line, north of Runway 16R-34L. Future land acquisition is planned for in this area, as denoted on the drawing.

TABLE 6-3
AIRPORT FLEET MIX - 2025

		2025		
Aircraft	**Stage**	**Day**	**Night**	**Total**
Q400	3	14	4	18
MD-86	3	-	-	0
EMB-175/190	3	9	3	12
CRJ-200/700/900	3	2	2	4
737-700/900	3	6	-	6
A320	3/4	10	2	12
A319	3/4	1	1	2
Single Engine	-	66	5	71
Twin Engine	-	21	3	24
Jet	-	25	2	27
Total		**154**	**22**	**176**

Source: RS&H Analysis, 2016

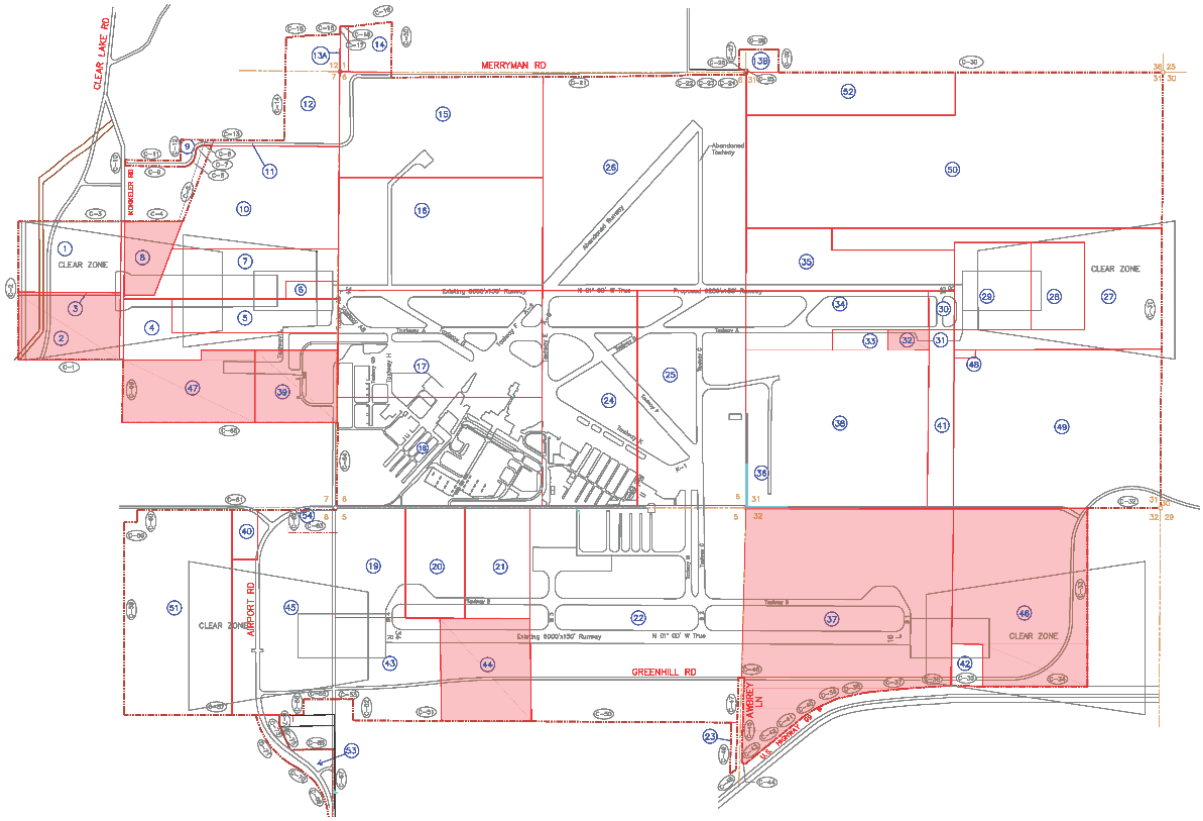
6.4.13 Exhibit "A" / Airport Property Map (Sheet 17)

The Exhibit 'A'/Airport Property Map depicts the airport property interests consistent with the existing and future Airport Layout Plan drawing. This drawing documents past airport land acquisition, including fee-simple and easement tracts, and includes all those acquired or disposed of since 2017. This sheet is developed in accordance with ARP SOP 3.00 *FAA Review of Exhibit 'A' Airport Property Inventory Maps*. Information on each of the existing 54 parcels at EUG include:

- Grantor (Selling Owner)
- Type of interest acquired
- Acreage
- Type of conveyance instrument
- Liber/book and page of recording
- Federal Agreement (FAA Grant Number/PFC Project Number)
- Type of Easement
- Purpose of Acquisition

The development of the Exhibit "A" carried forward the previous Exhibit "A" Property Map, established in 2006. Since the previous Exhibit "A" was developed, the FAA has updated the requirements for a compliant Exhibit "A" to the current ARP SOP 3.00 standards. The changes in standards for a compliant Exhibit "A" require additional information be presented for each of the parcels. The planning team worked with the Airport to find warranty deeds for each of the 54 parcels the Airport is in possession of. During this process, nine of the 54 warranty deeds were unable to be located. **Figure 6-1** shows the previous Exhibit "A" and a red hatching depicts those parcels of which a warranty deed was not obtained.

FIGURE 6-1
2006 EUGENE AIRPORT EXHIBIT "A"



Source: City of Eugene, 2006

Coordination between the Airport and the local FAA ADO determined the best course of action was to submit the Exhibit "A" as is, as the scope of service of this Master Plan did not include property searches. Unavailable parcel information was left blank on Sheet 17 of the ALP set. It is recommended that the Airport perform title searches on the missing parcels and perform a survey to determine the Airport's property boundary as soon as practical.

The Airport has plans for future property acquisitions, two parcels located on the north side are targeted for acquisition in order for the Airport to have full control of the Runway Protection Zones for Runway 16L and 16R. There is an additional four parcels the Airport has expressed interest in acquiring. These parcels are located on the east side of the Airport. Acquisition of these parcels would allow Green Hill Road, to be

relocated farther to the east, which would allow the opportunity for more development adjacent to the Airport.

6.4.14 Airport Development Phasing Plan (Sheet 18)

The Airport Development Phasing Plan provides a visual depiction of the proposed phasing of enhancements and additions over the course of the planning period, and demand driven development options that work to move towards the ultimate vision of the Airport. The phasing plan directly correlates with the implementation plan provided in the previous chapter. The sheet is intended to help visibly tie together the Airport's CIP to the timing and location of future project and enhancements. Though all future development is not represented on the Airport's CIP, demand driven development, such as, hangars, are also represented over the course of the planning-period.

6.5 AIRPORT LAYOUT PLAN DRAWING

The Airport Layout Plan drawing set inserted as part of this report is a reduced-size version of the 30-inch by 42-inch drawings that have been reviewed and approved by the FAA, Oregon Department of Aviation, and the Airport.