SOUTH VALLEY REGIONAL AIRPORT MASTER PLAN

JUNE 2024

SVR

RS&H

U42

South Valley Regional Airport Master Plan

June 2024

SVR

RS&H

TABLE OF CONTENTS

TABLE OF CONTENTS

LIST OF TABLES

Chapter 2 Aviation Forecasts

Chapter 3 Facility Requirements

Chapter 4 Identification and Evaluation of Development Alternatives

Chapter 5 Financial Feasibility and Implementation Plan

LIST OF FIGURES

Chapter 1 Inventory of Existing Conditions

Chapter 2 Aviation Forecasts

Chapter 3 Facility Requirements

Chapter 4 Identification and Evaluation of Development Alternatives

LIST OF APPENDICES

Chapter 1

Inventory of Existing Conditions

1.1 INTRODUCTION

The Federal Aviation Administration (FAA) Advisory Circular (AC) 150/5070-6B Change 2, *Airport Master Plans*, outlines the necessary steps in the development of an airport master plan. Identifying existing conditions at South Valley Regional Airport (U42) is the initial step in the master planning process. This step involves collecting data pertinent to an airport and the region it serves. The objective of this task is to provide background information for subsequent phases of analysis.

The development of a master plan for U42 requires the collection and evaluation of data relating to the airport and the surrounding area. This information was obtained through onsite investigations at the airport, interviews with airport management and airport users/stakeholders, and collection and analysis of previous reports and studies.

1.1.1 Airport Setting and Location

U42 sits inside the municipal boundary of the City of West Jordan which is a part of Salt Lake County. The dramatic peaks of the Wasatch Mountains to the east and the rugged Oquirrh Mountain Range to the west make the geography of the area particularly unique. Salt Lake City International Airport (SLC) is approximately a 20-minute drive from U42 via Bangerter Highway. Tooele Valley Airport (TVY) is a 30-minute drive around the northern tip of the Oquirrh Mountains. The airport is located only eleven miles southwest of downtown Salt Lake City and within a few miles of Interstates 15 and 215, as shown in **Figure 1-1**. As explained later in this chapter, TVY and U42 are both owned by the Salt Lake City Department of Airports (SLCDA) and serve specific roles as part of the SLCDA airport system.

FIGURE 1-1
VICINITY MAP

Source: RS&H, 2021

1.1.2 Airport Background

U42 was constructed in 1942 as an inland Army training site intended to support basic military and technical training in Kearns, Utah. Ownership was transferred to Salt Lake City shortly after World War II. The airport was named Salt Lake City Municipal Airport II until 2009, when the airport was renamed South Valley Regional Airport.

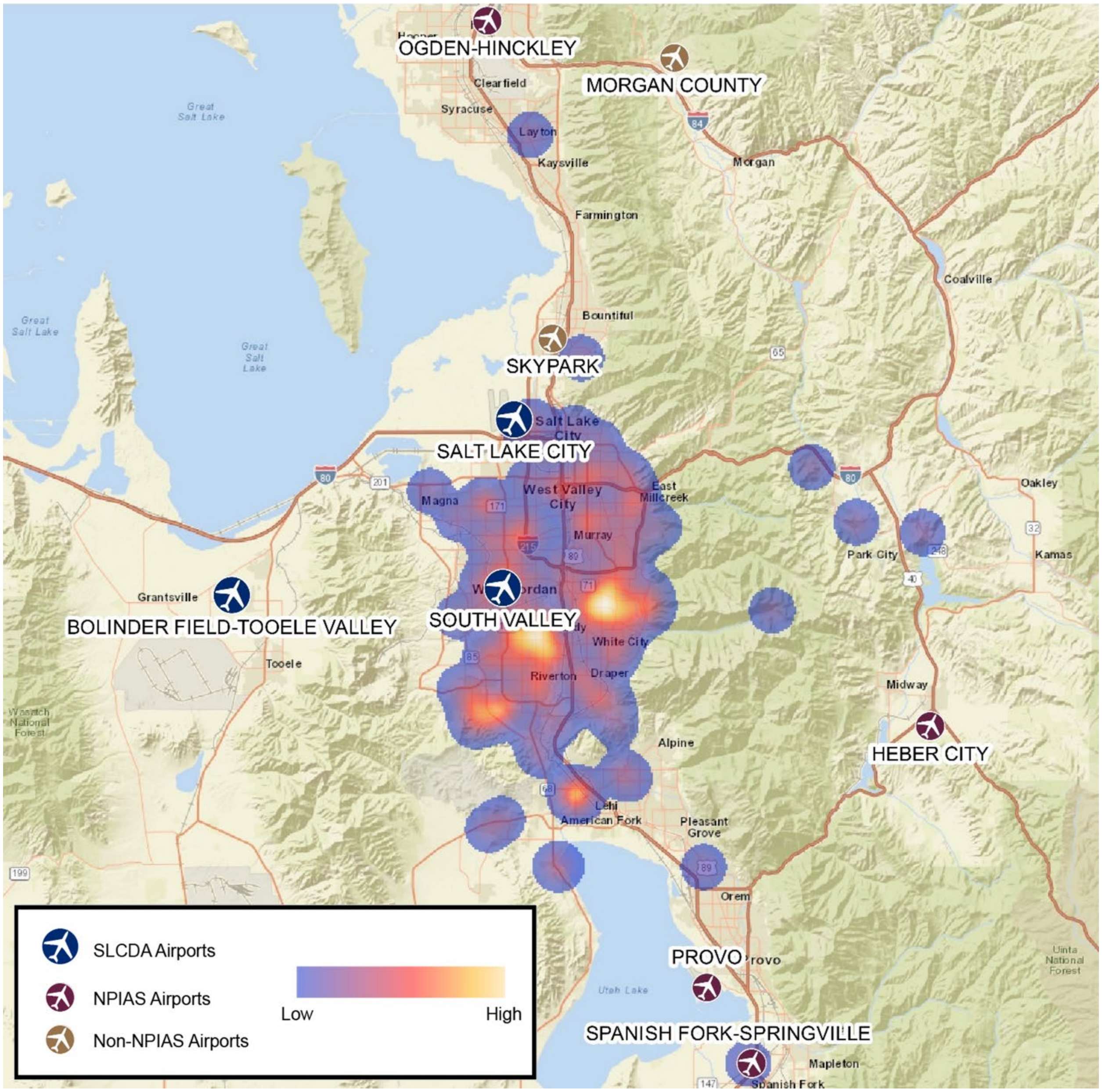
The most recent master plan for U42 was completed in 2006, which proposed several facility developments including the construction of additional hangars and apron expansions. In subsequent years, a new T-hangar row and a new box hangar were constructed. The Utah Army National Guard has also constructed an additional hangar. U42 is often viewed as the preferred alternative airport to SLC for GA users, due to its proximity to the Salt Lake City metropolitan area's population hub and services it has to offer.

1.1.2.1 Community Setting

Situated in the City of West Jordan, U42 is approximately a 20-minute drive from the central business district of Salt Lake City. The airport is located within a few miles of Interstates 15 and 215. The airport can be accessed from the west by Airport Road, which is located between 6200 South Street and 7800 South Street. In 2018, SLCDA engaged in a land swap with the City of West Jordan which will allow for the widening and expansion of 7800 South on the airport's south end. Users traveling along New Bingham Highway can also easily access the airport via 4455 West. Currently, aviation facilities are only located on the west side of the airport; therefore, public access to facilities from the north and east sides of the airport is unavailable.

As shown in **Figure 1-2**, the aviation tenants of U42 reside throughout the region. Overall, the tenant population is primarily centered towards the south Salt Lake Valley with Sandy and South Jordan heavily represented.

FIGURE 1-2
U42 TENANT HEAT MAP



Source: SLCDA, Prepared by RS&H, 2018

1.1.3 Sustainability

The Environmental Protection Agency (EPA) describes sustainability as the basis of one guiding principle: "Everything that we need for our survival and well-being depends, either directly or indirectly, on our natural environment. To pursue sustainability is to create and maintain the conditions under which humans and nature can [co]exist in productive harmony to support present and future generations." Unfortunately, sustainability is often misinterpreted and over-simplified as an inflexible protection of the natural environment at any cost. However, sustainable development under real-world conditions requires a comprehensive approach with consideration of many factors. The complex nature of securing a sustainable future is why government agencies across the globe, including the FAA, are supporting airport planning initiatives that incorporate sustainable approaches.

This Airport Master Plan incorporates the Airports Council International – North America (ACI-NA) EONS approach for sustainable airport development. Using the triple bottom line approach to sustainability as a starting point, ACI-NA evolved the concept into "a holistic approach to managing an airport so as to ensure the integrity of ***E***conomic viability, ***O***perational efficiency, ***N***atural resource conservation, and ***S***ocial responsibility (EONS) of the airport." To maintain consistency with the airport's plans and sustainability initiatives, the EONS approach is being integrated into the framework of this Airport Master Plan and is critical to its success.

According to FAA guidance on the Sustainable Master Plan Pilot Program and Lessons Learned, reported on December 17, 2012, "Small airports should prioritize the economic pillar of sustainability more than larger airports that have more resources to pursue sustainability initiatives." This is especially true of general aviation airports which receive limited federal funding for capital improvement projects and don't have access to all the same project funding opportunities as commercial service airports. These airports are still obligated to meet FAA Grant Assurance 24 which mandates that an airport "maintain a fee and rental structure for the facilities and services at the airport which will make the airport as self-sustaining as possible." For these reasons, economic viability will be of substantial consideration throughout the master planning process.

1.2 ECONOMIC VIABILITY

Airports are mandated under FAA Grant Assurances to be "as self-sustaining as possible under circumstances existing at the particular airport.[1] Therefore, while providing services and facilities for the public, U42 must maintain an organizational structure that optimizes revenue generation, decreases overall costs, and provides capital suitable to, at the very minimum, cover operating costs and federal grant matches. As a reliever airport, U42 does not have access to the same levels of federal funding as an airport offering scheduled commercial airline service. Instead, self-sustaining finances at U42 are reliant on lease revenues and airport user fees, such as fuel flowage fees. The following sections develop a baseline inventory of the conditions and facilities which influence or impact the economic viability of U42.

1.2.1 Airport Ownership and Control

U42 is owned by Salt Lake City Corporation and is managed by the Salt Lake City Department of Airports (SLCDA) under the guidance of the mayor of Salt Lake City and the Salt Lake City Council. In addition to U42, SLCDA manages and operates Salt Lake City International Airport (SLC) and Tooele Valley Airport (TVY). Staff members of SLCDA manage operations across TVY, SLC, and U42. As an enterprise department of the Salt Lake City Corporation, the Department of Airports requires no funding from property taxes, local government funds, or special district taxes.

[1] FAA Grant Assurance 24 – Fee and Rental Structure

Additionally, the City of West Jordan has a nine-member Advisory Board that consists of citizen volunteers appointed by the mayor of West Jordan to serve a four-year term and make recommendations to the mayor of West Jordan regarding airport rules and regulations, construction and expansion, and airport policies.

Though the airport is owned by SLCDA, it must still adhere to federal standards set forth by the FAA to maintain compliance with safe operating practices. As an airport receiving federal funding for capital improvement projects, U42 has an obligation to adhere to federal grant assurances, as further detailed in **Section 1.5.4**. These assurances obligate the airport to adhere to applicable federal law and guidance under Code of Federal Regulations (CFR) Title 14, FAA Advisory Circulars, FAA Orders, and FAA Memos. SLCDA's compliance with FAA regulations is predominantly overseen by the FAA Denver Airports District Office (ADO), though some matters may reach the Northwest Mountain Region Airports Division office or FAA Airport Planning and Environmental Division Headquarters (APP-400) office, as necessary. State grant assurances also apply to funding received by the State of Utah. These require SLCDA to follow applicable laws and guidance set by the State of Utah and the Utah Division of Aeronautics, a division of the Utah Department of Transportation (UDOT).

1.2.2 Airport Classification and Role

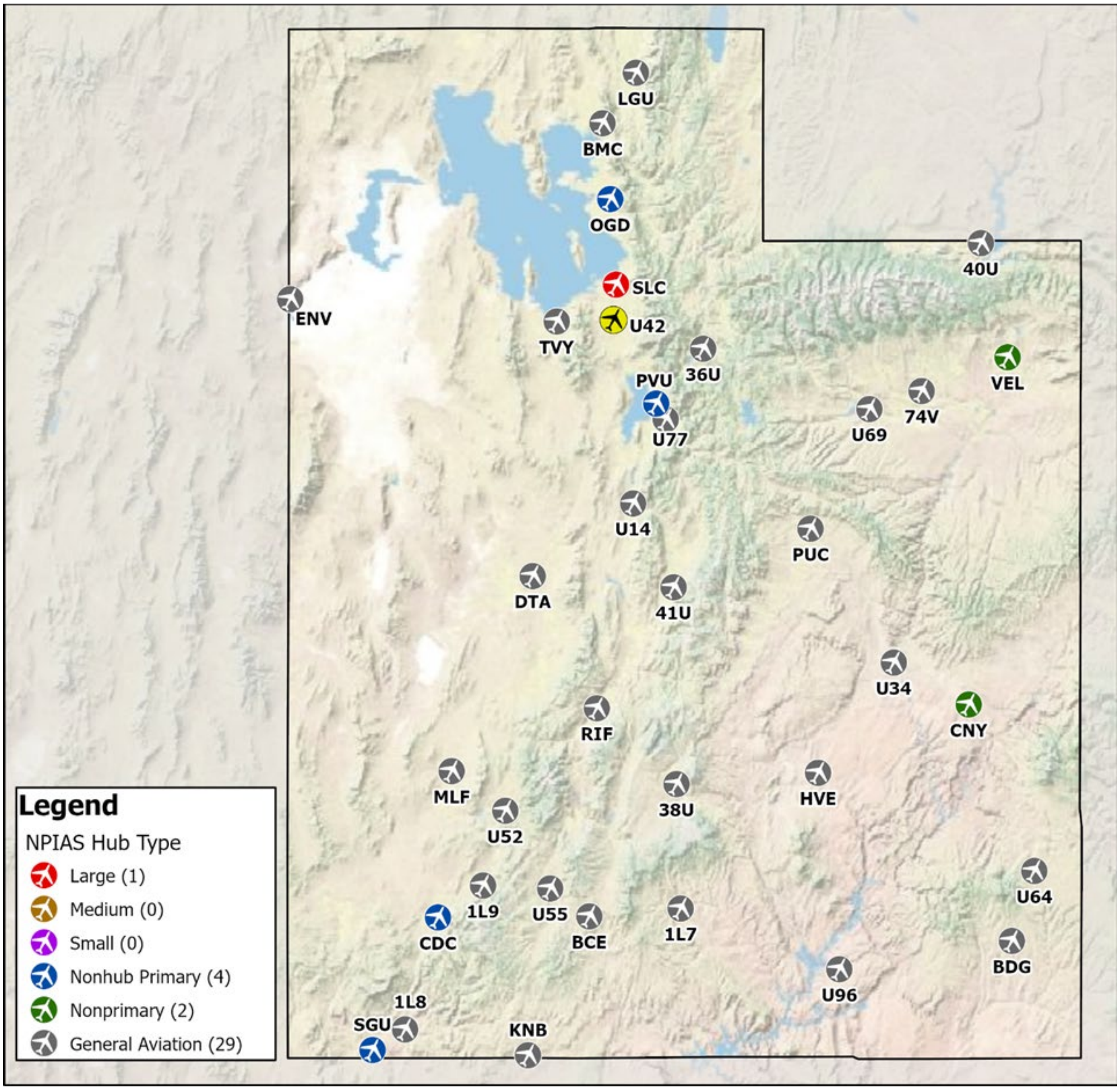
Several criteria have been established by various governing organizations to describe the role that an airport serves within the national, state, or local aviation system. The role of U42 can best be understood by how it is defined and designated by the Federal Aviation Administration, the Utah Department of Transportation, and SLCDA.

1.2.2.1 National Plan of Integrated Airports Systems

The Federal Aviation Administration (FAA) has identified in the National Plan of Integrated Airports Systems (NPIAS) approximately 3,400 airports in the United States that are significant to national air transportation and are eligible to receive federal grants under the Airport Improvement Program (AIP). The 2021-2025 NPIAS Report classifies airports as large-hub commercial service, medium-hub commercial service, small-hub commercial service, non-hub commercial service, nonprimary commercial service, reliver, or general aviation. The NPIAS designates the role of U42 as a reliever airport. The designation in the NPIAS of U42 as a reliever airport is beneficial due to opportunities for reliever airports to be given priority in discretionary funding decisions made by the FAA. The role of reliever airports is defined as "An airport designated by the Secretary of Transportation to relieve congestion at a commercial service airport and to provide more general aviation access to the overall community." U42 is designated as a reliever airport because it relieves congestion at Salt Lake City International Airport.

Other nearby airports within the immediate area of U42 include Salt Lake City International Airport (SLC, a large hub commercial service airport), Tooele Valley Airport, (TVY, a general aviation airport), and Provo Airport (PVU, a non-hub commercial service airport). All Utah NPIAS airports are shown in **Figure 1-3**.

FIGURE 1-3
UTAH NPIAS AIRPORTS



Source: RS&H, 2021

1.2.2.2 Salt Lake City Department of Airports – U42 Role

A General Aviation Strategy was prepared by SLCDA in May 2019. This report evaluated and refined the roles of each airport within the SLCDA airport system. The study recommended policy changes and development strategies to address the needs of the GA community and plan for appropriate facilities at each of the SLCDA-managed airports.

The role of U42 was defined by SLCDA based on the types of aviation service the airport can provide. The 2019 General Aviation Strategy outlined the following role for (U42):

> *"It is the role of South Valley Regional Airport to serve as a general aviation reliever. U42 will be developed and managed to support the needs of the region for non-air carrier flight operations, consisting of both business and recreational activity. As a mixed-use facility, the Airport will accommodate a broad range of general aviation uses including, single-engine, twin-engine, corporate, public service flight activities, helicopters, and military operations."*

The role assigned to U42 within the SLCDA system of airports will be the lens of which this master plan focuses requirements and development alternatives.

1.2.3 Financial Review

This section provides a high-level overview of the airport's historical operating revenues and expenses, capital expenditures, rates and charges, and FAA grants received. All financial data is shown in the airport's Fiscal Year (FY). Later sections of this Master Plan will analyze and evaluate alternative financial models of airport management and make recommendations for a financial model to support the preferred facility development plan.

1.2.3.1 Revenues and Expenses

Since FY 2017, U42 has operated with an average net loss of approximately $305,000 per year. This does not include estimated General & Administration Expenses, which when included, calculate to a greater net loss. Most of the airport's operating revenue has come from hangar fees, fuel sales and site leases while the costliest expenses include salaries and benefits, fuel, supplies, and utility payments. **Table 1-1** shows the revenues and expenses of U42 between FY 2017-2021.

TABLE 1-1
REVENUES AND EXPENSES

Revenues	Fiscal Year				
	2017	**2018**	**2019**	**2020**	**2021**
Operating Revenues					
General Aviation Hangars	$551,850	$612,159	$570,641	$639,759	$632,043
FBO Hangars	$15,951	$20,975	$17,960	$19,967	$20,122
Office Space	$13,299	$13,619	$12,751	$14,181	$15,219
Leased Sites	$4,545	$4,568	$4,213	$2,714	$742
Military - Army Guard Lease	$80,138	$80,138	$80,138	$83,219	$86,300
Other	$14,625	$8,272	$5,276	$7,250	$10,698
Fuel Sales	$765,408	$979,402	$1,053,134	$1,254,087	$1,312,712
Total Operating Revenues	**$1,445,816**	**$1,719,133**	**$1,744,113**	**$2,021,177**	**$2,077,836**
Operating Expenses					
Salaries	$657,543	$775,894	$721,404	$772,572	$764,566
Benefits	$243,057	$259,163	$271,433	$301,114	$301,833
Operations and Maintenance Supplies	$133,294	$52,978	$61,418	$56,907	$89,202
Diesel and Gasoline Fuel	$11,309	$15,982	$21,327	$14,026	$7,148
Other Fuel	$619,200	$697,374	$838,772	$895,117	$916,756
Chemicals	$1,547	$12,971	$17,199	$22,303	$870
Safety Equipment	$2,701	$1,081	$414	$1,596	$2,319
License & Tags	$150	$150	$250	$250	$250
Small Tools & Equipment	$83,366	$18,503	$1,676	$290	$1,041
Contractual Payments and Professional Services	$66,866	$26,847	$55,513	$37,293	$69,232
Electrical Power	$44,919	$45,830	$43,359	$47,262	$42,939
Natural Gas	$26,313	$27,898	$24,948	$19,561	$21,631
Water	$36,051	$38,714	$37,897	$49,235	$61,295
Telephone	$6,069	$5,985	$3,914	$5,841	$4,602
Miscellaneous	$1,082	$444	$5,398	$3,913	$2,774
Total Operating Expenses	**$1,933,467**	**$1,979,814**	**$2,104,922**	**$2,227,280**	**$2,286,458**
Net Operating Gain (Loss)	**($487,651)**	**($260,681)**	**($360,809)**	**($206,103)**	**($208,622)**

Note Estimated General & Administration Expenses and Estimated Depreciation not included
Source: SLCDA Records, Prepared by RS&H, 2021

1.2.3.2 FAA Grant History

Since 2010, U42 has received approximately $5.2 million in AIP grants, of which $4 million was designated for pavement rehabilitation. As part of the FAA NPIAS, U42 also receives $150,000 of general aviation entitlement funding each year. **Table 1-2** summarizes the federal grant history at U42.

TABLE 1-2
FAA GRANT HISTORY

Year	Total AIP	City Description of Work
2010	$300,000	Install Airfield Guidance Signs
2012	$905,878	Improve Airport Drainage
2014	$500,000	Rehabilitate Apron
2016	$2,675,000	Construct Taxiway, Rehabilitate Runway - 16/34, Rehabilitate Runway Lighting - 16/34
2019	$789,582	Rehabilitate Taxiway

Source: Federal Aviation Administration, 2021

1.2.3.3 Capital Improvement Plan

SLCDA maintains an existing Capital Improvement Program (CIP) that identifies projects that it expects to implement in the coming years. The existing CIP will be updated as part of this master plan. In the next 10 years, SLCDA is planning for $4.3 million in capital projects. Funding for these projects is expected to be through a mix of FAA AIP grants, Utah state grants, and local funding. **Table 1-3** shows the Capital Improvement Plan at U42 from 2021-2031.

TABLE 1-3
CAPITAL IMPROVEMENT PLAN

Year	Description	Funding Source	State Apportionment	Entitlements	State	Sponsor	Total
2025	Pavement Preservation	State Grant			$110,000	$12,222	$122,222
2025	Taxiway A & B Rehabilitation	Federal AIP	$2,100,000	$450,000	$131,819	$131,819	$2,813,638
2027	Construct Perimeter Fence	Federal AIP		$600,000	$31,016	$31,016	$662,032
2031	Rehab Apron	Federal AIP		$600,000	$31,016	$31,016	$662,032

Source: SLCDA, 2021

1.2.3.4 Rates and Charges

Based aircraft at U42 are stored on uncovered tiedowns on the apron, in shaded hangars, or in fully enclosed T-hangars. There are also several large storage hangars on the airfield that are independently leased out and three hangars that are managed by the FBO. As shown in **Table 1-4**, each storage area has an associated monthly fee for its usage.

TABLE 1-4
RATES AND CHARGES

Hangar Type	Per Month Fee
Tie Down	$50
Shade	$88
Single	$271
Single End	$271
Row G Single	$271
Twin	$361

Source: SLCDA, 2021

1.3 OPERATIONAL EFFICIENCY

Operational efficiency and the maximization of resource utility are vital to the success of U42. However, operational safety at any airport should never be compromised in favor of development which prioritizes efficiency. The FAA offers recommendations and guidance to airports for geometric layout and engineering design of airfield facilities through Advisory Circulars such as 150/5300-13B, *Airport Design*. The following sections develop a baseline inventory of the conditions and facilities which influence or impact the operational efficiency of U42.

1.3.1 Meteorological Conditions

Predominant weather conditions at the airport influence the ability for operations to take place effectively. Temperature, precipitation, winds, visibility, and cloud ceiling heights are elements used to understand the local climate and the effect it has on airport operations. U42 is in a semi-arid climate located south of the Great Salt Lake and within a valley created by the Wasatch and Oquirrh mountain ranges. The following is a summary of historical weather conditions in Salt Lake County as obtained from the National Oceanic and Atmospheric Administration station.

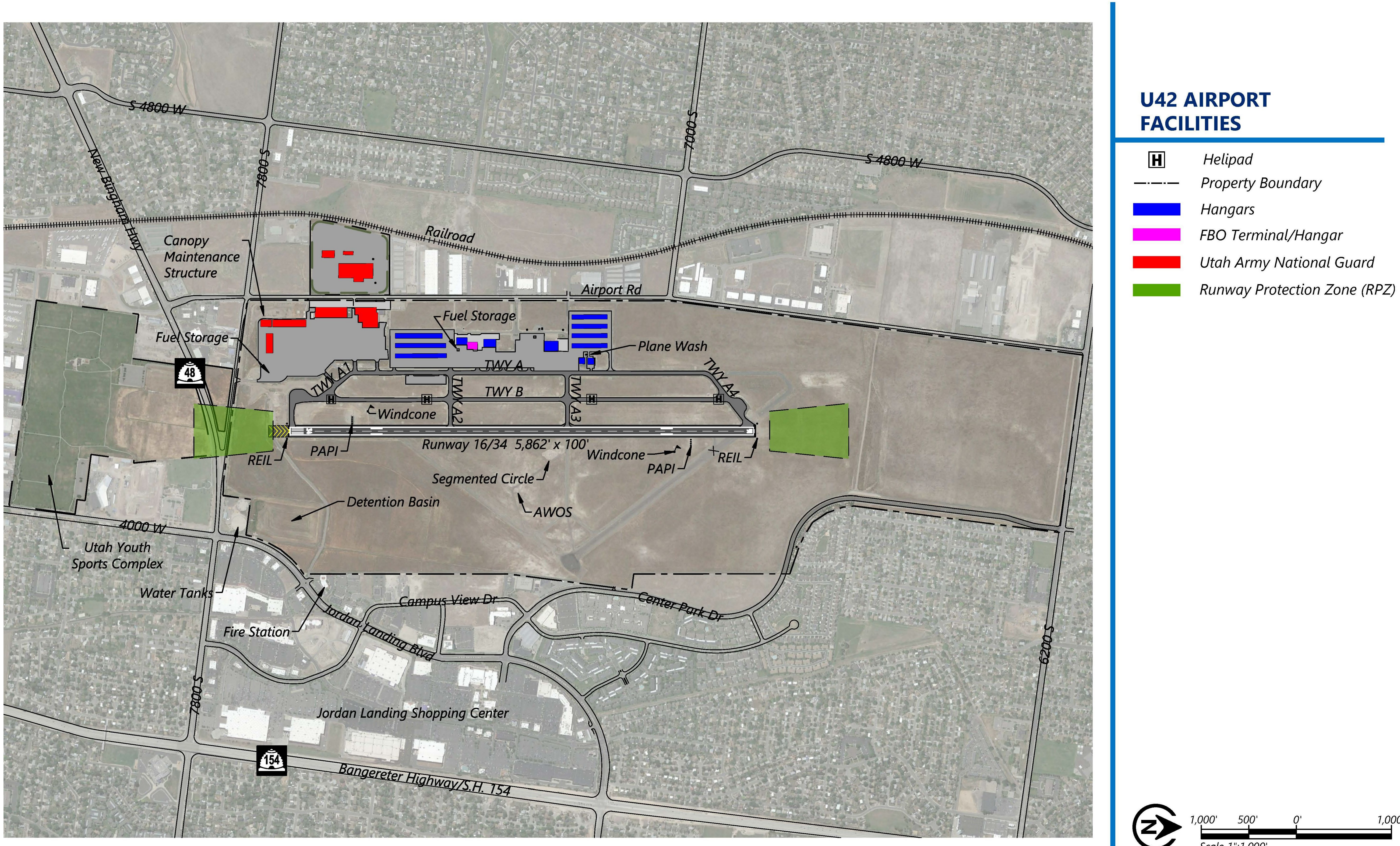
Between 1991 and 2020, July was typically the warmest month with an average high temperature of 94.0 degrees Fahrenheit and an average low temperature of 68.2 degrees Fahrenheit. The coldest month on average was January with an average high temperature of 38.6 degrees Fahrenheit and an average low temperature reaching 24.2 degrees Fahrenheit. On average, 7.6 days per year exceeded 100 degrees Fahrenheit and 20.6 days had a high temperature that did not exceed 32 degrees Fahrenheit.

Within the same time frame, the month with the highest precipitation was April, averaging 2.16 inches. Total annual average precipitation for this period was 15.52 inches. The month with the lowest average precipitation has been August with only 0.68 inches. The month with the most snowfall was January, which brought an average of 12.7 inches, with December and February close behind with 12.1 and 10.7 inches respectively. In total, 51.9 inches of snow per year were experienced between 1991 and 2020.

1.3.2 Airfield Facilities

This section provides an inventory of airport airside facilities, which includes the runway, taxiway, and apron systems as well as the condition of each. Additionally, this section inventories navigational aids, lighting, and the airspace surrounding the airport. **Figure 1-4** provides an overview of the facilities at U42.

FIGURE 1-4
AIRPORT OVERVIEW



Note: As part of a recent runway and taxiway rehabilitation project completed after the initiation of this Master Plan, there have been modifications to the taxiway nomenclature at U42. Taxiway A is now designated as Taxiway B, and Taxiway B is now designated as Taxiway A.
Source: RS&H, 2021

1.3.2.1 Runway

Runway 16-34 is the sole runway at U42. This runway has a length of 5,862 feet, a width of 100 feet, and is constructed of asphalt. **Table 1-5** summarizes the characteristics of Runway 16-34. The runway is constructed to a Runway Design Code (RDC) of B-II-4000 and has a weight bearing capacity of 30,000 pounds for single-wheel main gear aircraft and 43,000 pounds for dual-wheel main gear aircraft. The runway is equipped with pilot-controlled Medium Intensity Runway Lights (MIRL) and is marked with non-precision markings on Runway 34 and visual markings on Runway 16.

TABLE 1-5
RUNWAY CHARACTERISTICS

Runway Characteristics	RWY 16	RWY 34
Magnetic Heading	158	338
TORA/TODA/ASDA/LDA	5,862'	5,862'
Width	100'	100'
Aircraft Approach Category (AAC)	B	B
Airplane Design Group (ADG)	II	II
Pavement Surface	Asphalt	Asphalt
Single Wheel Weight Capacity	30,000 lbs.	30,000 lbs.
Dual Wheel Weight Capacity	43,000 lbs.	43,000 lbs.
Runway Markings	Visual	Non-precision
Approach Type	Visual	Non-precision
Visibility Minimums	Visual	7/8 Mile (LPV)

Note: TORA=Takeoff Distance Available, TODA=Takeoff Run Available,
ASDA=Accelerate Stop Distance, LDA=Landing Distance Available, LPV=Localizer Performance with Vertical Guidance
Source: FAA 5010 Master Record

1.3.2.2 Helipads

Four public use helipads are located at the airport on Taxiway B near connector taxiway intersections, as shown in **Figure 1-4**. The helipads are primarily utilized by student helicopter pilots and by the Utah Army National Guard. The helipads are helpful reference points for helicopter pilots and aid in communicating location to other users at the airport. No helicopter-specific approach or departure procedures are in place at the airport.

1.3.2.3 Taxiways

The airfield includes two parallel taxiways for circulation to Runway 16-34, Taxiway A and Taxiway B. Taxiway A is located 700 feet west of the runway, immediately adjacent to the apron. Between Taxiway A and Runway 16-34, lies Taxiway B. Both Taxiway A and Taxiway B are equipped with a Medium Intensity Taxiway Lighting System (MITL). Taxiways A1, A2, A3, and A4 serve as connector taxiways between the runway and apron. All existing taxiways at U42 have a width of 50 feet as detailed in **Table 1-6**.

TABLE 1-6
TAXIWAY CHARACTERISTICS

Taxiway Designator	Width	Type
A	50'	Access Taxiway to Apron
A1	50'	Connection Taxiway for RWY 16-34
A2	50'	Connection Taxiway for RWY 16-34
A3	50'	Connection Taxiway for RWY 16-34
A4	50'	Connection Taxiway for RWY 16-34
B	50'	Parallel Taxiway for RWY 16-34

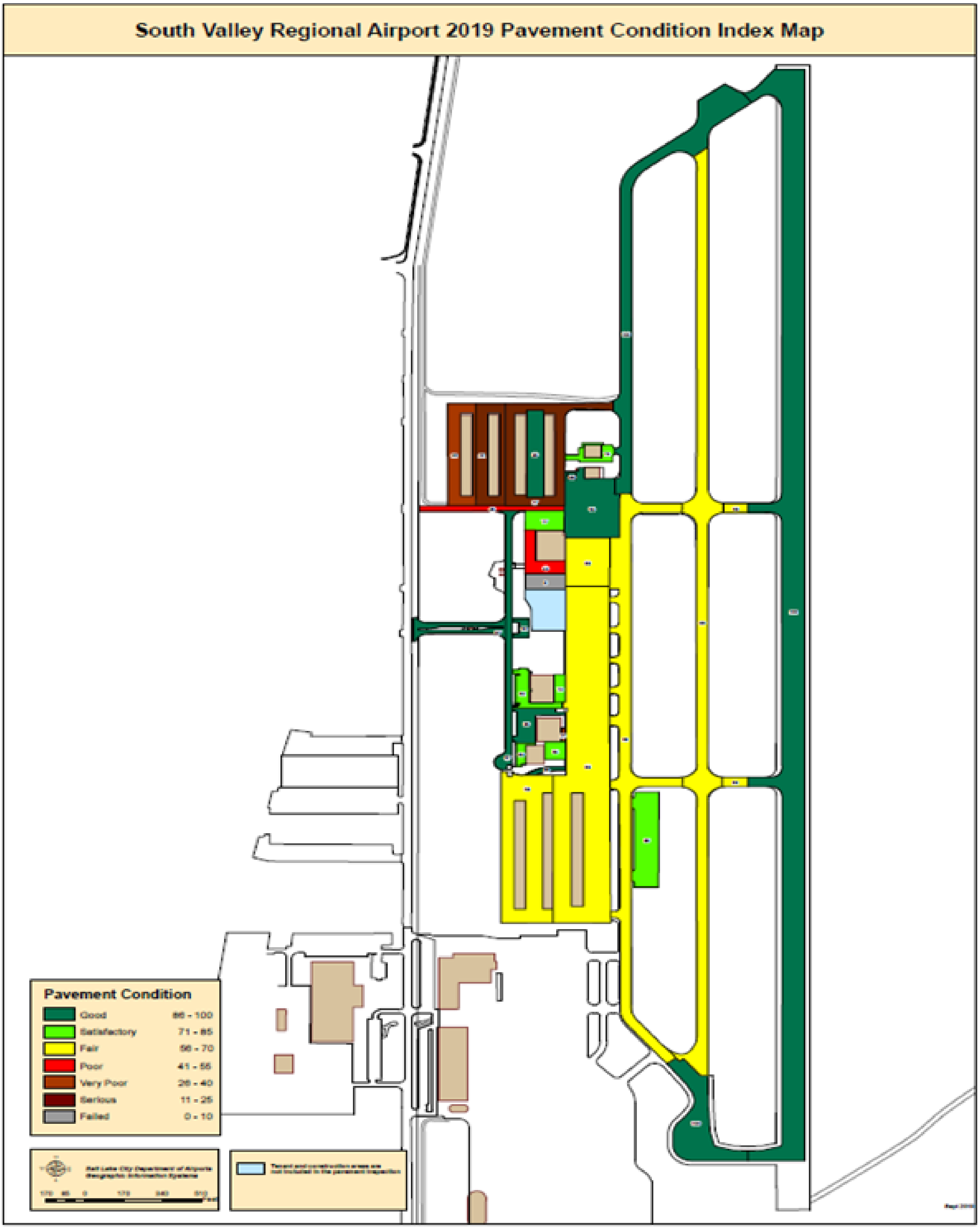
Source: SLCDA, 2021

1.3.2.4 Pavement

U42 conducts Pavement Condition Index (PCI) surveys every few years with the most recent survey having been performed in September 2019. The PCI is a visual analysis of the existing pavement surface conditions and serves as the baseline for progressive five-year PCI projections. PCI values range from 0, representing pavement that has failed and is no longer usable, to 100, which represents new pavement in perfect condition. The PCI values are further broken-down into a numeric index indicating the type of pavement repair anticipated, including reconstruction (0 to 25), major rehabilitation (25 to 55), or preventative maintenance (55 to 100).

The airport's paved airfield surfaces include pavement conditions ranging from good to failed. Runway 16-34 is made of asphalt and is in good condition. Taxiway B and the southern half of Taxiway A, which run parallel to Runway 16-34, are in fair condition. The northern half of Taxiway A, which connects the apron to the arrival end of Runway 16, is in good condition. The very small amount of pavement that has failed at the airport can be found on the apron, north of the FBO. The runway, taxiway, and apron pavement conditions resulting from the PCI inspection are illustrated in **Figure 1-5**.

FIGURE 1-5
PAVEMENT CONDITION



Source: SLCDA, 2021

1.3.2.5 Navigational Aids and Lighting

The airport has Precision Approach Path Indicator (PAPI) and Runway End Identifier Light (REIL) systems installed for navigation assistance; however, unlike both TVY and SLC nearby, no Instrument Landing System (ILS) is available, and no ILS procedures exist at the airport. While an ILS approach would likely be beneficial for future development at U42, the location of the airport in relation to arrival/departure flight paths at SLC presents a challenge. The 2006 Master Plan examined the possibility of installation of an ILS at U42 and deemed doing so unfeasible without significantly affecting the aircraft operations at SLC. As part of this master plan, the airspace is analyzed extensively with consideration to new technologies and current standards in effort to find opportunities to separate U42 instrument traffic from SLC.

Today, an Area Navigation (RNAV) (GPS) approach is available for Runway 34. U42 is equipped with a Remote Transmitter/Receiver (RTR) which allows pilots to communicate with the SLC ATCT (Airport Traffic Control Tower). Radar coverage in the area almost extends to the surface of U42. A summary of the NAVAIDS available at U42 is outlined in **Table 1-7**.

TABLE 1-7
NAVIGATIONAL AIDS

Navigational Aids	Runway	
	16	34
Visual Aids		
Lighting System	MIRL	MIRL
Approach Lighting	REIL	REIL
Touchdown Zone Lighting	No	No
Visual Slope Indicator	PAPI	PAPI
Runway Markings	Non-Precision	Non-Precision
Runway Centerline Lights	No	No
Electronic Aids (Approaches)		
ILS or LOC DME	No	No
ILS CAT II-III	No	No
RNAV (RNP)	No	No
RNAV (GPS)	No	Yes
VOR/DME	No	No
Other Airport Aids		
AWOS	Yes	
Rotating Beacon	Yes	
RTR	Yes	
Segmented Circle with Windcone	Yes	

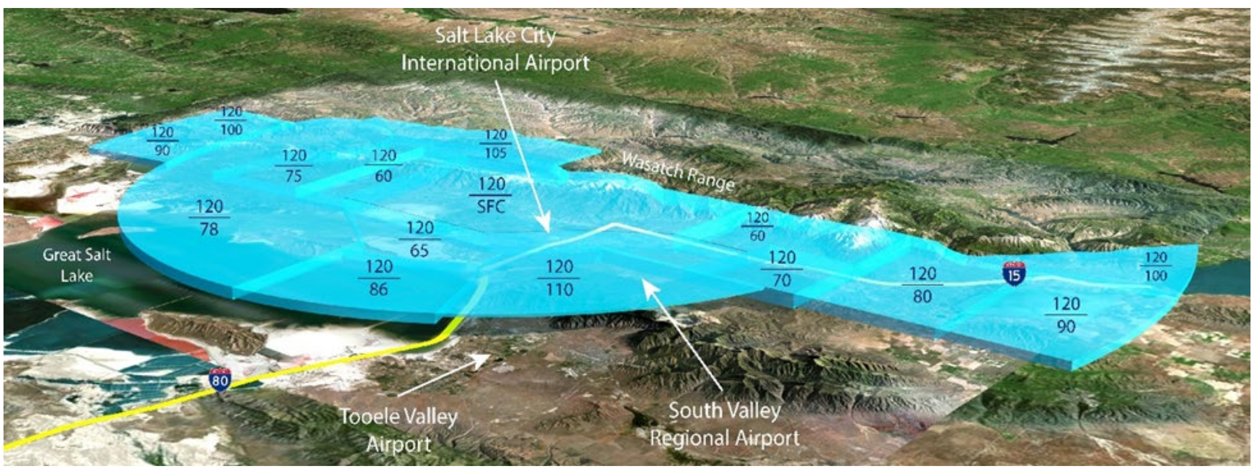
Note: AWOS = Automated Weather Observing System, MIRL = Medium Intensity Runway Light, PAPI = Precision Approach Path Indicator, REIL = Runway End Identifier Lights, RNAV = Area Navigation, RTR = Remote Transmitter/Receiver, VOR = Very High Frequency Omnidirectional Range, DME = Distance Measuring Equipment
Source: FAA Chart Supplements, FAA.gov, 2021

1.3.2.6 Airspace

U42 is a non-towered airport located within uncontrolled airspace beneath SLC Class B airspace shelf. SLC Terminal Radar Approach Control (TRACON) provides approach and departure services for the airport. Under Visual Flight Rules (VFR), this can include providing traffic advisory services to aircraft. If Instrument Flight Rules (IFR) exist, then the SLC TRACON will provide separation for aircraft at U42.

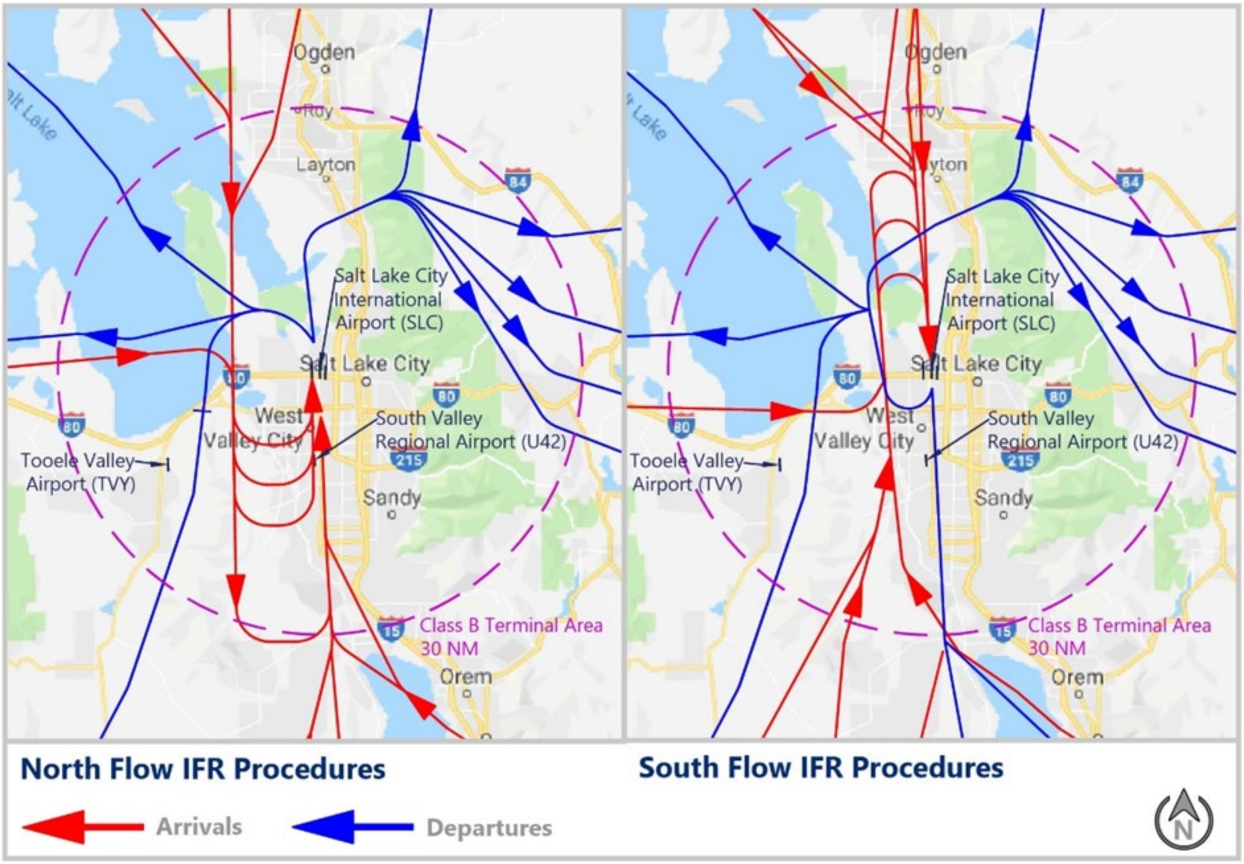
The airport is located approximately ten miles directly south of SLC, in line with the extended centerline of the approach path for several runways at SLC, but underneath SLC's Class B airspace. The airports share common airspace within the Salt Lake Valley, and as a result, instrument operations at SLC and U42 are dependent on one another. The SLC Class B airspace floor begins at 6,000 MSL, or approximately 1,400 feet above ground level (AGL) of U42. SLC arrivals from the south and southbound departures require aircraft to fly directly over U42 which prevents simultaneous independent approaches at both airports. Due to the airport's proximity to SLC, aircraft departing and landing at U42 must be equipped with Automatic Dependent Surveillance-Broadcast (ADS-B Out). **Figure 1-6** shows the Class B airspace of SLC above the Salt Lake City metropolitan area. **Figure 1-7** shows the IFR procedures for SLC in a north and south flow as well as the relation of those approaches to U42 and TVY.

FIGURE 1-6
SLC CLASS B AIRSPACE



Source: Google Earth, RS&H Analysis, 2018

FIGURE 1-7
SLC NORTH AND SOUTH FLOW IFR PROCEDURES



Source: FAA Approach and Departure Procedures, RS&H Analysis, 2019

U42 has one FAA-approved departure procedure, South Valley One (RNAV), which requires a southbound climb to 9000' MSL (~4,400' AGL). This departure procedure terminates at the Fairfield VOR/DME which is outside of SLC Class B airspace. To the south, restricted airspace areas R-6412 A, B, C, and D, pose a challenge to general aviation departures from U42. 30 miles to the north is Hill Air Force Base, the Air Force's second largest base by population and geographical size.

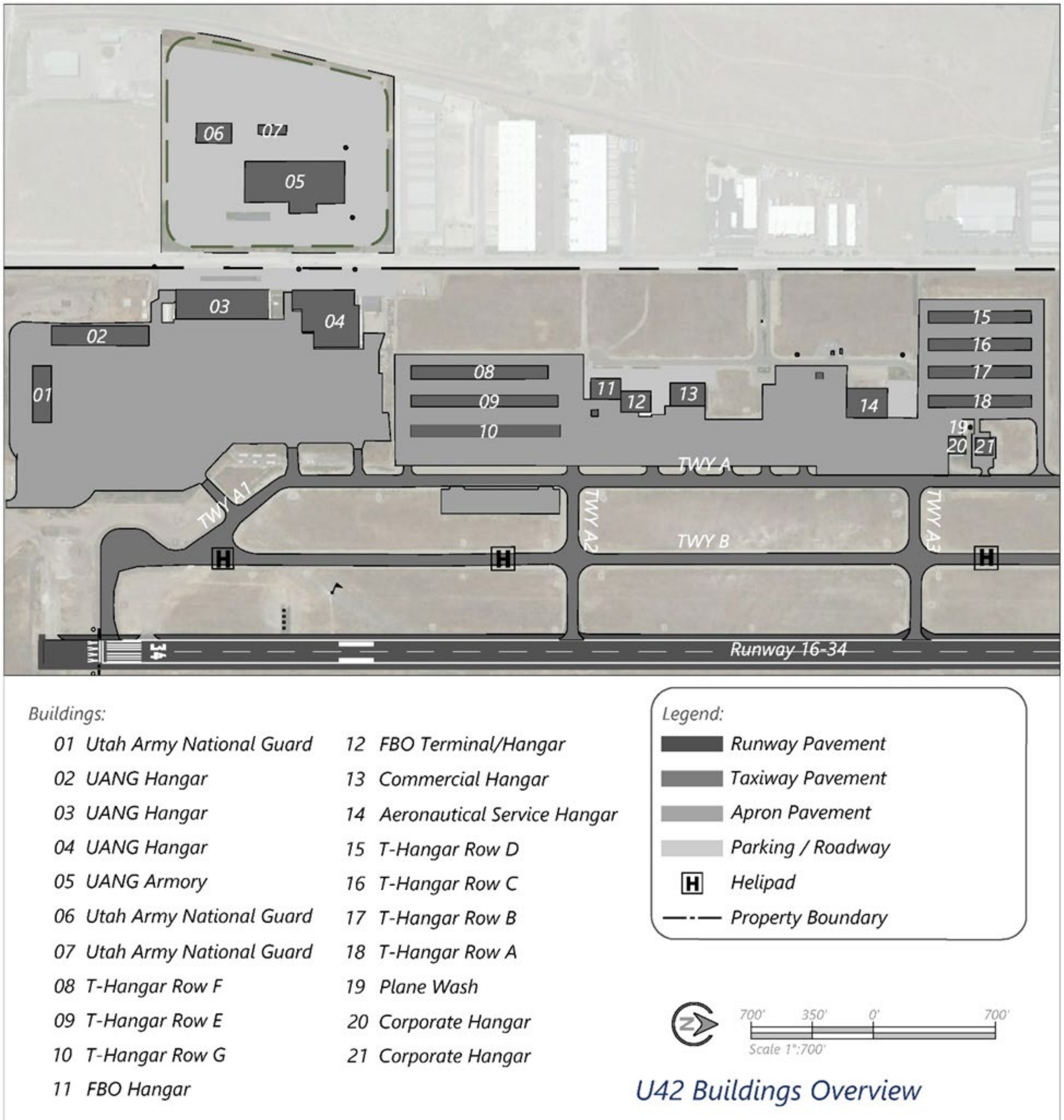
Aircraft must maintain a vertical separation of 1,000 feet or 3 nautical miles horizontally, and only 1,400 feet exists between U42 and the bottom of SLC airspace. For operations under VFR conditions, the issue of congestion has minimal impact as FAA flight procedures allow aircraft operating at U42 to fly below those operating at SLC under visual flight rules. However, instrument operations into U42 must be operated between SLC operations due to the impact of a missed approach procedure not maintaining the required 1,000 feet of vertical separation.

1.3.3 General Aviation and Utah Army National Guard Facilities

This section describes the location and condition of various facilities important to the overall operation of the airport. These facilities include hangars, aircraft tie-downs, parking positions, fixed base operators

(FBOs), aircraft rescue and firefighting (ARFF) facilities, and other airport owned facilities. **Figure 1-8** provides an overview of existing buildings at U42.

FIGURE 1-8
U42 BUILDINGS OVERVIEW



Source: RS&H, 2021

1.3.3.1 Aircraft Storage and Parking

Aircraft at U42 are parked and/or stored in one of three areas: apron tiedowns, storage hangars, or T-hangars. Tiedowns are uncovered defined locations on the apron with anchors to secure aircraft while parked at the airport. The apron has a total of 76 tiedown spots, with 64 allocated for based aircraft and the remaining 12 for transient aircraft. The FBO, corporate, and commercial hangars at the airport are capable of housing larger aircraft or multiple smaller aircraft in an enclosed and secure space. The T-hangars offer small areas of partially or fully enclosed space for parked aircraft. There are 42 shaded T-hangar bays, 95 single-engine T-hangar bays, and 18 twin-engine T-hangar bays at the airport. As of October 2021, the hangar waiting list has 14 interested parties. **Table 1-8** outlines the aircraft storage facilities available at U42.

TABLE 1-8
BASED AIRCRAFT STORAGE FACILITIES

Number	Building	Type	Dimensions	Condition	Units	Area (Sq ft)
8	T-Hangar Row F	Single	60 x 600	Fair	27	36,000
9	T-Hangar Row E	Twin	50 x 630	Good	18	31,500
10	T-Hangar Row G	Single	60 x 600	Excellent	28	36,000
11	FBO Hangar	Box	80 x 100	Good	1	8,000
12	FBO Terminal/Hangar	Box	90 x 130	Good	1	11,700
13	Commercial Hangar	Box	100 x 150	Fair	1	15,000
14	Aeronautical Service Hangar	Box	125 x 175	Good	1	21,875
15	T-Hangar (Shade) Row D	Shade	50 x 440	Good	21	22,000
16	T-Hangar Row C	Single	50 x 440	Good	20	22,000
17	T-Hangar (Shade) Row B	Shade	50 x 440	Good	21	22,000
18	T-Hangar Row A	Single	50 x 440	Fair	20	22,000
20	Corporate Hangar	Box	75 x 75	Excellent	1	5,625
21	Corporate Hangar	Box	75 x 75	Excellent	1	5,625

Source: SLCDA, 2021

1.3.3.2 Fixed Base Operator, Fuel, and Plane Wash

SLCDA operates the sole FBO at U42, with 10 employees involved in its operations. Previously, Leading Edge Aviation operated the FBO before their lease expired in 2016. Two 10,000-gallon fuel tanks allow the FBO to offer both full-service and self-service 100LL and Jet A facilities. Fuel trucks are parked near the fuel tanks in between the FBO and nearby T-hangars. In addition, a coin-operated plane wash is available for use.

1.3.3.3 Airport Maintenance

Most of the airport maintenance equipment is stored outdoors in an area north of the FBO. A list of owned equipment along with their condition is shown in **Table 1-9**. There are two SLCDA employees dedicated to U42. These individuals provide maintenance services year-round. In the winter, they provide snow removal services between the hours of 0700 and 1700 local time.

TABLE 1-9
EQUIPMENT LIST

Equipment	Condition
One ton pickup with plow and spreader	Good
One ton pickup with sprayer	Good
Two 7720 John Deer field tractors with field mow deck attachments	Good
One Backhoe	Good
One runway plow with towable broom	Good
One runway blower	Good
One road grader with push plow	Good
One ten-wheel dump truck with plow and spreader	Good
One street sweeper	Good
One towable pressure washer	Good
One runway lighted x	Good
One front end loader with push plow and dirt bucket	Good
Two riding turf mowers	Good

Source: SLCDA, 2021

1.3.3.4 Aircraft Rescue and Firefighting

U42 does not have ARFF facilities or operations because the airport does not accommodate commercial passenger aircraft. Therefore, FAA regulations do not mandate the availability of ARFF services at U42. However, the headquarters of the West Jordan Fire Department, Station #53, happens to be located less than a ½ mile east of the threshold of Runway 34. A small, paved road on the east side of the airport connects the intersection of S Jordan Landing Boulevard and S Plaza Center Drive with the blast pad behind Runway 34. This provides the fire station with direct access to the airfield. If SLCDA aims for U42 to achieve FAA Part 139 certification, dedicated ARFF services would need to be established.

1.3.3.5 General Aviation Services

Aircraft maintenance, charter operations, and flight training companies are available at the airport. Flight training companies, both fixed wing and helicopter, include Randon Aviation, AeroTech Aviation, and Utah Helicopter. Leading Edge Aviation, the previous FBO, managed the airport's flight training prior to 2016. When this company departed from U42, it resulted in a significant decrease in operations. Since 2016, flight training at the airport has been undertaken by multiple companies. These companies, in addition to others that have expressed interest in relocating operations to U42, have requested more office and hangar space than is currently leased due to the strong demand being experienced. Advantage Aviation provides full-service maintenance at the airport.

1.3.3.6 Utah Army National Guard Aviation Support Facility

The Utah Army National Guard's Aviation Support Facility, which houses the 211th Aviation Regiment, is a 59-acre section of leased land in the southwest corner of the airport. Three large hangars, two of which are climate-controlled, provide space for military aircraft storage, ground support equipment, and maintenance operations. This section of the airfield also contains its own underground fuel storage facility that lies underneath a 650,000 sq. ft. apron area. High-security fences and gates separate the Utah

National Guard facilities from the rest of the airport. There are 11 Blackhawk helicopters and 18 Apache helicopters based at U42, which all utilize the airspace above underdeveloped areas immediately south and east of the airport for pilot training. Directly across Airport Road, the Utah Army National Guard has two buildings dedicated to the administrative side of its operations, an armory, and a vehicle storage area. In 2018, military regional pilot training was held at U42 due to lack of space at other previous training airports. **Table 1-10** lists the size of the Utah Army National Guard Facilities.

TABLE 1-10
UTAH ARMY NATIONAL GUARD FACILITIES

No.	Building	Sq ft
1	Army National Guard	19,592
2	Commercial/Maintenance/Storage Hangar	35,112
3	Maintenance/Storage Hangar	50,666
4	Maintenance/Storage Hangar	59,760
5	Army National Guard Armory	82,281
6	Army National Guard	13,119
7	Army National Guard	4,907

Source: SLCDA, 2021

1.3.4 Landside and Access Roadways

Airport landside facilities provide intermodal connections between the airport and a variety of ground transportation modes. These facilities include regional access connections, on-airport circulation roadways, as well as public and employee parking facilities. These facilities are described in the following sections.

1.3.4.1 Regional Access

The airport can be accessed from the west by Airport Road, located between 6200 South Street and 7800 South Street. Bangerter Highway, which runs north-south on the east side of the airport, intersects both 7800 and 6200 South Streets. Approximately 4 miles further east is the intersection of interstate highways 15 and 215. In 2018, SLCDA engaged in a land swap with the City of West Jordan which allowed for the widening and expansion of 7800 South on the airport's south end. Users traveling along New Bingham Highway can also easily access the airport via 4455 West. Currently, aviation facilities are only located on the west side of the airport property; therefore, public access to facilities from the north and east sides of the airport is unavailable.

1.3.4.2 Parking

Parking is located both north and west of the U42 FBO, adjacent to the building. The FBO is easily accessed east of Airport Road and is located at the end of a dead-end road. Between Randon Aviation and the FBO on the west side of the airport, there are more than 100 available parking spots. Between these two buildings, there is a small aircraft viewing area with ten parking spots.

1.3.5 Utilities

The airport is served by multiple utility companies. Natural gas pipelines, owned and maintained by Questar Gas, are located within and around airport property. Rocky Mountain Power provides the airport with electricity. Inside airport property on the west side, Rocky Mountain Power's existing 2MW power lines extend underground to transformers located near existing airport buildings. Secondary power lines branch off from these transformers to feed power to the airport. The communication facilities at U42 include both Qwest owned telecommunication facilities and airport owned facilities. Qwest telecommunication lines extend from the telecommunication pads on Airport Road to airport facilities including the FBO and existing corporate hangars. Inside of airport property, there is an airport warning system and two CASS (Computer Access Security System) gates.

Water is serviced by an 8-inch waterline loop that is owned and maintained by SLCDA. This loop is fed by two master meters, one that is near the main entrance to the airport, on Airport Road, and the other east of the Army National Guard on 7800 South. There are several 8- and 12-inch pipes which are used to drain almost all current sewer production to the south into West Jordan's main line located in 7800 South. In 2008, new 8- and 12-inch sewer lines were installed to provide wastewater conveyance capacity for future expansion of facilities. These sewer lines connect to The City of West Jordan's existing system on the east side of the airport.

1.4 NATURAL RESOURCE CONSERVATION

When not managed and maintained responsibly, natural resources can be exhausted. As a public service facility, SLCDA understands it has a duty to promote policies which seek to protect and conserve natural resources. Acting on this duty occurs through policies and development which limit/reduce greenhouse gas emissions and discharge into water systems, provide opportunities for development of energy efficient facilities, promote environmental stewardship practices, protect wildlife by humanely discouraging its presence on the airfield, and supporting industry transitions to renewable energy sources.

1.4.1 Environmental Conditions

Environmental conditions and issues requiring consideration at U42 include the following:

- Air quality
- Biological resources
- Climate
- Farmlands
- Hazardous materials, solid waste, and pollution prevention
- Land uses
- Natural resources and energy supply
- Noise and noise compatibility
- Socioeconomics, environmental justice, children's environmental health, and safety risks
- Visual effects
- Water resources

For detailed information regarding all environmental resource categories, see **Appendix A, Environmental Inventory**.

1.5 SOCIAL RESPONSIBILITY

As a public facility in the southern Salt Lake City metropolitan area, SLCDA recognizes it has an obligation to the surrounding communities to act in a socially responsible manner. In action, this translates into the following:

- Abide by all federal, state, and local regulations and meet contractual FAA grant assurances
- Maintain competitive rate and fee structure to support operating and capital expenses
- Act ethically in all business and development decisions
- Remain transparent with community stakeholders about airport related decisions
- Make efforts to provide business and employment opportunities to the region
- Ensure equal treatment of all persons and remain intolerant of discrimination in any form
- Use the airport's standing within the community to support and advance positive community goals and values

The following sections develop a baseline inventory of the conditions which influence or impact the social responsibility held by SLCDA.

1.5.1 Noise

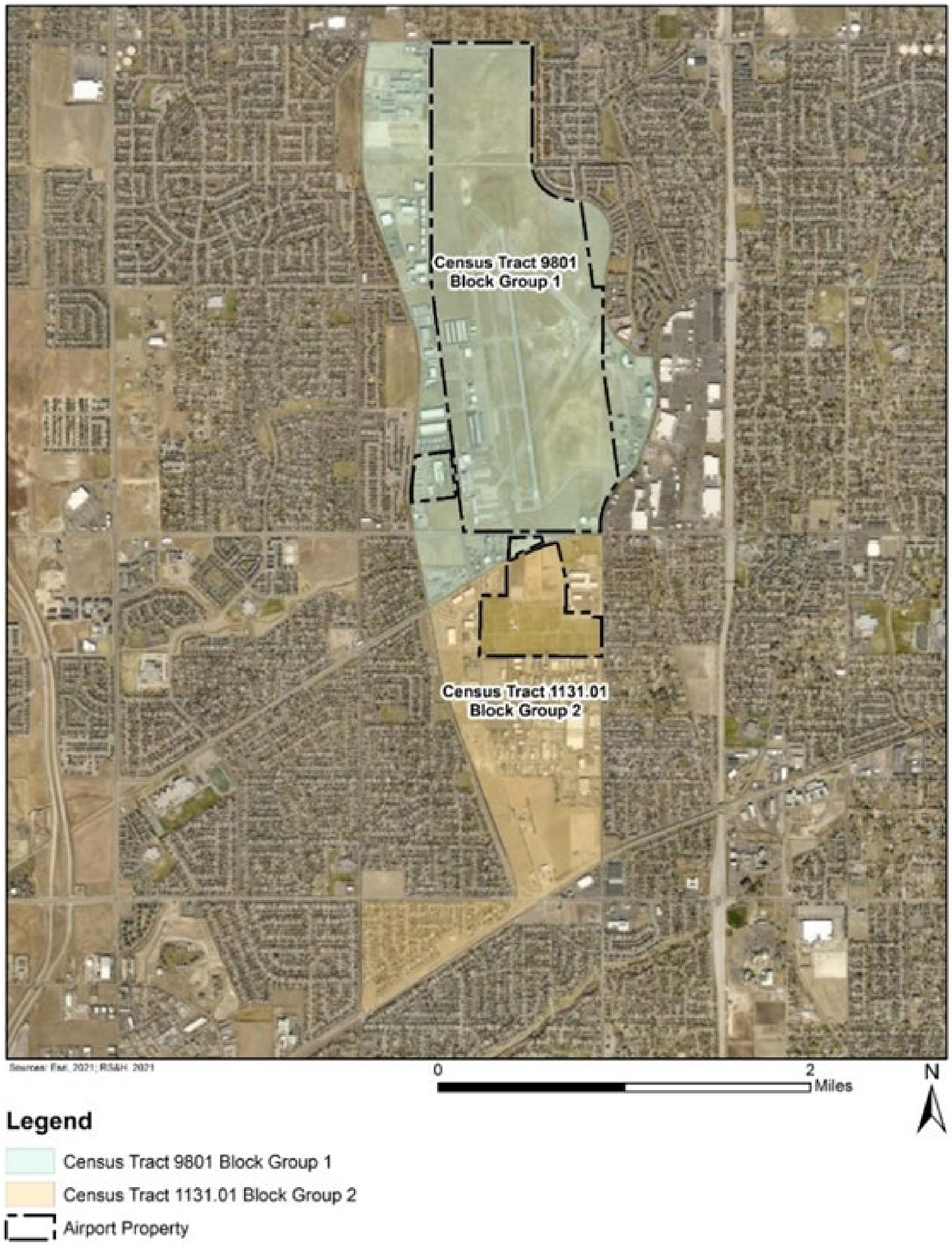
The most current noise exposure map, developed in 2006, shows the 65 dB DNL contour does not extend off airport property. That map shows the projected 65 dB DNL contour, which anticipates growth in operations for 2024 also does not extend off airport property. The 65 dB DNL level is the federal significance threshold for aircraft noise exposure and land use compatibility. Regardless of the federal policy, given the large amount of residential development near the airport, noise has historically been an important issue to the surrounding community as aircraft overflights might be interpreted by nearby residents as being a nuisance.

This master plan includes updated noise contours, detailed in later chapters. As part of this study, flight patterns and airspace procedures are analyzed with consideration of noise impacts to surrounding neighborhoods.

1.5.2 Socioeconomic and Environmental Justice

The airport is in West Jordan, Utah which is within Salt Lake County. The airport is located within two U.S. census tracts; Census Tract 9801, Block Group 1 and Census Tract 1131.01, Block Group 2 (see **Figure 1-9**). Airport property does not include any residences. Data for the following sections was taken from the U.S. Census American Community Survey (ACS) 5-Year Estimates from 2019.

FIGURE 1-9
SOUTH VALLEY REGIONAL AIRPORT CENSUS TRACTS



Source: RS&H Analysis, 2021

1.5.2.1 Population and Housing

Table 1-11 compares population and housing data for airport census tracts compared to West Jordan, Salt Lake County, and the state of Utah, which were included for comparison purposes. The population was the lowest in the airport census tracts and highest for the state. Housing occupancy for the airport census tracts are generally similar when compared to West Jordan, the county and state.

TABLE 1-11
POPULATION AND HOUSING CHARACTERISTICS

Characteristic	Airport Census Tracts/a/	West Jordan	Salt Lake County	Utah
Total Population	947	116,480	1,160,437	3,205,958
Total Households	320	35,366	374,820	977,313
Average Persons Per Household	N/A	3.28	2.99	3.12
Percent Housing Occupied	99.30%	96.70%	94.00%	88.70%

Note: /a/ - Airport Census Tracts include Census Tract 9801, Block Group 1 and Census Tract 1131.01, Block Group 2
Source: U.S. Census Bureau, 2019 ACS 5-Year Estimate

1.5.2.2 Employment

Table 1-12 compares employment rates for the airport census tracts compared to West Jordan, Salt Lake County, and the state of Utah. Unemployment in the airport census tracts is higher (9.17%) when compared to West Jordan (3.0%), Salt Lake County (2.5%), and Utah (3.6%).

TABLE 1-12
EMPLOYMENT CHARACTERISTICS

Characteristic	Airport Census Tracts/a/	West Jordan	Salt Lake County	Utah
Percent Unemployed	9.2%	3.0%	2.5%	3.6%

Note: /a/ - Airport Census Tracts include Census Tract 9801, Block Group 1 and Census Tract 1131.01, Block Group 2
Source: U.S. Census Bureau, 2019 ACS 5-Year Estimate

1.5.2.3 Public Services

The West Jordan Fire Department, with a total of four fire stations located in West Jordan, services the airport.[2] The West Jordan Police Department provides police services to the airport and surrounding community with the closest substation located about seven miles northeast of the airport.[3] Healthcare services are available at the Jordan Valley Medical Center, located less than one mile southeast of the airport.

1.5.2.4 Environmental Justice

Table 1-13 shows environmental justice characteristics of the airport census tracts compared to West Jordan, Salt Lake County, and the state of Utah. As shown, the airport census tracts have the lowest percentage of the population living below the poverty line (3.0%) compared to West Jordan (6.6%), Salt Lake County (9.0%) and Utah (8.9%). The airport census tracts have a larger minority population (22.1%) when compared to West Jordan (11.6%), Salt Lake County (12.9%) and Utah (9.4%).

---

[2] West Jordan City. (n.d.). *About Us - West Jordan Fire Department*. Retrieved from https://www.westjordan.utah.gov/fire/fire/about-us-west-jordan-fire-department/

[3] West Jordan City. (n.d.). *About Us - West Jordan Police Department*. Retrieved from https://www.westjordan.utah.gov/police/

TABLE 1-13
ENVIRONMENTAL JUSTICE CHARACTERISTICS

Characteristic	Airport Census Tracts/a/	West Jordan	Salt Lake County	Utah
Precent Minority	22.1%	11.6%	12.9%	9.4%
Percent Living Below Poverty Line	3.0%	6.6%	9.0%	8.9%

Note: /a/ - Airport Census Tracts include Census Tract 9801, Block Group 1 and Census Tract 1131.01, Block Group 2
Source: U.S. Census Bureau, 2019 ACS 5-Year Estimate

1.5.2.5 Children's Health and Safety

There are no schools, daycares, or childcare facilities on airport property. There are schools, daycares, and childcare facilities located in West Jordan in the vicinity of the airport. The closest school to the airport is Westland Elementary School, which is located over one mile east of the Airport. **Table 1-14** shows children age distribution of the airport census tracts compared to West Jordan, Salt Lake County, and the state of Utah.

TABLE 1-14
CHILDREN AGE DISTRIBUTION

Child Age Group	Airport Census Tracts /a/	West Jordan	Salt Lake County	Utah
Population under 3	48	5,163	50,968	148,800
Population ages 3-5	6	4,975	52,612	152,511
Population ages 6-11	39	12,377	106,153	317,151
Population ages 12-17	124	12,075	100,969	302,044
Total	217	34,590	310,702	920,506

Note: /a/ - Airport Census Tracts include Census Tract 9801, Block Group 1 and Census Tract 1131.01, Block Group 2
Source: U.S. Census Bureau, 2019 ACS 5-Year Estimate

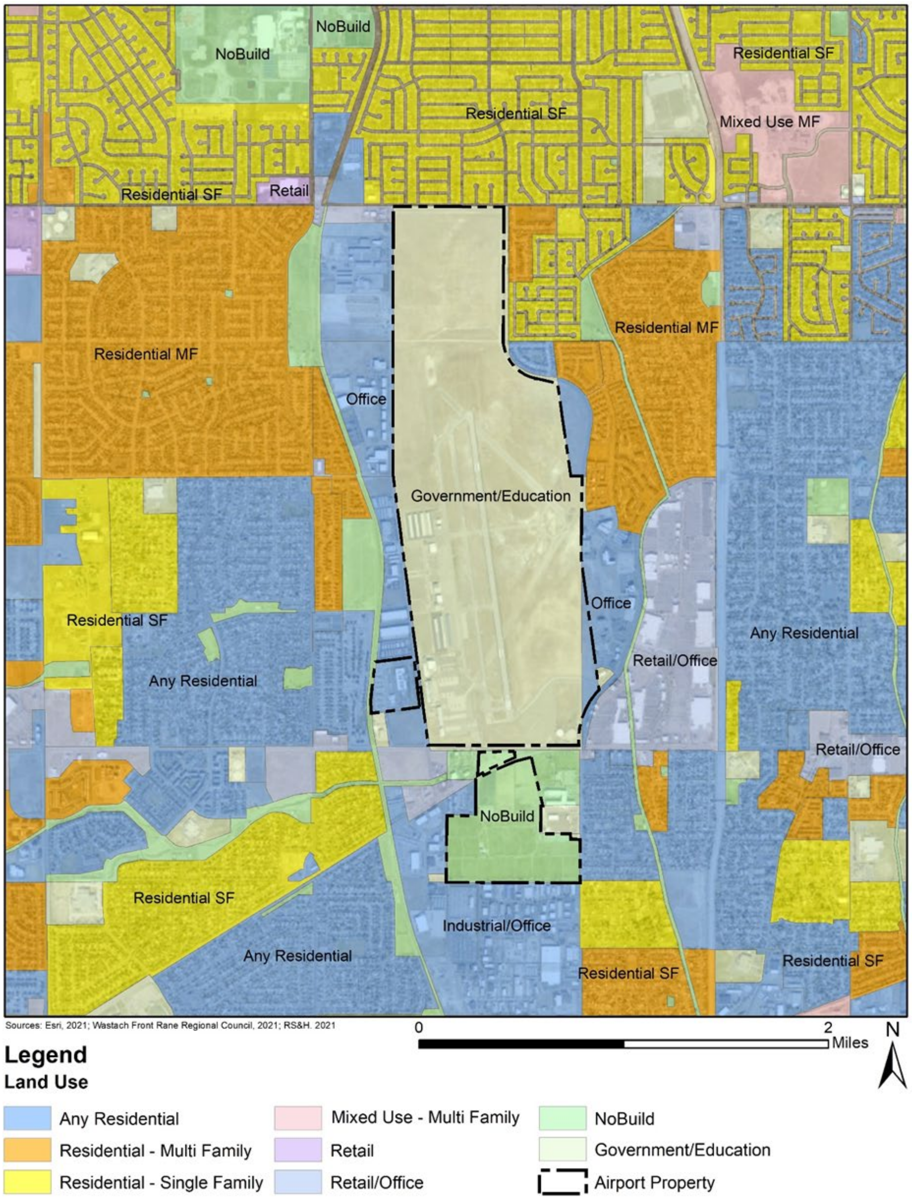
1.5.3 Land Use and Airport Overlay Zone

The property area of U42 includes a total of 860 acres, many of which are undeveloped. The Airport is bordered by residential development to the north, commercial and residential land uses to the east, commercial development to the south and commercial and residential land uses to the west. The City of West Jordan adopted an Airport Overlay Zone to allow for protection of the surrounding airspace of the Airport and compatible land development. **Figure 1-10** displays each distinct area of land use around U42.[4]

The relatively developed residential land bordering the north and north-east property line is protected from conflict by the Airport's ownership of a large tract of land past the paved runway surface. The "no build" area on the south end of the Airport property includes area outside the airport property boundary which aligns with the 2007 Airport Layout Plan's depiction of a larger future RPZ.

[4] West Jordan City. (n.d.). City Information. Retrieved from https://gis.wjordan.com/city-info/

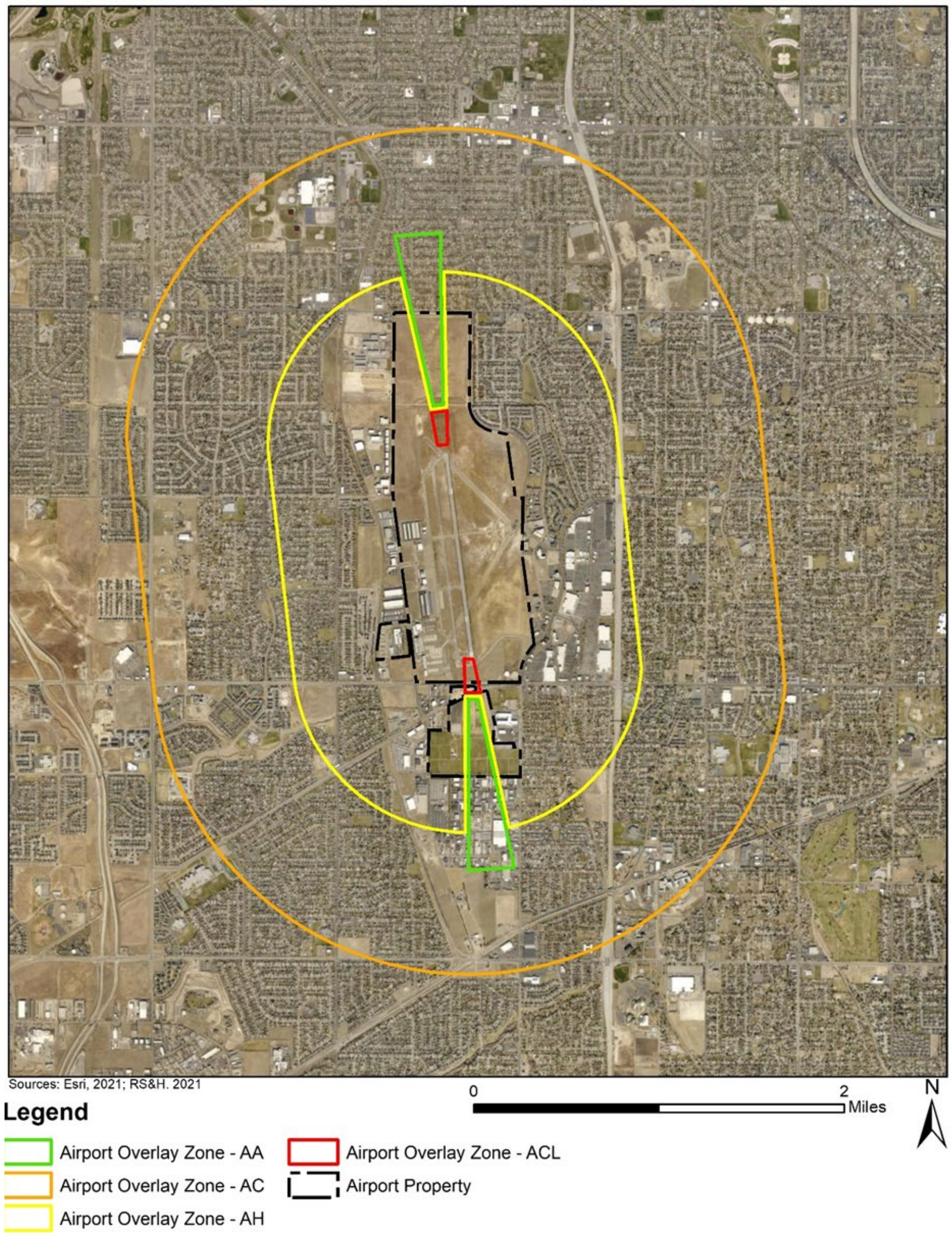
FIGURE 1-10
CITY OF WEST JORDAN LAND USE



Source: RS&H Analysis, 2021

The Airport Overlay Zone, shown in **Figure 1-11** displays each airport overlay zone. Many of these zones correlate with airport imaginary surfaces in Code of Federal Regulations (CFR) Title 14 Part 77.25, albeit with some deviations. These airport overlay zones are the Clear Zone (Acl), Approach Zone (Aa), Horizontal Zone (Ah), and Conical Zone (Ac). The City of West Jordan has defined which uses can occur in different overlay zones, with some uses being indicated specifically as permitted or conditional. **Table 1-15** below describes the language related to each of the overlay zones per the City of West Jordan Code of Ordinances, *13-6A-2 Establishment of Airport Overlay Zones*.[5] Note that the overlay zone for U42 does not include a Noise Zone (An). **Table 1-16** displays such uses. Conditional uses must be approved by the Planning Commission.

FIGURE 1-11
CITY OF WEST JORDAN AIRPORT OVERLAY ZONE



Source: RS&H Analysis, 2021

[5] West Jordan City. (n.d.). *West Jordan, UT Code of Ordinances*. Retrieved from https://codelibrary.amlegal.com/codes/westjordanut/latest/westjordan_ut/0-0-0-12251

TABLE 1-15
DESCRIPTION OF AIRPORT OVERLAY ZONES

Airport Overlay Zones	Abbreviation	Definition
Clear Zone	Acl	A zone containing the width of the primary surface (250’), expanding out from each end of the primary surface to a width of 450’ and a length 1000’ along the direction of the centerline.
Approach Zone	Aa	A zone expanding out from the outside end of the Clear Zone (450’) expanding uniformly to 1,500’ wide and 5,000’ from the primary surface along the direction of the centerline.
Noise Zone	An	Zone which contains the area around the airport projected to have an airport activity noise of 65dB or greater.
Horizontal Zone	Ah	A zone that is 5,000’ away from each side of the primary surface centerline. The boundary on each end is a half-circle arc with a 5,000’ radius, centered 200’ beyond the runway end.
Conical Zone	Ac	A zone that expands out from the Horizontal Zone by 4,000’

Source: City of West Jordan, 2021

TABLE 1-16
AIRPORT OVERLAY ZONE PERMITTED AND CONDITIONAL USES

Use	Acl	Aa	Ah	Ac
Agriculture uses, except as specifically regulated elsewhere in this section		C	C	P
Animal specialties devoted to raising chickens, turkeys, or other fowl			C	P
Athletic fields and playgrounds			C	P
Building moved from another site (see section 13-8-12 of this title)			C	C
Commercial and industrial uses resulting in large concentrations of people, including, but not limited to, shopping centers, restaurants, and factories			P	P
Commercial uses, except as specifically regulated elsewhere in this section		C	P	P
Communication, transmission or reception towers, church steeples, flagpoles and other like extensions which exceed the height of buildings allowed in unrestricted zones			C	P
Electrical power generating plants			P	P
Electrical power transmission lines aboveground		C	P	P
Fairgrounds and racetracks			C	P
Gas and oil aboveground storage and pipelines		C	P	P
Hotel and motel			C	C
Industrial uses, except as specifically regulated elsewhere in this section		C	P	P
Large scale public utilities			C	C
Low power radio service facility		C	C	C
Outdoor theaters			C	P
Public and civic uses, public utilities, except as specifically regulated elsewhere in this section		C	C	P
Public and civic uses resulting in large concentrations of people, including, but not limited to, stadiums, hospitals and open-air assemblies			C	P
Recreational and natural uses as allowed in unrestricted zones, except as specifically regulated elsewhere in this section		AC	AC	P
Residential development	C	P		

Note: C – Conditional, P – Permitted
Source: City of West Jordan, 2021

1.5.4 Compliance with FAA Grant Assurances

The FAA-administered financial assistance that U42 receives in the form of federal grants have specific obligations, or grant assurances, that SLCDA is required to adhere to. There are 39 grant assurances, each specific to items that the Airport Sponsor must comply with. These are outlined within FAA Order 5190.6B, *Airport Compliance Manual*. **Table 1-17** details the 39 grant assurances and notes what general category each is typically associated with.

As part of this master plan, specific items will be addressed in relation to these FAA grant assurances, such as examining protections in place to protect the airport's airspace, planning for compatible land use, updating the airport layout plan, and making recommendations to help U42 ensure compliance.

TABLE 1-17
AIP GRANT ASSURANCES

Assurance Number	Title/Description	General / Miscellaneous	Airport Management	Airport Operations	Planning	Construction
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 Preventive Maintenance			✓		
12	Terminal Development Prerequisites	✓				
13	Accounting System, Audit, and Record Keeping				✓	✓
14	Minimum Wage Rates					✓
15	Veteran's Preference					✓
16	Conformity to Plans and Specifications					✓
17	Construction Inspection and Approval					✓
18	Planning Projects				✓	
19	Operation and Maintenance			✓		
20	Hazard Removal and Mitigation			✓		
21	Compatible Land Use		✓			
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 Plan				✓	✓
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 Buses	✓				
37	Disadvantaged Business Enterprises	✓			✓	✓
38	Hangar Construction		✓			
39	Competitive Access		✓			

Source: FAA, 2021

Chapter 2

Aviation Forecasts

2.1 INTRODUCTION

Projected activity levels of aircraft operations and based aircraft for the next 20-year planning horizon are provided in this chapter. The methodologies used to estimate projected aviation demand are also described. The chapter concludes with recommended operations and based aircraft forecasts that will be used to plan the requirements for future infrastructure and facilities.

2.2 DEMOGRAPHIC AND SOCIOECONOMIC FACTORS

South Valley Regional Airport is owned by Salt Lake City Corporation. The Salt Lake City Department of Airports (SLCDA), a department of Salt Lake City Corporation, manages and operates U42. U42 sits inside the municipal boundary of West Jordan City which is a municipality within Salt Lake County. According to the West Jordan City's comprehensive general plan, which was completed in 2012, the city has seen a population increase of 141 percent, or an average annual increase of 5.0 percent over the last twenty years. The population growth in the area is largely due to both residential development and land annexation. In 2020, the U.S. Census Bureau reported West Jordan had a population of 116,961.[6]

It is estimated that West Jordan's population will increase to over 155,000 by 2031. The population is relatively young, with the average West Jordan resident being 28.2 years old. The median household family income in West Jordan is $80,955, compared to the average of $74,865 of Salt Lake County as a whole. The population of Salt Lake County in 2020 sits at just over 1,185,000 people, growing approximately 15 percent from 2010, or a compound average growth rate of 1.42 percent.[7] It is anticipated that the county will have a population of approximately 1,400,000 by 2040.

Salt Lake County and Utah County are projected to continue to lead job growth and population growth in Utah for the next 40 years.[8] Population is expected to increase through a combination of net migration and births, with the Wasatch Front area remaining the core of the State's overall growth. Over the next 40 years, the employment base is also projected to expand by 63.3 percent with Salt Lake and Utah Counties capturing the majority of the estimated growth in manufacturing, professional, scientific, and technical service areas. The Utah economy is strong and in 2001, Utah led the nation in overall population growth between 2010 through 2020.

Overall, the region surrounding U42 has been growing, and is expected to continue to grow through this study's 20-year planning period and beyond. The area's job growth and consistent population increases are indicative of the strong economy. These factors will influence growth at U42 as more people and businesses locate into the area who may use aviation for business or pleasure. Additionally, the growing population makes it more likely there will be an increased demand for flight training associated with students looking to become career pilots, therefore increasing demand for local flight schools.

[6] U.S. Census Bureau. (n.d.). *West Jordan city, Utah*. QuickFacts. Retrieved from https://www.census.gov/quickfacts/westjordancityutah

[7] U.S. Census Bureau. (n.d.). *Salt Lake County, Utah*. QuickFacts. Retrieved from https://www.census.gov/quickfacts/saltlakecountyutah

[8] University of Utah Gardner Policy Institute. (2022, January). *Utah Long-Term Planning Projections: A Baseline Scenario of Population and Employment Change in Utah and its Counties*. Retrieved from https://d36oiwf74r1rap.cloudfront.net/wp-content/uploads/LongTermProj-Jan2022.pdf

2.3 NATIONAL AND REGIONAL AVIATION TRENDS

The FAA Aerospace Forecast (FY 2021 – FY 2041) is a comprehensive 20-year forecast of both commercial and general aviation (GA) activity. For the purposes of this chapter, only GA fleet data was analyzed. As detailed in **Table 2-1**, the total number of general aviation aircraft is projected to slightly decrease over the next 20 years, although individual types of aircraft are anticipated to grow significantly in popularity within the same timeframe. Turbojet, light sport, and experimental aircraft are projected to spur growth in the general aviation sector through the next 20 years while single- and multi-engine piston fleets are expected to decrease. Aging aircraft fleets, unfavorable pilot demographics, increasing aircraft ownership costs, and the lack of available lower cost alternatives are accelerating the decline of piston aircraft. The number of turbine-powered GA aircraft is expected to grow by nearly 13,000 between 2020-2040 while the number of light-sport aircraft is forecast to double by 2040. The report also shows that the GA sector, which was not as negatively affected by the pandemic as the airlines, is expected to recover to its pre-pandemic operational numbers much faster than other sectors of aviation.

TABLE 2-1
FAA AEROSPACE FORECAST

Year	Single-Engine	Multi-Engine	Turboprop	Turbojet	Rotorcraft	Experimental	Light Sport	Total General Aviation Fleet
2010	139,519	15,900	9,369	11,484	10,102	24,784	6,528	223,370
2011	136,895	15,702	9,523	11,650	10,082	24,275	6,645	220,453
2012	128,847	14,313	10,304	11,793	10,055	26,715	2,001	209,034
2013	124,398	13,257	9,619	11,637	9,765	24,918	2,056	199,927
2014	126,036	13,146	9,777	12,362	9,966	26,191	2,231	204,408
2015	127,887	13,254	9,712	13,440	10,506	27,922	2,369	210,031
2016	129,652	12,986	9,779	13,751	10,577	27,585	2,478	211,794
2017	129,833	13,083	9,949	14,217	10,511	26,921	2,551	211,757
2018	130,179	12,861	9,925	14,596	9,989	27,531	2,554	211,749
2019	128,926	12,470	10,242	14,888	10,198	27,449	2,675	210,981
2020	127,920	12,395	10,205	15,245	10,155	24,455	2,145	204,980
2025	121,765	12,030	10,140	17,315	10,685	27,710	3,385	207,155
2030	116,080	11,765	10,335	19,605	11,420	29,595	4,050	207,040
2040	106,315	11,390	11,215	23,975	13,195	32,765	5,295	208,395
CAGR (2019-2040)	-0.9%	-0.4%	0.4%	2.3%	1.2%	0.8%	3.3%	-0.1%

Source: FAA Aerospace Forecast Fiscal Years 2021-2041

The GA industry has come out of the COVID-19 pandemic strong, and demand for new pilots and associated training is expected to drive demand for new developments and increasing annual operations at U42. With COVID-19 related airline pilot retirements and continued "baby-boomer" generation pilots retiring, the demand for new pilots is expected to continue for decades. The Bureau of Labor Statistics estimates from 2020 to 2030 there will be a demand of 14,500 new pilots each year.[9] Because U42 is adjacent to a major population base and multiple airports with thriving GA communities, it is expected that flight training related use of U42 will see higher levels through the planning period.

[9] Bureau of Labor Statistics. (n.d.). *Transportation and material moving occupations*. Occupational Outlook Handbook. Retrieved from https://www.bls.gov/ooh/transportation-and-material-moving/home.htm

There are multiple flight schools based at South Valley Regional Airport, including Randon Aviation, Upper Limit Aviation, and Utah Helicopter. During discussions with these operators, they expressed a desire to grow and expect the market for flight training to remain strong throughout the decade. It is currently estimated that by 2025 there will be a shortage of 34,000 commercial airline pilots worldwide.[10] United Airlines and other carriers are actively addressing this issue by creating their own flight schools. United's new school, United Aviate Academy in Goodyear, Arizona, has been developed to help fill United's need for 10,000 new pilots by 2030. Though, United only expects that 5,000 pilots of their total need will come from United Aviate. Traditionally pilots come into the airline industry from prior military service and numerous smaller flight schools such as those that operate at U42. United and other carriers will continue to rely on these pipelines to meet their demand for new pilots.

Overall, the industry's need for more commercial airline pilots is expected to continue providing demand for flight training. This will result in continued growth of flight training operations at U42.

2.4 HISTORICAL AVIATION ACTIVITY

Shown in **Table 2-2** are aircraft operations at U42 between 2005 and 2020 which have been counted through acoustic traffic counters on the airfield. From 2005 to 2020, U42 has averaged 72,074 annual operations, with an average of 197 operations per day.

TABLE 2-2
ACOUSTIC COUNTER OPERATIONS

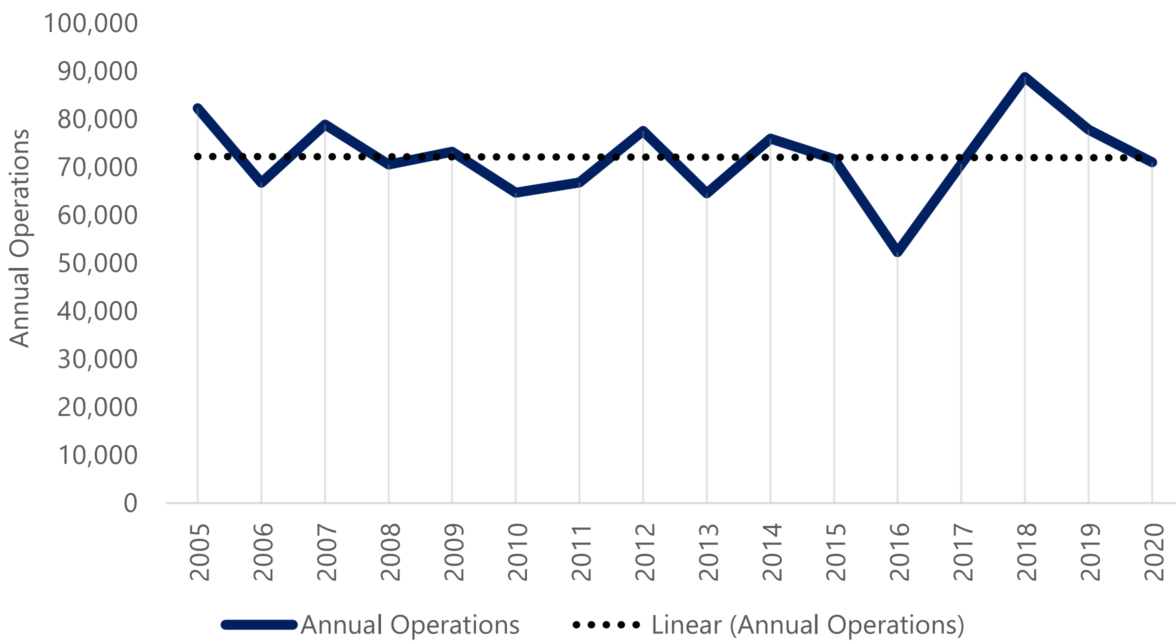
Year	Annual Operations	Average/Day
2005	82,253	225
2006	66,720	183
2007	78,879	216
2008	70,515	193
2009	73,227	201
2010	64,660	177
2011	66,790	183
2012	77,517	212
2013	64,562	177
2014	75,934	208
2015	71,665	196
2016	52,271	143
2017	70,628	194
2018	88,756	243
2019	77,815	213
2020	70,990	194

Source: SLCDA Acoustic Counter Data, 2021

[10] Kirby, S. (2022, January 27). *The Truth About the Pilot Shortage*. LinkedIn. https://www.linkedin.com/pulse/truth-pilot-shortage-scott-kirby/

Figure 2-1 illustrates the variations year-to-year of operations at U42. A trendline was applied to that data and no trend of growth or decline was found. Overall, operations have been flat with year-to-year variations above and below the 70,000 mark.

FIGURE 2-1
ANNUAL OPERATIONS PER ACOUSTIC COUNTER DATA



Note: Dotted line shows trendline.
Source: SLCDA Acoustic Counter Data, 2021

As part of this study, Envirosuite (EVS) Earth Flight Tracking Data was also obtained and used. This data was gathered and used to provide a detailed sample of the exact aircraft types operating at U42. Through analysis of this data, a fleet mix based on propulsion type as well as critical aircraft could be determined.

The EVS data available for this study included an 18-month period between April 2020 and September 2021. The EVS data consists of flight track and aircraft identification acquired through the FAA's System Wide Information Management (SWIM) database. The data provides operational counts by specific aircraft type and helped validate the acoustic traffic counter data.

The 18 months of EVS data was totaled and then annualized, as shown in **Table 2-3**, equating to 52,393 annual operations. This is roughly 30 percent lower than the acoustic traffic counter data for 2020, which recorded 70,990 annual operations. The discrepancy required a validation process to determine which data source should be used as a baseline level of operations.

The TVY Master Plan study is being completed simultaneously with this U42 Master Plan study, and EVS data was collected for both airports. For the TVY Master Plan project, game cameras were used to capture 18 days' worth of flight activity between September 16th and October 3rd, 2020. Because the EVS data for

TVY was lacking many operations due to lesser radar coverage in the Tooele Valley, the game camera data was used to validate acoustic data. The average daily operational levels of the game camera data closely aligned with and validated the average daily levels of acoustic traffic counter data. Thus, for the TVY Master Plan, the acoustic traffic counter data was used for the baseline of annual operations. The acoustic traffic counters at U42 are similar to those at TVY, and data is collected by the same SLCDA staff. As such, the U42 acoustic traffic counter data was determined acceptable for use as the baseline of annual operations.

TABLE 2-3
EVS DATA OPERATIONS BY PROPULSION TYPE

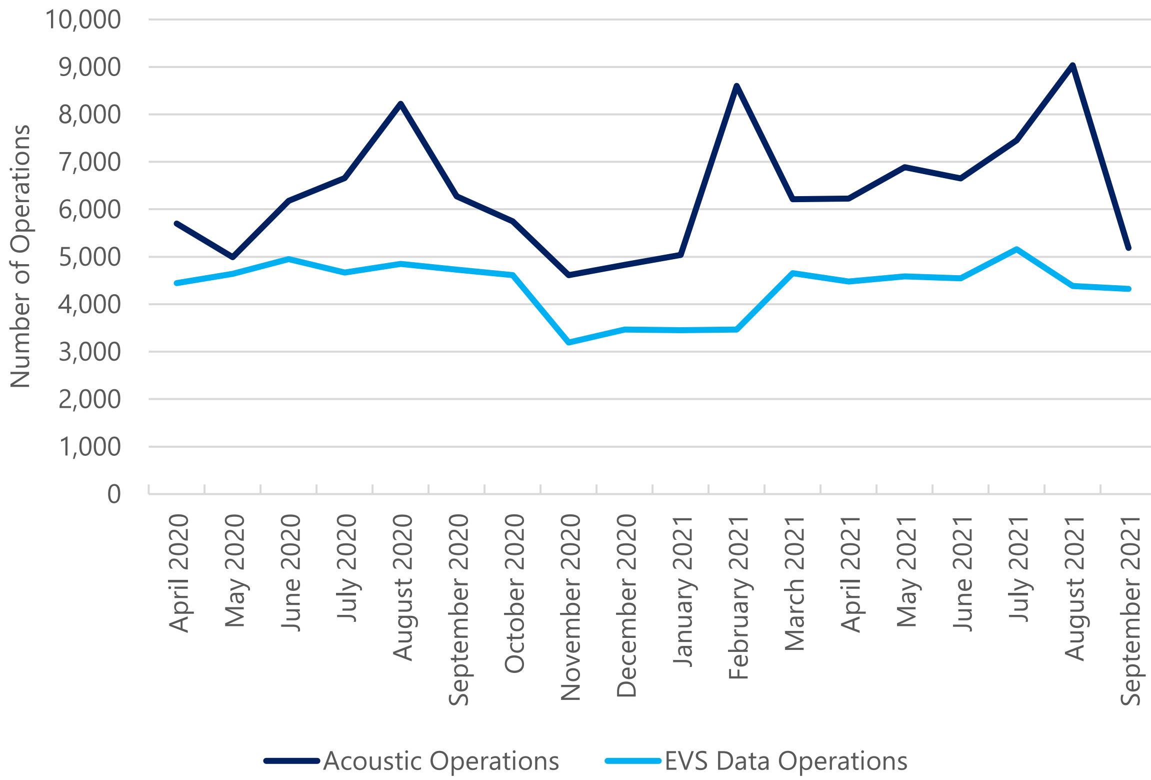
Propulsion Class	9 Months 2020 Ops	9 Months 2021 Ops	18 Months Total Ops	Annualized
Helicopter	403	1,615	2,018	1,345
Jet	540	369	909	606
Single Piston	33,140	31,446	64,586	43,057
Dual Piston	1,047	953	2,000	1,333
Quad Piston	2	1	3	2
Turboprop	484	496	980	653
Unknown	3,932	4,161	8,093	5,395
Total	**39,548**	**39,041**	**78,589**	**52,393**

Source: EVS Earth Flight Tracking Data; RS&H Analysis, 2022

The EVS data was also compared to the acoustic traffic counter data on a month-by-month basis, as shown in **Figure 2-2**. Traffic at U42 is seasonally affected and weather dependent, as evidenced by the spike in operations in the summer months of 2020 and 2021. The TVY acoustic data was also compared with the acoustic data collected for U42, and both showed spikes in operations in August of 2020, February of 2021, and again in August of 2021. The alignment between data sets confirmed accuracy of the acoustic traffic counter data.

Overall, the EVS data provides excellent data pertaining to fleet mix and aircraft types operating at the airport, but does not catch all operations, specifically touch-and-go operations. Thus, acoustical data was used for the annual operations baseline and the EVS data was used for analysis of aircraft specific operations.

FIGURE 2-2
ACOUSTIC COUNTER OPERATIONS CHART



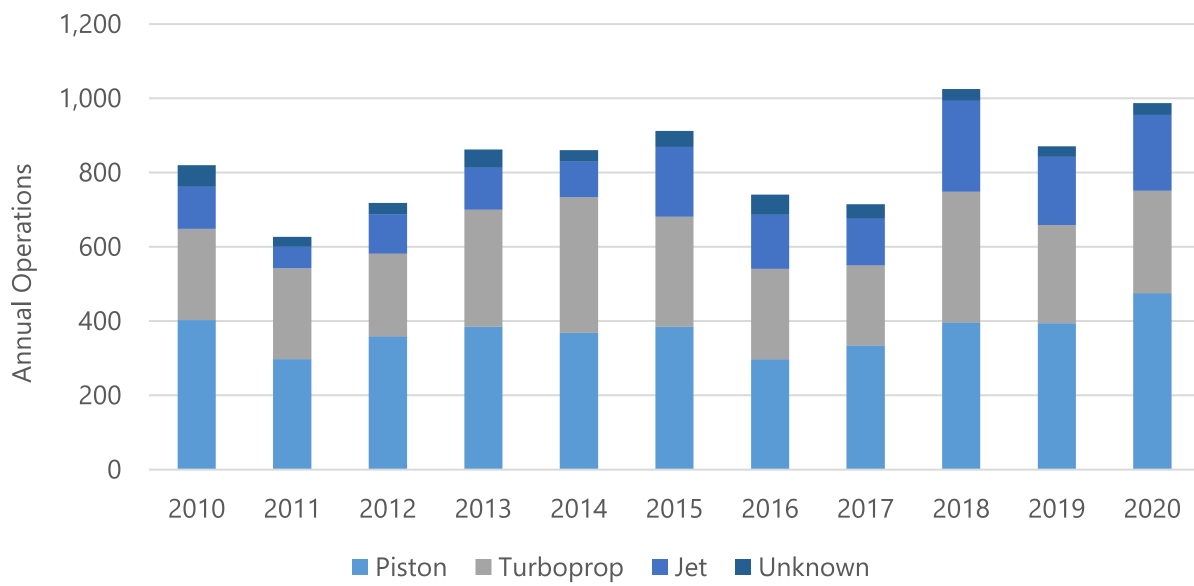
Source: EVS Earth Flight Tracking Data; RS&H Analysis, 2022

2.4.1 FAA TFMSC Data Analysis

The FAA Traffic Flow Management System Counts (TFMSC) data was also examined for U42. TFMSC data is created when pilots file flight plans, and mostly includes flights conducted under Instrument Flight Rules (IFR). At airports such as U42, the FAA system does not capture all IFR flights conducted at the airport. Nevertheless, the data is useful in examining trends and determining what aircraft fleet mix is using the Airport under an IFR flight plan. These operations are typically business-specific operations and may be related to charter operations. This data assists in pulling out those operations that are mission-oriented from training operations.

Figure 2-3 illustrates the number of annual operations by propulsion type captured in the TFMSC data between 2010 and 2020. On average, 45 percent of IFR operations were conducted by piston aircraft, 33 percent by turboprop aircraft, 17 percent by jet aircraft, and the remining 5 percent is unknown. The piston category includes both single and dual engine aircraft. In examining the dataset of specific aircraft types making up these operations, it was found the piston category fleet consists mostly of higher performance aircraft not typically used as flight training aircraft.

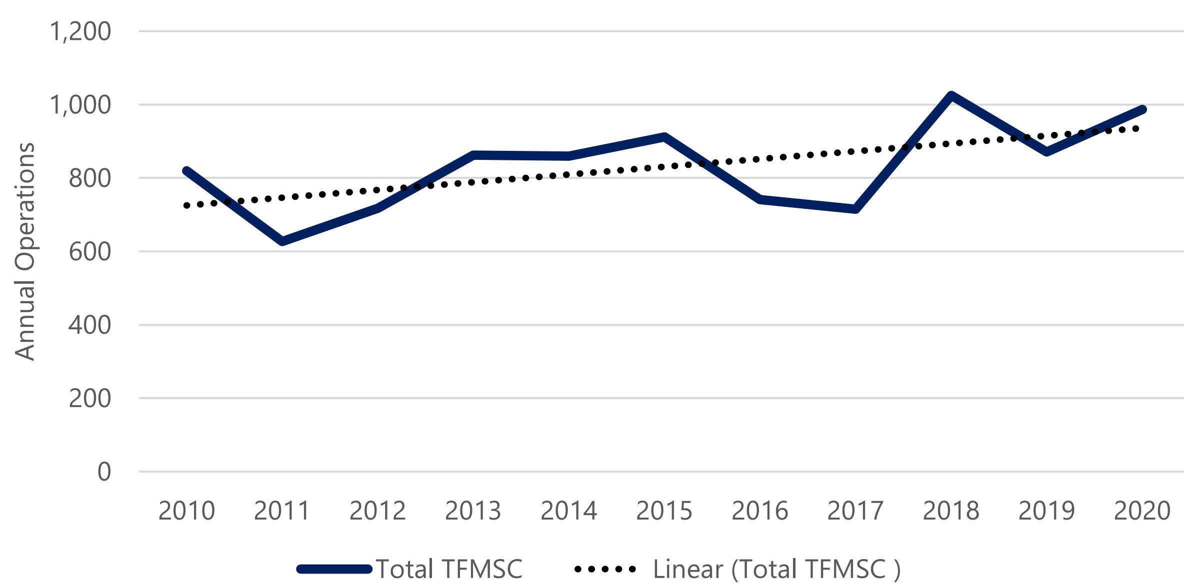
FIGURE 2-3
TFMSC ANNUAL OPERATIONS BY PROPULSION TYPE



Source: FAA TFMSC Database; RS&H Analysis, 2022

Since 2010, there has been an upward trend in IFR operations at U42, as detailed by the trendline in **Figure 2-4**. These operations are conducted predominantly by high performance aircraft, indicating U42 is being used more consistently by operators with mission-specific operations related to business or other non-training purposes.

FIGURE 2-4
TFMSC ANNUAL OPERATIONS TRENDLINE



Note: Dotted line shows trendline.
Source: FAA TFMSC Database; RS&H Analysis, 2022

2.4.2 Historical Based Aircraft Counts

Table 2-4 details historical based aircraft as reported in the FAA 2019 Detailed Terminal Area Forecast (TAF) and the FAA 2020 TAF. The FAA Detailed TAF provided operations by aircraft type and is no longer available at the time of this writing. Those numbers were carried over from the General Aviation Strategy Plan (GASP) that was conducted as a component of the 2020 SLC Airport Master Plan. The FAA 2020 TAF provides only a total number of based aircraft and does not align with the older 2019 Detailed TAF.

TABLE 2-4
HISTORICAL BASED AIRCRAFT DATA

FAA 2019 Detailed Terminal Area Forecast						
Year	Single-Engine	Multi-Engine	Jet	Helicopter	Total	2020 TAF Total
2008	192	19	4	5	220	244
2009	219	20	5	5	249	244
2010	219	20	5	5	249	269
2011	154	10	1	2	167	273
2012	228	15	2	3	248	191
2013	259	17	2	3	281	272
2014	192	11	1	6	210	311
2015	220	16	1	7	244	240
2016	220	16	1	7	244	274
2017	194	9	1	3	207	272
2018	200	13	1	6	220	272
2019	-	-	-	-	-	222
2020	-	-	-	-	-	222
2021	190	12	1	3	206	206

Notes: FAA 2020 Terminal Area Forecast shown for comparison. 2021 data is based on SLCDA records. The BasedAircraft.com database record of 177 based aircraft was used as the starting point for forecasting purposes.
Source: FAA 2019 Detailed Terminal Area Forecast; SLCDA Records 2022

Overall, the difference in historical data is negligible. Over the last decade, no hangar or apron development has occurred at U42 and based aircraft numbers have remained relatively consistent. Knowing that facilities haven't been recently developed and that U42 is typically at maximum capacity for based tenants, the historical fluctuations of based aircraft are assumed to be related to "snapshots in time" of reporting when leases were in transition and/or reporting errors.

In 2022, SLCDA records were analyzed and a total of 206 aircraft were based at U42. At that time, a corporate hangar and space in the FBO hangars were in transition between leaseholders. On average, U42 is estimated to have between 200 and 225 based aircraft, the difference being related to changes in leases and size of aircraft based in the larger hangars where multiple aircraft are stored.

The FAA uses an online database, BasedAircraft.com, to track based aircraft at all NPIAS airports. That system uses aircraft N- numbers for tracking purposes, and aircraft that lack airworthy certificates are not counted as based aircraft. Additionally, due to aircraft being sold and moved to various airports, it is typical that some aircraft may be counted at other airports, and thus not able to be counted at their new home airport until further validated. At U42, the database reported 177 based aircraft at the time of this writing. The lower count compared to airport records was determined to be a result of a few unairworthy aircraft still in hangars and new aircraft to U42 that still required validation in the database. For forecasting purposes, the base number of 177 aircraft was used as the baseline.

2.5 PRIOR FORECASTS

This section provides a review of prior forecasts of operations and based aircraft, including the FAA 2020 TAF and the policy driven forecasts developed as part of the SLCDA General Aviation Strategy Plan which was completed in 2019. The FAA 2020 TAF provides historical data from 2011 through 2019 as well as a 20-year forecast. The GASP forecast included scenarios of growth at TVY and U42 based on the hypothetical relocation of GA aircraft from SLC. The following subsections describe these forecasts and how this master plan forecast is incorporating them.

2.5.1 Terminal Area Forecast

Table 2-5 shows the FAA Terminal Area Forecast (TAF) for U42. The forecast for U42 shows no growth throughout the planning period. This is typical of small general aviation airports like U42 because non-towered airports do not have verified operational data provided by an airport traffic control tower facility. Historical data is estimated by airport management and reported to the State and FAA. That estimate is typically incorporated into the TAF, and for small airports like U42, zero growth forecasts are usually assumed unless a planning study is provided to the FAA.

TABLE 2-5
FAA 2020 TERMINAL AREA FORECAST

Year	Itinerant Air Taxi	Itinerant General Aviation	Itinerant Military	Local General Aviation	Local Military	Total Annual Operations	Based Aircraft
Historical							
2011	450	24,210	7,500	48,492	0	80,652	273
2012	650	18,720	7,500	48,130	0	75,000	191
2013	650	18,720	7,500	48,130	0	75,000	272
2014	650	18,720	7,500	48,130	0	75,000	311
2015	658	18,953	7,593	48,730	0	75,934	240
2016	658	18,953	7,593	48,730	0	75,934	274
2017	658	18,953	7,593	48,730	0	75,934	272
2018	658	18,953	7,593	48,730	0	75,934	272
2019	658	18,953	7,593	48,730	0	75,934	222
Forecast							
2020	658	18,953	7,593	48,730	0	75,934	222
2025	658	18,953	7,593	48,730	0	75,934	222
2030	658	18,953	7,593	48,730	0	75,934	222
2040	658	18,953	7,593	48,730	0	75,934	222
CAGR (2019-2040)	0%	0%	0%	0%	0%	0%	0%

Source: FAA 2020 Terminal Area Forecast

2.5.2 General Aviation Strategy Plan

The GASP was completed in 2019 as a component of the Salt Lake City International Airport Master Plan. That study developed a simplistic baseline forecast for U42 and TVY and two scenario forecasts based on policy decisions predicated on the relocation of small GA aircraft at SLC to U42 and TVY.

2.5.2.1 GASP Baseline Forecast

The GASP study noted that operations and based aircraft at U42 have not followed socio-economic trends in the region. The result is that all socio-economic models tested provided coefficients with inadequate correlation. Therefore, local socio-economic trends were not considered viable indicators for based aircraft or operational forecasts.

The GASP baseline forecast for based aircraft showed immediate growth in the near term related to flight school expansion. At the time of the GASP writing in 2019, conditions were similar to today in 2022 and flight schools were growing fleets to keep up with demand. However, the baseline forecast incorporated an overall decline in single piston aircraft in correlation with the FAA Aerospace Forecasts of the GA fleet. Multi-engine, jet and helicopter fleets were forecasted to continue to grow. The baseline GASP based aircraft forecast is detailed in **Table 2-6**.

TABLE 2-6
GASP BASELINE BASED AIRCRAFT FORECAST

Year		Single-Engine Piston	Multi Engine Piston	Jet	Helicopter	Total
Historical	2008	192	19	4	5	220
	2009	219	20	5	5	249
	2010	219	20	5	5	249
	2011	154	10	1	2	167
	2012	228	15	2	3	248
	2013	259	17	2	3	281
	2014	192	11	1	6	210
	2015	220	16	1	7	244
	2016	220	16	1	7	244
	2017	194	9	1	3	207
	2018	200	13	1	6	220
Forecast	2027	209	13	1	7	230
	2032	204	15	1	8	228
	2037	199	17	2	8	226
CAGR 2008-2018		0.4%	-3.7%	-12.9%	1.8%	0.0%
CAGR 2018-2037		0.0%	1.4%	3.7%	1.5%	0.1%

Source: FAA Detailed Terminal Area Forecast; SLCDA; RS&H/L&B Analysis, 2019

Annual operations were forecast to grow from 88,756 in 2018 to 103,980 by 2037. That equates to a compound average annual growth rate of 0.84 percent. The growth in that forecast was attributed to operations per based aircraft (OPBA) increasing at the same level as based aircraft were forecast to grow and increased local GA OPBA assuming continued growth of flight training operations. The increase in flight training activity was estimated to support continued growth in operations despite the forecast for based aircraft to decline.

2.5.2.2 GASP Scenario #1

Scenario #1 was an optimistic, aggressive best-case scenario. The scenario was based on the relocation of based aircraft at SLC to U42 and TVY. Of those estimated to seek relocation it was assumed that 75 percent would relocate to U42, 15 percent would relocate to TVY, and the remaining 10 percent would relocate to an airport outside of the SLCDA system of airports or no longer lease a hangar. **Table 2-7** and **Table 2-8** show the Scenario #1 based aircraft and aircraft operations forecast for U42.

TABLE 2-7
SCENARIO #1 BASED AIRCRAFT FORECAST

Year		Single-Engine	Multi-Engine	Jet	Helicopter	Total
Historical	2017	194	9	1	3	207
	2018	200	13	1	6	220
Forecast	2022	282	22	1	8	313
	2027	286	27	1	9	323
	2032	290	33	1	10	334
	2037	294	39	2	10	345
CAGR 2018-2037		2.0%	6.0%	3.7%	2.7%	2.4%

Source: SLCDA; RS&H/L&B Analysis, 2019

TABLE 2-8
SCENARIO #1 AIRCRAFT OPERATIONS FORECAST

Year		Piston		Turboprop		Jet	Helicopter	Total
		Single-Engine	Multi-Engine	Single-Engine	Multi-Engine			
Historical	2017	53,475	6,010	2,761	1,559	1,559	9,584	74,948
	2018	57,493	8,383	2,968	2,176	1,847	15,889	88,756
Forecast	2022	73,709	9,437	5,475	3,115	2,214	18,167	112,117
	2027	75,656	10,005	5,812	3,599	2,530	19,205	116,807
	2032	77,678	10,858	6,144	4,204	2,890	20,391	122,165
	2037	79,589	11,816	6,473	4,891	3,280	21,677	127,726
CAGR 2018-2037		1.7%	1.8%	4.2%	4.4%	3.1%	1.6%	1.9%

Source: FAA National Offload Program; RS&H/L&B Analysis, 2019

2.5.2.3 GASP Scenario #2

Scenario #2 shows a more conservative scenario with slower implementation of facility improvements based on the recommendations included in the GASP. An additional 15,010 aircraft operations are forecasted in Scenario #2 at U42 by 2037. **Table 2-9** and **Table 2-10** show the Scenario #2 based aircraft and aircraft operations forecast for U42.

TABLE 2-9
SCENARIO #2 BASED AIRCRAFT FORECAST

Year		Single-Engine	Multi-Engine	Jet	Helicopter	Total
Historical	2017	194	9	1	3	207
	2018	200	13	1	6	220
Forecast	2022	243	15	1	6	265
	2027	261	19	1	9	290
	2032	261	24	1	10	296
	2037	261	27	2	10	300
CAGR 2018-2037		1.4%	3.9%	3.7%	2.7%	1.6%

Source: FAA National Offload Program; RS&H/L&B Analysis, 2019

TABLE 2-10
SCENARIO #2 AIRCRAFT OPERATIONS FORECAST

Year		Piston		Turboprop		Jet	Helicopter	Total
		Single-Engine	Multi-Engine	Single-Engine	Multi-Engine			
Historical	2017	53,475	6,010	2,761	1,559	1,559	9,584	74,948
	2018	57,493	8,383	2,968	2,176	1,847	15,889	88,756
Forecast	2022	67,092	9,093	4,175	2,560	2,214	17,878	103,012
	2027	71,324	9,625	4,970	2,920	2,530	19,205	110,573
	2032	72,540	10,454	5,158	3,402	2,890	20,391	114,835
	2037	73,622	11,305	5,340	3,767	3,280	21,677	118,990
CAGR 2018-2037		1.3%	1.6%	3.1%	2.9%	3.1%	1.6%	1.6%

Source: FAA National Offload Program; RS&H/L&B Analysis, 2019

2.5.3 Utah Airports Based Aircraft TAF Comparison

An examination of other airports in Utah was conducted to compare FAA forecasted growth rates of based aircraft. **Table 2-11** details the historical and forecast based aircraft for Heber Valley Airport (HCR), Odgen-Hinkley Airport (OGD), Spanish Fork Airport (SPK), Provo Airport (PVU), and St. George Regional Airport (SGU). HCR, OGD, SPK, and PVU are all airports near the Salt Lake Valley. St. George was included in the comparison because it is a similar fast growing Utah city with a population base well suited to support flight schools. In discussions with flight school operators at U42, it was noted that some have operations at SPK and have considered opening another division at SGU. Additionally, the FAA TAF forecast for the State of Utah was included in the comparison analysis.

Most of these airports and the State show growth of based aircraft forecasted throughout the planning period. Many of these airports have experienced strong based aircraft growth in the past 20 years, especially SPK. Some airports have lost based aircraft over the last 20 years, such as PVU and OGD, but are forecast to regain some of them in the future. That phenomenon correlates directly to the FAA Aerospace Forecast which forecasts a decline in single engine piston activity. At PVU, many older and rarely used aircraft stored on tie-downs eventually got sold, moved, or scrapped which resulted in a decline in fleet since 2000. Yet, with strong business growth and the national need for flight training, PVU is seeing new hangar development and newer modern small GA aircraft being based at the airport. This is a recognized trend across the country at busy GA airports near metropolitan areas.

The FAA TAF forecasted the total number of based aircraft within the state of Utah to grow at 0.81 percent per year through the planning period. This is less than the more metropolitan and resort-oriented airports in the comparison (except for SPK which like U42 has a no growth forecast typical of small GA airports without a recent planning study forecast). This correlates to what the GA industry has experienced nationwide, which is growth within affluent areas and metropolitan areas while rural area growth remains flat. The 0.81 percent growth rate forecasted for the State overall was determined to be a reasonable estimate for baseline growth at U42, as it is expected that U42 will contribute to a correlated share of the State's growth. As such, a 0.8 percent growth rate was used for the baseline forecast of based aircraft at U42.

TABLE 2-11
FAA TAF UTAH AIRPORTS BASED AIRCRAFT COMPARISON

Year	Heber Valley (HCR)	Ogden (OGD)	Spanish Fork (SPK)	Provo (PVU)	St. George (SGU)	State of Utah
TAF Historical Based Aircraft Data						
2000	76	270	50	153	103	N/A
2001	84	292	50	153	105	N/A
2002	89	292	50	153	118	N/A
2003	90	292	50	154	118	N/A
2004	94	292	108	157	151	N/A
2005	94	292	111	166	177	N/A
2006	100	292	111	166	177	N/A
2007	100	385	111	166	178	N/A
2008	95	277	116	127	178	N/A
2009	113	256	130	114	177	2,050
2010	97	251	125	114	173	1,968
2011	99	247	125	114	177	1,937
2012	87	244	115	111	177	1,843
2013	87	245	114	111	183	2,014
2014	89	243	114	111	185	2,049
2015	98	236	154	111	185	2,035
2016	96	241	155	111	185	2,117
2017	78	236	155	111	195	2,056
2018	78	241	155	111	195	2,063
2019	78	241	141	111	195	1,967
CAGR 2000-2019	0.14%	-0.60%	5.61%	-1.67%	3.42%	
CAGR 2009-2019	-3.64%	-0.60%	0.82%	-0.27%	0.97%	-0.41%
TAF Forecast Based Aircraft Data						
2020	80	241	141	112	197	1,980
2025	90	243	141	122	212	2,058
2030	101	253	141	132	227	2,142
2040	131	273	141	152	257	2,328
CAGR 2019-2020	2.50%	0.60%	0.00%	1.51%	1.32%	0.81%

Note: TAF data did not include State of Utah historical numbers between 2000 through 2008.
Source: FAA Terminal Area Forecast, 2020

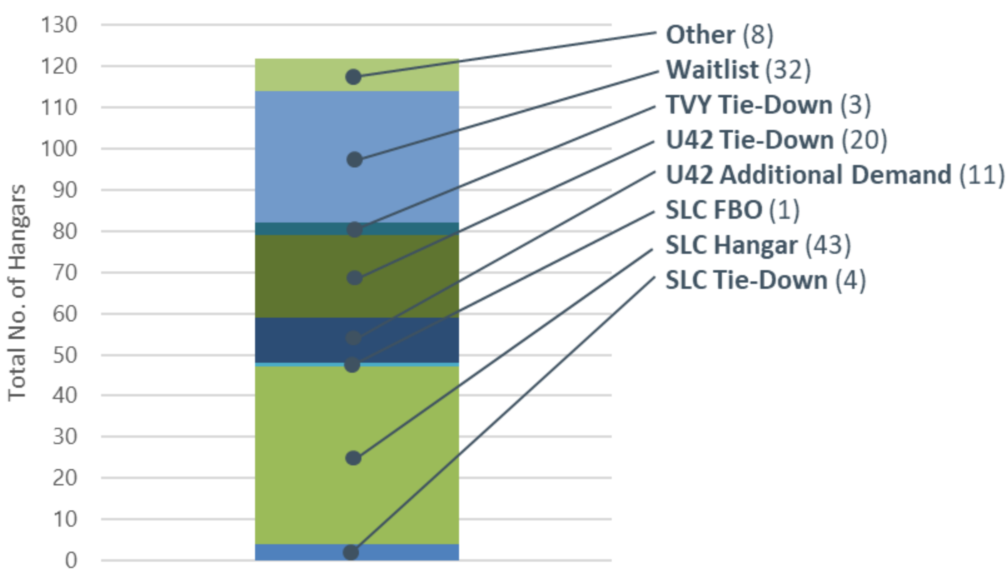
2.6 TENANT SURVEY

This U42 Master Plan is being conducted simultaneously with the TVY Master Plan. As part of these studies, a tenant survey was issued to SLCDA GA tenants at all three of the SLCDA airports. The survey was disseminated to tenants through the SLCDA GA Newsletter which is sent electronically every month. The GA Newsletter is publicly available, and anyone can subscribe to the newsletter via the SLC website. As such, non-tenants also responded to the survey.

The survey was designed to gauge interest in new hangars at U42 and TVY. In addition, tenants at SLC were asked if they would be interested in relocating to U42 or TVY if there existing aircraft storage accommodations were impacted by proposed development, and if so, how many hangars they would want and at which airport.

In total, the survey garnered 195 responses. Of those responses, 57 were tenants at SLC, 76 were tenants at U42, 9 were tenants at TVY, and 53 were not currently a tenant at any SLCDA airport. Overall, the survey indicated potential demand for 122 hangars at U42. **Figure 2-5** displays a breakdown of potential U42 hangar/aircraft storage demand as indicated by the survey results.

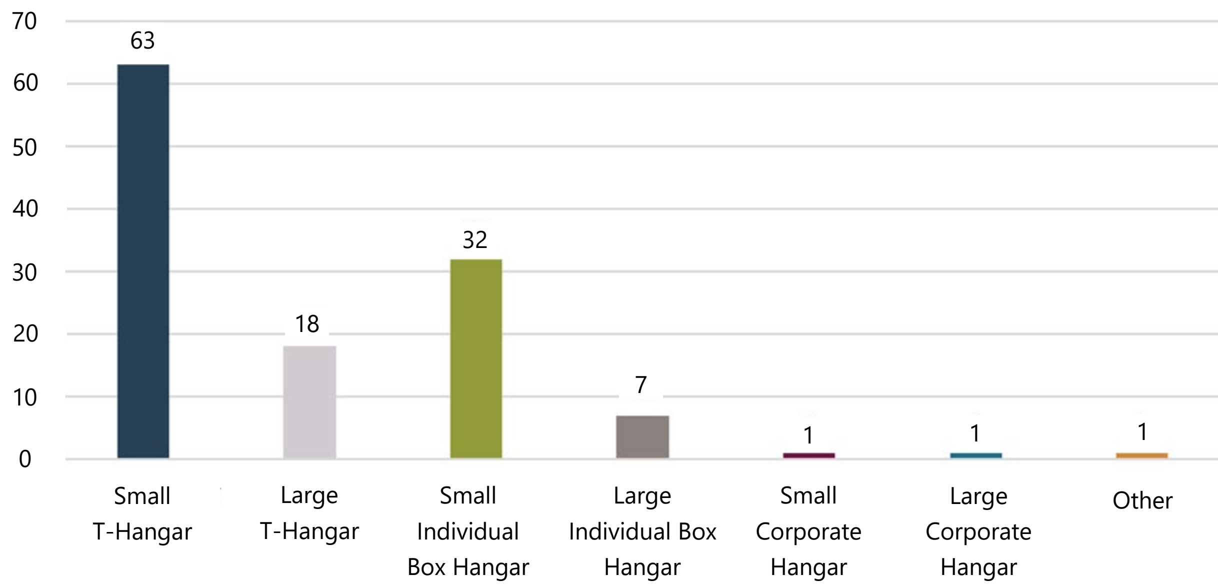
FIGURE 2-5
POTENTIAL HANGAR DEMAND BY ORIGIN



Source: GA Tenant Survey, RS&H Analysis, 2022

The survey also asked respondents what type of hangar they would be interested in leasing. **Figure 2-6** denotes the types of hangars the respondents would like at U42. The majority of respondents desired T-hangars. There was also interest in box hangars and corporate hangars and one individual asked for a shade type hangar (which constitutes the “Other”).

FIGURE 2-6
POTENTIAL HANGAR DEMAND BY HANGAR TYPE



Source: GA Tenant Survey, RS&H Analysis, 2022

2.7 AVIATION FORECASTS

The GA Tenant Survey confirmed demand for hangars within the community of aircraft owners already based or on a waitlist within the SLCDA system of airports. The survey also validated the GASP forecast scenarios, which were based on relocation of smaller GA aircraft from SLC to TVY and U42.

Several classical forecasting techniques, such as a socio-economic regression model, were attempted while forecasting based aircraft and aircraft operations at U42. However, no suitable model was found. Therefore, the local socio-economic trends were not considered as viable indicators for forecasting. For U42, the FAA TAF forecast for the state of Utah was determined as the best indicator of future levels for use in the baseline forecast.

Hangar development at U42 is likely to materialize within the planning period. The demand within West Jordan and the Salt Lake Valley for flight training indicate, at the very least, based aircraft growth at U42 will be in line with the FAA's based aircraft forecast for the state of Utah of 0.8 percent per year. That growth rate was carried forward for this study's baseline forecast of based aircraft as detailed in **Table 2-12**.

The growth rate between 2020 and 2025 equated to 1.6 percent year over year. This rate reflects organic growth of 0.8 percent year-over-year as well as the Airport's efforts to have aircraft validated within the FAA BasedAircraft.com database and ensuring only airworthy aircraft are based on tiedowns and hangars. Beyond 2025, the 0.8 percent growth rate is applied, equating to 241 total based aircraft by 2040.

This baseline forecast of based aircraft is predicated on continued growth of flight training. Flight schools are expected to grow fleets of single engine aircraft, as well as add one additional based multi-engine and helicopter within the planning period. One additional turboprop and jet is also forecast to be based at U42 by the end of the planning period, which correlates to the FAA's expectation of national turbo and jet fleets to grow through the future.

TABLE 2-12
BASELINE U42 BASED AIRCRAFT FORECAST

Year	Single-Engine Piston	Multi-Engine Piston	Turboprop	Jet	Helicopter	Total
2020	160	9	4	1	3	177
2025	189	9	4	1	3	206
2030	197	10	4	1	3	215
2040	213	10	5	2	4	234
CAGR (2020-2040)	1.4%	0.5%	1.1%	3.5%	1.4%	1.4%
CAGR (2025-2040)	0.8%	0.4%	1.2%	4.5%	1.7%	0.8%

Note: 2020 is baseline historical year
Source: SLCDA Records; BasedAircraft.com; RS&H Analysis, 2022

Table 2-13 details the baseline operations forecast. The breakout of operational type (i.e., itinerant air taxi, itinerant general aviation, etc.) is based on the breakout percentage of the FAA 2020 TAF. That breakout is valid as the majority of operations at U42 are flight training touch-and-go operations (local general aviation), as well as training operations that leave the airport area (itinerant general aviation). The Army National Guard conducts helicopter flight training operations predominantly Monday through Thursday. Those operations typically leave the airport area as well, which correlates to itinerant military operations.

Itinerant air taxi operations were found to be roughly aligned with TFMSC data which, for 2020, showed a total of 987 operations. It is assumed most air taxi operations are conducted under IFR flight plans. Considering U42 also has based tenants who operate aircraft for business-specific missions and not all TFMSC operations would be related to air taxi operations, 615 itinerant air taxi operations in 2020 is a reasonable estimate. The percentage total of air taxi relative to other categories of operations was held constant though the forecast.

The baseline operations forecast shows growth in all categories, except military, at 0.8 percent per year. This assumes the operations per based aircraft for these categories remains roughly the same though the planning period. The total annual OPBA will decline as itinerant military operations are held constant through the planning period.

The baseline operations forecast is conservative, and accounts for the fact that, between 2005 and 2020, U42 has not seen consistent growth in operations. As shown previously in **Figure 2-1**, the trendline for annual operations is flat at around 70,000 operations. In the future, some years are likely to see operational levels exceed this forecast, while other years may be lower than projected. Overall, it is expected the baseline for average annual operations will increase up to the 80,000 per year mark, with an upward trend from 2020 through the planning period. This will be largely due to increases in flight training activity as well as continued increases in operations by the growing national jet and turboprop aircraft fleet.

TABLE 2-13
BASELINE U42 OPERATIONS FORECAST

Year	Itinerant Air Taxi	Itinerant General Aviation	Itinerant Military	Local General Aviation	Local Military	Total Annual Operations	Based Aircraft
2020	615	17,719	7,099	45,557	0	70,990	177
2025	664	19,139	7,099	49,208	0	76,111	213
2030	671	19,319	7,099	49,671	0	76,760	221
2040	741	21,354	7,099	54,904	0	84,098	241
CAGR (2020-2040)	0.9%	0.9%	0.0%	0.9%	0.0%	0.9%	1.6%

Note: 2020 is baseline historical year
Source: SLCDA Records; BasedAircraft.com; RS&H Analysis, 2022

2.7.1 High Growth Forecast

Considering the potential demand indicated in the results of the GA Tenant Survey, the increase in flight training forecasted industry-wide, and the robust growth of businesses and population within the Wasatch Front, a high growth forecast was developed. This forecast assumed hangar demand indicated in the GA Tenant Survey would be accommodated by 2025, adding approximately 130 based aircraft. After 2025, the 0.8 percent growth rate was applied, equating to a total of 378 based aircraft by 2040, as detailed in **Table 2-14**.

The results of the GA Tenant Survey suggested aircraft relocated from SLC to U42 would be single piston aircraft along with a few multi-engine piston aircraft. Thus, most of the growth forecasted in the high growth forecast are single engine piston aircraft. A few additional multi-engine pistons are predicted to be based over time as flight training schools continue to grow fleets. Also, one additional turboprop, jet, and helicopter are forecasted to be based at U42 by the end of the planning period.

The high growth forecast of operations is detailed in **Table 2-15**. This forecast is similar to the baseline forecast in that all operational categories are held constant based on today's OPBA for each[11], expect for military which is not forecasted to grow. The forecast suggests that operations would exceed 100,000

[11] OPBA was analyzed based on the total number of based aircraft listed within SLCDA records, which at the time of this writing was 206. Those records included validated and unvalidated aircraft within the FAA BasedAircraft.com system.

after the hangar demand from the GA Tenant Survey is accommodated. Annual operations would then continue to grow as the based aircraft fleet continues to grow though the rest of the planning period.

TABLE 2-14
HIGH GROWTH BASED AIRCRAFT FORECAST

Year	Single-Engine Piston	Multi-Engine Piston	Turboprop	Jet	Helicopter	Total
2020	160	9	4	1	3	177
2025	314	12	4	1	3	335
2030	327	13	4	1	3	348
2040	354	14	5	2	4	378
CAGR (2020-2040)	4.1%	2.2%	0.8%	3.5%	0.8%	3.9%

Note: 2020 is baseline historical year
Source: SLCDA Records; BasedAircraft.com; RS&H Analysis, 2022

TABLE 2-15
HIGH GROWTH OPERATIONS FORECAST

Year	Itinerant Air Taxi	Itinerant General Aviation	Itinerant Military	Local General Aviation	Local Military	Total Annual Operations	Based Aircraft
2020	529	15,225	7,099	39,144	0	61,996	177
2025	1,000	28,815	7,099	74,086	0	111,000	335
2030	1,039	29,933	7,099	76,961	0	115,032	348
2040	1,129	32,513	7,099	83,595	0	124,337	378
CAGR (2020-2040)	3.9%	3.9%	0.0%	3.9%	0.0%	3.5%	3.9%

Note: 2020 is baseline historical year
Source: SLCDA Records; BasedAircraft.com; RS&H Analysis, 2022

Overall, the high growth forecast accounts for the potential demand indicated in the GA Tenant Survey as well as the organic growth forecasted to materialize at U42.

2.8 CRITICAL AIRCRAFT

The FAA requires the identification of the existing and future critical aircraft for airport planning purposes. The critical aircraft is the most demanding aircraft, or grouping of aircraft, using the airport regularly. Regular use is specifically defined in AC 150/5000-17, *Critical Aircraft and Regular Use Determination*, as 500 total annual operations, not counting touch-and-go landings.

Three parameters are used to classify the critical aircraft: Aircraft Approach Category (AAC), Airplane Design Group (ADG), and Taxiway Design Group (TDG). The AAC, depicted by a letter, relates to aircraft landing speeds. The ADG, depicted by a Roman numeral, relates to airplane wingspan and tail height. The

TDG, classified by number, relates to the outer-to-outer main gear width and the distance between the cockpit and main gear. These parameters serve as the basis of the design and construction of airport infrastructure.

The 2010 Airport Layout Plan (ALP) lists the Beechcraft Super King Air as the existing critical aircraft for U42. That aircraft is a B-II-2 aircraft.[12] The ALP denotes the Cessna Citation X as the future critical aircraft. Per the *FAA Aircraft Characteristics Database (October 2018)*, the Cessna Citation X is a B-II-1B aircraft. However, the Citation X+ is listed as a C-II-1B aircraft. The approach speed for these aircraft sits on the threshold of AAC A and AAC B. The Citation X+ came to market in 2010 and it is assumed that when the 2010 ALP was developed, manufacturer data at the time indicated the Citation X family was an AAC C aircraft. This assumption is validated considering the 2010 ALP lists the future Runway Design Code (RDC) would be upgraded to C-II in correlation to the change in critical aircraft to the Cessna Citation X.

An analysis of the EVS data obtained during this study was used to validate the existing critical aircraft. The annualized number of aircraft operations were sorted by approach and design group categories. As shown in **Table 2-16**, the EVS raw data includes 998 AAC B operations and 734 ADG II annual operations. The EVS data contained operations that were "unknown," as they weren't tagged by aircraft type. Those were disbursed into the categories of AAC and ADG by correlating percentage to total. Using this methodology, the EVS raw data disbursed implies U42 accommodated approximately 1,146 AAC B and 923 ADG II annual operations.

As noted earlier in this chapter, the EVS data provides an incomplete picture of the full breadth of operations at U42, assuming the acoustic traffic counters captured a more accurate total number of annual operations. As such, the EVS data was extrapolated to match the acoustic counter totals, as shown in the EVS extrapolated data column of the table. The EVS Extrapolated Data Distributed column includes the totals when the "unknown" data is allocated into categories. TFMSC data is also shown for comparison.

[12] B-II-2 refers to approach category (AAC) B, aircraft design group (ADG) II, and taxiway design group (TDG) 2. Since the previous ALP was published, AC 150/5300-13B has been published, which divides TDG 2 into 2A and 2B. The critical aircraft stated in the previous ALP is now categorized with TDG 2A.

TABLE 2-16
AIRCRAFT OPERATIONS BY AAC AND ADG

Annual Mean Operations by AAC					
AAC	**EVS Raw Data**	**EVS Raw Data Disbursed**	**EVS Extrapolated Data**	**EVS Extrapolated Data Disbursed**	**TFMSC**
A	44,556	51,170	60,372	69,333	805
B	998	1,146	1,352	1,553	471
C	54	62	73	84	44
D	13	15	17	20	11
Unknown	6,772	-	9,176	-	-
Annual Mean Operations by ADG					
ADG	**EVS Raw Data**	**EVS Raw Data Disbursed**	**EVS Extrapolated Data**	**EVS Extrapolated Data Disbursed**	**TFMSC**
I	40,928	51,444	55,456	69,705	901
II	734	923	995	1,250	427
Unknown	10,710	-	14,512	-	-

Note: EVS Raw Data is not extrapolated. EVS Extrapolated Data refers to the EVS data escalated to match total annual acoustic operations in 2020.
Source: EVS Earth Flight Tracking Data; FAA TFMSC Data; RS&H Analysis, 2022

The EVS data validates AAC B and ADG II aircraft are meeting the 500 annual operations threshold required for a critical aircraft. The data also indicated no one specific aircraft is conducting 500 annual operations. Instead, the threshold is met via a variety of AAC B and ADG II aircraft types.

Considering the 500 annual operations threshold cannot include touch-and-go operations, the type of B-II aircraft was further examined. The EVS data showed most B-II aircraft operating at U42 are not the type of aircraft typically used for touch-and-go training operations. The aircraft making up the majority of AAC B and ADG II operations at U42 include the Cessna Citation Jet series aircraft, Beechcraft King Air series aircraft, Cessna Caravan, Pilatus PC-12, Hawker Bae-125 business jet, and other jet and turboprop aircraft. As such, it is concluded that the B-II aircraft operations in the EVS dataset includes little to no touch-and-go operations, thereby validating the existing critical aircraft as B-II.

The Beechcraft Super King Air was carried forward as the existing critical aircraft for U42. As shown in **Table 2-17,** the Cessna Citation X+ is also carried forward as the future critical aircraft. However, because that aircraft is a TDG 1B aircraft, the Super King Air is also carried forward as a future critical aircraft as it has a more demanding taxiway design group.

Carrying forward a C-II jet aircraft as the future critical aircraft was found prudent, as these faster jet aircraft are operating today at U42, albeit below the threshold of substantial use. As the Salt Lake Valley continues to mature and business jet traffic increases at SLC, U42, and PVU, catering passengers destined to major business hubs in the valley, increased use of C-II aircraft is expected at U42.

TABLE 2-17
EXISTING AND FUTURE CRITICAL AIRCRAFT

	Design Aircraft	AAC	ADG	TDG
Existing Conditions	Beechcraft Super King Air	B	II	2A
Future Conditions	Beechcraft Super King Air	B	II	2A
	Cessna Citation X+	C	II	1B

Source: FAA Aircraft Characteristics Database (October 2018); RS&H Analysis, 2022

2.9 FORECAST SUMMARY

The summary of aviation forecasts as it relates to aircraft operations and based aircraft is provided below in **Table 2-18**. That table details the baseline forecast and growth rates projected for operations and based aircraft for the 5-, 10-, and 20-year planning period. The base year level in this table does not include what is listed in the FAA 2020 TAF, as that information was found inaccurate. Instead, the base year numbers are set at the 2020 acoustic traffic counter data levels for operations and the based aircraft levels determined in BasedAircraft.com.

TABLE 2-18
AVIATION BASELINE FORECAST SUMMARY

	Base Yr. Level	Base Yr.+5yrs.	Base Yr.+10yrs.	Base Yr.+20yrs.	Average Annual Compound Growth Rates		
					Base Yr. to +5	Base Yr. to +10	Base Yr. to +20
	2020	2025	2030	2040	2025	2030	2040
Operations							
Itinerant							
Air Taxi	615	664	671	741	1.55%	0.88%	0.94%
General aviation	17,719	19,139	19,319	21,354	1.55%	0.87%	0.94%
Military	7,099	7,099	7,099	7,099	0.00%	0.00%	0.00%
Local							
General aviation	45,557	49,208	49,671	54,904	1.55%	0.87%	0.94%
Military	0	0	0	0	0.00%	0.00%	0.00%
Total	70,990	76,110	76,760	84,098	1.40%	0.78%	0.85%
Based Aircraft							
Single Engine Piston	160	196	203	220	4.14%	2.41%	1.61%
Multi Engine Piston	9	9	10	10	0.00%	1.06%	0.53%
Turboprop	4	4	4	5	0.00%	0.00%	1.12%
Jet Engine	1	1	1	2	0.00%	0.00%	3.53%
Helicopter	3	3	3	4	0.00%	0.00%	1.45%
Other	0	0	0	0	0.00%	0.00%	0.00%
Total	177	213	221	241	3.77%	2.24%	1.56%

Source: BasedAircraft.com; RS&H Analysis, 2022

As noted in this chapter, the historical FAA data does not align with acoustic traffic counter data for operations or SLCDA records for based aircraft in 2019 or 2020. The variance can be seen in the base year 2020 data shown in **Table 2-19** below. That table details a comparison between the FAA 2020 TAF and the Master Plan baseline forecast.

TABLE 2-19
FAA TAF TO BASELINE FORECAST COMPARISON

	Year	Master Plan Forecast	2020 TAF	MP Forecast/ 2020 TAF % Difference
Operations				
Base yr.	2020	70,990	75,934	6.7%
Base yr. + 5yrs.	2025	73,587	75,934	3.1%
Base yr. + 10yrs.	2030	76,289	75,934	0.5%
Base yr. + 20yrs.	2040	82,028	75,934	7.7%
Based Aircraft				
Base yr.	2020	206	222	7.5%
Base yr. + 5yrs.	2025	214	222	3.7%
Base yr. + 10yrs.	2030	223	222	0.4%
Base yr. + 20yrs.	2040	242	222	9%

Note: TAF base year 2020 is a forecasted year in the TAF but is the same as 2019.
Source: FAA 2020 Terminal Area Forecast; BasedAircraft.com; RS&H Analysis, 2022

Chapter 3

Facility Requirements

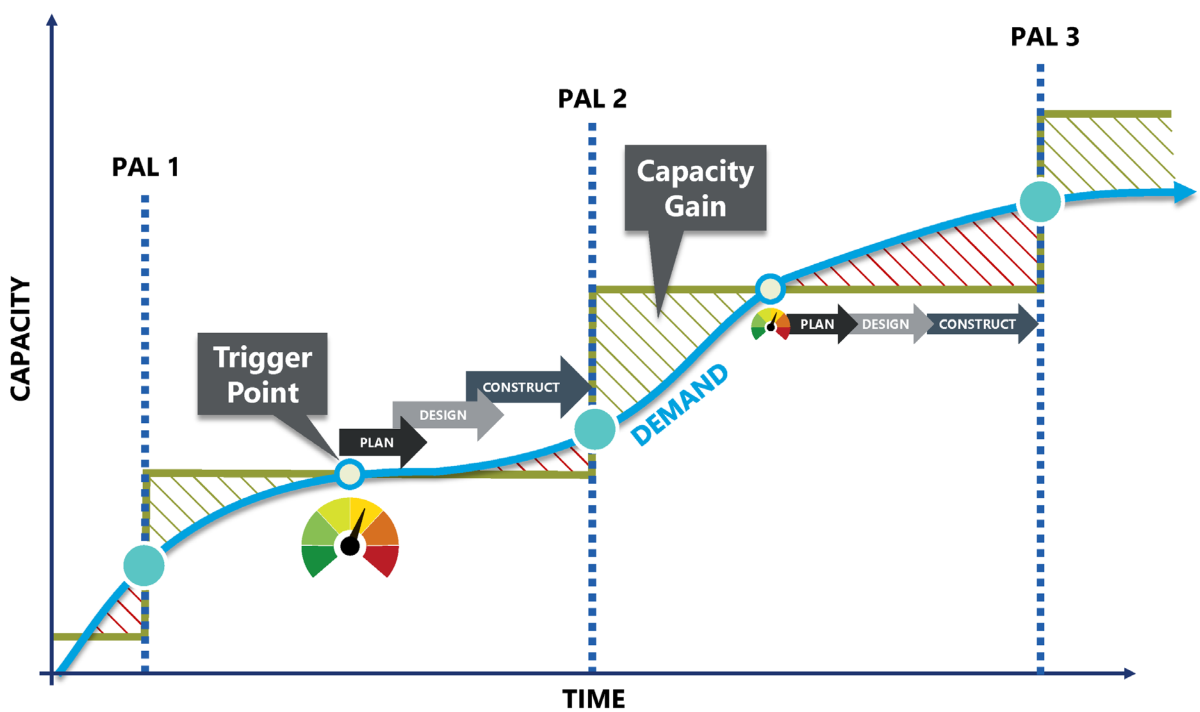
3.1 INTRODUCTION

Airport facility requirements, including the type, size, and quantity, are in large part dependent upon the future aviation activity levels projected in the aviation demand forecasts discussed in **Chapter 2, Aviation Forecasts**. New additions, expansions, or elimination of facilities can be driven by many factors including capacity constraints, updates to regulatory standards, or adjustments in U42's strategic vision. Replacement of outdated or inefficient facilities that are cost prohibitive to maintain or modernize also inform facility needs.

The South Valley Regional Airport (U42) aviation demand forecast used demographic, economic, and geographic statistical analysis to derive a preferred forecast scenario tied to real-world factors in the Greater Salt Lake City area. From this analysis, aviation activity was forecast out for a twenty-year period (2020 – 2040). Although the forecast defines aviation activity milestones for the years 2025, 2030, and 2040, it is important to understand that facility requirements at U42 are driven by levels of user demand, which may or may not coincide with those specific years. Therefore, to eliminate associations between demand levels and specific years, the levels of demand triggering facility improvements will be referred to from this point forward as Planning Activity Levels (PALs).

PALs correlate with operational levels in each respective forecast year and, subsequently, are divided into three activity levels: PAL 1, PAL 2, and PAL 3. **Figure 3-1** diagrams how and when PALs trigger the need for project planning, design, and implementation at certain demand levels, and the effect on overall facility capacity to meet user needs.

FIGURE 3-1
PLANNING ACTIVITY LEVEL TRIGGERING POINTS



Source: RS&H, 2022

The facility requirements analysis begins with a review of current FAA design standards, industry trends, emerging challenges, and innovations requiring consideration in facility planning. While EONS (economic viability, operational efficiency, natural resource conservation, social responsibility) considerations will be a critical part of the upcoming Alternatives analysis in Chapter 4, facility requirement determinations are more quantitative and objectively determined by way of modern industry guidance, best practices, and regulatory standards. This chapter is devoted to assessments in each of the following topics and functional areas of U42:

- Emerging Trends
- Airfield Capacity
- Airfield Design Standards
- Navigational, Visual, and Meteorological Aids
- Airspace Requirements
- Aircraft Parking and Storage
- Aviation Support Facilities
- Vehicle Parking and Access
- Zoning and Land Use
- Utilities

This chapter concludes with a section summarizing the key findings of the facility requirement assessments which will be used to guide identification and evaluation of future development alternatives.

3.2 EMERGING TRENDS

In planning for the future of U42, it is important to consider the emerging trends of the general aviation industry, as well as operational trends at U42 and practices of Salt Lake City Department of Airports (SLCDA) as a whole. The aviation industry is always evolving, and history demonstrates that technological innovations often precede industry transformations. The rapid pace of development in aviation is anticipated to continue and airports will be expected to adapt quickly.

U42 acts as a reliever airport for Salt Lake City International Airport (SLC). SLC has a high amount of general aviation tenants and traffic for a large hub airport, which creates congestion and can cause interference for commercial air carrier operations. To remedy this, the SLCDA has begun an effort to fully utilize its reliever airports, U42 and TVY, to be able to maintain and grow both general aviation and air carrier operations in the Greater Salt Lake City area.

One of the most impactful trends in aviation includes the changing demographics of pilots. Over the past decade, a decline in the number of pilots in the 40 to 60-year-old range has occurred. Historically, this has been an age group involved in recreational flying. Statistics show an ongoing corresponding decline in recreational flying is being experienced. Simultaneously, a sharp increase in the amount of flight training has occurred. This trend is associated with both regulatory changes and a strong demand for commercial airline pilots.

The types of general aviation aircraft flying have also been changing. Flights by aircraft more than 20 years old is slightly down over the past five years. New types of general aviation aircraft, such as the Cirrus SR-22 and Pilatus PC-12, have been introduced and these specific aircraft are becoming two of the most popular general aviation aircraft of their kind.

Other trends occurring in the general aviation industry include:

- Demand for small aircraft is decreasing due to the decreasing number of people pursuing pilot certificates for recreational purposes.
- The cost of flying has sharply increased. This is especially true with relation to cost of retail aviation gasoline, which has more than quadrupled in the last 20 years.
- Operations by private jet aircraft are increasing as a share of total operations, which results in greater demand for additional, stronger pavement and Jet A fuel availability at airports. While it might appear that jet aircraft would increase negative externalities such as noise and emissions, in fact, they operate cleaner and quieter due to engine technological advancements. Simultaneously, new aircraft often replace older, louder, and less fuel-efficient aircraft, which reduces overall noise and emission impacts on communities around airports.

Aviation trends like electric aircraft development, environmental stewardship, and new aircraft designs will influence airport facility requirements. Electric aircraft have the potential to usurp traditional internal combustion powered small aircraft currently used in flight training and recreational flying. Electric aircraft engines can simultaneously reduce operational costs as well as noise and carbon dioxide emissions, making small aircraft operations more affordable and environmentally friendly. This shift affects airport facilities by requiring improvements like electric charging ports and it could affect airport capacity and storage needs if small aircraft operations increase. Necessary upgrades or extension of electrical lines serving U42 should be considered as well as strategic locations for battery charging stations, timing to implement improvements, and adjustments to financial policies which recapture operating revenues lost by decreasing fuel sales.

3.3 AIRFIELD REQUIREMENTS

Airport and airfield design standards related to the construction of airfield infrastructure are established in FAA Advisory Circular 150/5300-13B, *Airport Design*. Each airport has a design aircraft, which is the largest, most demanding aircraft that regularly uses the airfield. Regular use is defined as at least 500 annual operations, not counting touch-and-go operations.

Three parameters are used to classify the critical aircraft: Aircraft Approach Category (AAC) Airplane Design Group (ADG), and Taxiway Design Group (TDG) shown in **Figure 3-2.** The AAC, depicted by a letter, relates to aircraft speed as it on final approach to the runway. The ADG, depicted by a Roman numeral, relates to airplane wingspan and tail height. The TDG, classified by number, relates to the outer-to-outer main gear width and the distance between the cockpit and main gear. These parameters serve as the basis of the design and construction of airport infrastructure.

FIGURE 3-2
AIRPORT DESIGN CATEGORIES

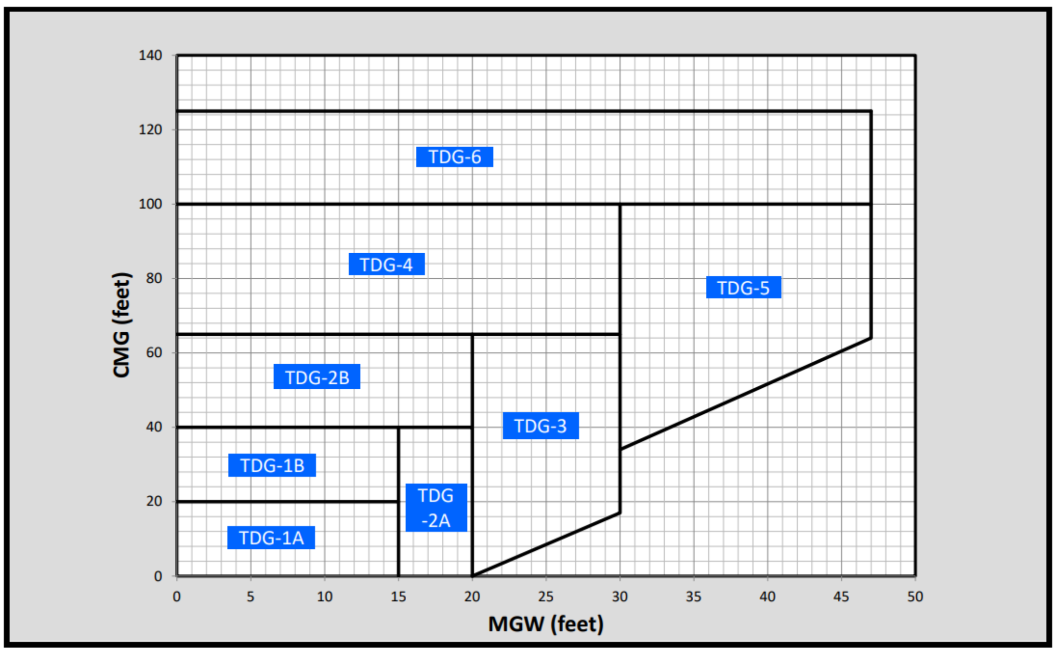
AIRCRAFT APPROACH CATEGORY

AAC	Approach Speed
A	Approach speed less than 91 knots
B	Approach speed 91 knots or more but less than 121 knots
C	Approach speed 121 knots or more but less than 141 knots
D	Approach speed 141 knots or more but less than 166 knots
E	Approach speed 166 knots or more

AIRCRAFT DESIGN GROUP

Group #	Tail Height (ft)	Wingspan (ft)
I	< 20'	< 49'
II	20' - < 30'	49' - < 79'
III	30' - < 45'	49' - < 118'
IV	45' - < 60'	118' - < 171'
V	60' - < 66'	171' - < 214'
VI	66' - < 80'	214' - < 262'

TAXIWAY DESIGN GROUP



Source: FAA AC 150/5300-13B, *Airport Design*

As identified in **Chapter 2, Aviation Forecasts**, the design aircraft for U42 is the Beech King Air B-200. The Citation X/X+ is listed as the future critical aircraft. **Table 3-1** denotes the corresponding airport design standards for these existing and future critical aircraft. Based on the evaluation of existing and future critical aircraft, a composite critical aircraft is recommended for future alternatives analysis.

TABLE 3-1
EXISTING AND FUTURE AIRPORT DESIGN CRITERIA

	Aircraft	AAC	ADG	TDG
Existing Critical Aircraft	Beechcraft Super King Air	B	II	2A
Future Critical Aircraft	Beechcraft Super King Air	B	II	2A
	Cessna Citation X+	C	II	1B
	Composite	**C**	**II**	**2A**

Source: FAA AC 150/5300-13B, Airport Design; RS&H Analysis, 2022

3.3.1 Wind Analysis and Meteorological Conditions

Weather plays a significant role in influencing airport facility needs and design requirements. Ambient temperature, precipitation, wind, visibility, cloud ceiling, and atmospheric pressure are all climate factors that affect operational parameters and future facility needs at U42. The warmest month on average for U42 is July, with an average high temperature of 94.0 degrees Fahrenheit from 1991 to 2020. Predominant winds arrive from the north-northwest.

Runway wind coverage analysis was conducted using the FAA's ADIP Windrose Tool. Data for this tool was supplied by the NOAA's Integrated Surface Database (ISD)[13]. Between 2016 and 2020, 107,362 hourly observations of winds occurred. 3,034 of these observations occurred in instrument meteorological conditions, equating to three percent of all observations occurring during instrument meteorological conditions (IMC), which are poor weather conditions where cloud ceilings are below 1,000 feet above ground level and/or there is less than three statute mile visibility.

FAA runway design standards recommend an airport's runway system provide a minimum of 95 percent wind coverage. The 95 percent wind coverage is computed on the basis of the crosswind component not exceeding the set value based on the Runway Design Code (RDC)[14]. If a single runway cannot provide this level of coverage, then a crosswind runway is warranted. The smaller an aircraft is, the less allowable crosswind component is allowed. For the smallest aircraft, such as A-I and B-I, 10.5 knots of crosswind component is allowed. For B-II aircraft, the crosswind component allowed is 13 knots, with C-II aircraft the allowable component is 16 knots. the current runway provides sufficient wind coverage. In all-weather and instrument meteorological conditions, U42 exceeds 95 percent wind coverage in even the most restrictive

[13] Information supplied on FAA ADIP through "A00028 SALT LAKE CITY MUNI 2 ARPT ANNUAL PERIOD RECORD 2016 2017 2018 2019 2020"

[14] The RDC is a design standard specific to a single runway, and per FAA Advisory Circular AC 150/5300-13B, *Airport Design*, "runway standards are related to aircraft approach speed, aircraft wingspan, and designated or planned approach visibility minimums." This practice properly configures runways to meet necessary physical and operational characteristics for the most demanding aircraft operating at the airport.

aircraft types. **Table 3-2** shows the runway wind coverage percentages for all-weather and instrument meteorological conditions at U42.

TABLE 3-2
RUNWAY WIND DATA

Runway	ALL-WEATHER WIND DATA			IMC WIND DATA		
	Crosswind Component			Crosswind Component		
	10.5 Knots	13 Knots	16 Knots	10.5 Knots	13 Knots	16 Knots
Runway 16-34	99.05%	99.63%	99.90%	98.98%	99.70%	99.97%
Runway 16	67.75%	67.97%	68.08%	46.73%	46.83%	46.87%
Runway 34	54.07%	54.42%	54.58%	87.19%	87.80%	88.04%

Source: NOAA Integrated Surface Database (ISD); All Weather Observations: 107,362; IMC Weather Observations: 3,034
Station: South Valley Regional Airport – AWOS III; Data Range: 2016-2020

3.3.2 Runway Design

Analysis of the runway addresses its ability to meet both current and forecast demand. At a minimum, runways must have the proper length, width, and strength to meet FAA recommended design standards to safely accommodate the critical aircraft. This section analyzes specific runway criteria and makes recommendations based on the forecast. Elements to be examined in this section include runway designation, length, width, strength, runway protection zones, and capacity.

3.3.2.1 Runway Designation

Runway designations provided on each runway indicate the runway orientation according to the magnetic compass bearing. Runway designations can change due to the slow drift of the magnetic poles on the Earth's surface, which over time change the runway's magnetic bearing. Magnetic declination relates to the degree of magnetic drift that must be accounted for. Depending on an airport's location and how much drift takes place, it may be necessary to change the runway designation. It is recommended that runway designations be changed if there is more than a five-degree difference from the runway's magnetic heading to its designation.

As of July 1, 2022, the magnetic declination at U42 is 11° 3′ E and changing annually by 0° 6′ W. As illustrated in **Table 3-3**, all runway designations are anticipated to remain the same throughout the planning period.

TABLE 3-3
MAGNETIC DECLINATION

Runway Designation	True Alignment	True Bearing	Existing		Future (2040)		
			Magnetic Bearing	Runway Heading	Magnetic Bearing	Runway Heading	Runway Designation
Runway 16	172°	172° 26' 16.08"	161° 23' 16.08"	161°	159° 35' 16.8"	159°	Runway 16
Runway 34	352°	352° 26' 22.56"	341° 23' 22.56"	341°	339° 35' 24"	339°	Runway 34

Source: National Centers for Environmental Information Magnetic Declination Calculator; RS&H Analysis 2022

3.3.2.2 Runway Length

As described below, there are two primary means for determining the airport's recommended runway lengths:

- **Guidance A FAA Recommended Runway Length:** General runway length guidance based on FAA computer modeling software and Advisory Circular performance graphs for composite aircraft groups, as adjusted for U42 mean maximum temperature (94.0°F), field elevation (4,606 feet above mean sea level), difference in runway centerline elevations (5 feet for Runway 16-34) and aircraft flight range of 500 nautical miles.

- **Guidance B Critical Aircraft Planning Manual (Performance Curves):** Determines runway length for specific aircraft models and engines based on data from the aircraft manufacturer, as adjusted for U42 to the extent possible based on aircraft operating (payload) weights, flight range, non-standard temperatures, and field elevation.

Table 3-4 provides recommended runway length requirements based on the FAA computer modeling software.

TABLE 3-4
RUNWAY LENGTH REQUIREMENTS

Aircraft Category	FAA Recommended Runway Length (Feet)
Existing Runway 16-34 Length	5,862'
Small airplanes with <30 knot approach speed	440'
Small airplanes with <50 knot approach speed	1,170'
Small airplanes (12,500 lbs) with <10 passenger seats	
75% of Fleet	4,440'
95% of Fleet	5,870'
100% of Fleet	6,120'
Small airplanes (12,500 lbs) with 10 or more passenger seats	6,120'
Large airplanes (12,501 lbs - 60,000 lbs)	
75% of Fleet at 60% useful load	6,670'
75% of Fleet at 90% useful load	8,650'
100% of Fleet at 60% useful load	10,780'
100% of Fleet at 90% useful load	11,050'

Source: FAA Advisory Circular 150/5325-4, *Runway Length Requirements for Airport Design,* using FAA Airport Design Microcomputer Program 4.2D

The results of the FAA modeling software indicated the existing runway length at U42 is sufficient for most small aircraft 12,500 pounds or less, but additional runway length is needed to accommodate those aircraft between 12,500 and 60,000 pounds. The 2007 Utah Continuous Airport System Plan has planned that U42 would eventually have a runway length sufficient to accommodate 75 percent of the large airplane fleet with 60 percent useful load, equating to a runway roughly 6,600 feet long. That is the length currently planned and shown on the existing airport layout plan (ALP).

As part of this study, detailed runway length analysis was conducted to determine the usefulness of the current runway and to validate the ALP's planned future runway length. The analysis focused on turboprop and business jet aircraft that have historically and consistently operated at U42. Using each aircraft's Aircraft Flight Manual (AFM) and Pilot Operating Handbook (POH) with standard flying conditions assumed, as well as consideration of AC 150/5325-4, *Runway Length Requirements for Airport Design*, supplemental aircraft runway length requirements were generated based on 90 percent useful payload. **Table 3-5** contains these runway length requirements.

TABLE 3-5
AIRCRAFT REQUIRED RUNWAY LENGTH ANALYSIS

Aircraft	Required Runway Length	Current Runway Length 5,862 Feet
Turboprop		
Pilatus PC-12NG	4,123'	✓
Cessna 208 Caravan	4,045'	✓
SOCATA TBM 850	3,882'	✓
Mitsubishi MU-2	4,750'	✓
Cessna 441 Conquest II	3,883'	✓
Beechcraft King Air 200	4,820'	✓
Business Jet		
Cessna Citation X	6,557'	×
Eclipse 500	4,297'	✓
Cessna Sovereign	3,645'	✓
Cessna CJ2+	5,337'	✓
Falcon 900EX (East Coast)	5,836'	✓
Falcon 900EX (Hawaii)	7,569'	×
Cessna 560XLS	6,248	×

Source: Analysis from LEAN Engineering using aircraft AFM and POH for landing performance data, 2022, FAA Advisory Circular 150/5325-4, *Runway Length Requirements for Airport Design*

Overall, the runway length at U42 is sufficient for many aircraft to operate, including the business jet fleet. However, to fully accommodate the future critical aircraft and maximize the utility of the runway, the existing ALP's planned future runway length of 6,600 feet is carried forward in this study. **Chapter 4, Identification and Evaluation of Development Alternatives** details options explored and the preferred solution of how best to accommodate a future extension of Runway 16-34 to 6,600 feet.

3.3.2.3 Runway Width and Blast Pads

Runway 16-34 is currently 100 feet wide and has approximately 22' foot paved shoulders. This is sufficient for B-II and C-II criteria, as denoted in **Table 3-6**. The existing width of 100 feet should be maintained through the planning period to support a future upgrade to C-II critical aircraft design.

Runway 34 has a blast pad that meets and exceeds B-II and C-II requirements. Runway 16 has no blast pad. Only runways that support ADG IV critical aircraft are required to have blast pads. However, blast pads are helpful in improving pilot visual cues to runway ends and help mitigate soil erosion at the ends of a runway. In the future, it is advisable for SLCDA to consider installing a blast pad for Runway 16, particularly if there are plans to implement a future RNAV GPS approach on that runway. This measure aims to enhance pilot visibility cues towards the runway end.

TABLE 3-6
RUNWAY WIDTH REQUIREMENTS

Runway Criteria	Current Runway	B-II Criteria	C-II Criteria	Meets Standard (✓)
Runway Pavement Width	100'	75'	100'	✓
Paved Shoulder Width	22'	10'	10'	✓
Runway 34 Blast Pad Length	260'	150'	150'	✓
Runway 34 Blast Pad Width	147'	95'	120'	✓

Source: FAA AC 150/5300-13B, *Airport Design;* RS&H Analysis, 2022

3.3.2.4 Runway Strength

Pavement strength is an important criterion in determining the usability of the airfield, as an aircraft that weighs more than the pavement surface's strength using the runway for takeoff or landing runs the risk of damaging the runway. General aviation aircraft weights that range between 2,000 to 50,000 pounds may often have a single wheel gear (SWG) configuration. Aircraft with a maximum takeoff weight (MTOW) over 20,000 pounds typically have a dual wheel gear (DWG) configuration.

U42's runway strength currently allows for a single wheel weight capacity of 30,000 pounds and a dual wheel weight capacity of 43,000 pounds. There is no forecasted need to increase runway strength, as the MTOW of the aircraft that use U42, including the existing and future critical aircraft, are within these strengths. **Table 3-7** details typical maximum takeoff weights for general aviation aircraft, air taxi aircraft, and the current and future critical aircraft at U42.

TABLE 3-7
TYPICAL AIRCRAFT MINIMUM TAKEOFF WEIGHTS

Aircraft	Aircraft Size (Passengers)	ARC	Gear Type	Maximum Take-Off Weight
General Aviation Aircraft				
Light/Small Business Jet	4 to 6 Passengers	B-I to B-II	Single-Wheel	8,000 to 20,000 lbs.
Medium Business Jet	6 to 10 Passengers	B-II to C-II	Dual-Wheel	20,000 to 50,000 lbs.
Large Business Jet	10 to 16 Passengers	C-II to D-III	Dual-Wheel	45,000 to 95,000 lbs.
Boeing Business Jet	up to 150 Passengers	C-III	Dual-Wheel	up to 188,000 lbs.
Boeing 767-300	up to 290 Passengers	D-IV	Dual-Tandem Wheel	up to 400,000 lbs.
Boeing 747-400	up to 524 passengers	D-V	Dual-Tandem Wheel	up to 900,000 lbs.
Air Carrier/Air Taxi Aircraft				
Turboprop	19 to 40 Passengers	B-II to A-III	Dual-Wheel	26,000 to 65,000 lbs.
Regional Jet	50 to 90 Passengers	C-II	Dual-Wheel	53,000 to 85,000 lbs.
Current/Future Critical Aircraft				
Beechcraft Super King Air	10-11 Passengers	B-II	Dual-Wheel	12,500 lbs.
Cessna Citation X+	8 Passengers	C-II	Dual-Wheel	36,600 lbs.

Sources: FAA Aircraft Characteristics Database, FAA; RS&H Analysis, 2022.

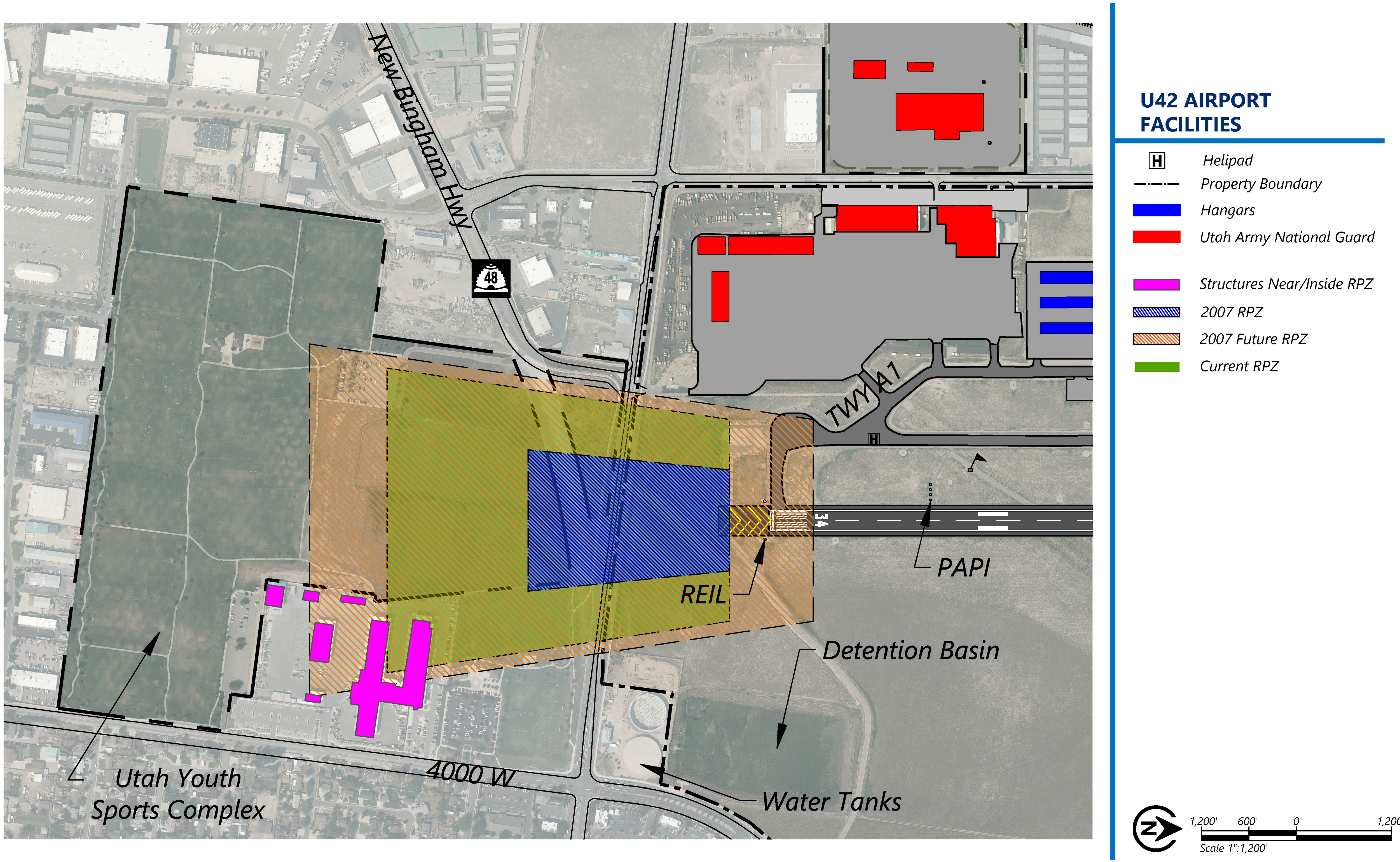
3.3.2.5 Runway Protection Zones

For the protection of people and property on the ground, the FAA has identified an area of land located off each runway end as the Runway Protection Zone (RPZ) that should be under airport control and free of incompatible objects and activities. The size of these zones varies according to the critical aircraft characteristics and the lowest instrument approach visibility minimum defined for each runway.

The FAA desires that airports own in fee all land within the RPZ. The northern RPZ is completely contained on airport property and has no structures or obstructions. The southern RPZ is not fully contained by airport property and is partially contained in a non-airport “no build” area that is bisected by 7800 S Street. The “no build” area is currently partially used as a soccer field complex with support facilities and West Jordan Department of Public Works. Soccer fields, as an area of public gathering, have been determined to be an incompatible use with the RPZ.[15] In regard to the public works building, a Notice of Proposed Construction for this building issued in 2017 resulted in a Determination of No Hazard to Air Navigation. Thus, the building does not affect approaches to U42. The building is not a gathering place for the public; thus, it does not conflict directly with approved land use within an RPZ. This area is depicted in **Figure 3-3**.

[15] Federal Aviation Administration. (2022, September 16). *Advisory Circular 150/5190-4B, Airport Land Use Compatibility Planning*. https://www.faa.gov/documentLibrary/media/Advisory_Circular/150_5190_4b_Land_Use_Compatibility.pdf

FIGURE 3-3
RUNWAY PROTECTION ZONE



Note: 2007 ALP Future RPZ is displaced 415′ due to the 2007 ALP anticipating the runway threshold being moved 415′ north.
Source: AC 150/5300-13B, *Airport Design*, RS&H Analysis, 2022.

3.3.2.6 Runway Geometric Standards

This section analyzes the existing runway geometric and separation distances against the dimensional standards that arise from the critical aircraft category designated for each runway. Compliance with FAA airport geometric and separation standards, without modification to standards, is intended to meet a minimum level of airport operational safety and efficiency. Runway 16-34 was evaluated for geometric deficiencies using B-II/C-II runway design criteria. **Table 3-8** compares current FAA 150,5300-13B airport design standards to existing conditions.

TABLE 3-8
RUNWAY GEOMETRY STANDARDS

Airfield Components	Existing 16	Existing 34	B-II	Adequate (✓)	C-II	Adequate (✓)	B-II Precision	Adequate (✓)	C-II Precision	Adequate (✓)
Runway Protection										
Runway Safety Area (RSA)										
Length beyond departure end	700'	1,000'	300'	✓	1,000'	×	600'	✓	1,000'	×
Length prior to threshold	1,000'	700'	300'	✓	600'	✓	600'	✓	600'	✓
Width	600'		150'	✓	500'	✓	300'	✓	500'	✓
Runway Object Free Area										
Length beyond departure end	700'	1,000'	300'	✓	1,000'	×	600'	✓	1,000'	×
Length prior to threshold	1,000'	700'	300'	✓	600'	✓	600'	✓	600'	✓
Width	600'		500'	✓	800'	×	800'	×	800'	×
Runway Obstacle Free Zone										
Length	200'		200'	✓	200'	✓	200'	✓	200'	✓
Width	400'		400'	✓	400'	✓	400'	✓	400'	✓
Runway Separation										
Runway Centerline to:										
Holding Position	200'		200'	✓	250	×	250'	×	250'	×
Parallel Taxiway/Taxilane Centerline	400'		240'	✓	300'	✓	300'	✓	400'	✓
Aircraft parking area	590'		250'	✓	400'	✓	400'	✓	400'	✓
Building Restriction Line	840'		495'	✓	495'	✓	745'	✓	745'	✓

Note: Only Runway 34 can support instrument approaches with visibility minima down to one mile visibility currently.
Source: FAA AC 150/5300-13B, *Airport Design;* RS&H Analysis, 2022

To have the airfield components meet standards for C-II operations, changes to the Runway Safety Area and Runway Object Free Area must be made to accommodate these operations.

3.3.2.7 Runway Capacity

A detailed study of capacity was not needed for this study, as sufficient analysis was achieved using assumptions and guidance provided in FAA AC 150/5060-5, *Airport Capacity and Delay*.

U42 is a single runway system, depicted by No. 1 configuration in AC 150/5060-5, shown in **Table 3-9**. The annual service volume (ASV) of a runway depends on the mix index associated with that runway. Mix index is related to the percentage of heavier aircraft operations compared to total annual operations. Because small aircraft flight training is a large contributor of operations at U42, and can decrease or increase substantially year over year, it is estimated the mix index is and will remain between 0 and 50, which equates to an ASV of 195,000 to 230,000 operations.

TABLE 3-9
RUNWAY MIX AND ANNUAL SERVICE VOLUME

Runway Configuration	Mix Index %(C+3D)	Hourly Capacity in Operations Per Hour		Annual Service Volume
		VFR	IFR	
	0 - 20	98	59	230,000
	21 - 50	74	57	195,000
1. 	51 - 80	63	56	205,000
	81 - 120	55	53	210,000
	121 - 130	51	50	240,000

Source: FAA AC 150/5060-5, *Airport Capacity and Delay;* RS&H Analysis, 2022

Comparing the forecasted operations to the ASV at the airport provides insight into existing and future capacity constraints. The generally accepted industry benchmark to begin planning for additional airfield capacity is when demand reaches 60 percent of the ASV, and building needed upgrades when demand reaches 80 percent ASV. Sixty percent of the estimated 230,000 ASV equates to 138,000 annual operations. The high growth forecast estimates PAL 3 reaching approximately 125,000 annual operations. Thus, the airport is not expected to reach the 60 percent threshold of ASV within the planning period.

3.3.3 Taxiway Design

This taxiway analysis addresses specific requirements relative to FAA design criteria and the ability of the existing taxiways to accommodate the current and projected demand. At a minimum, taxiways must provide efficient circulation, have the proper strength, and meet FAA design standards to safely accommodate the design aircraft. Airport runways should be supported by a system of taxiways that provide access between the runways and the aircraft parking and hangar areas.

The goal of an effective taxiway system is to maintain traffic flow using taxi routing with a minimum number of points requiring a change in the airplane's taxiing speed. At U42, the runway is supported by a dual parallel taxiway system, consisting of Taxiway A and Taxiway B. Taxiway A provides access across the apron, while Taxiway A1, A2, A3, and A4 provide access to the runway along various points. Taxiway A1 and A4 are runway entrance taxiways. Taxiway B is the inboard parallel taxiway sitting between Taxiway A and the runway.

The Airport's critical aircraft determines taxiway design standards and dimensional criteria. Taxiway pavement width is determined by the TDG of the design aircraft. Separation standards are determined by the ADG of the design aircraft. To accommodate the Airport's design aircraft, it is recommended that critical airfield taxiways be designed and built to ADG II/TDG 2A standards. **Table 3-10** illustrates the FAA standards and how each taxiway meets the specified criteria.

TABLE 3-10
TAXIWAY COMPONENT CRITERIA

Taxiway Components	Taxiway Width	Taxiway Shoulder Width	Taxiway Safety Area Width	Taxiway Object Free Area Width	Centerline to Parallel Taxiway	Centerline to Fixed or Movable Object
ADG II, TDG 2A Requirements	35'	15'	79'	131'	105'	65.5'
TWY A	✓	✓	✓	✓	✓	✓
TWY A1	✓	✓	✓	✓	✓	✓
TWY A2	✓	✓	✓	✓	✓	✓
TWY A3	✓	✓	✓	✓	✓	✓
TWY A4	✓	✓	✓	✓	✓	✓
TWY B	✓	✓	✓	✓	✓	✓

Source: FAA Advisory Circular 150/5300-13B, *Airport Design;* RS&H Analysis, 2022

An analysis of the taxiways was conducted to determine if airfield compliance deficiencies existed as measured by the new standards. The deficiencies that were found are described below and are referenced to specific paragraphs within AC 150/5300-13B (herein called the AC). Other deficiencies that affect nearly all the taxiways at U42 are related to changes in general design, such as the design of taxiway fillets. All deficiencies described are referenced to their location in the current AC. The following bullets address taxiway deficiencies found at U42:

» **Taxiway A2 and A3:** These taxiways provide a direct connection between the apron and the runway. Section 4.3.5.1 of the AC states the taxiway must have at least one turn between 75 and 90 degrees before the aircraft would reach a runway hold line. That type of configuration is proven to help prevent pilots from losing situational awareness and inadvertently taxing onto the runway by accident.

» **Taxiway A4:** This taxiway intersects the end of the runway at a 50 degree angle, which reduces a pilot's ability to detect if aircraft are operating on the runway and maintain general situational awareness. Section 4.8.2 in the AC states entrance taxiways should be designed as right-angle intersections with the runway.

» **All existing taxiway fillets**, except Taxiway A1, are not designed to current FAA design standards. These are not safety critical design items and should be addressed during future pavement rehabilitation projects.

» **Apron South of Taxiway A2:** The connections of this apron to Taxiway A are not aircraft rated or designed to FAA standard. Additionally, the apron concrete extends into the TOFA of Taxiway A2.

» **Dual Taxiway Configuration:** While not a deficiency, a dual taxiway configuration is not required for serving airports with operational levels of U42. However, U42 accommodates a wide range of operations, including military and private helicopter training, fixed wing training, and business aircraft operations. The mix of these aircraft operations creates risk of congestion on the airfield, which is further increased due to the lack of airport traffic control tower personnel controlling ground movements. The dual taxiway configuration provides significant benefit in providing flexibility for operators and preventing head-to-head conflicts between aircraft. As such, the dual taxiway configuration should be maintained.

3.4 NAVAID AND LIGHTING REQUIREMENTS

Navigational aids and lighting, often referred to as NAVAIDs, consist of equipment to help pilots locate the airport. NAVAIDs can provide information to pilots about the aircraft's horizontal alignment, height above the ground, location of airport facilities, and the aircraft's position on the airfield. U42 features all three types of navigational aids (visual, electronic, and metrological), as detailed in **Chapter 1, Inventory of Existing Conditions**. The following narrative describes the three types of NAVAIDs as well as any deficiencies that currently exist at U42.

3.4.1 Visual Aids and Electronic Aids

Visual aids at U42 include those specific to each approach, and those that serve the entire airport. Electronic aids include devices and equipment used for aircraft instrument approaches. Visual and electronic aids at U42 are listed in **Table 3-11**. As shown, existing visual and electronic aids are adequate to support current flight operations.

TABLE 3-11
VISUAL AND ELECTRONIC NAVIGATIONAL AIDS

NAVAID	Runway 16	Adequate (✓) or Deficient (X)	Runway 34	Adequate (✓) or Deficient (X)
	Visual		RNAV GPS	
Visual Aids				
Approach Lighting	REIL	✓	REIL	✓
Lighting System	MIRL	✓	MIRL	✓
Runway Markings	Basic	✓	Non-Precision	✓
Runway Windcone	Yes	✓	Yes	✓
Touchdown Zone Lighting	No	✓	No	✓
Visual Slope Indicator	PAPI (P4L)	✓	PAPI (P4L)	✓
Rotating Beacon	Yes	✓	Yes	✓
Segmented Circle	Yes	✓	Yes	✓
Electronic Aids (Approaches)				
Glideslope	No	✓	No	✓
LOC / DME	No	✓	No	✓
RNAV (GPS)	No	✓	Yes	✓
VOR/DME	No	✓	No	✓

Notes: REIL = Runway End Indicator Lights, PAPI = Precision Approach Path Indicator, LOC = Localizer, DME = Distance Measuring Equipment, RNAV = Area Navigation, VOR/DME = VHF Omnidirectional Range / Distance Measuring Equipment.
Source: FAA Chart Supplements; FAA.gov; RS&H Analysis, 2022

Many of the challenges associated with retaining or enhancing flight operations at U42 are related to the ability to safely deconflict traffic operating into U42 from arrivals and departures at SLC. One method to potentially enhance this capability is through the installation of a MALSR or Runway Lead-In Light System (RLLS) to one or both ends of Runway 16-34, which would allow for new airspace procedures.

The installation of a MALSR on either end of Runway 16-34 will enable the existing RNAV (GPS) Runway 34 approach to potentially achieve decreased visibility and enhance the safety of pilots on approach to safely separate the runway from a dense urban environment. This will be significant for the existing approach and to provide for future approach designs.

Limitations in current FAA runway design categories may prevent the ability of a new MALSR from effectively decreasing the required visibility, but the safety benefit and visual identification of the runway environment for potential simultaneous dependent operations with SLC runways may soon be a requirement. It is recommended that land be protected for future implementation of an 1,800 to 2,400 foot MALSR on Runway 34 and Runway 16.

In addition to MALSRs, the installation of one or more Runway Lead-In Light System (RLLS) to Runway 16 may be considered. The installation of a RLLS may enable aircraft to execute instrument approaches to Runway 16 at nighttime. Pilots would follow the RLLS (installed as clusters of three flashing lights, every 6,000 feet) along the intermediate and final approach path to Runway 16, permitting flight crews to safely navigate along the sequenced flashing path of lights towards the runway while staying visually or procedurally separated from SLC arrivals and departures. The footprint of a potential RLLS at U42 would likely involve an 1,800-foot MALS connecting to clusters of off-airport RLLS installation (similar to ODALS or RAILS) that would extend in three to four clusters for approximately three miles away from the airport. The Alternatives Chapter details the analysis of airspace enhancement options paired with these equipment upgrades, and describes the evaluation process conducted considering practicality, cost and usefulness.

3.4.2 Meteorological Aids

Meteorological aids consist of equipment that reports weather conditions to users and tenants at an airport. U42 has an Automated Weather Observing System III (AWOS III) to provide weather information such as temperature, pressure, wind direction/intensity, cloud and ceiling height, and visibility. With the anticipated increase in traffic and aircraft fleet size, there is value in upgrading the AWOS III to an AWOS III P/T to improve safety and operational efficiency. An AWOS III P/T improves upon the AWOS III in two ways; first, the system possesses the ability to identify general precipitation falling on the airport (rain, snow, drizzle), and second, it can detect if a thunderstorm is near the airport.

During periods of forecasted precipitation, pilots must assume U42 to have a runway condition code (RCC) of 3 or below. Because the U42 airport is non-towered, pilots rely solely on current and historical information from the AWOS to determine if the runway may be wet or contaminated either prior to departure or as a part of their in-flight landing distance assessment. The current length of Runway 16-34 is sufficient for dry and wet landing performance. However, it is not long enough to accommodate jet operations on RCC 3 or below. Therefore, to ensure the safety of landing operations, and to maximize the utility of the Airport, an upgrade from the AWOS III to an AWOS III P/T is recommended.

3.4.3 Airport Traffic Control Tower

A future FAA staffed Airport Traffic Control Tower (ATCT) has long been considered at U42. The 2006 Master Plan discussed the potential of an ATCT and preserved an area for a future ATCT development site on the Airport Layout Plan. For an airport such as U42 to qualify for an ATCT, the FAA has established certain qualifiers that must be met before ATCT construction will be considered. First, the airport must be in compliance with *14 CFR § 170.13 - Airport Traffic Control Tower (ATCT) Establishment Criteria*[16]**.** U42 already qualifies in many of these criteria, such as being part of the NPIAS, however a benefits/cost analysis must be conducted and submitted to the FAA before the FAA would make a consideration. These qualifiers being met also do not guarantee the airport an ATCT.

Overall, the primary benefit of an ATCT at U42 would be the ability to enhance approaches in instrument weather conditions (IMC), increase arrival and departure capacity, and add another level of safety when the airspace is congested. However, the cost to build an ATCT and staff the facility is significant, and benefits must outweigh those costs.

It is anticipated that new remote tower capabilities will be available in the future to allow SLC TRACON (S56), SLC ATCT, or an offsite team to provide airport traffic control services for U42. Nevertheless, in line with current FAA guidance, this master plan preserves three potential locations for a future onsite ATCT tower to ensure the Airport is ready if needs change.

3.5 LAND USE COMPATIBILITY AND ZONING

U42 sits within the City of West Jordan and abuts Kearns Township on the north side. Both West Jordan and Kearns Township have municipal codes addressing land uses permitted within areas surrounding U42. Deficiencies were found with both codes as noted below.

West Jordan code deficiencies:

- The defined clear zone (Acl) appears to be based off a runway protection zone (RPZ) sizing. The clear zone has smaller dimensions than the required RPZ for Runway 16 and 34.
- The defined approach zone (Aa) and horizontal zone (Ah) have similar dimensions to a Part 77 visual only approach surfaces. However, because Runway 34 is now a non-precision instrument approach runway, the dimensions of the approach surface (Aa) and horizontal zone (Ah) must be increased in size.
- The defined conical zone (Ac) is in accordance with Part 77, but does not define what the slope should be.
- No specific height limitations are defined in the code to adequately protect Part 77 surfaces.

Kearns Township code deficiencies:

- The code describes an airport overlay zone but no mapping is provided. It is estimated the code intends to reference the West Jordan airport overlay zone, but this is not mentioned in the code.
- A map that correlates with code shows a Zone F which is not described in the code.

[16] 14 CFR § 170.13 - Airport Traffic Control Tower (ATCT) Establishment Criteria, FAA. https://www.law.cornell.edu/cfr/text/14/170.13

It is recommended the West Jordan Airport Overlay zone be updated to align with FAR Part 77. The update should at a minimum describe specific height limitations that will protect Part 77 surfaces from penetration, should protect for current and future approach and departure surfaces, and be mapped with the accuracy afforded modern GIS tools. Similarly, it is recommended the Kearns Township code be updated with a corresponding map and/or be revised to reference the West Jordan Airport Overlay Zone. As part of the updates, both codes should be reviewed in further detail to determine any other elements that need revision and modernization.

3.6 AIRCRAFT PARKING AND STORAGE

This section outlines the requirements for the general aviation (GA) facilities during the planning period for parking and storage of based and transient aircraft. The areas evaluated in this section include aircraft hangars, aircraft tie-downs, and apron space. The analysis divides aircraft storage needs between based and transient aircraft.

3.6.1 Based Aircraft Storage Requirements

This section outlines requirements for tie-downs, shade hangars, T-hangars, box hangars, and corporate hangars. These hangar types are terms for different sized hangars. The following definitions describe how each hangar space is programmed within the context of this Master Plan.

- **Tie-Downs** – Uncovered defined locations on the apron with anchors to secure aircraft while parked at the Airport. These spaces are typically leased to based aircraft with some being reserved for use by itinerant aircraft.
- **Shade Hangars** – Similar to tie-downs, but the defined location is covered with a roof to shelter from sun exposure and inclement weather and does not include side walls.
- **T-Hangars** – Small hangars that are typically arranged so aircraft are “nested” next to each other in alternating directions.
- **Box Hangars** – Hangars that are larger than a T-hangar, most often used to house large corporate turboprop and jet aircraft. Some are large enough to store multiple smaller aircraft.
- **Corporate Hangars** – The largest type of hangar which can contain multiple aircraft. They often are built with ancillary space for other uses such as offices, crew lounge, reception, restrooms, and other needs of business travelers.

The tenant survey that was used for developing the high growth forecast, as described in **Chapter 2, Aviation Forecasts**, provided data regarding the potential demand for specific hangar types. Survey results indicated that roughly 2 percent of respondents desired tie-down space at U42 and the rest desired hangars. Of the potential hangar demand indicated in the survey, 66 percent was for T-hangars, 32 percent was for box hangars, and 2 percent was for corporate hangars. These percentages were used to estimate hangar area requirements.

Table 3-12 summarizes the estimated amount of hangar space needed based on the high growth forecast of based aircraft. For planning purposes, it was assumed that every new based aircraft would require a hangar. Thus, the analysis is conservative as box and corporate hangars will often be used to store multiple based aircraft. Overall, the analysis indicated a need to preserve approximately 1,500,000 square feet, or 35 acres, of land for future hangar development.

TABLE 3-12
HANGAR REQUIREMENTS

Hangar Type	Existing	Planning Activity Level (PAL)		
		PAL 1 (2025)	PAL 2 (2030)	PAL 3 (2040)
Shade Hangar Units				
Hangars	42	42	42	42
Hangar Surplus / (Deficit)		0	0	0
Square Footage Deficit		0	0	0
T-Hangar Units				
Hangar Bays	113	215	224	243
Hangar Surplus / (Deficit)		(102)	(111)	(130)
Square Footage Deficit		(561,000)	(610,500)	(715,000)
Box Hangars				
Hangars	2	51	55	65
Hangar Surplus / (Deficit)		(49)	(53)	(63)
Square Footage Deficit		(347,900)	(376,300)	(447,300)
FBO				
Hangars	2	2	2	2
Hangar Surplus / (Deficit)		0	0	0
Square Footage Deficit		0	0	0
Corporate Hangars				
Hangars	2	6	6	7
Hangar Surplus / (Deficit)		(4)	(4)	(5)
Square Footage Deficit		(100,000)	(100,000)	(125,000)
Total Hangars	161	316	329	359
Total Hangar Surplus / (Deficit)		(155)	(168)	(198)
Total SF Deficit		(1,109,790)	(1,195,480)	(1,544,760)

Notes: Additional hangar units are sized to include apron area and/or taxilane immediately adjacent to the hangar door. T-Hangars units calculated at 5,500sf, box hangar units at 7,100sf, and corporate hangars at 25,000sf. Total SF Deficit includes total hangar area as well as 20% extra to account for general circulation variances of hangar size and parking requirements.
Source: RS&H Analysis, 2022

3.6.1.1 Apron and Hangar Configuration

The existing configuration of the apron and tie-downs presents operational challenges. Today, Hangar 20 is blocked from accommodating larger aircraft when aircraft to the south are parked on existing tie-downs. Additionally, the tie-downs on the apron in front of the Aeronautical Service Hangar (are not efficiently placed due to the need to maintain aircraft access to the hangar.

Overall, the configuration of the existing tie-down parking, transient parking, and hangar layout requires further analysis to determine a more efficient layout. The alternatives chapter will validate plans in the prior ALP and determine solutions to solve current issues that have arisen since that plan was made.

3.6.2 Apron Pavement Requirements

The 2019 Pavement Condition Index Map indicates the majority of taxilane and apron pavement is at best in fair condition. The taxilanes used for access to the T-hangar and shade hangars on the north side of the airport are listed as being in very poor and/or serious condition. There is also a pavement section for tie-downs south of the Aeronautical Service Hangar that has failed. These pavement sections must be rehabilitated in the near-term to continue to provide a safe operating environment for airport users.

3.7 SUPPORT FACILITIES REQUIREMENTS

Support facilities at an airport encompass a broad set of functions that exist to ensure the airport can fulfill its primary role and mission in a safe and operationally efficient manner. The following sections outline the requirements for various supporting facilities at U42.

3.7.1 Fixed Based Operator (FBO)

The FBO at U42 is currently run by SLCDA. The facility overall meets the needs of SLCDA staff, is in good condition and is optimally located. Deficiencies found are related to the configuration of apron and other facilities adjacent to the FBO transient apron. The aviation fuel storage/self-serve tanks create an area of unusable space on the apron and can create congestion.

The current FBO transient apron is roughly 30,000 square feet and is sized adequately to support current operations. Long range planning concepts must determine the following elements:

- How the apron can expand to roughly double its current size. This ability will ensure flexibility in the future if U42 is used more by business jets with wider wingspans.
- Where electrical eVTOL and other electrical airport can be parked and charged.
- An ultimate configuration that deconflicts the self-serve fuel tanks from the apron area.

3.7.2 Airport Maintenance and Snow Removal Equipment

Roughly half of the Aeronautical Service Hangar and the area adjacent is used as the airport maintenance facility. The interior space used is approximately 13,000 square feet and is where SLCDA staff perform maintenance on equipment as needed. Most of the maintenance and snow removal equipment (SRE) is stored outdoors in an area roughly 45,000 square feet. Within that area are also two fuel storage tanks for diesel and gasoline are also located.

In discussions with SLCDA management, the airport and SRE maintenance facility and storage areas are adequate. However, the location of this facility uses a portion of a hangar that could otherwise be used for aircraft storage. Similarly, the outdoor storage of equipment is in an area that is ripe for conversion to apron or hangar storage for aircraft. A new location for airport and SRE maintenance and storage must be determined and land reserved for the future relocation of the facility.

3.7.3 Flight School Office Space

Flight schools at U42 mostly operate out of a portion of the Aeronautical Service Hangar that is configured with two floors of office space. The offices take up roughly a quarter of the northern portion of the building, with an estimated 11,000 sf of floor space split between two floors. The interior configuration includes restrooms, stairwell corridors, and is made up of small office spaces leased to various tenants.

The office space is deficient and cannot accommodate today's operators. Randon Aviation has moved its offices into an offsite office building across Airport Road as they required more room than was available onsite at the Airport. Additionally, the vehicle parking area is limited, and the grass area to the west of the Aeronautical Service Area is often used for overflow for up to 15 vehicles.

Future facility planning must account for new areas for office space to be built. This must include consideration for all types of facilities that are traditionally used for flight training including: modular units, larger hangars with office space built in, and office buildings. New office facilities should be located in close proximity to the apron area and/or hangars where flight school aircraft are stored, and provide adequate vehicle parking space.

3.7.4 Aircraft Wash Facilities

A coin-operated plane wash is available for use at the airport. This facility allows aircraft operators and owners to clean their aircraft of dust, dirt, and debris. Tenant comments show the wash facility is an important part of the airport and is used extensively.

The wash facility is located off a non-standard taxilane that serves a row of T-hangars. Aircraft can access the wash facility via that taxilane or by traversing the apron area to the south. Though this facility works well for tenants today, alternatives for ultimate build-out of the Airport must consider a new location for the wash facility based on an optimized configuration of the apron and tie-down areas.

3.7.5 Aircraft Fuel Storage

The airport's FBO currently has two above ground 10,000-gallon fuel tanks, one for 100LL and one for Jet A fuel. These tanks are positioned and equipped to also provide self-serve fueling. In addition to the tanks, the FBO has one 100LL and one Jet A fuel truck which are stored in between the FBO's building and adjacent T-hangars when not in use. The Utah Army National Guard also has its own underground fuel storage facility beneath an apron on their property.

The FBO fuel storage tanks are nearing the end of their useful life and will be planned for replacement in the near-term. Their current location is poorly suited for fueling operations as it blocks hangar access, and there is no room for expansion. A new location for fuel storage is required. That location must be double in size to support additional fuel tanks to support SLCDA's desired storage amounts. The new site should provide easy access for tanker truck deliveries, while also being secured within the airport property.

SLCDA desires to maintain self-serve fueling for 100LL and Jet A at U42. As such, new self-serve tanks must be provided, or the new fuel storage area must be sited to allow aircraft to taxi to and fuel from the new tanks.

3.8 LANDSIDE ROADWAYS AND PARKING

The Airport is flanked on all sides by vehicle roadways, with Airport Road providing access to the airport's landside facilities. Alternatives examining ultimate build-out of the airport must consider roadway connections to the current roadways on the east side of the airport. Additionally, warehouse developments along the northwest side of Airport Road have added considerable truck traffic to that area. This must be considered when planning for new roads into currently undeveloped areas of the west side of the airport's property.

3.8.1 Parking

There are approximately 143 existing public parking spaces at U42 utilized by flight schools, the FBO, hangar tenants, and other visitors to the airport. The quantity of parking spaces is adequate to meet the needs of the current based aircraft tenant base but will need to increase with future growth. The flight schools and businesses operating out of the Aeronautical Service Hangar don't have adequate parking, and often overflow into a grass area adjacent to the building.

Table 3-13 details parking requirements for the various facilities at U42. Ratios of spaces per hangar were used to determine vehicle parking requirements for t-hangars, box hangars, and corporate hangars. The FBO and the viewing area parking areas were found to be sufficient through the planning period. Flight schools and businesses operating in the Aeronautical Service hangar are deficient by an estimated 20 parking spaces today. Note no new flight school or business is considered in the future in this analysis. When new businesses do start up at U42, additional parking beyond what is figured in this analysis will be required. The alternatives for ultimate build out of the airport considers areas for future flight schools and business. Parking requirements of roughly .005 spaces per 1,000 square feet of office space is recommended as a baseline for planning purposes.

As part of the analysis of vehicle parking, requirements were determined for vehicle charging stations. The popularity of electric vehicles (EVs) has dramatically increased during the time of this writing, and sales of EVs doubled in 2021 from the previous year and continue to rise in 2022. For EVs to run, they need to be recharged. With more EVs on the road, facilities need to think about installing EV charging stations to accommodate this growing trend. Conversations with the airport determined that U42 should plan to dedicate 10 percent of parking spaces to EVs. This equates to a total need of 42 spaces being equipped with charging stations at PAL 3.

TABLE 3-13
PARKING REQUIREMENTS

Functional Area	Existing	Planning Activity Level (PAL)		
		PAL1 (2025)	PAL 2 (2030)	PAL 3 (2040)
T-Hangars/Shade Hangars				
Hangar Bays	155	259	268	288
Parking Spaces	0	26	27	29
Parking Surplus / (Deficit)		(26)	(27)	(29)
EV Station Requirement @ 10%		*(3)*	*(3)*	*(3)*
Box Hangars				
Hangars	2	52	56	66
Parking Spaces	5	156	168	198
Parking Surplus / (Deficit)		(151)	(163)	(193)
EV Station Requirement @ 10%		*(16)*	*(17)*	*(20)*
Corporate Hangars				
Hangars	2	6	6	7
Parking Spaces	0	30	30	35
Parking Surplus / (Deficit)		(30)	(30)	(35)
EV Station Requirement @ 10%		*(3)*	*(3)*	*(4)*
Flight Schools/Businesses				
Parking Spaces	33	53	53	53
Parking Surplus / (Deficit)		(20)	(20)	(20)
EV Station Requirement @ 10%	0	*(5)*	*(5)*	*(5)*
FBO				
Parking Spaces	95	95	95	95
Parking Surplus / (Deficit)		0	0	0
EV Station Requirement @ 10%		*(10)*	*(10)*	*(10)*
Viewing Area				
Parking Spaces	10	10	10	10
Parking Surplus / (Deficit)		0	0	0
EV Station Requirement @ 10%		*(1)*	*(1)*	*(1)*
Total Hangars	162	319	332	363
Total Parking	143	370	383	420
Total Parking Surplus / (Deficit)		(227)	(240)	(277)
Total EV Station Requirement @ 10%		*(37)*	*(38)*	*(42)*

Notes: Parking spaces per hangar were planned on the following ratios: 0.1 spaces per new T-hangar; 3 spaces per new box hangar; 5 spaces per new corporate hangar.
Source: RS&H Analysis, 2022

3.9 UTILITY INFRASTRUCTURE REQUIREMENTS

The existing utilities supporting the operations at the airport are generally adequate with room to grow. Relatively minor utility improvements are necessary to accommodate future expansion at the airport.

These utilities include sanitary sewer, potable water, storm water, electrical power, natural gas, and communications.

The airport's sanitary sewer mains serving the main airport area runs at 9 percent capacity. The system serving the north area of the airport runs at less than 1 percent capacity. These capacities are based on usage records and a review of the as-built sewer construction drawings. The water system was found to be adequate for both existing buildings and any future buildings similar in size to the largest buildings on site. Larger buildings could also be accommodated with the installation of fire sprinklers or increasing the size of the primary water main connection. For domestic water usage, the water system is currently using 3 percent of its maximum capacity.

The storm water system that serves the majority of the existing airport area is over capacity for the design storm event and in need of improvement to prevent flooding. The north area of the airport has a separate storm water system with capacity to serve the existing development. Some improvements may be necessary if the impervious area at the north end of the airport doubles the existing impervious area.

Natural gas utilities are managed by Dominion Energy. Their engineers have reviewed the airport facilities and confirmed that the natural gas utility is adequate for existing needs and could support double the existing demand at the airport. If improvements are necessary, they would be handled by Dominion Energy.

The SLCDA completed an inventory and improvement update to the security and data communications systems in 2020. The SLCDA and CenturyLink have confirmed that the existing infrastructure is adequate to meet existing needs and projected needs over the next 10-15 years.

Electrical power utilities are managed by Rocky Mountain Power. Their engineers have reviewed the airport facilities and confirmed that the existing system is adequate for existing usage with room for growth. If peak demands increase greater than 1 MW over any 2-to-3-year period, then the Airport may bear some of the financial responsibility to increase the capacity of the system. Below that benchmark, the gradual capacity increases due to expansion on the airport site are covered by the power company.

3.10 OTHER AIRPORT REQUIREMENTS AND CONSIDERATIONS

The following lists other requirements and/or considerations documented for this master plan study.

- **Perimeter Fencing**: The current perimeter fence at U42 currently has sections of 6-foot high fence on the east side of Airport property. The standard at U42 is 8-foot high with barbed wire. Upgrading the 6-foot will increase security of the airport.

- **Fire Response Access**: The headquarters of the West Jordan Fire Department, Station #53, is located less than a ½ mile east of the threshold of Runway 34. A small, paved road on the east side of the airport connects the intersection of S Jordan Landing Boulevard and S Plaza Center Drive with the blast pad behind Runway 34. This provides the fire station with direct access to the airfield. The gate to this access road currently is pad-locked. A break-away gate system is recommended so fire response personnel can gain immediate access to the airfield without having to take time to unlock and open the fence.

3.11 CONCLUSION

Table 3-14 is a summary of the requirements determined in this study for U42. This next chapter of the master plan details the alternatives analysis conducted for those facilities that needed further study, indicated with a blue box in the table below. The alternatives chapter details the conclusions of the alternatives analysis and provides a comprehensive concept that integrates all chosen preferred alternatives.

TABLE 3-14
SUMMARY OF FACILITY REQUIREMENTS

Elements	Description of Need and/or Recommendation
Runways	
Runway Length	The runway is currently planned for ultimate extension to 6,600 feet. Alternatives will determine a preferred solution for the extension that integrates future RPZ and safety area requirements.
Runway Protection Zones	Runway 34 runway protection zone is not owned outright by the SLCDA. Public soccer fields are within a portion of the RPZ, which is not compatible as they are considered a public gathering place.
Runway Safety Areas	An upgrade to future C-II critical aircraft will require a 1,000-foot safety area beyond the runway ends. Alternatives will examine solutions to accommodate the 1,000-foot safety area on the end of Runway 16.
Object Free Areas	To support future precision approaches and/or an upgrade to C-II, the segmented circle and windcones must be relocated outside of the associated wider object free area.
Taxiways and Taxilanes	
Direct Connections from Apron to Runway	Taxiway A2 and A3 connect the apron directly to the runway. Alternatives will determine a preferred future configuration that adheres to FAA standards.
Non-Standard Taxiway A4 Angle	Taxiway A4 connects to the runway at a non-standard angle.
Taxiway Fillets	All taxiways except Taxiway A1 do not have fillets that meet FAA design standards.
Apron South of Taxiway A2	Connections to Taxiway A are not built to FAA standard, and apron concrete is inside of TOFA of Taxiway A2.
NAVAIDs and Lighting	
Airport Traffic Control Tower	An Airport Traffic Control Tower (ATCT) or remote technologies is recommended for consideration in conjunction with airspace enhancements.
Meteorological Aids	Upgrading current AWOS III to AWOS III P/T is recommended as it would give more detailed weather information to air crews.

	Approach Lighting System	A MALSR, RLLS, or other approach lighting system may improve safety and enable the airport to pursue lower visibility minimums for approaches in inclement weather and at night.
Land Use, Hangar and Support Facilities, and Landside Access		
	Land Use Compatibility and Zoning	The West Jordan Airport Overlay Zone and associated zoning code and the Kearns Township code are recommended to be updated.
■	Aircraft Parking and Storage	A minimum of 35 acres of land must be reserved for new hangar infrastructure. Additional land preservation may be needed for new business and flight school entrants. Alternatives will examine layout concepts to validate land use preservation.
■	Airport Maintenance and Snow Removal Equipment Building	Airport maintenance and snow removal equipment facilities should be considered for relocation long-term. Alternatives will determine a preferred ultimate location.
■	Aircraft Wash Facilities	The aircraft wash facilities should be considered for eventual relocation. Alternatives will determine a preferred ultimate location.
■	Aircraft Fuel Storage	The aircraft fuel storage tanks are approaching the end of their useful life and are currently in a poor location. Alternatives will determine a new location for aircraft fuel storage that can allow for expansion and maintain self-serve functions.
■	Landside Access and Vehicle Parking	Additional vehicle parking is required to support existing flight school operations. Additionally, vehicle parking must be added to support future hangar developments.
Utilities		
	Water / Sanitary / Storm	Current sanitary and potable water systems are adequate to support anticipated future demand. The storm water system is over capacity for the design storm event and in need of improvement. Additional impervious surfaces may also require additional capacity upgrades.
	Natural Gas	Current natural gas infrastructure is expected to meet future demand requirements.
	Electricity	Electrical capacity can meet expected future demand of hangars and buildings. Electrical aircraft and vehicles may require additional capacity then is currently provided.

■ Elements that will be addressed in the alternatives analysis

Chapter 4

Identification and Evaluation of Development Alternatives

4.1 INTRODUCTION

This chapter identifies and evaluates facility development alternatives for South Valley Regional Airport based on the facility requirements determined in **Chapter 3, Facility Requirements**. The primary purpose behind identifying and evaluating various alternative development options is to ensure airport facilities can meet projected activity demand levels, make efficient and effective use of available airport land, and meet FAA airfield design standards. Every potential alternative in this chapter has been thoroughly analyzed, refined, and vetted through the stakeholder involvement process to develop a plan which reflects stakeholder and community values and preferences, and integrates well with the unique operational nature and role of the South Valley Regional Airport.

Analysis of development alternatives began by defining a vision, specifically for U42 – a comprehensive view of how key stakeholders feel the airport should "look" and operate in the future. The vision considered both facilities and services. The vision includes ideas for new facilities to support anticipated growth or enhance services and the necessary improvements that must be undertaken to correct operational deficiencies. This vision was vetted through a public process described within **Appendix B, Stakeholder Visioning**. This sets the stage for an airport development plan that extends beyond the planning period identified in this study and enables long-term strategic development. For the purposes of this study, planning activity level (PAL) 3 facility needs will inform the development of an Airport Layout Plan able to guide development throughout the planning period.

A hierarchy of priority is required when analyzing airport facilities and developing alternatives.
The components of the airport are broken down into leading elements and trailing elements, with leading elements considered first. Leading elements are primary facilities that require significant amounts of land and/or capital investment to implement, and whose placement and configuration must take precedence when formulating alternatives. The division between leading and trailing elements allows the initial focus of analysis to be on determining solutions for those high-cost, more demanding leading elements. The placement and decisions surrounding the leading elements influence the location and layout of the trailing elements. **Figure 4-1** shows the relationship between leading and trailing elements at U42. Note that several trailing elements for this study didn't require an alternatives analysis. Instead, decisions were made based on the preferred alternative of leading elements.

FIGURE 4-1
AIRPORT PLANNING ELEMENTS

Source: RS&H Analysis, 2022

At U42, the leading elements include the runway and supporting taxiway infrastructure. Trailing elements at the airport include aircraft storage and parking areas, such as hangars and aprons, and aeronautical support facilities, such as the fixed based operator (FBO) and flight schools. The last trailing element examined was land use.

4.2 ALTERNATIVES ANALYSIS PROCESS

The following section identifies and describes the steps involved in the alternatives development process. Using this process, design charrettes were held to brainstorm ultimate land use pattern visions and various options for future airport development through PAL 3.

4.2.1 Steps in the Alternatives Analysis Process

The airport alternatives development approach was organized into the following steps:

1.) Gather information related to airport users/community vision for airport development (Visioning)
2.) Describe and evaluate existing airport land use patterns (Inventory and Facility Requirements)
3.) Define evaluation criteria
4.) Delineate constraining factors such as environmental conditions
5.) Craft an ultimate on-airport land use pattern vision
6.) Create alternative development options in-line with on-airport land use pattern vision as well as off-airport land use regulations
7.) Analyze preferred options against planning, engineering, operational, and financial criteria
8.) Select preferred development future

Prior to beginning the master plan, stakeholder advisory groups were established. These stakeholders represented a diverse array of community representatives acting as partners and valuable resources throughout the alternatives development and evaluation process. All alternatives within the chapter have been presented and refined through the public involvement process.

4.3 ALTERNATIVES EVALUATION CRITERIA

Throughout the alternative development process, evaluation was performed based on guidance provided from a combination of SLCDA visioning goals and general airport planning criteria. At a high level, each concept was evaluated against the following criteria:

- Operational and public safety
- Operational efficiency
- Ability to meet FAA airfield design standards
- Effectiveness to service target users
- Resolution of current issues
- Long-term facility requirements are met
- Appropriate level of service is provided
- Ease of implementation
- Realistic cost to implement (capital investment and operating)
- Flexibility and future expansion potential
- Supports sustainable development principles

4.4 RUNWAY ALTERNATIVES

The runway alternatives were based on both immediate needs and long-range objectives. The immediate issue requiring resolution is the approach runway protection zone (RPZ) for Runway 34 that currently drapes over the West Jordan Public Works building, shown in **Figure 3-3** in **Chapter 3, Facility Requirements**. That building is a public facility, and thus not a compatible land use within the RPZ. The RPZ also drapes over 7800 South, and while a public roadway within an RPZ is not preferred, it is a historical configuration that the FAA allows to stay. Relocating 7800 South was not considered in any alternative because of the high cost, potential disruption to the community, and the fact that the control of the roadway falls outside the purview of the Airport Sponsor (SLCDA). Additionally, no alternative was specifically designed to move the RPZ off the roadway since it is a permitted condition. However, those alternatives that included moving the RPZ off, or partially off, the roadway were considered beneficial and were factored into the overall evaluation.

In determining solutions to the RPZ, alternatives must account for the current B-II critical aircraft as well as the future C-II critical aircraft. To account for the future critical aircraft, the alternatives included the following additional objectives:

- **Extend the runway to 6,600 feet –** The current runway length is 5,862 feet. The facility requirements analysis determined a length of 6,600 feet is needed to fully support the operations of the Citation X aircraft, which was identified as the future critical aircraft for U42. Additionally, through further runway performance analysis, a runway extension to 6,600 feet was also found to provide substantial benefits for turboprop aircraft including the existing critical aircraft.
- **Provide a 1,000-foot safety area** – To support the future C-II critical aircraft, a clear and level area beyond the departure end of Runway 16 is needed for a compliant runway safety area (RSA) and runway object free area (OFA).

4.4.1 Runway Protection Zones and Aircraft Approach Surface Determinations

RPZs are a trapezoidal area off the end of the runway that serves to enhance the protection of people and property on the ground in the event an aircraft lands or crashes beyond the runway end. Under FAA design criteria, the airport must own the landing area, have sufficient interest in the RPZ to protect them from both obstructions and incompatible land use, and must strive to attain compatible zoning around the airport to prevent incompatible land use that:

- Could cause sufficient conflict that endangers the airport,
- Cause it to be closed, or
- Require substantial remedial investment to purchase conflicting developed property.

The size of the RPZ trapezoid is directly related to the aircraft approach category and visibility minimums for the specific runway. For the purpose of this report, the three sizes are termed *small*, *medium*, and *large* RPZ.

- A small RPZ will serve aircraft approach categories (AAC) C & D with an approach visibility minimum greater than 1 mile.
- A medium RPZ will serve all aircraft with approach visibility greater than 3/4 mile.

» A large RPZ will serve all aircraft with an approach visibility of less than 3/4 mile.

Currently, Runway 34 has a non-precision instrument approach (RNAV-GPS) with greater than 3/4 mile visibility minimums for pilots to navigate a safe landing. This correlates to the medium RPZ with a trapezoid of 1,000 x 1,510 x 1,700 feet. Runway 16 is currently a visual runway that requires the small RPZ which has a size of 500 x 700 x 1,000 feet. The prior master plan and current Airport Layout Plan (ALP) planned to protect for a future large RPZ for Runway 34, which is used for approaches with less than 3/4 mile visibility minimums, and the medium RPZ for Runway 16.

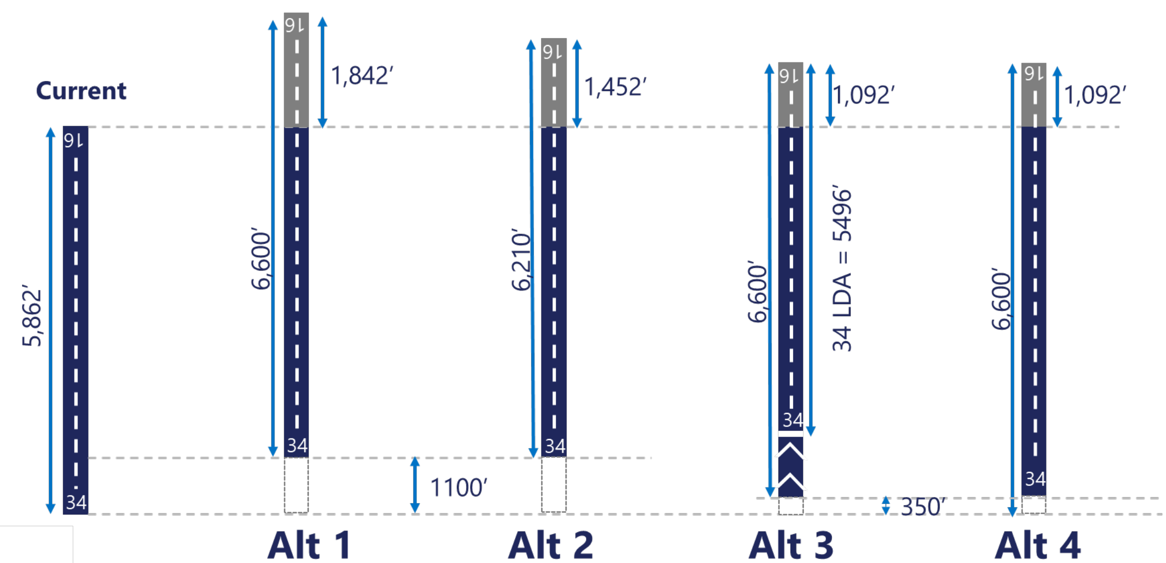
As part of this master plan, analysis was completed regarding the capability of enhancing the instrument approaches available to pilots on both runways. See **Appendix C, Aircraft Performance and Instrument Procedure Considerations** for the complete report. That analysis confirmed it is feasible for Runway 34 to have an RNAV GPS approach with less than 3/4 mile visibility minimums, requiring a large RPZ. The study also concluded there is the possibility for an approach with greater than 3/4 mile visibility minimums to Runway 16, which would require the medium-sized RPZ.

Therefore, the runway alternatives analysis began with preserving future plans to enhance the instrument approaches and expand RPZ trapezoids for Runway 34 (medium to large) and Runway 16 (small to medium).

4.4.2 Runway Alternatives

Four runway alternatives were developed to analyze various ways to meet the objectives and needs of U42 today and through the future. **Figure 4-2** below provides an overall visual depiction of the alternatives. The narrative following describes the alternatives developed and the subsequent evaluation to determine the preferred alternative.

FIGURE 4-2
RUNWAY ALTERNATIVES

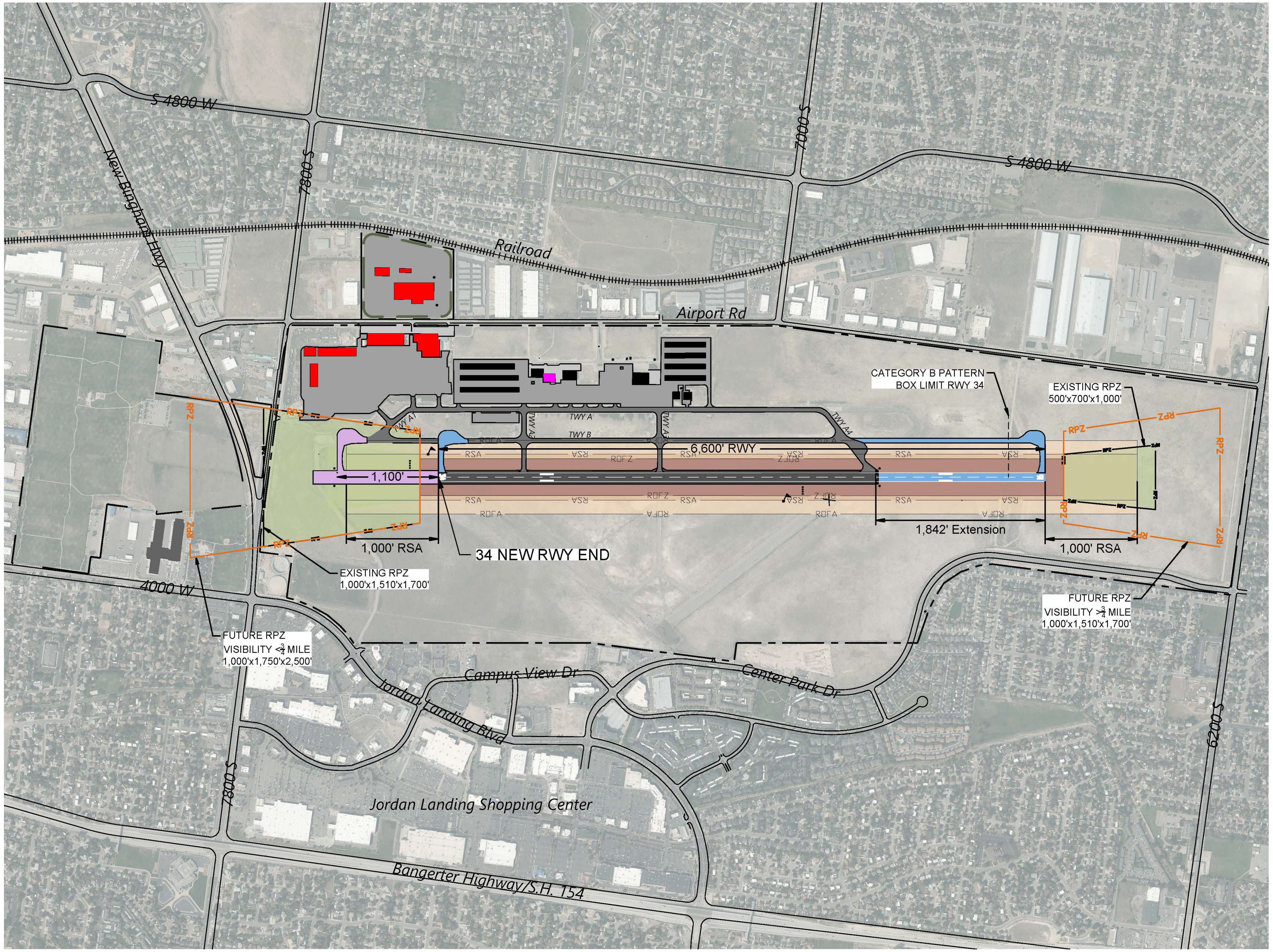


Source: RS&H, 2022

4.4.2.1 Alternative 1 – Shift Runway North and Extend by 1,842’ to 6,600’

Alternative 1 (see **Figure 4-3** on the next page) proposes shifting the runway to the north by 1,100 feet and extending the runway to the north 1,842 feet. By shifting the runway north, the existing RPZ and a future large RPZ are compatible with the existing land use and keep the RPZ off the West Jordan Public Works building. A medium sized approach RPZ for Runway 16 fits within airport property. The alternative would include demolition of Taxiway A1 between Taxiway B and the runway, as well as the southern portion of the runway up to the new Runway 34 threshold. A new A1 connector would be built perpendicular to the Runway 34 end.

FIGURE 4-3
RUNWAY ALTERNATIVE 1



U42
Runway Alternative 1

- *Property Boundary*
- *Hangars*
- *FBO Terminal/Hangar*
- *Utah Army National Guard*
- *Runway Protection Zone (RPZ)*
- *Runway Object Free Zone (ROFZ)*
- *Runway Safety Area (RSA)*
- *Runway Object Free Area (ROFA)*
- *Proposed Pavement*
- *Abandoned Pavement*

1,200' 600' 0' 1,200'
Scale 1":1,200'

Source: RS&H, 2023

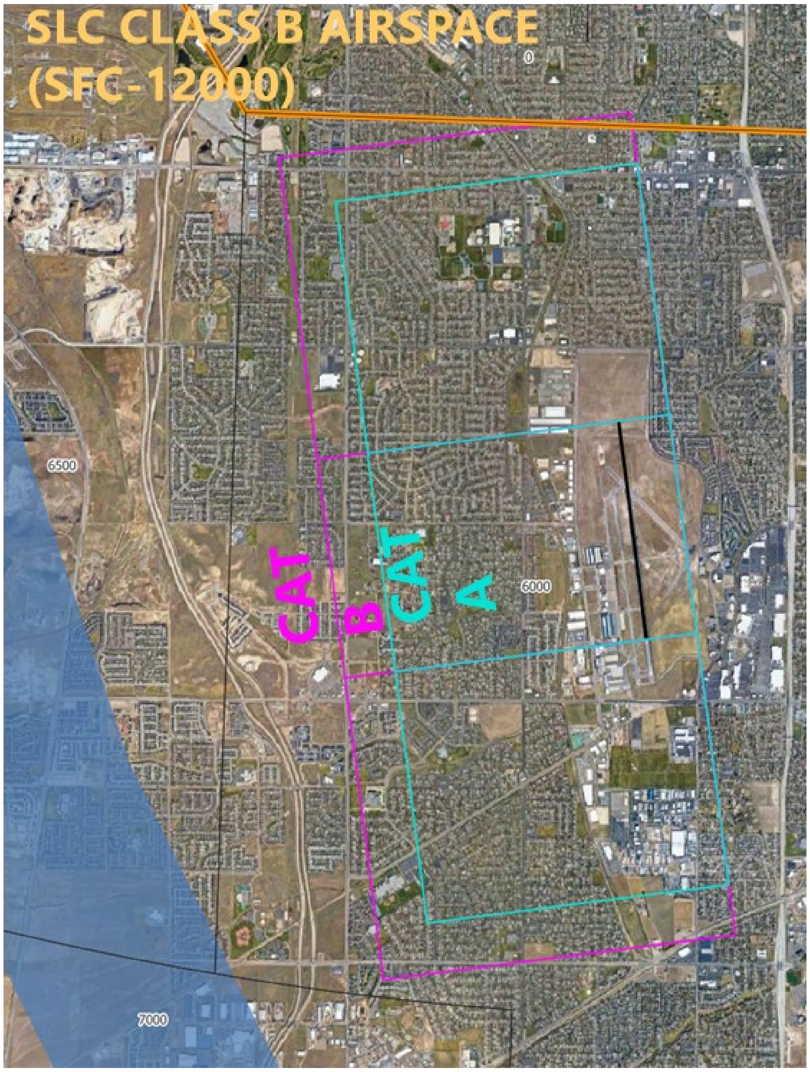
Advantages of the alternative include the following:

- By shifting the runway 1,100 feet to the north, the current medium RPZ sits predominantly inside the airport property, north of 7800 South.
- Overall, the alternative meets all the objectives and would serve the existing and future needs of U42.

Disadvantages of the alternative include the following:

- Shifting the runway to the north by 1,100 feet dramatically changes how the runway integrates with the existing taxiway infrastructure and the current facilities. Runway exits may prove to be in poorly located portions of the runway. Taxi distance to the Runway 16 end is further than other alternatives.
- With the shift of Runway 34, Part 77 surfaces will be placed over portions of Taxiway B and Taxiway A1. Part 77 Approach Surface for Non-Precision Instrument and Precision Instruments will be penetrated by aircraft on Taxiway B and Taxiway A1. This factor may require operational restrictions to prevent penetration of surfaces during arrival operations. If a precision approach was created for Runway 34, a Precision Obstacle Free Zone (POFZ) would require separate hold positions. Further study would be needed to determine if, and where, taxi hold positions would be placed.
- Shifting and extending the runway to the north to the extent proposed in this alternative pushes the Category B traffic pattern box into the SLC Class B airspace. Categories in this regard are related to the AAC, which is correlated to aircraft speed on final approach to the runway. Category A includes small piston aircraft such as the Cessna 172. Category B includes the current critical aircraft for U42, a Beechcraft Super King Air. The conflict is depicted in **Figure 4-4** on the next page, where the magenta line (Category B pattern) crosses the double orange line (Class B airspace) at the top of the graphic. This situation would require an Airport Traffic Control Tower (ATCT) to be installed at U42, and a Class D carve out of Class B airspace be created.
- The 1,1000-foot shift to the north and 1,452-foot runway extension would naturally lead to a corresponding adjustment of the traffic pattern, placing it farther north than the other proposed alternatives under consideration. The altered traffic pattern would bring aircraft closer to the residential areas directly to the north of U42 during takeoffs and landings, resulting in an intensified noise disturbance. The extended runway accommodating larger planes would compound this issue, generating more frequent and intrusive noise events and potentially disrupting the tranquility of the community.

FIGURE 4-4
SLC CLASS B AIRSPACE



Source: LEAN, RS&H, 2022

4.4.2.2 Alternative 2 – Shift Runway North and Extend by 1,452' to 6,210'

Alternative 2 proposes shifting the runway to the north by 1,100 feet and extending the runway to the north 1,452 feet, as shown in **Figure 4-5**. By shifting the runway north, the existing RPZ and a future large RPZ are compatible with the existing land use since the RPZ is kept off the West Jordan Public Works building. A medium sized approach RPZ for Runway 16 fits within airport property. The alternative would include demolition of Taxiway A1 between Taxiway B and the runway, as well as the southern portion of the runway up to the new Runway 34 threshold. A new A1 connector would be built perpendicular to Runway 34 end. The 1,452-foot extension prevents the Category B pattern box from penetrating into SLC Class B airspace, and thus no ATCT tower would be needed.

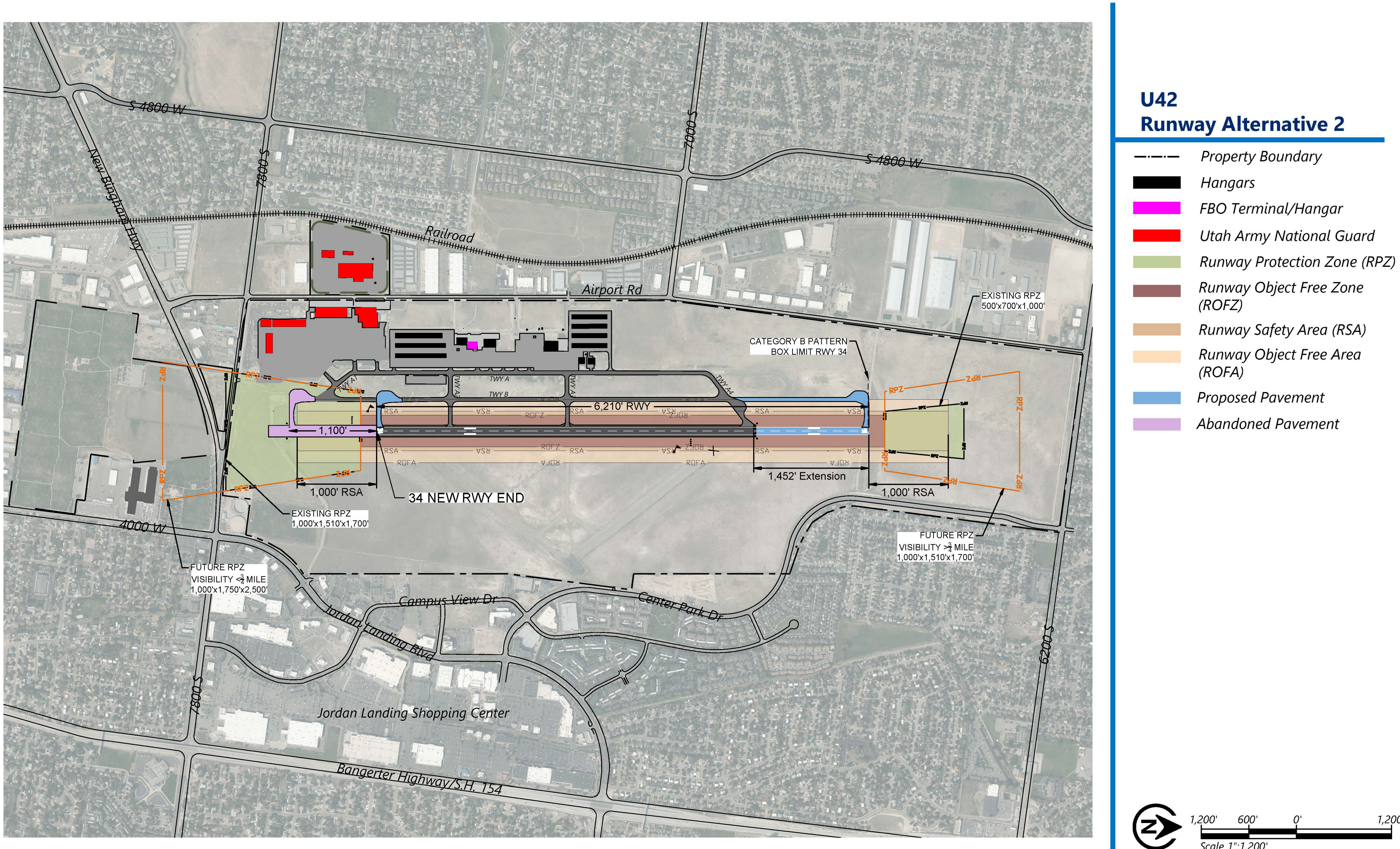
Advantages of the alternative include the following:

- By shifting the runway 1,100 feet to the north, the current medium RPZ sits predominantly inside airport property, north of 7800 South.
- The alternative meets the objectives of providing an OFA and RSA for future C-II critical aircraft, and for ensuring compliant RPZs.

Disadvantages of the alternative include the following:

- The alternative does not meet the preferred runway length requirements of 6,600 feet.
- Shifting the runway to the north by 1,100 feet dramatically changes how the runway integrates with the existing taxiway infrastructure and the current facilities. Runway exits may prove to be in poorly located portions of the runway. The taxi distance to the Runway 16 end is further than other alternatives.
- The relocated approach surfaces for Runway 34 would fall over portions of Taxiway A1 and the Army Guard ramp. This could create the need for operational restrictions to prevent penetration of surfaces during arrival operations. It is likely that Taxiway A1, A, and B adjacent to the Guard ramp, and the entrance to Runway 34 would require further adjustments beyond what is shown in the alternative, to ensure safe and efficient aircraft flow. Further study would be required.

FIGURE 4-5
RUNWAY ALTERNATIVE 2



Source: RS&H, 2023

4.4.2.3 Alternative 3 – Extend Runway by 1,092' and Implement Declared Distances

Alternative 3 uses declared distances to achieve compliant RPZs and provides an OFA and RSA for C-II standards, as shown in **Figure 4-6** on the next page. The Runway 34 end would be shifted north by 350 feet, providing a compliant C-II RSA and OFA on the south end of the runway. That shift also ensures the Runway 16 departure RPZ is clear of the West Jordan Public Works building.

Taxiway A1 would be relocated to the new Runway 34 end. The Runway 34 threshold would be displaced by 750 feet, which would move the existing RPZ off the West Jordan Public Works building and allow room for a future large RPZ to be established if the Runway 34 approach was enhanced to <3/4 mile minimums. Finally, to achieve 6,600 feet for departure operations, the runway would be extended to the north by 1,092 feet.

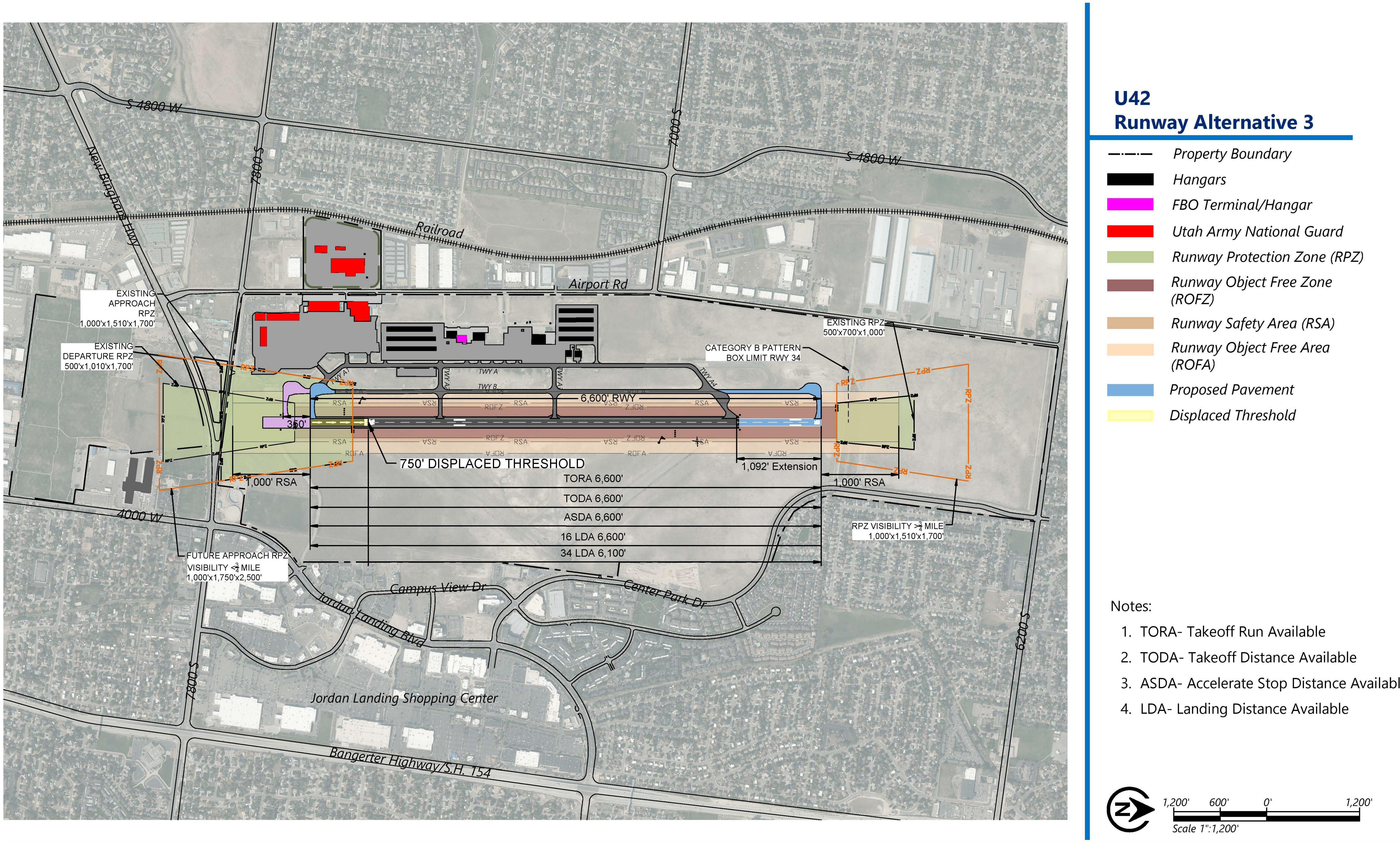
Advantages of the alternative include the following:

- With a runway shift to the north, the usefulness of existing taxiway connectors is maintained, albeit A1 which would need to be relocated to the new Runway 34 end.
- The runway extension is less length than proposed in Alternatives 1 and 2, which minimizes changes in taxi times and fuel burn for aircraft departing Runway 16. The overall cost of implementation is also minimized.
- The current medium sized RPZ for Runway 34 will fall mostly north of 7800 South, inside the airport property.
- Overall, the alternative meets all the objectives and would serve the existing and future needs of U42.

Disadvantages of the alternative include the following:

- The use of displaced thresholds is not preferred. Per FAA AC 150/5300-13B, *Airport Design*, paragraph H.1.1, the "preferred condition is a runway fully meeting design standards without the need for declared distances." Unless this alternative was found to be the only feasible solution, it could not be considered as the preferred alternative.
- The landing distance available to pilots landing Runway 34 would be 6,100 feet.

FIGURE 4-6
RUNWAY ALTERNATIVE 3



Source: RS&H, 2023

4.4.2.4 Alternative 4 – Shift Runway North and Extend by 1,092' to 6,600'

A detailed analysis was completed (see **Appendix C, Aircraft Performance and Instrument Procedure Considerations**) regarding the feasibility and benefits of enhancing the instrument approaches available to pilots to both runways. It concluded that instrument approach enhancements are possible but that changes to the current flight procedure could negatively impact aircraft separations on north flow to SLCIA, and only a nominal increase in aircraft operations could be anticipated if enhancements were made to the instrument approach procedures for Runway 34. Therefore, it is not cost effective to shift the runway further north to preserve land on airport property for a future large RPZ. This analysis also confirmed that the lack of instrument approaches to Runway 16 is a significant shortcoming of the airport during IFR conditions and protecting for a future medium sized RPZ is recommended so future instrument approach enhancements can be made.

Based on this detailed airspace and instrument procedure analysis, Alternative 4 features a 350-foot runway shift so the existing medium RPZ is clear of the West Jordan Public Works building, and a 1,092-foot extension to provide 6,600 feet of runway distance, while preserving for a medium sized RPZ on the Runway 16 end. This alternative is shown in **Figure 4-7**.

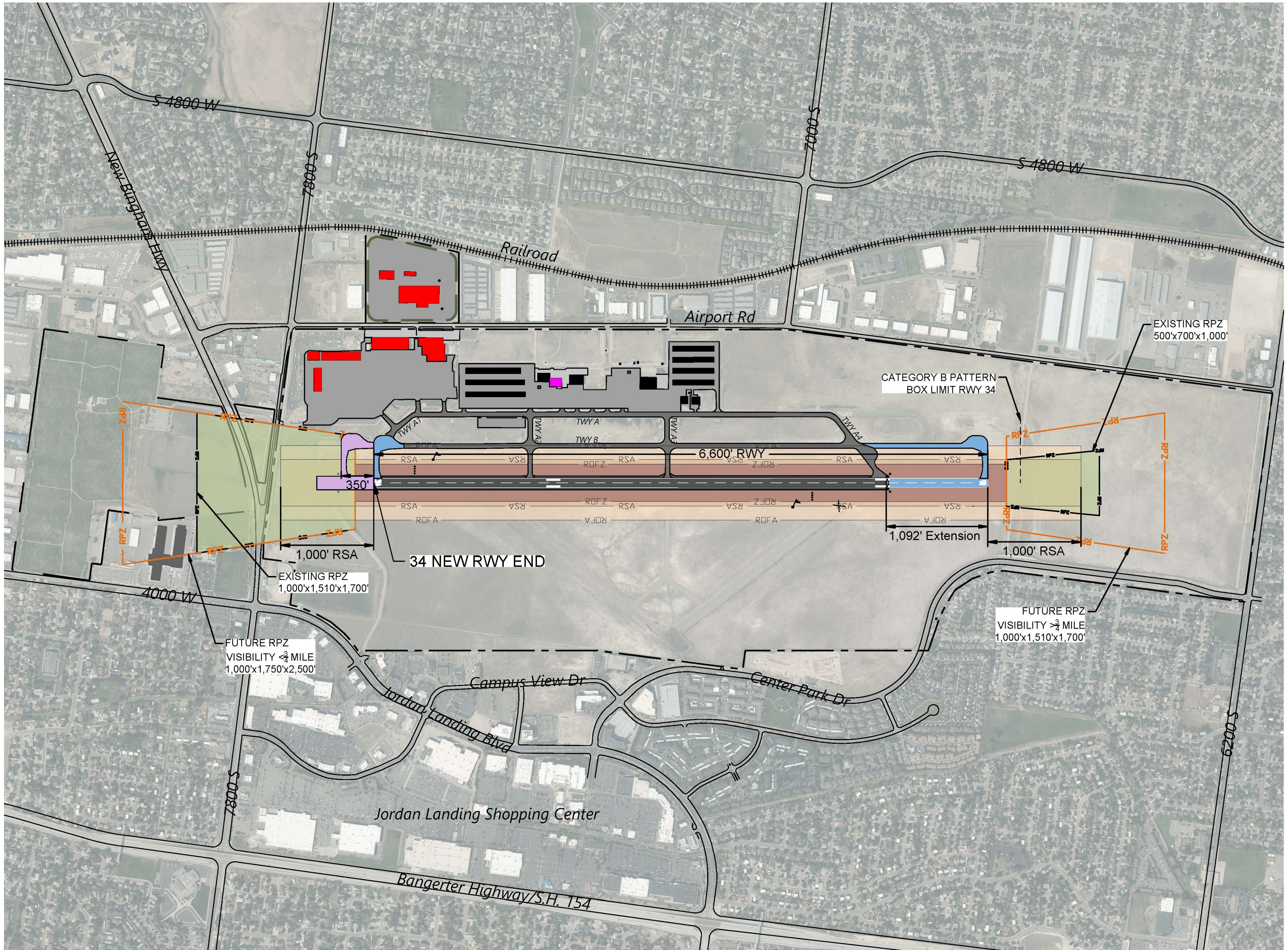
Advantages of the alternative include the following:

- With a minimum runway shift to the north, the usefulness of existing taxiway connectors is maintained, albeit A1 which would need to be relocated to the new Runway 34 end.
- The runway extension is less length than proposed in Alternative 1 and 2, which minimizes changes in taxi times and fuel burn for aircraft departing Runway 16. The overall cost of implementation is also minimized.
- No declared distances are used, which meets FAA standards and recommendations.
- The ability to enhance the instrument approach procedure is preserved by protecting for a medium sized RPZ on the Runway 16 end.

Disadvantages of the alternative include the following:

- The configuration complicates, if not prevents, future enhancements to instrument approach procedures (reduce minimums to below 3/4 mile visibility) by not protecting for a large sized RPZ on the Runway 34 end.

FIGURE 4-7
RUNWAY ALTERNATIVE 4



U42
Runway Alternative 4

- Property Boundary
- Hangars
- FBO Terminal/Hangar
- Utah Army National Guard
- Runway Protection Zone (RPZ)
- Runway Object Free Zone (ROFZ)
- Runway Safety Area (RSA)
- Runway Object Free Area (ROFA)
- Proposed Pavement
- Abandoned Pavement

1,200' 600' 0' 1,200'
Scale 1":1,200'

Source: RS&H, 2023

4.4.3 Runway Alternative Evaluation

Each of the runway alternatives were evaluated for their performance against specific evaluation criteria. That criterion is described below with additional narrative summarizing how each alternative was scored.

Evaluation Criteria and Assessment:

- Airspace Integration: How does the alternative work with the existing airspace in the Salt Lake Valley?
  - Alternative 2, 3, and 4 all integrate equally well with the current airspace.
  - Alternative 1 will move the Category B traffic pattern box into the SLC Class B airspace. This feature will require an ATCT at U42 and a Class D airspace carve-out of the Class B where the airspace is impacted.

- Aircraft Performance: Does the alternative enhance or degrade departure capability for the fleet mix at U42?
  - Preliminary alternatives were analyzed by LEAN Corporation to determine how each would be able to serve large turboprop (Super King Air type aircraft), large cabin business jets (Global Express G5000/6000 type aircraft), and small cabin business jets (Cessna Citation 560XLS type aircraft). The analysis examined the likelihood of success for departures to various destinations, as explained in detail in **Appendix C, Aircraft Performance and Instrument Procedure Considerations**.[17] Overall, Alternative 2 performed the worst comparably to the other alternatives due to the decrease in runway length. Alternatives 1, 3, and 4 provide comparable performance.
  - Alternative 3 performed comparatively well for departure performance. However, Runway 34 landings would have a shorter distance available than other alternatives. While that factor doesn't present limitations to the runway's utility, it is less preferred than the other options that have a greater runway landing distance available.

- Land Use Integration: How does the alternative work with the existing land uses on the north and south sides of the airport?
  - Alternatives 1 and 2 provide compliant RPZs and allow flexibility for an approach below 3/4 mile minimum visibility to Runway 34 to be implemented in the future. However, these options shift the runway substantially to the north, which has greater degree of change to flight tracks, including those over the residential areas of Kearns. This is not preferred when compared to Alternative 3 and 4.
  - Alternative 3 scores best when considering planning for a Runway 34 approach with less than 3/4 mile visibility minimums.

[17] The LEAN Corporation analysis of Alternative 3 was based on a preliminary configuration that included only 738 feet of extension to the north and no overall runway shift to the north. While viable, that configuration would require declared distances for Runway 16 to protect for a C-II safety area, provide for a compliant departure RPZ, and would subsequently provide less TORA/TODA for Runway 16 than 6,600 feet. That configuration was discarded and revised to what is presented in this document. The results of the LEAN analysis overall were inferred to judge performance of the final Alternative 3 described in this chapter.

  - Alternative 4 scores similar to Alternative 3 when not planning for the approach to Runway 34 with less than 3/4 mile visibility minimums. Ultimately, it was determined not to plan for below 3/4 mile minimums, because, after deeper analysis, it was concluded instrument approach enhancements could impact aircraft separation on north flow to SLCIA, while only minimally increasing instrument aircraft operations at U42.

- Facility Integration: How does each alternative's new runway configuration work with the existing taxiway, apron, and hangar infrastructure?
  - Alternatives 1 and 2 move the runway to the north substantially farther than Alternatives 3 and 4. That shift creates an imbalance of airport facilities relative to the runway ends. Operational flows on the south end would become more complex, which would be exacerbated by the amount of Army Guard helicopter traffic in that area.
  - Alternatives 3 and 4 work well with existing and future planned facilities.

- ROM Costs: When compared, what is each alternative's rough order magnitude cost for implementation?
  - Alternatives 1 and 2 are estimated to have greater cost implications than Alternatives 3 and 4 due to the greater degree of runway shift. The shift would incur additional costs associated with taxiway construction and taxiway reconfiguration.

- Carbon Footprint: When compared, how does each alternative impact taxi distance, and subsequently carbon emissions.
  - Alternatives 1 and 2 will require greater taxi distance to/from the Runway 16 end, therefore increasing overall emissions when compared to Alternatives 3 and 4.

- FAA Preferences: Does the alternative meet the standards, recommendations, and preferences of design outlined in AC 150/5300-13B, *Airport Design*.
  - Alternative 3 uses declared distances which, per FAA, is not allowed unless it is the only solution available. This study validated other solutions are viable, which eliminates Alternative 3 from being considered as the preferred alternative.

The decision to plan only for approaches with greater than 3/4 visibility minimums stems from the following factors:

- Analysis of historical weather conditions at U42 determined that the current approaches at U42 allow nearly hub-airport level reliability for arriving aircraft. The airport typically has approximately 95 percent or greater chance of being open to arrivals with its current approaches that have greater than 3/4 mile visibility minimums. This data suggests approaches with lower visibility minimums are not needed to maintain the utility of the airport.
- The reliability of U42 for arrivals reduces and/or eliminates the possibility of FAA funding NAVAIDS such as a localizer, glide slope, and/or approach lighting systems, as well as approach procedures that could enable lower minimums. Additional lighting enhancements would not be advantageous unless daily commercial operations were expected. As a result, the responsibility for

funding those improvements would fall on SLCDA. Therefore, such enhancements are not being pursued or are recommended.

- U42's role within the SLCDA airport system is to relieve general aviation traffic from SLCIA. It is anticipated that only high-performance business aircraft will typically operate in weather conditions where minimums were below 3/4 mile. In those conditions, it is assumed operators would prefer to use SLCIA due to its longer runways, instrument approaches and NAVAIDS, and hub-airport level of snow removal and reporting.

Together, these factors negate the need to plan for an approach to Runway 34 with below 3/4 mile minimums.

Alternative 4 was carried forward as the preferred alternative. That alternative scored favorable in every evaluation category, as shown in **Table 4-1**. After significant comprehensive analysis, including cost benefit analysis, stakeholder engagement, and public input, the decision was made to score Alternative 4 as "Favorable" for land use integration. That scoring accounts for the collective decision to not protect for enhanced instrument approach procedures to Runway 34 that would allow for visibility minimums to drop below 3/4 mile. Had this decision not been made, a different alternative would have been required. Alternative 4 would not have met the primary objective of providing land use integration and compatibility.

TABLE 4-1
RUNWAY ALTERNATIVES EVALUATION

	Runway Alternative 1 *Shift N into Class B 6,600'*	**Runway Alternative 2** *Shift N w/out Class B 6,210'*	**Runway Alternative 3** *Declared Distances 6,600'*	**Runway Alternative 4** *No RPZ enhancement 6,600'*
Airspace Integration	Less Favorable	Favorable	Favorable	Favorable
Aircraft Performance	Favorable	Less Favorable	Less Favorable	Favorable
Land Use Integration	Less Favorable	Less Favorable	Favorable	Favorable
Facility Integration	Least Favorable	Least Favorable	Favorable	Favorable
ROM Costs	Less Favorable	Less Favorable	Favorable	Favorable
Carbon Footprint	Less Favorable	Less Favorable	Favorable	Favorable
FAA Preferences	Favorable	Favorable	Least Favorable	Favorable

Favorable (green) · Less Favorable (yellow) · Least Favorable (red)

Source: RS&H, 2023

4.4.4 Environmental Analysis of Runway Alternatives

The analysis in this section is to advise SLCDA of potential environmental impacts associated with the four runway alternatives described in **Section 4.2.2**. The following sections identify the applicable environmental resource categories described in Section 4-1 of FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures*, and describe the appropriate level of National Environmental Policy Act (NEPA) documentation for each alternative. Environmental resource categories include:

- Air Quality

- Biological Resources
- Climate
- Coastal Resources
- Department of Transportation Act, Section 4(f)
- Farmlands
- Hazardous Materials, Solid Waste, and Pollution Prevention
- Historical, Architectural, Archaeological, and Cultural Resources
- Land Use
- Natural Resources and Energy Supply
- Noise and Noise-Compatible Land Use
- Socioeconomics, Environmental Justice, and Children's Environmental Health and Safety Risks
- Visual Effects
- Water Resources (includes Wetlands, Floodplains, Surface Waters, Groundwater, and Wild and Scenic Rivers)

Only those environmental resource categories that could be affected by the four runway alternatives are described below. The four runway alternatives would all have the same environmental resource categories that could be affected and are described together.

Air Quality: A temporary increase in air pollutant emissions from construction vehicles and equipment would occur during construction of any runway alternative. A construction emissions inventory may be necessary for the NEPA documentation. Additionally, the change in aircraft fleet mix combined with the forecast increase operations at the airport and changes to airspace designations may require an operational air quality emissions analysis for the NEPA documentation associated with any runway alternative.

Biological Resources: Threatened and endangered species and migratory birds, have the potential to be found at the airport. In addition, each runway alternative is proposed on undisturbed, pervious land. Therefore, a biological survey may be necessary for the NEPA documentation associated with any runway alternative.

Climate: Implementation of any runway alternative would result in a temporary increase in emissions from construction vehicles and equipment, and a permanent increase in emissions related to the forecast increase in aircraft operations and change to the aircraft fleet mix. An estimate of GHG emissions could be included in the construction and operational emission inventory as part of the NEPA documentation associated with any Runway Alternative.

Department of Transportation Act, Section 4(f): No Department of Transportation Act, Section 4(f) properties exist at the airport.

Hazardous Materials, Solid Waste, and Pollution Prevention: Construction associated with any runway alternative would generate solid waste. Waste would be handled and disposed of according to federal, state, and local rules and regulations.

Noise and Noise-Compatible Land Use: The aviation noise contours are anticipated to change with the implementation of any runway alternative. It is recommended that the SLCDA model new noise contours that account for the runway extension using the most recent version of the Aviation Environmental Design Tool (AEDT). Residential land uses near the airport may be sensitive to aircraft noise associated with U42. New noise contours that account for the changes anticipated at the airport for each runway alternative should be prepared to see if any new noise sensitive resources are within the 65 dB DNL[18] noise contours, and if so, if any of those resources would experience a significant noise impact.

Socioeconomic, Environmental Justice, and Children's Environmental Health and Safety Risks: Minority and low-income populations exist in the airport vicinity. NEPA documentation would require a determination of whether any impacts resulting from any runway alternative would disproportionately affect minority or low-income populations.

Water Resources (Floodplains): There are 100-year floodplains close to the existing Runway 34 end at the airport. NEPA documentation would require detailed analysis of any impacts to floodplains resulting from implementation of any runway alternative.

NEPA Documentation Guidance: The reconstruction, resurfacing, extension, strengthening, or widening of an existing runway can be categorically excluded (CATEX) under FAA Order 1050.1F, paragraph 5-6.4(e), provided that the project would not cause significant erosion or sedimentation, would not cause a significant noise increase over noise sensitive area, or cause significant impacts to air quality, and if no, extraordinary circumstances exist. If any of these conditions exist, then an Environmental Assessment (EA) could be required.

4.4.5 Long-Range Runway and Airspace Adjustment Conclusions

At the onset of this master plan study, there were questions from tenants and SLCDA staff regarding if adjusting the runway orientation could provide benefit (i.e., better deconflict U42 from SLCIA), and if an east traffic pattern was possible. With the assistance of LEAN Corporation, the planning team determined the following answers:

- Runway Reorientation: The potential runway orientations were limited by the available airport property boundaries necessary to maintain the existing pavement length. The feasible range included a maximum clockwise rotation of 2.5° and a counterclockwise rotation of 15.5°, all while keeping the existing runway length of 5,862 feet intact. The initial orientation explored was the Runway 16-34 configuration. Under this setup, the runway at U42 would align entirely parallel to

[18] Day-Night Sound Level (DNL) is based on sound levels measured in relative intensity of sound decibels (dB) on the A-weighted scale (dBA) over a time-weighted average normalized to a 24-hour period. DNL has been widely accepted as the best available method to describe aircraft noise exposure.

Runways 16R-34L and 16L-34R at SLCIA. This alignment would facilitate closely spaced parallel operations between the two airports. However, implementation would necessitate the establishment of an ATCT at U42 and significant modifications to the airspace system.

The second configuration that was considered, Runway 14-32, represented the most significant counterclockwise rotation achievable within the confines of U42's property boundary. The Runway 14-32 configuration provides 18° of separation from SLCIA Runways 16R-34L and 16L-34R. Additional rotation in the counterclockwise direction would likely entail the acquisition and demolition of external buildings, rendering it impractical. This shift would induce conflicts on the northwest side of the airport between U42 and the VFR corridor that runs parallel between the airport and the Oquirrh Mountains. Any potential gain would be marginal, whereas impacts to the airport and community would be extensive. Impacts would include new flight tracks over residential areas, RPZ areas in land not owned by SLCDA, creation of new approach and departure procedures, potential obstruction mitigation and/or impacts, and taxiway reconfiguration. Additional rotation in the counterclockwise direction would likely entail the acquisition and demolition of external buildings, rendering it impractical.

An initial assessment of instrument procedure feasibility was conducted for both the potential Runway 14-32 and Runway 16-34 orientations. The analysis affirmed that both orientations could support full RNAV (GPS) approaches that maintain current approach minimums and RNAV departures. However, the analysis related to the reorientation of runways indicated that substantial capacity gains between U42 and SLCIA would not be realized without the installation of an ATCT and comprehensive redesign of the surrounding airspace. Considering these factors, a runway reorientation was ruled out for future consideration.

» East Traffic Pattern: A GA traffic pattern on the east side of the airport was found to be incompatible with SLC operations. FAA staff confirmed an east side traffic pattern would not be supported due to the conflicts that would arise with SLCIA arrival and departure traffic. If an east side pattern was implemented, a safe separation could not be maintained between U42 aircraft in the pattern and commercial airliners operating in/out of SLCIA. For this reason, an east side GA pattern for was not considered for implementation in the future.

However, the Utah Army National Guard consistently conducts rotor wing aircraft patterns at substantially lower altitudes compared to fixed-wing traffic, often flying at or below 5,500' mean sea level (MSL). This practice, prevalent across various airports nationwide, would ensure the necessary vertical separation between rotor wing aircraft on the east side of the airport and the inbound SLCIA traffic on its final approach over the pattern area. Given this context, the consideration of an east side pattern specifically tailored for rotor wing military operations of the Utah Army National Guard holds merit and should be thoroughly explored. Incorporating military traffic could be seamlessly accomplished by utilizing the Bangerter Transition to merge into the pattern. This approach would establish a clear demarcation between military helicopter operations and the aircraft within the standard GA pattern at U42. Changes to the GA VFR traffic patterns are not recommended. Considering the anticipated increase in traffic volume, this adjustment holds the potential to significantly elevate operational safety for both military and GA users of the airport. It is important to note that the implementation of a distinct east traffic pattern intended solely for military operations would not impact the existing GA traffic patterns at U42. Further exploration of the Utah Army National Guard proposed east traffic pattern for military use only is recommended.

4.4.6 Taxiway Deficiency Solutions

The facility requirements outlined taxiway deficiencies. This section describes how those non-standard taxiway deficiencies will be corrected and incorporated into the preferred development plan.

- Taxiway A2 and A3 connect the apron directly to the runway. To date, direct access has not proven to be a source of runway incursions. It was found best to relocate sections of A2 and A3 between Taxiway B and the runway when the preferred runway alternative is implemented. This will allow the runway exits to be situated in the optimal location considering the runway shift and extension. This solution also allows the portions of A2 and A3 between the apron and Taxiway B to remain in place, which preserves the flow and efficiency of today's apron configuration.
- The non-standard Taxiway A4 entrance to the runway should be corrected when that taxiway requires reconstruction. If timing allows, it is recommended that the realignment be completed after the preferred runway alternative is implemented so the portion of A4 between Taxiway B and the runway can be placed optimally to serve as a runway exit. The portion between Taxiway A and Taxiway B may be placed in a different location to serve future hangar development efficiently.
- The apron south of Taxiway A2 is not built to FAA standard and the apron concrete on the north end is within the Taxiway A2 TOFA. This apron can remain through the planning period, however the TOFA should be marked so no aircraft or vehicles are parked within the Taxiway A2 TOFA.

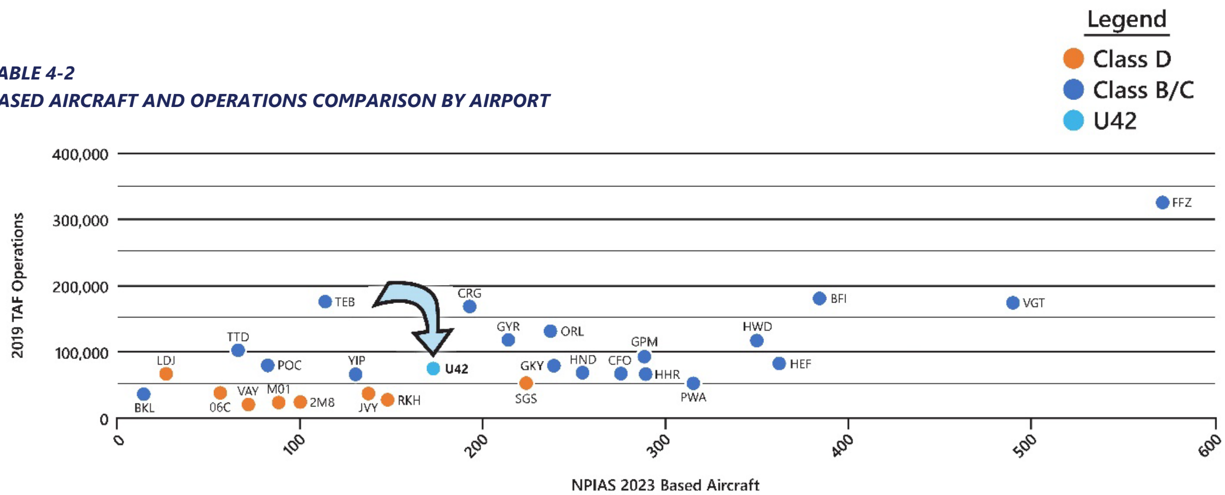
4.5 ATCT VALIDATION AND SITING

The 2006 Airport Master Plan examined the need and potential location for a future ATCT at U42. The need to plan for an ATCT at U42 was confirmed as part of this study. The validation was based on a comparison analysis which examined 27 other airspaces in the US that are comparable to U42. Comparable airspaces in this regard include:

- Hub airports with adjacent Class C/D airspace
- Secondary airports with runway alignments in conflict to the hub airport
- Airspaces with known ATC challenges and/or restrictions per NBAA, AOPA, and FAA feedback

FAA TAF operations data and based aircraft data was collected and then compared for each of the 27 airspaces. Of those 27 airspaces, 18 included a Class D resolution, which means the secondary airport (akin to U42) had an ATCT in place. **Table 4-2** shows the data for each of those airports and is color coded according to if the airport has an ATCT tower. The data indicates that airports with similar airspace challenges as U42 generally have an ATCT if they have more than 200 based aircraft and/or 80,000 operations. At the time of this writing, U42 had approximately 71,000 annual operations and 177 based aircraft. It is expected that U42 will exceed the 200 based aircraft/80,000 annual operations benchmarks within the early portion of the planning period.

TABLE 4-2
BASED AIRCRAFT AND OPERATIONS COMPARISON BY AIRPORT



Source: LEAN; RS&H, 2023
Notes: Class D is an airport with an ATCT. Class B/C are airports without an ATCT.

The analysis validated that an ATCT should continue to be planned for at U42. Three sites have been reserved for potential siting. Based on airspace limitations and UANG operations, the east side of the airport preferred over the west side of the airport. Thus, two of the three sites are on the east side. These sites will need to be further analyzed in the future according to FAA Order 6480.B, *Airport Traffic Control Tower Siting Process*. It is recommended SLCDA continue to coordinate with FAA, and that FAA complete an FAA ATCT Siting Study. The primary benefits of an ATCT at U42 are:

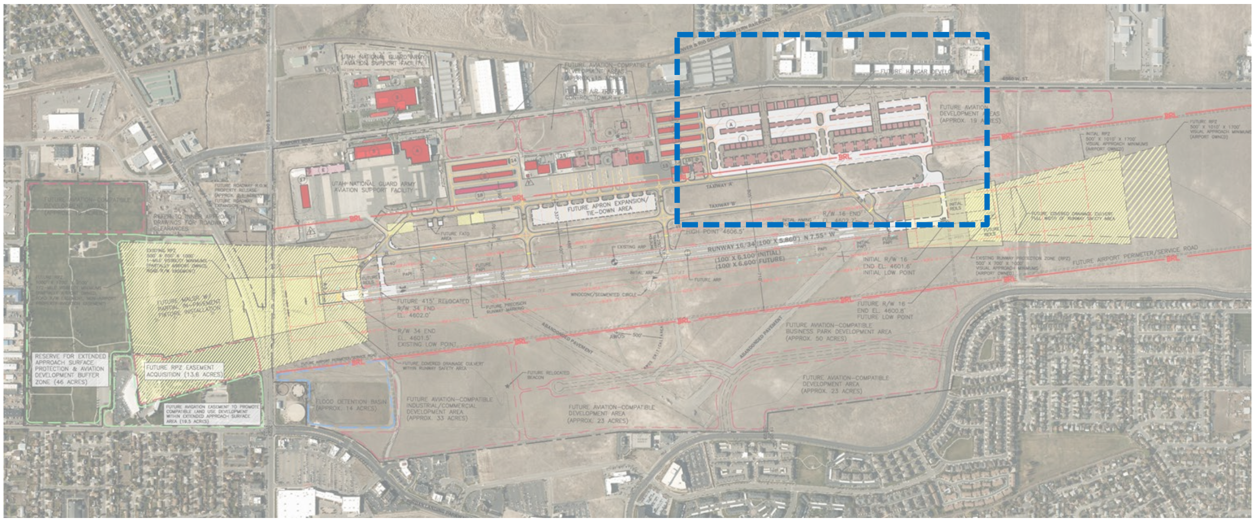
- An ATCT would enhance safety of the airspace and the operation on the field. U42 has a high count of diverse general aviation operations (flight training, business, national defense) for any single runway airport with typical busy days seeing 6 to 8 aircraft in the pattern simultaneously. That level of congestion, mixed with an already compressed airspace due to terrain and the SLC Class B airspace, creates a complex operating environment that would benefit from the added level of safety provided by ATCT management of local airspace.
- The implementation of an ATCT at U42 carries the potential to notably strengthen approach and departure procedures by fostering heightened coordination between the future tower and the SLC TRACON (S56). This scenario would offer the chance to introduce a new RNAV Standard Instrument Departure (SID), ensuring the safe and efficient northbound routing of aircraft taking off from either Runway 16 or Runway 34 at U42. This initiative would contribute to addressing the overall inefficiency stemming from the existing departure procedures that are limited to southbound routes from the airport. Furthermore, the collaboration of S56 and a functional ATCT would allow for the potential of incorporating a Charted Visual Flight Procedure (CVFP) for Runway 16 as part of the effort to enhance arrival access.[19]

4.6 AIRCRAFT PARKING AND STORAGE

The PAL 3 facility requirements determined the need to provide roughly 35 acres for hangar development. The 2006 Master Plan and Airport Layout Plan identified future aircraft hangar development in the northwest quadrant of the airport property, as noted in within the dashed blue box in **Figure 4-8**.

[19] Due to increased aircraft operations, an ATCT siting study is being considered.

FIGURE 4-8
AIRCRAFT PARKING AND STORAGE

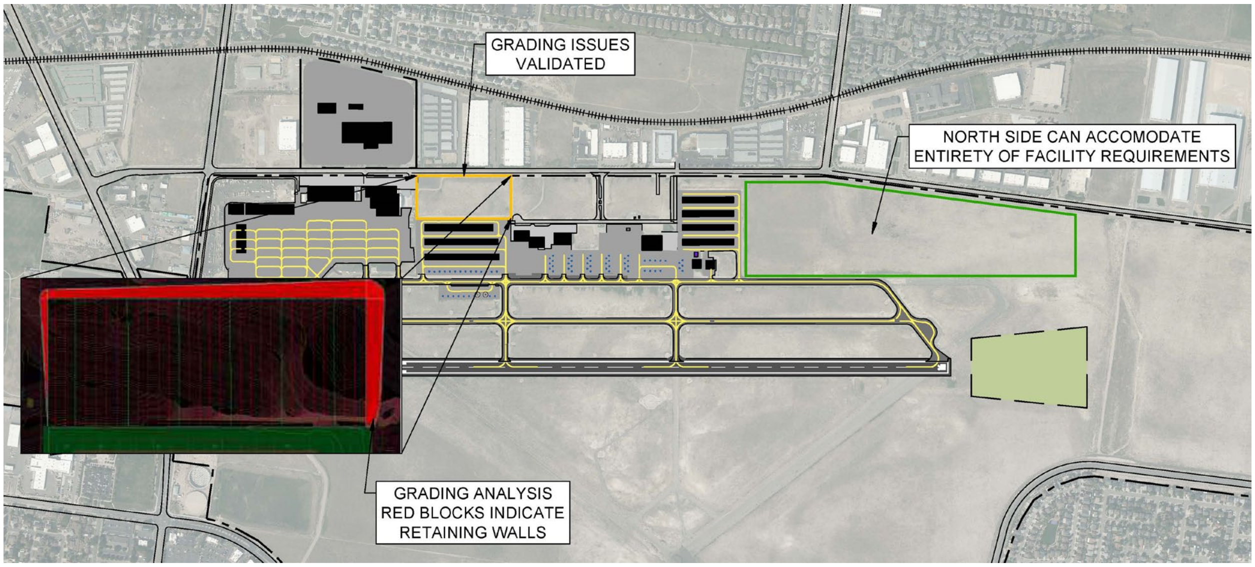


Source: 2006 Airport Layout Plan

That area includes more than 40 acres suitable for hangar development and was validated as being able to accommodate all future aircraft storage requirements at U42 through the planning period. The northwest quadrant was carried forward in this plan as the primary area designated for future hangar development.

Other areas on the west side of the airport were further explored for their ability to accommodate aircraft storage including the area behind the row of T-hangars identified with the orange box in **Figure 4-9**. It was envisioned that T-hangar and/or apron space could be tied into existing taxilane infrastructure. However, grading challenges were identified that, while not unsurmountable, would add significant site-work cost to allow development. To continue to add T-hangar rows to that site, a retention wall would be required which, at its tallest, would be approximately 10 to 15 feet high. Considering that the northwest portion of the airport can accommodate the entirety of aircraft storage requirements for PAL 3 and that areas exist for infill between the current large hangars and the FBO, all other open lots on the west side were deemed appropriate for other uses.

FIGURE 4-9
AIRCRAFT STORAGE ON THE WEST SIDE OF THE AIRPORT



Source: RS&H, 2023

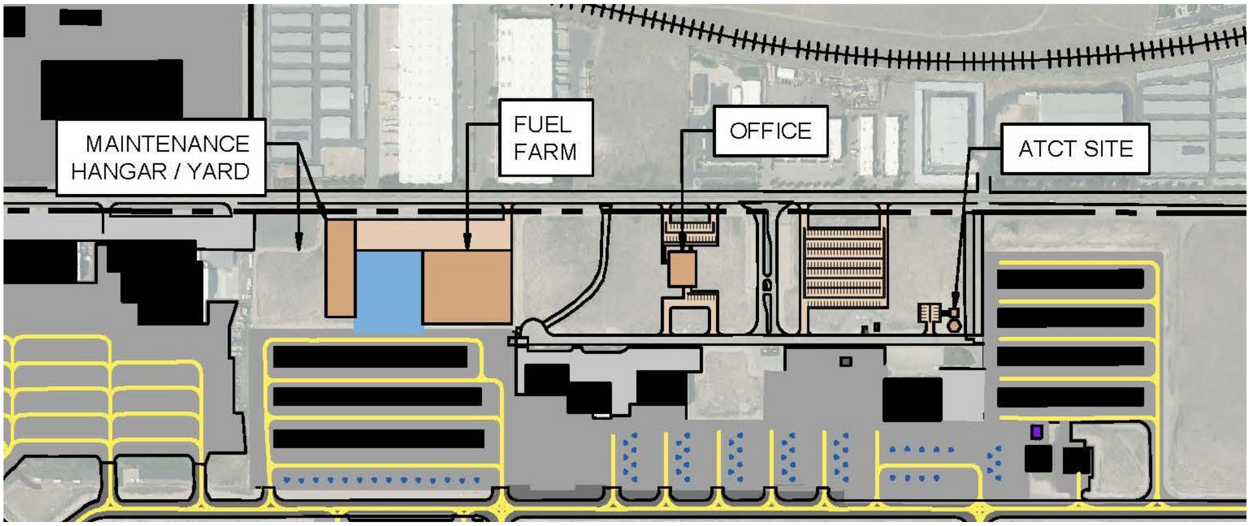
4.7 AIRPORT SUPPORT FACILITIES

The facility requirements analysis determined that the airport maintenance and SRE building, which today is within a portion of a hangar, is not in an optimal location as the space would be better used for aircraft storage. Additionally, the existing fuel farm is poorly located and requires expansion, and additional vehicle parking is needed to support the current and future businesses and facilities on the west side of the airport.

Figure 4-10 shows open land areas that were examined for use. As noted in the section above, the 5-acre parcel on the left side of the diagram (south side) was determined to be a costly site for development for aircraft parking/storage. However, that site is optimal for relocation of the airport fuel farm and airport maintenance. Facilities on that site can be easily connected to both the landside and airside portions of the airport. A fuel farm in that location can allow room for tanker trucks to efficiently access the location from Airport Road. The middle parcel is ideal for additional parking to serve the existing and future businesses in that area. Additionally, nonaeronautical use such as an office building and/or restaurant may be practical to further support flight school or another aeronautical-related business.

The northern site (on the right of the diagram) is the site previously reserved for an ATCT in the 2006 Master Plan. This is being carried forward in this study as one of three potential sites for an ATCT. Until a final decision is made for an ATCT site, the parcel is suggested to be used for additional parking. A parking lot is a relatively low-cost development that can be removed in the future if the site is ultimately selected for an ATCT.

FIGURE 4-10
AIRPORT SUPPORT FACILITY DEVELOPMENT OPPORTUNITIES



Source: RS&H, 2023

The facility requirements also identified the need to determine if the aircraft wash rack location was optimal or if a different location would be more advantageous. It was determined the wash rack location should stay in place. The issues with circulation to/from the wash rack can be resolved with a different apron configuration. Various apron configurations were explored to examine the potential for opening circulation to current and future large hangars while maintaining and/or expanding tie-down areas. Overall, it was concluded that in the future, a taxi route for ADG II aircraft should be implemented in front of all the hangars on the main apron to allow better flow if/ when new hangar development in the area materializes. With that type of circulation route, the wash rack would then become more easily accessible.

There are a myriad of ways the apron can be reconfigured in the future, and an optimal configuration will be dependent on the type and use of hangar development in the area and SLCDA's preference for preserving tie-down locations. During the stakeholder engagement process, several apron expansion options were considered and remain viable solutions depending on how private hangars and FBO expansions occur. These apron expansion options are available in **Appendix D, Potential Apron Options**. Thus, it is outside the scope of this study to select a new configuration for the apron as that would be premature. As developments are proposed, it is recommended the apron configuration be studied further and reconfigured as necessary. Additionally, it is recommended that if tie-downs on the existing apron are displaced, new areas are created adjacent to new developments in the northern portion of the airport.

4.8 COMPREHENSIVE PREFERRED ALTERNATIVE

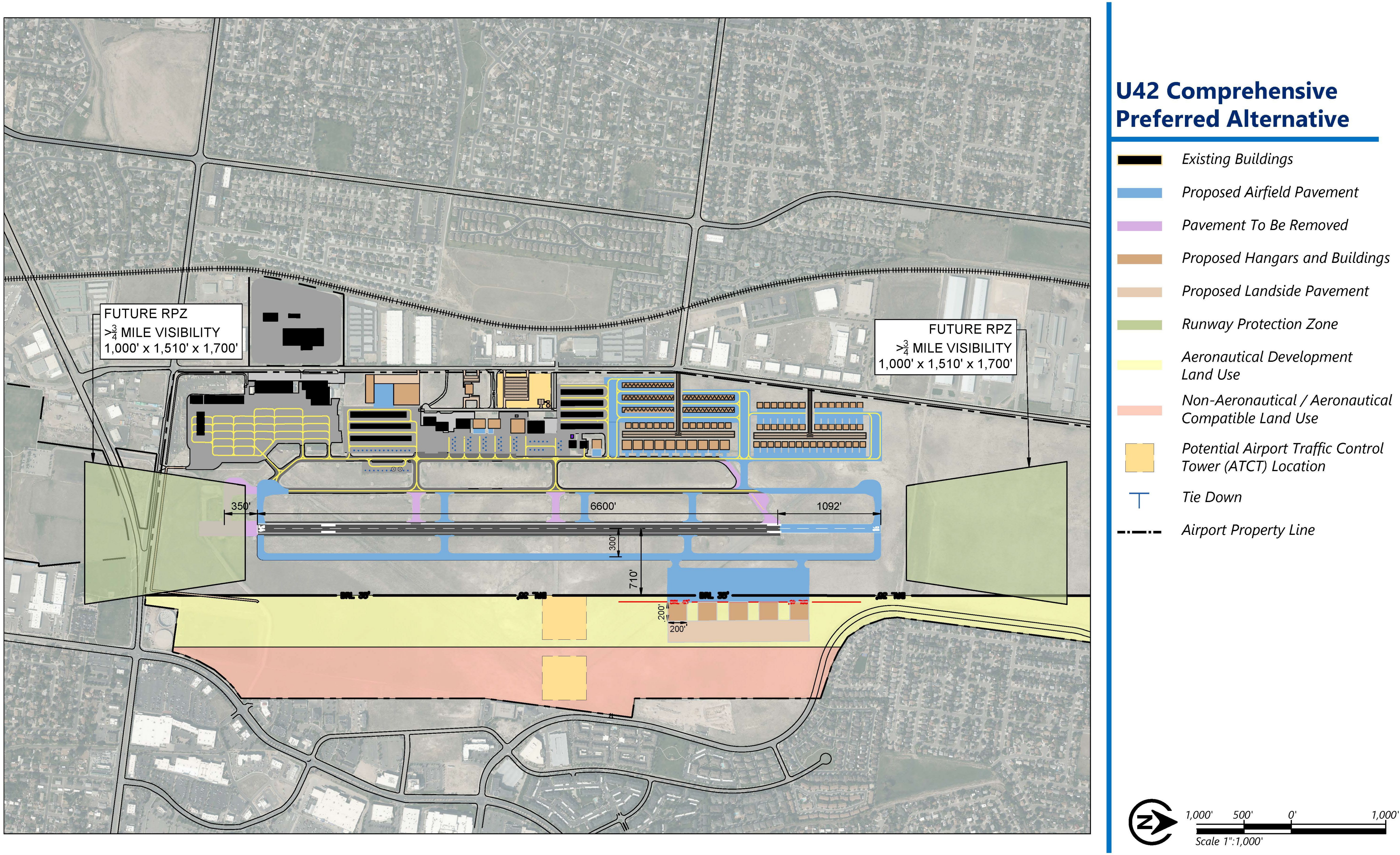
The comprehensive preferred alternative for developing South Valley Regional Airport is a coordinated facilities plan which addresses needs up to and beyond the forecast demand facility requirements. **Figure 4-11** shows the preferred comprehensive plan for development at U42.

The development strategy for the west side of the airport remains consistent with the original concept created in the 2006 Master Plan study. However, the development strategy for the east side of the airport has been refined. It was determined that the east side of the airport should consider an aeronautical campus development to better support the role U42 plays in the system of airports for SLCDA and the growing West Jordan community. The refined strategy is to encourage an aeronautical campus that could accommodate aviation research and development facilities, flight training services, and aviation-related manufacturing or assembly. To preserve for an aeronautical campus, the long-term conceptual layout includes a full-length parallel taxiway on the east side of the airport. While the need for a full-length taxiway is unlikely to be within the 20-year planning period, the concept ensures separation standards and flexibility will remain available as this development occurs over time.

Along the east parallel taxilane, the land will be preserved for future aeronautical use, while the remaining land farther to the east and adjacent to the airport property line will become available will become available for aviation-compatible nonaeronautical uses. This configuration was determined to be a prudent balance for allowing land to be used for non-aeronautical revenue-producing purposes while safeguarding that enough land is preserved to ensure aeronautical uses will not be limited beyond this study's planning horizon.

This comprehensive preferred alternative optimizes the use of all available airport land for both aeronautical and non-aeronautical purposes to support the SLCDA system of airports. This comprehensive development plan provides facilities that allow U42 to fulfill its general aviation reliever system role safely and efficiently while providing facilities for airport users and supporting economic development within the local community.

FIGURE 4-11
COMPREHENSIVE PREFERRED ALTERNATIVE



Source: RS&H, 2023

Chapter 5

Financial Feasibility and Implementation Plan

5.1 INTRODUCTION

The preceding chapters of this Master Plan identified an aviation demand forecast and the future facilities needed to meet that forecast demand, as well as those needed to sustainably maintain and/or improve airport safety. This chapter identifies a financially feasible Capital Improvement Program (CIP) to implement Master Plan recommendations over the planning period. This comprehensive CIP can be used to guide future airport development and position South Valley Regional Airport to meet the established vision for ultimate facility development.

The future investments identified in SLCDA'S CIP for U42 involve many interrelated components that must be identified and implemented in a coordinated manner. This chapter documents required development sequencing within identified development programs and at the individual project level.

This chapter begins by identifying potential sources for capital project funding. Consideration is given to historical airport funding trends and Federal Aviation Administration funding guidance to establish achievable future funding expectations. This allows for realistic CIP sequencing with rough order-of-magnitude (ROM) costs based on reasonable design and construction estimations. The process results in a practical, fundable, and implementable plan that SLCDA can use to guide project timing and budgeting for facility improvements to meet future development needs.

In summary, this chapter:

- Presents the approved 5-year CIP.
- Outlines the processes involved in project implementation.
- Provides an overview of the current financial framework in place at the airport.
- Describes historical and projected airport project funding sources.
- Presents the updated 20-year CIP, including ROM cost estimates for all projects.
- Offers a phased plan for the 5-year, 10-year, and 20-year planning periods, including project descriptions, rationale, and supplementary notes.
- Details the NEPA implementation strategy for all relevant projects.

5.2 IMPLEMENTATION PROCESS

Several steps may be necessary prior to completing a capital improvement project at U42. Preparing for a facility improvement often starts several years prior to the actual need for the facility. This lead-in time is necessary for coordination with the FAA and/or Utah Department of Transportation - Division of Aeronautics (UDOA) regarding funding, environmental entitlement, and other regulatory compliance requirements.

The major implementation steps for a complex, federally funded Airport Improvement Program (AIP) project are shown in **Figure 5-1**.

FIGURE 5-1
TYPICAL STEPS TO COMPLETE AN AIRPORT PROJECT

Typical Steps Four Years Prior to Construction

- ❑ Identify the project in the approved Airport Layout Plan and consult with FAA Airports District Office (ADO)
- ❑ Submit 5-year CIP *(by February 1st)*
- ❑ Validate project justification and funding eligibility and identify funding sources
- ❑ Determine probable level of environmental review *(planning may need to begin much earlier if EIS required)*
- ❑ Determine if ALP and/or Exhibit 'A' need updating
- ❑ Identify required flight procedure modifications and need for aeronautical survey
- ❑ Coordinate with local officials and airport users on project plans

Typical Steps Three Years Prior to Construction

- ❑ Refine project scope, cost estimates, and funding sources
- ❑ Determine if a Benefit/Cost Analysis or if FAA Letter of Intent (LOI) are necessary
- ❑ Determine if a reimbursable agreement is necessary for affected navigational aids (NAVAIDs)
- ❑ Initiate aeronautical survey as required
- ❑ Begin purchase or assembly of all necessary land for the project

Typical Steps Two Years Prior to Construction

- ❑ Refine project scope
- ❑ Solicit professional design services
- ❑ Prepare preliminary design, site planning, and cost estimates
- ❑ Initiate reimbursable agreements and coordinate any NAVAID requirements with the FAA
- ❑ Complete aeronautical survey and submit requests for new/modified flight procedures with the FAA
- ❑ Submit a request for airspace review of projects under non-rulemaking authority (NRA)
- ❑ Begin Benefit/Cost Analysis if determined to be necessary *(projects seeking over $5M discretionary)*
- ❑ Initiate environmental assessment or categorical exclusion documentation
- ❑ Coordinate with local officials and airport users on refined project scope and schedule

Typical Steps One Year Prior to Construction

- ❑ Complete airspace study
- ❑ Complete project scope of work
- ❑ Complete environmental documentation
- ❑ Complete 90 percent design, plans, and specifications after FAA environmental findings are made
- ❑ Refine and update cost estimates
- ❑ Execute reimbursable agreements to support NAVAIDs, if relevant
- ❑ Prepare and coordinate Construction Safety Phasing Plan
- ❑ Initiate Safety Management Systems (SMS) process

(Figure continued next page)

- ❑ Secure all necessary local funding
- ❑ Secure environmental and other necessary permits
- ❑ Submit Benefit/Cost Analysis *(by March 1st)*
- ❑ Coordinate Safety Risk Management Panel with FAA-ATO or FAA-ARP, as necessary
- ❑ Finalize construction bidding, grant application, and grant acceptance schedules

Year of Construction

- ❑ Complete 100 percent design, plans, and specifications
- ❑ Complete FAA environmental documentation for current fiscal year *(by January 15th)*
- ❑ Advertise and secure bids according to ADO schedule
- ❑ Submit grant applications *(by May 1st, if discretionary funds expected bid by April 1st)*
- ❑ Accept federal grants *(within 30 days of offer)*
- ❑ Coordinate with local officials and airport users on the progress and schedule
- ❑ Issue notice-to-proceed
- ❑ Monitor environmental mitigation requirements during construction
- ❑ Provide weekly inspection reports

After Construction

- ❑ Submit final report and provide final test results *(within 60 days of construction end)*
- ❑ Close any accepted federal grants *(within 90 days of project acceptance)*
- ❑ Monitor environmental mitigation measures
- ❑ Submit final As-Built ALP and Exhibit 'A'

Source: Federal Aviation Administration - "Steps to AIP Funding for Your Airport Project: Quick Reference Guide", September 2016; Adapted by RS&H, 2024

5.2.1 NEPA Implementation Process

The environmental entitlement for projects within each development phase, which involves obtaining necessary approvals and permits in compliance with applicable federal rules and regulations, will need to be completed in advance of the design and construction to allow for project completion. FAA Order 1050.1F, *Policies and Procedures for Considering Environmental Impacts*, and 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airports*, require the evaluation of airport development projects as they relate to specific environmental impact categories.

Environmental Assessments (EAs) and Environmental Impact Statements (EISs) represent the most rigorous forms of environmental analysis, necessitating a thorough assessment of impact categories in accordance with FAA Orders 1050.1F and 5050.4B. In contrast, Categorical Exclusions (CATEX) demand evaluations of exceptional circumstances to confirm that projects, which usually have minimal environmental impacts, do not warrant more extensive analysis in EAs or EISs.

While the exact level of environmental review remains to be determined, the recommended CIP (shown in **Section 5.6, Airport Development Phasing and Funding Plan**) includes two EAs for planning and budgetary purposes. These assessments are designated for the following projects:

- Project #17 (Airport Traffic Control Tower - Design/Construction)
- Project #29 (Extend Runway 16-34 and Taxiway B to 6,600' – Design/Construction)

This assumes that none of the other projects identified in the recommended CIP would result in any extraordinary circumstances as defined in FAA Order 1050.1F. If an extraordinary circumstance (e.g., impacts to more than 0.5 acres of wetlands, impacts to a threatened or endangered species, impacts to a known cultural resource) would occur as a result of a project not listed above, then an additional EA would be required. It should be noted that the FAA has the final decision in the type of NEPA document needed for each project, as well as the scope of that NEPA document.

5.3 FINANCIAL OVERVIEW

U42 is owned by the Salt Lake City Corporation and managed by SLCDA under the governance of the mayor of Salt Lake City and the Salt Lake City Council. As an enterprise department of Salt Lake City Corporation, SLCDA requires no funding from property taxes, local government funds, or special district taxes. In addition to South Valley Regional Airport, SLCDA manages and operates Salt Lake City International Airport (SLCIA or SLC) and Tooele Valley Airport (TVY).

The recent historical financial performance of U42 has required annual financial support from SLCDA to offset operating deficits. Given SLCDA's ownership and operation of three airports (SLC, TVY, and U42) as a system, it is essential to allocate the budget in a manner that facilitates development and ensures adequate resources for all three airports. An inventory of financial conditions which affect the short and long-term economic health of U42 can be found in **Section 1.2** of **Chapter 1, Inventory of Existing Conditions**. The development phasing and funding plan will consider existing financial structures when making recommendations.

5.4 APPROVED 5-YEAR CAPITAL IMPROVEMENT PLAN

SLCDA maintains a 5-year CIP for projects at U42 aimed at expanding, maintaining, and improving airport infrastructure, which is kept on file with UDOA. **Table 5-1** depicts the most current 5-year CIP for fiscal year (FY) 2024 to FY 2028, current as of the time of writing. U42's 5-year CIP amounts to approximately $4.5 million. As shown in **Figure 5-2**, SLCDA plans to fund approximately 16 percent of this total, while 79 percent is expected to come from federal funds. The remaining balance is anticipated to be sourced from the State of Utah.

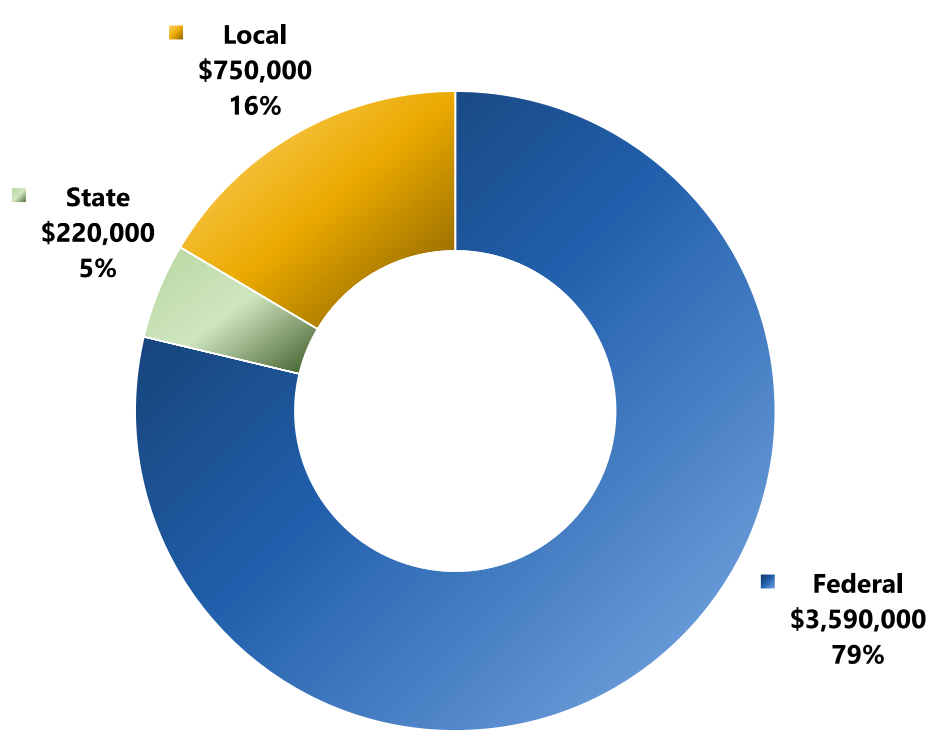
Funding for airport projects is coordinated with the FAA over a rolling 3-year period; however, updates to an airport's CIP can be submitted at any time for consideration. Pavement rehabilitation and perimeter fence improvements are the focus of the current approved CIP. An important outcome of any master plan is the preparation of an updated 20-year CIP. The updated CIP must adopt and continue near-term programmed projects and funding plans because the mechanisms to implement and fund those projects are already in place. Therefore, all of the projects listed in the approved CIP, shown in **Table 5-1**, are also included in the recommended CIP detailed in **Section 5.6**, **Airport Development Phasing and Funding Plan**.

TABLE 5-1
APPROVED 5-YEAR CAPITAL IMPROVEMENT PROGRAM

Project Year (FY)	Project Name	Totals				Federal Funding					State Funding	Local Funding	
		Federal	State	Local	Total Cost	AIP Entitlement	AIP Discretionary	State Apportionment	BIL	Other	UDOA	SLCDA	Other
2024-2028													
2025	Apron Rehabilitation	$750,000	$46,850	$203,150	$1,000,000	$0	$0	$0	$750,000	$0	$46,850	$203,150	$0
2026	Taxiway A/B Rehabilitation	$2,500,000	$133,522	$216,478	$2,850,000	$0	$2,500,000	$0	$0	$0	$133,522	$216,478	$0
2027	Perimeter Fence - Design/Construction	$337,500	$32,795	$329,705	$700,000	$0	$0	$0	$337,500	$0	$32,795	$329,705	$0
Total		**$3,590,000**	**$220,000**	**$750,000**	**$4,550,000**	**$0**	**$2,500,000**	**$0**	**$1,090,000**	**$0**	**$220,000**	**$750,000**	**$0**

Notes:
1. All projected values are shown in 2023 dollars.
2. Approved 5-Year Capital Improvement Program is shown for planning purposes only; Projects are not assured until actual grants are issued.
3. Totaled values rounded to nearest ten thousand.
Source: SLCDA Records, 2021; RS&H Analysis, 2023

FIGURE 5-2
APPROVED 5-YEAR CAPITAL IMPROVEMENT PROGRAM ANTICIPATED SOURCES OF FUNDING



Source: Airport Records, 2021; RS&H Analysis, 2023

5.5 AIRPORT FUNDING OUTLOOK

Airports often face challenges when trying to meet their capital development funding needs solely from internal sources. To address these requirements, airports typically rely on a mix of funding from various sources, including federal, state, and local governments, as well as private entities. This diverse funding approach is often used to successfully finance capital improvement projects. When planning project funding, it's essential to consider the availability of funds from each source and the specific eligibility criteria associated with them. The analysis in this section identifies potential funding sources and assesses the eligibility of each project element for various programs or funding sources to support the preferred development.

5.5.1 Federal Funding Outlook

The primary federal sources of funding available to SCLDA for projects at U42 are grants from the FAA's AIP and the 2021 Bipartisan Infrastructure Law (BIL). By receiving federal funding for capital improvement projects, SLCDA has an obligation to adhere to federal grant assurance requirements. These assurances obligate SLCDA to comply with applicable federal law and guidance under the Code of Federal Regulations (CFR) Title 14, FAA Advisory Circulars, FAA Orders, and FAA Memos.

5.5.1.1 Airport Improvement Program

Federal funding is available to airports through the AIP dependent upon the airport category designated in the National Plan of Integrated Airport Systems (NPIAS), and the priority of the improvement as determined within the national priority ranking system. The NPIAS categorizes U42 as a regional general aviation (non-primary) airport that does not have commercial air service. The FAA defines the role of basic general aviation airports within the national airspace system as follows:

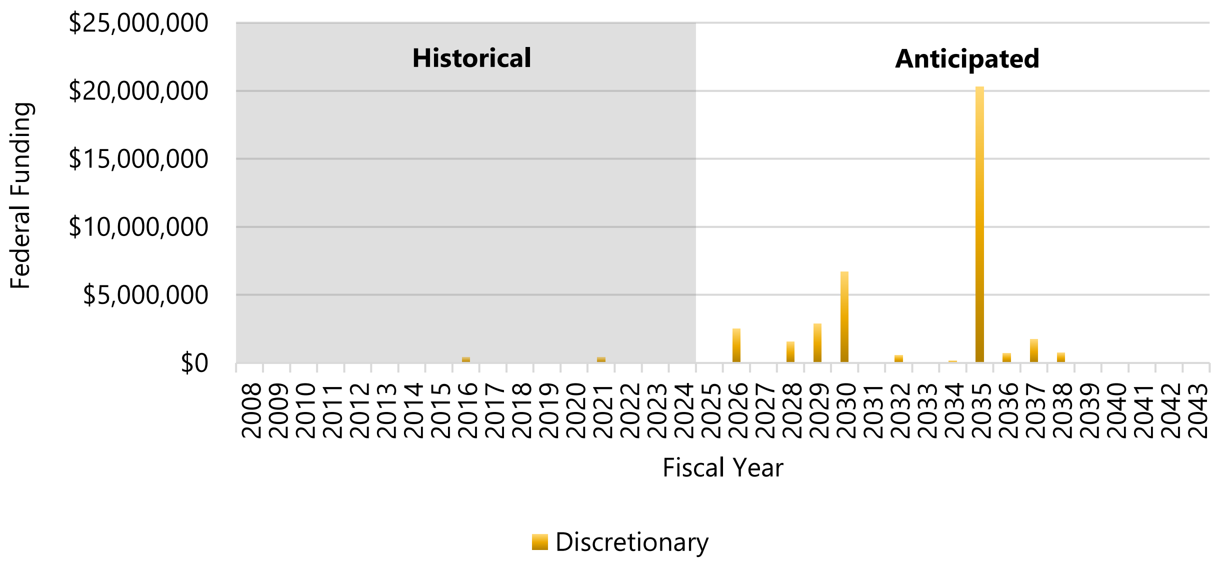
> *Links the community with the national airport system and supports general aviation activities, such as emergency response, air ambulance service, flight training, and personal flying. Most of the flying at basic airports is self-piloted for business and personal reasons using propeller-driven aircraft. They often fulfill their role with a single runway or helipad and minimal infrastructure.*[20]

Non-primary airports receive non-primary entitlement funds that must be used within three fiscal years immediately following the year the funds were originally allocated. Based on its NPIAS categorization, U42 receives $150,000 of AIP entitlement money per fiscal year. This fixed yearly sum is provided in addition to any other project-specific AIP entitlement grants. Additionally, discretionary grants may be awarded for project costs that exceed entitlement funds available in any given year. AIP discretionary grants are competitive and depend upon the availability of funds and the FAA's assessment of need and priority ranking. SLCDA has mobilized nearly $5.3 million in combined entitlement and discretionary federal funds at South Valley Regional Airport between FY 2010 and FY 2021.

[20] Federal Aviation Administration. (2022, December 7). *Airport Categories*. Retrieved from https://www.faa.gov/airports/planning_capacity/categories

Figure 5-3 shows the historical and anticipated discretionary federal funding for U42 from FY 2010 to FY 2043. The most significant federal contribution is anticipated in 2035 to support the future extension of Runway 16-34.

FIGURE 5-3
DISCRETIONARY FUNDING AT SOUTH VALLEY REGIONAL AIRPORT (HISTORICAL AND ANTICIPATED)



Note: 2034 = $165,000
Source: FAA Grant Look Up Tool; RS&H Analysis, 2024

States also receive an annual apportionment from the federal government to be distributed to non-primary airports. State apportionment funds are available for a period of two fiscal years following the year the funds were originally allocated.[2] For FY 2022, the State of Utah received a total of $3,866,436 in state apportionment funds.[3] Carried forward from the funding breakdown of the existing CIP, none of the projects in the recommended CIP are anticipated to leverage state apportionment funds. However, it is recommended for U42 to maintain communication with the State and actively seek these funds as they become available.

A distinctive feature of federal funding for projects at U42 is the capacity for SLCDA to distribute and allocate both fixed entitlements and discretionary funding among the general aviation (GA) airports in its system (U42 and TVY) based on need. This means that federal funding awarded to projects at U42 can be allocated to finance projects at TVY, and vice versa. To accomplish this, SLCDA engages in extensive coordination and advanced planning to ensure that the desired projects receive the necessary funding levels.

---

[2] Federal Aviation Administration. (n.d.). *Airport Improvement Program (AIP) & Bipartisan Infrastructure Law (BIL)*. Retrieved from https://www.faa.gov/airports/southwest/aip

[3] Federal Aviation Administration. (2023, October 27). *Airport Improvement Program (AIP) Grant / Apportionment Data*. Retrieved from https://www.faa.gov/airports/aip/grantapportion_data

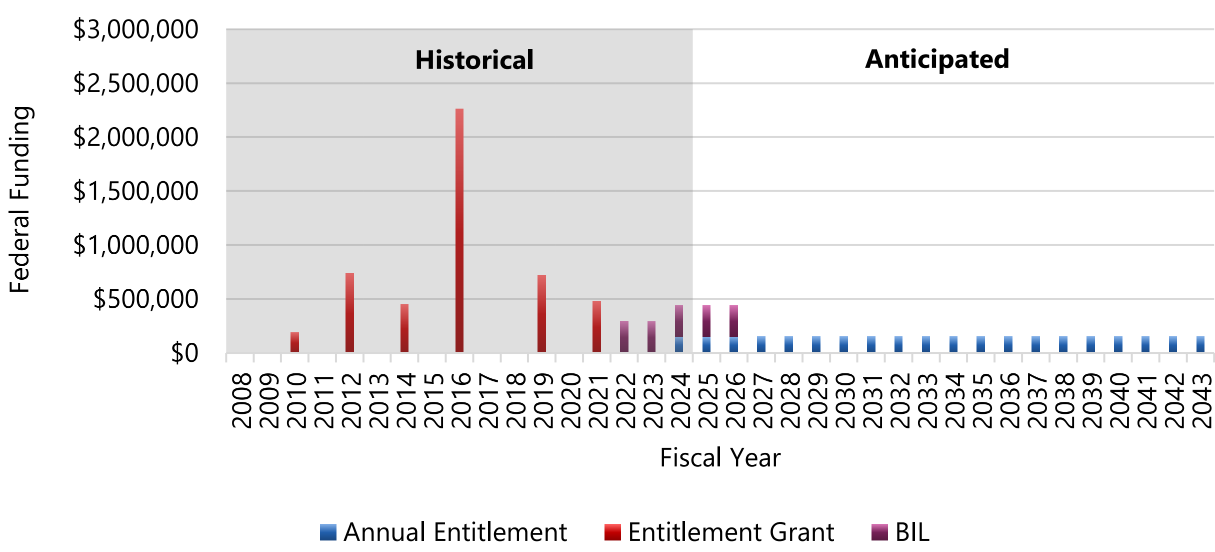
5.5.1.2 Bipartisan Infrastructure Law

In November 2021, the BIL was enacted into law, providing $20 billion in new funding for domestic airport infrastructure projects. The distribution of these funds is overseen by the FAA's Office of Airports (ARP). The BIL allocates $20 billion in funding over a five-year period, totaling $4 billion each year, to be used towards airport infrastructure, terminal development (which includes multimodal terminal development and on-airport rail access projects), and airport-owned towers. These investments are intended to enhance and improve the overall capabilities and facilities of airports across the country.

The BIL follows a similar process and methodology to the AIP in terms of justifying the distribution of funds to airports. U42 received $295,000, $292,000, and $294,000 in BIL funds for FY 2022 through 2024, respectively. For planning purposes, U42 anticipates similar BIL allocations for FY 2025 and FY 2026. These funds will be in addition to AIP entitlement and discretionary grants. The funds allocated through the BIL will remain available for obligation until the conclusion of the fourth fiscal year following their distribution. If any funds remain unobligated by the fifth fiscal year, they are recovered and repurposed for competitive grants. This ensures that the allocated funds are effectively utilized for infrastructure projects within the specified time frame, and any unused funds are redirected towards other deserving projects through a competitive grant process.

Figure 5-4 depicts the historical and anticipated federal funding for South Valley Regional Airport from combined AIP and BIL funds from FY 2010 to FY 2043. As shown, SLCDA can potentially anticipate $3 million in cumulative entitlement funds over the 20-year planning period for U42.

FIGURE 5-4
AIP AND BIL FUNDING AT SOUTH VALLEY REGIONAL AIRPORT (HISTORICAL AND ANTICIPATED)

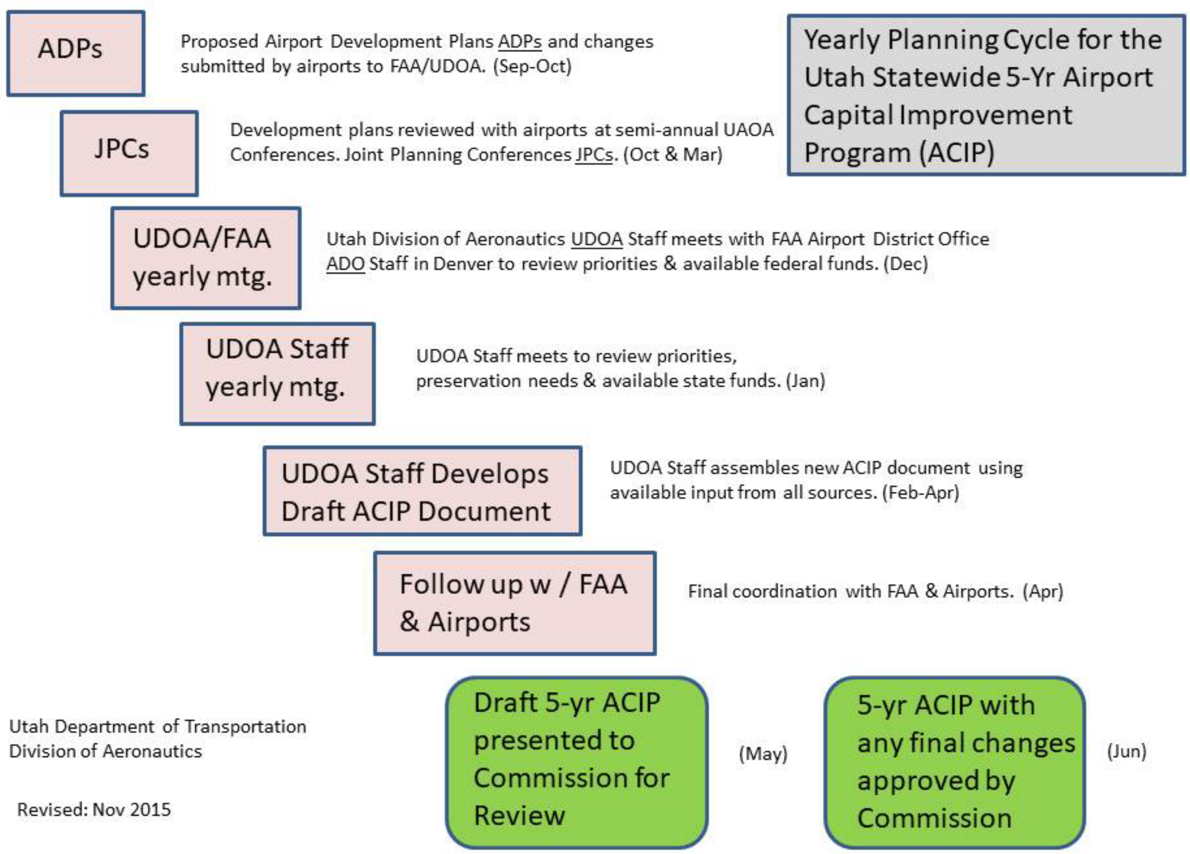


Note: Historical annual entitlement not shown.
Source: FAA Grant Look Up Tool; RS&H Analysis, 2024

5.5.2 State Funding Outlook

State funding for airport planning, construction, and maintenance projects is available from UDOA through the statewide Airport Capital Improvement Program (ACIP). Funding for this program is primarily generated by aviation fuel taxes and registration fees on aircraft based in Utah. The revenue generated from these taxes and fees are deposited into a restricted account from which funds are appropriated annually by the Utah Legislature. Eligible projects at U42 are included in the ACIP through a collaborative process involving UDOA staff, the FAA ADO, and SLCDA. The 5-year ACIP is reviewed and approved annually by the Utah Transportation Commission. The UDOA ACIP life cycle is shown in **Figure 5-5**.

FIGURE 5-5
UDOA AIRPORT CAPITAL IMPROVEMENT PROGRAM LIFE CYCLE



Source: UDOA, 2015

In FY 2024, the total available funding from UDOA is $9,867,300, with $6.7 million allocated for airport construction and aid to local airports.[23] ACIP project requests from all general aviation airports within the state submitted to UDOA typically surpass the available funding, leading to a significant shortfall in funding.

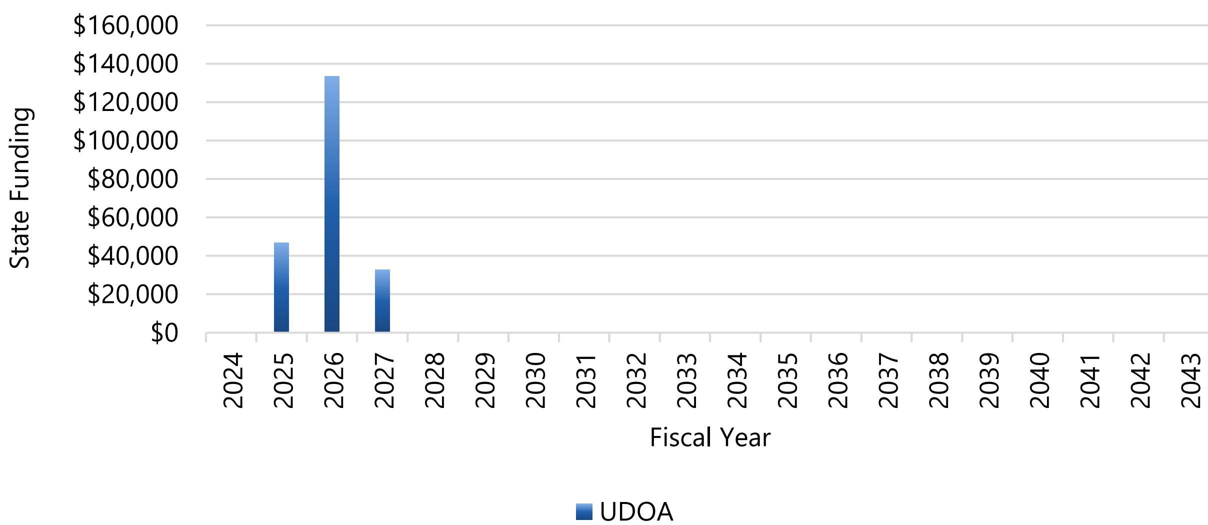
[23] Utah Department of Transportation. (n.d.). *Strategic Direction - Funding FY2024*. Retrieved from https://udot.utah.gov/strategic-direction/funding_fy2024.html

Historically, SLCDA has not heavily relied on substantial funding from the state of Utah to finance airport improvement projects. This is because, as a channeling-act state,[24] UDOA typically prioritizes funding for other general aviation facilities in Utah over the general aviation airports operated by SLCDA (U42, and TVY) and the state's seven primary commercial airports. Despite capital funding needs at U42 (and TVY), the majority of general aviation airports in the state do not generate sufficient revenues to implement their own capital and maintenance programs or have the support of a sponsor such as SLCDA.

Given these factors, the projected funding outlook for UDOA participation in CIP projects at U42 reflects this historical reality. **Figure 5-6** shows the anticipated funding for U42 from UDOA from FY 2024 to FY 2043, which illustrates no state funding participation at U42 after 2027.

Looking forward, especially with the potential for smaller general aviation airports in and around the Salt Lake Valley to play a significant role in benefiting the region during the Winter Olympics scheduled for 2034, SLCDA should take advantage of the opportunity to re-engage with UDOA regarding funding certain projects in their CIP.

FIGURE 5-6
STATE FUNDING AT SOUTH VALLEY REGIONAL AIRPORT (ANTICIPATED)



Source: RS&H Analysis, 2024

[24] Chapter 10, Aeronautics Act of Utah Code, Title 72, Transportation Code establishes that: Airports cannot submit requests for aid to federal government without the approval of UDOA; Airports shall designate the UDOA as its agent to accept, receive or disburse federal funds; that the airport shall enter into an agreement with the UDOA that establishes terms and conditions for the UDOA; Money paid by the federal government shall be retained by the state or paid to the airport under the terms and conditions imposed by the U.S. Government in making the grant.

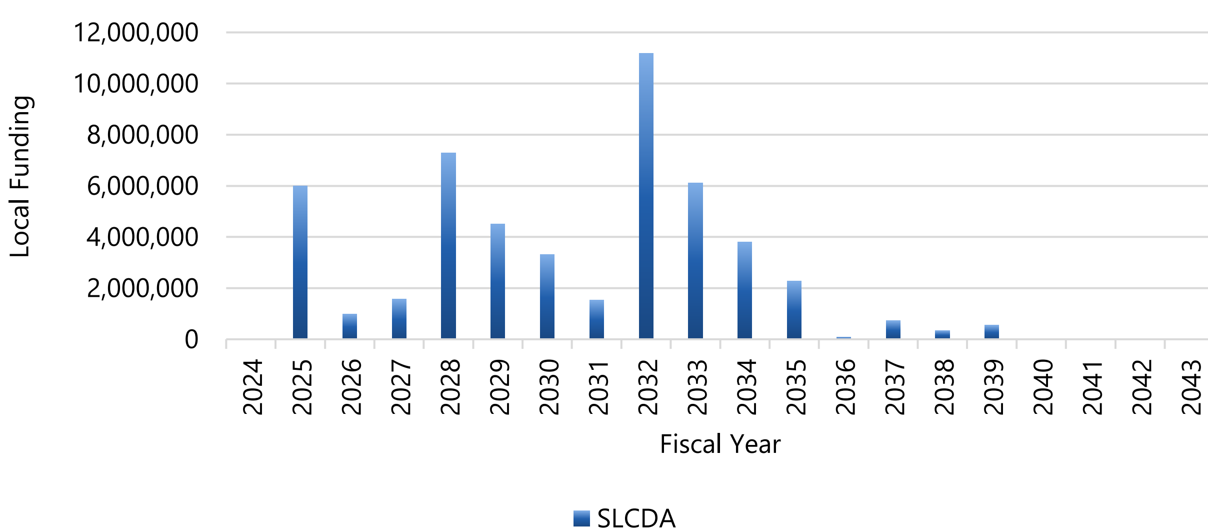
5.5.3 Local Funding Outlook

As mentioned in **Section 5.3, Financial Overview**, U42 operates with an operating deficit and depends on subsidies from SLCDA to support airport development. This arrangement allows SLCDA to address financial shortfalls at U42 and pursue necessary investments and improvements for the airport. Since FY 2017, U42 has operated with an average net loss of approximately $305,000 per year, although the average net deficit between 2020 and 2021 improved to $207,000. This does not include estimated general and administrative expenses which, when included, amount to a greater net loss. Historical revenues and expenses at U42 can be found in **Section 1.2** of **Chapter 1, Inventory of Existing Conditions**.

Most of the airport's operating revenue has come from hangar lease rental fees and fuel sales, while the costliest historical expenses include salaries and benefits, fuel (which is offset by fuel sales revenue), operations and maintenance supplies, and utility payments. While currently not profitable, the ultimate objective is to transform U42 into a self-sustaining and profitable entity through ongoing airport development efforts. Until that becomes a reality, SLCDA plans to provide a significant amount of additional funding to the airport to cover deficits as necessary.

Figure 5-7 illustrates the anticipated local funding required from SLCDA to support upcoming projects for U42, covering the period from FY 2024 to FY 2043. This depiction is based on details outlined in the updated CIP, which depend on AIP eligibility and the local portion of approved projects.

FIGURE 5-7
LOCAL FUNDING AT SOUTH VALLEY REGIONAL AIRPORT (ANTICIPATED)



Note: 2036 = $90,000
Source: RS&H Analysis, 2024

The following projects represent the most substantial anticipated financial investment required from SLCDA for each respective term:

- **Near-Term:** Project #2 (Utility Infrastructure Expansion (Ph. I) and Site Grading)
- **Mid-Term:** Project #21 (Maintenance/Operations Building - Design/Construction)
- **Long-Term:** Project #29 (Extend Runway 16-34 and Taxiway B to 6,600' – Design/Construction)

While the airport anticipates SLCDA funding for projects extending into the 2040-2043 period and beyond, there are currently no specified projects outlined for that timeframe in the Master Plan.

5.6 AIRPORT DEVELOPMENT PHASING AND FUNDING PLAN

This section provides a comprehensive airport development plan, outlining projects currently in progress as well as those planned for the near-, mid-, and long-term planning periods. The development plan is organized according to priority, project enabling factors, and funding availability. Future projects are accompanied by concise descriptions and justifications to provide information regarding their purpose and need. This approach ensures that the projects are prioritized based on their relevance to SLCDA's development goals, feasibility of implementation, and the availability of financial resources.

Each phase of development identifies projects aligned with a corresponding timeframe, allowing for a comprehensive and staged approach to airport development. The near-term development phase reflects the initial five years of the 20-year master planning horizon (FY 2024 to FY 2028) and includes 12 recommended projects, three of which are carried forward from the current approved 5-year CIP. The mid-term development phase covers years 6-10 of the planning horizon (FY 2029 to FY 2033) and includes 14 projects while the long-term phase encompasses seven projects slated to commence between FY 2034 and FY 2043.

A summary of the CIP project list by programmed term and budget year along with estimated costs is shown in **Table 5-2**.

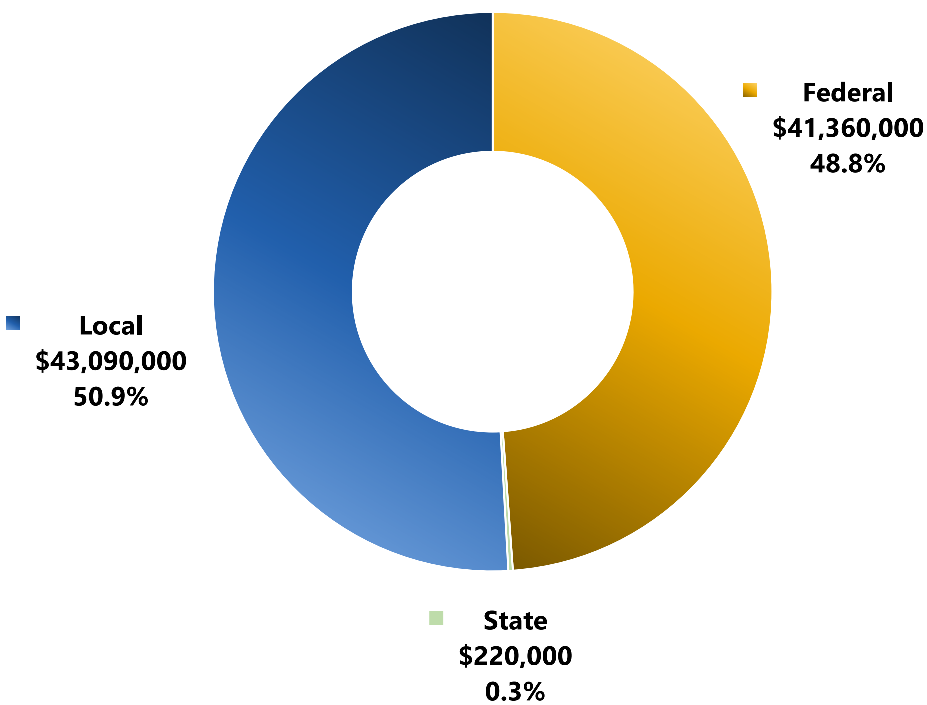
TABLE 5-2
AIRPORT DEVELOPMENT PROJECTS COST AND FUNDING

Project Year (FY)		Program	Totals				Federal Funding				State Funding	Local Funding
			Federal	State	Local	Total Cost	AIP Entitlement	AIP Discretionary	State Apportionment	BIL	UDOA	SLCDA
Near-Term — 2024-2028												
2025	Existing Stormwater Infrastructure Improvements	N/A	$0	$0	$676,000	$676,000	$0	$0	$0	$0	$0	$676,000
2025	Utility Infrastructure Expansion (Ph. I) and Site Grading	N/A	$0	$0	$5,123,950	$5,123,950	$0	$0	$0	$0	$0	$5,123,950
2025	SW Apron/Taxilane Expansion – Design/Construction	N/A	$409,000	$0	$0	$409,000	$368,100	$40,900	$0	$0	$0	$0
2025	Apron Rehabilitation	N/A	$750,000	$46,850	$203,150	$1,000,000	$0	$0	$0	$750,000	$46,850	$203,150
2026	Corporate Hangar Apron/Taxiway Connectors - Design/Construction	N/A	$0	$0	$550,000	$550,000	$0	$0	$0	$0	$0	$550,000
2026	Airport Traffic Control Tower Siting Study	N/A	$0	$0	$225,000	$225,000	$0	$0	$0	$0	$0	$225,000
2026	Taxiway A/B Rehabilitation	N/A	$2,500,000	$133,522	$216,478	$2,850,000	$0	$2,500,000	$0	$0	$133,522	$216,478
2027	FBO Hangar Apron - Design/Construction	N/A	$169,000	$0	$169,000	$338,000	$169,000	$0	$0	$0	$0	$169,000
2027	Perimeter Fence Replacement	N/A	$337,500	$32,795	$329,705	$700,000	$0	$0	$0	$337,500	$32,795	$329,705
2027	NW Access Roadway/Auto Parking (Ph. I) - Design/Construction	N/A	$0	$0	$1,076,000	$1,076,000	$0	$0	$0	$0	$0	$1,076,000
2028	NW Apron/Taxilane Expansion (Ph. I) – Design/Construction	N/A	$1,770,480	$0	$688,520	$2,459,000	$212,900	$1,557,580	$0	$0	$0	$688,520
2028	T-Hangar (Row "E") – Design/Construction	N/A	$0	$0	$6,600,000	$6,600,000	$0	$0	$0	$0	$0	$6,600,000
Near-Term Total			**$5,940,000**	**$220,000**	**$15,860,000**	**$22,010,000**	**$750,000**	**$4,100,000**	**$0**	**$1,090,000**	**$220,000**	**$15,860,000**
Mid-Term — 2029-2033												
2029	Utility Infrastructure Expansion (Ph. II)	N/A	$0	$0	$3,459,950	$3,459,950	$0	$0	$0	$0	$0	$3,459,950
2029	Taxiway A4 Realignment - Design/Construction	N/A	$898,200	$0	$99,800	$998,000	$150,000	$748,200	$0	$0	$0	$99,800
2029	NW Apron/Taxilane Expansion (Ph. II) – Design/Construction	N/A	$1,625,760	$0	$632,240	$2,258,000	$0	$1,625,760	$0	$0	$0	$632,240
2029	Airport Traffic Control Tower - Environmental Assessment	N/A	$675,000	$0	$325,000	$1,000,000	$150,000	$525,000	$0	$0	$0	$325,000
2030	Airport Traffic Control Tower - Design/Construction	N/A	$6,868,125	$0	$3,306,875	$10,175,000	$150,000	$6,718,125	$0	$0	$0	$3,306,875
2031	Airport Entrance Roadway/Auto Parking - Design/Construction	N/A	$0	$0	$1,029,000	$1,029,000	$0	$0	$0	$0	$0	$1,029,000
2031	Maintenance/Operations Building Roadway/Auto Parking - Design/Construction	N/A	$0	$0	$399,000	$399,000	$0	$0	$0	$0	$0	$399,000
2031	Maintenance/Operations Building Airside Pavement - Design/Construction	N/A	$0	$0	$112,000	$112,000	$0	$0	$0	$0	$0	$112,000
2032	Maintenance/Operations Building - Design/Construction	N/A	$0	$0	$10,626,000	$10,626,000	$0	$0	$0	$0	$0	$10,626,000
2032	General Aviation Apron Expansion – Design/Construction	N/A	$723,600	$0	$80,400	$804,000	$150,000	$573,600	$0	$0	$0	$80,400
2032	Fuel Farm Access Roadway/Auto Parking – Design/Construction	N/A	$0	$0	$472,000	$472,000	$0	$0	$0	$0	$0	$472,000
2033	Fuel Farm – Design/Construction	N/A	$150,000	$0	$123,000	$273,000	$150,000	$0	$0	$0	$0	$123,000
2033	Administration Building Roadway/Auto Parking – Design/Construction	N/A	$0	$0	$457,000	$457,000	$0	$0	$0	$0	$0	$457,000
2033	Administration Building – Design/Construction	N/A	$150,000	$0	$5,542,500	$5,692,500	$150,000	$0	$0	$0	$0	$5,542,500
Mid-Term Total			**$11,100,000**	**$0**	**$23,210,000**	**$34,300,000**	**$900,000**	**$10,200,000**	**$0**	**$0**	**$0**	**$26,670,000**
Long-Term — 2034-2043												
2034	Utility Infrastructure Expansion (Ph. III)	N/A	$0	$0	$3,771,300	$3,771,300	$0	$0	$0	$0	$0	$3,771,300
2034	Extend Runway 16-34 and Taxiway B to 6,600' - Environmental Assessment	Runway 16-34 Shift/Extension	$315,000	$0	$35,000	$350,000	$150,000	$165,000	$0	$0	$0	$35,000
2035	Extend Runway 16-34 and Taxiway B to 6,600' – Design/Construction	Runway 16-34 Shift/Extension	$20,431,800	$0	$2,270,200	$22,702,000	$150,000	$20,281,800	$0	$0	$0	$2,270,200
2036	Airport Master Plan Update	N/A	$810,000	$0	$90,000	$900,000	$90,000	$720,000	$0	$0	$0	$90,000
2037	NW Apron/Taxilane Expansion (Ph. III) – Design/Construction	N/A	$1,874,160	$0	$728,840	$2,603,000	$150,000	$1,724,160	$0	$0	$0	$728,840
2038	NW Apron/Taxilane Expansion (Ph. IV) – Design/Construction	N/A	$900,000	$0	$350,000	$1,250,000	$150,000	$750,000	$0	$0	$0	$350,000
2039	NW Access Roadway/Auto Parking (Ph. II) - Design/Construction	N/A	$0	$0	$550,000	$550,000	$0	$0	$0	$0	$0	$550,000
Long-Term Total			**$24,340,000**	**$0**	**$4,030,000**	**$28,360,000**	**$690,000**	**$23,650,000**	**$0**	**$0**	**$0**	**$7,800,000**
Total			**$41,360,000**	**$220,000**	**$43,090,000**	**$84,660,000**	**$2,340,000**	**$37,940,000**	**$0**	**$1,090,000**	**$220,000**	**$50,320,000**

Notes:
1. All projected values are shown in 2023 dollars.
2. The estimated total project costs incorporate a contingency allowance of 30% for planning purposes.
3. Totaled values rounded to nearest ten thousand.
Source: Airport Records, 2021; RS&H Analysis, 2024

The planning-level cost estimates provided for each project are ROM calculations which consider the gross areas of the project and multiply them by a realistic unit cost factor. ROM estimates provide a rough approximation of costs and are valuable in the early planning stages to gauge the financial implications of the proposed projects. As the projects progress, more detailed and accurate cost estimates will be developed to refine the budgeting and funding requirements. U42's 20-year CIP amounts to approximately $85 million. As shown in **Figure 5-8**, SLCDA plans to fund approximately 51 percent of this total, with around 49 percent expected to be sourced from federal funds. The small remaining balance is anticipated to come from the State of Utah.

FIGURE 5-8
20-YEAR CAPITAL IMPROVEMENT PROGRAM ANTICIPATED SOURCES OF FUNDING

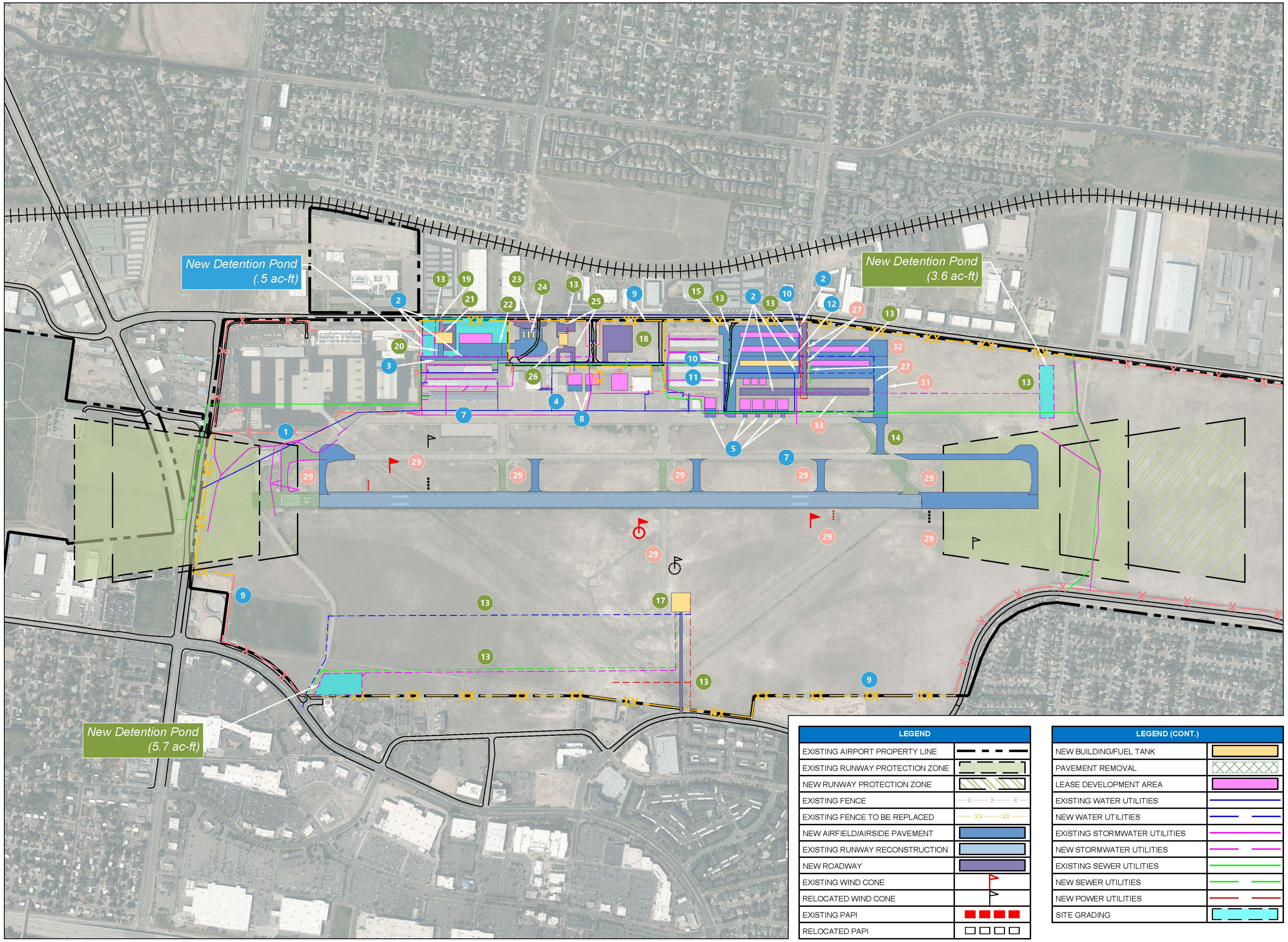


Source: Airport Records, 2021; RS&H Analysis, 2024

An illustration of airfield capital projects included within U42's CIP is provided in **Figure 5-9**. The updated 20-year CIP is structured into 33 projects, one of which, Project #29 (Extend Runway 16-34 and Taxiway B to 6,600' - Design/Construction), is expected to be divided into multiple projects at the discretion of SLCDA to minimize operational disruptions during construction.

Appendix E, Project Pull Pages provides summaries of primary development projects at U42 within the 20-year master planning horizon. These summaries offer key information, including project descriptions, justifications for undertaking the projects, recurrence, program affiliations, project durations, budgeted project costs, anticipated funding sources, and maps illustrating the project locations.

FIGURE 5-9
AIRPORT DEVELOPMENT PROJECTS



South Valley Regional Airport Development Phasing Plan

NEAR-TERM PROJECTS (2024-2028)

1 Existing Stormwater Infrastructure Improvements
2 Utility Infrastructure Expansion (Ph. I) and Site Grading
3 SW Apron/Taxilane Expansion
4 Apron Rehabilitation
5 Corporate Hangar Apron/Taxiway Connectors
6 Airport Traffic Control Tower Siting Study*
7 Taxiway A/B Rehabilitation
8 FBO Hangar Apron
9 Perimeter Fence Replacement
10 NW Access Roadway/Auto Parking (Ph. I)
11 NW Apron/Taxilane Expansion (Ph. I)
12 T-Hangar (Row "E")

MID-TERM PROJECTS (2029-2033)

13 Utility Infrastructure Expansion (Ph. II)
14 Taxiway A4 Realignment
15 NW Apron/Taxilane Expansion (Ph. II)
16 Airport Traffic Control Tower - Environmental Assessment*
17 Airport Traffic Control Tower
18 Airport Entrance Roadway/Auto Parking
19 Mx/Ops Building Roadway/Auto Parking
20 Mx/Ops Building Airside Pavement
21 Mx/Ops Building
22 GA Apron Expansion
23 Fuel Farm Access Roadway/Auto Parking
24 Fuel Farm
25 Administration Building Roadway/Auto Parking
26 Administration Building

LONG-TERM PROJECTS (2034-2043)

27 Utility Infrastructure Expansion (Ph. III)
28 Extend Runway 16-34 and Taxiway B to 6,600' - Environmental Assessment*
29 Extend Runway 16-34 and Taxiway B to 6,600'
30 Master Plan Update*
31 NW Apron/Taxilane Expansion (Ph. III)
32 NW Apron/Taxilane Expansion (Ph. IV)
33 NW Access Roadway/Auto Parking (Ph. II)

Notes:
1) "*" Denotes project is not shown in graphic.

0' 500' 1,000'

Source: RS&H, 2024

5.6.1 Near-Term (2024-2028)

Near-term capital improvements include those development projects that are expected to begin within the next five years (FY 2024 to FY 2028). The following near-term development projects are phased strategically according to airport priority, enabling projects, and funding availability. Implementation of near-term development projects address capacity constraints as well as overall airport viability and sustainability.

The near-term initiatives at U42 are shown as projects 1-12 in **Figure 5-10** at the conclusion of this section.

1. Existing Stormwater Infrastructure Improvements (2025)

Project Description: Upgrading stormwater infrastructure by piping open channel sections and replacing undersized pipes.

Purpose and Need: The stormwater system south of the Utah National Guard facilities has a section of open channel swales that are prone to maintenance issues like debris accumulation, leading to clogs and reduced system capacity. Piping the system will mitigate these issues and ensure efficient stormwater disposal. Undersized pipes further south exacerbate runoff problems, necessitating replacement with larger pipelines.

Project Notes:
1.) Detailed Utility Master Plan with ROM cost estimations prepared by Bowen Collins & Associates (2024). See **Appendix F, Utility Master Plan**.

2. Utility Infrastructure Expansion (Ph. I) and Site Grading (2025)

Project Description: The initial phase of utility improvements prioritizing extending sanitary sewer, power, and stormwater infrastructure to lay the groundwork for future apron expansion. This phase also addresses existing grading issues and creates a new stormwater detention pond on the southwest side of the airfield.

Purpose and Need: As U42 continues to accommodate a growing number of based aircraft and aeronautical users, the extension of essential utilities and correction of grading issues will be required to serve future development.

Project Notes:
1.) Detailed Utility Master Plan with ROM cost estimations prepared by Bowen Collins & Associates (2024). See **Appendix F, Utility Master Plan**.

3. SW Apron/Taxilane Expansion – Design/Construction (2025)

Project Description: Expansion of the existing apron to accommodate an additional taxilane.

Purpose and Need: To improve aircraft circulation between the apron and the taxiway and support future development related to Project #2 (Utility Infrastructure Expansion (Ph. I) and Site Grading).

Project Notes:
1.) Cost Estimation: Five percent contingency incorporated into construction quantities; Prices inflated/deflated due to project size and/or constructability; Unit prices are adapted using rounded averages from "TVY N Airport Rd. Extension Ph. I" project; Cost of NEPA documentation encompassed within contingency.

4. Apron Rehabilitation (2025)

Project Description: Rehabilitation of a section of the apron at U42 that includes the removal of old asphalt, potential foundation reinforcement as required, the addition of new engineered fill material where needed, and the installation of a new 4-inch-thick asphalt surface.

Purpose and Need: Portions of the apron at U42 have cracks, ruts, loose material, and debris issues. The surface is also aging, with a 2019 Pavement Condition Index (PCI) score ranging from 56 to 69. This suggests that within the next 5 years, it will likely deteriorate to a "Poor" or "Very Poor" condition and require rehabilitation.

Project Notes:
1.) Cost Estimation: Total cost and funding breakdown from the current CIP, as shown in **Table 5-1**, has been continued.

5. Corporate Hangar Apron/Taxiway Connectors – Design/Construction (2026)

Project Description: Design and construction of three apron areas and two taxiway connectors to support future hangar development.

Purpose and Need: To provide movement areas and convenient connectivity between future corporate hangars and the taxiway.

Project Notes:
1.) Cost Estimation: Five percent contingency incorporated into construction quantities; Prices inflated/deflated due to project size and/or constructability; Unit prices are adapted using rounded averages from "TVY N Airport Rd. Extension Ph. I" project; Cost of NEPA documentation encompassed within contingency.

6. Airport Traffic Control Tower Siting Study (2026)

Project Description: Conducting a thorough evaluation to identify the ideal site for positioning an airport traffic control tower at U42 that involves in-depth site analysis, feasibility assessments, and the formulation of recommendations for the most suitable location of the control tower.

Purpose and Need: Ensuring an effective and efficient process for accurately siting new airport traffic control towers, as outlined in FAA Order 6480.4B, *Airport Traffic Control Tower Siting Process*, aligns with the FAA's mission to promote a safe, secure, and efficient aviation system.

7. Taxiway A/B Rehabilitation (2026)

Project Description: Rehabilitation of taxiways A and B at U42 that involves the removal of the current asphalt surface using cold milling. If necessary, the subgrade will be repaired, and new engineered fill material will be added, followed by the installation of a new 4-inch-thick asphalt surface course.

Purpose and Need: Taxiways A and B are currently experiencing cracking, rutting, and surface brittleness. A 2019 Pavement Condition Index (PCI) assessment assigned a score of 69 to these taxiways. This suggests that within the next 5 years, they are expected to deteriorate to a "Poor" or "Very Poor" condition, necessitating rehabilitation to maintain the Airport Operations Area (AOA) pavement integrity and lifespan.

Project Notes:
1.) Cost Estimation: Total cost and funding breakdown from the current CIP, as shown in **Table 5-1**, has been continued.

8. FBO Hangar Apron – Design/Construction (2027)

Project Description: Design and construction of apron space to accommodate prospective FBO tenants and their aircraft.

Purpose and Need: To ensure U42 can accommodate potential FBO tenants and their aircraft, ultimately enhancing the airport's overall service offerings and competitiveness.

Project Notes:
1.) Cost Estimation: Five percent contingency incorporated into construction quantities; Prices inflated/deflated due to project size and/or constructability; Unit prices are adapted using rounded averages from "TVY N Airport Rd. Extension Ph. I" project; Cost of NEPA documentation encompassed within contingency.

9. Perimeter Fence Replacement (2027)

Project Description: Upgrading the perimeter security fence by replacing the current 6-foot chain link fence with an 8-foot one and addressing specific sections of the existing 8-foot fence that require replacement. The new fence will also include three strands of barbed wire on top of the chain link. Demolition of the existing fencing is also part of the project.

Purpose and Need: The existing 6-foot fence, along with some sections of the older 8-foot fence, pose a security risk and need replacement with a standard 8-foot-high fence that includes barbed wire.

Project Notes:
1.) Cost Estimation: Total cost and funding breakdown from the current CIP, as shown in **Table 5-1**, has been continued.

10. NW Access Roadway/Auto Parking (Ph. I) – Design/Construction (2027)

Project Description: Design and construction of roadway access and auto parking in an area identified for hangar development. The project is situated in an area where there is an existing access road with deteriorating pavement, which links to the airport perimeter road.

Purpose and Need: Improved roadway access and parking facilities are necessary to provide convenient access to future hangar development.

Project Notes:

1.) Cost Estimation: Five percent contingency incorporated into construction quantities; Prices inflated/deflated due to project size and/or constructability; Unit prices are adapted using rounded averages from "TVY N Airport Rd. Extension Ph. I" project; Cost of NEPA documentation encompassed within contingency.

11. NW Apron/Taxilane Expansion (Ph. I) – Design/Construction (2028)

Project Description: Expansion of the existing apron and new taxilanes in an area identified for future hangar development.

Purpose and Need: To support future hangar development and improve aircraft circulation between hangars and the taxiway.

Project Notes:

1.) Cost Estimation: Five percent contingency incorporated into construction quantities; Prices inflated/deflated due to project size and/or constructability; Unit prices are adapted using rounded averages from "TVY N Airport Rd. Extension Ph. I" project; Pavement section taken from SVRA Apron Rehabilitation (2012); Cost of NEPA documentation encompassed within contingency.

12. T-Hangar (Row "E") – Design/Construction (2028)

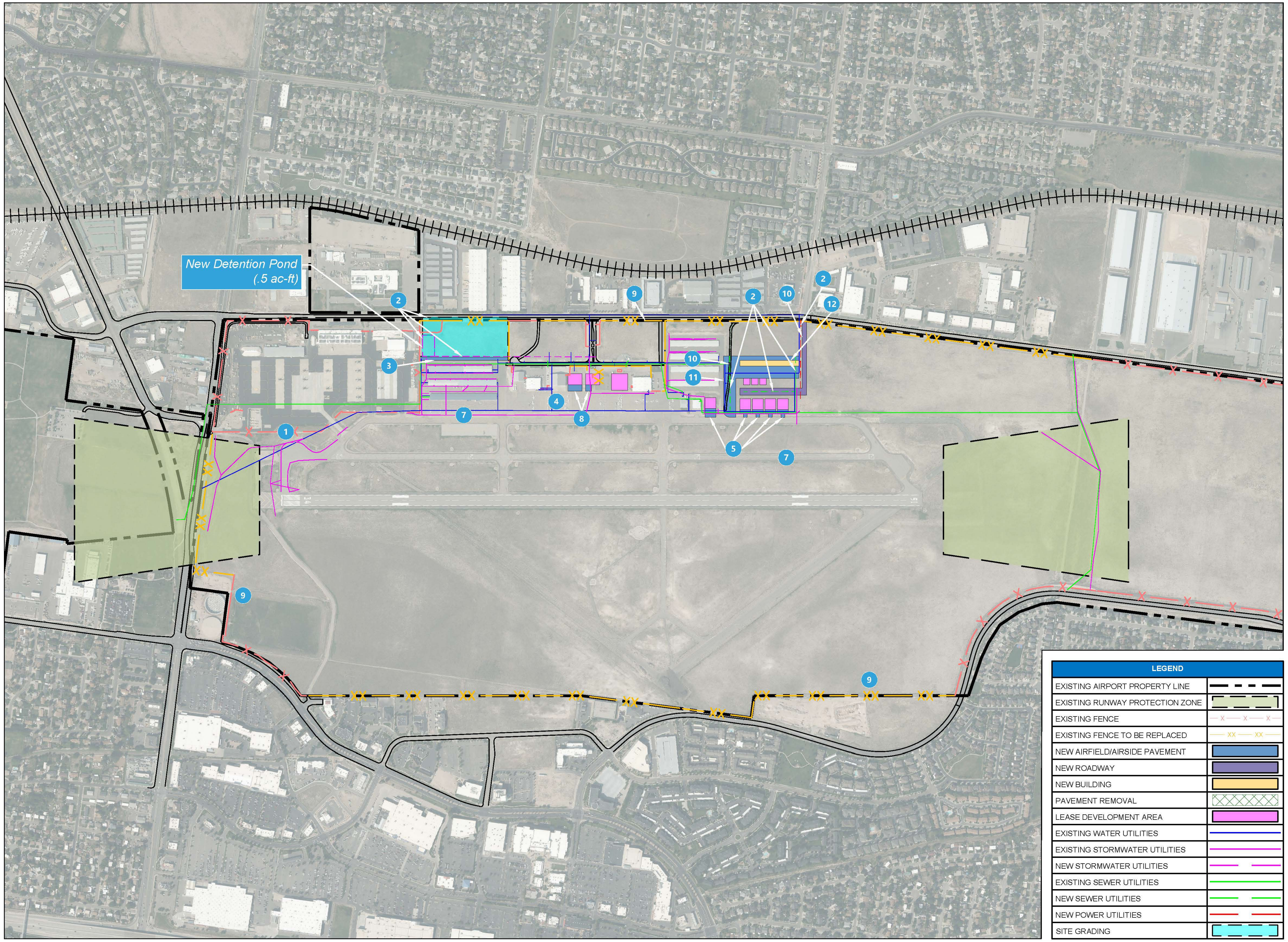
Project Description: Design and construction of a new T-hangar row designated as row "E".

Purpose and Need: To support future hangar development and improve aircraft circulation between hangars and the taxiway.

Project Notes:

1.) Cost Estimation: Construction quantities and unit prices are adapted from comparable T-hangar design/construction projects and are rounded averages.

FIGURE 5-10
NEAR-TERM PROJECTS



South Valley Regional Airport Development Phasing Plan

NEAR-TERM PROJECTS (2024-2028)

1. Existing Stormwater Infrastructure Improvements
2. Utility Infrastructure Expansion (Ph. I) and Site Grading
3. SW Apron/Taxilane Expansion
4. Apron Rehabilitation
5. Corporate Hangar Apron/Taxiway Connectors
6. Airport Traffic Control Tower Siting Study*
7. Taxiway A/B Rehabilitation
8. FBO Hangar Apron
9. Perimeter Fence Replacement
10. NW Access Roadway/Auto Parking (Ph. I)
11. NW Apron/Taxilane Expansion (Ph. I)
12. T-Hangar (Row "E")

Notes:
1) "*" Denotes project is not shown in graphic.

0' 500' 1,000'

Source: RS&H, 2024

5.6.2 Mid-Term (2029-2033)

Mid-term capital improvements are those development projects that are anticipated to commence during the second five-year period of the planning period (FY 2029 to FY 2033). The following mid-term project list is phased strategically to reflect airport priority, incorporate enabling projects, and funding availability. Implementation of these projects will be undertaken as warranted by demand, but each project is programmed for a specific year for planning purposes. A key project in this phase is the design and construction of an airport traffic control tower, vital for ensuring the safe and efficient management of airport traffic operations, especially as the number of aircraft operations and based aircraft at U42 are anticipated to significantly increase in the future.

The mid-term initiatives at U42 are shown as projects 13-26 in **Figure 5-11** at the conclusion of this section.

13. Utility Infrastructure Expansion (Ph. II) (2029)

Project Description: The second phase of utility improvements focusing on extending sanitary sewer, power, potable water, and stormwater infrastructure to lay the groundwork for future development including a potential airport traffic control tower on the east side of the airfield. This phase also involves the establishment of two new stormwater detention ponds, with one situated on the northwest side of U42 and the other on the southeast side.

Purpose and Need: As U42 continues to accommodate a growing number of based aircraft and aeronautical users, the extension of essential utilities will be required to serve future development.

Project Notes:

1.) Detailed Utility Master Plan with ROM cost estimations prepared by Bowen Collins & Associates (2024). See **Appendix F, Utility Master Plan**.

14. Taxiway A4 Realignment – Design/Construction (2029)

Project Description: Redesign and reconstruction of Taxiway A4.

Purpose and Need: To ensure operational safety and reduce the potential for runway incursions at U42, this project involves realigning Taxiway A4 into a standard 90-degree configuration, in compliance with current FAA design standards.

Project Notes:

1.) Cost Estimation: Five percent contingency incorporated into construction quantities; Prices inflated/deflated due to project size and/or constructability; Unit prices are adapted using rounded averages from "TVY N Airport Rd. Extension Ph. I" project; Cost of NEPA documentation encompassed within contingency.

15. NW Apron/Taxilane Expansion (Ph. II) – Design/Construction (2029)

Project Description: The second phase of apron and taxilane expansion on the north side of U42.

Purpose and Need: To support additional hangar development and improve aircraft circulation between hangar facilities and the airfield.

Project Notes:
1.) Cost Estimation: Five percent contingency incorporated into construction quantities; Prices inflated/deflated due to project size and/or constructability; Unit prices are adapted using rounded averages from "TVY N Airport Rd. Extension Ph. I" project; Pavement section taken from SVRA Apron Rehabilitation (2012); Cost of NEPA documentation encompassed within contingency.

16. Airport Traffic Control Tower – Environmental Assessment (2029)
Project Description: At the time of this Master Plan, the level of environmental review for Project #15 (Airport Traffic Control Tower - Design/Construction) is not yet determined. Therefore, an environmental assessment is included for planning and budgetary purposes.

Purpose and Need: To evaluate and document the expected environmental impacts of a new airport traffic control tower in a location determined by Project #6 (Airport Traffic Control Tower Siting Study).

17. Airport Traffic Control Tower – Design/Construction (2030)
Project Description: The design and construction of a modern and efficient control tower at U42 is essential for the safe and smooth management of airport traffic operations.

Purpose and Need: Airports with similar airspace challenges as U42 generally have an Airport Traffic Control Tower (ATCT) if they have more than 200 based aircraft and/or 80,000 operations. At the time of this writing, U42 has approximately 71,000 annual operations and 177 based aircraft. It is expected that U42 will exceed the 200-based aircraft/80,000 annual operations benchmarks within the near or mid-term planning period.

Project Notes:
1.) Cost Estimation: Construction quantities and unit prices are adapted using rounded averages from comparable airport traffic control tower design/construction projects in the region; Assumes an approximate tower height of 120 feet.

18. Airport Entrance Roadway/Auto Parking – Design/Construction (2031)
Project Description: Design and construction of auto parking facilities and roadway infrastructure at U42.

Purpose and Need: To accommodate auto parking requirements for the planning period.

Project Notes:
1.) Cost Estimation: Five percent contingency incorporated into construction quantities; Prices inflated/deflated due to project size and/or constructability; Unit prices are adapted using rounded

averages from "TVY N Airport Rd. Extension Ph. I" project; Cost of NEPA documentation encompassed within contingency.

19. Maintenance/Operations Building Roadway/Auto Parking – Design/Construction (2031)

Project Description: Design and construction of parking facilities and roadway infrastructure to support Project #21 (Maintenance/Operations Building - Design/Construction).

Purpose and Need: To provide auto and equipment access between Project #21 (Maintenance/Operations Building - Design/Construction) and the airfield.

Project Notes:
1.) Cost Estimation: Five percent contingency incorporated into construction quantities; Prices inflated/deflated due to project size and/or constructability; Unit prices are adapted using rounded averages from "TVY N Airport Rd. Extension Ph. I" project; Cost of NEPA documentation encompassed within contingency.

20. Maintenance/Operations Building Airside Pavement – Design/Construction (2031)

Project Description: Design and construction of airside pavement that connects Project #21 (Maintenance/Operations Building - Design/Construction) to the airfield.

Purpose and Need: To provide auto and equipment access between Project #21 (Maintenance/Operations Building - Design/Construction) and the airfield.

Project Notes:
1.) Cost Estimation: Five percent contingency incorporated into construction quantities; Prices inflated/deflated due to project size and/or constructability; Unit prices are adapted using rounded averages from "TVY N Airport Rd. Extension Ph. I" project; Cost of NEPA documentation encompassed within contingency.

21. Maintenance/Operations Building - Design/Construction – Design/Construction (2032)

Project Description: Design and construction of an airport maintenance and operations building.

Purpose and Need: An upgraded maintenance and operations facility designed to facilitate the storage of necessary equipment and materials is imperative to bolster the airport's capability to service both based and transient aircraft.

Project Notes:
1.) Cost Estimation: Construction quantities and unit prices are adapted from comparable airport support building projects and are rounded averages.

22. General Aviation Apron Expansion – Design/Construction (2032)

Project Description: Expansion of the general aviation apron accessible via taxilanes from Project #3 (SW Apron/Taxilane Expansion – Design/Construction) to accommodate a potential aviation tenant and their aircraft.

Purpose and Need: To provide adequate aircraft parking and circulation in concert with the development of a portion of the area identified in Project #2 (Utility Infrastructure Expansion (Ph. 1) and Site Grading).

Project Notes:
1.) Cost Estimation: Five percent contingency incorporated into construction quantities; Prices inflated/deflated due to project size and/or constructability; Unit prices are adapted using rounded averages from "TVY N Airport Rd. Extension Ph. I" project; Cost of NEPA documentation encompassed within contingency.

23. Fuel Farm Access Roadway – Design/Construction (2032)

Project Description: Design and construction of landside access from N Airport Rd. and Project #24 (Fuel Farm - Design/Construction).

Purpose and Need: To ensure the safe flow of fuel transport vehicles to and from Project #24 (Fuel Farm – Design/Construction).

Project Notes:
1.) Cost Estimation: Five percent contingency incorporated into construction quantities; Prices inflated/deflated due to project size and/or constructability; Unit prices are adapted using rounded averages from "TVY N Airport Rd. Extension Ph. I" project; Cost of NEPA documentation encompassed within contingency.

24. Fuel Farm – Design/Construction (2033)

Project Description: Design and construction of a new fuel farm at U42.

Purpose and Need: To address the inadequacies of the current fuel farm location and expand the capacity to meet accommodate fuel requirements associated with future activity levels.

Project Notes:
1.) Cost Estimation: Five percent contingency incorporated into construction quantities; Prices inflated/deflated due to project size and/or constructability; Unit prices are adapted using rounded averages from "TVY N Airport Rd. Extension Ph. I" project; Pavement section taken from SVRA Apron Rehabilitation (2012); New fuel tanks are not included in estimate; Cost of NEPA documentation encompassed within contingency.

25. Administration Building Roadway/Auto Parking – Design/Construction (2033)

Project Description: Design and construction of roadway and auto parking facilities for a new administration building at U42.

Purpose and Need: To provide adequate access and auto parking capacity to serve Project #26 (Administration Building – Design/Construction).

Project Notes:
1.) Cost Estimation: Five percent contingency incorporated into construction quantities; Prices inflated/deflated due to project size and/or constructability; Unit prices are adapted using rounded averages from "TVY N Airport Rd. Extension Ph. I" project; Cost of NEPA documentation encompassed within contingency.

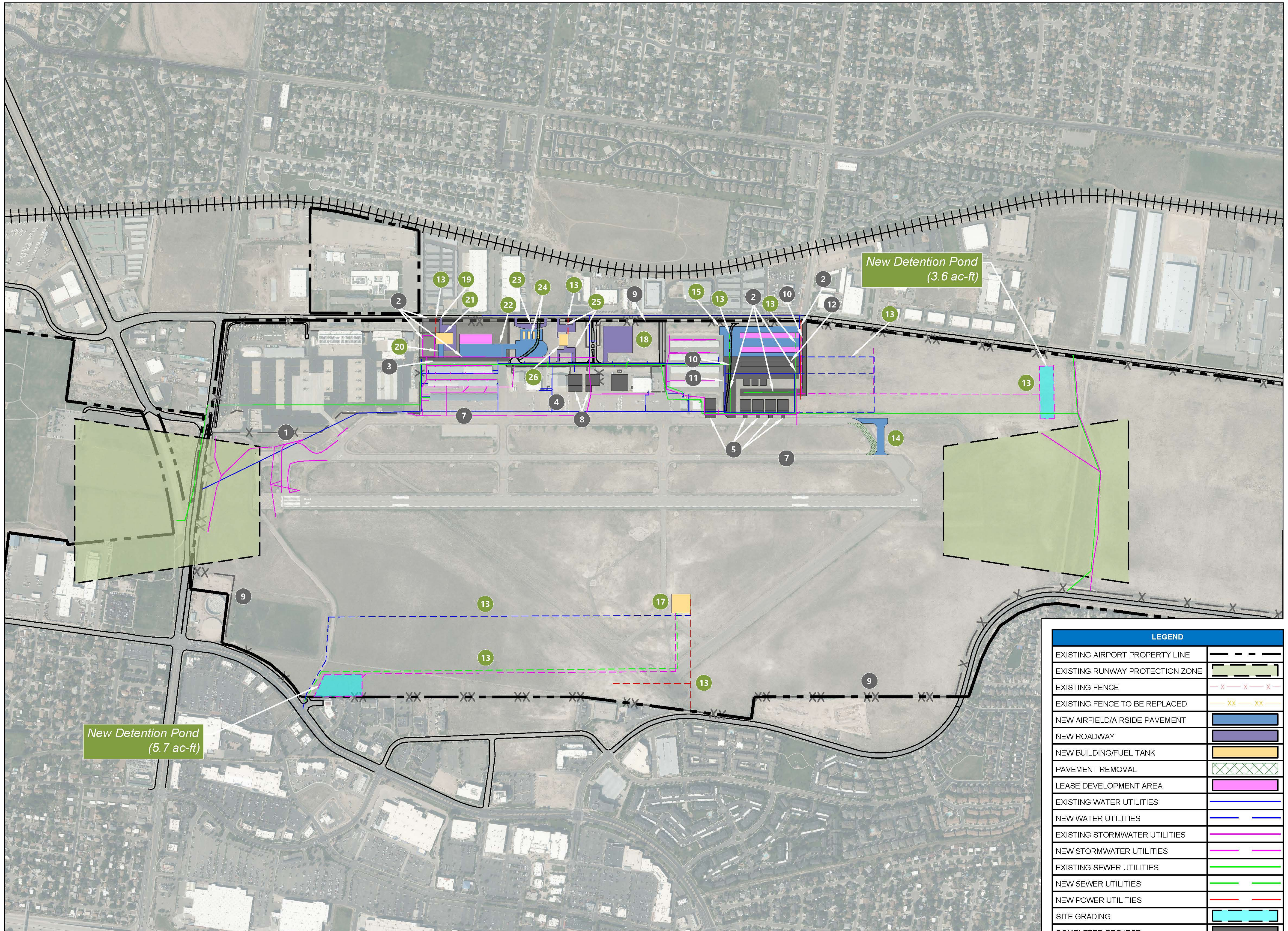
26. Administration Building – Design/Construction (2033)

Project Description: Design and construction of an administration building, which will serve as a central administrative and operational hub for airport staff at U42.

Purpose and Need: To provide a modern and efficient on-site workspace for airport staff.

Project Notes:
1.) Cost Estimation: Construction quantities and unit prices are adapted from comparable airport support building projects and are rounded averages.

FIGURE 5-11
MID-TERM PROJECTS



South Valley Regional Airport Development Phasing Plan

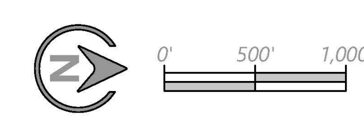
NEAR-TERM PROJECTS (2024-2028)

1. Existing Stormwater Infrastructure Improvements
2. Utility Infrastructure Expansion (Ph. I) and Site Grading
3. SW Apron/Taxilane Expansion
4. Apron Rehabilitation
5. Corporate Hangar Apron/Taxiway Connectors
6. Airport Traffic Control Tower Siting Study*
7. Taxiway A/B Rehabilitation
8. FBO Hangar Apron
9. Perimeter Fence Replacement
10. NW Access Roadway/Auto Parking (Ph. I)
11. NW Apron/Taxilane Expansion (Ph. I)
12. T-Hangar (Row "E")

MID-TERM PROJECTS (2029-2033)

13. Utility Infrastructure Expansion (Ph. II)
14. Taxiway A4 Realignment
15. NW Apron/Taxilane Expansion (Ph. II)
16. Airport Traffic Control Tower - Environmental Assessment*
17. Airport Traffic Control Tower
18. Airport Entrance Roadway/Auto Parking
19. Mx/Ops Building Roadway/Auto Parking
20. Mx/Ops Building Airside Pavement
21. Mx/Ops Building
22. GA Apron Expansion
23. Fuel Farm Access Roadway/Auto Parking
24. Fuel Farm
25. Administration Building Roadway/Auto Parking
26. Administration Building

Notes:
1) "*" Denotes project is not shown in graphic.
2) Utility projects completed in earlier phases shown as existing.



Source: RS&H, 2024

5.6.3 Long-Term (2034-2043)

Long-term capital improvements include development projects expected to begin within the final ten years of the planning period from FY 2034 to FY 2043. The following long-term project list is phased strategically to reflect airport priority, incorporate enabling projects, and funding availability. The long-term focus primarily centers on the extension of Runway 16-34, a critical project essential for enabling U42 to accommodate the increasing demand from larger turboprop and business jet aircraft. This extension will enhance the airport's capacity, positioning U42 as a reliable reliever airport for Salt Lake City International. However, it is acknowledged that this is a complex and costly undertaking, necessitating sufficient time to accrue funds, garner stakeholder and agency support, and undergo detailed planning. Despite its high priority status, this Master Plan emphasizes that the construction of the airport traffic control tower must precede the runway shift and extension, underscoring the importance of strategic sequencing in project implementation.

The long-term initiatives at U42 are shown as projects 27-33 in **Figure 5-12** at the conclusion of this section.

27. Utility Infrastructure Expansion (Ph. III) (2034)

Project Description: The third phase of utility improvements focusing on extending sanitary sewer and power infrastructure to lay the groundwork for future apron expansion.

Purpose and Need: As U42 continues to accommodate a growing number of based aircraft and aeronautical users, the extension of essential utilities will be required to serve future development.

Project Notes:
1.) Detailed Utility Master Plan with ROM cost estimations prepared by Bowen Collins & Associates (2024). See **Appendix F, Utility Master Plan**.

28. Extend Runway 16-34 and Taxiway B to 6,600' – Environmental Assessment (2034)

Project Description: Conduct environmental assessment for the extension of Runway 16-34 to a length of 6,600 feet and Taxiway B to a full-length parallel of equal length. Design alternatives for this project were thoroughly explored and are presented in detail in **Appendix G, Runway 16-34 Extension/Shift Design Alternatives**.

Purpose and Need: To evaluate and document the anticipated environmental impacts of extending Runway 16-34 and Taxiway B.

29. Extend Runway 16-34 and Taxiway B to 6,600' – Design/Construction (2035)

Project Description: The project involves extending Runway 16-34 and Taxiway B to a length of 6,600 feet, including NAVAID relocation, taxiway demolition, and new connector additions. It will be implemented through multiple projects over several years. Design alternatives for this project were thoroughly explored and are presented in detail in **Appendix G, Runway 16-34 Extension/Shift Design Alternatives**.

Purpose and Need: The extension of Runway 16-34 and Taxiway B is essential to accommodate the increasing demand from larger turboprop and business jet aircraft at U42. This initiative aims to enhance the airport's capacity, establishing U42 as a dependable reliever airport for Salt Lake City International.

30. Airport Master Plan Update (2036)

Project Description: Conducting an update to the Airport Master Plan that involves a comprehensive reassessment of activity and facility needs to build a long-term plan to guide sustainable future development.

Purpose and Need: The FAA advises updating airport master plans every 7-10 years or as needed to address changes in aviation activity. An updated master plan for U42 is crucial to align planned improvements with demand and maintain a safe operating environment for the long term.

31. NW Apron/Taxilane Expansion (Ph. III) – Design/Construction (2037)

Project Description: The third phase of apron and taxilane expansion on the north side of U42.

Purpose and Need: To support additional hangar development and improve aircraft circulation between hangar facilities and the airfield.

Project Notes:

1.) Cost Estimation: Five percent contingency incorporated into construction quantities; Prices inflated/deflated due to project size and/or constructability; Unit prices are adapted using rounded averages from "TVY N Airport Rd. Extension Ph. I" project; Pavement section taken from SVRA Apron Rehabilitation (2012); Cost of NEPA documentation encompassed within contingency.

32. NW Apron/Taxilane Expansion (Ph. IV) – Design/Construction (2038)

Project Description: The fourth phase of apron and taxilane expansion on the north side of U42.

Purpose and Need: To support additional hangar development and improve aircraft circulation between hangar facilities and the airfield.

Project Notes:

1.) Cost Estimation: Five percent contingency incorporated into construction quantities; Prices inflated/deflated due to project size and/or constructability; Unit prices are adapted using rounded averages from "TVY N Airport Rd. Extension Ph. I" project; Pavement section taken from SVRA Apron Rehabilitation (2012); Cost of NEPA documentation encompassed within contingency.

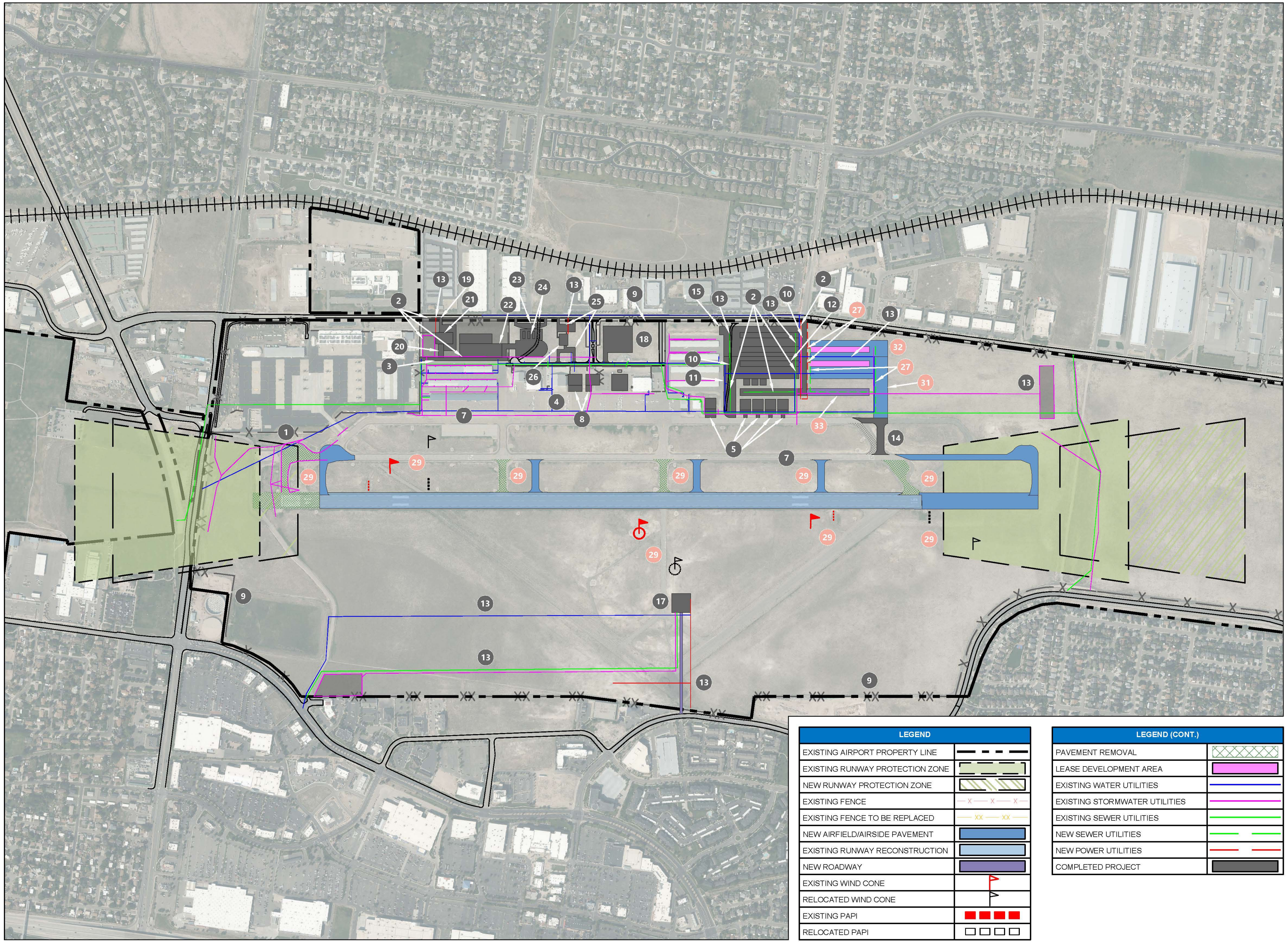
33. NW Access Roadway/Auto Parking (Ph. II) – Design/Construction (2039)

Project Description: The second phase of design and construction of roadway access and auto parking in an area identified for hangar development. The project is situated in an area where there is an existing access road with deteriorating pavement, which links to the airport perimeter road.

Purpose and Need: Improved roadway access and parking facilities are necessary to provide convenient access to future hangar development.

Project Notes:
1.) Cost Estimation: Five percent contingency incorporated into construction quantities; Prices inflated/deflated due to project size and/or constructability; Unit prices are adapted using rounded averages from "TVY N Airport Rd. Extension Ph. I" project; Cost of NEPA documentation encompassed within contingency.

FIGURE 5-12
LONG-TERM PROJECTS



South Valley Regional Airport Development Phasing Plan

NEAR-TERM PROJECTS (2024-2028)

1. Existing Stormwater Infrastructure Improvements
2. Utility Infrastructure Expansion (Ph. I) and Site Grading
3. SW Apron/Taxilane Expansion
4. Apron Rehabilitation
5. Corporate Hangar Apron/Taxiway Connectors
6. Airport Traffic Control Tower Siting Study*
7. Taxiway A/B Rehabilitation
8. FBO Hangar Apron
9. Perimeter Fence Replacement
10. NW Access Roadway/Auto Parking (Ph. I)
11. NW Apron/Taxilane Expansion (Ph. I)
12. T-Hangar (Row "E")

MID-TERM PROJECTS (2029-2033)

13. Utility Infrastructure Expansion (Ph. II)
14. Taxiway A4 Realignment
15. NW Apron/Taxilane Expansion (Ph. II)
16. Airport Traffic Control Tower - Environmental Assessment*
17. Airport Traffic Control Tower
18. Airport Entrance Roadway/Auto Parking
19. Mx/Ops Building Roadway/Auto Parking
20. Mx/Ops Building Airside Pavement
21. Mx/Ops Building
22. GA Apron Expansion
23. Fuel Farm Access Roadway/Auto Parking
24. Fuel Farm
25. Administration Building Roadway/Auto Parking
26. Administration Building

LONG-TERM PROJECTS (2034-2043)

27. Utility Infrastructure Expansion (Ph. III)
28. Extend Runway 16-34 and Taxiway B to 6,600' - Environmental Assessment*
29. Extend Runway 16-34 and Taxiway B to 6,600'
30. Master Plan Update*
31. NW Apron/Taxilane Expansion (Ph. III)
32. NW Apron/Taxilane Expansion (Ph. IV)
33. NW Access Roadway/Auto Parking (Ph. II)

Notes:
1) "*" Denotes project is not shown in graphic.
2) Utility projects completed in earlier phases shown as existing.

Source: RS&H, 2023

5.6.4 NEPA Implementation Strategy

The purpose of considering environmental factors in airport master planning is to provide initial information that will help expedite subsequent environmental processing. Federal Aviation Administration (FAA) Order 1050.1F, *Environmental Impacts: Policies and Procedures*, and FAA Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*, are the FAA's environmental guidance for aviation projects/actions to comply with NEPA. The environmental analysis included in this section is for informational and planning purposes and does not satisfy NEPA requirements.

There are three levels of NEPA documentation depending on the scope of a proposed project and the potential environmental impacts associated with a proposed project. These are categorical exclusions (CATEXs), environmental assessments (EAs), and environmental impact statements (EISs):

» *CATEX*: Proposed projects that fall within the list found in FAA Order 1050.1F, which outlines actions that the FAA has found in the past to not normally have a significant effect on the environment, and do not have an extraordinary circumstance can be processed with a CATEX.

» *EA*: For proposed projects that do not fall within the list specified as a CATEX in FAA Order 1050.1F, an EA must be prepared. At the completion of the EA, the FAA will issue a Finding of No Significant Impact (FONSI) or continue with an EIS.

» *EIS*: An EIS must be prepared if the environmental impacts associated with a proposed project are significant impacts that cannot be mitigated below the established significant threshold. At the completion of an EIS, the FAA will issue a Record of Decision (ROD). As part of Section 163 of the FAA Reauthorization Act of 2018, certain types of airport non-aeronautical development projects have limited regulation by the FAA and therefore, may not be subject to NEPA documentation.[25]

Prior to starting NEPA documentation for an airport development project at U42, SLCDA or its contractor should coordinate with the FAA ADO Environmental Protection Specialist (EPS) to officially determine if the project qualifies under Section 163, and if not, determine the appropriate level NEPA documentation (e.g., CATEX, EA, EIS). It is recommended that projects connected in function, place, and/or time be evaluated in the same NEPA document to save time and money. Connected actions (projects that do not have independent utility from another project) must be considered in the same NEPA document to avoid segmentation.

For purposes of this Master Plan, the level of analysis outlined in this section is to advise SLCDA of potential environmental impacts associated with the Airport Development Projects. The following list

[25] Exceptions to Section 163: Where FAA has regulation to ensure the safe and efficient operations of aircraft or the safety of people on the ground or property as it relates to aircraft operations, to ensure the airport Sponsor receives fair market value for the use or disposal of property, or if the project is being proposed on property that was originally purchased with Airport Improvement Program dollars. This total does not include any fixed annual AIP entitlements received by SLCDA.

outlines the near-term, mid-term, and long-term Airport Development Projects, as shown in **Figure 5-9**, and their anticipated NEPA documentation requirements.

5.6.4.1 Near-Term Projects (2024-2028)

Existing Stormwater Infrastructure Improvements (2025)

Project Description: Upgrading stormwater infrastructure by piping open channel sections and replacing undersized pipes.

Anticipated NEPA Documentation Requirements:

Air Quality: This project would temporarily increase emissions from construction vehicles and equipment. Because U42 is in nonattainment for 2015 Ozone (O_3), Particulate Matter-2.5 ($PM_{2.5}$), and Sulfur Dioxide (SO_2), and in maintenance for PM_{10}, a construction emissions inventory (CEI) may be required.

Biological Resources: Federal and state threatened and endangered species have the potential to be found at U42 and the project would include ground disturbing activity on pervious ground. Therefore, a biological resources survey may be required for this project.

Climate: This project would result in a temporary increase in emissions from construction vehicles and equipment. An estimate of GHG emissions could be included in the construction emissions inventory.

Hazardous Materials, Solid Waste, and Pollution Prevention: This project would generate solid and/or hazardous waste during construction. Construction waste would be handled and disposed of according to federal, state, and local rules and regulations.

Historical, Architectural, Archaeological, and Cultural Resources: This project would include ground disturbing activity on pervious ground. Therefore, an archaeological survey may be required.

Water Resources: There are floodplains in the area where this project would occur. Any impacts to floodplains would need to be reviewed and potentially coordinated with Salt Lake County Flood Control. SLCDA would be responsible for obtaining a Stormwater Pollution Prevention Plan (SWPPP) under a Utah Pollutant Discharge Elimination System (UPDES) Construction Storm Water Permit prior to the start of ground disturbing activities.

NEPA Documentation Guidance: Utility and infrastructure projects can be processed with a CATEX under FAA Order 1050.1F, paragraph 5-6.4(w), provided there are no significant environmental impacts, and no extraordinary circumstances exist.

Utility Infrastructure Expansion (Ph. I) and Site Grading (2025)

Project Description: The initial phase of utility improvements prioritizing extending sanitary sewer, power, and stormwater infrastructure to lay the groundwork for future apron expansion. This phase also addresses existing grading issues and creates a new stormwater detention pond on the southwest side of the airfield.

Anticipated NEPA Documentation Requirements:

Air Quality: This project would temporarily increase emissions from construction vehicles and equipment. Because U42 is in nonattainment for 2015 Ozone (O_3), Particulate Matter-2.5 ($PM_{2.5}$), and Sulfur Dioxide (SO_2), and in maintenance for PM_{10}, a construction emissions inventory (CEI) may be required.

Biological Resources: Federal and state threatened and endangered species have the potential to be found at U42 and the project would include ground disturbing activity on pervious ground. Therefore, a biological resources survey may be required for this project.

Climate: This project would result in a temporary increase in emissions from construction vehicles and equipment. An estimate of GHG emissions could be included in the construction emissions inventory.

Hazardous Materials, Solid Waste, and Pollution Prevention: This project would generate solid and/or hazardous waste during construction. Construction waste would be handled and disposed of according to federal, state, and local rules and regulations.

Historical, Architectural, Archaeological, and Cultural Resources: This project would include ground disturbing activity on pervious ground. Therefore, an archaeological survey may be required.

Water Resources: There are no floodplains in the area where this project would occur, and this project would not add new impervious surfaces to U42. However, SLCDA may still be responsible for updating its SWPPP and UPDES permit prior to the start of ground disturbing activities, and all construction activities would be required to comply with the provisions set forth in that permit.

NEPA Documentation Guidance: Utility and infrastructure projects can be processed with a CATEX under FAA Order 1050.1F, paragraph 5-6.4(w), provided there are no significant environmental impacts, and no extraordinary circumstances exist.

SW Apron/Taxilane Expansion – Design/Construction (2025)

Project Description: Expansion of the existing apron to accommodate an additional taxilane.

Anticipated NEPA Documentation Requirements:

Air Quality: This project would temporarily increase emissions from construction vehicles and equipment. Because U42 is in nonattainment for O_3, $PM_{2.5}$, and SO_2, and in maintenance for PM_{10}, a CEI may be required.

Biological Resources: Federal and state threatened and endangered species have the potential to be found at U42 and the project would include ground disturbing activity on pervious ground. Therefore, a biological resources survey may be required for this project.

Climate: This project would result in a temporary increase in emissions from construction vehicles and equipment. An estimate of GHG emissions could be included in the construction emissions inventory.

Hazardous Materials, Solid Waste, and Pollution Prevention: This project could generate solid and/or hazardous waste during construction. Waste would be handled and disposed of according to federal, state, and local rules and regulations.

Historical, Architectural, Archaeological, and Cultural Resources: This project would include ground disturbing activity on pervious ground. Therefore, an archaeological survey may be required for the NEPA documentation associated with this project.

NEPA Documentation Guidance: Apron and taxilane projects can be processed with a CATEX under FAA Order 1050.1F, paragraph 5-6.4(e), provided there are no significant environmental impacts, and no extraordinary circumstances arise.

Apron Rehabilitation (2025)

Project Description: Rehabilitation of a section of the apron at U42 that includes the removal of old asphalt, potential foundation reinforcement as required, the addition of new engineered fill material where needed, and the installation of a new 4-inch-thick asphalt surface.

Anticipated NEPA Documentation Requirements:

Air Quality: This project would temporarily increase emissions from construction vehicles and equipment. Because U42 is in nonattainment for O_3, $PM_{2.5}$, and SO_2, and in maintenance for PM_{10}, a CEI may be required.

Climate: This project would result in a temporary increase in emissions from construction vehicles and equipment. An estimate of GHG emissions could be included in the construction emissions inventory.

Hazardous Materials, Solid Waste, and Pollution Prevention: This project could generate solid and/or hazardous waste during construction. Waste would be handled and disposed of according to federal, state, and local rules and regulations.

Water Resources: There are no floodplains in the area where this project would occur, and this project would not add new impervious surfaces to U42. However, SLCDA may still be responsible for updating its SWPPP and UPDES permit prior to the start of ground disturbing activities, and all construction activities would be required to comply with the provisions set forth in that permit.

NEPA Documentation Guidance: Apron projects can be processed with a CATEX under FAA Order 1050.1F, paragraph 5-6.4(e), provided there are no significant environmental impacts, and no extraordinary circumstances arise.

Corporate Hangar Apron/Taxiway Connectors - Design/Construction (2026)

Project Description: Design and construction of three apron areas and two taxiway connectors to support future hangar development.

Anticipated NEPA Documentation Requirements:

Air Quality: This project would temporarily increase emissions from construction vehicles and equipment. Because U42 is in nonattainment for O_3, $PM_{2.5}$, and SO_2, and in maintenance for PM_{10}, a CEI may be required. An operational emissions inventory might be needed, as the project aims to increase the number of based aircraft at U42, which in turn, will likely increase operations at the airport.

Biological Resources: Federal and state threatened and endangered species have the potential to be found at U42 and the project would include ground disturbing activity on pervious ground. Therefore, a biological resources survey may be required for this project.

Climate: This project would result in a temporary increase in emissions from construction vehicles and equipment. An estimate of GHG emissions could be included in the construction and operational emissions inventories.

Hazardous Materials, Solid Waste, and Pollution Prevention: This project could generate solid and/or hazardous waste during construction. Waste would be handled and disposed of according to federal, state, and local rules and regulations.

Historical, Architectural, Archaeological, and Cultural Resources: This project would include ground disturbing activity on pervious ground. Therefore, an archaeological survey may be required for this project.

Water Resources: This project would add impervious surfaces to U42. This increase in impervious surface would increase the volume of stormwater runoff; however, the existing stormwater drainage system is anticipated to be able to accommodate the increase in stormwater runoff. SLCDA would be responsible for updating its SWPPP and UPDES permit prior to the start of ground disturbing activities, and all construction activities would be required to comply with the provisions set forth in that permit.

NEPA Documentation Guidance: Apron and taxiway construction projects can be processed with a CATEX under FAA Order 1050.1F, paragraph 5-6.4(e), provided there are no significant environmental impacts, and no extraordinary circumstances arise.

Taxiway A/B Rehabilitation (2026)

Project Description: Rehabilitation of taxiways A and B at U42 that involves the removal of the current asphalt surface using cold milling. If necessary, the subgrade will be repaired, and new engineered fill material will be added, followed by the installation of a new 4-inch-thick asphalt surface course.

Anticipated NEPA Documentation Requirements:
Air Quality: This project would temporarily increase emissions from construction vehicles and equipment. Because U42 is in nonattainment for O_3, $PM_{2.5}$, and SO_2, and in maintenance for PM_{10}, a CEI may be required.

Climate: This project would result in a temporary increase in emissions from construction vehicles and equipment. An estimate of GHG emissions could be included in the construction emissions inventory.

Hazardous Materials, Solid Waste, and Pollution Prevention: This project could generate solid and/or hazardous waste during construction. Waste would be handled and disposed of according to federal, state, and local rules and regulations.

Water Resources: There are no floodplains in the area where this project would occur, and this project would not add new impervious surfaces to U42. However, SLCDA may still be responsible for updating its SWPPP and UPDES permit prior to the start of ground disturbing activities, and all construction activities would be required to comply with the provisions set forth in that permit.

NEPA Documentation Guidance: Taxiway rehabilitation projects can be processed with a CATEX under FAA Order 1050.1F, paragraph 5-6.4(e), provided there are no significant environmental impacts, and no extraordinary circumstances arise.

FBO Hangar Apron – Design/Construction (2027)
Project Description: Design and construction of apron space to accommodate prospective FBO tenants and their aircraft.

Anticipated NEPA Documentation Requirements:
Air Quality: This project would temporarily increase emissions from construction vehicles and equipment. Because U42 is in nonattainment for O_3, $PM_{2.5}$, and SO_2, and in maintenance for PM_{10}, a CEI may be required.

Biological Resources: Federal and state threatened and endangered species have the potential to be found at U42 and the project would include ground disturbing activity on pervious ground. Therefore, a biological resources survey may be required for this project.

Climate: This project would result in a temporary increase in emissions from construction vehicles and equipment. An estimate of GHG emissions could be included in the construction emissions inventory.

Hazardous Materials, Solid Waste, and Pollution Prevention: This project could generate solid and/or hazardous waste during construction. Waste would be handled and disposed of according to federal, state, and local rules and regulations.

Historical, Architectural, Archaeological, and Cultural Resources: This project would include ground disturbing activity on pervious ground. Therefore, an archaeological survey may be required for the NEPA documentation associated with this project.

Water Resources: This project would add impervious surfaces to the airport. This increase in impervious surface would increase the volume of stormwater runoff; however, the existing stormwater drainage system is anticipated to be able to accommodate the increase in stormwater runoff. SLCDA would be responsible for updating its SWPPP and UPDES permit prior to the start of ground disturbing activities, and all construction activities would be required to comply with the provisions set forth in that permit.

NEPA Documentation Guidance: Apron projects can be processed with a CATEX under FAA Order 1050.1F, paragraph 5-6.4(e), provided there are no significant environmental impacts, and no extraordinary circumstances arise.

Perimeter Fence Replacement (2027)

Project Description: Upgrading the perimeter security fence by replacing the current 6-foot chain link fence with an 8-foot one and addressing specific sections of the existing 8-foot fence that require replacement. The new fence will also include three strands of barbed wire on top of the chain link. Demolition of the existing fencing is also part of the project.

Anticipated NEPA Documentation Requirements:

Air Quality: This project would temporarily increase emissions from construction vehicles and equipment. Because U42 is in nonattainment for O_3, $PM_{2.5}$, and SO_2, and in maintenance for PM_{10}, a CEI may be required.

Biological Resources: Federal and state threatened and endangered species have the potential to be found at U42 and the project would include ground disturbing activity on pervious ground. Therefore, a biological resources survey may be required for this project.

Climate: This project would result in a temporary increase in emissions from construction vehicles and equipment. An estimate of GHG emissions could be included in the construction emissions inventory.

Hazardous Materials, Solid Waste, and Pollution Prevention: This project could generate solid and/or hazardous waste during construction. Waste would be handled and disposed of according to federal, state, and local rules and regulations.

Water Resources: There are floodplains in the area where this project would occur. Any impacts to floodplains would need to be reviewed and potentially coordinated with Salt Lake County Flood Control. SLCDA would be responsible for obtaining a Stormwater Pollution Prevention Plan (SWPPP) under a Utah Pollutant Discharge Elimination System (UPDES) Construction Storm Water Permit prior to the start of ground disturbing activities.

NEPA Documentation Guidance: Perimeter fence projects can be processed with a CATEX under FAA 1050.1F, paragraph 5-6.4(f), provided there are no significant environmental impacts, and no extraordinary circumstances exist.

NW Access Roadway/Auto Parking (Ph. I) - Design/Construction (2027)
Project Description: Design and construction of roadway access and auto parking in an area identified for hangar development. The project is situated in an area where there is an existing access road with deteriorating pavement, which links to the airport perimeter road.

Anticipated NEPA Documentation Requirements:
Air Quality: This project would temporarily increase emissions from construction vehicles and equipment. Because U42 is in nonattainment for O_3, $PM_{2.5}$, and SO_2, and in maintenance for PM_{10}, a CEI may be required.

Biological Resources: Federal and state threatened and endangered species have the potential to be found at U42 and the project would include ground disturbing activity on pervious ground. Therefore, a biological resources survey may be required for this project.

Climate: This project would result in a temporary increase in emissions from construction vehicles and equipment. An estimate of GHG emissions could be included in the construction emissions inventory.

Hazardous Materials, Solid Waste, and Pollution Prevention: This project could generate solid and/or hazardous waste during construction. Waste would be handled and disposed of according to federal, state, and local rules and regulations.

Historical, Architectural, Archaeological, and Cultural Resources: This project would include ground disturbing activity on pervious ground. Therefore, an archaeological survey may be required for this project.

Water Resources: This project would add impervious surfaces to U42. This increase in impervious surface would increase the volume of stormwater runoff; however, the existing stormwater drainage system is anticipated to be able to accommodate the increase in stormwater runoff. SLCDA would be responsible for updating its SWPPP and UPDES permit prior to the start of ground disturbing activities, and all construction activities would be required to comply with the provisions set forth in that permit.

NEPA Documentation Guidance: This project can be processed with a CATEX under FAA Order 1050.1F, paragraph 5-6.4(a) for the access roadway and paragraph 5-6.4(f) for the auto parking, provided there are no significant environmental impacts, and no extraordinary circumstances exist.

NW Apron/Taxilane Expansion (Ph. I) – Design/Construction (2028)
Project Description: Expansion of the existing apron and new taxilanes in an area identified for future hangar development.

Anticipated NEPA Documentation Requirements:
Air Quality: This project would temporarily increase emissions from construction vehicles and equipment. Because U42 is in nonattainment for O_3, $PM_{2.5}$, and SO_2, and in maintenance for PM_{10}, a CEI may be required.

Biological Resources: Federal and state threatened and endangered species have the potential to be found at U42 and the project would include ground disturbing activity on pervious ground. Therefore, a biological resources survey may be required for this project.

Climate: This project would result in a temporary increase in emissions from construction vehicles and equipment. An estimate of GHG emissions could be included in the construction emissions inventory.

Hazardous Materials, Solid Waste, and Pollution Prevention: This project could generate solid and/or hazardous waste during construction. Waste would be handled and disposed of according to federal, state, and local rules and regulations.

Historical, Architectural, Archaeological, and Cultural Resources: This project would include ground disturbing activity on pervious ground. Therefore, an archaeological survey may be required for this project.

Water Resources: This project would add impervious surfaces to the airport. This increase in impervious surface would increase the volume of stormwater runoff; however, the existing stormwater drainage system is anticipated to be able to accommodate the increase in stormwater runoff. SLCDA would be responsible for updating its SWPPP and UPDES permit prior to the start of ground disturbing activities, and all construction activities would be required to comply with the provisions set forth in that permit.

NEPA Documentation Guidance: Apron and taxilane projects can be processed with a CATEX under FAA Order 1050.1F, paragraph 5-6.4(e), provided there are no significant environmental impacts, and no extraordinary circumstances arise.

<u>T-Hangar ("Row E") – Design/Construction (2028)</u>
Project Description: Design and construction of a new T-hangar row designated as row "E".

Anticipated NEPA Documentation Requirements:
Air Quality: This project would temporarily increase emissions from construction vehicles and equipment. Because U42 is in nonattainment for O_3, $PM_{2.5}$, and SO_2, and in maintenance for PM_{10}, a CEI may be required. An operational emissions inventory might be needed, as the project aims to increase the number of based aircraft at U42, which in turn, will likely increase operations at the airport.

Biological Resources: Federal and state threatened and endangered species have the potential to be found at U42 and the project would include ground disturbing activity on pervious ground. Therefore, a biological resources survey may be required for this project.

Climate: This project would result in a temporary increase in emissions from construction vehicles and equipment. An estimate of GHG emissions could be included in the construction and operational emissions inventories.

Hazardous Materials, Solid Waste, and Pollution Prevention: This project could generate solid and/or hazardous waste during construction. Waste would be handled and disposed of according to federal, state, and local rules and regulations.

Historical, Architectural, Archaeological, and Cultural Resources: This project would include ground disturbing activity on pervious ground. Therefore, an archaeological survey may be required for this project.

Noise and Noise Compatible Land Use: This project would increase the number of aircraft at U42 and could require Area Equivalent Method (AEM) noise modeling to determine any potential impacts to noise sensitive areas.

Water Resources: This project would add impervious surfaces to U42. This increase in impervious surface would increase the volume of stormwater runoff; however, the existing stormwater drainage system is anticipated to be able to accommodate the increase in stormwater runoff. SLCDA would be responsible for updating its SWPPP and UPDES permit prior to the start of ground disturbing activities, and all construction activities would be required to comply with the provisions set forth in that permit.

NEPA Documentation Guidance: T-hangar construction projects can be processed with a CATEX under FAA 1050.1F, paragraph 5-6.4(f), provided there are no significant environmental impacts, and no extraordinary circumstances exist.

5.6.4.2 Mid-Term Projects (2029-2033)

Utility Infrastructure Expansion (Ph. II) (2029)

Project Description: The second phase of utility improvements focusing on extending sanitary sewer, power, potable water, and stormwater infrastructure to lay the groundwork for future development including a potential airport traffic control tower on the east side of the airfield. This phase also involves the establishment of two new stormwater detention ponds, with one situated on the northwest side of U42 and the other on the southeast side.

Anticipated NEPA Documentation Requirements:

Air Quality: This project would temporarily increase emissions from construction vehicles and equipment. Because U42 is in nonattainment for 2015 Ozone (O_3), Particulate Matter-2.5 ($PM_{2.5}$), and

Sulfur Dioxide (SO_2), and in maintenance for PM_{10}, a construction emissions inventory (CEI) may be required.

Biological Resources: Federal and state threatened and endangered species have the potential to be found at U42 and the project would include ground disturbing activity on pervious ground. Therefore, a biological resources survey may be required for this project.

Climate: This project would result in a temporary increase in emissions from construction vehicles and equipment. An estimate of GHG emissions could be included in the construction emissions inventory.

Hazardous Materials, Solid Waste, and Pollution Prevention: This project would generate solid and/or hazardous waste during construction. Construction waste would be handled and disposed of according to federal, state, and local rules and regulations.

Historical, Architectural, Archaeological, and Cultural Resources: This project would include ground disturbing activity on pervious ground. Therefore, an archaeological survey may be required.

Water Resources: There are no floodplains in the area where this project would occur, and this project would not add new impervious surfaces to U42. However, SLCDA may still be responsible for updating its SWPPP and UPDES permit prior to the start of ground disturbing activities, and all construction activities would be required to comply with the provisions set forth in that permit.

NEPA Documentation Guidance: Utility and infrastructure projects can be processed with a CATEX under FAA Order 1050.1F, paragraph 5-6.4(w), provided there are no significant environmental impacts, and no extraordinary circumstances exist.

Taxiway A4 Realignment - Design/Construction (2029)
Project Description: Redesign and reconstruction of Taxiway A4.

Anticipated NEPA Documentation Requirements:
Air Quality: This project would temporarily increase emissions from construction vehicles and equipment. Because U42 is in nonattainment for O_3, $PM_{2.5}$, and SO_2, and in maintenance for PM_{10}, a CEI may be required.

Biological Resources: Federal and state threatened and endangered species have the potential to be found at U42 and the project would include ground disturbing activity on pervious ground; therefore, a biological resources survey may be required for this project.

Climate: This project would result in a temporary increase in emissions from construction vehicles and equipment. An estimate of GHG emissions could be included in the construction emissions inventory.

Hazardous Materials, Solid Waste, and Pollution Prevention: This project could generate solid and/or hazardous waste during construction. Waste would be handled and disposed of according to federal, state, and local rules and regulations.

Historical, Architectural, Archaeological, and Cultural Resources: This project would include ground disturbing activity on pervious ground. Therefore, an archaeological survey may be required for this project.

Water Resources: This project would add impervious surfaces to U42. This increase in impervious surface would increase the volume of stormwater runoff; however, the existing stormwater drainage system is anticipated to be able to accommodate the increase in stormwater runoff. SLCDA would be responsible for updating its SWPPP and UPDES permit prior to the start of ground disturbing activities, and all construction activities would be required to comply with the provisions set forth in that permit.

NEPA Documentation Guidance: Taxiway projects can be processed with a CATEX under FAA Order 1050.1F, paragraph 5-6.4(e), provided there are no significant environmental impacts, and no extraordinary circumstances arise.

NW Apron/Taxilane Expansion (Ph. II) – Design/Construction (2029)
Project Description: The second phase of apron and taxilane expansion on the north side of U42.

Anticipated NEPA Documentation Requirements:
Air Quality: This project would temporarily increase emissions from construction vehicles and equipment. Because U42 is in nonattainment for O_3, $PM_{2.5}$, and SO_2, and in maintenance for PM_{10}, CEI may be required.

Biological Resources: Federal and state threatened and endangered species have the potential to be found at U42 and the project would include ground disturbing activity on pervious ground. Therefore, a biological resources survey may be required for this project.

Climate: This project would result in a temporary increase in emissions from construction vehicles and equipment. An estimate of GHG emissions could be included in the construction emissions inventory.

Hazardous Materials, Solid Waste, and Pollution Prevention: This project could generate solid and/or hazardous waste during construction. Waste would be handled and disposed of according to federal, state, and local rules and regulations.

Historical, Architectural, Archaeological, and Cultural Resources: This project would include ground disturbing activity on pervious ground. Therefore, an archaeological survey may be required for this project.

Water Resources: This project would add impervious surfaces to U42. This increase in impervious surface would increase the volume of stormwater runoff; however, the existing stormwater drainage system is anticipated to be able to accommodate the increase in stormwater runoff. SLCDA would be responsible for updating its SWPPP and UPDES permit prior to the start of ground disturbing activities, and all construction activities would be required to comply with the provisions set forth in that permit.

NEPA Documentation Guidance: Apron and taxilane projects can be processed with a CATEX under FAA Order 1050.1F, paragraph 5-6.4(e), provided there are no significant environmental impacts, and no extraordinary circumstances arise.

Airport Traffic Control Tower – Design/Construction (2030)

Project Description: The design and construction of a modern and efficient control tower at U42 is essential for the safe and smooth management of airport traffic operations.

Anticipated NEPA Documentation Requirements:

Air Quality: This project would temporarily increase emissions from construction vehicles and equipment. Because U42 is in nonattainment for O_3, $PM_{2.5}$, and SO_2, and in maintenance for PM_{10}, a CEI may be required.

Biological Resources: Federal and state threatened and endangered species have the potential to be found at U42 and the project would include ground disturbing activity on pervious ground. Therefore, a biological resources survey may be required for this project.

Climate: This project would result in a temporary increase in emissions from construction vehicles and equipment. An estimate of GHG emissions could be included in the construction emissions inventory.

Hazardous Materials, Solid Waste, and Pollution Prevention: This project could generate solid and/or hazardous waste during construction. Waste would be handled and disposed of according to federal, state, and local rules and regulations.

Historical, Architectural, Archaeological, and Cultural Resources: This project would include ground disturbing activity on pervious ground. Therefore, an archaeological survey may be required for this project.

Water Resources: This project would add impervious surfaces to U42. This increase in impervious surface would increase the volume of stormwater runoff; however, the existing stormwater drainage system is anticipated to be able to accommodate the increase in stormwater runoff. SLCDA would be responsible for updating its SWPPP and UPDES permit prior to the start of ground disturbing activities, and all construction activities would be required to comply with the provisions set forth in that permit.

NEPA Documentation Guidance: Under FAA Order 1050.1F, paragraph 3-1.2(b)(7), establishment of an airport traffic control tower normally requires an EA. However, FAA Order 1050.1F, paragraph 5-6.4(dd), states that if the airport traffic control tower is a non-Radar, Level 1 ATCT at an existing visual flight rules airport, the project can be processed as a CATEX. For the purposes of this Master Plan, an environmental assessment is included for planning and budgetary purposes.

Airport Entrance Roadway/Auto Parking – Design/Construction (2031)

Project Description: Design and construction of auto parking facilities and roadway infrastructure at U42.

Anticipated NEPA Documentation Requirements:

Air Quality: This project would temporarily increase emissions from construction vehicles and equipment. Because U42 is in nonattainment for O_3, $PM_{2.5}$, and SO_2, and in maintenance for PM_{10}, a CEI may be required.

Biological Resources: Federal and state threatened and endangered species have the potential to be found at U42 and the project would include ground disturbing activity on pervious ground. Therefore, a biological resources survey may be required for this project.

Climate: This project would result in a temporary increase in emissions from construction vehicles and equipment. An estimate of GHG emissions could be included in the construction emissions inventory.

Hazardous Materials, Solid Waste, and Pollution Prevention: This project could generate solid and/or hazardous waste during construction. Waste would be handled and disposed of according to federal, state, and local rules and regulations.

Historical, Architectural, Archaeological, and Cultural Resources: This project would include ground disturbing activity on pervious ground. Therefore, an archaeological survey may be required for this project.

Water Resources: This project would add impervious surfaces to U42. This increase in impervious surface would increase the volume of stormwater runoff; however, the existing stormwater drainage system is anticipated to be able to accommodate the increase in stormwater runoff. SLCDA would be responsible for updating its SWPPP and UPDES permit prior to the start of ground disturbing activities, and all construction activities would be required to comply with the provisions set forth in that permit.

NEPA Documentation Guidance: This project can be processed with a CATEX under FAA Order 1050.1F, paragraph 5-6.4(a) for the access roadway and paragraph 5-6.4(f) for the auto parking, provided there are no significant environmental impacts, and no extraordinary circumstances exist.

Maintenance/Operations Building Roadway/Auto Parking - Design/Construction (2031)

Project Description: Design and construction of airside pavement that connects Project #21 (Maintenance/Operations Building - Design/Construction) to the airfield.

Anticipated NEPA Documentation Requirements:

Air Quality: This project would temporarily increase emissions from construction vehicles and equipment. Because U42 is in nonattainment for O_3, $PM_{2.5}$, and SO_2, and in maintenance for PM_{10}, a CEI may be required.

Biological Resources: Federal and state threatened and endangered species have the potential to be found at U42 and the project would include ground disturbing activity on pervious ground. Therefore, a biological resources survey may be required for this project.

Climate: This project would result in a temporary increase in emissions from construction vehicles and equipment. An estimate of GHG emissions could be included in the construction emissions inventory.

Hazardous Materials, Solid Waste, and Pollution Prevention: This project could generate solid and/or hazardous waste during construction. Waste would be handled and disposed of according to federal, state, and local rules and regulations.

Historical, Architectural, Archaeological, and Cultural Resources: This project would include ground disturbing activity on pervious ground. Therefore, an archaeological survey may be required for this project.

Water Resources: This project would add impervious surfaces to U42. This increase in impervious surface would increase the volume of stormwater runoff; however, the existing stormwater drainage system is anticipated to be able to accommodate the increase in stormwater runoff. SLCDA would be responsible for updating its SWPPP and UPDES permit prior to the start of ground disturbing activities, and all construction activities would be required to comply with the provisions set forth in that permit.

NEPA Documentation Guidance: This project can be processed with a CATEX under FAA Order 1050.1F, paragraph 5-6.4(a) for the access roadway and paragraph 5-6.4(f) for the auto parking, provided there are no significant environmental impacts, and no extraordinary circumstances exist.

Maintenance/Operations Building Airside Pavement - Design/Construction (2031)

Project Description: Design and construction of airside pavement that connects Project #21 (Maintenance/Operations Building - Design/Construction) to the airfield.

Anticipated NEPA Documentation Requirements:

Air Quality: This project would temporarily increase emissions from construction vehicles and equipment. Because U42 is in nonattainment for O_3, $PM_{2.5}$, and SO_2, and in maintenance for PM_{10}, a CEI may be required.

Biological Resources: Federal and state threatened and endangered species have the potential to be found at U42 and the project would include ground disturbing activity on pervious ground. Therefore, a biological resources survey may be required for this project.

Climate: This project would result in a temporary increase in emissions from construction vehicles and equipment. An estimate of GHG emissions could be included in the construction emissions inventory.

Hazardous Materials, Solid Waste, and Pollution Prevention: This project could generate solid and/or hazardous waste during construction. Waste would be handled and disposed of according to federal, state, and local rules and regulations.

Historical, Architectural, Archaeological, and Cultural Resources: This project would include ground disturbing activity on pervious ground. Therefore, an archaeological survey may be required for this project.

Water Resources: This project would add impervious surfaces to U42. This increase in impervious surface would increase the volume of stormwater runoff; however, the existing stormwater drainage system is anticipated to be able to accommodate the increase in stormwater runoff. SLCDA would be responsible for updating its SWPPP and UPDES permit prior to the start of ground disturbing activities, and all construction activities would be required to comply with the provisions set forth in that permit.

NEPA Documentation Guidance: Apron projects can be processed with a CATEX under FAA Order 1050.1F, paragraph 5-6.4(e), provided there are no significant environmental impacts, and no extraordinary circumstances arise.

Maintenance/Operations Building - Design/Construction (2032)

Project Description: Design and construction of an aircraft maintenance and operations building.

Anticipated NEPA Documentation Requirements:

Air Quality: This project would temporarily increase emissions from construction vehicles and equipment. Because U42 is in nonattainment for O_3, $PM_{2.5}$, and SO_2, and in maintenance for PM_{10}, a CEI may be required.

Biological Resources: Federal and state threatened and endangered species have the potential to be found at U42 and the project would include ground disturbing activity on pervious ground. Therefore, a biological resources survey may be required for this project.

Climate: This project would result in a temporary increase in emissions from construction vehicles and equipment. An estimate of GHG emissions could be included in the construction emissions inventory.

Hazardous Materials, Solid Waste, and Pollution Prevention: This project could generate solid and/or hazardous waste during construction. Waste would be handled and disposed of according to federal, state, and local rules and regulations.

Historical, Architectural, Archaeological, and Cultural Resources: This project would include ground disturbing activity on pervious ground. Therefore, an archaeological survey may be required for this project.

Water Resources: This project would add impervious surfaces to U42. This increase in impervious surface would increase the volume of stormwater runoff; however, the existing stormwater drainage system is anticipated to be able to accommodate the increase in stormwater runoff. SLCDA would be responsible for updating its SWPPP and UPDES permit prior to the start of ground disturbing activities, and all construction activities would be required to comply with the provisions set forth in that permit.

NEPA Documentation Guidance: Building projects can be processed with a CATEX under FAA Order 1050.1F, paragraph 5-6.4(f), provided there are no significant environmental impacts, and no extraordinary circumstances arise.

General Aviation Apron Expansion – Design/Construction (2032)

Project Description: Expansion of the general aviation apron accessible via taxilanes from Project #3 (SW Apron/Taxilane Expansion – Design/Construction) to accommodate a potential aviation tenant and their aircraft.

Anticipated NEPA Documentation Requirements:

Air Quality: This project would temporarily increase emissions from construction vehicles and equipment. Because U42 is in nonattainment for O_3, $PM_{2.5}$, and SO_2, and in maintenance for PM_{10}, a CEI may be required.

Biological Resources: Federal and state threatened and endangered species have the potential to be found at U42 and the project would include ground disturbing activity on pervious ground. Therefore, a biological resources survey may be required for this project.

Climate: This project would result in a temporary increase in emissions from construction vehicles and equipment. An estimate of GHG emissions could be included in the construction emissions inventory.

Hazardous Materials, Solid Waste, and Pollution Prevention: This project could generate solid and/or hazardous waste during construction. Waste would be handled and disposed of according to federal, state, and local rules and regulations.

Historical, Architectural, Archaeological, and Cultural Resources: This project would include ground disturbing activity on pervious ground. Therefore, an archaeological survey may be required for this project.

Water Resources: This project would add impervious surfaces to U42. This increase in impervious surface would increase the volume of stormwater runoff; however, the existing stormwater drainage system is anticipated to be able to accommodate the increase in stormwater runoff. SLCDA would be responsible for updating its SWPPP and UPDES permit prior to the start of ground disturbing activities, and all construction activities would be required to comply with the provisions set forth in that permit.

NEPA Documentation Guidance: Apron projects can be processed with a CATEX under FAA Order 1050.1F, paragraph 5-6.4(e), provided there are no significant environmental impacts, and no extraordinary circumstances arise.

<u>Fuel Farm Access Roadway – Design/Construction (2032)</u>

Project Description: Design and construction of landside access from N Airport Rd and Project #24 (Fuel Farm - Design/Construction).

Anticipated NEPA Documentation Requirements:

Air Quality: This project would temporarily increase emissions from construction vehicles and equipment. Because U42 is in nonattainment for O_3, $PM_{2.5}$, and SO_2, and in maintenance for PM_{10}, a CEI may be required.

Biological Resources: Federal and state threatened and endangered species have the potential to be found at U42 and the project would include ground disturbing activity on pervious ground. Therefore, a biological resources survey may be required for this project.

Climate: This project would result in a temporary increase in emissions from construction vehicles and equipment. An estimate of GHG emissions could be included in the construction emissions inventory.

Hazardous Materials, Solid Waste, and Pollution Prevention: This project could generate solid and/or hazardous waste during construction. Waste would be handled and disposed of according to federal, state, and local rules and regulations.

Water Resources: This project would add impervious surfaces to U42. This increase in impervious surface would increase the volume of stormwater runoff; however, the existing stormwater drainage system is anticipated to be able to accommodate the increase in stormwater runoff. SLCDA would be responsible for updating its SWPPP and UPDES permit prior to the start of ground disturbing activities, and all construction activities would be required to comply with the provisions set forth in that permit.

NEPA Documentation Guidance: Access roadway projects can be processed with a CATEX under FAA Order 1050.1F, paragraph 5-6.4(a), provided there are no significant environmental impacts, and no extraordinary circumstances arise.

Fuel Farm – Design/Construction (2033)

Project Description: Design and construction of a new fuel farm at U42.

Anticipated NEPA Documentation Requirements:

Air Quality: This project would temporarily increase emissions from construction vehicles and equipment. Because U42 is in nonattainment for O_3, $PM_{2.5}$, and SO_2, and in maintenance for PM_{10}, a CEI may be required.

Biological Resources: Federal and state threatened and endangered species have the potential to be found at U42 and the project would include ground disturbing activity on pervious ground. Therefore, a biological resources survey may be required for this project.

Climate: This project would result in a temporary increase in emissions from construction vehicles and equipment. An estimate of GHG emissions could be included in the construction emissions inventory.

Hazardous Materials, Solid Waste, and Pollution Prevention: This project could generate solid and/or hazardous waste during construction. Waste would be handled and disposed of according to federal, state, and local rules and regulations. Any potential hazardous materials associated with operation of the project (i.e., fuel spills) would be handled in accordance with the airport's Spill Prevention, Control, and Countermeasure Plan (SPCC).

Historical, Architectural, Archaeological, and Cultural Resources: This project would include ground disturbing activity on pervious ground. Therefore, an archaeological survey may be required for this project.

Water Resources: This project would add impervious surfaces to U42. This increase in impervious surface would increase the volume of stormwater runoff; however, the existing stormwater drainage system is anticipated to be able to accommodate the increase in stormwater runoff. SLCDA would be responsible for updating its SWPPP and UPDES permit prior to the start of ground disturbing activities, and all construction activities would be required to comply with the provisions set forth in that permit.

NEPA Documentation Guidance: Fuel farm projects can be processed with a CATEX under FAA Order 1050.1F, paragraph 5-6.4(u) if there is no bulk fuel storage and associated distribution systems, and provided there are no significant environmental impacts, and no extraordinary circumstances arise.

Administration Building Roadway/Auto Parking – Design/Construction (2033)

Project Description: Design and construction of roadway and auto parking facilities for a new administration building at U42.

Anticipated NEPA Documentation Requirements:
Air Quality: This project would temporarily increase emissions from construction vehicles and equipment. Because U42 is in nonattainment for O_3, $PM_{2.5}$, and SO_2, and in maintenance for PM_{10}, a CEI may be required.

Biological Resources: Federal and state threatened and endangered species have the potential to be found at U42 and the project would include ground disturbing activity on pervious ground. Therefore, a biological resources survey may be required for this project.

Climate: This project would result in a temporary increase in emissions from construction vehicles and equipment. An estimate of GHG emissions could be included in the construction emissions inventory.

Hazardous Materials, Solid Waste, and Pollution Prevention: This project could generate solid and/or hazardous waste during construction. Waste would be handled and disposed of according to federal, state, and local rules and regulations.

Historical, Architectural, Archaeological, and Cultural Resources: This project would include ground disturbing activity on pervious ground. Therefore, an archaeological survey may be required for this project.

Water Resources: This project would add impervious surfaces to U42. This increase in impervious surface would increase the volume of stormwater runoff; however, the existing stormwater drainage system is anticipated to be able to accommodate the increase in stormwater runoff. SLCDA would be responsible for updating its SWPPP and UPDES permit prior to the start of ground disturbing activities, and all construction activities would be required to comply with the provisions set forth in that permit.

NEPA Documentation Guidance: This project can be bulk fuel storage and associated distribution systems a CATEX under FAA Order 1050.1F, paragraph 5-6.4(a) for the access roadway and paragraph 5-6.4(f) for the auto parking, provided there are no significant environmental impacts, and no extraordinary circumstances exist.

Administration Building – Design/Construction (2033)
Project Description: Design and construction of an administration building, which will serve as a central administrative and operational hub for airport staff at U42.

Anticipated NEPA Documentation Requirements:
Air Quality: This project would temporarily increase emissions from construction vehicles and equipment. Because U42 is in nonattainment for O_3, and $PM_{2.5}$, and SO_2, and in maintenance for PM_{10}, a CEI may be required.

Biological Resources: Federal and state threatened and endangered species have the potential to be found at U42 and the project would include ground disturbing activity on pervious ground. Therefore, a biological resources survey may be required for this project.

Climate: This project would result in a temporary increase in emissions from construction vehicles and equipment. An estimate of GHG emissions could be included in the construction emissions inventory.

Hazardous Materials, Solid Waste, and Pollution Prevention: This project could generate solid and/or hazardous waste during construction. Waste would be handled and disposed of according to federal, state, and local rules and regulations.

Historical, Architectural, Archaeological, and Cultural Resources: This project would include ground disturbing activity on pervious ground. Therefore, an archaeological survey may be required for this project.

Water Resources: This project would add impervious surfaces to U42. This increase in impervious surface would increase the volume of stormwater runoff; however, the existing stormwater drainage system is anticipated to be able to accommodate the increase in stormwater runoff. SLCDA would be responsible for updating its SWPPP and UPDES permit prior to the start of ground disturbing activities, and all construction activities would be required to comply with the provisions set forth in that permit.

NEPA Documentation Guidance: Building construction projects can be processed with a CATEX under FAA Order 1050.1F, paragraph 5-6.4(h), provided there are no significant environmental impacts, and no extraordinary circumstances arise.

5.6.4.3 Long-Term Projects (2034-2043)

Utility Infrastructure Expansion (Ph. III) (2034)

Project Description: The third phase of utility improvements focusing on extending sanitary sewer and power infrastructure to lay the groundwork for future apron expansion.

Anticipated NEPA Documentation Requirements:

Air Quality: This project would temporarily increase emissions from construction vehicles and equipment. Because U42 is in nonattainment for 2015 Ozone (O_3), Particulate Matter-2.5 ($PM_{2.5}$), and Sulfur Dioxide (SO_2), and in maintenance for PM_{10}, a construction emissions inventory (CEI) may be required.

Biological Resources: Federal and state threatened and endangered species have the potential to be found at U42 and the project would include ground disturbing activity on pervious ground. Therefore, a biological resources survey may be required for this project.

Climate: This project would result in a temporary increase in emissions from construction vehicles and equipment. An estimate of GHG emissions could be included in the construction emissions inventory.

Hazardous Materials, Solid Waste, and Pollution Prevention: This project would generate solid and/or hazardous waste during construction. Construction waste would be handled and disposed of according to federal, state, and local rules and regulations.

Historical, Architectural, Archaeological, and Cultural Resources: This project would include ground disturbing activity on pervious ground. Therefore, an archaeological survey may be required.

Water Resources: There are no floodplains in the area where this project would occur, and this project would not add new impervious surfaces to U42. However, SLCDA may still be responsible for updating its SWPPP and UPDES permit prior to the start of ground disturbing activities, and all construction activities would be required to comply with the provisions set forth in that permit.

NEPA Documentation Guidance: Utility and infrastructure projects can be processed with a CATEX under FAA Order 1050.1F, paragraph 5-6.4(w), provided there are no significant environmental impacts, and no extraordinary circumstances exist.

Extend Runway 16-34 and Taxiway B to 6,600' – Design/Construction (2035)

Project Description: The project involves extending Runway 16-34 and Taxiway B to a length of 6,600 feet, including NAVAID relocation, taxiway demolition, and new connector additions. It will be implemented through multiple projects over several years. Design alternatives for this project were thoroughly explored and are presented in detail in **Appendix G, Runway 16-34 Extension/Shift Design Alternatives**.

Anticipated NEPA Documentation Requirements:

Air Quality: This project would temporarily increase emissions from construction vehicles and equipment. Because U42 is in nonattainment for O_3, $PM_{2.5}$, and SO_2, and in maintenance for PM_{10}, a CEI may be required. An operational emissions inventory might be needed, as the project aims to increase the airport's capacity and establish U42 as a reliever airport for Salt Lake City International Airport.

Biological Resources: Federal and state threatened and endangered species have the potential to be found at U42 and the project would include ground disturbing activity on pervious ground. Therefore, a biological resources survey may be required for this project.

Climate: This project would result in a temporary increase in emissions from construction vehicles and equipment, and aircraft. An estimate of GHG emissions could be included in the construction and operational emissions inventories.

Hazardous Materials, Solid Waste, and Pollution Prevention: This project could generate solid and/or hazardous waste during construction. Waste would be handled and disposed of according to federal, state, and local rules and regulations.

Historical, Architectural, Archaeological, and Cultural Resources: This project would include ground disturbing activity on pervious ground. Therefore, an archaeological survey may be required for the NEPA documentation associated with this project.

Water Resources: This project would add impervious surfaces to U42. This increase in impervious surface would increase the volume of stormwater runoff; however, the existing stormwater drainage system is anticipated to be able to accommodate the increase in stormwater runoff. SLCDA would be responsible for updating its SWPPP and UPDES permit prior to the start of ground disturbing activities, and all construction activities would be required to comply with the provisions set forth in that permit.

NEPA Documentation Guidance: This project could be processed with a CATEX under FAA Order 1050.1F, paragraph 5-6.4(h), provided there are no significant environmental impacts, and no extraordinary circumstances arise. Specifically, the project can be processed with a CATEX if there would not be significant erosion, sedimentation, and would not result in a significant noise increase over noise sensitive areas or result in significant impacts on air quality. However, the project would be elevated to an EA or EIS if there are significant impacts, or public controversy. For the purposes of this Master Plan, an environmental assessment is included for planning and budgetary purposes.

NW Apron/Taxilane Expansion (Ph. III) – Design/Construction (2037)
Project Description: The third phase of apron and taxilane expansion on the north side of U42.

Anticipated NEPA Documentation Requirements:
Air Quality: This project would temporarily increase emissions from construction vehicles and equipment. Because U42 is in nonattainment for O_3, $PM_{2.5}$, and SO_2, and in maintenance for PM_{10}, a CEI may be required.

Biological Resources: Federal and state threatened and endangered species have the potential to be found at U42 and the project would include ground disturbing activity on pervious ground. Therefore, a biological resources survey may be required for this project.

Climate: This project would result in a temporary increase in emissions from construction vehicles and equipment. An estimate of GHG emissions could be included in the construction emissions inventory.

Hazardous Materials, Solid Waste, and Pollution Prevention: This project could generate solid and/or hazardous waste during construction. Waste would be handled and disposed of according to federal, state, and local rules and regulations.

Historical, Architectural, Archaeological, and Cultural Resources: This project would include ground disturbing activity on pervious ground. Therefore, an archaeological survey may be required for this project.

Water Resources: This project would add impervious surfaces to U42. This increase in impervious surface would increase the volume of stormwater runoff; however, the existing stormwater drainage system is anticipated to be able to accommodate the increase in stormwater runoff. SLCDA would be responsible for updating its SWPPP and UPDES permit prior to the start of ground disturbing activities, and all construction activities would be required to comply with the provisions set forth in that permit.

NEPA Documentation Guidance: Apron projects can be processed with a CATEX under FAA Order 1050.1F, paragraph 5-6.4(e), provided there are no significant environmental impacts, and no extraordinary circumstances arise.

NW Apron/Taxilane Expansion (Ph. IV) – Design/Construction (2038)
Project Description: The fourth phase of apron and taxilane expansion on the north side of U42.

Anticipated NEPA Documentation Requirements:
Air Quality: This project would temporarily increase emissions from construction vehicles and equipment. Because U42 is in nonattainment for O_3, $PM_{2.5}$, and SO_2, and in maintenance for PM_{10}, a CEI may be required.

Biological Resources: Federal and state threatened and endangered species have the potential to be found at U42 and the project would include ground disturbing activity on pervious ground. Therefore, a biological resources survey may be required for this project.

Climate: This project would result in a temporary increase in emissions from construction vehicles and equipment. An estimate of GHG emissions could be included in the construction emissions inventory.

Hazardous Materials, Solid Waste, and Pollution Prevention: This project could generate solid and/or hazardous waste during construction. Waste would be handled and disposed of according to federal, state, and local rules and regulations.

Historical, Architectural, Archaeological, and Cultural Resources: This project would include ground disturbing activity on pervious ground. Therefore, an archaeological survey may be required for this project.

Water Resources: This project would add impervious surfaces to U42. This increase in impervious surface would increase the volume of stormwater runoff; however, the existing stormwater drainage system is anticipated to be able to accommodate the increase in stormwater runoff. SLCDA would be responsible for updating its SWPPP and UPDES permit prior to the start of ground disturbing activities, and all construction activities would be required to comply with the provisions set forth in that permit.

NEPA Documentation Guidance: Apron and taxilane projects can be processed with a CATEX under FAA Order 1050.1F, paragraph 5-6.4(e), provided there are no significant environmental impacts, and no extraordinary circumstances arise.

NW Access Roadway/Auto Parking (Ph. II) - Design/Construction (2039)

Project Description: The second phase of design and construction of roadway access and auto parking in an area identified for hangar development. The project is situated in an area where there is an existing access road with deteriorating pavement, which links to the airport perimeter road.

Anticipated NEPA Documentation Requirements:

Air Quality: This project would temporarily increase emissions from construction vehicles and equipment. Because U42 is in nonattainment for O_3, $PM_{2.5}$, and SO_2, and in maintenance for PM_{10}, a CEI may be required.

Biological Resources: Federal and state threatened and endangered species have the potential to be found at U42 and the project would include ground disturbing activity on pervious ground. Therefore, a biological resources survey may be required for this project.

Climate: This project would result in a temporary increase in emissions from construction vehicles and equipment. An estimate of GHG emissions could be included in the construction emissions inventory.

Hazardous Materials, Solid Waste, and Pollution Prevention: This project could generate solid and/or hazardous waste during construction. Waste would be handled and disposed of according to federal, state, and local rules and regulations.

Historical, Architectural, Archaeological, and Cultural Resources: This project would include ground disturbing activity on pervious ground. Therefore, an archaeological survey may be required for this project.

Water Resources: This project would add impervious surfaces to U42. This increase in impervious surface would increase the volume of stormwater runoff; however, the existing stormwater drainage system is anticipated to be able to accommodate the increase in stormwater runoff. SLCDA would be responsible for updating its SWPPP and UPDES permit prior to the start of ground disturbing activities, and all construction activities would be required to comply with the provisions set forth in that permit.

NEPA Documentation Guidance: This project can be processed with a CATEX under FAA Order 1050.1F, paragraph 5-6.4(a) for the access roadway and paragraph 5-6.4(f) for the auto parking, provided there are no significant environmental impacts, and no extraordinary circumstances exist.

The following list outlines Airport Development Projects that might not require NEPA documentation because they potentially would not: 1.) Require federal approval of a change to the Airport Layout

Plan, 2.) Use federal funds, 3.) Are not aeronautical in nature, and/or 4.) Would not occur on Airport property originally purchased with federal funds:

- Project #6 (Airport Traffic Control Tower Siting Study)
- Project #30 (Airport Master Plan Update)

5.7 FINANCIAL FEASIBILITY AND IMPLEMENTATION SUMMARY

The development phasing and funding plan presented in this chapter indicates that funding will likely be available to plan, design, and construct the entirety of the projects identified in the recommended CIP. Implementation of these projects at U42 will allow SLCDA to make improvements to achieve their vision for U42. The development plan is grounded in financial realities and anticipates that South Valley Regional Airport will be able to meet its future financial obligations by both traditional AIP grant and local funding. A total of 33 capital projects have been identified in the recommended CIP, 12 of which are programmed in the near-term between 2024 and 2028.

To support the recommended CIP, shown in **Section 5.6, Airport Development Phasing and Funding Plan**, approximately 51 percent of the total program cost will require local funding, which amounts to $43 million for the 20-year planning period. The remaining 49 percent of the program cost is anticipated to be covered by federal grants with a small amount programmed for other sources, such as UDOA.

These projects will allow SLCDA to comply with FAA facility design and operational standards, accommodate anticipated and forecasted levels of facility demand, and meet the strategic goals for U42. This comprehensive plan will enable SLCDA to effectively continue development at U42 while aligning it with the long-term general aviation strategy pla

APPENDIX A

Environmental Inventory

TABLE OF CONTENTS

Appendix A Environmental Inventory

LIST OF TABLES

LIST OF FIGURES

A.1 INTRODUCTION

Federal Aviation Administration (FAA) Advisory Circular (AC) 150/5070-6B Change 2, *Airport Master Plans*, provides guidance for the preparation of master plans for airports. The purpose of considering environmental factors in airport master planning is to help the Airport Sponsor to thoroughly evaluate airport development alternatives and to provide information that will help expedite subsequent environmental processing. Future development plans at the South Valley Regional Airport (Airport) take into consideration environmental resources that are known to exist at and in the vicinity of the proposed development. Early identification of these environmental resources helps to avoid impeding development plans in the future. For a comprehensive description of the existing environmental conditions at the airport, environmental resource categories described in FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures,* were used to identify and describe potential environmental effects during this planning process.

This appendix provides an overview of resource categories defined in FAA Order 1050.1F, Chapter 4, as it applies to the environs at the airport. **Figure A-1** shows the airport property boundary and **Table A-1** provides a summary of the environmental resource categories that were reviewed at the airport.

FIGURE A-1
SOUTH VALLEY REGIONAL AIRPORT PROPERTY

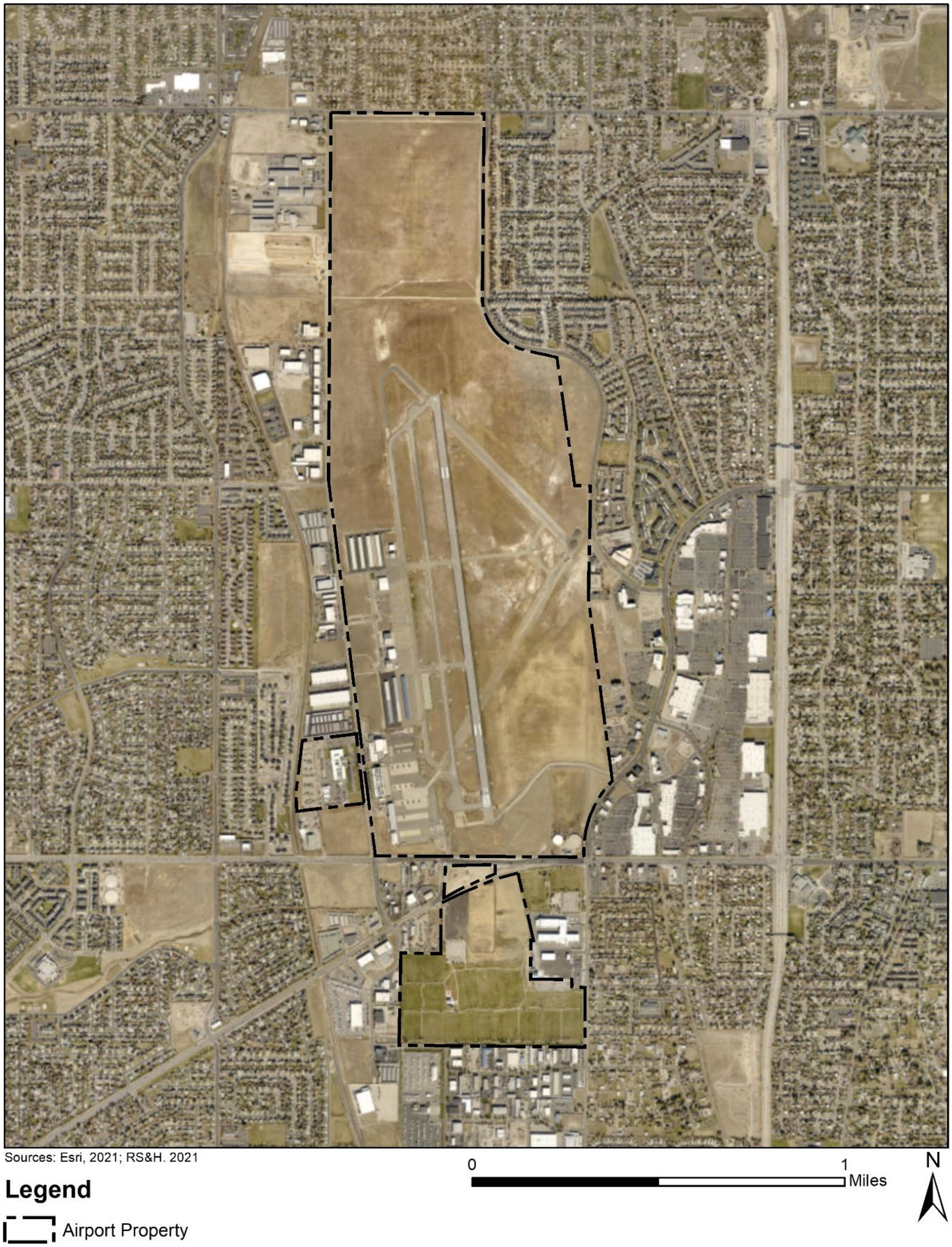


TABLE A-1
SUMMARY OF ENVIRONMENTAL RESOURCE CATEGORIES AT SOUTH VALLEY REGIONAL AIRPORT

Environmental Resource	Summary
Air Quality	The airport is in a "maintenance" area for Particulate Matter-10 (PM_{10}), and in a nonattainment area for Particulate Matter-2.5 ($PM_{2.5}$), Ozone (O_3), and Sulfur Dioxide (SO_2). See **Section A.2** for more details.
Biological Resources	Federal- and state-threatened and –endangered species, as well as migratory birds have the potential to occur at the airport. No critical habitat exists at the airport. See **Section A.3** for more details.
Climate	Greenhouse gas (GHG) emissions are produced at the airport. See **Section A.4** for more details.
Coastal Resources	The airport is not within a coastal zone and there are no Coastal Barrier Resource System (CBRS) segments within airport property. See **Section A.5** for more details.
Department of Transportation Act, Section 4(f)	No Department of Transportation Act, Section 4(f) properties exist at the airport. See **Section A.6** for more details.
Farmlands	The airport contains prime farmlands and farmlands of statewide importance; but is exempt from the Farmland Protection Policy Act (FPPA). See **Section A.7** for more details.
Hazardous Materials, Solid Waste, and Pollution Prevention	No Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) superfund sites exist at the airport. The airport is serviced by the Trans-Jordan Landfill. The airport has a Utah Pollutant Discharge Elimination System (UPDES) Multi Sector General Permit (MSGP), Spill Prevention and Countermeasure Plan (SPCC), as well as a Stormwater Prevention Plan (SWPP). See **Section A.8** for more details.
Historical, Architectural, Archaeological, and Cultural Resources	No historic resources are located within airport property. See **Section A.9** for more details.
Land Use	Existing land use around the airport includes low to medium density residential areas in all directions, light to medium industrial uses to the west and south, and professional offices and neighborhood commercial to the east. See **Section A.10** for more details.
Natural Resources and Energy Supply	Electricity and natural gas are supplied to the airport by Rocky Mountain Power and Dominion Energy, respectively. See **Section A.11** for more details.
Noise and Noise-Compatible Land Use	There are no noise-sensitive land uses within the updated DNL 65 dBA noise contours. See **Section A.12** for more details.
Socioeconomics, Environmental Justice, and Children's Environmental Health and Safety Risks	The airport is in West Jordan, Utah within Salt Lake County. The airport is in Census Tract 9801, Block Group 1 and Census Tract 1131.01, Block Group 2 as defined by the U.S. Census Bureau. There are minority and low-income populations within the airport census tracts. There are no schools or daycare facilities located close to the airport. See **Section A.13** for more details.

Visual Effects	Light emissions at the airport currently result from airfield, buildings, access roadway, and parking area lighting fixtures required for the safe and secure movement of people, vehicles, and aircraft. The visual resources and visual character of the airport currently matches that of a highly urbanized area. See **Section A.14** for more details.
Water Resources	According to the National Wetlands Inventory, there are no wetlands present at the airport. There are floodplains located within airport property. The airport is within the Barneys Creek-Jordan River watershed (HUC 12 ID: 160202040206). No surface waters, wild or scenic rivers, or rivers within the National River Inventory are present at the airport. See **Section A.15** for more details.

Source: RS&H, 2021

A.2 AIR QUALITY

The U.S. Environmental Protection Agency (USEPA) sets National Ambient Air Quality Standards (NAAQS) for specific air pollutants to protect public health and welfare through Section 109 of the Clean Air Act (CAA). The USEPA identifies the following six criteria air pollutants and has set NAAQS for each: Carbon Monoxide (CO), Lead (Pb), Nitrogen Dioxide (NO_2), 8-Hour Ozone (O_3), Particulate Matter (PM_{10} and $PM_{2.5}$), and Sulfur Dioxide (SO_2).

Areas found to be in violation of one or more NAAQS of these pollutants are classified as "nonattainment areas." States with nonattainment areas must develop a State Implementation Plan (SIP) demonstrating how the areas will be brought back into attainment of the NAAQS within designated timeframes. Areas where concentrations of the criteria pollutants are below (i.e., within) these threshold levels are classified as "attainment areas." Areas with prior nonattainment status that have since transitioned to attainment are known as "maintenance areas."

The airport is in Salt Lake County, which according to the USEPA is in a "maintenance" area for PM_{10}, and in a "nonattainment area" for $PM_{2.5}$, O_3, and SO_2.[1]

A.3 BIOLOGICAL RESOURCES

Biological resources include terrestrial and aquatic plant and animal species; game and non-game species; special status species; and environmentally sensitive or critical habitats. The following are federal laws, regulations, Executive Orders (EOs), and guidance that protect biotic communities:

- Endangered Species Act (ESA) (16 U.S.C. §§ 1531-1544);
- Bald and Golden Eagle Protection Act (16 U.S.C. §§ 668 et seq.);
- Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. § 1801 et seq.);

[1] U.S. Environmental Protection Agency, Air Quality Green Book, Utah. Accessed: https://www3.epa.gov/airquality/greenbook/anayo_ut.html, November 2021.

- Fish and Wildlife Coordination Act (16 U.S.C. § 661-667d);
- Executive Order (EO) 13112, *Invasive Species* (64 FR 6183);
- Marine Mammal Protection Act (16 U.S.C. § 1361 et seq.);
- Migratory Bird Treaty Act (MBTA) (16 U.S.C. §§ 703 et seq.);
- EO 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds* (66 FR 3853);
- Council on Environmental Quality (CEQ) Guidance on Incorporating Biodiversity Considerations into Environmental Impact Analysis under NEPA; and
- Memorandum of Understanding to Foster the Ecosystem Approach.

According to the U.S. Fish and Wildlife Service (USFWS) Information for Planning and Conservation (IPaC) and the Utah Division of Wildlife Resources, there is one federally listed threatened species, the June Sucker (*Chasmistes liorus*) and one federal candidate species, the Monarch Butterfly (*Danaus plexippus*) with the potential to occur at the airport[2] and 17 state-listed species with the potential to occur in Salt Lake County.[3] However, due to the high level of development and disturbance within airport property, the airport does not provide suitable habitat for any protected species. Additionally, according to IPaC, the airport does not contain any critical habitat.[4]

The Migratory Bird Treaty Act (MBTA) prohibits the taking of any migratory birds, their parts, nests, or eggs except as permitted by regulations, and does not require intent to be proven. According to the USFWS IPaC, there is the potential for seven migratory bird species to be found at the airport.[5]

A.4 CLIMATE

Relevant federal laws, regulations, and EOs that relate to climate include:

- CAA (42 U.S.C. §§ 7408, 7521, 7571, 7661 et seq.);
- EO 13514, *Federal Leadership in Environment Energy and Economic Performance* (74 FR 52117);
- EO 13653, *Preparing the United States for the Impacts of Climate Change* (78 FR 66817); and
- EO 13693, *Planning for Federal Sustainability* (80 FR 15869).

Greenhouse gases (GHG) are gases that trap heat in the earth's atmosphere. Both naturally occurring and man-made GHGs primarily include water vapor, carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. Activities that require fuel or power are the primary stationary sources of GHGs at airports. Aircraft and ground access vehicles that are not under the control of an airport typically generate more GHG emissions than airport-controlled sources.

[2] U.S. Fish and Wildlife Service, Information for Planning and Consultation. Accessed: https://ecos.fws.gov/ipac/location/2XEDY7722ZA7ZBWRF3GKSPUNCY/resources#endangered-species, November 2021.

[3] Utah Division of Wildlife Resources, Utah's Wildlife Action Plan, Selected data sets from the Wildlife Action Plan, County-by-county.csv files. Accessed: https://wildlife.utah.gov/discover/wildlife-action-plan.html, November 2021.

[4] U.S. Fish and Wildlife Service, Information for Planning and Consultation. Accessed: https://ecos.fws.gov/ipac/location/2XEDY7722ZA7ZBWRF3GKSPUNCY/resources#endangered-species, November 2021.

[5] U.S. Fish and Wildlife Service, Information for Planning and Consultation. Accessed: https://ecos.fws.gov/ipac/location/2XEDY7722ZA7ZBWRF3GKSPUNCY/resources#migratory-birds, November 2021

Research has shown there is a direct correlation between fuel combustion and GHG emissions. In terms of U.S. contributions, the Government Accountability Office (GAO) reports that "domestic aviation contributes about three percent of total carbon dioxide emissions, according to EPA data, "compared with other industrial sources, including the remainder of the transportation sector (20%) and power generation (41%).[6] The International Civil Aviation Organization (ICAO) estimates that GHG emissions from aircraft account for roughly three percent of all anthropogenic GHG emissions globally.[7]

A.5 COASTAL RESOURCES

The primary statutes, regulations, and EOs that protect coastal resources include:

- Coastal Barrier Resources Act (16 U.S.C. § 3501 et seq.);
- Coastal Zone Management Act (CZMA) (16 U.S.C. § 1451-1466);
- National Marine Sanctuaries Act (16 U.S.C. §1431 et seq.);
- EO 13089, *Coral Reef Protection* (63 FR 32701); and
- EO 13547, *Stewardship of the Ocean, Our Coasts, and the Great Lakes* (75 FR 43021-43027).

Utah is not a coastal state. As such, the airport is not within a coastal zone. Additionally, there are no Coastal Barrier Resource System (CBRS) segments within airport property.[8] The closest CBRS segment is over 1,000 miles northeast of the airport.

A.6 DEPARTMENT OF TRANSPORTATION ACT, SECTION 4(F)

Relevant federal laws, regulations, and EOs that protect Section 4(f) resources include:

- U.S. Department of Transportation (USDOT) Act, Section 4(f) (49 U.S.C. § 303.);
- Land and Water Conservation Fund Act of 1965 (16 U.S.C. §§ 4601-4604 et seq.);
- Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) – Section 6009 (49 U.S.C. § 303.); and
- U.S. Department of Defense Reauthorization (Public Law (P.L.) 105-185, Division A, Title X, Section 1079, November 18, 1997, 111 Stat. 1916).

The USDOT Act, Section 4(f) (Section 4(f)) provides that no project that requires the use of any land from a public park or recreational area, wildlife and waterfowl refuge, or historic site be approved by the Secretary of Transportation unless there is no viable alternative and provisions to minimize any possible harm are included in the planning. Similarly, the Land and Water Conservation Fund (LWCF) Act prevents the conversion of lands purchased or developed with Land and Water Conservation funds to non-recreation uses, unless the Secretary of the Interior, through the National Park Service, approves the

[6] U.S. Government Accountability Office, Report to Congressional Committees, *Aviation and Climate Change*, June 2009. Accessed: https://www.gao.gov/products/gao-09-554, November 2021.

[7] Melrose, Alan, *European ATM and Climate Adaptation: A Scoping Study*, ICAO Environmental Report, 2010. Accessed: http://www.icao.int/environmental-protection/Documents/EnvironmentReport-2010/ICAO_EnvReport10-Ch6_en.pdf, November 2021.

[8] U.S. Fish and Wildlife Service, Coastal Barrier Resources System Mapper. Accessed: https://www.fws.gov/cbra/Maps/Mapper.html, November 2021.

conversion. Conversion may only be approved if it is consistent with the comprehensive statewide outdoor recreation plan when the approval occurs. Additionally, the converted property must be replaced with other recreation property of reasonably equivalent usefulness and location, and at least equal fair market value.

There are no Section 4(f) resources at the airport. The closest Section 6(f) property is West Jordan Park, located about two miles southwest of the airport.[9]

[9] Land Water Conservation Fund, Projects Funded by LWFC. Accessed: https://lwcf.tplgis.org/mappast/, November 2021.

A.7 FARMLANDS

The following statutes, regulations, and guidance pertain to farmlands:

- Farmland Protection Policy Act (FPPA) (7 U.S.C. §§ 4201-4209); and
- CEQ Memorandum on the Analysis of Impacts on Prime or Unique Agricultural Lands in Implementing the National Environmental Policy Act (45 FR 59189).

The FPPA of 1981 regulates federal actions that have the potential to convert farmland to non-agricultural uses. The FAA requires consideration of "important farmlands," which it defines to include "all pasturelands, croplands, and forests considered to be prime, unique, or statewide or local important lands."[10]

According to the Natural Resource Conservation Service (NRCS), portions of the airport contain soil rated as prime farmland and farmland of statewide importance, as defined above.[11] However, according to Section 523.10(B) of the FPPA, lands identified as urbanized areas by the U.S. Census Bureau are not subject to the provisions of the FPPA. The airport is in an urbanized area[12] and therefore, the airport is not subject to the FPPA.

A.8 HAZARDOUS MATERIALS, SOLID WASTE, AND POLLUTION PREVENTION

Federal laws, regulations, and EOs that relate to hazardous materials, solid waste, and pollution prevention include:

- Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (42 U.S.C. §§ 9601-9765);
- Emergency Planning and Community Right to Know Act (42 U.S.C. §§ 11001-11050);
- Federal Facilities Compliance Act (42 U.S.C. § 6961);
- Hazardous Materials Transportation Act (49 U.S.C. §§ 5101-5128);
- Oil Pollution Prevention Act of 1990 (33 U.S.C. §§ 2701-2762);
- Pollution Prevention Act (42 U.S.C. §§ 13101-13109);
- Toxic Substances Control Act (TSCA) (15 U.S.C. §§ 2601-2697);
- Resource Conservation and Recovery Act (RCRA) (42 U.S.C. §§ 6901-6992k);
- EO 12088, *Federal Compliance with Pollution Control Standards* (43 FR 47707);
- EO 12580, *Superfund Implementation* (52 FR 2923), (63 CFR 45871), and (68 CFR 37691);
- EO 13423, *Strengthening Federal Environmental, Energy, and Transportation Management* (72 FR 3919); and

[10] Federal Aviation Administration, Order 1050.1F Desk Reference, July 2015. Accessed: November 2021.
[11] Natural Resources Conservation Service, Web Soil Survey. Accessed: https://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx, November 2021.
[12] U.S. Census Bureau, Urbanized Area Reference Map, Salt Lake City – West Valley, UT. Accessed: https://www2.census.gov/geo/maps/dc10map/UAUC_RefMap/ua/ua78499_salt_lake_city--west_valley_city_ut/DC10UA78499.pdf, November 2021.

- EO 13514, *Federal Leadership in Environmental, Energy, and Economic Performance* (74 FR 52117).

A.8.1 Hazardous Materials

In a regulatory context, the terms "hazardous wastes," "hazardous substances," and "hazardous materials" have very precise and technical meanings:

Hazardous Wastes. Subpart C of the RCRA defines hazardous wastes (sometimes called characteristic wastes) as solid wastes that are ignitable, corrosive, reactive, or toxic. Examples include waste oil, mercury, lead, or battery acid. In addition, Subpart D of the RCRA contains a list of specific types of solid wastes that the USEPA has deemed hazardous (sometimes called listed wastes). Examples include degreasing solvents, petroleum refining waste, or pharmaceutical waste.

Hazardous Substances. Section 101(14) of the CERCLA defines hazardous substances broadly and includes hazardous wastes, hazardous air pollutants, or hazardous substances designated as such under the Clean Water Act and TSCA and elements, compounds, mixtures, solutions, or substances listed in 40 CFR Part 302 that pose substantial harm to human health or environmental resources. Pursuant to the CERCLA, hazardous substances do not include any petroleum or natural gas substances and materials. Examples include ammonia, bromine, chlorine, or sodium cyanide.

Hazardous Materials. According to 49 CFR Part 172, hazardous materials are any substances commercially transported that pose unreasonable risk to public health, safety, and property. These substances include hazardous wastes and hazardous substances, as well as petroleum and natural gas substances and materials. As a result, hazardous materials represent hazardous wastes and substances. Examples include household batteries, gasoline, or fertilizers.

Aircraft fuel constitutes the largest quantity of hazardous substances stored and consumed at the airport. Fuel is stored at the airport in above ground storage tanks.

There are no CERCLA superfund sites on airport property. The closest superfund site to airport property, Midvale Slag (Site EPA ID: UTD081834277), is located four miles east of the Airport.[13]

A.8.2 Solid Waste

Solid waste generated at the airport is disposed of at the Trans-Jordan Landfill, located five miles southwest of the airport. The capacity of this landfill was evaluated in 2013 and was determined to have a remaining capacity of 18 years at that time.[14]

---

[13] U.S. Environmental Protection Agency, Superfund, National Priorities List, Colorado. Accessed: https://www.epa.gov/superfund/search-superfund-sites-where-you-live#map, November 2021.

[14] Utah Department of Environmental Quality, Waste Management & Radiation Control, Trans-Joran Cities Solid Waste Facility fact Sheet: Class I Landfill. Accessed: https://deq.utah.gov/businesses-facilities/trans-jordan-cities-solid-waste-facility-fact-sheet-class-i-landfill, November 2021.

A.8.3 Pollution Prevention

The airport has a Utah Pollutant Discharge Elimination System (UPDES) Multi Sector General Permit (MSGP) as well as a Stormwater Pollution Prevention Plan (SWPPP), as required by the MSGP. The airport also has a Spill Prevention and Countermeasure Plan (SPCC), which was prepared in September 2016.

A.9 HISTORICAL, ARCHITECTURAL, ARCHAEOLOGICAL, AND CULTURAL RESOURCES

The National Historic Preservation Act (NHPA) (54 U.S.C. §§300101 et seq.) establishes the Advisory Council on Historic Preservation (ACHP). The ACHP oversees federal agency compliance with the NHPA. The NHPA also established the National Register of Historic Places (NRHP) that the National Park Service (NPS) oversees. Other applicable statues and EOs include:

- American Indian Religious Freedom Act (42 U.S.C. § 1996);
- Antiquities Act of 1906 (54 U.S.C. §§320301-320303);
- Archeological and Historic Preservation Act (54 U.S.C. §§ 312501-312508);
- Archeological Resources Act (16 U.S.C. §§ 470aa-470mm);
- USDOT Act, Section 4(f) (49 U.S.C. § 303);
- Historic Sites Act of 1935 (16 U.S.C. §§ 461-467);
- Native American Graves Protection and Repatriation Act (25 U.S.C. §§ 3001-3013);
- Public Building Cooperative Use Act (40 U.S.C. §§ 601a, 601a1, 606, 611c, and 612a4);
- EO 11593, *Protection and Enhancement of the Cultural Environment* (36 FR 8921);
- EO 13006, *Locating Federal Facilities on Historic Properties in Our Nation's Central Cities* (61 FR 26071);
- EO 13007, *Indian Sacred Sites* (61 FR 26771);
- EO 13175, *Consultation and Coordination with Indian Tribal Governments* (65 FR 67249);
- Executive Memorandum, Government-to-Government Relations with Native American Tribal Governments (April 29, 1994);
- Executive Memorandum on Tribal Consultation (Nov. 5, 2009) (65 FR 67249); and
- USDOT Order 5650.1, *Protection and Enhancement of the Cultural Environment.*

There are no known historical, architectural, archaeological, cultural resources located on airport property. The closest National Register of Historic Places (NRHP) resource is the Mclachlan, William, Farmhouse located three miles northeast of the airport.[15]

A.10 LAND USE

Various statutes, regulations, and EOs relevant to land use include:

- Airport and Airway Improvement Act of 1982, and subsequent amendments (49 U.S.C. 47107(a)(10));
- Airport Improvement Program (49 U.S.C. 47106(a)(1);

[15] National Park Service, National Register of Historic Places. Accessed: https://www.nps.gov/maps/full.html?mapId=7ad17cc9-b808-4ff8-a2f9-a99909164466, November 2021.

- Airport Safety, Protection of Environment, Criteria for Municipal Solid Waste Landfills (40 CFR § 258.10); and
- State and local regulations.

Most of airport property is located within Salt Lake County and is zoned as an Airport Special Purpose Zone. Additionally, a small portion of airport property south of 7800 S Street contains the Utah Youth Sports Complex and is zoned as public facilities.[16] Land surrounding the airport is zoned as light manufacturing, high family residential, community commercial, single-family residential, professional office, low density single family residential, public facilities, and manufacturing park.

Existing land use around the airport includes low to medium density residential areas in all directions, light to medium industrial uses to the west and south, and professional offices and neighborhood commercial to the east (see **Figure A-2**). Additionally, an Airport Overlay Zone (see **Figure A-3**) surrounds the airport. Within the Airport Overlay Zone, land uses are either permitted or conditional.[17] Permitted uses are those that are allowed outright, provided they comply with all other requirements of all other zoning regulations, while conditional uses are those that must be approved by the Planning Commission. As shown in **Figure A-3**, there are four Airport Overlay Zones, which represent restrictive designations to protect the surrounding airspace of the airport, including aircraft and people, as well as support compatible land development. See **Section 1.5.1** of this Airport Master Plan for more details.

A.11 NATURAL RESOURCES AND ENERGY SUPPLY

Statutes and EOs that are relevant to natural resources and energy supply include:

- Energy Independence and Security Act (42 U.S.C. § 17001 et seq.);
- Energy Policy Act (42 U.S.C. § 15801 et seq.);
- EO 13423, *Strengthening Federal Environmental, Energy, and Transportation Management* (72 FR 3919); and
- EO 13514, *Federal Leadership in Environmental, Energy, and Economic Performance* (74 FR 52117).

Natural resources (e.g., water, asphalt, aggregate, etc.) and energy use (e.g., fuel, electricity, etc.) at an airport is a function of the needs of aircraft, support vehicles, airport facilities, support structures, and terminal facilities. Energy use at the airport is primarily in the form of electricity required for the operation of airport-related facilities (e.g., FBO, hangars, airfield lighting) and fuel for aircraft, aircraft support vehicles/equipment, and airport maintenance vehicles/equipment. Rocky Mountain Power supplies electricity and Dominion Energy Utah supplies natural gas to the airport.[18]

[16] City of West Jordan, Planning and Zoning. Accessed: https://gis.wjordan.com/city-info/, November 2021.
[17] City of West Jordan, Code of Ordinances, 13-6A-4. Accessed: https://codelibrary.amlegal.com/codes/westjordanut/latest/westjordan_ut/0-0-0-12251, November 2021.
[18] Utah Department of Commerce, Office of Consumer Services, Utah Public Utilities – Learn about your Service Provider. Accessed: https://ocs.utah.gov/utilities.html, November 2021

FIGURE A-2
LAND USE AT SOUTH VALLEY REGIONAL AIRPORT

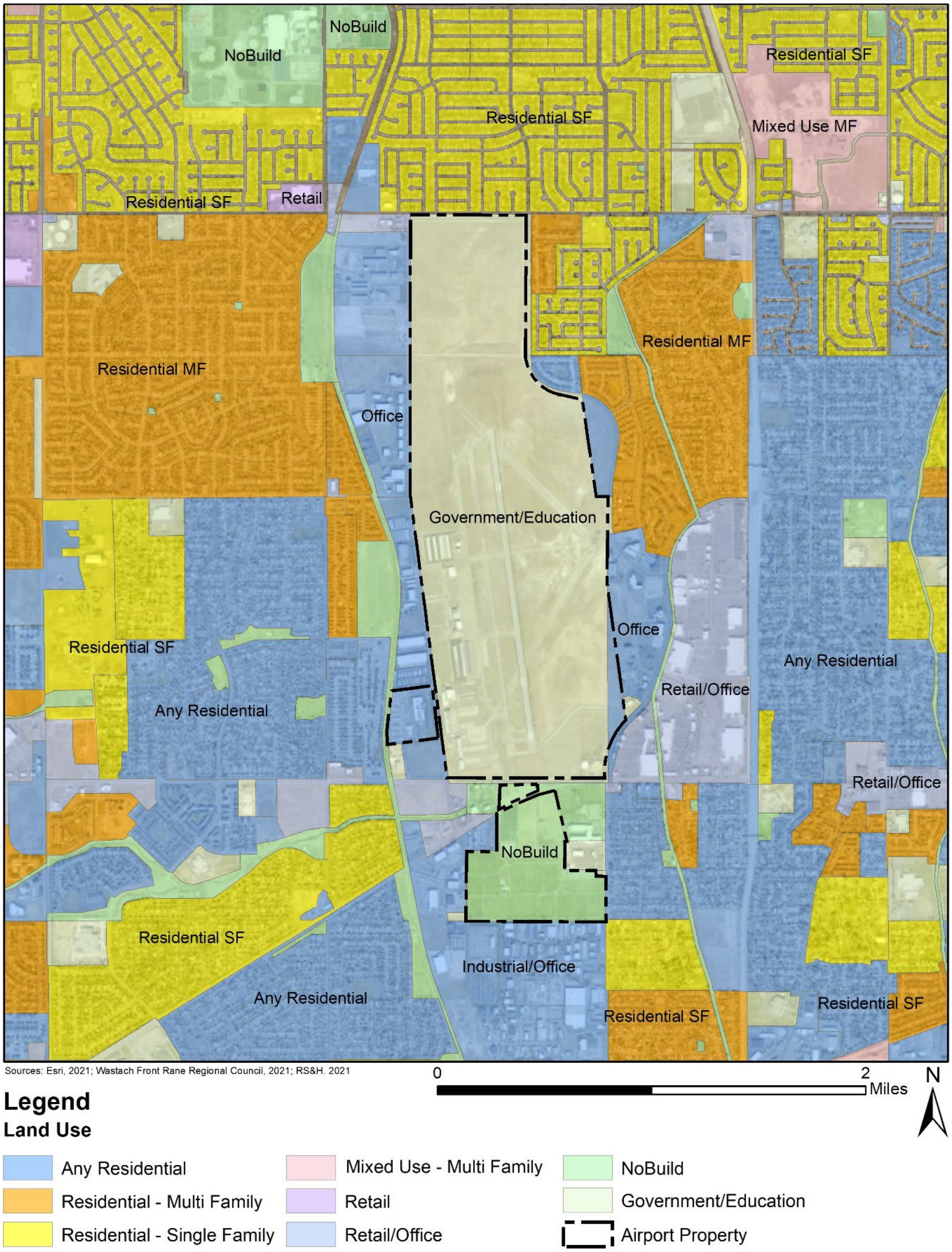
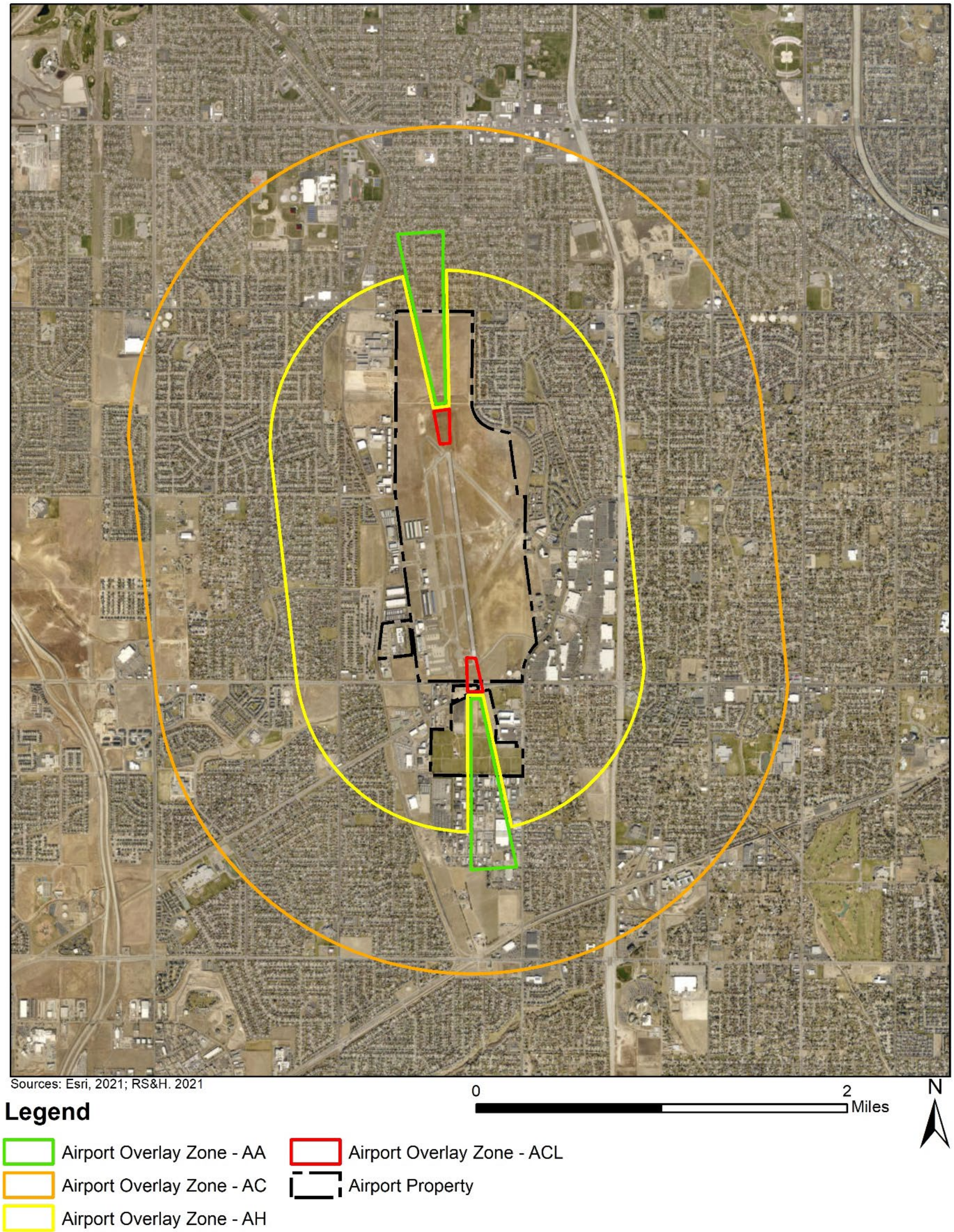


FIGURE A-3
AIRPORT OVERLAY ZONES AT SOUTH VALLEY REGIONAL AIRPORT



A.12 NOISE AND NOISE-COMPATIBLE LAND USE

Statutes and EOs relevant to noise and noise-compatible land use include:

- The Control and Abatement of Aircraft Noise and Sonic Boom Act of 1968 (49 U.S.C. § 44715);
- The Noise Control Act of 1972 (42 U.S.C. §§ 4901-4918);
- Aviation Safety and Noise Abatement Act of 1979 (49 U.S.C. § 47501 et seq.);
- Airport and Airway Improvement Act of 1982 (49 U.S.C. § 47101 et seq.);
- Airport Noise and Capacity Act of 1990 (49 U.S.C. §§ 47521-47534, §§ 106(g);
- Section 506 of the FAA Modernization and Reform Act of 2012, *Prohibition on Operating Certain Aircraft Weighting 75,000 Pounds of Less Not Complying with Stage 3 Noise Levels* (49 U.S.C. §§ 47534); and
- State and local noise laws and ordinances.

Day-Night Sound Level (DNL) is based on sound levels measured in relative intensity of sound, (decibels or dB) on the "A-weighted scale" or dBA over a time-weighted average normalized to a 24-hour period.[19] DNL has been widely accepted as the best available method to describe aircraft noise exposure. The USEPA identifies the DNL as the principal metric for aircraft noise analysis. The FAA requires DNL as the noise descriptor for use in aircraft noise exposure analysis and noise compatibility planning. DNL levels are commonly shown as lines of equal noise exposure, similar to terrain contour maps, referred to as noise contours. All residential areas are considered compatible with cumulative noise level below DNL 65 dBA.

There are no noise-sensitive land uses within the updated DNL 65 dBA noise contours. See **Section A.12** for more details. However, as **Section A.10**, **Land Use** describes, there are residential land uses near the airport. These areas may be sensitive to aircraft noise associated with the airport.

A.13 SOCIOECONOMIC, ENVIRONMENTAL JUSTICE, AND CHILDREN'S ENVIRONMENTAL HEALTH AND SAFETY RISKS

The primary considerations of socioeconomics analysis are the economic activity, employment, income, population, housing, public services, and social conditions of the area. The Uniform Relocation Assistance and Real Property Acquisitions Policy Act of 1970 (42 U.S.C. § 61 et seq.), implemented by 49 CFR Part 24, is the primary statute related to socioeconomic impacts. Statutes, EOs, memorandums, and guidance that are relevant to environmental justice and children's environmental health and safety risks include:

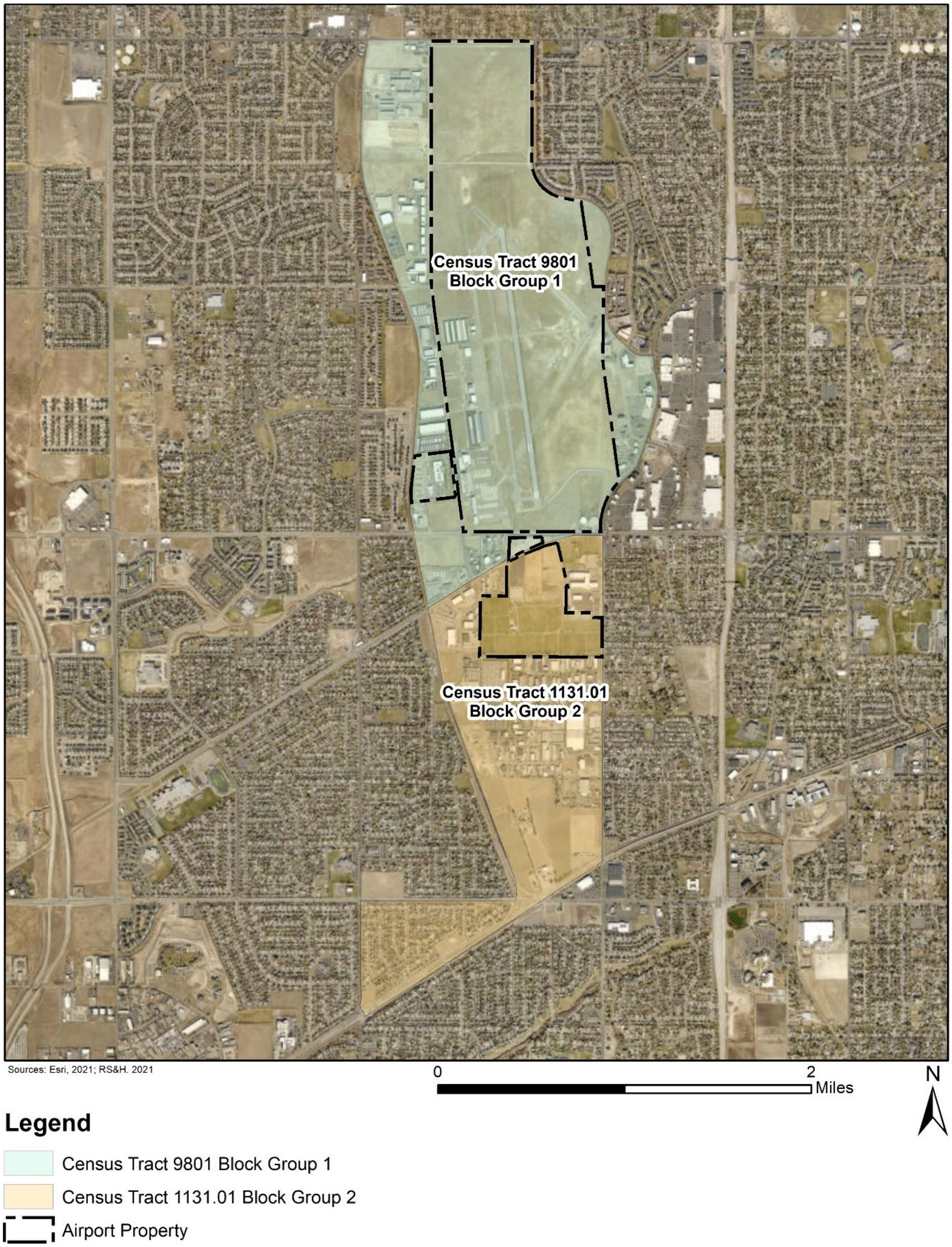
- Title VI of the Civil Rights Act, as amended (42 U.S.C. §§ 2000d-2000d-7);
- EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* (59 FR 7629);
- Memorandum of Understanding on Environmental Justice and EO 12898;

[19] Federal Aviation Administration, *Technical Support for Day/Night Average Sound Level (DNL) Replacement Metric Research, Final Report*, June 14, 2011.

- USDOT Order 5610.2(a), Environmental Justice in Minority and Low-Income Populations (77 FR 27534);
- CEQ Guidance: *Environmental Justice: Guidance Under the National Environmental Policy Act*;
- Revised USDOT Environmental Justice Strategy (77 FR 18879); and
- EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks* (62 FR 19885).

The airport is in West Jordan, Utah which is within Salt Lake County. The airport is located within two U.S. census tracts; Census Tract 9801, Block Group 1 and Census Tract 1131.01, Block Group 2 (see **Figure A-4**). Airport property does not include any residences. Data for the following sections was taken from the U.S. Census American Community Survey (ACS) 5-Year Estimates from 2019.

FIGURE A-4
SOUTH VALLEY REGIONAL AIRPORT CENSUS TRACTS



A.13.1 Socioeconomics

A.13.1.1 Population and Housing

Table A-2 compares population and housing data for airport census tracts compared to West Jordan, Salt Lake County, and the state of Utah, which were included for comparison purposes. The population was the lowest in the airport census tracts and highest for the state. Housing occupancy for the airport census tracts are generally similar when compared to West Jordan, the county and state.

TABLE A-2
POPULATION AND HOUSING CHARACTERISTICS

Characteristic	Airport Census Tracts/a/	West Jordan	Salt Lake County	Utah
Total Population	947	116,480	1,160,437	3,205,958
Total Households	320	35,366	374,820	977,313
Average Persons Per Household	N/A	3.28	2.99	3.12
Percent Housing Occupied	99.3%	96.7%	94.0%	88.7%

Note: /a/ - Airport Census Tracts include Census Tract 9801, Block Group 1 and Census Tract 1131.01, Block Group 2
Source: U.S. Census Bureau, 2019 ACS 5-Year Estimate

A.13.1.2 Employment

Table A-3 compares employment rates for Airport census tracts compared to West Jordan, Salt Lake County, and the state of Utah. Unemployment in Airport census tracts is higher (9.17%) when compared to West Jordan (3.0%), Salt Lake County (2.5%), and Utah (3.6%).

TABLE A-3
EMPLOYMENT CHARACTERISTICS

Characteristic	Airport Census Tracts/a/	West Jordan	Salt Lake County	Utah
Percent Unemployed	9.2%	3.0%	2.5%	3.6%

Note: /a/ - Airport Census Tracts include Census Tract 9801, Block Group 1 and Census Tract 1131.01, Block Group 2
Source: U.S. Census Bureau, 2019 ACS 5-Year Estimate

A.13.1.3 Public Services

The West Jordan Fire Department, with a total of four fire stations located in West Jordan, services the airport.[20] The West Jordan Police Department provides police services to the airport and surrounding community with the closest substation located about seven miles northeast of the airport.[21] Health care

[20] City of West Jordan, Utah, West Jordan Fire Department. Accessed: https://www.westjordan.utah.gov/fire/fire/about-us-west-jordan-fire-department/https://www.westjordan.utah.gov/fire/fire/about-us-west-jordan-fire-department/, November 2021.
[21] City of West Jordan, West Jordan Police Department. Accessed: https://www.westjordan.utah.gov/police/, November 2021.

services are available at the Jordan Valley Medical Center, located less than one mile southeast of the airport.

A.13.2 Environmental Justice

Table A-4 shows environmental justice characteristics of the airport census tracts compared to West Jordan, Salt Lake County, and the state of Utah. As shown, the airport census tracts have the lowest percentage of the population living below the poverty line (3.0%) compared to West Jordan (6.6%), Salt Lake County (9.0%) and Utah (8.9%). The airport census tracts have a larger minority population (22.1%) when compared to West Jordan (11.6%), Salt Lake County (12.9%) and Utah (9.4%).

TABLE A-4
ENVIRONMENTAL JUSTICE CHARACTERISTICS

Characteristic	Airport Census Tracts[/a/]	West Jordan	Salt Lake County	Utah
Precent Minority	22.1%	11.6%	12.9%	9.4%
Percent Living Below Poverty Line	3.0%	6.6%	9.0%	8.9%

Note: /a/ - Airport Census Tracts include Census Tract 9801, Block Group 1 and Census Tract 1131.01, Block Group 2
Source: U.S. Census Bureau, 2019 ACS 5-Year Estimate

A.13.3 Children's Health and Safety

There are no schools, daycares, or childcare facilities on airport property. There are schools, daycares, and childcare facilities located in West Jordan in the vicinity of the airport; however, these facilities all fall outside of the DNL 65 dBA noise contour. The closest school to the airport is Westland Elementary School, which is located over one mile east of the airport. **Table A-5** shows children age distribution of the airport census tracts compared to West Jordan, Salt Lake County, and the state of Utah.

TABLE A-5
CHILDREN AGE DISTRIBUTION

Child Age Group	Airport Census Tracts [/a/]	West Jordan	Salt Lake County	Utah
Population under 3	48	5,163	50,968	148,800
Population ages 3-5	6	4,975	52,612	152,511
Population ages 6-11	39	12,377	106,153	317,151
Population ages 12-17	124	12,075	100,969	302,044
Total	217	34,590	310,702	920,506

Note: /a/ - Airport Census Tracts include Census Tract 9801, Block Group 1 and Census Tract 1131.01, Block Group 2
Source: U.S. Census Bureau, 2019 ACS 5-Year Estimate

A.14 VISUAL EFFECTS

There is no federal statutory or regulatory requirement for adverse effects resulting from light emissions or visual impacts. FAA Order 1050.1F describes factors to consider within light emissions and visual resources/visual character.

A.14.1 Light Emissions

Various lighting features currently illuminate portions of the airport, such as buildings, access roadways, and automobile parking areas, for the safe and secure movement of people and vehicles (e.g., aircraft, passenger cars, etc.).

A.14.2 Visual Resources and Visual Character

Structures at the airport include, but are not limited to, fixed base operators, hangars, and maintenance buildings. Residential areas surrounding the airport to the northeast, north, and west have a line-of-sight view of the airport. The airport is developed with visual character that is consistent with that of an urbanized area, such as West Jordan.

A.15 WATER RESOURCES

Water resources include wetlands, floodplains, surface waters, groundwater, and wild and scenic rivers. These resources typically function as a single, integrated natural system that are important in providing drinking water in supporting recreation, transportation and commerce, industry, agriculture, and aquatic ecosystems.

A.15.1 Wetlands

Statutes and EOs that are relevant to wetlands include:

- EO 11990, *Protection of Wetlands* (42 FR 26961);
- Clean Water Act (33 U.S.C. §§ 1251-1387);
- Fish and Wildlife Coordination Act (16 U.S.C. § 661-667d) ; and
- USDOT Order 6660.1A, *Preservation of the Nation's Wetlands*.

The Clean Water Act defines wetlands as "…those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions."[22] Wetlands have three necessary characteristics:

- Water: presence of water at or near the ground surface for a part of the year;
- Hydrophytic Plants: a preponderance of plants adapted to wet conditions; and
- Hydric Soils: soil developed under wet conditions.

According to the USFWS National Wetland Inventory (NWI) there are no wetlands present at the airport.[23]

A.15.2 Floodplains

Statues and EOs that are relevant to floodplains include:

- EO 11988, *Floodplain Management* (42 FR 26951);

[22] U.S. Environmental Protection Agency, Section 404 of the Clean Water Act. Accessed: https://www.epa.gov/cwa-404/section-404-clean-water-act-how-wetlands-are-defined-and-identified, November 2021.

[23] U.S. Fish and Wildlife Service, National Wetlands Inventory, Surface Water and Wetlands. Accessed: https://www.fws.gov/wetlands/data/mapper.HTML, November 2021.

- National Flood Insurance Act (42 U.S.C. § 4001 et seq.); and
- U.S. Department of Transportation (USDOT) Order 5650.2, *Floodplain Management and Protection*.

Floodplains are "…lowland areas adjoining inland and coastal water which are periodically inundated by flood waters, including flood-prone area of offshore islands." Floodplains are often referred to in terms of the 100-year floodplain, rather, the one percent chance of a flood occurring in any given year. The USDOT Order 5650.2 outlines the policies and procedures for ensuring that proper consideration is given to the avoidance and mitigation of adverse floodplain impacts in agency actions, planning programs, and budget requests. Therefore, the objective is to avoid, to the extent practicable, any impacts within the 100-year floodplain.

According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM) encompassing the airport, there are floodplains present at the airport (see **Figure A-5**).[24]

A.15.3 Surface Waters

Statues that are relevant to surface water include:

- Clean Water Act (33 U.S.C. §§ 1251-1387);
- Fish and Wildlife Coordination Act (16 U.S.C. § 661-667d); and
- Rivers and Harbors Act (33 U.S.C. § 401 and 403).

Surface waters include areas where water collects on the surface of the ground, such as streams, rivers, lakes, ponds, estuaries, and oceans. According to USEPA NEPAssist, there are no surface waters present at the airport.[25]

A.15.4 Groundwater

Statues relevant to groundwater include:

- Safe Drinking Water Act (42 U.S.C. §§ 300(f)-300j-26).

Groundwater is described as the "subsurface water that occupies the space between sand, clay, and rock formations."[26] The airport is within the Barneys Creek-Jordan River watershed (HUC 12 ID: 160202040206).[27]

---

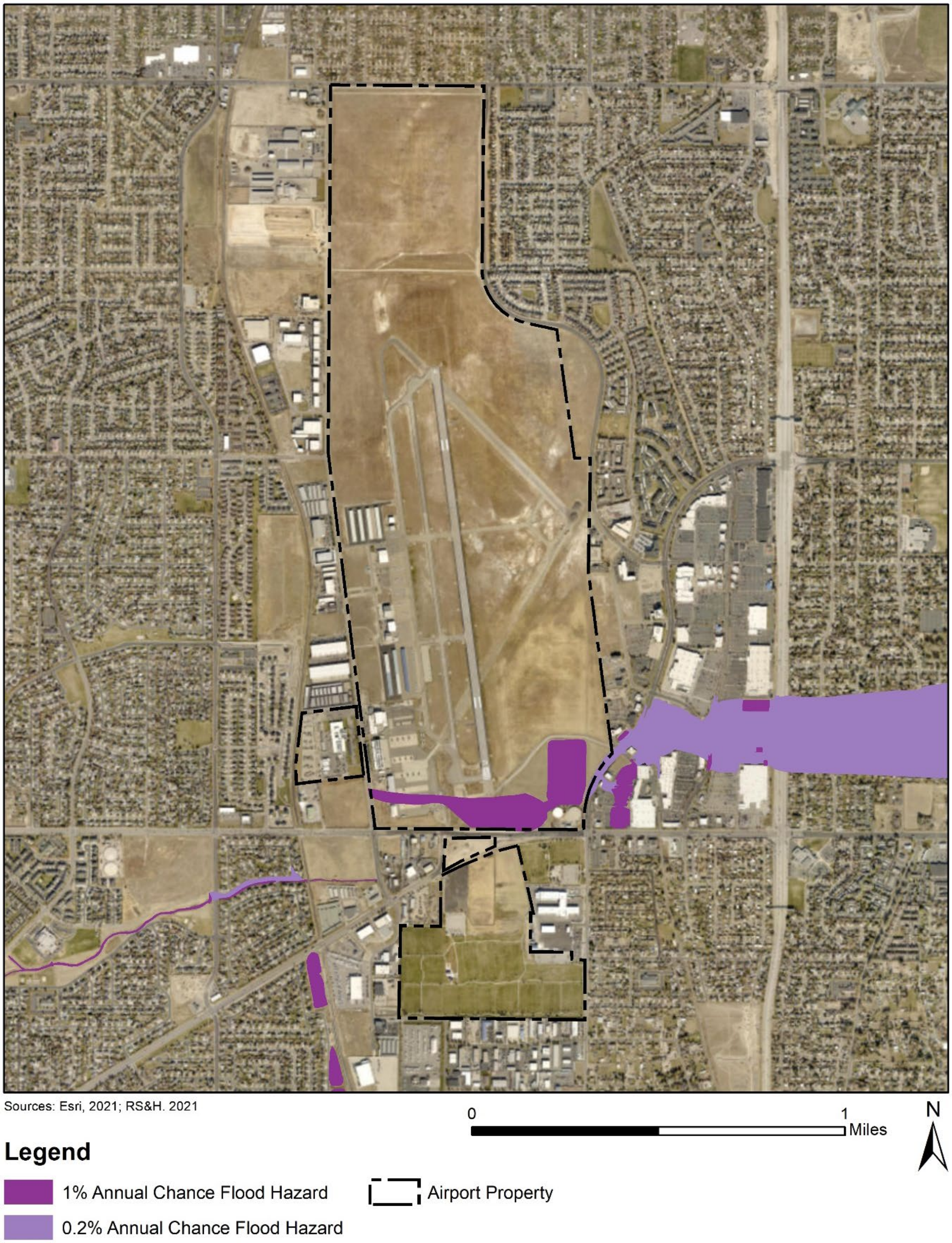
[24] Federal Emergency Management Agency, Flood Map Service Center, Flood Insurance Rate Map 49035G0430GG (effective 9/25/2009). Accessed: https://msc.fema.gov/portal/search#searchresultsanchor, November 2021.

[25] USEPA, NEPAssist Tool. Accessed: https://nepassisttool.epa.gov/nepassist/nepamap.aspx?wherestr=west+jordan+airport, November 2021.

[26] Federal Aviation Administration, 1050.1F Desk Reference, Section 14.4 *Groundwater*. July 2015.

[27] USEPA, NEPAssist Tool. Accessed: https://nepassisttool.epa.gov/nepassist/nepamap.aspx?wherestr=west+jordan+airport, November 2021.

FIGURE A-5
FLOODPLAINS AT SOUTH VALLEY REGIONAL AIRPORT



A.15.5 Wild and Scenic Rivers

Statues relevant to wild and scenic rivers include:

- Wild and Scenic Rivers Act (16 U.S.C. §§ 1271-1278).

Wild and scenic rivers are defined as "outstanding natural, cultural, and recreational values in a free-flowing condition for the enjoyment of present and future generations."[28] There are no wild and scenic river segments within the airport. The closest wild and scenic river segment is the Green River, located 140 miles southeast of the airport. The closest river on the Nationwide Rivers Inventory is American Fork Creek located 19 miles southeast of the airport.[29] There are no state protected rivers in Utah.

[28] National Wild and Scenic Rivers System, Utah. Accessed: https://www.rivers.gov/utah.php, November 2021.

[29] National Park Service, US Department of the Interior, Nationwide Rivers Inventory. Accessed: https://www.nps.gov/maps/full.html?mapId=8adbe798-0d7e-40fb-bd48-225513d64977, November 2021.

APPENDIX B

Stakeholder Visioning

TABLE OF CONTENTS

Appendix B Stakeholder Visioning

LIST OF TABLES

LIST OF FIGURES

B.1 INTRODUCTION

On October 20th and 21st, 2021, Salt Lake City Department of Airports (SLCDA) hosted multiple visioning charrettes to gather information for the Master Plans being developed for its two general aviation reliever airports: South Valley Regional Airport (U42) and Tooele Valley Airport (TVY). The first charrette included key SLCDA leaders from the Airport Master Plans Working Group (AWG) and addressed both airports. Each of the following two charrettes included airport-specific stakeholders from the established Technical Advisory Committees (TAC) and Policy Advisory Committees (PAC).

The charrettes served as a foundation for each airport in individually developing new Airport Master Plans which look at the upcoming 20-year facility investment needs and beyond. This makes sure the airports can strategically fulfill and/or expand their important roles as general aviation reliever airports within the SLCDA regional system and meet demand from the surrounding communities.

This vision was specifically developed as part of the U42 Airport Master Plan and represents a comprehensive view of how key stakeholders feel the airport should “look” and operate in the future, with consideration to both facilities and services. The vision includes ideas for new facilities to support anticipated growth or enhance services, as well as necessary improvements that must be undertaken to correct operational deficiencies. While the Master Plan Update creates a roadmap for development for the next 20 years, the visioning session helps establish a diverse set of stakeholder perspectives and expectations for what ultimate buildout of the airport may look like beyond the Master Plan horizon.

Developing the vision was a collaborative process, with input from both internal (SLCDA staff) and external (tenants, users, and community) stakeholders. Input was obtained during a hybrid in-person/virtual visioning charrette to maximize stakeholder opportunity for participation. The charrettes considered essential and desired enhancements for services and facilities, customer service improvements/ innovations, considerations of capacity constraints, additions of new facilities and services, and maintenance of existing infrastructure. The input gathered during the charrettes was synthesized to aid in the development of a cohesive vision for the airport.

Stakeholder input received during the hybrid style charrette was documented using MURAL digital collaboration software and will be considered throughout the master planning process. This input will assist the planning process by helping to focus attention on specific issues and the establishment of goals and objectives to guide analysis in a way that generates optimal development solutions. The following sections present a summary of stakeholder input received during the visioning charrette exercises and concludes with defined goals and objectives that serve as a foundation of stakeholder perspectives to help guide the Master Plan study.

B.2 VISIONING CHARRETTE OVERVIEW

Stakeholders participating in the two visioning charrettes are as follows:

- SLCDA Staff (internal) – This group included airport staff and leadership.
- Community Stakeholders (external) – This group included organizational representatives and community members with an interest in the airport's success.

Table B-1 shows attendees of the community-oriented Policy Advisory Committee (PAC) and Technical Advisory Committee (TAC) visioning charrette and the organization they represent. An Airport Working Group (AWG) charrette was also hosted internal to key SLCDA staff.

TABLE B-1
PAC AND TAC VISIONING CHARRETTE INVITEES AND ATTENDANCE

Attendees	Master Plan Committee	Organization
Christine Yaffa	TAC/PAC	FAA – Airports District Office
Kevin Davis	TAC	FAA – Air Traffic Control
Jesse Lyman	TAC	FAA – Airports District Office
Col Gordon Pedersen	TAC	Utah Air National Guard (UTANG)
Maj Noé Vásquez	TAC	Utah Air National Guard (UTANG)
Scott Upton	TAC	Utah Air National Guard (UTANG)
Jared Esselman	TAC	UDOT – Aeronautics
Nikki Navio	TAC	Wasatch Front Regional Council
Jory Johner	TAC	Wasatch Front Regional Council
Randon Russell	TAC	Randon Aviation
Lois Reid	TAC	Upper Limit Aviation
Aldin Pope	TAC	Upper Limit Aviation
Gregory Baser	TAC	West Jordan – Airport Advisory Committee
Jason Hess	TAC	West Jordan – Airport Advisory Committee
Richard Meyer	TAC	West Jordan – Airport Advisory Committee
Steve Shelly	TAC	West Jordan – Airport Advisory Committee
Korbin Lee	PAC	West Jordan - City Administrator
Scott Langford	PAC	West Jordan - Community Development Director
Ed Clayson	PAC	SLCDA – Airport Maintenance
Pete Higgins	PAC	SLCDA – Director of Airport Operations
Dave Teggins	TAC	SLCDA – General Aviation Manager
Matt Brown	TAC	SLCDA – Airside Airport Operations Manager
Kristian Wade	TAC	SLCDA – Operations Manager
David Miller	TAC	SLCDA – Airport Engineering
Sean Nelson	TAC/PAC	SLCDA – Airport Planning
Brady Fredrickson	TAC/PAC	SLCDA – Airport Planning

Invited – Unable to Attend	Master Plan Committee	Organization
Melissa Worthen	TAC	West Jordan City Council – District Two
Zach Jacob	TAC	West Jordan City Council – District Three
Ray McCandless	TAC	West Jordan - Senior Planner
Larry Gardner	TAC	West Jordan - Planning Director
Richard Meyer	TAC	West Jordan – Airport Advisory Committee
Steve Schiele	TAC	West Jordan – Airport Advisory Committee
Jim Dearden	TAC	West Jordan – Airport Advisory Committee
Clint Bradley	TAC	FAA – Air Traffic Control
Scott Penn	TAC	FAA – Air Traffic Control
Megan Leonard	TAC	UDOT – Traffic and Safety
Neil Amonson	TAC	Absolute Flight
Doug Frix	TAC	Aerotech Aviation
Lorri Hansen	TAC	Platinum Aviation
Bryce Royle	TAC	SLCDA – Airport Operations
Al Stuart	TAC	SLCDA – Airfield Manager
Medardo Gomez	TAC	SLCDA – Operations and Readiness
Scott Martin	TAC	SLCDA – Airport Architect
Bob Bailey	TAC	SLCDA – Civil Engineer
Dean Warner	TAC	SLCDA – Network Administration (IT)
Teresa Griffiths	TAC	SLCDA – FBO Airport Operation Manager
Paul Coates	PAC	West Jordan – Director of Planning
Chris Pegra	PAC	West Jordan - Economic Development Director
Cyndy Miller	PAC	SLCIA – Airport Advisory Board Vice Chair
Larry Pinnock	PAC	SLCIA – Airport Advisory Board
Theresa Foxley	PAC	SLCIA – Airport Advisory Board
Steve Price	PAC	SLCIA – Airport Advisory Board
Nancy Volmer	PAC	SLCDA – Public Relations and Marketing
Shane Andreasen	PAC	SLCDA – Administration/Commercial Properties
Kevin Robins	PAC	SLCDA – Engineering
Brian Butler	PAC	SLCDA – Airport Finance and Accounting
Ed Cherry	PAC	SLCDA – Information Technology

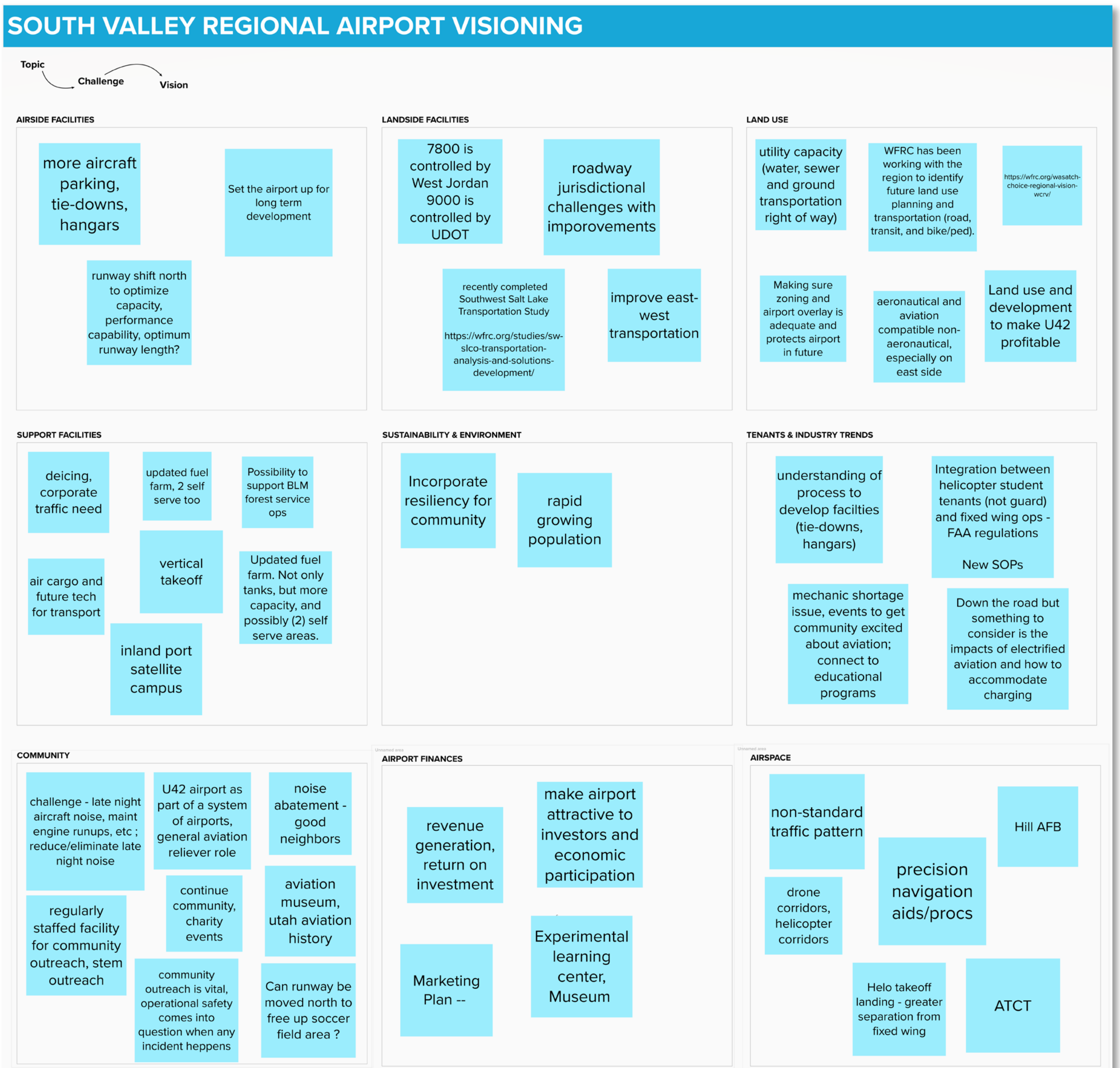
The virtual portion of the charrette was held using online video conferencing software and used a digital MURAL board developed specifically for the project where stakeholder comments were captured and organized (shown in **Figure B-1** and **Figure B-2**). The conversation with stakeholders was framed using three questions:

1) "What is the topic?"
2) "What is the perceived challenge?"
3) "What is the vision?"

A total of nine topic categories were used to organize visioning thoughts. These included:

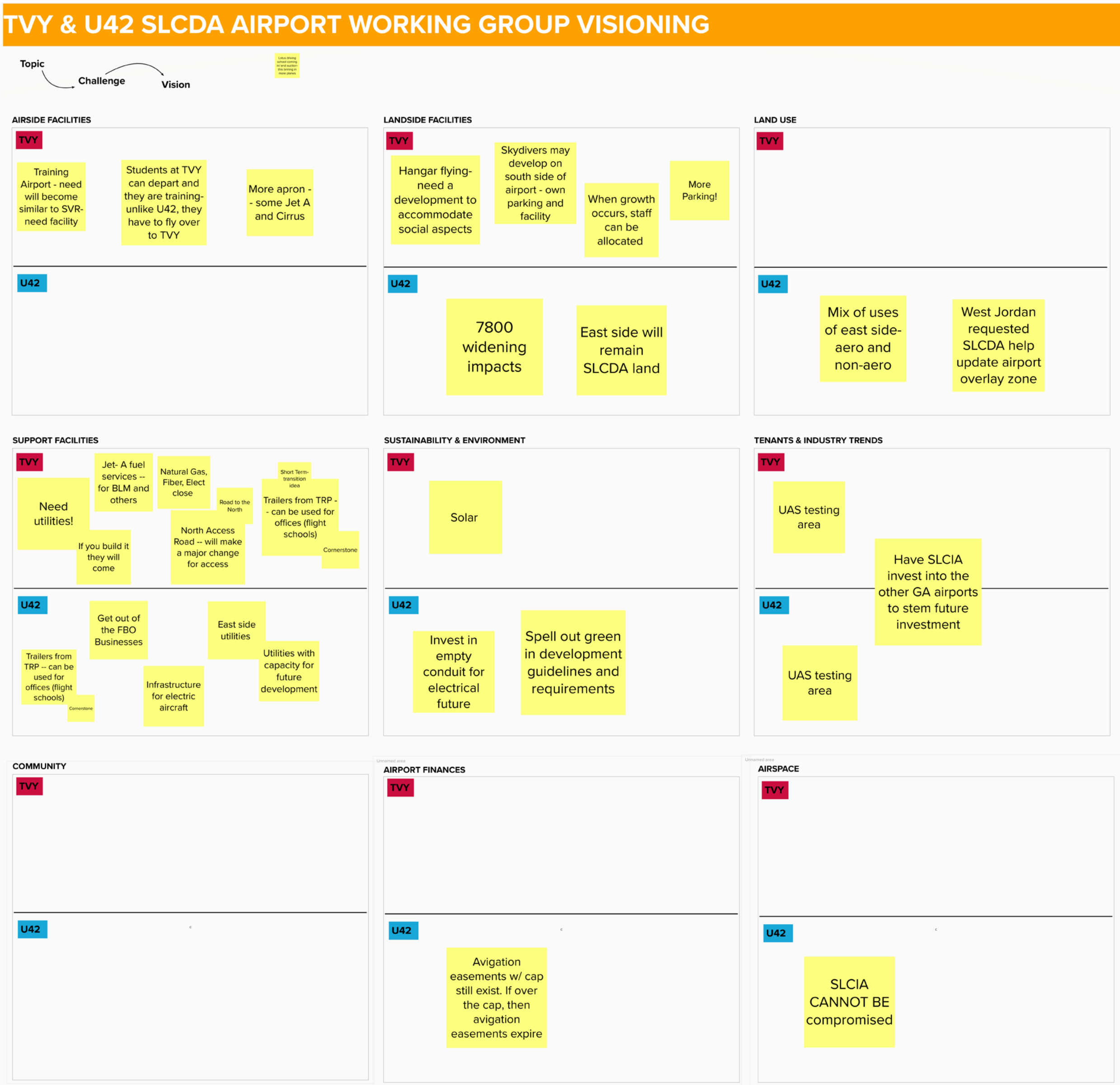
- Airside
- Airspace
- Landside
- Land use
- Tenants and industry trends
- Sustainability and environment
- Community
- Support facilities
- Airport finances

FIGURE B-1
U42 PAC AND TAC MURAL VISION BOARD



Source: RS&H, 2021

FIGURE B-2
U42 AWG MURAL VISION BOARD



Source: RS&H, 2021

B.3 VISIONING OUTCOMES AND OBSERVED THEMES

It is to be expected that stakeholders have varying perspectives on how airport facilities should evolve over the life of the airport, depending on how they use the airport. Overall, the goal of SLCDA for South Valley Regional Airport as a facility provider is to balance these needs, understanding that not all needs can be fully met, and compromise is often required. Within this context, the visioning charrette invited a large and diverse set of stakeholders. Input from those who participated is summarized within the following sections and tables.

The vast majority of stakeholder identified challenges and visions were aligned. The primary focus areas of the meeting were preserving and expanding the airport's contributions to community, protecting its status as a reliever airport to SLCIA, and providing safe and efficient facilities with high user levels of service. The following list identifies specific areas of need identified during the meeting:

- More tie-downs and hangars
- Provide deicing for corporate aircraft
- Fuel farm enhancements (self-fuel and capacity)
- Land use and development to make U42 profitable
- Update zoning and airport overlay to protect airport
- Evaluate runway for optimization (length and airspace)
- Next-Gen readiness (electric aircraft)
- Continue efforts to be a "good neighbor" (soccer fields, noise, etc.)
- Amenities (museum, STEM facility, restaurant, hotel, etc.)
- Airside Vision

The airside facility stakeholder vision identifies a need to analyze, evaluate, and consider airfield orientations that could enhance the entire region's airspace. Additional ramp, tie-down, and hangar space is needed for aircraft parking and storage. The overall airfield configuration should accommodate long-term development on the undeveloped east side of the airport. Airside visioning outcomes are shown in more detail in **Table B-2**.

B.3.1 Airspace Vision

Preservation and protection of U42 and all SLC system airspace were identified as important elements in planning for the future of U42. Reducing/eliminating conflicting operational uses, especially related to helicopter and fixed wing traffic, was also noted as an important consideration in the planning process. Finally, providing better radar facilities for local ATC would improve safety at U42 and establishing precision NAVAIDs (such as an ILS) and flight procedures could improve safety and accessibility. The airspace visioning outcomes are shown in more detail in **Table B-3**.

B.3.2 Landside

The vision for landside facilities at U42 focused strongly on providing utilities and identifying/preserving future utility corridors. Regional access and connectivity were some other important elements for consideration as well as vehicle parking and providing charging facilities for electric vehicles. **Table B-4** shows a more detailed list of the landside vision.

B.3.3 Land Use Vision

The vision for land use at U42 focuses on a balance of aeronautical and non-aeronautical growth that maximizes use of airfield facilities. A need was identified for updating the existing airport overlay zone to protect airspace and airport utility as well as protecting FAA defined Part 77 and TERPS airspace from obstructions. Roadways and east-west connectivity around the airport should be considered in U42 planning, and coordination with a variety of roadway owners will be necessary. More details of the land use visioning outcomes are shown in **Table B-5**.

B.3.4 Tenants and Industry Trends

Stakeholder comments on tenants and industry trends emphasized clarifying the development process at U42 and implementing Standard Operating Procedures (SOPs) driven by FAA regulations. Additional input related to planning for safe drone operations, electric aircraft/vehicles, and addressing industry labor challenges. **Table B-6** shows details of comments received during the visioning session.

B.3.5 Sustainability and Environment Vision

Providing sustainable, environmentally responsible development and operations is important to the future growth of U42. Stakeholder input received during the charrette included priming development with utility corridors outfitted with space for additional future runs, planning to be a center for community resiliency, and including sustainability aspects into development guidelines. **Table B-7** shows visioning outcomes for sustainability and environmental considerations.

B.3.6 Community Vision

The community vision presented by stakeholders centered on promoting and enhancing the airport's economic and societal benefits. Stakeholders stressed the importance of growing facilities related to education and training and continuing charitable activities. The impact of aircraft noise was identified as an issue to consider through sensible operating practice improvements. The challenge of having soccer fields in the Runway Protection Zone (RPZ) was brought forward as a concern to address in planning. **Table B-8** shows more detail regarding the community vision outcomes from the airport visioning charrette.

B.3.7 Support Facilities Vision

Airport support facilities are critical to continuing airport operations. The vision expressed during the charrette for airport support facilities included transitioning the Fixed Base Operator (FBO) to private sector management, improving fueling facilities, providing deicing to corporate traffic, and positioning for future air cargo technology. It was also expressed that trailers used during the SLCIA terminal construction might be used as interim facilities for flight training while permanent structures are built. **Table B-9** shows visioning outcomes related to support facilities.

B.3.8 Airport Finances Vision

The airport financing vision addressed topics including developing a marketing/branding plan, balancing airport and tenant lease needs, becoming financially self-sustaining, establishing new minimum standards, and integrating rates for any implemented alternative energies such as electric charging stations. More details related to the airport finances visioning outcomes are shown in **Table B-10**.

TABLE B-2
AIRSIDE FACILITIES

AIRSIDE		
Topic	**Challenge**	**Vision**
Airfield design	Nonstandard taxiway geometry	Maintain/correct airfield to current FAA design standards
Airfield design	Runway orientation	Evaluate potential for systemwide improvements
Airfield design	Runway length	Optimize runway length for performance requirements
Airfield design	Promote development	Establish airside pattern for long-term development
Airfield ramp	Additional aircraft parking needed	Meet aircraft parking demand through mix of tie-downs and hangars

TABLE B-3
AIRSPACE

AIRSPACE		
Topic	**Challenge**	**Vision**
Airport system planning	SLCIA role in community cannot be compromised	Support/enhance U42 role as general aviation reliever airport for SLCIA
Obstructions	Prevent obstructions to airspace	Intergovernmental coordination; FAA 7460 process; airport overlay zone review
Traffic pattern	Non-standard traffic pattern	Reevaluate traffic pattern
Precision NAVAIDs and flight procedures	Lack of precision flight procedures	Provide precision NAVAIDs and flight procedures to improve safety and capacity if possible
Helicopter operations	Helicopter and fixed wing aircraft operations conflict	Provide greater separation between helicopter and fixed wing aircraft operations
Drones	Difficult to predict future implementation rate and timing	Stay flexible and current with changing technologies
Air Traffic Control	No on-airport ATC	Provide additional ATC radar coverage as supported by operational growth

TABLE B-4
LANDSIDE

LANDSIDE		
Topic	**Challenge**	**Vision**
Roadway jurisdictions	Varying roadway jurisdictions create challenges for road improvements (ex. 7800 is West Jordan and 9000 is UDOT)	Coordinate roadway improvements between owning jurisdictions
Road improvements	7800 road widening has impacts to airport	SLCDA should coordinate with West Jordan on any roadway improvements to 7800
Airport east side (undeveloped)	On-airport land use	East side should remain SLCDA land for airport development
Existing regional plans	Coordinate with other regional agencies	Southwest Salt Lake transportation study recently completed (2021)
Electric vehicles	Difficult to predict future implementation rate and timing	Stay flexible and current with changing consumer habits; Plan for charging locations and financial structure

TABLE B-5
LAND USE

LAND USE		
Topic	**Challenge**	**Vision**
Zoning	Land use compatibility	Encourage aviation-compatible zoning near the airport
Airport zoning	Update airport overlay zone to protect airport utility	Work with surrounding jurisdictions to update existing airport overlay zoning
Avigation easements	Avigation easements with cap may expire if cap exceeded	Ensure avigation easements apply to all necessary parcels within airport overlay zone
Aeronautical/Non-aeronautical	Strike balance of land uses for highest and best use	Explore non-aeronautical revenue producing opportunities where aeronautical use is impractical, especially regarding the east side of airport
Aeronautical/Non-aeronautical	Airport profitability and sustainability	Develop to make U42 a self-sustaining airport
Utilities	Utility capacity	Establish "shovel ready" sites with necessary utilities
Compatible off-airport development	Compatible off-airport development	Cooperative planning with surrounding communities; partnerships to develop smart; tie to industrial/commercial developments; See WFRC regional land use plans
Airport land acquisition	Enhancing airport assets and ability for growth	When appropriate, purchase land around airport; Any land sales should include covenants/avigation easements

TABLE B-6
TENANTS AND INDUSTRY TRENDS

TENANTS AND INDUSTRY TRENDS		
Topic	**Challenge**	**Vision**
Facilities development process	Development process at U42 has been noted as "unclear"	Provide clear and available information regarding facilities development process at U42
Standard Operating Procedures (SOPs)	Integration of student helicopter traffic and fixed wing aircraft creates safety concerns	Implement SOPs for varying users driven by FAA regulations
Mechanic labor shortage	Shortage of trained A&P mechanics	Connect with community to promote aviation and careers in aviation; Promote aviation educational programs
Unmanned Aerial Systems (UAS)	Integrating variety of users including UAS	Ensure planning accommodates potential for UAS operations/testing site
Electric aircraft and electric vehicles	Infrastructure and systems necessary to support electric aircraft/vehicles	Plan for supporting operational needs of electric aircraft and electric vehicles
SLCDA investment	Limited funding	SLCDA to consider investing in U42 and TVY to spur future private investment

TABLE B-7
SUSTAINABILITY AND ENVIRONMENT

SUSTAINABILITY AND ENVIRONMENT		
Topic	**Challenge**	**Vision**
Renewable alternative energy	No alternative energy infrastructure	Consider potential for using solar energy
Sustainability planning	Development guidelines lack sustainability aspects	Establish "green" guidelines and requirements in development guidelines
Utilities	Priming land for electric charging infrastructure	When running new utility lines, invest in empty conduit for future runs
Community resiliency	Resiliency plan needed during emergency events	Establish plan for meeting community resiliency needs during community-wide emergencies
Development pressure	Pressure from development around airport on all sides	Maintain airport utility as an asset to community

TABLE B-8
COMMUNITY

COMMUNITY		
Topic	**Challenge**	**Vision**
Aviation museum	Highlight the historical significance of U42	Plan for aviation museum to promote Utah aviation history
Learning center	Capitalize on opportunity for aviation schools and learning centers	Plan for experimental learning center facility
Charity	Charitable events help engage the community in a positive way	Continue and grow charitable events that promote aviation in a positive light and engage community members
Runway location	Soccer fields impact runway protection zone	Evaluate solutions to determine how to resolve land use conflict

TABLE B-9
SUPPORT FACILITIES

SUPPORT FACILITIES		
Topic	**Challenge**	**Vision**
Fixed Base Operator (FBO)	SLCDA desires private company to manage FBO	Bring in private sector FBO management
Electric aircraft	Infrastructure needed for electric aircraft charging	Plan for infrastructure to support charging of electric aircraft
Utilities	Need utilities on east side of airport	Plan for utilities on east side of airport
Deicing	Corporate traffic needs deicing	Provide deicing for corporate aircraft
Repurposing structures	Can trailers be repurposed for facilities such as flight schools?	Explore possibility of repurposing trailers for facilities such as flight training
Fuel storage	Need additional capacity for storing fuel	Accommodate all fuel storage needs with adequate capacity; Plan for growth of fuel facilities
Air cargo/future tech	Need to incorporate potential for future cargo transportation methods	Consider future technologies for cargo transport in planning

TABLE B-10
AIRPORT FINANCES

AIRPORT FINANCES		
Topic	**Challenge**	**Vision**
Airport leasing policies	Balance airport and tenant needs in leasing practice	Track and provide fair market rate leases for reasonable term lengths
Economic development	Investor attraction	Make U42 attractive to investors and economic participation
Airport minimum standards	Establish new Minimum Standards for airport	Regular review and update of minimum standards; Balance benefit with burden on tenant businesses
Marketing	No marketing/branding plan for U42	Create marketing and communications plan for public outreach
Return on investment	Development needs to provide return on investment	Ensure lease practices generate revenue generation and adequate return on investment
Renewable energy impacts	Integrate renewable energy costs into rate/fee structure	Create fair rate structure for any new energy sources

B.4 AIRPORT GOALS AND OBJECTIVES

Through airport leadership input and the stakeholder visioning process, a set of goals and objectives for the airport master plan and future planning efforts has been established. These are intended to be used as a framework to provide context and balance throughout the master plan study. It is important to note that not all goals can be analyzed and completed during the airport master plan and the intention of these goals and objectives is to inform future planning efforts and studies for the airport. Aviation industry trends are incorporated into each of the following goals and objectives. These should be reviewed and revised regularly as the airport operating environment evolves.

B.4.1 Airside Goals and Objectives

Goal: Plan for, and operate, a safe and efficient airfield that meets the needs of the current and future fleet mix.

Objectives:

- Provide safe and efficient airfield configuration through implementation of FAA design standards.
- Investigate existing runway alignment in relation to systemwide airspace safety and capacity.
- Identify potential airfield/airspace enhancements and determine cost/benefit trigger points for implementation.
- Identify trigger points for airfield/airspace enhancements to provide infrastructure capable of meeting performance requirements for current and future fleet mix.
- Ensure airfield pavement strengths can safely accommodate critical aircraft.
- Promote economic development on airport property and coordinate as necessary to support compatible development off-airport.
- Promote integration of new technologies driven by customer demand.
- Provide a mix of based aircraft storage options as driven by customer demand.
- Provide demand triggers and qualitative/quantitative justifications for airport capital improvement needs. EONS sustainability principles (including tangible and intangible costs and benefits) should be considered in evaluation of development alternatives.
- Keep the Airport Layout Plan current as required by FAA to properly represent airport facilities and future development plans.

B.4.2 Airspace Goals and Objectives

Goal: Provide a safe environment for aircraft operating at/around the airport and people/property within the communities underlying the influence area of aircraft operations.

Objectives:

- Eliminate existing obstacles/obstructions and prevent future obstacles/obstructions to airspace (Part 77 and TERPS) through intergovernmental coordination, updates to the existing Airport Overlay Zone, upholding the FAA 7460 process, and/or the acquisition of land or avigation easements where appropriate.

- Coordinate with FAA to provide flight procedures capable of meeting all user performance requirements for both SLCIA and U42.
- Coordinate with navigational aid owners (federal and state) to provide safe and reliable equipment to airport users.
- Plan to safely accommodate drone operations within the local airspace system through tools such as designated corridors and staying involved and current on evolving federal regulations.

B.4.3 Landside Goals and Objectives

Goal: Plan for, and provide, safe, accessible, and thoughtfully designed landside facilities that support airport user needs and integrate seamlessly into the local/regional transportation system.

Objectives:

- Plan for, and design, landside facilities that provides a safe, efficient, and high-quality customer experience.
- Integrate airport planning into regional transportation plans.
- Provide integrated on-airport landside roadway/transportation system into the regional multi-modal transportation network.
- Develop, construct, and maintain an intuitive, branded, full-coverage wayfinding system which integrates South Valley Regional Airport into the regional transportation system.
- Identify key utility corridors and preserve right-of-way for critical utility infrastructure.
- Identify impacts of alternative energy and autonomous vehicles to landside facilities and plan for needs to accommodate these new and emerging technologies.
- Beautify airport facilities through sustainable landscaped environments.

B.4.4 Land Use Goals and Objectives

Goal: Establish locally coordinated land use policies that make highest and best use of airport land and promote compatible off-airport development.

Objectives:

- Establish long-term land use plans that define highest and best use of airport land (aeronautical and non-aeronautical).
- Work with impacted community officials to continually review/update existing zoning practices to preserve and protect airport operations and local airspace.
- Work with community landowners and developers to ensure adjacent off-airport land uses are compatible with airport operations.
- Partner with community networks to promote compatible off-airport development and equitable access via regional transportation networks.
- Identify and purchase any strategic properties near the airport to protect its long-term utility.

B.4.5 Tenants/General Aviation Goals and Objectives

Goal: Develop safe, efficient, and sustainable general aviation facilities with an emphasis on providing a high-quality user experience.

Objectives:

- » Identify land to preserve for future development, access right of way, and utility corridors.
- » Provide utilities necessary to spur private investment in aeronautical facilities.
- » Plan for co-location of certain compatible general aviation facilities that create synergistic effects. Conversely, separate uses that conflict with one another and/or create safety concerns.
- » Coordinate with state agencies to provide safe vehicular access to all landside areas of the airport.

B.4.6 Sustainability and Environmental Goals and Objectives

Goal: Act ethically and with consideration to the broader SLCDA sustainability goals when forming policies, performing daily operational activities, or making capital investment decisions.

Objectives:

- » Develop a sustainability master plan for the airport.
- » Develop and promote policies that minimize/mitigate/eliminate all negative externalities created by the airport and aircraft operations.
- » Provide and promote a recycling and waste reduction program for the airport.
- » Explore the implementation of alternative and renewable energy options that meet user demand, minimize community/environmental impacts, and create opportunities for the airport to produce/provide clean energy independent of the existing energy grid.
- » Become energy independent to sustain operations, provide community support, and promote community resiliency during emergency disasters.
- » Work with surrounding jurisdictions, land developers, and property owners to promote compatible land uses in areas exposed to aircraft overflights to preserve integrity of safe airport operations and prevent the placement of unnecessary burdens on property owners.
- » Operate according to best practices in relation to spill prevention and preservation of water quality.

B.4.7 Community Goals and Objectives

Goal: SLCDA will collaborate with local community leaders to promote and protect the utility of the airport to meet local/state transportation needs by providing its general aviation reliever role within the SLCDA airports system.

Objectives:

- » Support sustainable economic growth within the region.
- » Form plans and make capital investments that adequately address airport issues and satisfy local, state, and federal regulations.

- Encourage development of on- and off-airport land with investments that create economies of agglomeration reliant on airport access.
- Discourage unnecessary late-night noise related to airport operations.
- Work with local governments and agencies to coordinate aviation-related public events with positive community impacts.
- Support charitable activities which encourage positive interactions and grow social capital within the community.
- Encourage development of educational and training facilities on, or near, airport property.
- Promote the importance of the airport as a community asset which provides economic opportunities through regional access.
- Promote and support compatible development and land use policies that protect airport operations and property owners within a defined airport influence area.

B.4.8 Support Facility Goals and Objectives

Goal: Plan for, and operate, top-tier support facilities to meet airport operational needs.

Objectives:

- Incentivize private FBO management to discontinue SLCDA management of FBO.
- Provide deicing facilities/services.
- Provide sufficient facility space in an efficient layout for equipment movements for all airport maintenance operations on the airport.
- Store all maintenance equipment under structured cover free from inclement weather which reduces life of equipment.
- Humanely prevent/discourage wildlife from interfering with safe airport operations.
- Regularly evaluate fuel storage capacity need, fuel types, optimal location(s), and delivery methods.

B.4.9 Airport Financial Goals and Objectives

Goal: Operate in a financially self-sustaining manner and take advantage of available outside funding opportunities.

Objectives:

- Meet all FAA grant assurances to remain eligible for federal funding of approved capital projects.
- Secure adequate return on investment for all capital improvements.
- Enact land lease policies which provide opportunities for tenant businesses to thrive while still keeping pace with market rates.
- Track and monitor airport lease policies through benchmarking against peer airports to stay current with industry best practices.
- Identify and leverage alternative funding methods for capital development projects.
- Regularly review airport compliance documents and update as appropriate to sustain airport economic viability.
- Study and enact policies which support and appropriately capture necessary revenues from alternative energy sources used at the airport.

APPENDIX C

Aircraft Performance and Instrument Procedure Considerations

South Valley Regional Airport (U42)

Aircraft Performance and Instrument Procedure Considerations

Prepared By

Tyler Hawkins and Craig Nordstrom, LEAN Technology Corp

Reviewed By

Paul Hannah, LEAN Technology Corp

Submitted To

Michael Becker, RS&H

For

Salt Lake City General Aviation Masterplan

1 Revision Log

Version	Date	Reviewer(s)	Content Updated
1.0	19JUN23	Paul Hannah, Tyler Hawkins, Craig Nordstrom	Initial Release to RS&H
1.1	11AUG23	Paul Hannah, Tyler Hawkins, Craig Nordstrom	Updated per RS&H comment

Table of Contents

List of Figures

2 Executive Summary

This report analyzed the effectiveness of the existing runway 16-34 to support current and future business jet, turboprop, and GA aircraft flight operations during takeoff and landing. This was achieved by a thorough examination of takeoff performance, landing performance, payload range carrying capabilities and instrument procedure effectiveness for the existing runway and alternative runway definitions.

The following is a synopsis of the key recommendations in this report:

- **Existing Payload-Range Capability** In the existing airport configuration, current and future small cabin business jets are capable of operating to destinations covering the entire Continental United States. Large cabin business jets can serve all domestic destinations including Hawaii. The existing runway supports turboprop destinations within 500 nautical miles. Destinations beyond 500 nautical miles may require payload restrictions during high temperature conditions or fuel stops may be necessary.

- **Increase Runway Length to 6,600 feet** The existing runway length of 5,862 feet, location and orientation of the runway are suitable to ensure reliable business jet and turboprop service to and from currently served destinations. A runway extension to the north would provide a substantial capability improvement to turboprop operators which are predicted to represent a significant number of operations. Based on analysis of the project team's preferred alternatives, extending the runway to 6,600 feet in length would provide turboprops an opportunity to reach more distant destinations that cannot be reliably served today.

- **Protect for One Engine Inoperative Obstacle Accountability** Surrounded on four sides by urban development the current one engine inoperative obstacle environment at U42 contains many man-made obstructions required for consideration under 14 CFR Parts 91-K and 135 operations. Fortunately, most of this development is housing and other less significant structures which do not have a significant impact on one-engine inoperative performance. This enables a significant payload-range capability from a relatively short runway length. To preserve the utility of the current takeoff runway length and any future planned extensions, and payload-range capability findings described in this report, SLCDA must protect the local airspace from any future objects that might penetrate the OEI surfaces depicted in Figure 4, Figure 5, Figure 7 and Figure 10.

- **Consider the Addition of an ATCT and Airspace Changes** The current airspace surrounding U42 is extremely challenging for IFR operations. The airport is surrounded by high terrain, military restricted airspaces and further constrained by significant arrival and departure operations at SLC which take priority over U42 operations. This results in significant delays that can only be overcome through future airspace and ATC changes. More will be discussed in a separate tech memo about when the right time to pursue an ATCT at U42 will occur.

Please refer to Appendix 2 for additional information about optimal ATCT locations on the airfield.

- **Pursue an Instrument Approach Enhancement Runway 34** A new, offset, instrument approach to runway 34 was identified that helps aircraft avoid military restricted airspace above Camp Williams. This procedure, identified in this report as RNAV (GPS) Y Rwy 34, achieves nearly identical instrument approach minimums to the existing procedure and would be vertically separated from SLC arrival operations during north flow. This procedure can be pursued at any time with FAA via IFP Gateway request but may be best undertaken during other airspace re-design initiatives.

- **Improve Weather Measurements** U42 sees weather that is markedly different than SLC but currently is only supported by an aging AWOS-3 system that does not report information on rain or snow accumulation. The airport would be well-served by upgrading the current weather system to one that is capable of precipitation measurement, type, and intensity such as an FAA ASOS or AWOS-3P/T.

- **Improve Runway Bearing Strength and Surface Treatment** The current runway 16/34 at U42 has no surface treatment, or porous friction course overlay, and is not designed to support regular large cabin business jet operations. To ensure that operators can achieve the payload range and runway length findings of this report, it is strongly recommended to implement a surface treatment to the runway and increase its overall bearing strength to accommodate larger aircraft operating on long range flights with gross takeoff weights in excess of 90,000lbs.

3 Objective of This Analysis

The analysis in this report was created as part of a Master Plan process. The objective of the analysis is to evaluate the current and future capabilities of runway 16-34 to support existing and potential future air traffic in terms of runway length, one engine inoperative obstacle accountability (OEI) and VFR/IFR procedure effectiveness.

The runway length, including OEI consideration, was examined to provide AC-150-5325-4B compliant information suitable to plan for future growth and to indicate the desired runway geometry and obstacle accountability on an Airport Layout Plan. The runway length and OEI accountability were determined using aircraft performance information via a Monte Carlo simulation and statistical analysis methods particular to LEAN. These methods determine the likelihood of different aircraft types to support daily scheduled flight operations over a 12-month period using pseudo-randomly selected inputs across each of the 12 months and at varying hours of the day. The aircraft performance data used is compliant with 14 CFR Parts 25 & 121 certificated aircraft performance requirements. This includes an analysis of the takeoff declared distances and one engine inoperative obstacle departures based on historical weather conditions, aircraft configuration, and flight planning considerations.

The VFR/IFR procedure effectiveness examined approach procedures, departure procedures, weather sensing capabilities, and NAVAID siting. The combination of approach and departure procedures were analyzed using statistical analysis methods particular to LEAN. This analysis identifies the likelihood that aircraft would be able to takeoff and land at the airport during the desired hours of operation for the existing procedures and following any future runway length or other airside modifications. A high-level examination of the NAVAIDs and weather sensors was included to ensure that procedures which rely on a NAVAID, like an ILS approach, will retain their capabilities. If a NAVAID or weather sensor were to be removed, this analysis will identify the potential impacts.

This document does not include any information, or analysis, related to the design or performance of NAVAIDs, approach lighting, radar, communications facilities, or runway lighting.

4 Data Restrictions

Monte Carlo methods are regularly used by aircraft performance and flight operations engineers to analyze disparate information into meaningful data for decision making and risk mitigation. Many 14 CFR Part 135/121 domestic and international air carriers use Monte Carlo analysis methods to assist with complex tasks like forecasting payload availability on a route, establishing fuel forecasts for a period of time, or monitoring changes in aerodynamics and engine performance that are too subtle to identify on an individual flight.

The Monte Carlo analysis described in this report uses proprietary takeoff and flight planning performance information either provided by aircraft manufacturers or created by the aircraft operators themselves. This information is meant to be used by certificated aircraft operators with personnel who are trained to ensure that the data is never used for incorrect or unsafe purposes either by their own flight operation or by others who do not have the commercial rights or training to replicate the flight operation. This often means that the aircraft performance information used by airlines is not publicly available and must be protected when placed into a public setting like FAA airport planning, environmental analysis, or design.

To ensure that any proprietary data shared by an aircraft operator in support of this analysis is kept away from unsafe or unapproved uses, the project team has taken two important steps.

The first step is to ensure that the ultimate results of a runway length analysis, using aircraft performance information, are intentionally obfuscated to achieve the following outcomes:

1. The results cannot be used meaningfully in any flight operation (commercial, private, experimental, or otherwise)
2. The results cannot be meaningfully reverse engineered to reveal detailed aircraft performance characteristics

Thus, low-speed and high-speed performance data obfuscation is achieved by displaying the results of the Monte Carlo analysis in terms of runway lengths necessary to achieve varying likelihoods of a target outcome rather than as a summation of discrete mission planning elements.

The second step is to protect the aircraft performance information provided by an aircraft operator in support of this analysis by only making the data available to FAA and Airport personnel associated with the Master Plan.

5 Document Overview

This document contains information about the inputs, methods, results, and limitations associated with both the Monte Carlo analysis of aircraft performance and instrument procedure assessments used to further identify runway geometry limitations.

Below are several sections describing information that can be used by other stakeholders to consider the accuracy and validity of the methods and results.

Section 6 addresses the aeronautical and geospatial information used to establish baseline aircraft performance and instrument procedure conditions.

Section 6.2 addresses the airspace and instrument procedures that are currently in use at the airport, how they are anticipated to change following possible landing threshold relocations, and any resulting geometry or NAVAID limitations that may need to be considered.

Section 8 addresses historical weather information used as inputs to the Monte Carlo runway length analysis.

Section 9 identifies the aircraft and performance computations used as inputs to for the Monte Carlo runway length analysis.

Section 10 addresses the results of the Monte Carlo analysis used to determine potential runway lengths.

Section 12 contains a detailed summary of the findings, limitations on the findings and any recommendations for consideration.

6 Aeronautical and Geospatial Information

6.1 Baseline Information

Aeronautical and geospatial information was collected by LEAN through a combination of FAA maintained sources available to the public, and surveyed sources provided by the project team as a part of the update to the Masterplan and ALP. The following sections describe the information that was considered for both the instrument procedure assessment and Monte Carlo performance analysis.

6.1.1 Runways

U42 has one runway, runway 16-34, in a north/south orientation. The runway is supported by a full-length parallel taxiway with several entrance and exit taxiways.

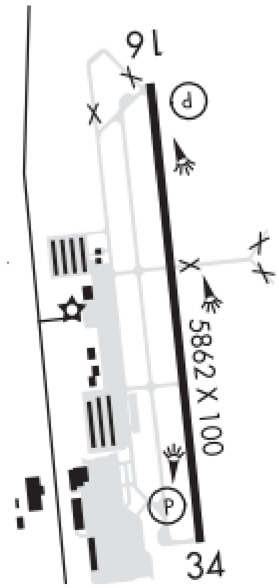


Figure 1 U42 Runway and taxiways

For detailed information about the runways, and their aeronautical properties, please see Table 1 below.

Table 1 Summary of Existing Declared Distances and Runway Properties at U42

RWY	BR Elev. (feet MSL)	DER Elev. (feet MSL)	TORA (feet)	TODA (feet)	ASDA (feet)	LDA (feet)	Width (feet)	Entry Angle	PCN
16	4,603.2	4,601.9	5,862	5,862	5,862	5,862	100	135º	N/A
34	4,601.9	4,603.2						90º	

All information in Table 1 was compiled from FAA eNASR during the 18MAY2023 AIRAC. The column titled "BR Elev" refers to the Brake Release point on the runway, which is synonymous with the start of the declared takeoff distances. The DER refers to the departure end of the runway.

6.1.1.1 Runway 16-34 Declared Distances

As listed in Table 1, runway 16-34 currently does not utilize any displaced thresholds or declared distances. Neither runway has any reductions in Landing Distance Available (LDA) nor Accelerate Stop Distance Available (ASDA) to comply with Runway Safety Area (RSA) requirements for overrun mitigation.

6.1.1.2 Runway 16-34 Markings and Surface Treatment

Runway 16 currently only supports basic visual markings as there are no published instrument approach procedures to that runway end. Runway 34 currently has non-precision instrument markings to support the RNAV approach to the runway end.

The runway currently has no surface treatment; it is neither grooved nor does it have a porous friction course (PFC) applied. The absence of any surface treatment could lead to reduced friction situations for landing and takeoff operations during periods of rain, snow, or ice. All Part 91-KI, 125, 121 and 135 operators are required to consider reduced stopping capability during landing and takeoff distance assessments when the runway is either wet or contaminated.

Any future jet operations will benefit from the application of grooving and/or PFC.

6.1.1.3 Runway 16-34 Taxiways

Four taxiways, designated A1-A4, connect to runway 16-34 providing aircraft access to the full length of the runway using a standard 90-degree entry at the south end and an approximately 135-degree entry at the north end. A full-length parallel taxiway, designated Taxiway A runs along the west side of the runway. There are four designated helicopter takeoff and landing pads spaced along Taxiway A. Further to the west is Taxiway B which provides access to the Utah Air National Guard ramp and general aviation ramp areas on the west side of the airfield.

The use of a 135-degree entry at the north end of the runway will require some operators to consider a reduced runway length in OEI takeoff performance calculations when compared to a standard 90-degree angle. This distance reduction related to the amount of length required for an aircraft to "align" with the runway centerline prior to starting the takeoff roll. The amount of line up distance will vary based on the size of the aircraft and information provided by the OEM to the aircraft operator. For most aircraft considered in this study, the reduction in runway length ranged between 0 – 50ft for a standard 90-degree angle and between 50 – 100ft for a 135-degree angle.

6.1.1.4 Runway 16-34 Elevation Profile

The overall elevation profile of runway 16-34 reflects a minimal end-to-end slope. Runway 16 has a slightly downhill slope at a -0.02% grade and runway 34 is slightly uphill at 0.02%.

Aircraft performance calculations must account for runway slope. Operators commonly calculate slope between the brake release point (start of TORA/TODA) and the DER (usually the end of the TORA/TODA). This is referred to as a 100%, or full length, slope calculation. In situations where the physical runway profile exhibits significant undulations, or the physical profile dips below the elevation found by using only the starting and finishing elevations, some aircraft operators may use a different slope calculation using a reduced portion of the runway length and elevation. Since the available data for U42 does not show any mid-runway elevations, we assume the runway is truly planar. The project team will therefore utilize the 100% slope calculation and assume that no aircraft operators currently flying into U42 would utilize an alternative slope calculation method when determining OEI performance.

6.1.1.5 Runway 16-34 Bearing Strength and PCN Limitations

No current pavement classification number (PCN) has been published for runway 16-34. The published weight limitations published in the FAA Chart Supplement for runway 16-34 could create potential limitations for larger business jet aircraft.

The single-wheel main landing gear limitation of 30,000 pounds is adequate for all anticipated aircraft operations of aircraft with that landing gear configuration. However, the dual-wheel landing gear limitation of 43,000 pounds could become problematic for future medium and large cabin business jet operations. The current runway bearing limits do not impose a restriction on smaller aircraft being studied for this analysis but will present limits to large cabin jets.

Without corrective action to either enhance the pavement strength, or identify a PCN appropriate to larger aircraft operations, this deficiency will require aircraft operators to either impose a runway weight bearing restriction on the calculated maximum allowable takeoff weight, or to directly correspond with the airport to determine if some latitude exists to exceed the published runway weight bearing limits.

Possible operational weight restrictions could be mitigated if an opportunity arises to enhance the current bearing strength via runway rehabilitation. Additionally, establishing a PCN value for the runway could further mitigate possible operator-imposed weight restrictions on what is ostensibly a design life protection value. However, the team does not recommend either of these actions as a part of this study as the current and planned operations do not currently require it.

6.1.2 NAVAIDs and Lighting

6.1.2.1 NAVAIDs

The following baseline NAVAIDs, identified in Table 2 were considered for runway 16-34. These NAVAIDs were used to evaluate instrument approach and departure procedures, as well as inform potential frangibility of existing obstacles and localizer critical areas.

Table 2 Existing NAVAIDs Supporting Runway 16-34

NAVAID Ident	Type	RWY Served	Distance from LDG Threshold (feet)	Offset from Rwy CL (feet)	Elevation (feet MSL)
FFU	VORTAC	16/34	N/A	N/A	7,690
TCH	VORTAC	16/34	N/A	N/A	4,612

All information in Table 2 was compiled from FAA eNASR during the 18MAY2023 AIRAC.

The Fairfield VOR (FFU) is a high-altitude NAVAID utilized for both the RNAV (GPS) Rwy 34 approach and South Valley 1 RNAV Departure procedures and is widely utilized for SLC approaches and departures.

The Wasatch VOR (TCH) is a high-altitude NAVAID used for the Rwy 34 ODP, and is also commonly used for SLC approaches and departures.

6.1.2.2 Lighting

The following baseline runway, approach lighting and VGSI, identified in Table 3, were considered for runway 16-34. Approach lighting elements were used to examine instrument approach and departure procedures, as well as inform potential frangibility and lightplane protection areas.

Table 3 Existing Approach Lighting Elements Supporting Runway 16-34

RWY	Lighting	Type	Length/Distance from LDG Threshold (feet)	Elevation (feet MSL)	Slope / TCH (feet AGL)
16	ALS	REIL	0	4,603.2	N/A
34		REIL	0	4,601.9	N/A
16	VGSI	PAPI (4L)	783.0	4,603.0	3.00 / 43
34		PAPI (4L)	800.0	4,602.1	3.00 / 40

All information in Table 3 was compiled from FAA eNASR during the 18MAY23 AIRAC.

In addition to the information listed in Table 3, runway 16-34 is supported by medium intensity runway edge lighting.

Both runways are served by 4-box PAPIs with both PAPIs activated by Pilot Controlled Lighting (PCL).

6.1.3 Obstacles and Terrain

6.1.3.1 Overall Obstacles

Obstacle information considered in this analysis originated from a combination of FAA and airport/project team sources intended to cover a 50 nautical mile area surrounding the U42 airport. This included obstacle information specific to U42 and other obstacle information in the vicinity of the airport as seen in Figure 3 below.

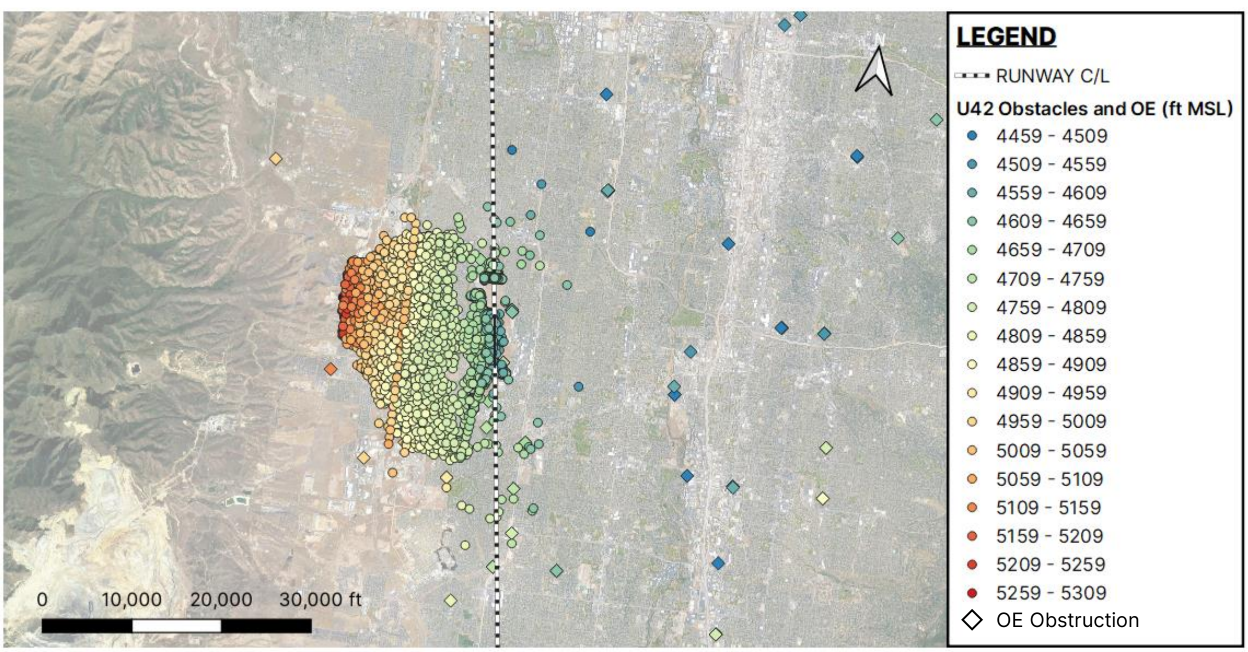


Figure 2. Obstructions in the U42 vicinity

The first source used to examine existing obstacle information was provided by the SLC GAMP Master Plan project team in the form of a draft AC-150-5300-18B VGA obstruction survey. The survey, and associated imagery, was completed in 2021 and then successfully uploaded to FAA ADIP for public access in March of 2022. LEAN used both the draft obstruction information, which included obstacle data not ultimately submitted to the FAA ADIP, along with the final obstruction survey.

The second source used to gather existing obstacle information in the vicinity of the airport was the FAA Obstacle Authoritative Source (OAS), which was accessed via the FAA AIRNAV download available from the Aeronautical Data Information Portal (ADIP). This data was obtained using a radius-based search for obstacles information located within 15 NM of U42.

OAS Obstacles in AIRNAV represent a combination of previous AC-150-5300-18B compliant obstacle surveys, surveys performed for airport surface clearance, determined 7460 obstructions and FAA flight inspection obstacles. Obstacles obtained from this source contain FAA assigned accuracy values which introduce a horizontal and vertical uncertainty that translates an obstacle referenced using WGS-84 coordinates to define a point with an elevation, into a 3-dimensional cylindrical shape. The uncertainty associated with the accuracy must be considered for instrument procedure design but is often not required (or considered) for airport planning surfaces, airspace protection surfaces or one engine inoperative calculations performed by 14 CFR 121 and 135 aircraft operators.

For aircraft performance calculations, the obstacles available in AIRNAV are both known to operators and currently considered when determining limiting takeoff weights, ultimately influencing payload range decisions.

The third source used for this project were specific AC-150-5300-18B and NOAA 405 specification surveys. These were also downloaded from FAA ADIP and overlaid on top of the AIRNAV obstacles. In cases where the previous survey identified a point that was in the same latitude and longitude as current AIRNAV/OAS obstacle, then the elevation and accuracy of the AIRNAV/OAS obstacle was used. However, there exist certain supplemental object information contained in previous surveys which were not submitted to the FAA as obstacles through the Airports GIS process. These objects were valid unless a scan of aerial imagery, or feedback from the project team, indicated that the object was no longer valid or had been removed or relocated.

Since the surveyor and the FAA will likely refine the initial survey results and adjust the final accuracies to cover large/connected objects (like radio towers), the preliminary AC-150-5300-18B survey of obstacles is considered a supplementary source for analyzing the feasibility of instrument procedures and one engine inoperative calculations. This preliminary survey does not replace previous obstacle sources.

The final obstacle source considered in this analysis was the obstacle information available from the FAA Obstacle Evaluation and Airport Airspace Analysis (OEAAA) website. Determined OE cases represent proposed structures off of the airport, while determined NRA cases represent proposed projects and structures on the airport. Cases determined between 2018 and Q4 2021 were retrieved and evaluated. Any determined obstacle that would result in a structure which could affect instrument procedures or aircraft performance was considered to exist today. The only exceptions were cases where the OE was seen to either be temporary, and not resulting in a new structure after the temporary action was completed, or cases where an NRA identified a temporary project on the airfield.

Proposed obstructions are assigned an accuracy of 4D (50 feet vertical accuracy, 250 feet horizontal accuracy). This is likely both larger and taller than the accuracy values that will be determined by survey following the construction of the structure. However, proposed objects which are determined by the FAA to have no substantial impact on the surrounding airspace often do not receive an updated survey definition following the OE review.

6.1.3.2 Terrain

Terrain information was sourced from USGS 3DEP at a 30-meter to 90-meter spacing across the 50 nautical mile (nm) area surrounding U42. On top of this information, a 100-foot vegetative allowance was applied for aircraft performance considerations. FAA required 200-foot Adverse Assumption Obstacle values were also applied to all terrain points outside of the U42 VGA collection extents.

The terrain surrounding the airport is significant enough to require mountainous terrain considerations for instrument procedure design both to runway 16 and runway 34. The Salt Lake Valley is surrounded by terrain on three sides. To the west are the Oquirrh Mountains which stand approximately 5 nautical miles from U42 with peaks exceeding 10,500 feet MSL. To the south, the valley is split by the Traverse Mountains which separate the Salt Lake Valley from the Utah Valley. The Traverse Mountains, in conjunction with the Oquirrh range substantially limit the corridors in which U42's primary users may approach and depart the airport. East of the airport are the Wasatch Mountains with peaks reaching approximately 12,000 feet MSL, almost 8,000' above the airfield elevation. While these mountains are nearly 10 NMi away from the airport, they constrict all air traffic in the valley, including approach and departure traffic for SLC. North of the airport is the most benign terrain as the valley opens to the Great Salt Lake, however SLC is situated directly north of the airfield in this area.

6.1.3.3 Obstacle and Terrain Considerations: Runway 16

Obstacles considered for OEI takeoff performance were identified using the FAA AC-120-91A Area Analysis Method. As a typical starting point for takeoff performance analyses the project team analyzed a standard 'straight-out' One Engine Inoperative Departure Procedure (OEI DP) for all study aircraft. Utilizing a 'straight-out' procedure is standard practice performed by aircraft operators for situation where performance is either unconstrained by obstacles or is only constrained by obstructions that cannot be avoided by turning (i.e., close-in obstructions).

In accordance with current industry practice, the obstacles identified in the OEI DP were used without the application of any obstacle accuracy. Any terrain values encountered included the application of a 100-foot additive to account for the possibility of vegetation or other, un-surveyed, land cover.

Figure 3 shows the existing OAS obstacles currently identified and maintained by the FAA along with the AC 120-91A Area Analysis standard splay boundaries. Figure 4 shows the obstacles identified in the new AC-150-5300-18B compliant survey which has not yet been published. Several of the obstructions currently identified in the OAS no longer appear in the survey data, such as those along New Bingham way, which has been reconfigured, while many additional obstructions have been identified including a refined 'ROAD' obstructions along 7800 S and an additional 'TREE' obstruction at the south end of the West Jordan Sports Complex. The survey also identified multiple terrain points penetrating the identification surfaces on the airfield.

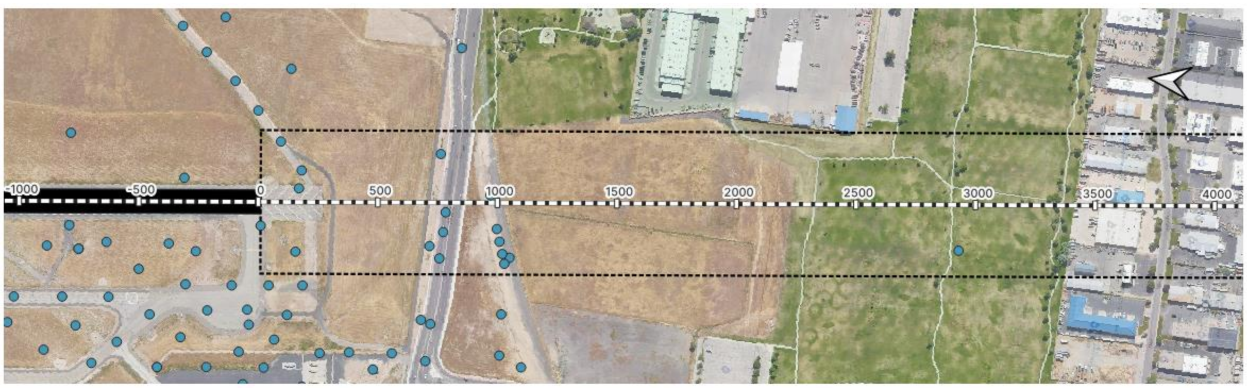


Figure 3 Runway 16 OEI DP Close-In with Previous OAS Obstacles

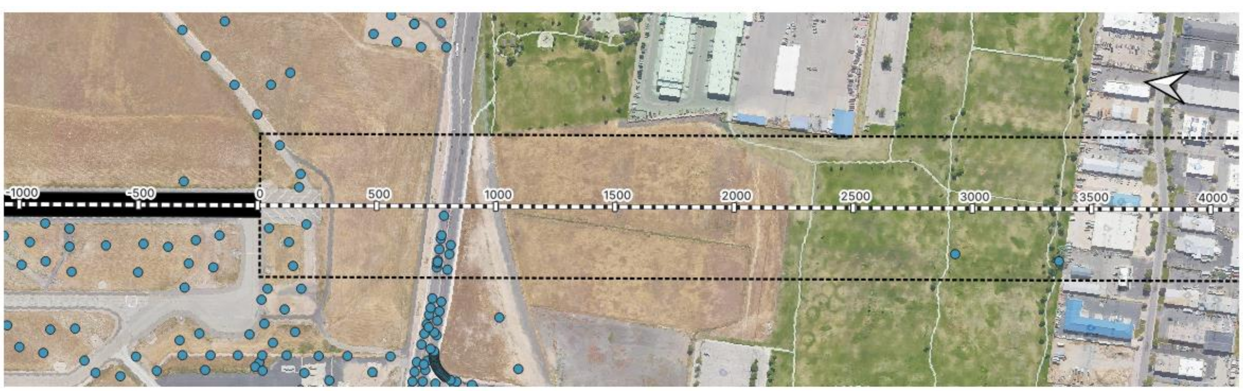


Figure 4 Runway 16 OEI DP Close-In with New Survey

Figure 5 shows the distant obstacle picture for runway 16. There are several distant obstacles identified in both the new survey information and the existing OAS obstacles, but none are particularly penalizing. The primary distant obstructions to aircraft performance and operations are the rising terrain to the south of the airport, which is discussed in Section 6.1.3.2 and the Special Use Airspace (SUAS) for Camp Williams, shown below with the red hatched areas, which will be discussed further in Section 7.1. As a result, an aircraft operator evaluating One-Engine Inoperative performance would likely elect to either develop a procedure turning east toward the gap in the terrain adjacent to the SUAS (shown below in Figure 5) or making a 180 degree turn direct to the TCH VOR (not depicted). This procedure and subsequent obstacle analysis will be further discussed in Section 10.

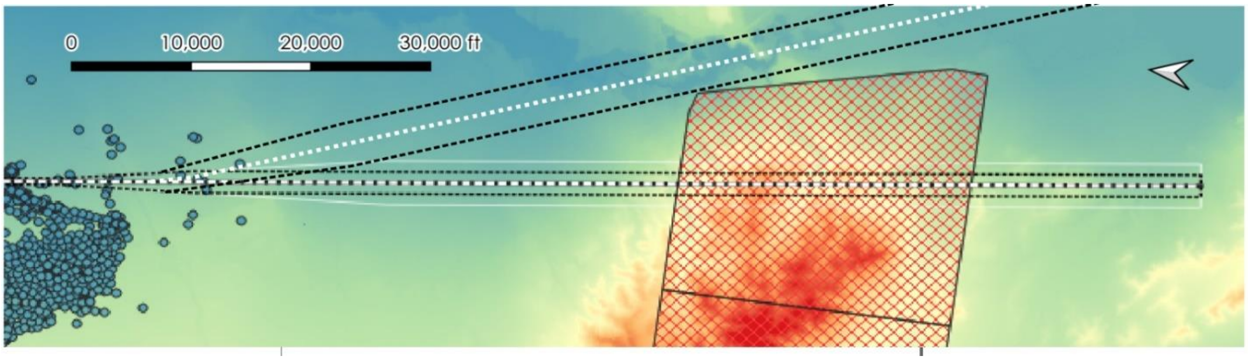


Figure 5 Runway 16 OEI DP Distant Obstacle picture

To preserve the accuracy of the aircraft performance findings in this report, the airport and SLCDA should prevent any new obstructions from being built within the extents of the OEI splay depicted in the figures.

6.1.3.4 Obstacle and Terrain Considerations: Runway 34

The previous OAS obstacles, shown in Figure 6, have only two close-in terrain points and two Runway End Indicator Lights within the OEI splay. The first 4,000 feet off the departure end of the runway is owned by the Airport and kept free of obstructions.

The current FAA OAS does not identify any obstacles, either identified as 'ROAD' or otherwise, on or near 6200 S situated at the north end of the airport. The new survey information, shown in Figure 7, shows additional obstacles within the OEI splay (primarily rising terrain) but these new points are no more substantial than what is currently in the OAS. These include several additional local high points identified but none exceeding 2.5' above the runway end elevation.

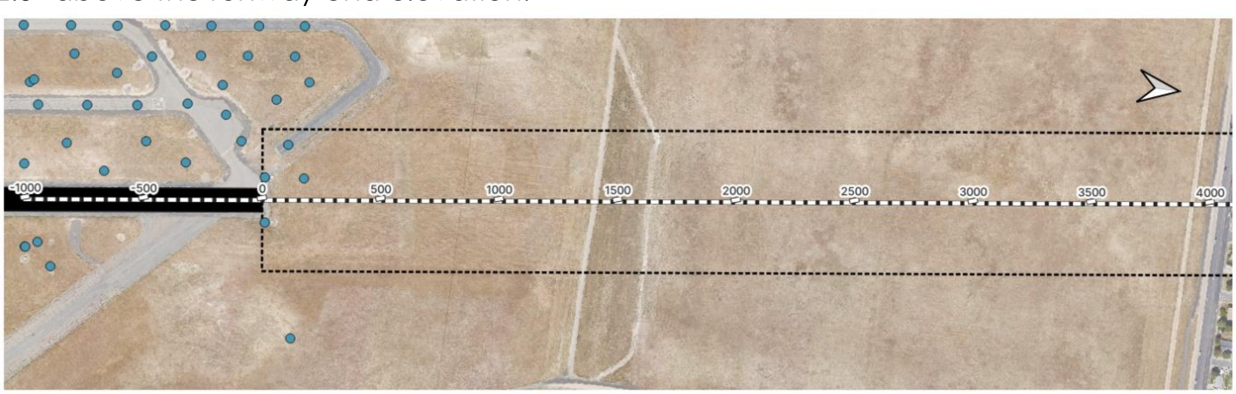


Figure 6 Runway 35 OEI DP Close-In with Existing OAS Obstacles

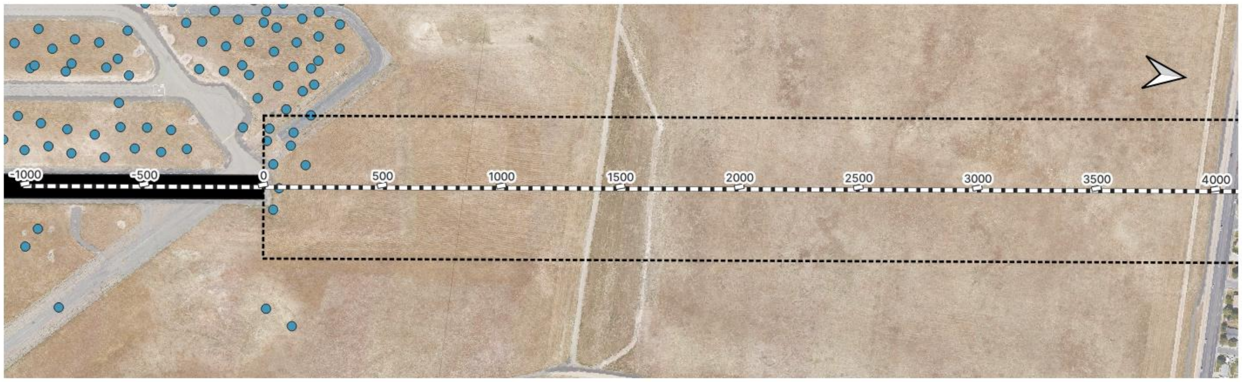


Figure 7 Runway 35 OEI DP Close-In with New Survey

The absence of obstacles identified along 6200 S in both the OAS and new survey is a result of the current FAA AC-150-5300-18B VGA process which requires the surveyor to quality assure and submit only those obstacles which penetrate the VGAS and VGPS. In this situation, generic road height additives along 6200 S do not penetrate either surface and were therefore not required for reporting to the FAA. However, the existence of obstacles below either surface will play a role in defining the existing and future aircraft performance capabilities for northbound departures.

During the geospatial deconfliction process, the team identified several power lines and trees on the north side of 6200 S and several light poles on the south side of the road, some located within the OEI splay boundaries. The team created estimated values for these obstructions, using Statewide LiDAR data, and determined that the presence of these obstacles would have OEI performance impacts.

Figure 8. Obstructions Identified by the Project Team along 6200 S

As a result of these initial LiDAR based findings, RS&H worked with the establish survey team to produce a supplemental subset of obstacles in the vicinity of 6200 S which were captured under the original -18B survey but not fully quality assured for submission to ADIP. Figure 9 shows the resulting obstacle picture when the additional survey information is included.

Figure 9. Additional Surveyed Obstacles along 6200 S

Figure 9 shows that there are additional obstacles that the OEI calculation should consider along 6200 S that are above the elevation of the DER. Some of the newly identified obstacles within the OEI splay are over 60 feet above DER, with the majority falling between 40 and 50 feet height above DER. The obstacles identified by the survey just north of the road are more substantial, measuring 75 feet to 82 feet above the DER. While not all aircraft operators will likely be aware of these obstacles, because they were not required to be reported to the FAA via ADIP, the supplemental obstacles were included in the aircraft performance analysis in this report.

The more distant obstacle picture north of the airport poses no significant challenges for OEI performance. There are obstacles identified within the splay, particularly near I-15 and SLC, but the terrain is on a consistent downslope toward the Great Salt Lake, mitigating the height of most obstacles identified. The distant obstacle picture can be seen below in Figure 10. All values shown in “blue” are below the overall elevation of U42.

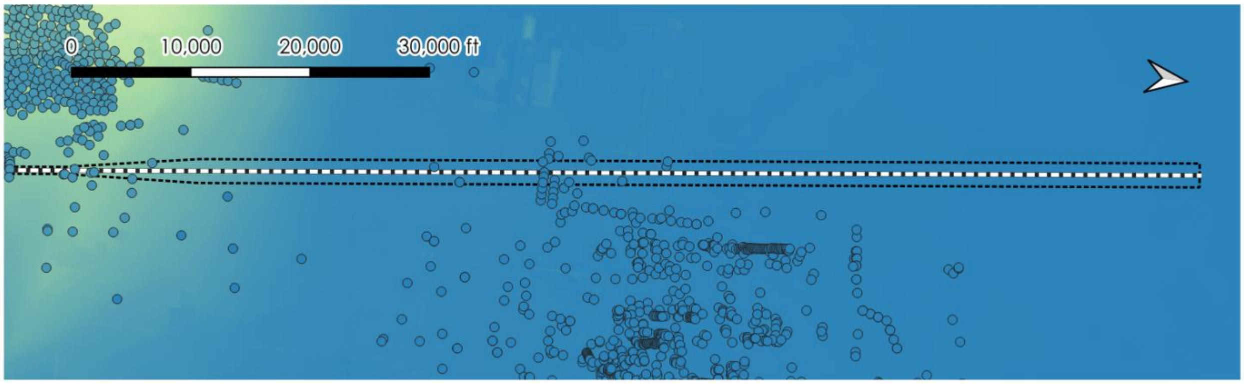


Figure 10 Runway 35 OEI DP Distant Obstacles with New Survey

To preserve the accuracy of the aircraft performance findings in this report, the airport and SLCDA must prevent any new obstructions from being built within the extents of the OEI splay depicted in the figures.

6.2 Evaluation of Re-Oriented Runway Heading

During the project team analysis for future airspace and payload range capabilities, several alternative runway orientations (changes to the overall runway heading) were examined. The goal of this analysis was, initially, to examine whether a re-oriented runway would be able to reduce aircraft separation conflicts with SLC arrivals and departures. If that goal was achieved, then the subsequent preliminary runway design would be shared with the civil planners for AC-150-5300-13C compliance and would be analyzed for OEI aircraft performance/payload range considerations.

The bulk of the assessment took place by comparing potential extended centerlines to existing simultaneous approach operations and potential VFR/Class D airspace which is described in a complementary tech memo to this one covering U42s role in the overall SLC airspace.

The primary range of runway rotations considered was constrained by available airport property boundaries necessary to maintain the existing 5,862ft pavement length. This resulted in a maximum clockwise rotation of 2.5° shown in Figure 11 as Rwy 16/34 P. The maximum counterclockwise rotation was determined to be 15.5° and is labeled as Rwy 14/32 in Figure 11.

Figure 11 (Left) Diagram of Re-Oriented Runway Options Considered at U42

Runway 16/34 P would make the existing runway at U42 completely parallel to runways 16R/34L and 16L/34R and SLC. This would enable certain closely spaced parallel operations between the two airports but would require an ATCT at U42 along with changes to the airspace system.

Runway 14/32 represents the most significant counterclockwise rotation that could be achieved within the boundaries of U42 with the existing 5,862ft length. Rotation of the runway any further in the counterclockwise rotation would likely result in the acquisition and demolition of buildings outside the airport and was considered unfeasible. This runway 14/32 creates an 18º separation from SLC runways 16R/34L and 16L/34R.

An initial instrument procedure feasibility analysis was performed on both the potential 14/32 orientation and 16/34 P orientation and both were found to be capable of supporting full RNAV (GPS) approaches and RNAV departures without any reduction in minimums from what is currently available.

Unfortunately, the analysis associated with re-orienting the runways, discussed in the separate tech memo, does not result in any significant capacity gains between U42 and SLC without the installation of ATCT and redesign of the airspace. Once those tasks are achieved, similar levels of safety and capacity can be achieved through enhanced procedure design without the requirement to re-orient the runway. Therefore, the project team decided not to pursue a runway rotation and no further analysis for instrument procedures, aircraft performance or payload range was performed.

7 Airspace and Instrument Procedures

7.1 Existing Airspace/Air Traffic Control

U42 is a non-towered airport that operates under the jurisdiction of SLC TRACON (S56) within Class E airspace. U42 is situated directly beneath the published SLC Class B airspace, which has a floor of 6000 feet MSL above the airport. The airport is situated so that the level portion of the VFR traffic pattern for Category A and B operations do not penetrate SLC Class B airspace. However, U42 IFR operations remain constrained by the SLC Class B Airspace, routinely resulting in long departure holds waiting for SLC approach traffic to clear before releasing U42 departures. As the airport is non-towered there are no Class D airspace carveouts for U42.

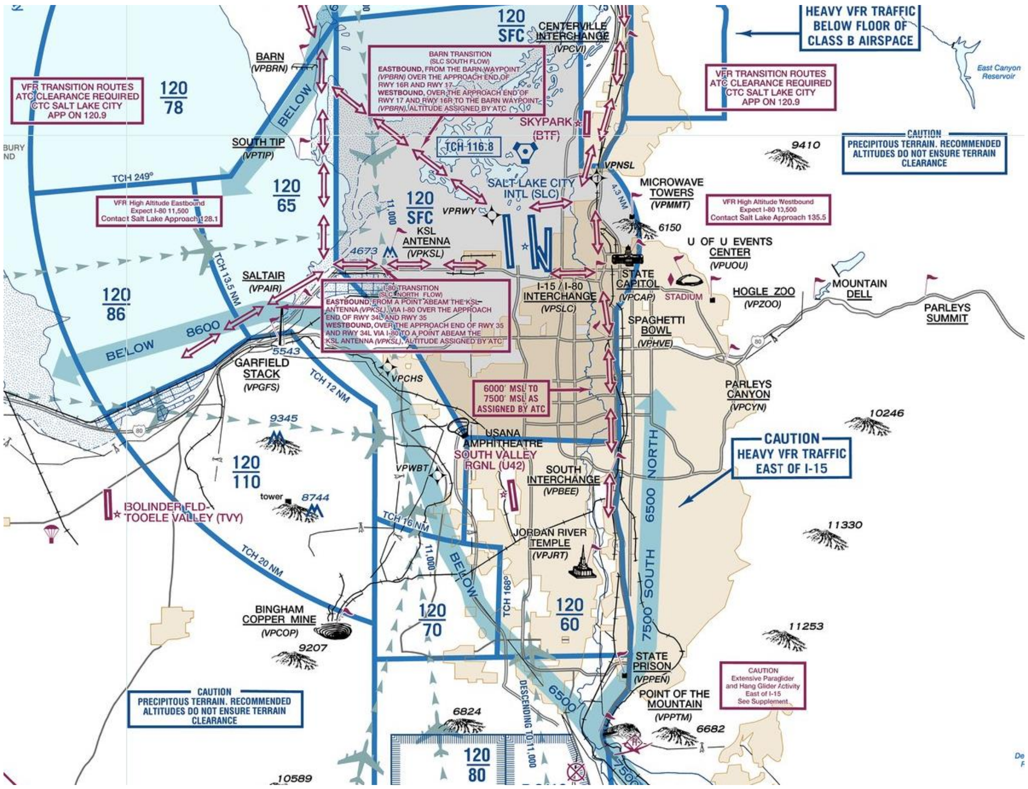


Figure 12 FAA "Fly" chart for Salt Lake City showing Class B Airspace, VFR Corridors and VFR Flyways

Four special use airspaces are located south of U42 attached to the Camp Williams Utah National Guard training facility. The four areas are comprised of two stacks of two

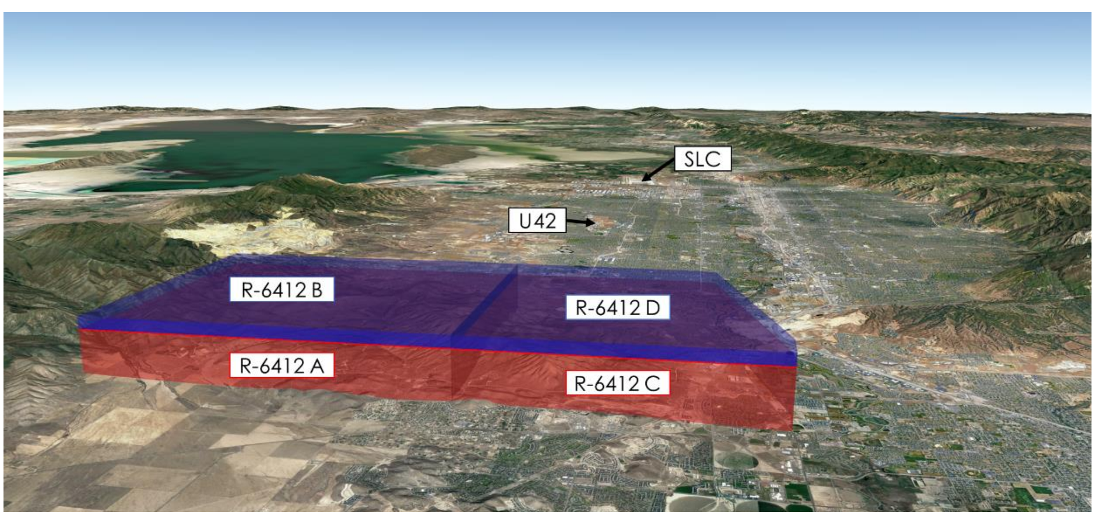


Figure 13 3D Depiction of R-6412 A/C (red) and R-6412 B/D (blue) residing next to each other. Area R-6412A controls surface to 9,000 feet MSL, while R-6412B controls from 9,000 feet to 10,000 feet MSL. Immediately east lie R-6412C, controlling surface to 9,000 feet MSL and R-6412D controlling 9,000 to 10,000 feet MSL. The areas are controlled by Salt Lake City TRACON via NOTAM when training, including live-fire artillery, activities are underway at Camp Williams. A 3D image of the surfaces, as viewed from the south, can be seen in Figure 13.

An Army/DoD/FAA proposal is currently being evaluated to reduce the extent of R-6412C/D by shrinking the eastern boundary 1 to 2 miles. The remaining areas C/D areas would then be merged with R-6412A/B. This proposal originates from a combination of airspace users looking for additional non-restricted airspace near the Point of the Mountain and a relative lack of use by armed forces operating on or near the eastern portion of Camp Williams. For the purposes of this analysis, the team did not consider any changes to R-6412A/B/C/D and sought to explore airspace/flight procedure options based on the current layout.

7.2 VFR Traffic Patterns

U42 is currently supported by standard, left-hand, traffic patterns for runway 34 and a non-standard right-hand pattern for runway 16, forcing all VFR fixed and rotor wing traffic to the west of the airfield and away from SLC north flow approach traffic. The FAA is unlikely to consider a standard left-hand traffic pattern for runway 16 as the traffic from SLC in a south flow for both the departures for runways 16L and 16R and the missed approach path for runway 16L would result in reduced vertical separation between U42 and SLC traffic. The traffic patterns do not have any published restrictions or special altitudes and are both free of obstacle and terrain penetrations. The Category B traffic pattern assessment areas are shown in Figure 14 in accordance with FAA 7400.2K Traffic Pattern Airspace. At this time there are no known, or planned, obstacle penetrations to the traffic patterns at U42.

Figure 14 U42 Rwy 16-34 VFR Traffic Pattern Areas with SLC Class B Limits and Altitudes

The Utah Army National Guard (UTARNG) 97th Aviation Troop Command unit based at U42 has requested a modification to the helicopter pattern to use airspace east of runway 16-34 and west of State Highway 154. This unit currently operates 38 aircraft, with 37 of those being rotor wing and 1 being fixed wing. The ANG's proposal stems from a desire to further separate military and general aviation traffic at the airport. While the existing GA Cat B pattern is west of the airport to avoid conflicts with SLC approach traffic, the UTARNG typically flies the pattern with rotor wing aircraft much lower than fixed wing traffic, typically at or below 5500' MSL. This lower altitude is common at airports throughout the NAS and provides vertical separation between aircraft in the U42 pattern and SLC traffic on final approach above the pattern.

If the UTARNG proposed east side pattern were executed, military traffic could use the Bangerter Transition to enter the pattern which would serve to further separate military helicopter traffic from typical GA pattern traffic. In conjunction with the proposed new traffic pattern, UTARNG has proposed additional development of landing pads and a helostrip on the east side of the airfield to provide further deconfliction of operations. This has been taken under advisement by SLCDA and at this time no commitments have been made regarding the pattern or the additional airfield development.

The project team does not recommend changes to the GA VFR traffic patterns at this time. The project team instead recommends further exploration of the UTARNG proposed east traffic pattern for military use only, regardless of whether additional military infrastructure is installed on the airfield. This change in traffic pattern will provide increased safety of operations for both military and GA users of the airport, especially as traffic continues to increase.

7.3 Considerations for a Future ATCT

As a part of a future airspace redesign that will focus on safely increasing the overall number of arrivals and departures at U42, the team recognizes that U42 would benefit from implementing Class D airspace, with a fully staffed ATCT, or the airport could also take advantage of remote air traffic control facilities that could be monitored either by future staff at S56, SLC ATCT or by a Non-Fed tower team located offsite.

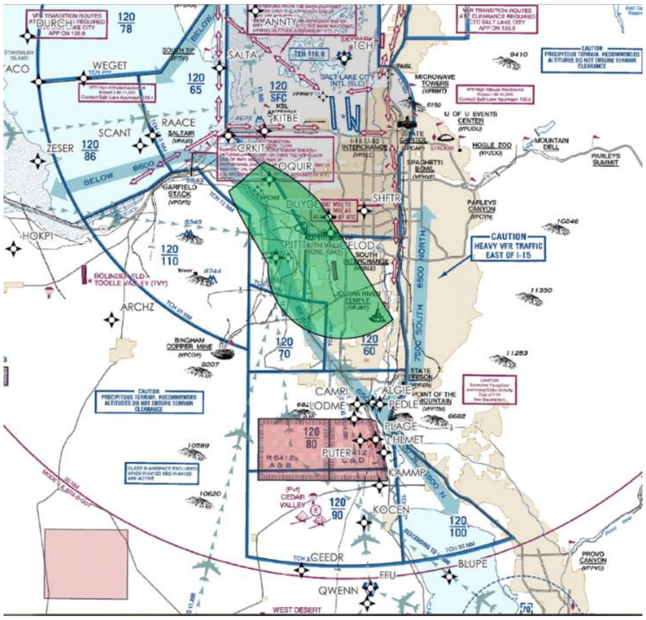


Figure 15. Possible new Class D at U42 that would Require On-site or Remote ATCT

The introduction of some supplemental level of air traffic control is seen as critical to any opportunity to substantially increase the overall safety and quantity of flight operations at U42. This will be especially important when considering forecast increases in air traffic at SLC. To achieve this enhanced capability, the team has analyzed a possible scenario where class D airspace is implemented around U42 and in the area immediately west of the airport to keep aircraft safely clear of SLC traffic. This could look something like the green area depicted left in Figure 15.

Other opportunities for traffic deconfliction may not require the implementation of physical, or locally staffed, ATCT. In this scenario an array of remote sensing technologies can be designed and installed at the airfield to enable a team of air traffic specialists to control the airfield and airspace immediately surrounding U42. This would most logically fall to SLC ATCT or S56, but it could also be implemented by other Non-Federal Tower personnel.

In either situation, the implementation of onsite ATC services at U42 will only be implemented through careful coordination with FAA and air traffic stakeholders. For this masterplan, we believe it will be important to identify a possible ATCT position and/or opportunities for remote air traffic control sensing arrays to ensure that future concepts for local ATC can be accommodated amidst any airside enhancements. Appendix 2 details the study showing the most likely area for the placement of a future ATCT determined by the project team at the time of the writing. Note that the precise tower placement on the eastern half of the airfield as shown in Appendix 2 would be contingent on implementation of any proposed development by UTARNG in the adjacent area. The potential VFR/Class D airspace described here is further explored and analyzed in a complementary tech memo to this one covering U42's role in the overall SLC airspace.

7.4 Existing Instrument Procedures

7.4.1 Arrivals

U42 is not currently supported by any published Standard Terminal Arrival Procedures (STARs). The airport is not under consideration to receive a new purpose-built STAR, and the existing STARs are not planned for expansion to include U42. This is due to the lack of instrument approach procedures at the airport, limited overall IFR operations and current Class B and MVA limitations near the airport.

Arrivals into U42 are currently limited by significant terrain in three directions, restricted airspace to the South along the extended runway centerline, SLC traffic to the north and PVU traffic to the south. These challenges limit all instrument procedure capabilities and force arrivals to either consider visual flight rules, use approach control services along VFR corridors or await approach control services for approaches to runway 34.

Pilots visually navigating to and from the U42 airspace frequently use established VFR corridors and VFR Flyways shown in Figure 12. These include the established VFR Flyways both immediately west and east of the airport and VFR Corridors east of the airfield which bring aircraft into the airspace environment around U42 at or below 7,500 feet MSL on the east side and below 6,500 feet MSL on the western corridor.

Aircraft arriving at U42 under IFR conditions will be vectored to the start of the RNAV (GPS) Rwy 34 approach at the FFU VOR approximately 20 NM south of the airport at an altitude of 9,000 feet MSL. This is because U42 is underneath Class B airspace, and the approach will ultimately place aircraft below S56 approach control services. However, if the R-6412 D airspace is active then only VFR options exist.

When terminal weather conditions fall below VFR for arrivals (clear of clouds and 1,000ft separated from terrain/obstacles over the Salt Lake City Metro), then all arrival operations into U42 are temporarily suspended until weather conditions improve.

The introduction of U42 to existing STARs, or establishment of new STARs supporting U42, can be considered when the following occur:

1. U42 experiences significant increase in IFR traffic
2. U42 established instrument approach procedures to both runways with approach control services
3. U42 establishes an ATCT and Class D airspace

7.4.2 Approaches to U42

U42 is currently served by one instrument approach procedure to runway 34 and with a circling approach to runway 16. The runway 34 approach is published by the FAA and combines varying navigation methods together on a single approach plate. The approaches to runways 16 and 34 are summarized in Table 4 below.

Table 4 Instrument Approach Options to Rwy 34

Procedure Name	Runway	Owner	Amendment, Date	Type	CAT C/D Decision Height (feet)	CAT C/D Visibility (Miles)	NAV Requirements
RNAV (GPS) RWY 34	34	FAA	1A, 26MAR20	LPV	275	7/8	WAAS
				LNAV/ VNAV	416	1-1/2	VNAV
				LNAV	434	1-1/4	LNAV
	16			Circling	1174 – C 1434 - D	3	LNAV

7.4.2.1 RNAV (GPS) RWY 34

The only published approach to U42 is the RNAV (GPS) Rwy 34. This approach supports the LPV, LNAV/VNAV and LNAV methods of making an approach to runway 34, including the option to circle to land on runway 16.

This approach has an initial approach fix (IAF) south of the airport at the FFU VOR which uses a procedure hold in-lieu of a procedure turn or feeder leg. This design results in the IAF being collocated with the intermediate fix (IF), which limits all vectoring by ATC to send aircraft to the FFU VOR only.

From the VOR the approach proceeds at a minimum altitude of 9000 feet MSL to KOCEN through R-6412D. FAA and DoD consider aircraft in this segment to be above R-6412C top altitude of 9,000 feet MSL. From KOCEN, the approach then descends to the final approach fix at LODME, at which point, or shortly before, the aircraft will switch from basic GPS navigation (either LNAV or LNAV/VNAV) into the method used to execute the final approach to landing.

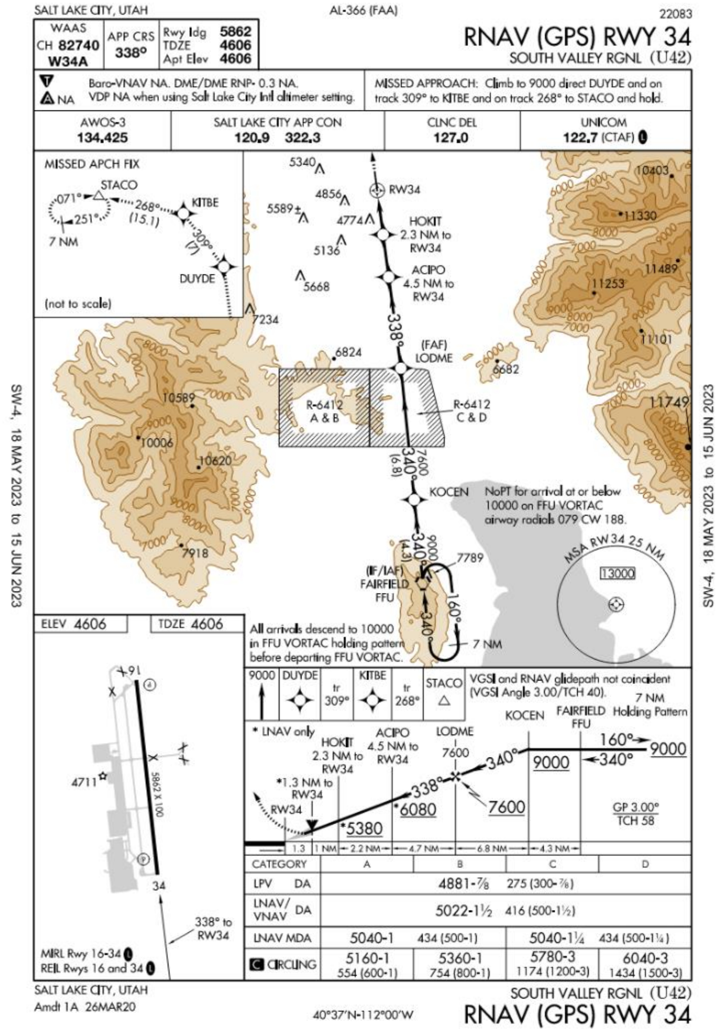


Figure 16 RNAV (GPS) Rwy 17

For aircraft that can use WAAS, the localizer performance with vertical guidance (LPV) method will result in standard CAT I approach, using a 3.00° glidepath angle with minimums of a 275-foot decision height (DH) and 7/8-mile visibility.

For aircraft that are not capable of using WAAS, the LNAV/VNAV option will permit approaches as low as 416-foot DH and 1½-mile visibility.

The final option is to use LNAV only with approach minimums of 434-foot minimum descent height and 1¼-mile visibility.

The circling approach minimums listed on this approach would be used by aircraft flying LNAV only until the point at which the decision is made to execute the circle to land maneuver to runway 16 with minimums of 1174 feet and 3 miles visibility (Cat C) or

1434 feet and 3 miles visibility (Cat D). There are no circling restrictions which means that the pilot can choose to maneuver either west or east of the airport to align with runway 16.

The missed approach procedure climbs to 9,000 feet MSL direct to the DUYDE waypoint followed by left turns toward KITBE and then STACO where the aircraft enters the published hold.

7.4.3 Analysis of Existing Approaches

The existing approach procedure to runway 34 was built in both MDA Global Procedure Developer (GPD) and FAA TARGETs platforms to compare the aeronautical and geospatial inputs identified in Section 6.1.3 against the latest FAA Terminal Instrument Procedures (TERPS) and Performance Based Navigation (PBN) criteria.

Upon rebuilding the approach procedure on both platforms, no significant discrepancies were detected between the current procedure, waypoints, altitudes, speeds, and minimums for the RNAV (GPS) Rwy 34. The approach procedure was also found to be compliant with the latest FAA TERPS/PBN criteria.

The analysis with the latest obstacle information found that the approach minimums for the LPV are driven by penetrations to the final approach segment Obstacle Clearance Surface (OCS) with an additional adjustment for Precipitous Terrain as required by 8260.3E criteria and are unchanged from the published procedure. The VNAV DH will likely need to be slightly increased due to new obstacles documented in the most recent survey to 434 feet while the visibility minima are unchanged. The LNAV minima are unchanged by the new obstacle survey.

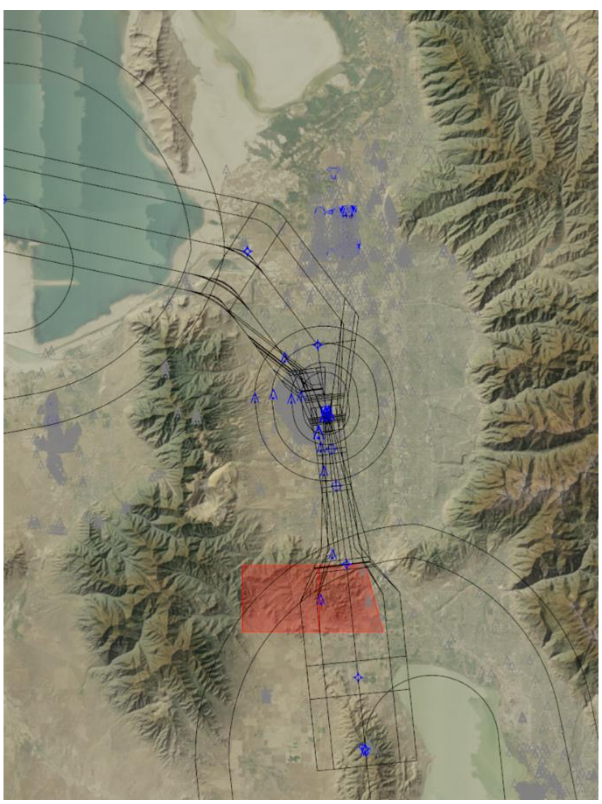


Figure 17 RNAV (GPS) Rwy 34 OCS

The current published hold at FFU was found to be 1200 feet too low (terrain penetration of the secondary area), but this is a common discrepancy in the vicinity of Salt Lake City and can be overcome with a waiver from S56. The process involves examination of the hold pattern with enroute/radar protection as opposed to the standard hold pattern design for terminal procedure design which requires a larger area.

The RNAV (GPS) Rwy 34 is designed to achieve separation from SLC north flow traffic through 1,000ft vertical separation throughout intermediate and final approach. However, this choice creates a conflict with the special use airspaces (SUAS) R-6412 C/D (R-6412 A/B/C/D are shown in Figure 17 in red). The primary restricted airspace that would prohibit use of the RNAV (GPS) Rwy 34 is the R-6412D. Historical NOTAMs indicate that R-6412C SUAS was typically active from 0600-1800L daily, but use of R-6412D is more sporadic and difficult to predict. As such, the utility of the procedure can be significantly reduced depending on DoD operations at Camp Williams.

The current state of the RNAV (GPS) Rwy 34 is unlikely to require modification following the introduction of the updated obstacle survey, but it could potentially benefit from an alternate design that deconflicts the procedure from R-6412.

The lack of instrument approaches to runway 16 is a significant shortcoming of the airport during IFR conditions and should be explored as a future enhancement.

7.4.4 Opportunities for Additional Approaches

This project team examined additional approach opportunities into U42, including an exploration of a new RNAV (GPS) approach and Charted Visual Flight Procedure (CVFP) to runway 16 and several modifications to the RNAV (GPS) to runway 34.

RNAV(GPS) approaches were evaluated for LPV, VNAV/LNAV and LNAV. Due the equipage of current and expected aircraft traffic at U42 for the planning period, the project team determined that exploring RNAV (RNP) approaches would not result in procedures with high enough utilization to be considered for future FAA production, regardless of achieved minima.

7.4.4.1 Potential RNAV (GPS) Approach to Runway 16

A new RNAV (GPS) approach to runway 16 would provide several enhancements to U42 in its current and future states. Runway 16 currently has no published straight-in approach procedures, due to a combination of challenging terrain to the west and conflicts with SLC approach and departure traffic, especially along runway 16R/34L. The only current minimums published for runway 16 are the circling minimums (1174 feet DH and 3 miles visibility for CAT C) shown on the runway 34 approach plate. These minimums are slightly worse than the typical VFR minimums of 1,000 feet DH and 3 miles visibility. This leaves the airport with unreliable instrument approach coverage when environmental conditions favor runway 16 operations, particularly during the winter season when heavy snows are a common occurrence.

Due to significant terrain to the west, south, and east of the airport, the team investigated the construction of a new RNAV(GPS) approach by designing a turning final approach course that laterally avoids Obstacle Clearance Surface penetrations from terrain and maximized traffic separation from runway 16R/34L operations at SLC in south flow.

The team achieved this through a turning approach path to runway 16 beginning with aircraft arriving from the northwest of U42, connecting a final approach course which is offset from the runway centerline by 3.00 degrees. A standard straight-ahead missed approach to the FFU VOR has the complication of avoiding the R-6412 SUAS areas and would thus require a climb gradient in the range of 380 to 400 feet per nautical mile to

9,000 feet MSL. A modest redirection to the east would completely avoid R-6412 and reduce the missed approach climb gradient to 220 feet per nautical mile to 7,000 feet MSL needed for terrain separation. The GPD depiction of the primary paths, and alternate missed approach to avoid R-6412, are shown in Figure 18.

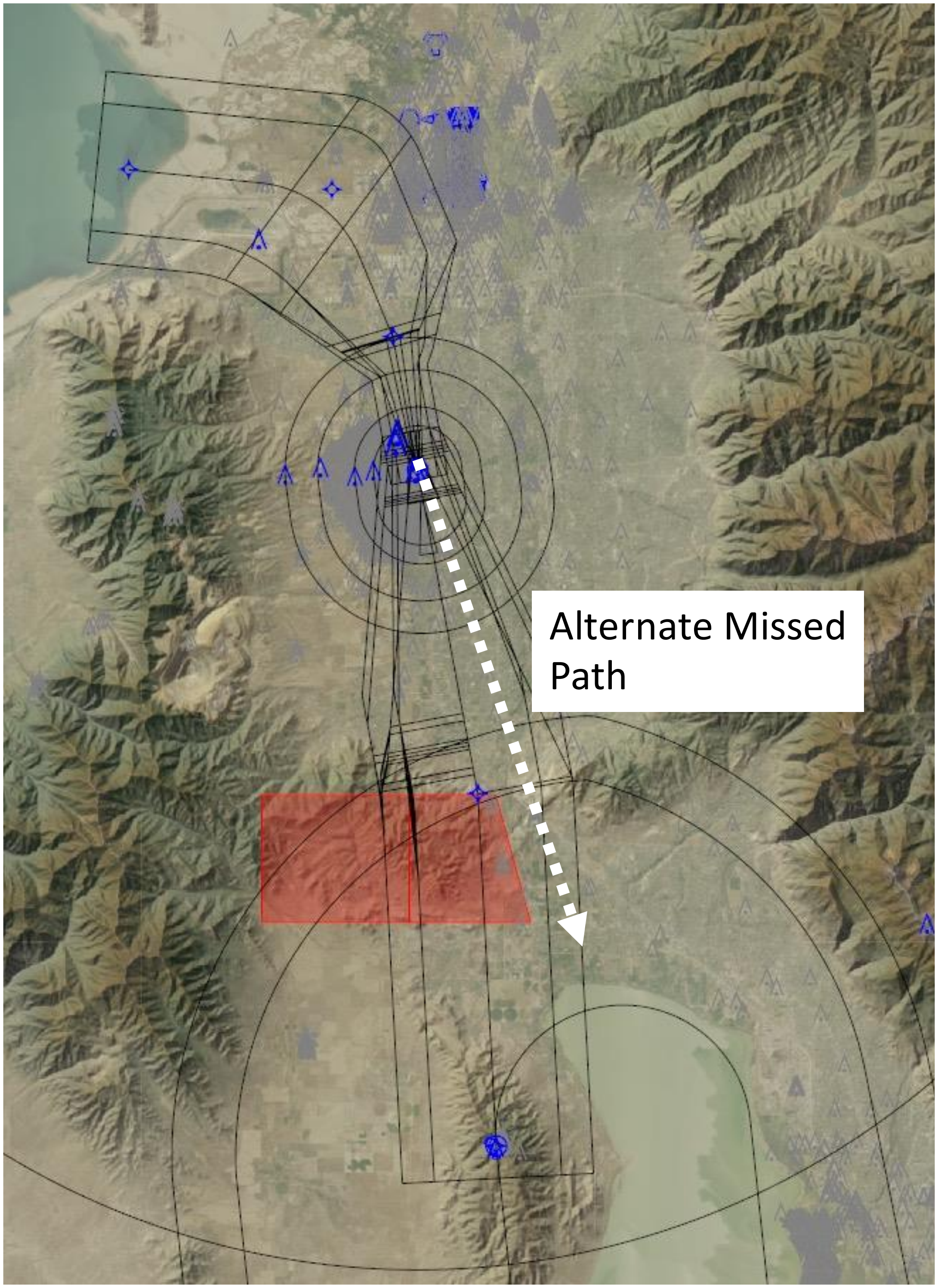


Figure 18 Rwy 16 Possible GPS Final Approach Segments, including an alternate missed approach path

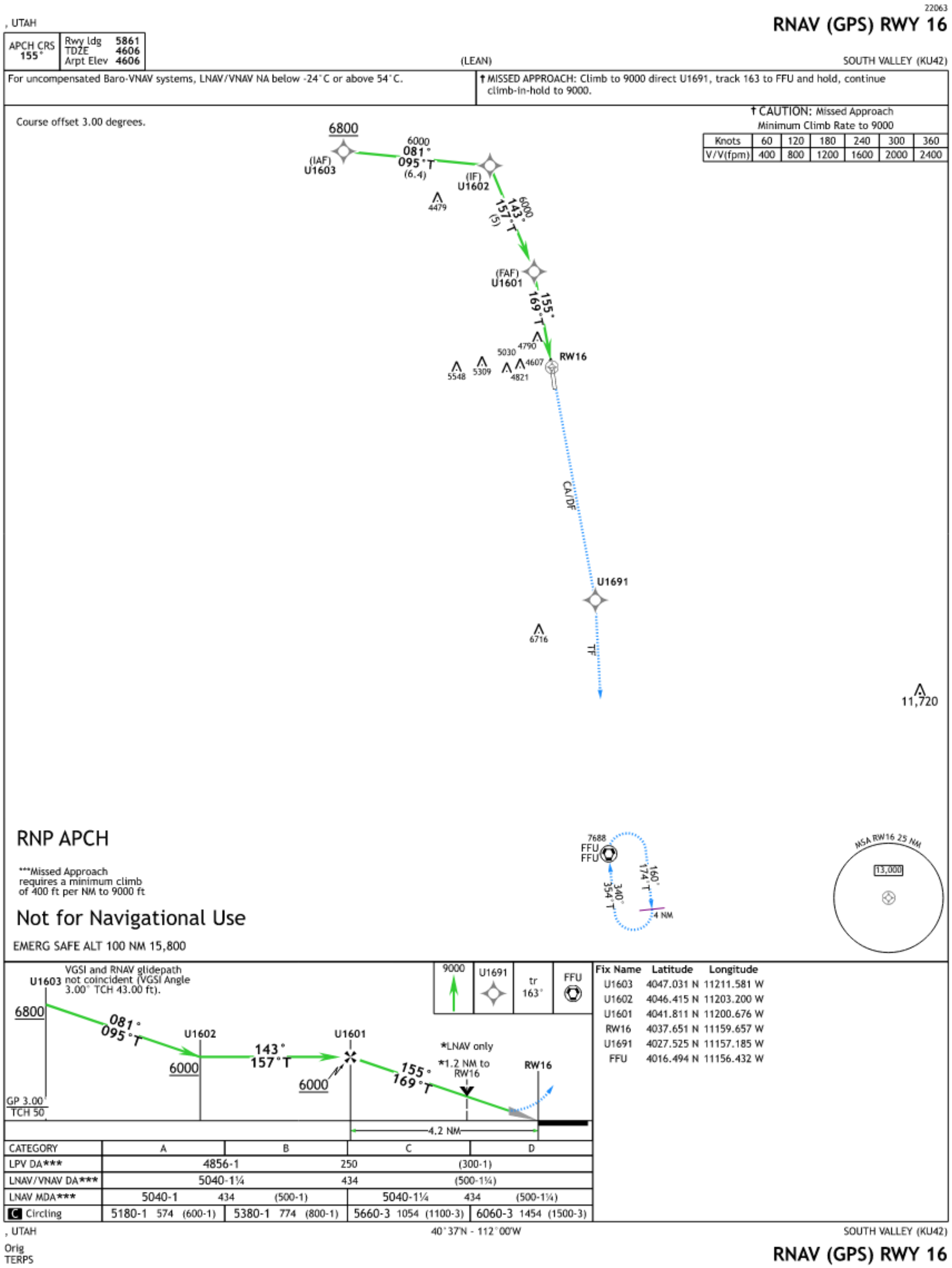


Figure 19 Flight Inspection Graphic of a potential RNAV (GPS) Rwy 16 Approach

For Category C aircraft this new approach would provide the following lines of minima:

- LPV – 250 feet DH – 1 Mile Visibility
- VNAV – 434 feet DH – 1-1/4Miles Visibility
- LNAV – 434 feet DH – 1-1/4 Miles Visibility

These minimums represent a significant improvement over the existing circling minimums associated with the RNAV (GPS) Rwy 34 approach. The addition of this approach would also require the markings on runway 16 to be enhanced from the current basic visual to non-precision instrument.

Any additional enhancements to the visibility minimums would require the addition of an approach lighting system. The cost-benefit associated with adding an ALS (MALSF or MALSR) would not likely be advantageous unless daily commercial operations were expected, and the addition of any lesser ALS would likely only provide a marginal benefit to the airport. Due to the offset final approach course, there would not be an opportunity to reduce the DH below 250ft.

Along with improvements to minima and overall availability of U42, this RNAV procedure would also allow increased operational efficiencies within the overall SLC airspace. Currently, any approach to runway 16 in IFR conditions requires a circle-to-land maneuver for aircraft arriving from the opposite direction of operation (arrive from the south to land from the north). If an aircraft is approaching from the south, coordination, and communication with S56 is required until the runway is in sight. If a dedicated instrument approach to runway 16 were developed, S56 would be able to clear the aircraft onto the approach from the existing arrivals published for SLC, which in turn would reduce controller workload.

While the approach does provide benefit in IFR conditions, it does create potential traffic flow challenges with the SLC 16R missed approach procedures when traffic is in a south flow. The missed approach at SLC on runway 16R calls for a climb to 4800' MSL followed by an immediate right turn to a 300˚ heading. This configuration could create an unacceptable head-to-head scenario for arriving traffic to U42 and an aircraft flying a missed approach for runway 16R. This might result in either reduced separation (less than 1,000ft vertical) and/or TCAS advisory messages for both airports. As this corridor is already constrained by the northern end of the Oquirrh Mountains, it is unlikely that a workable solution could be found to completely deconflict the designed flight paths either vertically, by lowering the intermediate approach segment into U42, or by raising the missed approach segment for SLC Rwy 16R.

Considering this conflict, and the already adequate operational coverage of the existing approach procedures, the project team does not recommend pursuing development of this approach via an IFP Gateway Entry until such time as there is a significant increase in IFR traffic to U42, or S56 expresses a significant interest or need for development of instrument approach procedures to runway 16.

7.4.4.2 Potential CVFP to Runway 16

The possibility of adding a Charted Visual Flight Procedure to runway 16 was also investigated by the team to improve arrival access. CVFPs are "issued" by air traffic control and require both approach control (S56) and an operational Air Traffic Control Tower for use. Flight crews are expected to follow published visual references (often with RNAV GPS waypoints provided to assist with the path). Equally important, pilots using a CVFP must visually remain clear of obstacles and separated from other aircraft. This means that an aircraft flying a CVFP can utilize reduced aircraft separation from other aircraft, like those operating on runway 16R at SLC, when weather conditions permit the use of the procedure.

Because a CVFPs is a visual procedure, they often have higher minimums than standard instrument approach procedures and even basic VFR. The proposed CVFP shown in Figure 20 below would have minimums of 2,900 feet and 3 miles. The addition of a Runway Lead-In Light System (RLLS) would enhance situational awareness for pilots during nighttime operations. This proposed path, and RLLS, follow an established VFR path of aircraft transiting into U42 today, with additional lighting installed along an existing railroad line to avoid impingement on residential and commercial areas.

Figure 20 Proposed Rwy 16 CVFP Path

The project team does not recommend pursuing development of this approach via an IFP Gateway Entry. The procedure and RLLS would provide additional situational awareness to pilots approaching 16 and nighttime visual references to avoid potential conflicts with SLC approach traffic. However, until such a time as U42 has an ATC Tower in operation and S56 expresses a significant interest or need for development of additional approach procedures to runway 16, the procedure will not be a practical option for U42.

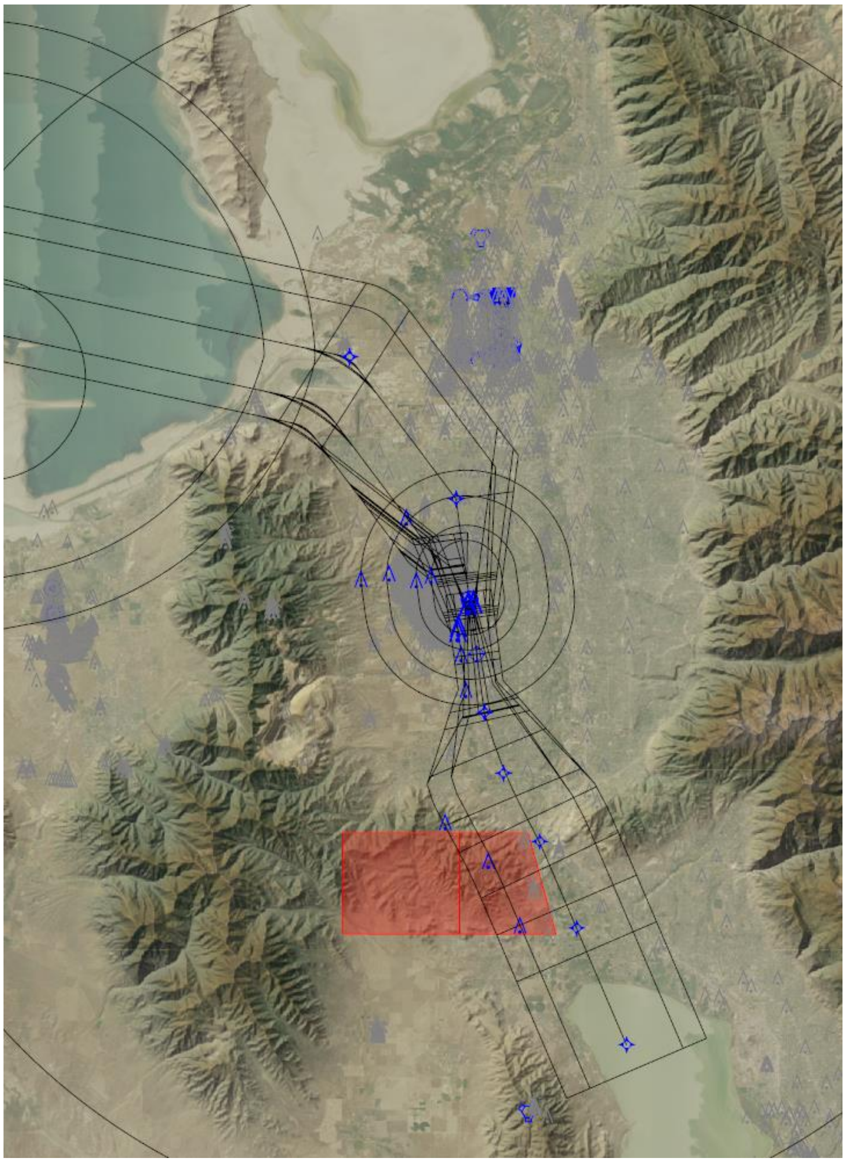


Figure 21 RNAV (GPS) Y Rwy 34 proposal, avoiding R-6412 in red

7.4.4.3 Potential Added RNAV (GPS) Rwy 34

Refining the RNAV (GPS) approach to runway 34 to avoid the R-6412 regions was also examined by the team. This would be achieved by establishing a short final approach segment, at a slightly steeper final approach glidepath angle, which is aligned with the runway 34 centerline. The remainder of the approach is preceded by an offset intermediate and initial approach path that avoids the current eastern edge of R-6412C/D.

This conceptual approach would achieve the lowest possible minimums to runway 34 given the existing approach obstacles. The minimums are also enhanced by minimizing the terrain additives necessary on the western side of the approach path. The procedure concept shown in this report was designed to stay below Class B Airspace, mitigating conflicts with SLC traffic. However, some potential conflicts with the eastern VFR corridor will need to be analyzed in further detail. The missed approach will be the same as the current RNAV (GPS) approach to Rwy 34. The proposed path and surfaces are shown in Figure 21.

For Category C aircraft this new approach would provide the following lines of minima:

- LPV – 250 feet DH – 3/4 Mile Visibility
- VNAV – 457 feet DH – 1 3/8 Miles Visibility
- LNAV – 474 feet DH – 1 3/8 Miles Visibility

While these minimums are not like those for the current RNAV (GPS), due to the steeper glidepath angle, the usability of the approach would be significantly higher thanks to the ability to avoid R-6412.

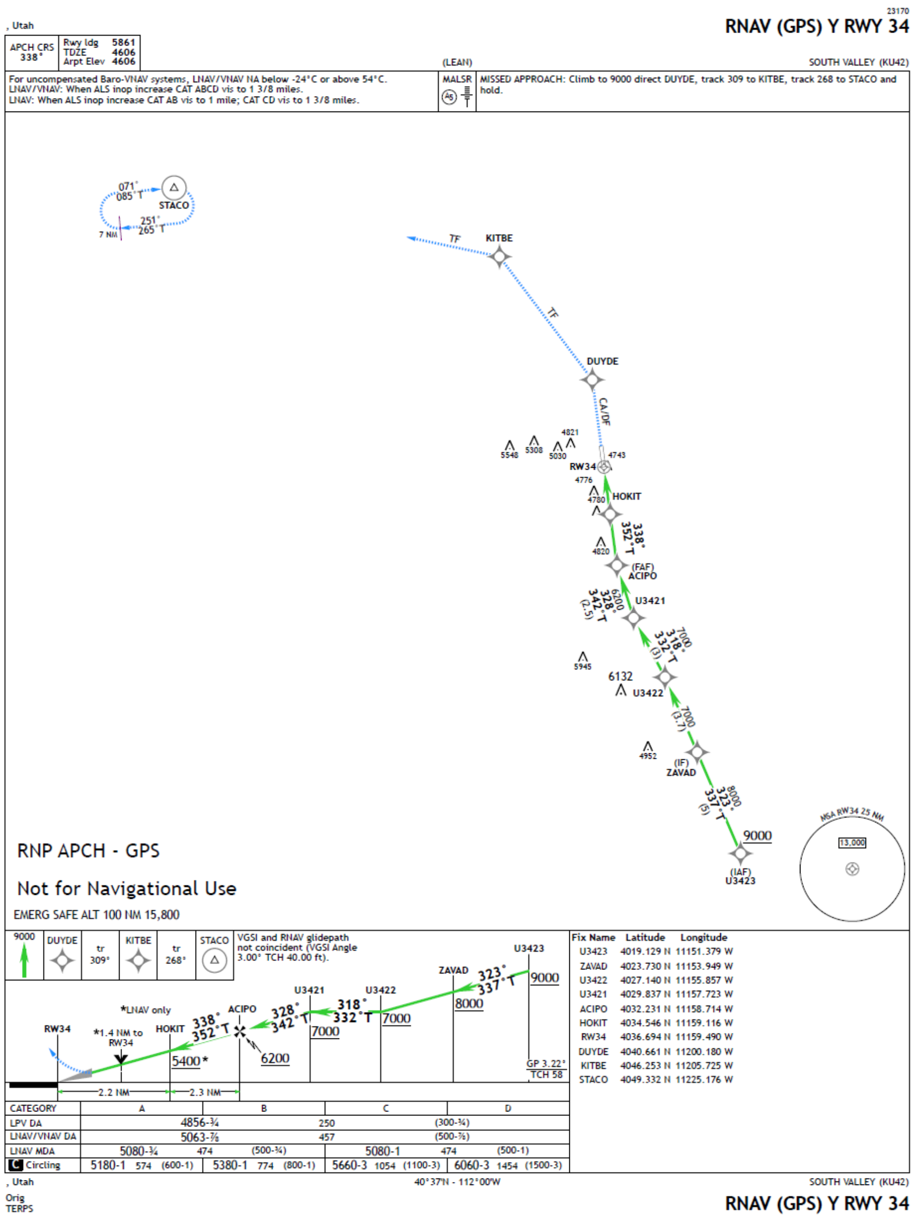


Figure 22 Offset Conceptual Approach to Rwy 34 at U42 RNAV (GPS) Y Rwy 34 (visibilities shown at the bottom include benefit of potential MALSR installed)

7.4.5 Effectiveness of Existing Approaches

To understand the effectiveness of an airport's existing approach procedures, the procedures need to be examined relative to historical weather conditions when each runway is in use and when all runway/approach options are available for use by pilots and air traffic controllers. LEAN describes the effectiveness of instrument approaches in three ways: Runway Effectiveness of an Approach Procedure, Overall Effectiveness of an Approach Procedure, and Ability of the airport to stay open to approach operations.

7.4.5.1 Runway Effectiveness of An Approach Procedure

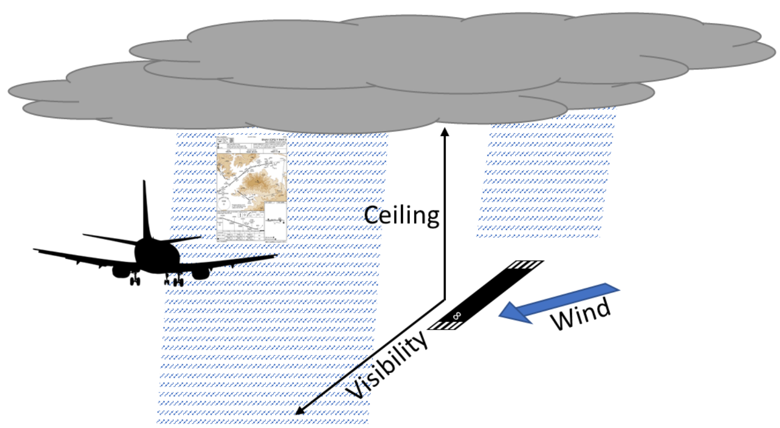
Historical weather data was analyzed (described in more detail in Section 8) for combinations of runway use, ceilings, and visibility to examine the effectiveness of each runway-specific approach procedure and for the airport as a whole.

For runway effectiveness, descriptive statistics were generated from time weighted weather observations to determine the likelihood that:

1. The runway with the approach procedure was capable of supporting approach and landing based on wind conditions

   And

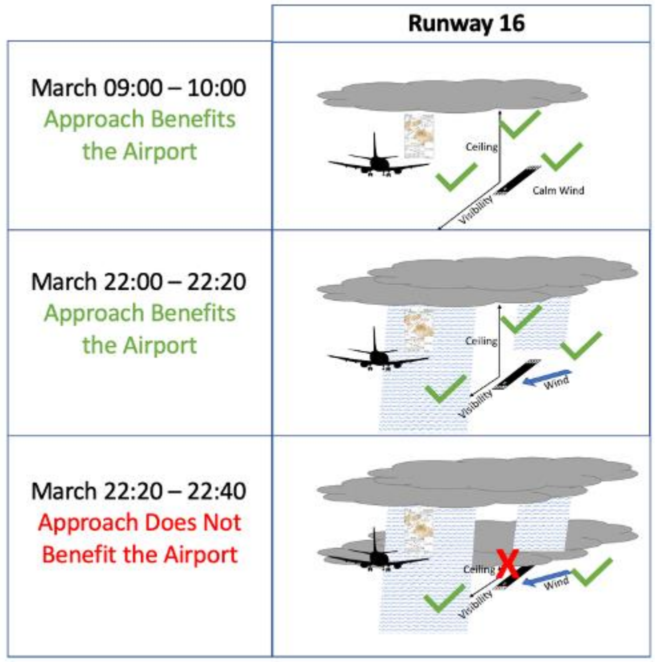
2. The runway with the approach procedure was experiencing ceiling and visibility greater than or equal to the approach procedure serving the runway.



For example, when winds on runway 16 would have been capable of supporting an approach (from the south), we determined the likelihood that the ceilings and visibility in that time weighted period would be enough to support an approach. If the winds did not support the runway operation, then no descriptive statistics were calculated because the analysis assumed that a different runway, and approach procedure, would have been in use.

This analysis shows how effective an approach is when a specific runway is in use, but not how beneficial the approach is to the entire airport. Hence the term runway effectiveness to describe only how valuable the approach is for the specific runway it is intended to serve.

7.4.5.2 Overall Effectiveness of An Approach Procedure



Understanding the effectiveness of an approach enabling aircraft to land on the designated runway is important, but it does not reveal how often that particular approach would benefit overall operations at U42.

To determine the effectiveness of a specific approach to the overall airport, the ceilings and visibility supported by the approach, and the capability of the runway to support approaches by wind, are analyzed within the overall hourly availability of the runway. This is different from the runway effectiveness because it takes into consideration periods when the approach may have been usable, but it was unavailable because the winds favored another runway, or vice versa.

In the image shown above, the overall effectiveness of the approach enabling aircraft to arrive at U42 would be high from 09:00 – 10:00 and 22:00 – 22:20. However, because the ceiling was lower than what was required for the approach procedure between 22:20 – 22:40, the procedure would not be effective at enabling arrivals into U42 during that time.

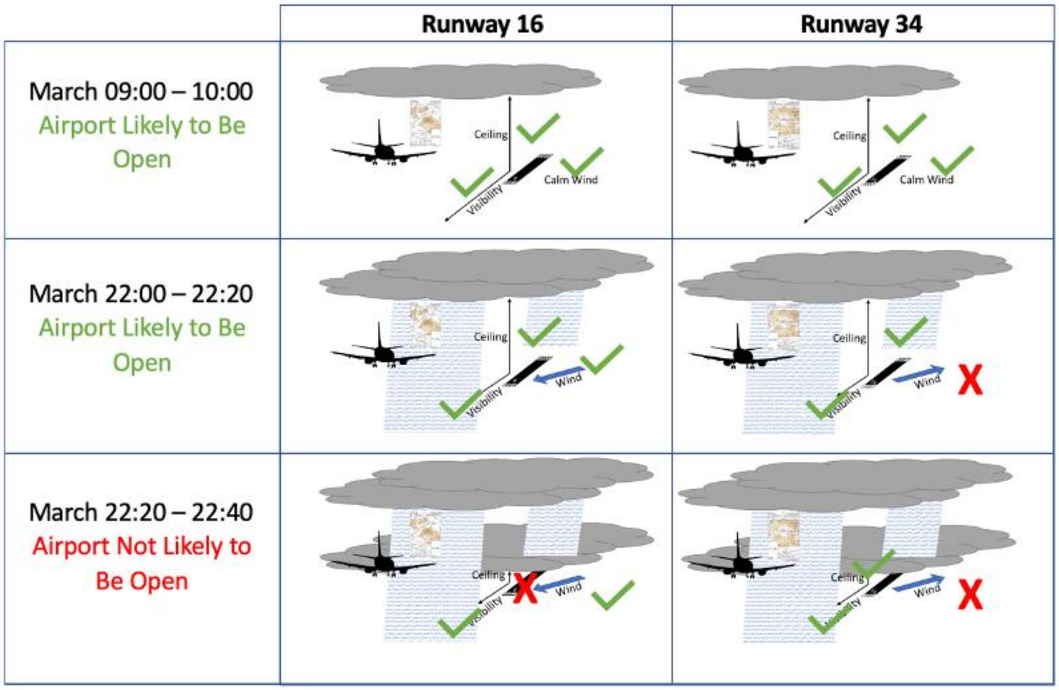
7.4.5.3 Ability of the Airport to Support Approach Operations

To determine how effective the airport is at enabling pilots to successfully arrive at a given hour and month, LEAN uses an analysis that combines multiple approach overall effectiveness together.

Determining whether an airport is likely to remain open involves examining which runway would likely have been the one available by wind preference/capability and then considering whether the aircraft/flight crew has the navigation capability to use the approach within the required weather minimums. For sophisticated aircraft operators with advanced onboard navigation technology, the range of options usually permits a higher likelihood of being able to arrive at the airport at the desired month/hour. However, for pilots with less training, or who are operating less capable aircraft, the number of approach procedure options may create a reduced likelihood of arriving at the desired time.

This reliance on training and onboard navigation technology results in different categories of aircraft that LEAN creates from historical and planned operations at the airport.

The figure below demonstrates the general analysis process of when the airport would be likely to be open to arrivals.



This example reveals that between 09:00 – 10:00, the airport would be open to arrivals using either runway 16 or 34. It also reveals that the airport would be open to arrivals using runway 16 between 22:00 – 22:20. However, it reveals that between 22:20 – 22:40, the airport would likely be closed to arrivals because the winds favored runway 34 and the weather conditions were worse than those supported by the approach serving runway 34.

By combining multiple approaches, for multiple runways, the likelihood expressed as a result of this analysis reveals how well the airport can remain open to aircraft operations at the desired time of day in a given month.

7.4.5.4 Likelihoods used with Runway, Overall and Airport Open to Operations Statistics

The process of statistically expressing the likelihood for an approach, or combination of approaches to different runway ends, to enable arrivals at the airport is expressed as a percentage of likely availability for the given hour and month.

The following relationship translates that statistical likelihood into qualitative likelihoods determined by LEAN based on observations of aircraft, and airline, operations at airports of varying sizes over the past 20 years.

100% - 95% Pilots are successfully able to land with little to no delay
94% - 90% Pilots may experience small delays but often arrive on time and will generally maintain scheduled service
89% - 80% Pilots experience delays when attempting to arrive at the airport and occasionally divert. Scheduled service may be performed with block time and cancellation contingencies.
79% - 60% Pilots expect delays when attempting to arrive at the airport and often consider gate holds and/or cancellations. Scheduled service is unlikely.
<59% Pilots don't often expect to arrive on schedule, consider planned diversions destinations or plan for alternate passenger transport. Scheduled service is not possible.

By considering these real-world relationships to discrete likelihood values, LEAN can not only determine how effective an approach is, but also measure how effective a change in the approach procedure might be, or how impactful the change or loss of a procedure will be.

The following sections will all utilize a similar color coding relative to the likelihood values presented. The relationships listed in the tables are most applicable to real world operations when examining the "overall" and "airport open to operations" statistical results.

7.4.5.5 RNAV (GPS) RWY 34

The effectiveness of the RNAV (GPS) LPV approach to runway 34 is extremely high at all hours and all months, aside from a notable decrease during September and October.

From the perspective of supporting overall approach and arrival operations into U42, the prevailing winds limit the ability to utilize runway 34 for operations, thus limiting the overall effectiveness of the existing LPV to periods of time in the morning and evening. This means that other approach options to runway 16 should be considered to ensure continued access to U42 24/7/365.

Table 5 RNAV (GPS) Rwy 34 LPV - Runway Effectiveness

RNAV (GPS) Rwy 34 LPV - Runway Effectiveness
275 - 7/8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0:00	97.5%	97.3%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	99.7%	97.0%
1:00	97.8%	97.9%	100.0%	99.2%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	99.5%	96.4%
2:00	96.3%	98.2%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	99.7%	96.6%
3:00	95.7%	98.3%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	96.0%
4:00	98.4%	99.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	95.8%
5:00	97.6%	99.0%	99.4%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	99.7%	95.6%
6:00	98.0%	99.3%	99.7%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	99.4%	95.3%
7:00	98.6%	97.8%	99.7%	99.7%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	99.7%	94.9%
8:00	97.3%	96.1%	100.0%	100.0%	100.0%	100.0%	99.4%	100.0%	100.0%	100.0%	99.4%	95.2%
9:00	97.5%	96.3%	100.0%	99.4%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	99.1%	95.3%
10:00	98.9%	95.7%	99.7%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	98.9%
11:00	98.6%	99.6%	99.1%	99.7%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	99.4%
12:00	99.7%	100.0%	99.7%	99.7%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	99.7%
13:00	99.2%	98.9%	99.7%	100.0%	100.0%	100.0%	100.0%	100.0%	99.7%	100.0%	98.9%	99.7%
14:00	98.9%	98.8%	99.7%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	98.6%	99.7%
15:00	99.1%	98.8%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	99.4%	99.4%
16:00	98.8%	98.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	99.4%	98.1%
17:00	98.0%	99.3%	99.2%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	99.5%	97.2%
18:00	97.2%	99.3%	100.0%	100.0%	100.0%	100.0%	99.7%	100.0%	100.0%	100.0%	100.0%	96.7%
19:00	96.9%	99.3%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	95.8%
20:00	97.2%	99.6%	99.4%	100.0%	100.0%	99.7%	100.0%	100.0%	100.0%	100.0%	100.0%	96.3%
21:00	98.0%	98.6%	99.4%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	99.2%	97.5%
22:00	96.9%	100.0%	100.0%	99.7%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	97.5%
23:00	97.8%	99.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	99.7%	97.2%
Day	98.7%	98.2%	99.7%	99.9%	100.0%	100.0%	99.9%	100.0%	100.0%	100.0%	99.4%	98.8%
Night	97.4%	98.8%	99.8%	99.9%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	99.8%	96.3%
24 Hours	97.9%	98.5%	99.8%	99.9%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	99.6%	97.1%

Table 6 RNAV (GPS) Rwy 34 LPV - Overall Effectiveness

RNAV (GPS) Rwy 34 LPV - Overall Effectiveness
275 - 7/8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0:00	76.5%	73.5%	79.1%	89.7%	89.8%	82.7%	78.0%	77.4%	81.3%	82.7%	82.8%	83.8%
1:00	78.9%	70.6%	75.3%	86.4%	87.9%	81.8%	77.4%	73.0%	81.9%	81.4%	81.3%	83.5%
2:00	77.8%	70.8%	72.9%	85.3%	85.4%	78.5%	73.4%	71.7%	82.5%	80.9%	78.1%	80.1%
3:00	78.3%	75.2%	71.6%	86.4%	84.7%	74.3%	75.7%	69.7%	82.5%	81.7%	79.0%	80.9%
4:00	81.0%	73.2%	74.3%	86.7%	81.0%	74.3%	73.1%	68.6%	81.7%	81.9%	78.3%	81.9%
5:00	78.1%	72.3%	74.4%	83.3%	79.3%	77.2%	74.2%	71.9%	83.1%	81.4%	78.7%	83.7%
6:00	76.2%	70.7%	74.1%	81.8%	77.9%	79.9%	77.6%	75.8%	84.5%	81.1%	78.3%	81.5%
7:00	77.6%	68.0%	72.3%	80.8%	78.3%	78.5%	76.3%	77.2%	84.7%	84.2%	76.7%	80.0%
8:00	77.5%	67.2%	67.9%	80.7%	79.4%	78.4%	74.7%	78.0%	81.1%	82.7%	73.8%	80.4%
9:00	76.9%	65.2%	71.0%	81.0%	83.2%	80.4%	79.1%	80.3%	81.0%	83.9%	74.3%	81.2%
10:00	76.8%	62.6%	72.9%	82.3%	84.4%	83.1%	82.4%	81.3%	80.3%	82.0%	77.3%	84.0%
11:00	78.7%	68.4%	76.6%	82.0%	86.5%	84.5%	83.8%	84.0%	80.6%	79.6%	75.1%	84.2%
12:00	81.1%	67.4%	76.7%	83.5%	83.0%	84.0%	86.9%	84.1%	80.4%	79.0%	77.0%	85.8%
13:00	80.6%	68.9%	75.1%	85.4%	84.5%	84.8%	84.3%	88.2%	81.3%	80.1%	78.3%	89.0%
14:00	78.4%	66.1%	75.5%	85.6%	86.4%	84.5%	85.0%	89.4%	80.6%	80.9%	77.4%	86.8%
15:00	76.2%	64.6%	78.5%	85.9%	86.3%	85.3%	84.5%	89.2%	84.3%	83.8%	78.8%	86.3%
16:00	75.1%	67.7%	81.5%	85.9%	88.3%	84.3%	83.3%	88.0%	84.8%	84.2%	82.0%	86.7%
17:00	74.4%	71.1%	83.3%	89.7%	89.7%	83.3%	85.7%	86.6%	85.6%	85.1%	85.2%	84.5%
18:00	75.9%	71.5%	84.8%	90.3%	92.1%	85.5%	84.9%	86.6%	87.1%	84.9%	84.4%	85.1%
19:00	74.7%	71.7%	83.4%	91.4%	90.9%	87.5%	83.3%	81.8%	86.4%	87.3%	85.9%	83.5%
20:00	77.7%	73.7%	82.5%	90.4%	90.5%	86.6%	83.1%	85.5%	87.2%	87.3%	87.1%	83.1%
21:00	76.5%	73.4%	80.3%	89.9%	89.2%	84.8%	82.0%	81.2%	86.0%	86.8%	83.3%	84.6%
22:00	74.5%	75.3%	82.2%	90.4%	90.7%	85.2%	79.8%	81.1%	85.5%	86.9%	84.3%	85.5%
23:00	76.5%	75.5%	79.7%	90.6%	92.5%	84.0%	78.1%	80.9%	82.3%	84.4%	83.9%	85.0%
Day	77.6%	66.9%	78.1%	85.3%	86.0%	83.6%	82.7%	84.8%	82.8%	82.3%	77.1%	85.5%
Night	77.2%	72.5%	75.9%	86.8%	85.8%	80.3%	76.9%	75.3%	83.6%	83.6%	81.8%	82.9%
24 Hours	77.3%	70.2%	76.9%	86.1%	85.9%	82.2%	80.3%	80.5%	83.2%	83.1%	80.1%	83.8%

The RNAV (GPS) LNAV/VNAV and LNAV approaches to runway 34 are very effective across most daylight hours and all months, but the inability of these procedures to achieve low visibility reduce their effectiveness during the morning hours from March through October.

From the perspective of supporting overall approach and arrival operations into U42, the prevailing winds limit the ability to utilize runway 34 for operations, thus limiting the effectiveness of the existing VNAV and LNAV approaches.

While there are some aircraft that are only LNAV capable (and not LPV, or ILS), most of these aircraft do not represent scheduled service, or even a significant portion of business jet traffic. These aircraft would more likely be training aircraft, or general aviation aircraft, with more flexibility in the intended departure and arrival to available to mitigate any impacts caused by a lack of instrument approach options. Therefore, there is no need for the airport to seek any improvements to these approaches at this time.

Table 7 RNAV (GPS) Rwy 34 LNAV/VNAV - Runway Effectiveness

RNAV (GPS) Rwy 34 LNAV/VNAV - Runway Effectiveness

416 - 1-1/2

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0:00	95.3%	93.9%	96.9%	98.4%	100.0%	100.0%	100.0%	100.0%	100.0%	99.8%	97.8%	94.2%
1:00	95.4%	96.1%	97.9%	98.7%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	98.7%	95.1%
2:00	92.5%	96.1%	96.5%	99.2%	99.7%	100.0%	100.0%	100.0%	100.0%	100.0%	99.2%	94.9%
3:00	93.1%	97.7%	95.8%	99.2%	100.0%	100.0%	100.0%	100.0%	100.0%	99.8%	99.2%	93.7%
4:00	94.2%	94.9%	97.2%	99.5%	100.0%	100.0%	100.0%	100.0%	100.0%	99.5%	99.2%	92.7%
5:00	94.3%	97.2%	98.2%	99.2%	99.2%	100.0%	100.0%	100.0%	100.0%	100.0%	98.9%	92.3%
6:00	93.0%	96.5%	99.1%	99.2%	99.7%	100.0%	100.0%	100.0%	100.0%	100.0%	99.2%	91.4%
7:00	91.4%	94.2%	99.0%	98.8%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	98.8%	91.5%
8:00	90.0%	94.3%	97.3%	100.0%	100.0%	100.0%	99.4%	100.0%	100.0%	99.5%	98.8%	89.6%
9:00	94.1%	92.9%	98.1%	98.9%	99.7%	100.0%	100.0%	99.8%	99.7%	100.0%	98.5%	90.9%
10:00	96.3%	93.0%	98.8%	97.5%	100.0%	100.0%	100.0%	100.0%	99.7%	100.0%	98.9%	94.1%
11:00	95.9%	94.8%	97.4%	98.3%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	95.8%
12:00	97.8%	96.6%	98.2%	99.5%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	99.7%	97.5%
13:00	96.7%	97.1%	99.1%	99.5%	100.0%	100.0%	100.0%	100.0%	99.7%	99.8%	98.6%	98.7%
14:00	96.4%	97.3%	98.5%	100.0%	99.8%	100.0%	100.0%	100.0%	100.0%	99.5%	98.3%	98.9%
15:00	96.8%	95.6%	97.7%	99.7%	100.0%	100.0%	100.0%	100.0%	100.0%	99.5%	98.0%	98.0%
16:00	95.2%	96.1%	98.6%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	98.6%	96.4%
17:00	96.8%	96.3%	97.7%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	98.4%	95.3%
18:00	96.3%	97.4%	97.6%	99.7%	99.8%	100.0%	99.7%	100.0%	100.0%	100.0%	98.7%	95.3%
19:00	95.4%	96.0%	98.6%	99.2%	99.5%	100.0%	99.7%	99.8%	100.0%	100.0%	99.2%	93.9%
20:00	95.3%	97.1%	98.9%	99.5%	100.0%	99.7%	100.0%	100.0%	100.0%	100.0%	99.3%	95.2%
21:00	96.3%	94.7%	98.9%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	98.4%	95.5%
22:00	95.5%	95.4%	99.2%	99.2%	100.0%	100.0%	100.0%	100.0%	100.0%	99.5%	98.7%	96.7%
23:00	95.8%	96.6%	97.7%	98.9%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	98.2%	95.6%
Day	96.2%	95.4%	98.2%	99.4%	99.9%	100.0%	99.9%	100.0%	99.9%	99.9%	98.8%	96.3%
Night	94.3%	96.0%	97.9%	99.1%	99.9%	100.0%	100.0%	100.0%	100.0%	99.9%	98.8%	93.9%
24 Hours	95.0%	95.7%	98.0%	99.3%	99.9%	100.0%	100.0%	100.0%	100.0%	99.9%	98.8%	94.7%

Table 8 RNAV (GPS) LNAV/VNAV - Overall Effectiveness

RNAV (GPS) Rwy 34 LNAV/VNAV - Overall Effectiveness
416 - 1-1/2

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0:00	74.8%	70.9%	76.7%	88.3%	89.8%	82.7%	78.0%	77.4%	81.3%	82.5%	81.2%	81.4%
1:00	76.9%	69.4%	73.8%	85.9%	87.9%	81.8%	77.4%	73.0%	81.9%	81.4%	80.7%	82.3%
2:00	74.7%	69.3%	70.3%	84.6%	85.2%	78.5%	73.4%	71.7%	82.5%	80.9%	77.7%	78.7%
3:00	76.1%	74.7%	68.6%	85.7%	84.7%	74.3%	75.7%	69.7%	82.5%	81.5%	78.3%	79.0%
4:00	77.5%	70.2%	72.2%	86.2%	81.0%	74.3%	73.1%	68.6%	81.7%	81.5%	77.6%	79.2%
5:00	75.5%	71.0%	73.5%	82.6%	78.6%	77.2%	74.2%	71.9%	83.1%	81.4%	78.1%	80.8%
6:00	72.3%	68.7%	73.6%	81.1%	77.7%	79.9%	77.6%	75.8%	84.5%	81.1%	78.0%	78.1%
7:00	72.0%	65.5%	71.8%	80.1%	78.3%	78.5%	76.3%	77.2%	84.7%	84.2%	76.1%	77.2%
8:00	71.7%	65.9%	66.1%	80.7%	79.4%	78.4%	74.7%	78.0%	81.1%	82.3%	73.4%	75.7%
9:00	74.2%	63.0%	69.6%	80.6%	82.9%	80.4%	79.1%	80.1%	80.8%	83.9%	73.9%	77.5%
10:00	74.8%	60.8%	72.3%	80.3%	84.4%	83.1%	82.4%	81.3%	80.1%	82.0%	76.5%	79.9%
11:00	76.6%	65.1%	75.3%	80.9%	86.5%	84.5%	83.8%	84.0%	80.6%	79.6%	75.1%	81.2%
12:00	79.6%	65.1%	75.6%	83.3%	83.0%	84.0%	86.9%	84.1%	80.4%	79.0%	76.7%	83.9%
13:00	78.6%	67.7%	74.6%	84.9%	84.5%	84.8%	84.3%	88.2%	81.3%	79.9%	78.1%	88.1%
14:00	76.4%	65.0%	74.6%	85.6%	86.2%	84.5%	85.0%	89.4%	80.6%	80.5%	77.1%	86.1%
15:00	74.4%	62.5%	76.7%	85.7%	86.3%	85.3%	84.5%	89.2%	84.3%	83.4%	77.7%	85.1%
16:00	72.4%	66.3%	80.3%	85.9%	88.3%	84.3%	83.3%	88.0%	84.8%	84.2%	81.4%	85.2%
17:00	73.5%	69.0%	82.1%	89.7%	89.7%	83.3%	85.7%	86.6%	85.6%	85.1%	84.3%	82.8%
18:00	75.3%	70.2%	82.8%	90.1%	91.8%	85.5%	84.9%	86.6%	87.1%	84.9%	83.3%	83.9%
19:00	73.6%	69.3%	82.3%	90.7%	90.5%	87.5%	83.1%	81.6%	86.4%	87.3%	85.2%	81.8%
20:00	76.1%	71.8%	82.0%	89.9%	90.5%	86.6%	83.1%	85.5%	87.2%	87.3%	86.5%	82.2%
21:00	75.2%	70.5%	79.9%	89.9%	89.2%	84.8%	82.0%	81.2%	86.0%	86.8%	82.6%	82.9%
22:00	73.4%	71.8%	81.5%	90.0%	90.7%	85.2%	79.8%	81.1%	85.5%	86.5%	83.2%	84.7%
23:00	75.0%	73.6%	77.8%	89.6%	92.5%	84.0%	78.1%	80.9%	82.3%	84.4%	82.6%	83.5%
Day	75.6%	65.0%	76.9%	84.9%	85.9%	83.6%	82.6%	84.8%	82.8%	82.3%	76.6%	83.4%
Night	74.7%	70.5%	74.5%	86.2%	85.7%	80.3%	76.9%	75.3%	83.6%	83.5%	81.0%	80.9%
24 Hours	75.0%	68.2%	75.6%	85.5%	85.8%	82.2%	80.3%	80.5%	83.2%	83.0%	79.4%	81.7%

Table 9 RNAV (GPS) Rwy 34 LNAV - Runway Effectiveness

RNAV (GPS) Rwy 34 LNAV - Runway Effectiveness
434 - 1-1/4

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0:00	95.8%	94.9%	97.5%	98.7%	100.0%	100.0%	100.0%	100.0%	100.0%	99.8%	97.8%	95.3%
1:00	95.7%	97.9%	98.2%	98.7%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	98.7%	95.6%
2:00	93.3%	97.5%	97.1%	99.7%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	99.7%	95.7%
3:00	94.1%	98.3%	97.4%	99.5%	100.0%	100.0%	100.0%	100.0%	100.0%	99.8%	99.2%	94.6%
4:00	95.3%	97.3%	98.1%	99.5%	100.0%	100.0%	100.0%	100.0%	100.0%	99.5%	99.2%	93.5%
5:00	95.4%	97.6%	98.2%	99.2%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	98.9%	95.3%
6:00	95.2%	98.2%	99.7%	99.4%	99.7%	100.0%	100.0%	100.0%	100.0%	100.0%	99.4%	93.1%
7:00	92.8%	97.4%	99.0%	98.8%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	99.1%	92.7%
8:00	92.7%	95.4%	98.0%	100.0%	100.0%	100.0%	99.4%	100.0%	100.0%	99.5%	98.8%	92.2%
9:00	95.8%	94.4%	99.7%	99.4%	99.7%	100.0%	100.0%	100.0%	99.7%	100.0%	98.8%	93.9%
10:00	98.0%	94.9%	98.8%	97.8%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	98.9%	95.5%
11:00	97.8%	96.7%	98.8%	98.3%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	96.4%
12:00	98.4%	98.5%	99.4%	99.5%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	99.2%
13:00	97.8%	98.9%	99.7%	99.5%	100.0%	100.0%	100.0%	100.0%	99.7%	100.0%	98.6%	99.0%
14:00	98.0%	97.7%	99.7%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	98.6%	99.5%
15:00	98.2%	97.2%	98.8%	99.7%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	99.1%	99.2%
16:00	96.1%	96.5%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	98.6%	96.7%
17:00	97.4%	97.4%	98.6%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	98.7%	96.4%
18:00	96.3%	98.2%	98.1%	99.7%	100.0%	100.0%	99.7%	100.0%	100.0%	100.0%	99.5%	95.8%
19:00	96.0%	96.7%	98.9%	99.7%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	99.2%	95.0%
20:00	96.1%	97.8%	98.9%	99.7%	100.0%	99.7%	100.0%	100.0%	100.0%	100.0%	99.3%	95.2%
21:00	96.9%	97.2%	98.9%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	98.4%	96.3%
22:00	96.6%	95.8%	99.7%	99.2%	100.0%	100.0%	100.0%	100.0%	100.0%	99.5%	98.7%	96.7%
23:00	96.9%	98.3%	97.7%	98.9%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	98.2%	96.1%
Day	97.5%	96.8%	99.1%	99.5%	100.0%	100.0%	99.9%	100.0%	100.0%	100.0%	99.1%	97.4%
Night	95.3%	97.4%	98.3%	99.3%	100.0%	100.0%	100.0%	100.0%	100.0%	99.9%	98.9%	95.0%
24 Hours	96.1%	97.1%	98.7%	99.4%	100.0%	100.0%	100.0%	100.0%	100.0%	99.9%	99.0%	95.8%

The circling approach to runway 16 mitigates some of the operational exposure when prevailing winds favor 16 operations but provides lesser minimums coverage in winter months with minimums are historically lower.

Table 10 RNAV (GPS) Rwy 34 LNAV - Overall Effectiveness

RNAV (GPS) Rwy 34 LNAV - Overall Effectiveness
434 - 1-1/4

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0:00	75.2%	71.7%	77.1%	88.6%	89.8%	82.7%	78.0%	77.4%	81.3%	82.5%	81.2%	82.4%
1:00	77.1%	70.6%	74.0%	85.9%	87.9%	81.8%	77.4%	73.0%	81.9%	81.4%	80.7%	82.7%
2:00	75.4%	70.3%	70.8%	85.1%	85.4%	78.5%	73.4%	71.7%	82.5%	80.9%	78.1%	79.4%
3:00	77.0%	75.2%	69.8%	85.9%	84.7%	74.3%	75.7%	69.7%	82.5%	81.5%	78.3%	79.7%
4:00	78.4%	72.0%	72.9%	86.2%	81.0%	74.3%	73.1%	68.6%	81.7%	81.5%	77.6%	80.0%
5:00	76.4%	71.3%	73.5%	82.6%	79.3%	77.2%	74.2%	71.9%	83.1%	81.4%	78.1%	83.5%
6:00	74.0%	69.9%	74.1%	81.3%	77.7%	79.9%	77.6%	75.8%	84.5%	81.1%	78.3%	79.6%
7:00	73.0%	67.8%	71.8%	80.1%	78.3%	78.5%	76.3%	77.2%	84.7%	84.2%	76.3%	78.1%
8:00	73.9%	66.7%	66.6%	80.7%	79.4%	78.4%	74.7%	78.0%	81.1%	82.3%	73.4%	77.8%
9:00	75.6%	64.0%	70.8%	81.0%	82.9%	80.4%	79.1%	80.3%	80.8%	83.9%	74.1%	80.0%
10:00	76.1%	62.1%	72.3%	80.5%	84.4%	83.1%	82.4%	81.3%	80.3%	82.0%	76.5%	81.1%
11:00	78.1%	66.3%	76.4%	80.9%	86.5%	84.5%	83.8%	84.0%	80.6%	79.6%	75.1%	81.6%
12:00	80.0%	66.4%	76.5%	83.3%	83.0%	84.0%	86.9%	84.1%	80.4%	79.0%	77.0%	85.3%
13:00	79.5%	68.9%	75.1%	84.9%	84.5%	84.8%	84.3%	88.2%	81.3%	80.1%	78.1%	88.3%
14:00	77.8%	65.3%	75.5%	85.6%	86.4%	84.5%	85.0%	89.4%	80.6%	80.9%	77.4%	86.6%
15:00	75.5%	63.5%	77.6%	85.7%	86.3%	85.3%	84.5%	89.2%	84.3%	83.8%	78.6%	86.1%
16:00	73.1%	66.6%	81.5%	85.9%	88.3%	84.3%	83.3%	88.0%	84.8%	84.2%	81.4%	85.5%
17:00	74.0%	69.8%	82.9%	89.7%	89.7%	83.3%	85.7%	86.6%	85.6%	85.1%	84.6%	83.8%
18:00	75.3%	70.7%	83.2%	90.1%	92.1%	85.5%	84.9%	86.6%	87.1%	84.9%	83.9%	84.4%
19:00	74.1%	69.8%	82.5%	91.2%	90.9%	87.5%	83.3%	81.8%	86.4%	87.3%	85.2%	82.7%
20:00	76.8%	72.3%	82.0%	90.1%	90.5%	86.6%	83.1%	85.5%	87.2%	87.3%	86.5%	82.2%
21:00	75.6%	72.4%	79.9%	89.9%	89.2%	84.8%	82.0%	81.2%	86.0%	86.8%	82.6%	83.6%
22:00	74.2%	72.1%	81.9%	90.0%	90.7%	85.2%	79.8%	81.1%	85.5%	86.5%	83.2%	84.7%
23:00	75.9%	74.9%	77.8%	89.6%	92.5%	84.0%	78.1%	80.9%	82.3%	84.4%	82.6%	84.0%
Day	76.6%	66.0%	77.7%	85.0%	86.0%	83.6%	82.7%	84.8%	82.8%	82.3%	76.8%	84.3%
Night	75.5%	71.5%	74.8%	86.3%	85.8%	80.3%	76.9%	75.3%	83.6%	83.5%	81.1%	81.8%
24 Hours	75.9%	69.2%	76.1%	85.6%	85.9%	82.2%	80.3%	80.5%	83.2%	83.0%	79.5%	82.6%

Table 11 RNAV (GPS) Circling Rwy 16 - Runway Effectiveness

RNAV (GPS) Circling Rwy 16 - Runway Effectiveness
1174-3

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0:00	90.1%	92.7%	95.4%	98.4%	99.8%	99.8%	100.0%	99.8%	100.0%	98.7%	97.6%	89.8%
1:00	89.0%	95.1%	95.3%	97.9%	100.0%	99.5%	100.0%	99.8%	100.0%	99.1%	97.5%	91.7%
2:00	87.5%	93.9%	94.1%	98.5%	99.5%	99.1%	100.0%	100.0%	99.8%	99.1%	98.4%	90.0%
3:00	86.7%	96.2%	95.4%	98.4%	99.3%	99.0%	100.0%	100.0%	99.1%	99.1%	99.1%	89.5%
4:00	89.0%	94.6%	96.1%	98.1%	99.3%	99.5%	100.0%	100.0%	99.1%	99.3%	98.6%	89.7%
5:00	88.5%	94.6%	97.1%	96.8%	98.1%	99.5%	99.8%	100.0%	99.5%	98.9%	98.1%	88.2%
6:00	88.4%	94.7%	95.5%	97.0%	98.4%	99.7%	100.0%	100.0%	99.8%	97.6%	97.6%	88.2%
7:00	87.1%	95.8%	96.5%	95.7%	98.8%	99.7%	100.0%	100.0%	99.3%	98.2%	96.7%	85.0%
8:00	84.4%	93.2%	95.1%	96.5%	99.5%	99.7%	99.5%	99.8%	99.0%	98.2%	97.4%	85.0%
9:00	88.4%	91.8%	95.2%	96.0%	98.9%	99.7%	100.0%	99.3%	98.6%	99.6%	97.8%	84.6%
10:00	88.5%	93.5%	93.6%	95.3%	99.7%	99.7%	100.0%	99.1%	99.0%	100.0%	97.4%	88.5%
11:00	90.9%	94.2%	94.1%	93.7%	99.2%	99.7%	100.0%	99.1%	99.0%	98.7%	99.1%	88.0%
12:00	91.6%	94.5%	94.9%	94.2%	98.4%	99.7%	100.0%	99.4%	99.3%	98.9%	98.8%	88.4%
13:00	91.8%	94.9%	96.1%	96.9%	98.0%	100.0%	99.5%	99.8%	98.5%	98.7%	97.7%	90.0%
14:00	94.0%	95.2%	96.3%	99.4%	98.5%	99.7%	100.0%	99.6%	99.5%	98.7%	98.1%	90.0%
15:00	93.9%	94.7%	95.3%	99.4%	99.5%	99.7%	100.0%	98.9%	100.0%	99.4%	96.6%	92.1%
16:00	92.3%	95.9%	96.9%	97.7%	99.2%	100.0%	100.0%	99.3%	100.0%	99.2%	98.3%	91.0%
17:00	91.5%	95.5%	96.0%	99.1%	99.5%	100.0%	99.8%	99.1%	99.0%	99.8%	98.8%	91.5%
18:00	92.3%	93.7%	95.9%	98.6%	99.8%	99.2%	100.0%	99.3%	100.0%	99.8%	97.7%	94.0%
19:00	92.1%	95.1%	96.4%	99.4%	98.8%	98.7%	100.0%	98.5%	99.5%	100.0%	98.4%	90.6%
20:00	91.6%	92.5%	96.4%	100.0%	99.8%	99.2%	99.8%	99.1%	98.9%	99.4%	98.6%	88.8%
21:00	91.5%	94.0%	95.5%	98.7%	99.8%	99.8%	100.0%	99.6%	99.5%	98.5%	97.0%	87.0%
22:00	90.6%	94.2%	94.9%	96.9%	98.8%	100.0%	100.0%	99.8%	99.3%	97.2%	98.0%	89.0%
23:00	91.9%	94.1%	95.0%	97.4%	99.5%	100.0%	100.0%	100.0%	99.8%	98.7%	97.7%	89.3%
Day	91.4%	94.3%	95.5%	97.2%	99.1%	99.6%	99.9%	99.3%	99.3%	99.3%	97.9%	89.1%
Night	89.4%	94.4%	95.6%	97.8%	99.2%	99.6%	100.0%	99.9%	99.5%	98.7%	98.0%	89.2%
24 Hours	90.1%	94.4%	95.5%	97.5%	99.2%	99.6%	99.9%	99.6%	99.4%	98.9%	98.0%	89.2%

Table 12 RNAV (GPS) Circling Rwy 16 - Overall Effectiveness

RNAV (GPS) Circling Rwy 16 - Overall Effectiveness

1174-3

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0:00	86.2%	87.8%	92.2%	88.1%	96.9%	97.7%	99.6%	98.8%	96.0%	90.9%	90.8%	85.7%
1:00	84.5%	88.6%	91.6%	87.8%	96.8%	97.3%	99.1%	99.4%	96.5%	91.5%	90.5%	85.8%
2:00	84.4%	89.1%	90.0%	88.0%	95.0%	95.5%	98.9%	99.0%	95.6%	90.8%	93.1%	83.4%
3:00	83.9%	90.1%	90.6%	87.1%	94.3%	93.6%	98.0%	98.2%	94.2%	89.9%	93.2%	82.1%
4:00	85.7%	88.4%	90.4%	85.1%	92.4%	93.6%	97.4%	96.8%	93.3%	90.5%	91.0%	83.8%
5:00	85.1%	87.7%	90.4%	83.7%	91.4%	92.0%	95.6%	94.5%	90.1%	87.2%	90.5%	83.9%
6:00	84.7%	85.4%	87.7%	82.0%	90.5%	85.8%	92.8%	91.5%	89.3%	86.4%	90.0%	83.6%
7:00	83.9%	87.8%	88.7%	83.2%	87.4%	82.8%	88.7%	85.3%	88.3%	87.3%	91.6%	81.0%
8:00	81.6%	85.3%	87.4%	82.3%	84.5%	82.2%	83.4%	84.6%	86.7%	88.9%	90.9%	79.2%
9:00	85.5%	84.9%	86.8%	80.8%	81.0%	80.4%	83.7%	82.8%	88.9%	91.1%	89.7%	78.9%
10:00	86.7%	87.5%	82.1%	79.4%	80.9%	80.0%	86.3%	86.6%	87.8%	90.0%	89.8%	83.0%
11:00	88.5%	86.5%	83.0%	74.9%	81.5%	79.6%	90.4%	88.2%	90.1%	88.1%	90.7%	82.6%
12:00	88.4%	88.0%	84.6%	74.3%	82.4%	85.1%	92.8%	90.6%	88.5%	92.0%	91.5%	83.2%
13:00	86.3%	89.2%	82.7%	78.2%	82.8%	84.8%	92.8%	92.9%	83.9%	90.9%	92.0%	84.1%
14:00	90.7%	88.8%	85.7%	77.5%	84.9%	83.8%	93.7%	92.6%	87.6%	90.6%	92.7%	84.7%
15:00	90.0%	87.8%	88.1%	78.5%	84.3%	86.2%	94.5%	88.6%	87.0%	93.1%	91.0%	86.1%
16:00	88.9%	88.7%	89.2%	81.5%	83.2%	88.9%	96.7%	88.8%	88.8%	91.4%	91.4%	86.9%
17:00	88.1%	83.2%	85.7%	82.1%	87.9%	87.6%	94.7%	89.3%	89.6%	92.2%	90.6%	86.0%
18:00	86.8%	83.8%	86.2%	82.3%	89.2%	88.7%	94.6%	90.7%	94.4%	94.0%	92.3%	88.0%
19:00	87.3%	86.5%	85.5%	85.9%	88.5%	88.2%	93.3%	91.9%	95.0%	95.1%	93.4%	86.4%
20:00	88.7%	85.6%	85.9%	83.8%	88.5%	90.8%	95.7%	93.2%	93.6%	92.8%	93.9%	85.3%
21:00	87.3%	86.3%	87.4%	86.3%	90.1%	93.5%	96.2%	94.7%	95.4%	91.0%	92.5%	83.1%
22:00	86.7%	86.4%	88.6%	86.0%	90.5%	95.2%	96.9%	96.1%	96.8%	90.6%	93.1%	86.4%
23:00	88.3%	88.0%	92.4%	90.4%	93.6%	96.7%	98.0%	98.0%	96.5%	91.7%	92.8%	87.1%

Day	88.1%	87.0%	85.4%	79.8%	84.8%	84.9%	91.5%	89.0%	89.0%	91.4%	91.1%	83.7%
Night	85.7%	87.2%	89.5%	86.0%	93.1%	94.1%	97.3%	95.7%	93.8%	90.3%	92.0%	84.4%
24 Hours	86.6%	87.1%	87.6%	82.9%	88.3%	88.7%	93.9%	92.2%	91.4%	90.8%	91.6%	84.2%

7.4.5.6 Airport Open to Operations

The following tables show the likelihood of airport availability, as a percentage, for combinations of the best available approaches to each runway end.

The current capability of the airport to remain open to operations is shown in Table 13. This table represents the overall operational coverage attained with the combination of the RNAV (GPS) approach on runway 34 and the Circling approach to 16.

This table reveals that the airport currently has a very high likelihood of enabling all aircraft to arrive at U42 at the desired time of operation with little to no gap in coverage 24/7/365 except in December and January where coverage is still quite good but has some gaps in the early morning hours. This result indicates that all existing procedures should be preserved and that any additional procedures be requested to enhance safety, operational efficiency, and ATC flexibility rather than for additional minimums coverage.

Table 13 LPV Rwy 34 or LNAV Circling Rwy 16

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0:00	95.6%	98.0%	99.8%	100.0%	100.0%	99.8%	100.0%	99.8%	100.0%	99.6%	97.1%	97.4%
1:00	96.1%	98.2%	100.0%	99.3%	100.0%	100.0%	100.0%	99.8%	100.0%	100.0%	96.6%	96.7%
2:00	95.0%	97.7%	99.8%	99.8%	99.3%	100.0%	100.0%	100.0%	100.0%	99.8%	97.6%	96.2%
3:00	95.0%	98.5%	100.0%	99.8%	100.0%	99.8%	100.0%	100.0%	100.0%	100.0%	98.2%	96.4%
4:00	97.6%	98.7%	99.5%	99.3%	100.0%	100.0%	100.0%	100.0%	99.8%	99.8%	97.1%	96.1%
5:00	97.2%	98.0%	99.3%	99.3%	100.0%	100.0%	100.0%	100.0%	100.0%	99.0%	97.4%	95.9%
6:00	97.6%	98.5%	99.8%	100.0%	100.0%	99.8%	100.0%	100.0%	100.0%	99.2%	97.0%	95.5%
7:00	98.3%	97.7%	99.5%	99.3%	99.6%	99.8%	100.0%	100.0%	100.0%	99.0%	97.1%	94.1%
8:00	96.5%	96.5%	99.5%	99.3%	99.2%	100.0%	99.6%	99.8%	99.6%	99.4%	96.8%	95.0%
9:00	96.0%	97.0%	99.5%	99.3%	98.9%	100.0%	100.0%	99.8%	99.6%	99.6%	96.9%	95.3%
10:00	96.5%	96.7%	98.9%	99.5%	99.8%	100.0%	100.0%	99.8%	100.0%	99.8%	98.0%	97.8%
11:00	96.7%	99.0%	98.6%	98.4%	99.6%	100.0%	100.0%	99.6%	100.0%	99.6%	98.0%	98.4%
12:00	98.5%	99.7%	99.1%	98.9%	99.1%	100.0%	100.0%	99.0%	100.0%	99.6%	97.2%	98.6%
13:00	98.0%	99.2%	99.1%	99.5%	99.4%	100.0%	99.3%	99.6%	99.8%	99.4%	97.0%	98.4%
14:00	98.2%	97.9%	98.7%	99.5%	99.6%	100.0%	99.8%	99.6%	99.8%	99.6%	96.9%	98.1%
15:00	98.0%	97.9%	98.9%	100.0%	99.8%	99.5%	100.0%	99.4%	100.0%	100.0%	97.3%	98.5%
16:00	98.4%	98.1%	99.8%	99.8%	100.0%	99.8%	99.8%	99.0%	99.8%	99.6%	97.0%	97.3%
17:00	98.5%	98.7%	99.3%	100.0%	100.0%	99.8%	99.5%	98.8%	100.0%	100.0%	97.5%	96.6%
18:00	97.4%	98.1%	100.0%	99.8%	99.8%	100.0%	99.8%	99.2%	100.0%	100.0%	98.0%	96.6%
19:00	96.3%	99.5%	99.8%	99.8%	100.0%	100.0%	100.0%	99.4%	100.0%	100.0%	98.0%	96.4%
20:00	96.0%	99.7%	99.3%	100.0%	100.0%	99.8%	99.8%	99.4%	99.8%	100.0%	98.0%	95.4%
21:00	95.8%	98.4%	99.3%	100.0%	99.8%	100.0%	100.0%	99.8%	100.0%	99.8%	97.1%	96.8%
22:00	94.3%	100.0%	99.5%	99.3%	100.0%	100.0%	100.0%	99.8%	100.0%	99.8%	98.1%	97.1%
23:00	96.5%	99.2%	100.0%	99.3%	100.0%	100.0%	99.3%	100.0%	100.0%	100.0%	97.6%	97.6%
Day	97.6%	98.1%	99.2%	99.5%	99.6%	99.9%	99.8%	99.4%	99.9%	99.7%	97.2%	97.8%
Night	96.3%	98.6%	99.6%	99.6%	99.9%	99.9%	99.9%	99.9%	100.0%	99.7%	97.5%	96.2%
24 Hours	96.8%	98.4%	99.5%	99.5%	99.7%	99.9%	99.9%	99.6%	99.9%	99.7%	97.4%	96.8%

7.4.5.7 Evaluation of Runway 34 MALSR

Many of the challenges associated with retaining or enhancing flight operations at U42 are related to the ability to safely deconflict traffic operating into U42 from arrivals and departures at SLC. One method to potentially enhance this capability is through the installation of a MALSR to runway 34. In addition to deconflicting traffic between airports, a MALSR would also enhance the safety of pilots on approach to safely separate the runway from the surrounding dense urban environment.

Along with the general safety and situational awareness benefits it provides, a MALSR on the runway 34 approach end will enable both the existing and the proposed offset RNAV (GPS) Rwy 34 approaches to achieve slightly decreased visibility minimums. The visibility minimums for the existing RNAV (GPS) Rwy 34 for VNAV and LNAV navigation methods would decrease from 1 3/8 mi to 7/8 mi. Adding a MALSR to this approach would not only provide a reduction to the LPV minimums from 7/8 mi to 3/4 mi due to existing limitations in current AC-150-5300-18B runway design categories.

While the project team considers these benefits to be an overall safety and operational improvement to the airfield, protection for the installation of a MALSR is not recommended within the current planning period. The Airport, as part of this planning effort, is likely to reduce the runway 34 RPZ to a 'Greater than ¾ mi Visibility' approach protection zone to resolve some outstanding land use issues south of the airfield. In this case, the value of adding a MALSR will be further mitigated as there will be no chance of adding or modifying procedures to achieve visibility minima down to less than ¾ mile in the future. Even setting this limitation aside, the effectiveness of the existing procedures as shown in Table 13 indicates that significant capital investment to achieve reductions to minimums would not be a practical application of scarce resources.

7.4.6 Departures from U42

U42 has one RNAV Standard Instrument Departure (SID) Procedures, and one Obstacle Departure Procedure (ODP). Due to the layered air traffic coverage, supported by radar capabilities, pilots and flight crews can elect to either use a published departure procedure or perform a visual departure using the traffic pattern.

Table 14 Departure Procedures

<table>
<tr><th>Departure</th><th>Publication Date</th><th>Rwy of Use</th><th>Minimums</th><th>Climb Gradient</th><th>Required NAVAIDs</th></tr>
<tr><td rowspan="2">SVALY ONE</td><td rowspan="2">18MAR22</td><td>16</td><td rowspan="2">Standard</td><td>300 feet/Nmi to 7,800 feet</td><td rowspan="2">FFU VORTAC</td></tr>
<tr><td>34</td><td>495 feet/Nmi to 9,000 feet</td></tr>
<tr><td rowspan="2">ODP</td><td rowspan="2">18MAR22</td><td>16</td><td rowspan="2">Standard</td><td>300 feet/Nmi to 10,700 feet</td><td>FFU VORTAC</td></tr>
<tr><td>34</td><td>330 feet/Nmi to 9,000 feet</td><td>TCH VORTAC</td></tr>
</table>

7.4.6.1 SVALY ONE SID

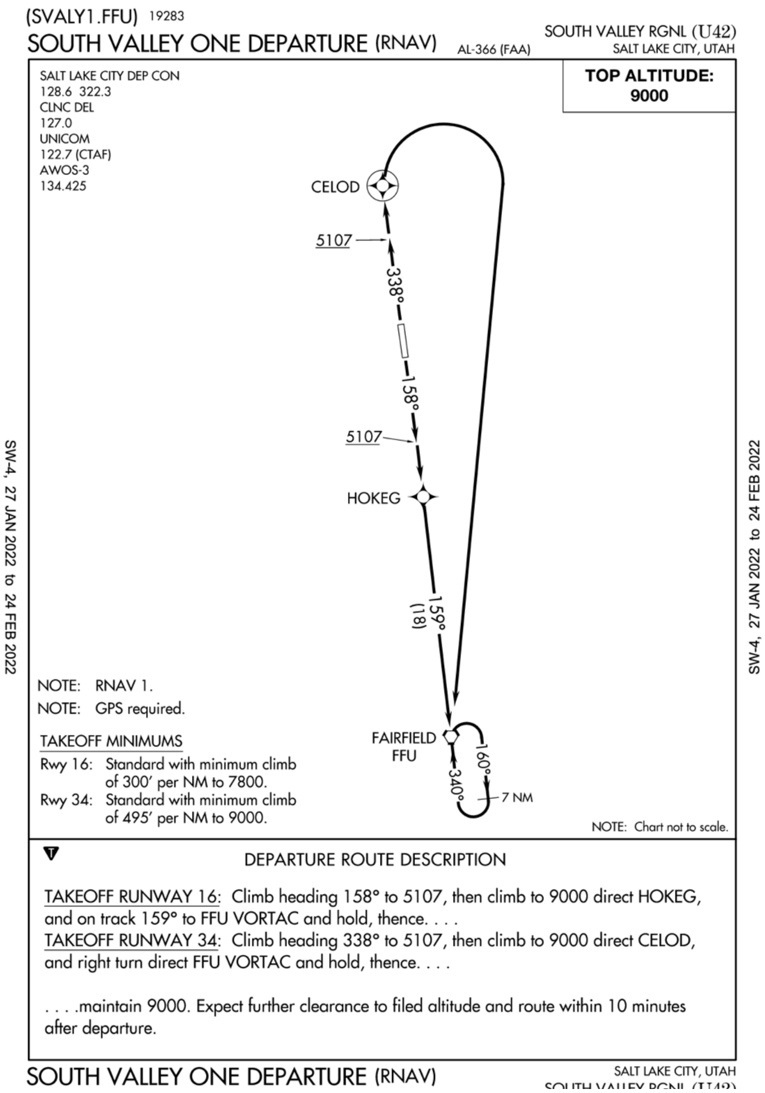


Figure 23 South Valley One SID

The SVALY ONE SID is an RNAV 1 departure procedure that can be used for aircraft departing IFR in either direction from U42. This SID begins with an initial climb on the runway heading until passing above the RNAV engagement altitude of 500ft AFE. When departing northbound from runway 34, pilots must then fly direct to the CELOD waypoint, which is designed as a fly-over waypoint. This requires aircraft to delay any subsequent turns until the aircraft has crossed precisely over this waypoint.

When departing southbound from runway 16, pilots having passed above the RNAV engagement altitude must fly direct to the HOKEG waypoint.

Both the northbound and southbound departure directions then proceed directly to the FFU VOR, with the northbound runway 34 departure requiring a right turn direct to FFU.

Once the aircraft reaches FFU they will either receive vectors along their filed route or remain in the hold pattern over FFU until further instructions are provided by ATC. It is also possible for aircraft to have received additional ATC instructions prior to reaching the published hold at FFU, but that is at the discretion of S56 and dependent on air traffic, weather and intended route of flight.

The standard minimums require the application of non-standard climb gradient capabilities due to surrounding terrain and traffic from SLC and PVU. When departing to the south, on runway 16, the non-standard climb gradient is 300 feet per nautical mile to 7,800 feet MSL. When departing northbound, on runway 34, the non-standard climb gradient required is 495 feet per nautical mile to 9,000 feet MSL.

The current SID does not permit aircraft to proceed north over SLC until reaching 9,000ft. This creates significant inefficiency for aircraft departing IFR from U42 heading to destinations Northwest, North or Northeast of SLC.

7.4.6.2 Obstacle Departure Procedures

The obstacle departure procedures at U42 are intended to provide flight crews with a non-radar, conventional navigation method to safely depart from either runway 16 or 34 while avoiding obstacles and terrain. It is not intended for aircraft separation or optimal route of flight and is designed to ensure that aircraft safely climb to an altitude at which the pilot can achieve the minimum enroute altitude for the next phase of flight.

The runway 16 ODP (southbound) mimics the SVALY ONE SID in proceeding to the FFU VOR. The initial climb is achieved by turning left to intercept the FFU VOR R-341 inbound to the VOR and then climbing in a hold to the MEA/MCA prior to joining the filed outbound path.

The runway 34 ODP (northbound) goes north past SLC by turning to intercept the TCH VOR R-161 inbound to the TCH VOR to climb in hold to the MEA/MCA and departing on the IFR filed path.

The relatively straight forward departure procedure instructions are not considered challenging enough to require a graphical depiction of the ODP and only textual references to the procedure are published by the FAA. The text shown in Figure 24 was copied from the FAA digital Terminal Procedures Publication.

SOUTH VALLEY RGNL (U42)
TAKEOFF MINIMUMS AND (OBSTACLE) DEPARTURE PROCEDURES
AMDT 6 01FEB18 (18032) (FAA)

TAKEOFF MINIMUMS:

Rwy 16, std. w/ min. climb of 300' per NM to 10700.
Rwy 34, std. w/ min. climb of 330' per NM to 9000.

DEPARTURE PROCEDURE:

Rwy 16, climbing left turn to 10700 on FFU VORTAC R-341 to FFU VORTAC, continue climb in FFU VORTAC holding pattern (hold S, right turn, 008° inbound) to cross FFU VORTAC at or above MEA/MCA for route of flight.
Rwy 34, climbing right turn to 9000 on TCH VORTAC R-161 to TCH VORTAC, continue climb in TCH VORTAC holding pattern (hold NW, right turn, 120° inbound) to cross TCH VORTAC at or above MEA/MCA for route of flight.

TAKEOFF OBSTACLE NOTES:

Rwy 16, NAVAID abeam DER, 99' right of centerline, 4602' MSL.
Terrain, sign beginning 34' from DER, 207' right of centerline, up to 4606' MSL.
Vehicle on road 83' from DER, 252' left of centerline, 4611' MSL.
Vehicle on road 171' from DER, 132' left of centerline, 4614' MSL.
Pole 551' from DER, 631' right of centerline, 15' AGL/4626' MSL.
Vehicle on road, vegetation beginning 672' from DER, 490' right of centerline, up to 4629' MSL.
Pole 1000' from DER, 638' right of centerline, 4638' MSL.
Pole 1008' from DER, 466' right of centerline, 31' AGL/4640' MSL.
Pole beginning 1092' from DER, 687' right of centerline, up to 31' AGL/4644' MSL.
Rwy 34, NAVAID 10' from DER, 96' left of centerline, 4606' MSL.
NAVAID 10' from DER, 94' right of centerline, 4604' MSL.
Terrain 58' from DER, 424' left of centerline, 4608' MSL.

Figure 24 U42 Obstacle Departure Procedure

7.4.7 Analysis of Existing Departure Procedures

The existing departure procedures from runways 16 and 34 were built in both MDA Global Procedure Developer (GPD) and FAA TARGETs platforms to compare the aeronautical and geospatial inputs identified in section 6.1.3 against the latest FAA Terminal Instrument Procedures (TERPS) and Performance Based Navigation (PBN) criteria.

Upon rebuilding the departure procedures in both platforms, the ODP was found to be compliant with current criteria, terrain, and obstacle information. The SVALY 1 departure from runway 34 was found to be non-compliant with current criteria while departures from runway 16 were found to be compliant.

The subsequent sections will discuss the findings for each procedure individually.

7.4.7.1 Analysis of SVALY 1 RNAV SID

The SVALY 1 RNAV SID for runway 16 is designed to provide a direct path to the FFU VOR to enter the published hold. The procedure utilizes a non-standard climb gradient of 300 feet per NM to 7,800 feet MSL to reach FFU at the publishing holding altitude of 9,000 feet MSL. However, even this non-standard climb gradient does not provide enough altitude gain for aircraft on the procedure to cross above the R-6412C airspace which itself extends to 9,000 feet MSL. As discussed previously in this report, this airspace is typically active daily from 0600-1800L which severely limits the usefulness of this departure procedure in this runway direction and requires additional coordination with S56 prior to departure for aircraft choosing to use this SID. The existing procedure complies with all current FAA criteria with no waivers required and there were no impacts found from the new obstacle survey.

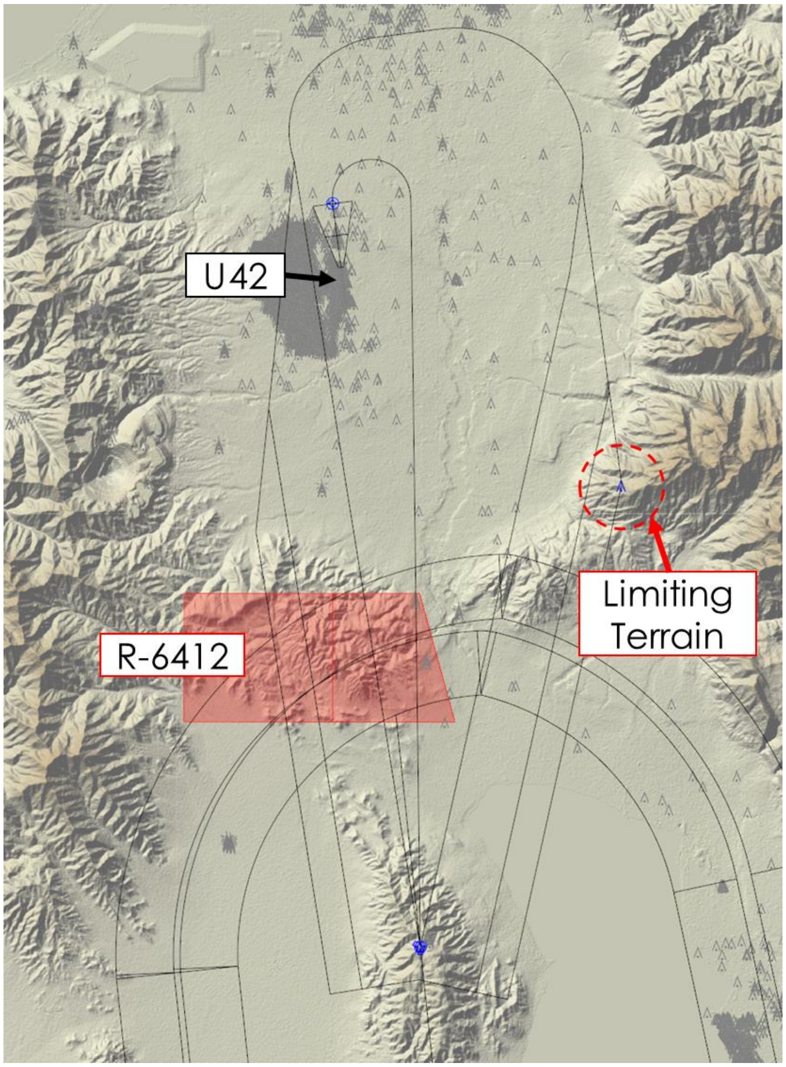


Figure 26 SVALY 1 Rwy 34 Departure OCS shown with a 250KIAS Speed Restriction

In the runway 34 direction the procedure is designed to turn aircraft south quickly to keep them separated from SLC northbound departures and direct them toward the published hold at the FFU VOR. The runway 34 procedure complies with current criteria via waivers. The non-standard climb gradient associated with the procedure is terrain-related, ensuring that aircraft safely clear the terrain near Lone Peak, southeast of Draper. The currently published climb gradient is 495 feet per NM to 9,000 feet MSL which few aircraft can achieve with the sharp initial turn. The analysis from both GPD and TARGETs indicates that this procedure, under the most recent TERPS criteria, would either require a different climb gradient of 424' per NM to 9,200' MSL or a speed restriction. If the procedure were restricted to below 250 KIAS, then the existing climb gradient would be sufficient, but this restriction is not currently published. It is possible that the FAA has chosen to apply the 250KIAS speed restriction because the SID path terminates below 10,000ft which establishes the overarching speed restriction. While this is not documented in the current FAA 8260 packages it could exist deeper in the FAA flight standards records.

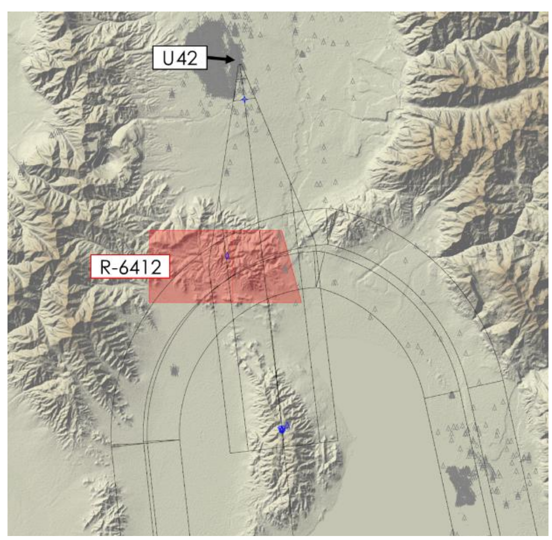


Figure 25 SVALY 1 Rwy 16 Departure OCS

In the runway 16 direction, there were no discrepancies or differences between the current published procedure and the rebuilt version in GPD and TARGETs using the new obstacle information.

The discrepancies identified in this analysis are not likely to cause significant changes to the SVALY 1 RNAV DP and will likely be permitted to exist until the next full procedure update following the VGA survey inclusion in the FAA OAS.

7.4.7.2 Analysis of the ODP

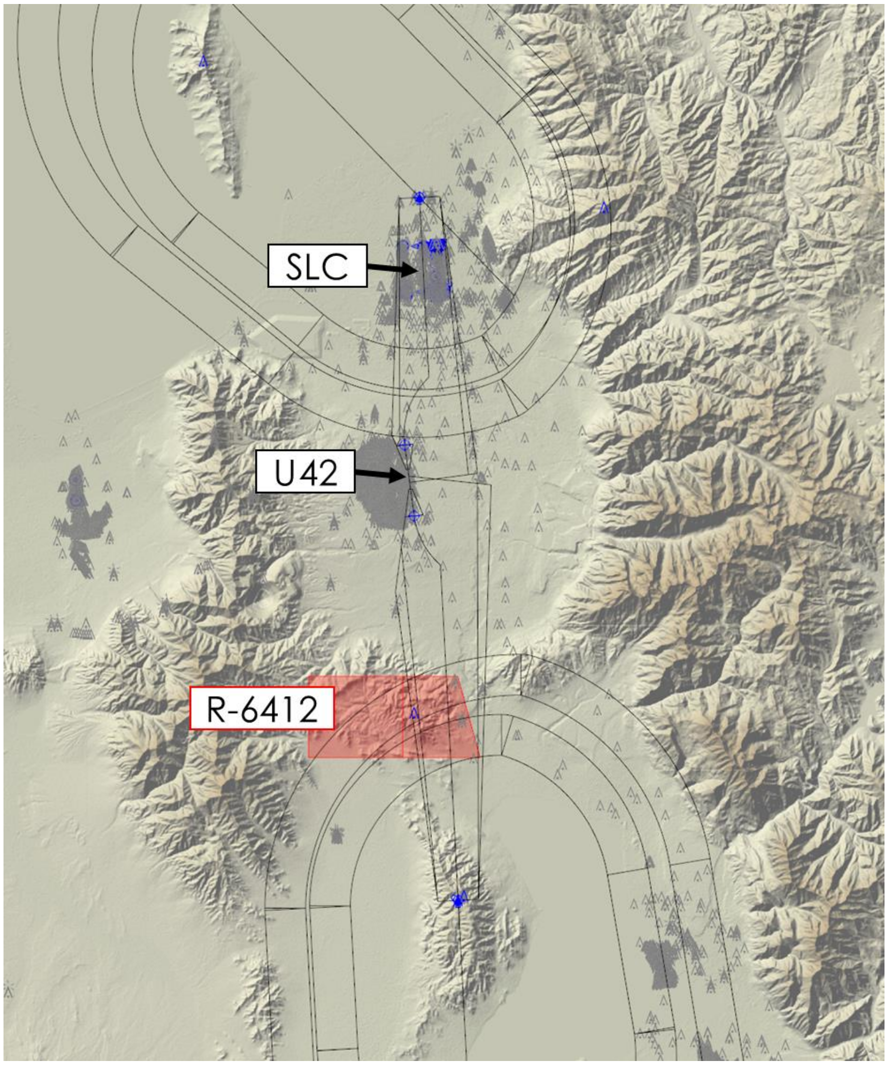


Figure 27 ODP for Rwys 16 and 34 Departure OCS

The current ODP for runways 16 and 34 are both compliant with all current criteria.

LEAN's analysis showed that the current OCS for the ODP requires consideration of significant terrain south of the airport for runway 16 departures. The current climb gradient associated with the procedure in the 16 direction is 300 feet per nautical mile to 10,700 feet MSL.

The ODP for runway 34 complies with all current criteria with no waivers required. In the runway 34 direction the climb gradient associated with the procedure is 330 feet per NM to 9,000 feet MSL which is primarily driven by ATC restrictions as the procedure requires direct overflight of SLC to reach the TCH VOR.

7.4.8 Opportunities for Additional Departure Procedures

Due to the overall inefficiency created by departure procedures which only proceed south of the airport, the team examined possible additional departure procedures for TVY that might enable aircraft departing to northern destinations to have a more direct route of flight.

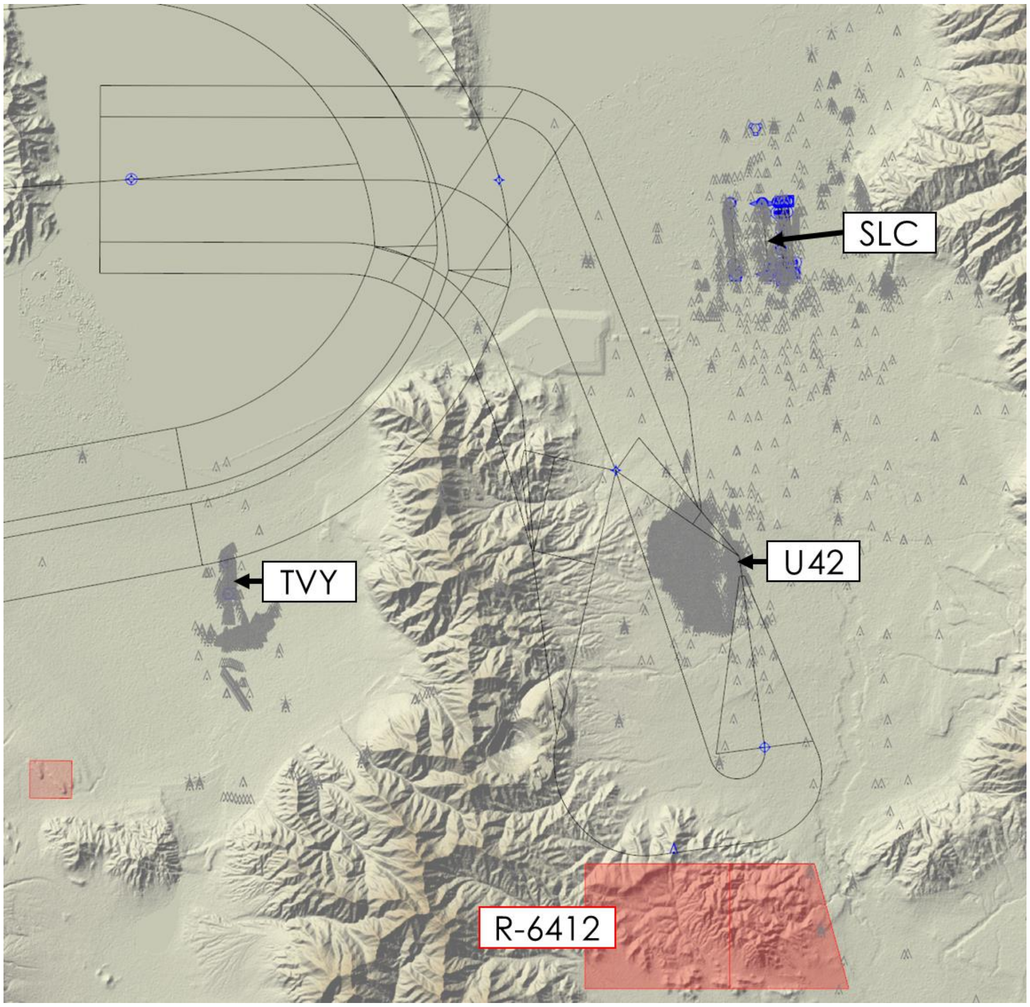


Figure 28 Potential New RNAV DP From runway 16 to STACO

A new RNAV 1 SID was developed to enable aircraft departing runways 16 and 34 at U42 to depart to the northeast towards the STACO waypoint and either climb in hold or receive additional instructions from ATC. This is the same hold pattern currently used by TVY departures and for missed approaches from SLC Runways 16R and 34L.

The procedure OCS are shown in Figure 28 for departures from runway 16. This procedure involves a long initial climb segment to 6600ft MSL before initiating a right turn (west) direct to a new undefined waypoint northwest of U42. Aircraft would then continue on a northwester track to the next fix before turning left towards the STACO waypoint.

This procedure would require a climb gradient of 362 feet/NMi to 7,800ft MSL, which is higher than the value required for the ODP, but which terminates at a lower required altitude.

There are two significant reasons why a procedure like this does not currently exist. The first is related to noise. While there are aircraft which potentially depart along this track under VFR conditions today, and there is significant overhead jet traffic arriving at SLC on any given day, this procedure would require significant environmental analysis prior to its implementation. The second reason a procedure like this does not currently exist is for aircraft separation. This procedure would be designed to require that aircraft climb to gain as much altitudes as possible before crossing over other SLC departures or arrivals, the portion of the path where the aircraft turns to the west around the northern edge of the Oquirrh Mountains. This may be easier to overcome for aircraft departing runway 16, it may be impossible for aircraft departing runway 34 leading to the need for additional air traffic control sectorization and the potential establishment of an ATCT and class D airspace at U42.

7.4.9 Summary of Existing and Future Procedures

The existing approaches published by the FAA are safe, effective at ensuring timely arrivals, and do not require significant changes. In the future, the addition of an RNAV (GPS) approach to runway 16 will increase the efficiency of flights arriving at U42 from the north and west and ensure that the airport can handle virtually all historical low visibility events in north or south flow conditions. That additional capability will provide the greatest operational availability of the airport to both future scheduled and current non-scheduled operators.

The opportunity to introduce a new RNAV (RNP) approach to runway 34 to avoid SUAS R-6412 will improve airport access during times when that airspace is unavailable to civilian operations.

Table 15 Summary of Existing and Future Approach Procedures at U42

Procedure	Existing/New	Minimums (Cat C)	Meets FAA Design Criteria	Impacted by New Survey	Airfield/NAVAID/ALS Modifications	Recommended Actions
RNAV (GPS) Rwy 34	Existing	LPV: 275ft – 7/8 mi VNAV: 416ft – 1 1/4 mi LNAV: 434ft – 1 1/4 mi	Yes	Yes (VNAV)	New MASLR LPV: 275ft – 3/4 mi VNAV: 416ft – 3/4 mi LNAV: 434ft – 3/4 mi	Maintain
Circling Rwy 16	Existing	1174ft – 3 mi Circling	Yes	No	None	Maintain
RNAV (GPS) Rwy 16	**New**	**LPV: 250ft – 3/4 mi VNAV: 434ft – 1 1/4 mi LNAV: 434ft – 1 1/4 mi Circling: 1054 – 3 mi**	**Yes**	**No**	**New MALSR LPV: 250ft – 3/4 mi VNAV: 434ft – 3/4 mi LNAV: 434ft – 3/4 mi**	**Discuss with S56**
CVFP Rwy 16	**New**	**2900ft – 3 mi**	**Yes**	**No**	**ATCT required RLLS may be required to maintain visual separation at nighttime**	**Discuss with S56**
RNAV (GPS) Y Rwy 34	**New**	**LPV: 250ft – 3/4 mi VNAV: 457ft – 1 3/8 mi LNAV: 474ft – 1 3/8 mi**	**Yes**	**No**	**New MALSR LPV: 250ft – 3/4 mi VNAV: 457ft – 7/8 mi LNAV: 474ft – 1 mi**	**Discuss with S56**

The departure procedures at U42 are safe and operationally adequate. The RNAV departure from runway 34, however, is not fully compliant with current TERPS criteria and does not provide an efficient routing for aircraft departing U42 to destinations northwest, north or northeast of the airport.

In the future, we recommend working with the FAA through the 7100.41A process to examine opportunities to both update the SVALY 1 RNAV DP and introduce a new RNAV SID that safely takes aircraft north from U42 from both runways 16 and 34. This may require additional noise and air traffic analysis up to, and including, the installation of a local ATCT at U42 and establishment of Class D airspace.

Table 16 Summary of Existing and Future Departure Procedures at U42

Procedure	Existing/ New	Minimums (Cat C)	Meets FAA Design Criteria	Impacted by New Survey	Airfield/NAVAID /ALS Modifications	Recommended Actions
SVALY 1 RNAV DP Rwy 16	Existing	300ft/Nmi to 7800ft Standard Mins (1/2 mi)	Yes	No	None	Maintain
SVALY 1 RNAV DP Rwy 34	**Existing**	**495ft/Nmi to 9000ft Standard Mins (1/2 mi)**	**Mostly**	**No**	**None**	**Maintain and reduce climb speed/gradient**
Obstacle DP Rwy 16	Existing	300ft/Nmi to 10700ft Standard Mins (1/2 mi)	Yes	No	None	Maintain
Obstacle DP Rwy 34	Existing	330ft/Nmi to 9000ft Standard Mins (1/2 mi)	Yes	No	None	Maintain
New RNAV SID Rwy 16	**New**	**362ft/Nmi to 7800ft Standard Mins (1/2 mi)**	**Yes**	**No**	**None**	**Consider following addition of ATCT**

We find no departure or approach procedure limitations that would influence aircraft operators to an extent that an operator selection of a departure runway would require additional consideration in the Monte Carlo modeling beyond application of historical winds.

8 Historical Weather Data

Performing a Monte Carlo analysis to determine runway length requires consideration of both terminal weather data to account for its influence on takeoff performance, and enroute weather to consider its effects on flight planning. This section describes the historical weather data that was collected, the overall properties of key weather data, and which historical weather data was used to create distributions as inputs to the overall runway length analysis.

8.1 Terminal Weather Data

Terminal weather data, like temperature, pressure, runway surface condition and wind direction & speed, are required by regulations when operators determine takeoff and landing limits. For a specific flight operation this data is usually taken from METARs or D-ATIS information and is supplemented by pilot or air traffic controller observations.

When using terminal weather data to inform a forward-looking aircraft performance calculation, like runway length determination, the selection of weather-related inputs must be made in a manner to maintain statistically significant reliability. The goal of this selection is to ensure that a variable modeled as an input can be both a plausible expectation of future weather conditions and not an inadvertent statistical outlier that creates an unintentional bias in the results.

This section describes how terminal weather information was collected, which inputs were selected for use with takeoff performance computations, and how the information was converted into distributions for use with the Monte Carlo modeling.

8.1.1 Source and Methods for Terminal Weather Data Processing

Terminal historical weather information was collected from the National Climactic Data Center (NCDC) Climate Data Online (CDO) servers for U42 over a 5-year historical period. The data collected was originally reported from the on-airport AWOS-3 in the form of METARs consisting of both routine hourly observations and non-routine off-hour weather events, resulting in approximately 130,000 weather observations.

To express historical weather observations in a format usable either directly or indirectly as an input for a Monte Carlo analysis, a process of time weighting must be accomplished over the source data. Typically, weather observations are made on an hourly schedule. When a significant change in weather occurs for wind, ceiling, or precipitation due to a storm or turbulent wind conditions, these observations may be made more frequently. The process of time weighting accounts for these "brief" weather observations that only occur during some portion of an hour, without exerting an excess influence relative to the typical hourly observations. The mathematical steps used to achieve time weighting are not expressed in this report but can be described in more detail from the project team upon request.

Increasing data fidelity to a time increment of less than an hour yields no statistical difference to the results constructed over a one-hour increment. However, accounting for monthly variations in data is essential to ensure the accuracy of any normalization in a data distribution used as an input.

Once the time weighting process has been applied to the source data, all historical weather properties are available for direct application with aircraft performance calculations. From this dataset, the project team can decide whether to use either generalized distribution models or discrete empirical inputs. These discrete selections do not permit additional modification of historical weather but do provide Monte Carlo level analysis to more accurately sample data from variables which could be difficult to accurately express through any regression analysis.

The choice of using a selected distribution (often achieved through curve fitting) for a particular variable can be used directly or modified to reflect future states at the airport. This method is typically limited only to temperature and pressure information.

For the purposes of this analysis, none of the terminal weather data inputs used in the Monte Carlo analysis were modified from the time weighted values derived over the previous 5-year period. This unmodified data was chosen to align the results of this analysis with other accepted FAA methodologies regarding simplified applications of Average Daily Maximum values.

8.1.2 Temperature

The effect of temperature on aircraft performance is significant to engine thrust, lift, altitude correction and absolute operating limitations.

5 year historical temperature information for U42, presented in Fahrenheit for the convenience of the reader, is presented in Table 17 and Table 18 for the 50% and 85% confidence intervals.

Table 17 5 Year Mean Historical Outside Air Temperature at U42,

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0:00	29.2	31.5	38.5	46.3	53.8	66.2	75.1	71.6	62.2	45.8	38.5	27.8
1:00	29.3	31.4	37.6	45.9	53.1	65.4	74.0	70.8	61.5	45.3	38.2	27.5
2:00	29.1	31.6	37.9	44.8	51.6	63.6	72.3	69.8	60.3	45.5	37.3	27.2
3:00	28.6	30.5	36.5	43.9	51.3	61.9	71.4	68.3	59.5	44.8	37.3	26.7
4:00	28.8	30.4	36.7	42.9	50.5	60.9	70.2	67.5	58.0	44.3	36.7	26.5
5:00	29.1	30.2	36.5	42.9	50.0	60.4	69.2	67.3	57.3	44.2	36.6	26.5
6:00	28.9	30.0	36.6	42.4	49.9	60.5	68.8	66.1	56.8	43.9	36.5	26.3
7:00	28.5	30.7	36.6	43.3	53.0	65.6	72.4	67.8	57.9	43.3	36.0	26.0
8:00	29.3	32.0	38.7	46.8	56.2	68.6	76.3	72.7	62.2	45.0	40.0	27.1
9:00	31.3	33.4	41.2	50.3	58.5	71.4	79.5	76.3	66.2	48.7	43.5	29.3
10:00	32.8	35.7	43.9	52.2	62.1	74.7	82.9	79.6	70.0	52.3	46.2	31.5
11:00	34.4	36.7	46.3	53.6	64.5	77.3	85.6	82.8	72.3	55.2	47.6	32.7
12:00	35.4	38.0	48.5	55.0	66.3	79.2	88.1	85.1	75.6	57.1	49.0	33.4
13:00	36.7	39.4	49.1	57.6	66.9	81.0	89.9	86.8	76.8	58.7	49.7	34.4
14:00	37.3	40.9	49.7	58.5	67.2	82.1	91.4	88.1	77.8	59.5	49.7	33.8
15:00	37.0	40.7	50.2	59.2	67.3	83.5	91.7	88.6	78.6	59.7	49.6	33.7
16:00	34.8	39.9	50.5	58.6	68.3	83.4	92.3	89.0	78.7	59.2	48.5	32.3
17:00	33.0	37.3	49.3	57.3	67.9	83.4	92.2	88.6	78.8	58.1	45.2	30.8
18:00	32.0	35.5	47.1	56.1	66.7	82.2	90.7	87.2	76.3	55.0	43.0	29.7
19:00	31.7	34.6	45.0	53.4	64.5	80.7	88.8	84.9	72.4	51.7	41.8	29.0
20:00	30.9	33.7	43.6	51.1	61.7	77.0	84.9	80.1	68.8	49.2	39.9	28.6
21:00	30.2	33.0	41.6	49.0	58.5	72.7	80.8	76.3	65.7	47.8	39.4	28.1
22:00	30.1	32.4	40.7	47.6	56.4	69.8	78.1	74.1	64.7	46.8	38.8	27.4
23:00	29.8	32.0	39.9	46.3	55.3	68.1	76.5	72.8	63.3	45.7	37.8	28.0
Day	34.8	37.4	47.3	54.9	63.7	77.9	86.2	84.1	73.8	56.4	47.1	32.6
Night	29.7	32.0	38.6	45.5	53.0	65.0	73.7	70.2	61.3	45.9	38.9	27.7
24 Hours	31.6	34.2	42.6	50.2	59.2	72.5	81.0	77.6	67.6	50.3	41.9	29.3

Table 18 5 Year 85% Confidence Interval Historical Outside Air Temperature at U42

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0:00	36.3	43.7	50.0	53.9	62.9	76.2	79.2	76.3	70.8	58.0	47.5	35.2
1:00	35.8	43.1	48.8	53.4	62.2	74.3	78.5	75.9	69.8	57.1	46.9	34.5
2:00	35.5	42.7	47.3	52.3	61.6	73.0	77.2	74.5	68.8	57.9	46.6	33.8
3:00	35.8	42.4	48.5	51.7	60.7	71.3	76.9	73.5	68.1	56.8	46.7	34.9
4:00	36.3	42.1	47.6	51.1	59.2	70.1	75.6	72.8	67.7	55.6	46.7	34.4
5:00	36.1	41.1	47.2	50.5	59.0	69.5	74.8	72.5	66.9	54.6	46.0	34.1
6:00	36.0	41.9	46.8	48.9	57.5	69.0	74.4	71.9	66.6	54.8	45.3	34.2
7:00	36.0	41.7	46.4	51.0	61.7	71.7	76.6	73.5	66.6	53.6	45.9	33.5
8:00	36.9	42.9	49.0	54.6	65.6	75.1	79.7	77.6	69.5	55.4	49.4	34.3
9:00	38.3	46.1	52.8	58.1	68.9	78.5	82.8	81.1	73.9	59.3	53.3	37.0
10:00	39.3	48.3	55.5	60.5	71.7	81.5	86.1	84.0	77.5	63.2	55.8	38.3
11:00	41.5	49.5	57.6	62.7	74.4	84.6	89.0	87.1	80.0	66.3	58.0	39.8
12:00	43.6	50.8	59.1	65.7	76.9	86.7	91.7	89.6	83.1	68.5	60.1	40.6
13:00	44.1	51.3	60.9	67.5	78.4	89.1	93.6	91.1	85.3	70.7	61.4	41.6
14:00	44.1	52.5	61.4	68.5	78.9	90.3	94.5	92.4	87.0	71.0	62.2	41.4
15:00	43.5	52.9	61.3	68.7	79.0	91.1	95.5	93.8	87.5	71.5	61.5	40.2
16:00	42.1	51.4	61.4	68.8	79.3	91.5	95.8	93.7	88.2	71.2	59.3	38.3
17:00	39.8	48.8	59.9	67.0	79.1	91.8	95.7	94.0	87.2	70.2	55.1	36.9
18:00	38.8	46.2	57.2	65.7	78.2	90.5	94.6	92.4	84.9	65.6	52.1	36.7
19:00	38.4	45.5	55.3	63.1	75.7	88.5	92.6	90.1	80.1	61.7	49.6	35.8
20:00	37.8	45.4	52.7	60.1	72.1	84.5	88.6	85.1	75.8	60.2	49.1	35.5
21:00	37.5	44.7	51.0	57.0	67.6	80.5	84.1	81.1	73.1	59.0	48.7	35.1
22:00	36.4	44.3	50.1	56.5	66.1	77.7	82.0	78.7	72.3	58.5	48.0	36.1
23:00	36.5	44.3	50.0	54.4	65.1	76.1	80.0	77.4	71.3	57.5	47.8	35.7
Day	41.8	49.4	58.4	64.2	74.3	85.4	89.8	88.9	82.0	67.8	57.9	39.7
Night	36.7	43.5	48.9	53.4	62.2	73.8	78.3	75.3	69.8	57.2	48.1	35.0
24 Hours	38.6	46.0	53.2	58.8	69.2	80.5	85.0	82.5	75.9	61.6	51.8	36.6

Cells in the table are color coded to visualize which hours of the day, and months of the year, are expected to experience temperatures which may adversely impact aircraft (yellow). Green or white cells have negligible temperature effects on aircraft performance. This breakdown was determined by the project team based on typical thrust break temperatures for the aircraft selected and seeks to generally identify hours of the day when runway length results may be longer than those anticipated under standard day conditions.

The 85% confidence interval value represents a direct application of the standard deviation for the weather data calculated across the entire year (all 12 months, all hours) for a 2-sided normalized distribution. This application approximates the Average Daily Maximum and is a commonly used value by most operators when considering payload forecasting for a market. For perspective, the highest observed temperature from the dataset was 103F from 15JUN21 @ 17:55L and the coldest temperature was 2F from 06JAN17 @ 06:35L.

From this analysis, U42 experiences a relatively wide range of temperatures throughout the year. None of the temperature observations over the past 5 years exceeded certificated operating limits which could have precluded takeoff or landing operations from occurring. Therefore, pseudo-random sampling of all months and hours of temperature data can be considered for the aircraft performance analysis.

8.1.2.1 Temperature Application in the Monte Carlo Analysis

To implement the anticipated range of temperatures that would be most applicable to assess operational capabilities using the Monte Carlo analysis, the project team elected to utilize a normal distribution to represent the temperature for a given month across any hour of the day rather than a normal distribution spread across the entire year. This was selected in part, because a normal distribution model can be well adapted to match a specific month's worth of historical temperature information without needing to consider bi-modality or skew.

The decision to use monthly distributions was also chosen because the Monte Carlo analysis did not focus on either a single hour, or limited range of hours for possible operations. This means that the temperature used in the Monte Carlo analysis can be applicable to any hour in each month as a starting point for a single permutation in the Monte Carlo process.

The result of creating 12 independent normal distributions of historical temperature means that the Monte Carlo outcomes run over all 12 months will not reveal a distribution of temperature values that reflects an annual normal distribution. This will ensure that the unique coastal climate effects that TVY experiences will be accurately represented in the overall results.

8.1.3 Pressure

The local pressure at an airport is often different than the values anticipated under standard atmospheric conditions. These nonstandard conditions must be considered by flight crews to ensure that the pressure-based altimeter onboard the aircraft is accurately adjusted and that any non-standard aircraft performance effects are taken into consideration.

5 year historical pressure information for U42, presented in QNH for inHg, is presented in Table 19 and Table 20 for the 15% and 50% confidence intervals.

Table 19 5 Year 50% Confidence Interval Historical Altimeter Setting (QNH inHg) at U42

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0:00	30.20	30.02	30.04	30.01	29.99	30.02	30.09	30.07	30.11	30.10	30.21	30.20
1:00	30.20	30.01	30.05	30.01	29.99	30.02	30.09	30.07	30.10	30.11	30.20	30.20
2:00	30.20	30.01	30.05	30.01	29.98	30.02	30.09	30.07	30.11	30.12	30.20	30.21
3:00	30.19	30.01	30.04	30.02	29.98	30.03	30.09	30.07	30.11	30.12	30.20	30.20
4:00	30.18	30.02	30.05	30.02	29.98	30.03	30.09	30.07	30.11	30.12	30.19	30.20
5:00	30.18	30.01	30.06	30.02	30.00	30.04	30.09	30.08	30.12	30.13	30.20	30.20
6:00	30.19	30.01	30.06	30.03	30.00	30.05	30.11	30.09	30.12	30.13	30.20	30.20
7:00	30.21	30.02	30.08	30.04	30.01	30.05	30.12	30.10	30.13	30.13	30.20	30.21
8:00	30.21	30.04	30.09	30.06	30.02	30.06	30.13	30.11	30.15	30.13	30.22	30.22
9:00	30.23	30.05	30.09	30.05	30.03	30.08	30.14	30.11	30.16	30.15	30.23	30.24
10:00	30.24	30.05	30.10	30.05	30.03	30.07	30.14	30.12	30.16	30.15	30.22	30.24
11:00	30.24	30.04	30.09	30.05	30.02	30.07	30.13	30.12	30.16	30.15	30.22	30.24
12:00	30.23	30.02	30.07	30.03	30.01	30.06	30.13	30.11	30.15	30.14	30.21	30.22
13:00	30.20	30.00	30.07	30.02	30.00	30.05	30.11	30.09	30.13	30.13	30.18	30.20
14:00	30.19	29.99	30.03	30.01	29.99	30.03	30.10	30.08	30.12	30.10	30.16	30.19
15:00	30.20	29.98	30.02	30.01	29.98	30.02	30.08	30.06	30.10	30.10	30.15	30.20
16:00	30.20	29.98	30.02	30.01	29.96	30.01	30.06	30.04	30.09	30.10	30.15	30.20
17:00	30.21	29.98	30.02	29.99	29.95	29.99	30.04	30.03	30.09	30.10	30.15	30.20
18:00	30.22	30.00	30.01	29.99	29.95	29.99	30.04	30.02	30.08	30.09	30.16	30.20
19:00	30.22	30.00	30.02	29.98	29.96	29.99	30.04	30.02	30.09	30.09	30.17	30.20
20:00	30.22	30.00	30.03	29.99	29.96	30.00	30.05	30.04	30.09	30.09	30.17	30.20
21:00	30.21	30.00	30.04	30.01	29.98	30.00	30.05	30.05	30.10	30.10	30.18	30.20
22:00	30.21	30.00	30.05	30.02	29.98	30.02	30.08	30.05	30.11	30.11	30.19	30.20
23:00	30.21	30.00	30.05	30.01	29.98	30.02	30.08	30.06	30.12	30.12	30.18	30.20
Day	30.21	30.01	30.05	30.02	29.99	30.03	30.09	30.08	30.12	30.12	30.19	30.21
Night	30.20	30.01	30.05	30.02	29.99	30.02	30.09	30.07	30.11	30.12	30.19	30.20
24 Hours	30.21	30.01	30.05	30.02	29.99	30.03	30.09	30.07	30.12	30.12	30.19	30.21

Table 20 5 Year 15% Confidence Interval Historical Altimeter Setting (QNH inHg) at U42

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0:00	29.88	29.77	29.85	29.82	29.82	29.87	29.98	29.96	29.90	29.93	29.93	29.95
1:00	29.88	29.76	29.85	29.82	29.82	29.87	29.99	29.97	29.91	29.93	29.92	29.94
2:00	29.87	29.76	29.85	29.82	29.82	29.88	30.00	29.97	29.91	29.93	29.91	29.93
3:00	29.85	29.77	29.84	29.82	29.82	29.88	30.00	29.98	29.91	29.93	29.92	29.94
4:00	29.84	29.76	29.84	29.82	29.82	29.89	30.00	29.98	29.92	29.93	29.90	29.93
5:00	29.83	29.76	29.85	29.83	29.82	29.90	30.01	30.00	29.93	29.94	29.91	29.95
6:00	29.85	29.75	29.85	29.83	29.83	29.91	30.02	30.00	29.94	29.93	29.91	29.96
7:00	29.85	29.75	29.84	29.84	29.84	29.92	30.04	30.02	29.95	29.94	29.90	29.96
8:00	29.85	29.76	29.85	29.85	29.84	29.93	30.05	30.03	29.95	29.95	29.92	29.96
9:00	29.86	29.77	29.86	29.85	29.84	29.95	30.05	30.04	29.95	29.94	29.95	29.97
10:00	29.87	29.78	29.87	29.85	29.83	29.94	30.05	30.04	29.96	29.95	29.95	29.97
11:00	29.85	29.77	29.88	29.85	29.83	29.93	30.05	30.04	29.95	29.96	29.94	29.97
12:00	29.84	29.77	29.87	29.84	29.83	29.93	30.05	30.03	29.95	29.95	29.93	29.96
13:00	29.84	29.76	29.86	29.84	29.81	29.90	30.03	30.01	29.93	29.94	29.95	29.95
14:00	29.84	29.74	29.85	29.82	29.79	29.88	30.01	29.99	29.93	29.92	29.90	29.95
15:00	29.85	29.76	29.84	29.80	29.79	29.86	29.99	29.98	29.91	29.90	29.90	29.96
16:00	29.86	29.77	29.84	29.79	29.77	29.84	29.98	29.95	29.90	29.91	29.90	29.96
17:00	29.89	29.77	29.83	29.78	29.77	29.83	29.97	29.95	29.89	29.90	29.91	29.96
18:00	29.90	29.76	29.84	29.77	29.77	29.82	29.96	29.93	29.89	29.89	29.92	29.96
19:00	29.89	29.77	29.84	29.76	29.77	29.82	29.96	29.92	29.88	29.90	29.92	29.96
20:00	29.89	29.78	29.84	29.79	29.78	29.84	29.96	29.93	29.89	29.91	29.92	29.97
21:00	29.89	29.78	29.84	29.80	29.79	29.84	29.97	29.95	29.90	29.92	29.93	29.97
22:00	29.88	29.78	29.86	29.82	29.81	29.86	29.98	29.95	29.90	29.93	29.93	29.96
23:00	29.89	29.78	29.86	29.82	29.81	29.87	29.98	29.96	29.90	29.93	29.92	29.95
Day	29.86	29.76	29.85	29.82	29.80	29.88	30.01	29.99	29.92	29.93	29.93	29.96
Night	29.87	29.77	29.85	29.82	29.82	29.88	29.99	29.98	29.91	29.93	29.92	29.95
24 Hours	29.86	29.77	29.85	29.82	29.81	29.88	30.00	29.98	29.92	29.93	29.92	29.96

Cells in the table are color coded to help visualize which hours of the day, and months of the year, are expected to experience pressure conditions which are beneficial to aircraft performance (green), adverse to aircraft performance (yellow) or neutral (white). This breakdown was determined by the project team based on sensitivity to non-standard pressure conditions for the aircraft selected and seeks to generally identify hours of the day when runway length results may be longer than those anticipated under standard-day conditions.

The 15% confidence interval value represents a direct application of the standard deviation for the weather data calculated across the entire year (all 12 months, all hours) for a 2-sided normalized distribution. This application approximates is a commonly used value by many airlines when considering whether non-standard pressure conditions should be considered in payload forecasting for a market.

From the results shown in Table 19, the average pressure experienced at TVY are nominal to aircraft performance conditions. Furthermore, any non-standard pressure conditions are relatively minor and thus have little effect on aircraft performance and subsequent runway length determinations.

8.1.3.1 Pressure Application in the Monte Carlo Analysis

Due to the limited periods of time when non-standard pressure application might influence aircraft performance at U42, the project team elected not to apply non-standard pressure to any of the Monte Carlo analysis.

8.1.4 Runway Condition

In the current aircraft operating environment, flight crews are presented with varying runway conditions that must be considered for both takeoff and landing. This includes information about whether the runway surface is dry, wet, or contaminated by other temporary conditions like ice, snow, standing water and slush. Any non-dry runway will create a takeoff and landing performance impact on an aircraft's ability to remain centered on the runway and bring the aircraft to a complete stop within the available accelerate-stop distance or landing distance due to a decrease in friction between airplane tires and the runway surface. For conditions worse than just wet, a contaminated runway will further degrade takeoff performance as the aircraft must push through the contaminant during acceleration for takeoff.

Runway condition information is currently reported to flight crews via Tower, D-ATIS and FICON NOTAMs for pilots to consider during the arrival and approach to land. Planning and dispatch offices rely on METAR, TAF and other in-house forecasting technologies. These observations are supplemented by flight crews as the anticipated hour of operation nears.

While FICON information is generally preferable for the basis of modeling runway conditions at an airport there are two limitations. The first is that D-ATIS and FICON information were not made available to the project team for consideration in the Monte Carlo analysis. The second is that FICON information is not currently available for the same 5-year period as the other weather data sources used.

The current weather sensing equipment at U42 is an FAA-Owned AWOS-3. In the absence of comprehensive FICON or D-ATIS information, and since the AWOS does not have the equipment necessary to classify precipitation type and intensity, the project team utilized precipitation accumulation measurements during the previous period data from the METAR to approximate the likelihood that the runway surface would be wet (RCC – 5) for a given month or hour.

5-year historical wet runway conditions information is shown in Table 21 expressed as a percent likelihood of occurrence for a given hour in any month.

Table 21 5-Year Historical Likelihood of Operating on a Wet Runway Surface

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0:00	0.4%	1.7%	2.4%	4.6%	2.0%	1.7%	0.4%	0.7%	2.8%	2.3%	1.2%	0.3%
1:00	1.4%	1.9%	1.3%	1.9%	1.3%	1.1%	0.5%	1.0%	1.5%	2.4%	2.4%	1.0%
2:00	0.5%	2.1%	2.3%	1.7%	4.2%	1.5%	0.5%	1.3%	2.4%	1.6%	1.0%	0.9%
3:00	1.6%	1.7%	1.5%	1.9%	2.7%	1.5%	0.5%	0.7%	1.8%	1.6%	0.7%	0.9%
4:00	0.9%	1.2%	2.1%	2.1%	3.8%	1.7%	0.4%	1.2%	1.6%	0.8%	1.5%	0.5%
5:00	0.9%	1.0%	1.9%	1.9%	4.2%	0.8%	0.9%	0.0%	0.5%	2.8%	1.2%	1.4%
6:00	1.3%	1.0%	1.3%	3.1%	3.6%	1.3%	0.7%	0.0%	0.0%	3.2%	1.8%	0.5%
7:00	1.8%	1.0%	1.5%	3.7%	2.5%	2.1%	0.5%	0.3%	1.8%	1.6%	1.5%	1.7%
8:00	2.7%	1.9%	1.3%	6.3%	2.3%	2.2%	0.4%	0.5%	2.5%	2.1%	1.7%	2.5%
9:00	2.6%	1.5%	5.6%	4.9%	2.9%	2.8%	1.4%	0.8%	2.3%	2.9%	2.5%	0.7%
10:00	4.0%	5.0%	5.9%	5.5%	2.2%	1.5%	0.9%	1.0%	1.8%	2.1%	2.7%	5.7%
11:00	3.8%	4.6%	6.1%	9.6%	2.0%	1.5%	0.0%	1.0%	1.7%	1.0%	2.7%	9.0%
12:00	6.0%	5.7%	5.2%	8.8%	0.9%	0.6%	0.4%	0.8%	0.7%	1.2%	3.7%	5.3%
13:00	6.2%	3.9%	4.8%	5.6%	4.1%	0.6%	0.5%	0.7%	2.5%	1.9%	3.4%	5.6%
14:00	4.4%	2.3%	6.3%	3.6%	2.0%	1.1%	3.1%	1.5%	1.2%	0.5%	3.8%	4.6%
15:00	3.9%	3.6%	6.2%	3.2%	2.9%	0.8%	2.0%	1.7%	1.2%	0.5%	3.4%	1.9%
16:00	3.6%	1.1%	3.4%	4.1%	3.5%	0.0%	0.0%	1.0%	1.4%	2.1%	2.3%	1.8%
17:00	1.7%	1.5%	3.2%	3.2%	1.7%	0.0%	1.7%	1.6%	1.4%	2.4%	2.2%	2.5%
18:00	1.5%	1.7%	2.5%	3.1%	3.5%	1.3%	1.3%	1.2%	1.5%	2.3%	2.2%	4.2%
19:00	1.1%	2.6%	1.0%	3.9%	2.4%	1.7%	1.5%	2.7%	1.5%	1.6%	2.4%	2.6%
20:00	1.1%	2.4%	2.3%	4.9%	2.2%	1.4%	0.6%	3.1%	2.3%	3.3%	2.7%	2.5%
21:00	1.5%	1.3%	3.4%	2.9%	2.7%	0.4%	1.8%	2.5%	1.8%	3.6%	3.1%	1.2%
22:00	1.4%	1.3%	2.5%	2.5%	3.1%	0.4%	0.7%	1.4%	2.6%	3.8%	1.8%	0.9%
23:00	0.7%	2.1%	1.7%	2.4%	2.3%	0.8%	0.0%	1.4%	2.0%	3.2%	1.2%	1.0%
Day	4.0%	3.1%	4.6%	5.2%	2.5%	1.3%	1.0%	1.2%	1.6%	1.7%	2.9%	4.3%
Night	1.3%	1.7%	2.0%	2.8%	3.0%	1.1%	0.7%	0.9%	1.8%	2.4%	1.8%	1.5%
24 Hours	2.3%	2.3%	3.2%	4.0%	2.7%	1.2%	0.9%	1.2%	1.7%	2.1%	2.2%	2.5%

The cells in this table are color coded to reflect airline decision making about periods when a runway is expected to be wet (yellow) or dry (green) from the perspective of payload forecasting only.

This chart identifies that wet runway conditions can be expected primarily from late fall through May typically from early morning through mid-afternoon.

Because this information is based on the accumulation data and not direct detection of precipitation type and intensity, the project team also looked at the FAA ASOS data at SLC for comparison to see if there is a likelihood of underreporting fog or snow conditions which would result in a wet runway. Table 22 below shows the wet results for the past ten years at SLC.

Table 22. 10-Year Historical Wet runway likelihood at SLC based on ASOS readings

Hour (Local)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0:00	23.3%	17.1%	9.1%	6.2%	3.1%	1.7%	0.7%	1.3%	3.7%	4.7%	5.8%	25.2%
1:00	23.3%	15.9%	8.8%	6.7%	2.8%	2.5%	0.9%	1.0%	4.1%	3.8%	6.0%	26.1%
2:00	24.0%	15.2%	10.6%	6.5%	3.9%	2.5%	1.2%	1.0%	3.9%	4.0%	6.2%	25.1%
3:00	23.8%	15.0%	11.1%	5.9%	4.6%	2.9%	1.2%	1.4%	3.8%	4.2%	5.7%	26.0%
4:00	24.6%	15.5%	11.0%	6.0%	4.6%	2.6%	1.3%	0.8%	2.3%	4.2%	6.6%	25.6%
5:00	23.0%	15.9%	10.8%	5.6%	4.8%	2.5%	1.3%	0.7%	2.5%	5.1%	5.4%	26.1%
6:00	24.1%	17.6%	9.7%	7.0%	5.3%	2.8%	1.4%	0.6%	1.7%	5.3%	5.4%	25.6%
7:00	26.1%	17.9%	9.3%	9.3%	5.5%	3.0%	1.3%	1.3%	3.6%	4.7%	5.8%	27.2%
8:00	27.0%	17.2%	11.8%	8.7%	4.4%	1.3%	1.2%	1.7%	4.5%	5.4%	7.3%	26.5%
9:00	26.7%	15.9%	11.4%	10.0%	3.4%	1.9%	0.9%	1.4%	3.7%	4.4%	7.0%	21.1%
10:00	23.7%	14.2%	10.9%	9.0%	3.0%	1.7%	0.5%	1.7%	3.3%	3.9%	5.6%	18.4%
11:00	19.1%	14.2%	9.8%	10.1%	3.2%	1.1%	0.8%	1.8%	3.4%	3.6%	5.4%	15.5%
12:00	16.5%	13.9%	9.0%	9.1%	3.1%	1.7%	0.5%	2.1%	4.1%	2.0%	6.0%	12.3%
13:00	16.0%	9.9%	10.4%	7.7%	5.5%	1.5%	1.2%	1.2%	3.8%	3.1%	6.7%	13.6%
14:00	14.9%	9.1%	10.2%	5.5%	4.8%	1.1%	1.2%	1.4%	3.5%	2.7%	7.1%	13.7%
15:00	14.5%	8.6%	11.4%	6.6%	7.6%	2.2%	1.0%	1.0%	2.2%	3.2%	5.7%	14.6%
16:00	15.1%	9.5%	12.0%	7.0%	6.0%	1.3%	1.0%	1.6%	2.4%	3.6%	7.3%	15.2%
17:00	15.7%	10.5%	8.4%	7.1%	5.7%	1.8%	1.0%	1.8%	2.4%	4.5%	6.4%	18.0%
18:00	14.1%	13.4%	7.8%	5.7%	3.9%	3.0%	2.1%	1.8%	2.8%	2.7%	7.3%	21.2%
19:00	14.5%	12.4%	7.3%	5.4%	4.5%	2.9%	2.8%	3.6%	2.7%	2.4%	5.6%	24.6%
20:00	16.5%	13.1%	6.7%	5.5%	4.1%	1.8%	1.0%	4.2%	4.0%	4.3%	5.3%	24.8%
21:00	16.9%	13.7%	8.2%	6.0%	4.0%	1.3%	2.2%	3.2%	3.6%	5.0%	5.4%	25.9%
22:00	19.8%	14.0%	8.4%	5.2%	3.2%	1.0%	1.4%	2.2%	3.4%	4.9%	6.6%	24.4%
23:00	20.3%	16.0%	9.2%	6.3%	3.3%	1.5%	1.8%	1.9%	3.8%	5.3%	7.6%	24.3%

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Day	19.3%	12.8%	10.2%	7.8%	4.7%	1.9%	1.2%	1.6%	3.3%	3.6%	6.4%	16.8%
Night	**20.7%**	**15.0%**	**9.3%**	**6.1%**	**3.8%**	**2.1%**	**1.3%**	**1.8%**	**3.3%**	**4.3%**	**6.1%**	**24.7%**
24 Hours	20.2%	14.0%	9.7%	7.0%	4.3%	2.0%	1.2%	1.7%	3.3%	4.0%	6.2%	21.7%

The SLC data indicates that the AWOS-3 at U42 may be underrepresenting wet and contaminated runway conditions, particularly in the winter months. While the terrain in close proximity to U42 does have the ability to create localized weather phenomena, including rain shadowing, the short distance between the airports and the significant difference between the determinations of the SLC ASOS and the U42 AWOS-3 leads the project team to believe that snow and fog events are not being recorded at the rate that would be expected if more sensitive equipment were being used on the airfield.

8.1.4.1.1 Runway Surface Application in the Monte Carlo Analysis

To accurately reflect the likelihood that an aircraft may need to depart on a wet runway (RCC 5) the project team decided to incorporate empirical discrete pseudo-random sampling on a monthly basis. This results in 12 independent months where the possibility of a runway length calculation utilizing wet runway data reflects historical observation, without any normalization of the inputs.

The decision to use empirical discrete selection of values ensures that the impacts of wet runway on takeoff performance are not inadvertently over-represented. Such over-representation can occur across a statistically significant sample of Monte Carlo runs. Using the discrete data results in an average likelihood of a performance computation using a wet runway condition of roughly 3% for a 12-month period, with individual monthly rates tracking closely to those values shown in Table 21.

This assumption is only valid under two significant assumptions:

1. Runway 16-34 is either going to be grooved or will receive a PFC
2. The snow plowing operation at U42 will be sufficient to remove any significant accumulation

At the present time, neither of these assumptions is true. However, the project team strongly recommends resolving both issues starting first with number 1. Failure to groove the runway, or apply a PFC overlay, will increase the overall length of runway required for future jet operations during wet and wintery conditions by almost 30% beyond its current length.

8.1.5 Icing

Aircraft operations in icing conditions can have an impact on both takeoff and landing performance due to the use of anti-ice engine bleeds which may degrade available engine thrust.

Icing conditions are considered to occur when the outside air temperature is at or below 10 degrees C (50 F) and visible moisture is present. While there are no direct sources available to flight crews that report the rate, amount or likelihood of icing, most flight crews and airlines consider the need to apply anti-icing based information taken from METARs and onboard aircraft sensors.

For the purposes of modeling aircraft performance, the combination of wet or contaminated runway surface conditions (which includes the likelihood of visible moisture close to the runway), low visibility and ceilings (which indicate additional possible sources of visible moisture in the form of clouds) and outside air temperature forms that basis of evaluating the likelihood of an aircraft operating needing to apply anti-ice engine bleeds.

5-year historical icing condition information is shown in Table 23, expressed as a percent likelihood of occurrence for a given hour and month.

Table 23 5-Year Historical Likelihood of Operating in Icing Conditions

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0:00	1.3%	3.3%	0.4%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	1.0%
1:00	1.5%	1.5%	0.0%	0.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.4%	1.2%
2:00	1.5%	1.8%	0.2%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.4%
3:00	1.3%	1.3%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	1.2%
4:00	1.1%	1.8%	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.7%	2.2%
5:00	2.4%	1.5%	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.9%	1.2%
6:00	1.3%	1.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.1%	1.9%
7:00	2.2%	1.8%	0.5%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.9%	2.6%
8:00	3.5%	3.2%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.4%	0.4%	2.6%
9:00	2.2%	3.8%	0.0%	0.5%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.7%	2.1%
10:00	1.5%	3.3%	0.7%	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	1.9%
11:00	1.5%	1.8%	0.2%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.4%
12:00	0.4%	1.0%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	0.2%
13:00	1.1%	0.8%	0.2%	0.0%	0.2%	0.0%	0.0%	0.0%	0.2%	0.0%	1.1%	0.2%
14:00	0.9%	1.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.1%	0.2%
15:00	0.7%	2.1%	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.5%	0.7%
16:00	1.6%	2.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.5%	3.0%
17:00	1.5%	1.6%	1.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.9%	2.7%
18:00	1.8%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	2.9%
19:00	1.5%	1.0%	0.2%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	2.9%
20:00	2.0%	0.3%	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.7%
21:00	2.0%	1.3%	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.9%	1.2%
22:00	2.0%	0.0%	0.2%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.5%
23:00	1.3%	1.0%	0.7%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	1.0%
Day	1.3%	2.1%	0.3%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.5%	1.2%
Night	1.8%	1.3%	0.4%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.5%	1.8%
24 Hours	1.6%	1.6%	0.3%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.5%	1.6%

In Table 23, cells which have been shaded in green are periods where an operator would not base a payload forecast on anti-ice aircraft performance considerations, whereas the white and yellow cells represent hours and months where the likelihood of considering aircraft performance impacts from icing increase.

From this figure, the likelihood of experiencing icing conditions matches reasonable operational expectations that icing conditions would be likely to occur only during winter months and would not be expected during the summer period. In summer, warm temperatures prevent the formation of ice on aircraft surfaces. In winter, both precipitation and cloud formation at or below the 50 degrees F threshold is more likely.

8.1.5.1 Icing Application in the Monte Carlo Analysis

While there are periods of the year at U42 where aircraft anti-ice application may occur, the project team decided not to consider the effects of icing in the Monte Carlo analysis due to the low prevalence during anticipated flight operations hours.

8.1.6 Winds and Runway Usage

Runway selection is a critical variable in the determination of overall runway length requirements, especially when comparing existing or proposed runways to other runways that may be advantageously oriented in such a way to enhance overall wind coverage. A runway, or more specifically a runway direction, is preferred for operational use when that direction experiences no tailwind and has limited crosswind. For a typical airport with multiple runways covering a large portion of possible wind directions, the preferred threshold for winds is for a runway to have 0 knots of tailwind and less than 10 knots of crosswind.

For the analysis of which runway direction might be used, the project team considered historical wind direction and intensity modeled together using the same METAR information as the previous weather elements.

Table 24 and Table 25 show the historical likelihood that runways 16 and 34 would have been preferred for use based on these wind criteria. Ceiling and visibility are not considered in this discussion.

Table 24 5-Year Historical Likelihood of Runway 16 Being Preferred for Operation Based on Wind Data

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0:00	**77.2%**	**72.2%**	**79.8%**	**62.1%**	**71.5%**	**71.2%**	**87.3%**	**87.5%**	**78.5%**	**72.4%**	**75.6%**	**74.3%**
1:00	**74.5%**	**73.9%**	**79.0%**	**64.3%**	**72.5%**	**77.3%**	**91.0%**	**92.7%**	**82.9%**	**74.5%**	**75.8%**	**71.9%**
2:00	**71.1%**	**74.1%**	**78.7%**	**66.7%**	**73.0%**	**76.4%**	**92.1%**	**91.1%**	**79.0%**	**73.1%**	**78.1%**	**73.7%**
3:00	**70.4%**	**78.5%**	**77.8%**	**64.9%**	**75.4%**	**72.5%**	**88.9%**	**88.6%**	**79.3%**	**73.6%**	**71.8%**	**73.7%**
4:00	**76.2%**	**77.5%**	**78.9%**	**59.4%**	**72.7%**	**74.1%**	**85.4%**	**83.8%**	**74.3%**	**69.2%**	**71.9%**	**72.2%**
5:00	**77.9%**	**71.8%**	**75.6%**	**57.6%**	**69.8%**	**70.4%**	**79.3%**	**76.2%**	**69.5%**	**70.9%**	**72.9%**	**73.4%**
6:00	**76.9%**	**71.0%**	**76.4%**	**52.2%**	68.6%	65.5%	72.5%	70.1%	**64.0%**	**68.6%**	**73.0%**	**73.2%**
7:00	**76.5%**	72.8%	71.1%	55.6%	61.8%	60.3%	70.7%	66.5%	65.3%	**67.3%**	**73.8%**	**71.0%**
8:00	77.5%	67.7%	70.0%	53.2%	55.7%	57.7%	66.0%	62.2%	60.8%	65.8%	70.8%	70.9%
9:00	78.0%	68.5%	71.0%	50.8%	53.4%	50.3%	64.1%	60.4%	61.3%	65.2%	70.0%	67.6%
10:00	79.4%	64.9%	67.8%	50.2%	51.0%	47.9%	61.2%	56.8%	61.5%	61.7%	66.9%	66.0%
11:00	80.0%	62.8%	61.2%	48.5%	48.0%	44.5%	58.0%	56.6%	66.1%	63.6%	66.8%	61.9%
12:00	77.4%	67.4%	60.2%	47.2%	46.7%	47.2%	61.2%	60.5%	64.6%	64.4%	69.1%	66.8%
13:00	74.9%	67.2%	55.5%	46.2%	48.5%	48.4%	63.6%	63.2%	58.7%	64.8%	63.6%	67.8%
14:00	76.4%	63.4%	57.5%	42.9%	45.9%	56.8%	64.7%	63.6%	60.1%	64.8%	66.4%	69.6%
15:00	78.0%	70.3%	56.8%	41.3%	48.8%	52.5%	69.8%	63.7%	58.5%	65.0%	68.8%	74.1%
16:00	77.6%	73.9%	55.5%	49.3%	55.0%	55.3%	69.4%	65.1%	59.3%	66.7%	65.5%	72.7%
17:00	**74.6%**	69.0%	59.3%	50.6%	54.4%	57.6%	68.7%	62.8%	60.8%	66.3%	**68.2%**	**71.9%**
18:00	**76.8%**	**68.1%**	65.7%	50.6%	51.9%	56.1%	69.1%	64.6%	63.9%	**64.8%**	**69.8%**	**69.0%**
19:00	**75.8%**	**72.5%**	**68.7%**	54.7%	55.2%	57.4%	69.7%	71.3%	**71.6%**	**71.8%**	**74.0%**	**70.3%**
20:00	**77.7%**	**72.9%**	**68.2%**	**57.4%**	**63.0%**	63.3%	74.5%	**76.6%**	**73.0%**	**76.1%**	**78.4%**	**73.1%**
21:00	**75.6%**	**70.8%**	**69.6%**	**59.4%**	**64.0%**	**66.6%**	**81.4%**	**77.8%**	**77.5%**	**77.2%**	**76.9%**	**76.8%**
22:00	**77.1%**	**72.9%**	**70.9%**	**60.4%**	**65.2%**	**69.3%**	**84.3%**	**80.9%**	**75.9%**	**77.7%**	**81.5%**	**75.8%**
23:00	**79.1%**	**74.7%**	**76.4%**	**63.4%**	**72.3%**	**69.2%**	**85.5%**	**81.7%**	**77.5%**	**76.1%**	**77.3%**	**76.2%**
Day	77.7%	68.0%	62.6%	49.3%	53.2%	54.7%	66.9%	63.4%	61.8%	64.8%	67.5%	68.6%
Night	**75.8%**	**73.1%**	**75.0%**	**60.7%**	**69.9%**	**71.9%**	**86.1%**	**83.7%**	**75.3%**	**72.4%**	**74.6%**	**73.1%**
24 Hours	76.5%	70.8%	68.8%	54.5%	60.2%	61.2%	74.1%	71.9%	68.5%	69.2%	72.0%	71.4%

Table 25 5-Year Historical Likelihood of Runway 34 Being Preferred for Operation Based on Wind Data

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0:00	**52.2%**	**41.8%**	**40.1%**	**59.6%**	**54.1%**	**54.8%**	**45.7%**	**39.5%**	**45.5%**	**49.3%**	**49.0%**	**59.5%**
1:00	**52.7%**	**42.8%**	**45.0%**	**54.1%**	**52.6%**	**47.3%**	**39.5%**	**36.6%**	**44.8%**	**49.2%**	**47.9%**	**56.7%**
2:00	**56.6%**	**42.1%**	**45.3%**	**51.5%**	**50.0%**	**54.4%**	**37.8%**	**33.4%**	**45.2%**	**47.0%**	**45.4%**	**59.0%**
3:00	**56.1%**	**43.5%**	**43.7%**	**54.0%**	**48.8%**	**51.8%**	**38.5%**	**34.1%**	**44.5%**	**45.7%**	**46.6%**	**54.3%**
4:00	**55.5%**	**43.7%**	**38.8%**	**58.5%**	**50.0%**	**47.5%**	**40.0%**	**38.5%**	**51.6%**	**48.7%**	**49.1%**	**56.8%**
5:00	**51.9%**	**48.6%**	**42.5%**	**58.3%**	**52.1%**	**48.5%**	**41.0%**	**43.0%**	**54.2%**	**48.3%**	**51.0%**	**59.7%**
6:00	**49.8%**	**50.0%**	**43.4%**	**61.0%**	53.0%	56.9%	48.4%	46.9%	**53.3%**	**53.0%**	**50.2%**	**58.9%**
7:00	**52.4%**	46.7%	43.6%	60.3%	56.2%	60.3%	50.7%	52.1%	56.2%	**51.9%**	**49.0%**	**60.8%**
8:00	48.2%	47.8%	44.7%	61.9%	59.5%	62.4%	49.5%	53.1%	57.1%	56.9%	51.3%	59.1%
9:00	53.1%	47.6%	46.6%	64.6%	63.0%	66.3%	50.3%	59.8%	57.1%	53.9%	49.8%	62.7%
10:00	52.4%	48.3%	51.2%	66.7%	67.0%	67.9%	55.9%	64.0%	55.3%	53.1%	51.0%	61.0%
11:00	50.3%	50.3%	55.1%	67.9%	71.8%	70.1%	60.4%	65.3%	53.8%	57.0%	54.4%	65.2%
12:00	47.9%	49.1%	57.2%	68.3%	67.2%	69.1%	59.7%	63.6%	53.5%	54.6%	53.7%	66.1%
13:00	46.9%	48.1%	57.5%	66.9%	65.5%	66.7%	58.0%	54.9%	58.5%	52.0%	58.8%	62.0%
14:00	50.2%	49.6%	55.2%	67.4%	66.4%	61.4%	56.2%	63.4%	57.6%	54.1%	57.8%	59.8%
15:00	49.7%	48.4%	56.2%	67.1%	66.2%	62.6%	56.1%	66.1%	57.0%	54.3%	56.7%	59.9%
16:00	50.0%	45.0%	58.8%	66.0%	59.4%	64.7%	55.8%	62.1%	62.9%	56.6%	56.4%	62.1%
17:00	**47.5%**	46.7%	56.9%	63.5%	60.8%	61.7%	58.5%	61.7%	62.1%	55.0%	**56.4%**	**62.2%**
18:00	**47.2%**	**46.0%**	56.1%	60.5%	64.7%	57.2%	59.7%	55.7%	58.6%	**56.1%**	**49.3%**	**61.5%**
19:00	**47.9%**	**42.9%**	**54.7%**	62.1%	64.9%	62.6%	58.6%	52.9%	**57.8%**	**53.5%**	**55.3%**	**62.0%**
20:00	**46.0%**	**46.0%**	**50.9%**	**61.6%**	**59.9%**	55.8%	54.1%	**49.4%**	**51.6%**	**48.6%**	**52.9%**	**59.4%**
21:00	**48.4%**	**49.7%**	**49.0%**	**56.4%**	**59.3%**	**57.2%**	**47.5%**	**48.9%**	**48.6%**	**45.5%**	**51.9%**	**56.0%**
22:00	**50.9%**	**48.7%**	**49.2%**	**58.3%**	**60.1%**	**52.7%**	**49.9%**	**46.2%**	**48.6%**	**46.6%**	**41.2%**	**52.8%**
23:00	**48.5%**	**44.6%**	**46.4%**	**57.6%**	**54.5%**	**55.4%**	**45.6%**	**44.8%**	**47.2%**	**50.2%**	**44.2%**	**57.0%**
Day	50.1%	48.0%	53.3%	64.8%	63.1%	63.6%	55.5%	59.1%	57.5%	54.6%	53.9%	61.9%
Night	**50.8%**	**45.4%**	**45.8%**	**57.4%**	**55.1%**	**52.5%**	**43.9%**	**42.5%**	**49.4%**	**48.8%**	**49.3%**	**58.3%**
24 Hours	50.5%	46.6%	49.5%	61.4%	59.5%	59.0%	50.7%	51.5%	53.4%	51.7%	51.2%	59.8%

Hours and months containing values in green indicate periods when the runway would be preferred for use by an aircraft operator (assuming no other terrain, convective activity, or ATC restrictions). Hours in white represent an hour and month when the runway use is neutral, while hours and months in yellow represent periods when the runway is less likely to be used.

Like runway preference, the wind data is examined to assess whether a runway could be used. A runway is considered capable of supporting operations up to a much higher tailwind and crosswind limit compared to the previous analysis of runway preference. In the case of U42, no more than a 10-knot tailwind and a crosswind of up to 20 knots are used to determine whether a runway direction is capable of being used.

Comparing both the likelihood of runway preference and runway capability provides a more complete picture about the hours of months when a runway is rarely considered for usage. This also gives insight into times when crosswinds or adverse wind conditions are so severe a runway (or runways) become unsuitable for aircraft operations, up to and including the entire air.

Table 26 and Table 27 represent the runway capability analysis based on 5 years of historical wind data for runways 16 and 34 respectively. As before, ceiling and visibility are not considered in this segment of the analysis.

Table 26 5 Year Historical Likelihood of Runway 16 Being Capable of Supporting Operations Based on Wind Data

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0:00	**95.6%**	**94.6%**	**96.6%**	**89.5%**	**97.1%**	**97.9%**	**99.6%**	**99.0%**	**96.0%**	**92.2%**	**93.1%**	**95.5%**
1:00	**95.0%**	**93.2%**	**96.2%**	**89.6%**	**96.8%**	**97.7%**	**99.1%**	**99.6%**	**96.5%**	**92.3%**	**92.9%**	**93.6%**
2:00	**96.5%**	**94.9%**	**95.6%**	**89.4%**	**95.4%**	**96.4%**	**98.9%**	**99.0%**	**95.8%**	**91.6%**	**94.7%**	**92.7%**
3:00	**96.7%**	**93.7%**	**95.0%**	**88.5%**	**95.0%**	**94.5%**	**98.0%**	**98.2%**	**95.0%**	**90.7%**	**94.1%**	**91.8%**
4:00	**96.3%**	**93.4%**	**94.0%**	**86.7%**	**93.1%**	**94.0%**	**97.4%**	**96.8%**	**94.1%**	**91.1%**	**92.3%**	**93.5%**
5:00	**96.1%**	**92.7%**	**93.2%**	**86.5%**	**93.1%**	**92.5%**	**95.9%**	**94.5%**	**90.5%**	**88.2%**	**92.3%**	**95.2%**
6:00	**95.9%**	**90.2%**	**91.8%**	**84.5%**	92.0%	86.0%	92.8%	91.5%	**89.5%**	**88.6%**	**92.2%**	**94.8%**
7:00	**96.3%**	91.6%	91.9%	86.9%	88.5%	83.0%	88.7%	85.3%	88.9%	**88.9%**	**94.7%**	**95.2%**
8:00	96.8%	91.5%	91.9%	85.3%	85.0%	82.4%	83.9%	84.8%	87.6%	90.5%	93.3%	93.1%
9:00	96.7%	92.4%	91.1%	84.2%	81.8%	80.6%	83.7%	83.4%	90.2%	91.5%	91.7%	93.2%
10:00	98.0%	93.6%	87.7%	83.3%	81.1%	80.2%	86.3%	87.4%	88.7%	90.0%	92.2%	93.8%
11:00	97.4%	91.8%	88.2%	80.0%	82.2%	79.8%	90.4%	89.0%	90.9%	89.3%	91.5%	93.9%
12:00	96.5%	93.1%	89.1%	78.9%	83.7%	85.3%	92.8%	91.2%	89.1%	93.0%	92.6%	94.1%
13:00	94.1%	94.0%	86.1%	80.6%	84.5%	84.8%	93.2%	93.1%	85.2%	92.1%	94.1%	93.5%
14:00	96.4%	93.2%	89.1%	78.0%	86.2%	84.0%	93.7%	93.0%	88.1%	91.8%	94.5%	94.1%
15:00	95.9%	92.7%	92.5%	78.9%	84.8%	86.5%	94.5%	89.6%	87.0%	93.7%	94.1%	93.4%
16:00	96.4%	92.5%	92.0%	83.3%	83.9%	88.9%	96.7%	89.4%	88.8%	92.2%	93.0%	95.6%
17:00	**96.2%**	87.1%	89.3%	82.8%	88.4%	87.6%	94.9%	90.1%	90.5%	92.4%	**91.7%**	**93.9%**
18:00	**94.0%**	**89.4%**	89.9%	83.5%	89.4%	89.4%	94.6%	91.3%	94.4%	**94.2%**	**94.5%**	**93.7%**
19:00	**94.7%**	**91.0%**	**88.7%**	86.4%	89.6%	89.3%	93.3%	93.3%	**95.5%**	**95.1%**	**94.9%**	**95.4%**
20:00	**96.9%**	**92.6%**	**89.2%**	**83.8%**	**88.8%**	91.5%	95.9%	**94.1%**	**94.6%**	**93.4%**	**95.2%**	**96.1%**
21:00	**95.4%**	**91.8%**	**91.5%**	**87.5%**	**90.3%**	**93.7%**	**96.2%**	**95.2%**	**95.8%**	**92.4%**	**95.4%**	**95.6%**
22:00	**95.6%**	**91.8%**	**93.4%**	**88.8%**	**91.6%**	**95.2%**	**96.9%**	**96.3%**	**97.4%**	**93.2%**	**95.0%**	**97.1%**
23:00	**96.1%**	**93.5%**	**97.2%**	**92.8%**	**94.1%**	**96.7%**	**98.0%**	**98.0%**	**96.8%**	**92.9%**	**95.0%**	**97.6%**
Day	96.5%	92.2%	89.9%	82.5%	85.8%	85.3%	91.7%	89.5%	89.1%	91.6%	93.0%	93.8%
Night	**95.8%**	**92.5%**	**93.5%**	**88.0%**	**93.5%**	**95.4%**	**97.8%**	**97.1%**	**94.8%**	**91.8%**	**93.9%**	**94.8%**
24 Hours	96.1%	92.3%	91.7%	85.0%	89.0%	89.1%	94.0%	92.6%	92.0%	91.7%	93.5%	94.4%

Table 27 5 Year Historical Likelihood of Runway 34 Being Capable of Supporting Operations Based on Wind Data

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0:00	**78.5%**	**75.5%**	**79.1%**	**89.7%**	**89.8%**	**82.7%**	**78.0%**	**77.4%**	**81.3%**	**82.7%**	**83.0%**	**86.4%**
1:00	**80.6%**	**72.2%**	**75.3%**	**87.1%**	**87.9%**	**81.8%**	**77.4%**	**73.0%**	**81.9%**	**81.4%**	**81.7%**	**86.5%**
2:00	**80.8%**	**72.1%**	**72.9%**	**85.3%**	**85.4%**	**78.5%**	**73.4%**	**71.7%**	**82.5%**	**80.9%**	**78.3%**	**82.9%**
3:00	**81.7%**	**76.5%**	**71.6%**	**86.4%**	**84.7%**	**74.3%**	**75.7%**	**69.7%**	**82.5%**	**81.7%**	**79.0%**	**84.3%**
4:00	**82.3%**	**74.0%**	**74.3%**	**86.7%**	**81.0%**	**74.3%**	**73.1%**	**68.6%**	**81.7%**	**81.9%**	**78.3%**	**85.5%**
5:00	**80.1%**	**73.0%**	**74.9%**	**83.3%**	**79.3%**	**77.2%**	**74.2%**	**71.9%**	**83.1%**	**81.4%**	**78.9%**	**87.5%**
6:00	**77.7%**	**71.2%**	**74.3%**	**81.8%**	77.9%	79.9%	77.6%	75.8%	**84.5%**	**81.1%**	**78.7%**	**85.5%**
7:00	**78.7%**	69.5%	72.5%	81.1%	78.3%	78.5%	76.3%	77.2%	84.7%	**84.2%**	**76.9%**	**84.3%**
8:00	79.7%	69.9%	67.9%	80.7%	79.4%	78.4%	75.2%	78.0%	81.1%	82.7%	74.2%	84.4%
9:00	78.9%	67.8%	71.0%	81.5%	83.2%	80.4%	79.1%	80.3%	81.0%	83.9%	75.0%	85.2%
10:00	77.7%	65.4%	73.2%	82.3%	84.4%	83.1%	82.4%	81.3%	80.3%	82.0%	77.3%	84.9%
11:00	79.8%	68.6%	77.3%	82.2%	86.5%	84.5%	83.8%	84.0%	80.6%	79.6%	75.1%	84.7%
12:00	81.3%	67.4%	76.9%	83.7%	83.0%	84.0%	86.9%	84.1%	80.4%	79.0%	77.0%	86.0%
13:00	81.3%	69.7%	75.3%	85.4%	84.5%	84.8%	84.3%	88.2%	81.5%	80.1%	79.2%	89.3%
14:00	79.3%	66.8%	75.7%	85.6%	86.4%	84.5%	85.0%	89.4%	80.6%	80.9%	78.5%	87.1%
15:00	76.9%	65.4%	78.5%	85.9%	86.3%	85.3%	84.5%	89.2%	84.3%	83.8%	79.2%	86.8%
16:00	76.0%	69.0%	81.5%	85.9%	88.3%	84.3%	83.3%	88.0%	84.8%	84.2%	82.5%	88.4%
17:00	**75.9%**	71.7%	84.0%	89.7%	89.7%	83.3%	85.7%	86.6%	85.6%	85.1%	**85.7%**	**86.9%**
18:00	**78.1%**	**72.1%**	84.8%	90.3%	92.1%	85.5%	85.1%	86.6%	87.1%	**84.9%**	**84.4%**	**88.0%**
19:00	**77.1%**	**72.2%**	**83.4%**	91.4%	90.9%	87.5%	83.3%	81.8%	**86.4%**	**87.3%**	**85.9%**	**87.1%**
20:00	**79.9%**	**73.9%**	**82.9%**	**90.4%**	**90.5%**	86.8%	83.1%	**85.5%**	**87.2%**	**87.3%**	**87.1%**	**86.3%**
21:00	**78.0%**	**74.5%**	**80.8%**	**89.9%**	**89.2%**	**84.8%**	**82.0%**	**81.2%**	**86.0%**	**86.8%**	**84.0%**	**86.8%**
22:00	**76.9%**	**75.3%**	**82.2%**	**90.7%**	**90.7%**	**85.2%**	**79.8%**	**81.1%**	**85.5%**	**86.9%**	**84.3%**	**87.7%**
23:00	**78.3%**	**76.2%**	**79.7%**	**90.6%**	**92.5%**	**84.0%**	**78.1%**	**80.9%**	**82.3%**	**84.4%**	**84.1%**	**87.4%**
Day	79.0%	68.3%	76.6%	84.3%	84.6%	83.1%	82.3%	83.8%	82.7%	82.5%	77.5%	86.1%
Night	**79.0%**	**73.7%**	**77.6%**	**88.3%**	**87.5%**	**81.0%**	**77.5%**	**76.6%**	**83.7%**	**83.6%**	**82.4%**	**86.4%**
24 Hours	79.0%	71.2%	77.1%	86.1%	85.9%	82.2%	80.3%	80.5%	83.2%	83.1%	80.3%	86.3%

The color selection in the cells for the runway capable likelihoods are the same used for the runway preference likelihoods.

This analysis shows that both runway directions are capable of supporting operations from a wind perspective. Both the preference and capability charts indicate that runway 16 is the preferred direction of operation.

8.1.6.1 Wind and Runway Usage Limitations

There are three limitations from this type of wind and runway usage analysis that should be noted. The first is that when comparing a specific likelihood value for a particular hour and month across all the runways, the sum of likelihoods can yield a value over 100%. This is primarily because calm wind conditions will be treated as enabling each runway to be equally likely of usage. That is, if the winds were always calm at the airport, both runway 16 and 34 would be 100% capable of operation, totaling 200% capability.

The second limitation is that wind gusts were considered as steady state wind conditions without any further manipulation such as multiplying gusts by 1.5. This can result in time periods where the likelihood of a runway direction is neither preferred nor capable. Because gusting wind conditions typically do not last for long periods of time, the application of time weighting minimizes the overall impact of high gusting wind conditions over a given period. However, gust application against the established crosswind and tailwind limitations can limit the overall usability of a runway.

The third limitation is that this level of runway usage analysis is not based on any historical air traffic utilization information. While this information is valuable in verifying that the historical weather analysis is a close match to commonly experienced airfield conditions, the project team has verified these findings with the airport and found them to be generally consistent with historical aircraft operations.

8.1.6.2 Wind Application in the Monte Carlo Analysis

The project team has chosen to use calm wind conditions for the Monte Carlo analysis.

The analysis described to this point has focused on using thresholds of tailwinds and crosswinds to identify when a runway may be preferred or capable of supporting aircraft operations.

However, part 121 aircraft performance calculations require consideration of tailwinds on takeoff analysis, which can penalize aircraft performance. For the purposes of the Monte Carlo Analysis, the adverse effect of tailwind is mitigated by assuming that an operator would choose not to takeoff or land with a known tailwind condition, thus avoiding a potential performance degradation that could increase the required runway length necessary.

Headwind is not considered for this analysis because not all operators take advantage of beneficial headwind in takeoff performance computations except under unusual situations as a matter of company policy.

Some aircraft can experience performance limitations resulting from crosswinds. This is not uncommon for approach and landing operations but should not result in any increased runway length requirements for runway 16-34. For takeoff purposes a crosswind can create a performance limitation under contaminated runway conditions are worse than wet (RCC < 5). In these situations, operators may need to restrict the flap settings, thrust values, or increase control speeds of the aircraft to protect against the possibility of drifting off of the runway centerline. These limitations are generally only applicable to Part 25 aircraft on runways less than 148 feet wide.

8.1.6.3 Runway Usage Application in the Monte Carlo Analysis

Based on the results of the runway capability analysis, the runway preference analysis was selected as an empirical discrete basis for the selection of which runway direction to use for a particular Monte Carlo iteration based on all historical observations in each month. This means that for an annual time period, with no specific hour or group of hours, the likelihood of a particular runway direction will be randomly selected for the target month based on a pseudo-random selection from time weighted runway preference results.

The decision to use an empirical discrete selection is further strengthened by the project team's decision to limit the Monte Carlo analysis to only consider one runway (two runway directions) at a time. This means that when analyzing runway 16-34, the likelihood of selecting a runway direction in a given Monte Carlo run can only result in the selection of either runway 16 or runway 34. Across a 12-month period this resulted in an average selection of runway 16 across 55-60% of all runs.

8.2 Enroute Weather Data

Enroute weather information is used to determine the time, distance, and fuel necessary for a given payload to be carried between city pairs. Traditional enroute weather conditions that are considered include winds, temperature, and icing. Less common considerations such as ozone concentrations, ionospheric interruption, turbulence, convective activity, and volcanic activity are not considered in this analysis. For the purposes of ensuring accurate runway length determinations in a Monte Carlo model, several enroute weather variables can be simplified through other flight operational assumptions like route efficiency metrics (see section 9.3). This section will only describe the consideration made by the project team regarding enroute winds, temperatures, and icing conditions.

8.2.1 Enroute Temperature

Historical enroute temperature data was taken from Boeing's PCWindTemp application covering the previous 30-year period from 1989 – 2019. The temperature information is calculated along two known points on earth for any altitude and direction of flight. The temperature has been normalized by Boeing and is provided to the user based on a selected confidence interval outcome for a given time period.

8.2.2 Application of Enroute Temperature to Monte Carlo Analysis

Enroute temperature variations were not considered by the project team for Monte Carlo analysis. This is because most modern aircraft do not experience significant changes to high-speed performance characteristics unless the upper atmosphere temperatures exceed ISA+15. While this condition can occur, it is uncommon for aircraft operating on the routes being analyzed from U42 and will therefore be disregarded from the Monte Carlo analysis as a random variable. All temperatures will therefore follow ISA+0.

8.2.3 Enroute Icing

Historical enroute icing data is not a widely available information set, is notoriously difficult to obtain from publicly available weather sources and is difficult to accurately apply across generalized routes of flight over long distances. Thus, most airlines do not consider historical icing application when making payload range forecasts in favor of taking icing performance impacts into consideration in real-time flight planning.

8.2.4 Application of Enroute Icing to Monte Carlo Analysis

Enroute icing effects were not considered by the project team for Monte Carlo analysis.

8.2.5 Enroute Winds

Historical enroute wind data was taken from Boeing's PCWindTemp application covering the previous 30-year period from 1989 – 2019. The wind information is calculated along two known points on earth for any altitude and direction of flight. The steady state wind values have been normalized by Boeing and are provided to the user based on a selected confidence interval outcome for a given time period.

Enroute wind data for flights originating from U42 follows a general trend across all 12 months whereby:

- Flights departing to destinations located to the north of U42 encounter headwinds
- Flights departing to destinations located to the south, southeast, east, and northeast of U42 encounter tailwinds

8.2.6 Application of Enroute Winds to Monte Carlo Analysis

Enroute winds were used to pre-calculate flight planning fuel requirements for each month using the 5%, 15%, 50%, 85% and 95% confidence interval wind values from PCWindTemp. The flight planning performance calculation module used for this analysis, PACELAB Mission, directly interfaces with PCWindTemp enabling varying flight level consideration of the historical wind results based on the direction of flight and step climbs iterations. This ensures that instead of 1 wind value being applied across the entire route, several historical wind levels (consistent with the selected confidence interval) would be considered.

Historical wind values were modified for the initial climb and final descent portions using a fixed ratio of 85% of the last utilized flight level.

The pseudo-random selection of wind-adjusted flight performance was achieved by considering a standard normal distribution allowing interpolation between the 5 pre-determined confidence intervals. However, no extrapolation was permitted to cover historical enroute wind situations that exceeded the 5% and 95% selections. This has the effect of reducing extreme flight conditions that might have resulted in unusual flight planning decisions and, consequently, unusual runway length requirements.

8.3 Summary

Historical weather data was used as the basis for modeling anticipated weather conditions for consideration with takeoff, landing, and flight planning aircraft performance calculations. 5 years' worth of historical data was used for terminal weather information while 30 years of historical weather data was used for enroute weather information.

While the terminal weather source data was formatted to enable monthly and hourly analysis, the calculations used by the project team resulted in monthly data distributions that were compiled across the Monte Carlo runs to present runway length analysis applicable to annual operations.

The following values were used for terminal weather inputs:

- Temperature
- Runway Usage (based on Wind Preference)
- Runway Surface Condition (Dry or Wet)

Enroute weather inputs only considered historical wind information.

Based on a review of the historical weather data, the project team anticipates a limited range of temperature related impacts on aircraft performance with a slight preference towards the usage of runway 16.

This analysis also revealed a strong benefit to U42 aircraft operations, if not a requirement, to both invest in an upgrade to the existing AWOS-3 (to an AWOS-3P/T) and to groove the runway in the near future.

9 Flight Operations

This section provides an overview of current flight operations activity at the airport for the purpose of identifying aircraft types, destinations, and flight planning methods to be used with traditional and Monte Carlo based runway length determination.

9.1 Aircraft

A variety of aircraft currently operate at U42 on domestic, non-oceanic routes including business jets, small GA traffic and turboprop aircraft. At the time that this analysis was conducted, there was no scheduled air traffic (14CFR 125, 121 or 135) at U42.

The following section describes the aircraft that were selected for analysis, the parameters and methods used to calculate both the low speed (takeoff) and high speed (flight planning) performance and which portions of this information were made available throughout the Monte Carlo simulations.

9.1.1 Selection of Aircraft

The following are a list of aircraft that were originally considered by the project team for analysis in the Monte Carlo Runway Length analysis at U42:

Aircraft:

- Global 5000
- 560XLS
- 800XP
- Super King Air 200

This comprehensive list of aircraft was reduced to a representative group that had the following characteristics:

1. Aircraft that were likely to be operated on all, or most, of the target routes being analyzed through the Monte Carlo process
2. Aircraft that are representative of the operations that currently take place today or are likely to take place in the near-term future of the airport
3. Aircraft for which the project team had access to performance data for high fidelity takeoff and flight planning calculations

When considering these three factors, the comprehensive list was reduced to the following 3 aircraft types:

- Super King Air 200
- Cessna Citation 560XLS
- Global Express 5000/6000

The decision to use the Super King Air 200 was based on its frequency of operations into U42, high likelihood of continued operations and typical aircraft performance characteristics for multi-engine turboprops. The specific model of Super King Air 200 selected was considered to be a "mid-range" King Air that was neither exceptionally suited to high pressure altitude operations nor the kind of King Air that would never be flown in the Rocky Mountains. Results for this aircraft are likely to be representative of all multi-engine turboprop operations.

The decision to use the Cessna Citation 560XLS was based on frequency of operations at SLC, U42, and TVY in combination with the high likelihood that aircraft of this type will continue to serve U42 over the timespan of the masterplan. This midsize cabin business jet has average aircraft performance characteristics that make it exceptionally useful in examining runway length and one engine inoperative obstacle capabilities. It represents the midpoint in performance for almost all midsize cabin business jets in terms of runway length requirements, OEI obstacle clearance, and payload-range carrying capability.

The decision to use the Global Express 6000 aircraft was based on the decision to choose a modern large cabin business jet that would be representative of both current and future large cabin business jets over the forecast period of the masterplan. Almost all current large business cabin jets are extremely capable performers with few differences between the Gulfstream, Bombardier, and Dassault families. The Global 6000 was chosen as it represents the midpoint for modern, large cabin business jets and has robust calculation capabilities for runway length and OEI obstacle clearance. No restrictions with respect to runway bearing strength were made on the Global 6000.

There is no plan to introduce scheduled air carrier service at U42 within the master planning period. As such, only business jet and turboprop traffic are being considered and regional jets and narrow body aircraft have been excluded from further runway length analysis.

9.2 Aircraft Configuration

Just as runway length and historical weather values can influence the takeoff and flight planning performance of an aircraft, so too can properties related to the configuration of an aircraft. Especially those that influence the amount of fuel that can be used, the factors that influence the payload and other factors that influence the overall weight of the aircraft.

These variables require careful consideration for their impacts on overall runway length requirements and include structural weight limitations, engine types, seating configuration, passenger weight, baggage weight, cargo, load factor and aircraft empty weight.

9.2.1 Aircraft Structural Weight and Engine Types Used in Monte Carlo Analysis

The following section describes the aircraft that were considered, and the fixed values selected, across multiple configurations in operations today. Each aircraft contains a description of the following aircraft characteristics:

- Powerplant: The engines assumed to be installed and analyzed for takeoff and flight planning performance.
- MRMP: The certified maximum ramp weight, which is the heaviest that an aircraft can be at any time during the ground operation (e.g. taxiing).
- MTOW: The certified maximum takeoff weight, which is the heaviest that an aircraft can be at the beginning of the takeoff roll. This may be further limited by operational requirements (e.g., field length).
- MLW: The certified maximum landing weight, which is the heaviest that an aircraft can be at the point where a landing will be attempted under normal (non-emergency) operating circumstances. This may be further limited by operational requirements (e.g., field length).
- MZFW: The certified maximum zero fuel weight, which is the heaviest that an aircraft can be without the presence of fuel onboard.
- Fuel Capacity: The usable fuel capacity, measured in liters. The density of fuel considered in this analysis was fixed at 6.76 pounds per gallon.

- OEW: The operating empty weight of the aircraft to include seating, catering, flight crew and other service items that will be onboard the aircraft during the flight. A nominal value is used for this analysis. Considerable variation can occur due to operator preferences and aircraft weighing programs.

9.2.1.1 Cessna Citation 560XLS

- Powerplant: PW545B
- MRMP: 20,400 pounds
- MTOW: 20,200 pounds
- MLW: 18,700 pounds
- MZFW: 15,100 pounds
- Fuel Capacity: 1,013 gallons
- OEW: 12,220 pounds

Figure 29 Cessna Citation 560XLS

9.2.1.2 Super King Air 200

- Powerplant: PT6A-42 (Hartzell 4 Blade)
- MRMP: 12,590 pounds.
- MTOW: 12,500 pounds
- MLW: 12,500 pounds
- MZFW: 11,000 pounds
- Fuel Capacity: 550 gallons
- OEW: 8,820 pounds

Figure 30 Beechcraft Super King Air 200

9.2.1.3 Global Express 5000/6000

- Powerplant: BR710-A2
- MRMP: 99,750 pounds
- MTOW: 99,500 pounds
- MLW: 78,600 pounds
- MZFW: 58,000 pounds
- Fuel Capacity: 6,646 gallons
- OEW: 51,400 pounds

Figure 31 Bombardier Global 5000/6000

9.2.2 Fixed Aircraft Configuration Values in the Monte Carlo Analysis

Business jets and turboprops offer a substantial number of variations in cabin configuration and passenger seating. These aircraft are regularly operated at less than full capacity.

To ensure that the Monte Carlo runway length analysis represents both realistic operational results and broadly applicable results, the project team utilized a unique strategy for selecting fixed aircraft seating and load factor characteristics.

The first part of the strategy was to set a fixed target for load factor on the aircraft that represents the broadest possible success factors for airline operations as follows:

- Target Passenger Load Factor for All Aircraft: 50%
- Target Cargo Load Factor: 0%

As will be discussed in later sections, a successful Monte Carlo run is one that could support 50% of the target passengers (and their baggage) with no additional cargo beyond the passengers' bags.

For this analysis, the target cargo level identified is 0% meaning that the only items intended to be placed into the cargo hold would be those items directly related to ticketed passengers boarding the aircraft.

9.2.3 Variable Payload Values in the Monte Carlo Analysis

Even though LEAN analysis considers a single passenger seating configuration for each airplane type, with target load factors, variations in the weight of passengers and their baggage are considered throughout the Monte Carlo analysis. By considering variations in the weight of passengers and bags, the overall takeoff and flight planning performance calculations reflect a range of different methodologies used to estimate the weight of non-tare payload on their aircraft.

9.2.3.1 Average Passenger Weight Variation in the Monte Carlo Analysis

The average passenger weight considered in this analysis accounts for the weight of the person, their clothing and any personal items and carry-on items they may bring onboard the airplane. The value also takes into consideration a statistical blend of gender and age. Most airlines use an average passenger weight in daily operations.

For the past several years, the average passenger weight used by US air carriers was 190 pounds in the summer and 195 pounds in the winter. Regional operators with a restricted carry-on baggage program use 184 pounds and 189 pounds, respectively.

Variations in passenger weight are a critical consideration. New guidance from the FAA (Advisory Circular 120-27F) directs airlines to continuously survey passenger weights. This is anticipated to potentially increase average passenger weights by 5 to 10 lbs.

With these considerations in place, the Monte Carlo analysis considers passenger weights ranging from 195lbs to 205 lbs. The passenger weight selected by pseudo-random methods, with equal probability, between 195 and 205 lbs., at a 5-lb. increment. The selected passenger weight is then multiplied by the total number of seats and becomes a required portion of the total payload considered as part of the takeoff weight for the route of flight being analyzed.

9.2.3.2 Average Baggage Weight Variation in the Monte Carlo Analysis

The average baggage weight considered in this analysis is the predicted weight of baggage that each passenger will check for under-floor carriage. Airlines will typically determine a market-dependent (domestic & international) weight for each piece, and a number of pieces per passenger. For example, each checked domestic (say, U42-DEN) bag is assumed to weigh 30 pounds, with a quantity of .75 bags per passenger, while each international bag (say, U42-DEN-CDG) is assumed to weigh 40 pounds with a quantity of 1.2 bags per passenger.

Similar to variable passenger weight, variable baggage weight is also significant to the Monte Carlo analysis. For the purposes of this analysis, the average baggage weight per person varies from 30 pounds up to 40 pounds. The bag weight selected by pseudo-random methods with equal probability of weights between 30 and 40 pounds, at a 5-pound increment, is then multiplied by the total number of seats and included as part of the aggregate payload that must be considered as part of the takeoff weight for the route of flight being analyzed. In addition, the total baggage weight was subtracted from the total cargo carrying capacity of the aircraft ensuring that any supplemental cargo request did not inadvertently create an overload situation in the cargo section of the aircraft. While 40 pounds is mentioned above as an international bag weight, LEAN assumes this is still a reasonable bag weight for private aircraft, especially in context of the greater Salt Lake Area where skiing is popular and typically requires heavy or oversize bags.

9.3 Destinations and Routes of Flight

Using a Monte Carlo analysis to determine the effectiveness of a given runway length is dependent upon the destinations that are likely to be targeted by operators flying to or from U42. While the purpose of this analysis is not to suggest the economic feasibility or desirability of any specific city pair, several potential destinations were taken from the Master Plan Analysis to determine distances representing plausible markets not currently served by operators at U42.

9.3.1 Routes and Time of Departure

Based on information provided by the SLC GAMP project team, the target routes identified for potential non-stop business jet and turboprop operations from U42 are as follows:

- SFO
- LAX
- PHX
- PDX
- SEA
- DEN
- DFW
- IAH
- ORD
- HNL
- TEB
- MIA

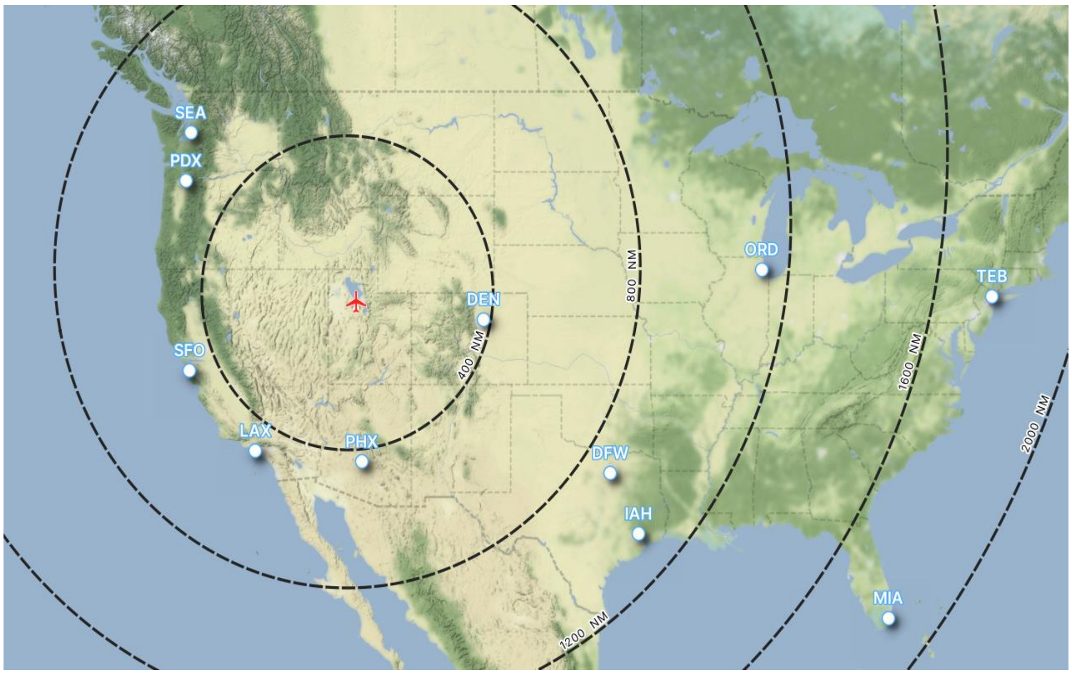


Figure 32 Range Ring Depiction for Departures Originating from U42

Of these destinations, several were selected as representative of the distances, and directions of flight, that were both capable of being operated at 50% load factor from U42 and which could serve as data points to assess overall aircraft performance capabilities. These destinations are indicated in Figure 32 as white dots spread across range rings generally depicting the flight times from U42 (white airplane dot).

The closest destinations were selected to determine the range of the Super King Air 200, which is the most range limited of the aircraft selected. Other destinations were selected to confirm whether the larger business jets would be able to reliably reach the East Coast and whether Hawaii is a viable destination to the west with existing runway lengths and OEI obstacle consideration, or modest extensions.

To increase the accuracy of high-speed aircraft performance calculations along the route of flight, the great circle distance between U42 and the destination was adjusted to reflect increased distances resulting from "route efficiency."

Route efficiency is a percentage increase in distance that the aircraft is expected to travel on top of the great circle distance resulting in a new airway distance using the formula:

Airway Distance = (1 + Route Efficiency) * Great Circle Distance

The route efficiency is used to account for the difference between the great circle distance and required airway distances used in modern air navigation; this is similar to "as the crow flies" versus street distance.

Route efficiency is also used to account for variations in enroute weather conditions not considered elsewhere in the Monte Carlo process like non-standard wind patterns and turbulence/weather avoidance. The project team selected values of route efficiency which matched the historical flight plan filings as observed from ForeFlight to be considered along each route from U42 to the destination. In situations where historical flight plans had not recently been filed, the project team created routes that enabled a minimum of 3% route efficiency, with maximum values as high as 20% on shorter flights (less than 1 hour). The route efficiencies are summarized below in Table 28.

Table 28 List of Destinations and Airway Destinations Considered in The Monte Carlo Analysis

Destination (IATA)	Destination (City)	Great Circle Distance (NMi)	Airway Distance 1 (NMi)	Airway Distance 2 (NMi)	Airway Distance 3 (NMi)	Airway Distance 4 (NMi)
PHX	Phoenix, AZ	431	484	494		
LAX	Los Angeles, CA	504	569	590		
SEA	Seattle, WA	605	622	633	643	
DFW	Dallas, TX	855	923	933	943	
PWK	Chicago, IL	1088	1148	1168	1190	1209
TEB	Teterboro, NJ	1716	1739	1759	1785	1805
MIA	Miami, FL	1812	1889	1899		
HNL	Honolulu, HI	2599	2665	2799	2819	

The route efficiencies listed above were not considered equally likely to occur either in the real world or in the Monte Carlo simulation. The overall preference was for route efficiencies listed for Airway Distance 1 and Airway Distance 2 with significantly lower probabilities of occurrence on routes 3 and 4.

Several city pairs were omitted from the detailed Monte Carlo analysis including PDX and DEN. For DEN, there were no conditions identified in which any of the aircraft considered were unable to complete the route with less than the target load factor. For PDX, the additional destinations being studied were either more challenging or representative of the route. Therefore, there was no need to model their performance using the Monte Carlo simulations because the likelihood of success was either already 100% or reasonably represented by other routes.

In the case of shorter flights from U42, such as to LAX, the departure routing includes a significant increase in miles traveled when compared to the great circle distance. This is a side effect of the current inefficiency of the available SID and ODP at U42 which require the aircraft to travel north to common waypoint before eventually turning southwest or southeast. This added as much as 30nmi to the overall trip distance before the aircraft preceded in the intended direction.

There are no known or anticipated destinations identified for current and future service at U42 that require ETOPS or non-FAA flight planning considerations.

This analysis does not account for any specific time of departure deferring instead to equal likelihood of a flight operating in any of the 12 months of a year, at any time of day. The team believes this is reasonable and representative as a measure of overall aircraft performance capability at U42.

9.3.2 Route and Time of Departure Inputs to Monte Carlo Analysis

For each destination, the airway distances identified in Table 28 were used to pre-calculate flight planning performance results that had an equal likelihood of selection. In other words, there was a 25% chance that any of the four airways distance was selected across any of the 12 months of other historical weather input parameters for destinations with plausible planning distances.

9.4 Flight Planning

The role of flight planning calculations in the Monte Carlo analysis focused on exploring the effectiveness of an existing runway length is to determine an accurate aircraft takeoff weight and significantly, the fuel load for each operation. Each calculation considers the month of operation, the payload being carried, the aircraft, the route of flight and the enroute weather conditions specific to operations to and from U42.

Each flight planning calculation utilizes regulatory-compliant methods particular to the host country and the airline operator to determine the amount of fuel required to plan for contingencies encountered while enroute to the destination or an alternate airport. A specialized set of high-speed aircraft performance data, supplied by aircraft manufacturers and refined by operator experience with the aircraft, is used with flight planning calculation engines to determine a mission-specific takeoff weight which can then be compared against the maximum possible takeoff weight available for a given runway length.

By directly calculating flight planning aircraft performance results using monthly enroute weather conditions along specific routes of flight, the accuracy of the overall Monte Carlo results is increased to ensure that the runway extension results have the highest likelihood of being sufficient for flight operations following a potential extension.

This section describes the flight planning data and methods used to calculate the planned takeoff weights for an aircraft, route, and payload. This section also describes which aspects of the flight planning performance calculation are carried forward into the Monte Carlo analysis and provides some initial insight on the overall flight planning performance results.

9.4.1 Flight Planning Performance Data

Each flight planning performance calculation requires several different sets of high-speed aircraft performance information. This includes climb, cruise, descent, approach, missed approach and holding performance information.

The high-speed performance data used in this analysis is created through a combination of high speed performance data taken from aircraft manufacturer provided data and tools. These data were imported and applied to routes using PACELAB Mission software (PLMS).

The project team did not have the manufacturer's high speed aircraft performance information for the King Air. In this case, the team utilized the ForeFlight Dispatch capability to model their publicly available aircraft performance models.

9.4.2 Flight Planning Methods Used

The project team utilized the PLMS toolset to calculate flight plan aircraft performance results with the goal of preserving the target passenger load factor first, followed by the cargo load factor second for any takeoff weight up to the structural limited value.

Fuel calculations for business jet operations were calculated by applying 14 CFR Part 121 domestic flight planning regulations and the following conditions:

EN-ROUTE

- ENGINE START: 2 min
- TAXI: 9 min
- TAKEOFF AND CLIMB TO 1,500 feet AGL, distance not credited
- CLIMB TO OPTIMUM ALTITUDE: Main Speed Schedule defined by OEM
- STEP CRUISE: Main Speed Schedule defined by OEM, No minimum cruise length
- DESCENT TO LANDING: Main Speed Schedule defined by OEM
- APPROACH AND LANDING FROM 1,500 feet AGL: distance not credited
- TAXI: 5 minutes, taken from reserve

DIVERSION (starts after approach)

- OVERSHOOT TO 1,500 feet AGL: 80 % T/O-performance
- CLIMB TO 35,000 feet: Diversion Speed Schedule defined in Aircraft
- STEP CRUISE: Diversion Speed Schedule defined in Aircraft
- DESCENT TO LANDING: Diversion Speed Schedule defined in Aircraft
- APPROACH AND LANDING FROM 1,500 feet AGL: distance not credited

CONTINGENCY fuel

- Is defined as Sum of:
  - Continued Cruise: 0.75 hour
- Burned prior to diverting

Reserve is defined as the sum of:

- Diversion fuel
- Contingency fuel

Alternate airports were considered to be located between 50 - 100 nautical miles away from the destination airport.

Fuel calculations for turbo prop operations were calculated by applying NBAA recommended flight planning practices that are generally applicable to FAR 91, 91-K and 135 operations as follows:

NBAA

EN-ROUTE

- TAXI: 0.17 hours
- TAKEOFF AND CLIMB TO 1,500 feet AGL, distance not credited
- CLIMB TO OPTIMUM ALTITUDE: Main Speed Schedule defined in Aircraft
- STEP CRUISE: Main Speed Schedule defined in Aircraft, No minimum cruise length
- DESCENT TO 0 feet AMSL: Main Speed Schedule defined in Aircraft
- HOLDING AT 5,000 feet AMSL: Main Speed Schedule defined in Aircraft, 0.08 hours

DIVERSION (starts after approach)

- OVERSHOOT TO 1,500 feet AGL: 80 % T/O-performance

- HOLDING AT 5,000 feet AMSL: Diversion Speed Schedule defined in Aircraft, 0.08 hours
- CLIMB TO 35,000 feet: Diversion Speed Schedule defined in Aircraft
- STEP CRUISE: Diversion Speed Schedule defined in Aircraft
- DESCENT TO LANDING: Diversion Speed Schedule defined in Aircraft
- HOLDING AT 5,000 feet AMSL: Diversion Speed Schedule defined in Aircraft, 0.5 hours
- APPROACH AND LANDING FROM 1,500 feet AGL

CONTINGENCY fuel

- N/A

Reserve is defined as the sum of:

- Diversion fuel

All aircraft were considered to operate at Long Range Cruise speed. LRC is unique to each aircraft and represents an operational speed which favors minimizing fuel over flight time. This will have the effect of reducing the overall runway length required for a route of flight compared to faster speeds that may be used by airlines. LRC also represents a standard operational speed that can be consistently applied to all aircraft.

No takeoff or landing weight limitations were applied to PLMS flight planning performance analysis beyond the certified limitations. This enables each of the flight planning performance permutations to reflect the required takeoff weight which can then be compared to the takeoff weight available for each runway length/obstacle combination.

9.4.2.1 Insight from Flight Planning Results

All PLMS and ForeFlight Flight Planning performance runs were performed "in advance" of the Monte Carlo pseudo-random selection methods, enabling the project team to review the overall characteristics of gross takeoff weight and load factors that were expected to meet the criteria.

9.4.2.2 When Flight Planning Results Did Not Succeed

There is one situation in which PLMS and/or ForeFlight was known to fail to generate a takeoff weight for use with the overall Monte Carlo Analysis.

The situation arises when the aircraft fuel capacity was insufficient to perform the route under the historical wind conditions and airway distance. In this situation, PLMS or ForeFlight would return an error indicating that the combination of inputs could not succeed given the requirement to carry a minimum payload of 50% passenger capacity.

9.4.3 Flight Planning Inputs to Monte Carlo Analysis

PLMS studies were utilized to generate thousands of different flight plan aircraft performance results that included independent inputs for the following combinations:

- Every month (x12)
- Each aircraft (x3)
- Each route (departing U42 to the destination)
- Each passenger weight (x3)
- Each baggage weight (x3)
- Each airway distance (x2-4 depending on the route)
- The 5 primary historical wind likelihoods (x5)

Each flight planning performance calculation was stored with data indexes created to enable rapid referencing of the inputs used - whether the flight plan succeeded for the inputs, the load factors achieved, and the takeoff weight required by the analysis.

9.4.4 Distribution of Flight Planning Performance for Monte Carlo Analysis

An individual flight planning calculation was performed for each aircraft, route, weather condition, airway distance and range of payload targets. This resulted in flight planning performance results that related the target takeoff weight required for the route of flight to the intended month of operation from U42.

There are two important limitations to identify related to the distribution of takeoff weights used in the Monte Carlo Analysis.

The first limitation to note is that no flight planning performance was calculated for routes beyond the destinations identified in Section 9.3.1. This means that in cases where an operator may consider destinations from U42 beyond Miami or Honolulu additional calculations would be required to assess required takeoff weights. This is particularly important as aircraft operating over increasingly longer ranges eventually will need to reduce payload in order to carry enough fuel for a given route. This fuel capacity limitation can lead to failure cases for aircraft unable to achieve 50% Load Factor.

The second limitation to note is that the calculated distribution of flight planning performance results is based only on the destinations listed in Table 28. This is not expected to have a significant impact on the overall Monte Carlo results because the target takeoff weight determined by the flight planning performance is used as a direct input into the runway length calculation. No interpolation of results from the flight planning performance is required to enable the next phase of the Monte Carlo runway length analysis.

9.5 Takeoff Performance

9.5.1 Takeoff Performance Methods Used

14CFR Parts 25 and 121 require consideration of the following factors when determining the limiting takeoff weight for a runway length, obstacle definition and other environmental inputs:

- One-Engine Inoperative (OEI) Accelerate Go (25.113)
- One-Engine Inoperative Accelerate Stop (25.109)
- All-Engines Operating (AEO) Accelerate Go (25.113)
- All-Engines Operating Accelerate Stop (25.109)
- Brake Energy Limitations (25.735)
- Tire Speed Limitations (25.733)
- One Engine Inoperative Climb Limitations (25.121)
- One Engine Inoperative Obstacle Clearance Limitations (121.189)
- Temperature and Pressure Altitude Limitations (121.189)
- Gust, Crosswind and Other Runway Surface Limitations (Identified by the OEM during certification)

These limiting factors are determined using the FAA Approved Airplane Flight Manual (AFM) for each airplane type. Operationally, many OEMs provide aircraft performance calculation software that optimizes variations with airplane configuration, takeoff safety speeds, climb speeds and other parameters to achieve the greatest possible takeoff weight in compliance with all regulatory limitations. In cases where OEM software either does not exist or was not available to the team, LEAN developed automated methods compliant with the FAA AFMs.

The primary mechanism for optimizing a takeoff performance calculation is to ensure that the minimum amount of runway, or declared distances, is utilized by the aircraft under normal conditions (all engines operating) and during an emergency loss of one engine at the most safety critical point on the runway. In Figure 33, the three primary calculations are depicted showing a normal takeoff (Accelerate Go (AEO), a normal or abnormal aborted takeoff (Accelerate Stop (AEO or OEI)) and an abnormal takeoff (Accelerate Go (OEI)).

Under each of these scenarios the aircraft is required to begin the takeoff roll with all engines operating. For the OEI scenarios, an engine failure occurs only at the most critical point of the takeoff. At that point, all OEI requirements must be met whether the takeoff is aborted or continued.

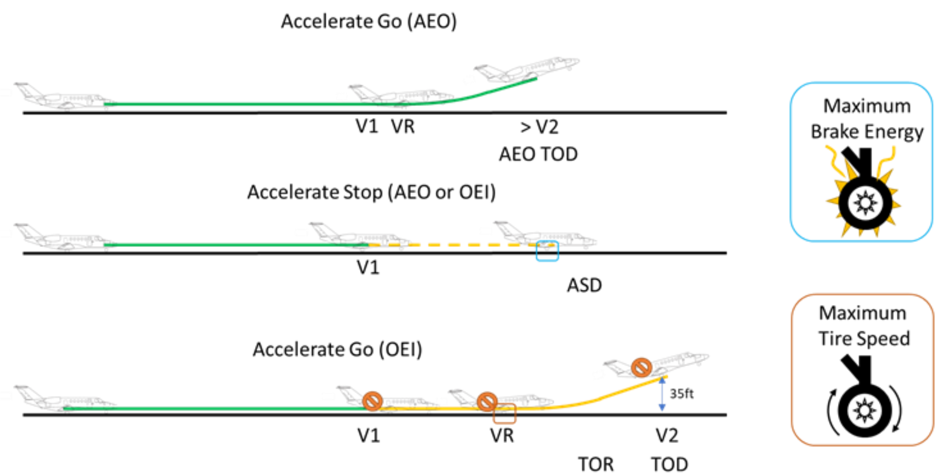


Figure 33 Primary Takeoff Performance Calculation Considerations for FAR 25/121 Operations

In each situation depicted, the performance calculation methods attempt to optimize the aircraft within the distances available so that the aircraft:

1. Reaches 35 feet. above the end of the runway (15 feet. under wet and or contaminated conditions)
2. Comes to a complete stop prior to reaching the end of the ASDA

Scenario 1. must be accomplished within the reported Takeoff Distance Available (TODA) and scenario 2 must be accomplished within the reported accelerate stop distance available (ASDA) both of which are part of the declared distances for a runway direction. The last of the three takeoff declared distances, Takeoff Run Available (TORA), is typically the published runway length. Most commonly, but not necessarily, these three distances are equal.

The performance calculation will optimize the use of the available distances attain the greatest weight possible.

The ability of the performance calculation to optimize takeoff distances also directly relates to the obstacles clearance requirements that the aircraft must also consider during the OEI takeoff maneuver.

Takeoff obstacle clearance requirements stipulate that the aircraft to continue the climb from the 35 feet. point (15 feet. under wet or contaminated conditions) and clear all remaining obstacles identified in the One Engine Inoperative OAA (described in Section 9.5.2) by both 35 feet. and an increasing margin based on distance to each obstacle. The margin is 0.8% of distance for 2-engine aircraft (25.115).

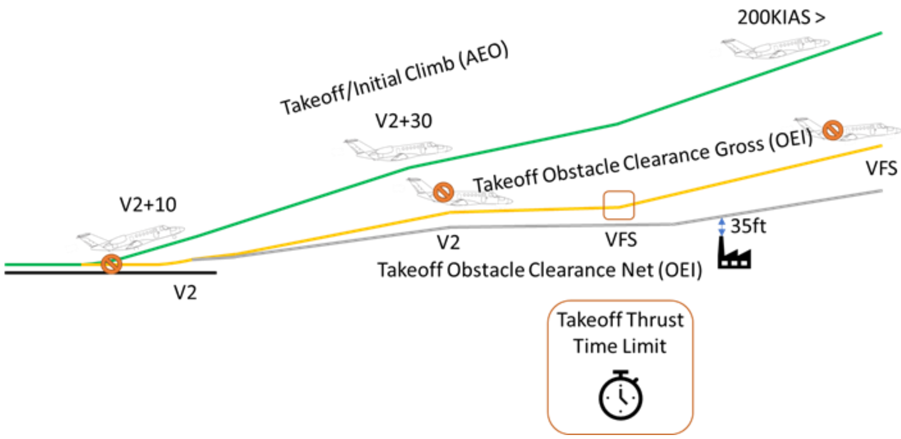


Figure 34 Overall Depiction of All Engines Operating and One Engine Inoperative Obstacle Clearance Considerations for FAR 25/121

The extent to which a takeoff weight is limited by obstacle clearance depends on three things:

1. Position of obstacles relative to the start of the takeoff
2. Length and slope of the runway
3. OEI Climb capability

Position of obstacles may be an obvious consideration when determining an obstacle limited takeoff weight, but even a small obstacle close to the end of a runway may be enough to change the overall takeoff performance optimization, consequently rendering portions of the runway effectively unusable.

The second element is related to the length and slope of the runway is also important, especially on runways with a downhill (negative) slope. These runways may appear to have many objects that will be required for obstacle clearance, but takeoff performance computations are aware of the starting point of the aircraft as it begins the takeoff roll. Therefore, optimized takeoff performance may enable an aircraft to become airborne prior to the end of the runway, essentially increasing distance to clear any obstacles.

The final element, climb capability, is directly tied to the weather conditions and the regulatory requirement of an aircraft to maintain a generic climb capability following the loss of an engine. This is influenced by the pressure altitude, outside air temperature, flap selection and initial climb speed. As U42 is considered a high-altitude airport with high temperatures at some times of the year, the climb capability at U42 can be a limiting factor in some cases.

9.5.2 Obstacle Accountability Areas

Part 135, 121 and 125 aircraft operators are required to consider one engine inoperative obstacle clearance for any objects, or terrain, detected inside an Obstacle Accountability Area (OAA).

Aircraft operators in the US utilize an OAA based methods specified within FAA Advisory Circular 120-91A. This AC defines two methods based on whether an operator chooses either to use navigational methods to narrow the OAA, or to rely on a more generic Area Analysis method.

The OAA defined in the AC expands as a function of distance from the end of the runway. The initial width begins at 300 feet. on either side of the centerline (approximately 90m). This width is fixed until 4,800 feet. from the end of the runway. At that point, each outer boundary of the OAA grows at a rate of 16:1 until the maximum OEA half width of 2,000 feet. is reached (3000 feet. for turning departures).

While US operators can choose to use AC 120-91A methods, some operators may use a more conservative OAA a result of an operator's policy decision, regulatory requirements (non-US operators).

AC 120-91A allows US operators to use a narrower initial OAA half-width of 200 feet. "within the airport boundaries". However, this method of analysis was not modeled in the Monte Carlo analysis.

For U42, the project team focused its aircraft performance calculations only on AC 120-91A OAA methods. There was no consideration of blending runway length results for operators that take one engine inoperative obstacle consideration into account with operators who do not.

9.5.3 Takeoff Performance Inputs to Monte Carlo

The primary goal of incorporating takeoff performance into the Monte Carlo analysis is to be able to determine whether the airport has sufficient runway length to achieve current and future payload range capabilities for target aircraft. Since all takeoff performance computations are calculated for a single runway direction, and obstacle profile, to determine a limiting takeoff weight, then is of paramount importance to calculate all limiting takeoff weights for each runway direction and obstacle combination that could be reasonably considered.

Pre-calculated takeoff performance results must therefore be divided into those with fixed inputs, either as inputs, outputs, or both, and those which will be fed into pseudo-random distributions based on historical weather inputs identified in Section 8.1.

9.5.3.1 Fixed Values for Takeoff Performance Calculations

All takeoff performance calculations were permitted to achieve optimized results using the following methods:

- Optimized decision speed (determination of V1 and application of declared distance considerations)
- Optimized takeoff safety speed (varying V2 for minimum climb or obstacle clearance)

All takeoff performance calculations considered the following values as established inputs that would not vary.

- One obstacle definition per runway direction and length
- 10 minute engine inoperative takeoff thrust time limitations (large cabin business jets)
- 5 minute engine inoperative takeoff thrust time limitations (turbo props and medium cabin business jets_
- Thrust reversers were only used for wet runway performance calculations
- No headwind, tailwind or crosswind values were considered
- Only dry or wet runway surface conditions were considered
- Anti-Ice bleeds were set to off
- No inoperative, MEL or CDL items were considered
- No thrust degradation was applied beyond the values already considered for certification of takeoff performance
    - No fixed derated thrust application
    - No assumed temperature thrust reduction

Flap and slat configurations were each run independently using the parameters identified above to determine the greatest possible weights for each condition to carry forward into the Monte Carlo Analysis. In other words, if a given aircraft type has three takeoff configurations, the takeoff performance results would be run for all three settings; the configuration resulting in the greatest weight from the three would be selected for the Monte Carlo analysis, and the other results would be set aside. This means that for any combination of inputs, including temperature, runway, obstacle, a different flap setting may be considered.

All optimization techniques, flap settings, and other fixed inputs align with known operational practices of the airlines and aircraft identified in this analysis.

9.5.3.2 Distributions for Takeoff Performance Calculations in the Monte Carlo Analysis

An individual takeoff performance calculation was performed for each runway, obstacle definition, weather condition and flap/slat setting. These takeoff performance results relate the maximum takeoff weight permitted by the runway and environmental conditions to a runway length.

The current limitation of this analysis is that, for the analysis of the existing runway, no takeoff performance was calculated for a runway length in excess of 5,862 feet. This means that in cases where a takeoff weight required a length greater than 5,862 feet to complete a mission with no loss of passenger load factor, the Monte Carlo sample run will only indicate that insufficient weight was generated, and it will not attempt to extrapolate runway length results beyond 5,862 feet.

For this study, several potential runway alternatives were also considered by the team. The goal of this alternatives analysis was to determine the viability, from an aircraft performance standpoint, of each of the individual proposed runway configurations. Therefore, when considering these alternatives, in a similar fashion to the analysis of the existing runway, no results were extrapolated beyond the prescribed runway length. The Monte Carlo calculation only indicates if the defined runway scenario can support the takeoff weight required to achieve the specific mission. The runway alternatives considered will be discussed more in Section 10.

9.6 Landing Performance

Contemporary landing performance now consists of two complementary requirements, a traditional time-of-dispatch determination, and a newer time-of-arrival determination.

9.6.1 Certificated Landing Lengths

As with takeoff, dispatch landing performance is driven by 14CFR Parts 25 & 121 as part of the required flight planning process by Part 121 dispatchers.

- Required Landing Distance (25.125)
- All-Engines Operating Climb Limitations (25.119)
- Engine Inoperative Climb Limitations (25.121)
- Temperature and Pressure Altitude Limitations (121.195)
- Gust, Crosswind and Other Runway Surface Limitations (Identified by the OEM during certification)

Notably, certificated landing data does not account for either temperature or runway slope, however the flight-test verified distances are conservatively factored to account for those conditions and other factors that may occur in typical operations. Unlike takeoff, there is no capability to determine landing performance on contaminated runways, only dry or wet conditions are considered.

These limiting factors are determined using the FAA Approved Airplane Flight Manual (AFM) for each airplane type. Operationally, many OEMs provide aircraft performance calculation software that optimizes variations with airplane configuration, approach, and landing speeds, missed approach and go-around climb speeds and other parameters to achieve the greatest possible landing weight in compliance with all regulatory limitations. In cases where such software was not available, the team determined landing performance directly from the FAA Approved AFMs.

9.6.2 Operational Landing Lengths

Operational landing assessments are intended to be done by flight crews closer to actual time of arrival with the understanding that conditions may have changed since time of dispatch. These determinations are driven by a 2005 runway excursion that resulted in FAA Safety Alert for Operators (SAFO) 06012, now superseded by SAFO 19001. While these assessments do not currently fall within the Code of Federal

Regulations, FAA Certificate Management Offices do expect operators to adhere to the SAFO recommendations.

Operational landing does consider more specific information regarding ambient conditions. Runway braking action due to contaminants, and the use of auto-braking systems, are considered for operational landing. Temperature and slope effects are also considered, all differing from the current regulatory requirements.

Operational landing assessments are intended to inform flight crew decision-making in line operations. However, some operators also use this information as part of dispatch process in addition to the normal dispatch flight planning requirement in order to provide some accountability for runway conditions. This can result in over-conservative results, including weight restrictions and flight cancellation.

As this information is not regulatory, it does not reside in the FAA Approved AFM. This data is provided to operators by the OEM in their Flight Crew Operating Manual (FCOM) or various software packages.

9.6.3 Landing Performance Analysis

Landing performance, and runway length required to accommodate landing, was not explicitly considered as a part of the Monte Carlo Runway Effectiveness analysis. Instead, the team analyzed the Certified and Operational landing performance capabilities for all of the aircraft considered in the Monte Carlo Analysis on an individual basis.

Each aircraft was evaluated for the payload that would be available for an aircraft to arrive at U42 with FAR 121 Domestic flight planning 45 minute fuel reserves + enough fuel to travel to an alternate and execute a full stop landing.

The landing performance evaluated both wet and dry conditions. No consideration for contaminated runway events was applied due to the absence of snow-based contaminants and no recorded events in the past 10 years of standing water on the runway.

From this analysis, all aircraft were found to be capable of landing at U42 on either runway 16 or 34 with the current displaced thresholds and, additionally, for all the runway alternatives being considered by the team.

9.7 Summary

The project team selected aircraft, seating configurations, flight operations policies, and takeoff performance methods based on existing operations under FAR domestic regulations and guidelines.

Aircraft selected for this analysis are representative of charter and business jet service for at least the next 5-to-20-year period at U42. Passenger seating configurations match existing layouts from business jet operators that serve U42 or are likely to serve U42 in the future.

10 Aircraft Performance Based Runway Length Determination

This section describes the methods used to determine the effectiveness of the current runway length resulting from a Markov Chain Monte Carlo methodology.

10.1 Monte Carlo Modeling Methodology

The project team used a simplified Markov Chain Monte Carlo methodology utilizing pseudo-random selections of predetermined variable distributions with two decision steps relating the flight planning takeoff weight, required to operate the aircraft on the desired route, to the takeoff weight resulting from the aircraft choosing to use a runway and obstacle definition.

Figure 35 illustrates the Markov Chain steps taken during each sample iteration enroute to achieving a Monte Carlo sampled distribution expressing the cumulative likelihood of an aircraft operating on a specific route for varying directions of the target runway.

A single aircraft and route served as the starting point for an independent Monte Carlo simulation resulting in a sample set that was specific to both. Thus, an independent Monte Carlo simulation was performed for each of the three aircraft across each of the target routes.

The first group of pseudo-random selection occurred to inform the Flight Planning, or "High Speed Performance" blue box described in Figure 35. The selected inputs from the payload, enroute weather and flight planning considerations were used to identify the pre-calculated flight planning performance set for further evaluation.

In the event that the randomly selected flight planning performance run was unable to converge, meaning that it was unsuccessful for the aircraft to operate the route regardless of runway availability at U42, then the result was considered to be a failure and the sample run was documented as such with information about where the failure occurred and for what reason. The sample run then restarted with another series of randomly selected input variables from the flight planning performance process generating a new gross takeoff weight necessary to operate with the target payload.

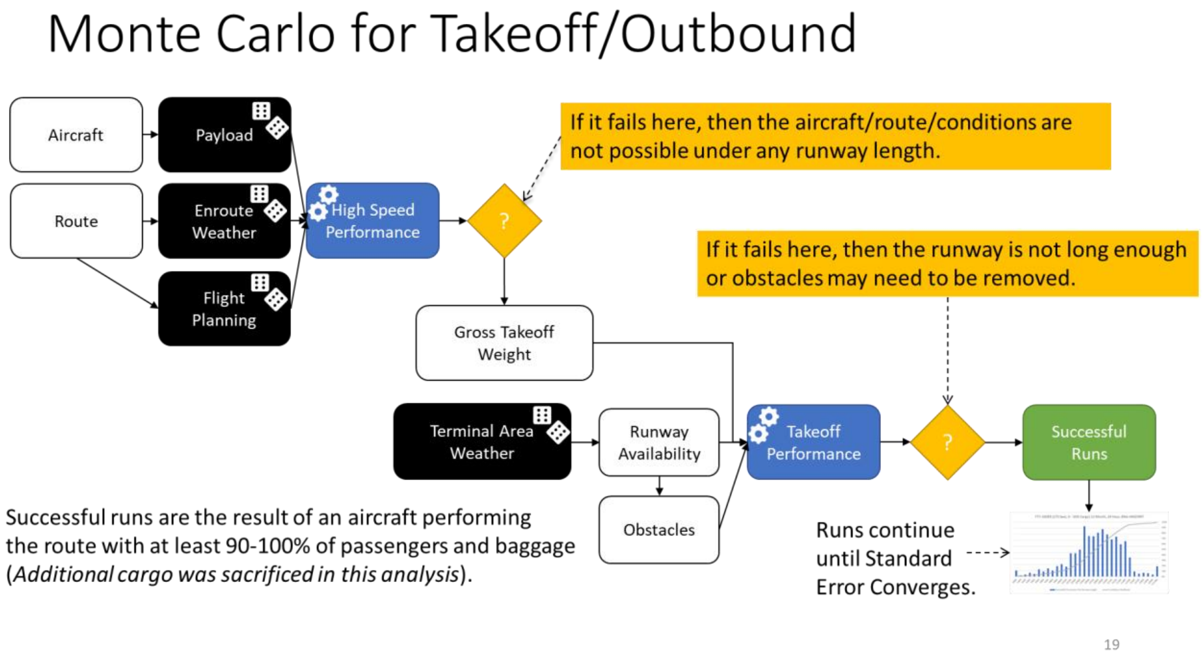


Figure 35 Flowchart Depicting Simplified Markov Chain Based Monte Carlo Analysis Process

The month and aircraft considered form the flight planning calculation were carried forward to the takeoff performance calculation process, ensuring that the pseudo-random selection of terminal weather inputs matched the time period used for the flight planning calculation. At this juncture, a pseudo-random selection of weather-related inputs was generated revealing the most likely direction of runway in use. The inputs were then fed into the takeoff performance generation tool.

In the situation where the flight planning takeoff weight matched a takeoff weight supported by an existing, or alternate, runway length (and obstacle set) then this runway length value was carried forward as a successful sample run and the process repeated itself.

In the scenario where the takeoff weight identified by the flight planning performance calculation was less than a value available for the considered runway configuration, then the Monte Carlo sample run was assumed to be successful at the existing runway length.

If the target takeoff weight identified by the flight planning process was greater than the takeoff weight calculated using the randomly selected terminal weather inputs, then the sample run is considered to have failed due to not having enough runway length available. In this specific analysis, takeoff weights were generated for the existing runway and for each of the proposed alternative configurations. As such, there was no calculation of a required runway length for the failed individual mission assessment.

The Monte Carlo process to build up a statistically significant sample set for each aircraft and route was permitted to produce sample runs until either 2,000 runs were calculated (including successful or failed runs from the payload comparison steps), or until such time that the standard error of the 95% cumulative likelihood converged.

The resulting sample set, for an aircraft, a runway configuration, and a route, was then expressed in terms of the cumulative likelihood of operations, or cumulative distribution function, for consideration by the project team.

10.2 Cumulative Likelihood and Airline Operations

The tendency for an airline to operate scheduled, seasonal or charter service can be expressed in terms of the cumulative likelihood calculated from the Monte Carlo process described in the preceding section.

The concept of using cumulative likelihood approximates the operational decision making and payload forecasting techniques demonstrated by airlines operating on domestic and international operations to and from US airports over the past 20 years.

Runway lengths that support operations near the 100% cumulative likelihood values are likely to operate every day, at any time, without the need to alter the payload or significantly alter the time of flight. In practical terms, no delays would be expected and no denied passenger boardings would be anticipated as a result of challenges to takeoff performance.

Airports serving as hubs to major carriers frequently have one or more runways that achieve this 100% cumulative likelihood for all aircraft and routes. At the other extreme, airports in challenging environments may experience cumulative likelihoods for a runway that may be near 50% for any time throughout a year. In these situations, operators may still choose to fly the route, with the aircraft, from the runway in question. To mitigate the operational risks, the operators may limit the number of operations or limit the time of operation to one that results in a different cumulative likelihood (specific to the hour of operation) rather than one based on an annual analysis.

This information has been synthesized by the Project Team and can be categorized into the following ranges of likelihood and the kinds of operations that can be expected for a year-round operation from U42, with no pre-determined time of departure:

95% - 100% Likelihood:

- Annual scheduled service
- No payload restrictions or
- No delays waiting for environmental conditions to improve

90% - 95% Likelihood:

- Annual scheduled service
- No payload restrictions

- Either an occasional delay or reduction in cargo

85% - 90% Likelihood:

- Annual scheduled service
- Some payload restrictions
- Targeted times of operation or potential seasonal service

50% - 85% Likelihood:

- Seasonal or charter service only
- Possibility of payload restrictions

<50% Likelihood:

- The route will not likely be attempted except under extraordinary circumstances

As there are currently no plans to support scheduled airline service within this planning period, the team has considered a 50% passenger load factor to be representative of typical business jet operations and flight planning. More typically, for analyses involving scheduled airline service a higher load factor is considered as the economic model for operating these flights is much different than that of a business jet operation. This is an important distinction because a runway length that supports a 90 – 95% cumulative likelihood result will still result in the eventual outcome that a flight operation will not have enough runway length to operate without some takeoff performance related impact.

Though starting with a lower load factor, the impacts experienced by a business jet operator from the existing runway will likely not result in unfavorable operational decisions. It may require the operator to consider using a different equipment type or to plan on an additional fuel stop that makes the airport seem less desirable when other options in the same area may be present that do not possess the same restrictions. The ability of a runway length to achieve higher and higher cumulative likelihood outcomes will ensure that operators consider the airport as their first choice when the customer, owner or clients make their decision on where to fly with their business jet or turboprop.

10.3 Existing Runway Length Monte Carlo Results

The initial Monte Carlo results representing all possible environmental variables, directions of operation and one engine inoperative obstacle profiles were independently run for each of the aircraft identified in Section 9.2.1. These results reflect the existing runway length, slope and width identified in Section 6.1.1.

10.3.1 Large Cabin Business Jet Results

The results of the MCMC analysis for the existing runway and obstacle definition revealed that the G6000 aircraft can reach all domestic destinations across all months of the year.

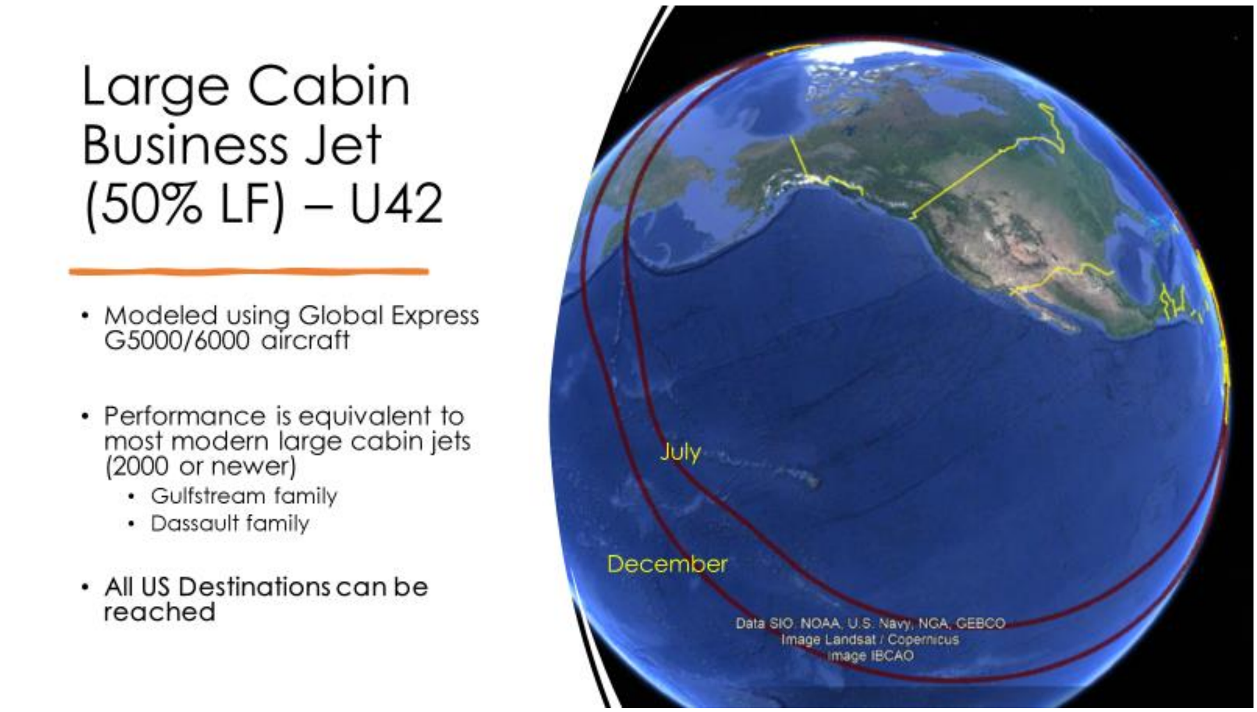


Figure 36 Calculated range rings for Large Cabin Business Jet

Figure 36 shows the calculated range rings for the large cabin business jets. The red lines represent the range of the aircraft being calculated by the flight planning tool PACELAB Mission Suite. There are two lines, one representing the range calculated for the month of July and one representing the month of December.

In this case, the Monte Carlo method was used to generate a distribution of takeoff weights for all meteorological conditions as discussed in the previous section. From this distribution the design team elected to develop range rings based on the 95th percentile weights (in this case 95th percentile indicates that 95 percent of produced weights are greater than that being considered) from that distribution for each month and 95th percentile enroute winds to determine the expected range of the aircraft. From this figure all domestic destinations, including Hawaii, are within reach for this aircraft type at all times of year with greater than 95% reliability.

By isolating the takeoff performance from other flight planning considerations, the MCMC analysis reveals that the G6000 aircraft is not impacted by obstructions in the vicinity but is more typically limited by runway length or, in the hotter months, climb capability requirements. These limitations on the maximum allowable takeoff weight do not reduce the capacity of the aircraft in a significant enough magnitude to limit its ability to successfully operate all anticipated routes from U42.

10.3.2 Medium/Small Cabin Business Jet Results

The results of the MCMC analysis for the existing runway and obstacle definition revealed that the 560XLS aircraft can reach all domestic destinations across all months of the year.

Figure 37 Calculated range rings for medium/small cabin business jet

Like the analysis conducted for the large cabin business jet, a range study was conducted for the medium/small cabin business jet. The Cessna Citation 560XLS represents this class to determine if the aircraft would be challenged on any anticipated route for this type of aircraft. In the case of the medium/small cabin business Jet, the routes considered included any destination within the Continental United States (CONUS). The range rings, shown in Figure 37, are presented in the same fashion as Figure 36 and were calculated in the same manner. The analysis shows that these types of aircraft are not challenged in reaching the eastern seaboard of the United States including the Miami and New York Markets.

As both aircraft types were determined to have sufficient range under the most statistically challenging circumstances covering all reasonable destinations, no further statistical analysis was performed regarding aircraft capability for these business jets. This means that the current runway length, width, orientation, slope, and OEI obstacle profile at U42 is capable of successfully supporting any anticipated operations for these aircraft for the foreseeable future.

10.3.3 Turboprop Results

The results of the MCMC analysis for the existing runway and obstacle definition revealed that the Super King Air 200 aircraft is not capable of reaching the targeted domestic destinations of LAX, SEA, and DFW across all months of the year. Of these destinations, only PHX appeared to have a high reliability of avoiding a payload reduction, delay in operation, or required fuel stop.

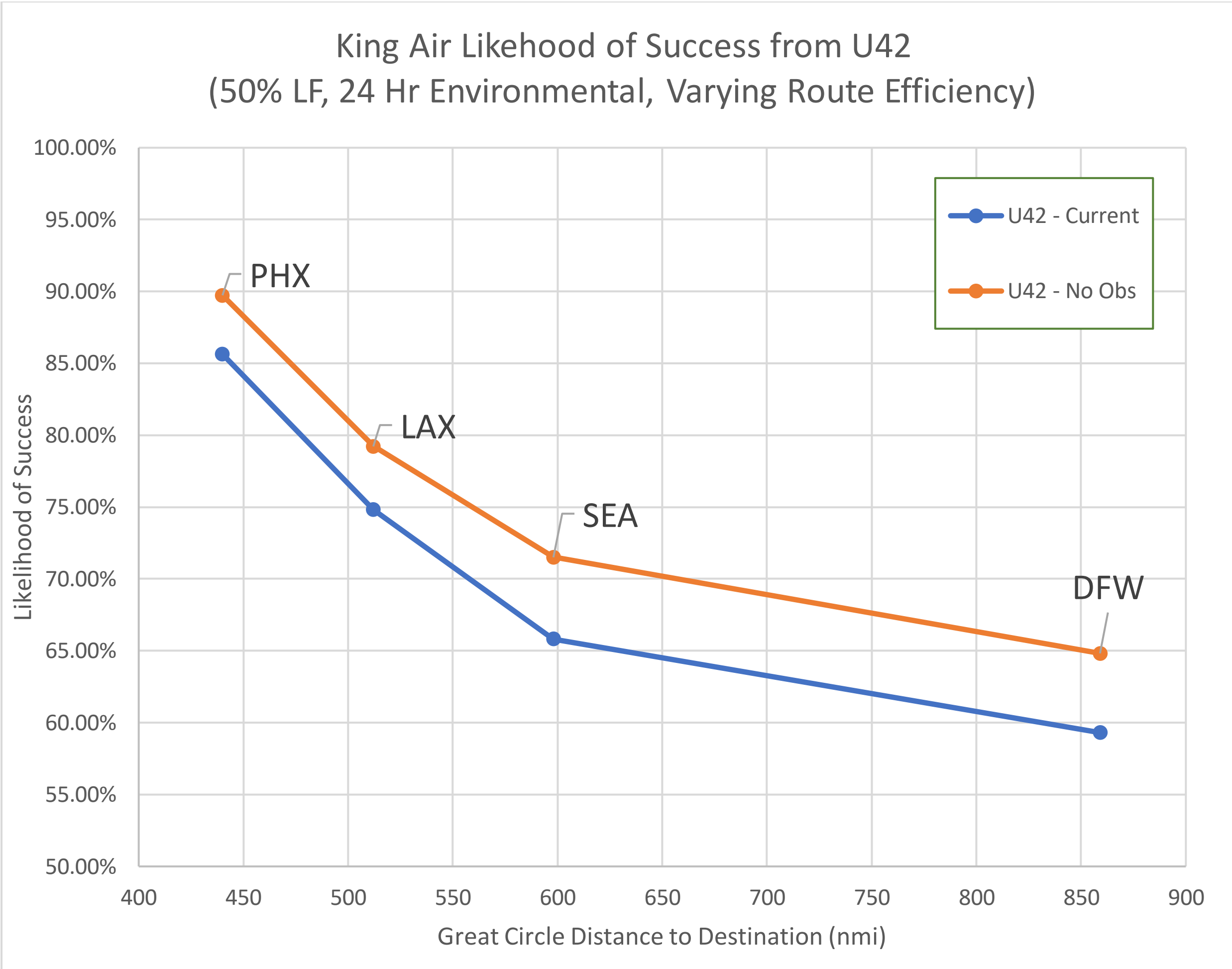


Figure 38 Likelihood of Turboprop Aircraft Serving Destinations From TVY

Figure 38 shows the likelihood of success for successfully performing a flight from U42 to the market indicated on the chart. In this case there are two curves shown, one that represents the airport in its current condition with all known existing obstacles considered ("U42 – Current") and the best-case scenario for the airport in its current state if all obstructions in the vicinity of the airport were removed ("U42 – No Obs").

The gap between the two curves in the figure indicates that there are obstacles within the accountability areas that are impacting the takeoff performance for U42. The figure also shows a significant reduction in reliability corresponding with the increase in destination distance which indicates a performance limited situation for this particular aircraft and runway configuration. Figure 39 below shows the takeoff weight impacts that are driving the reduction in cumulative likelihood of success over increasing market distance.

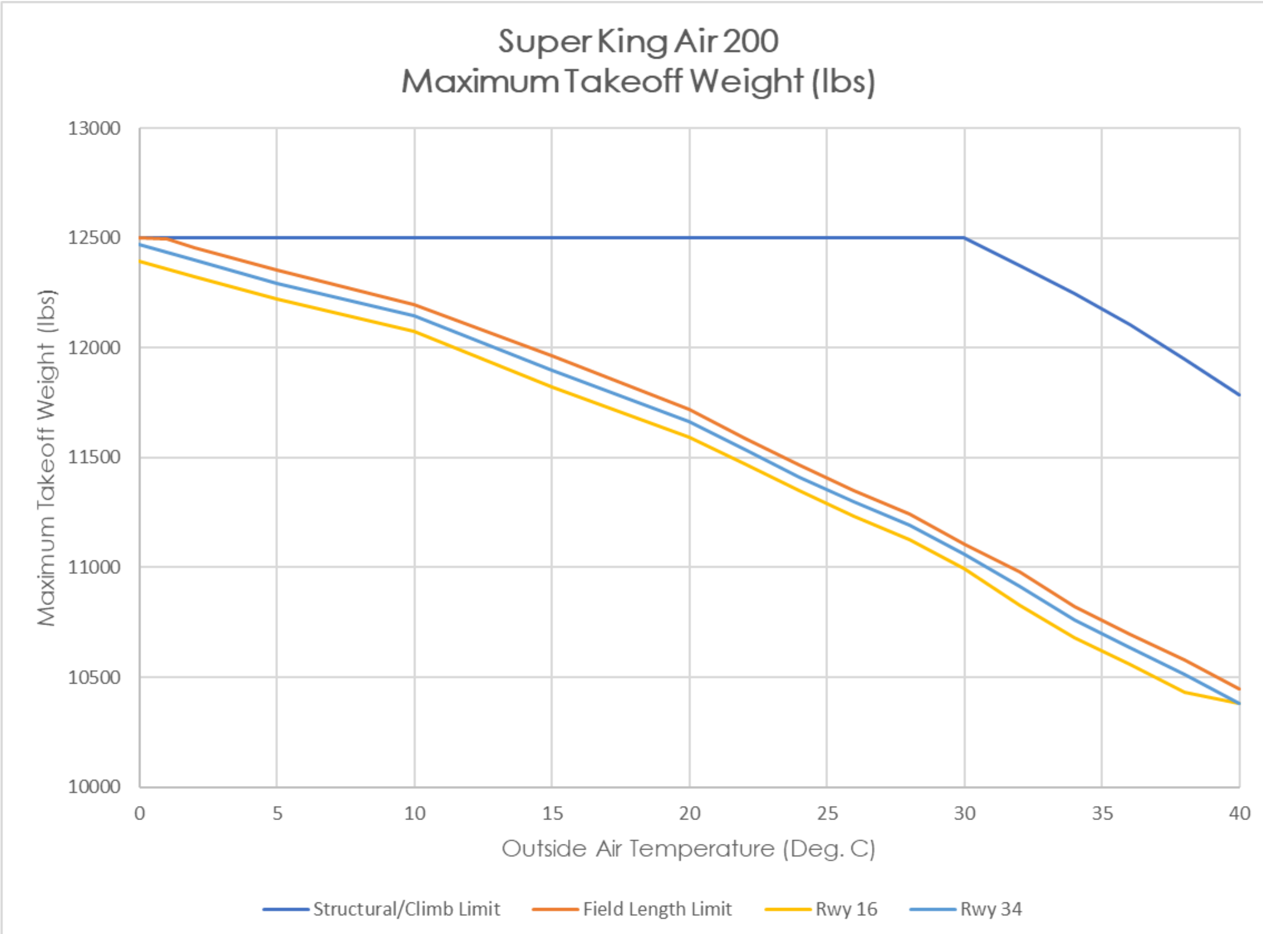


Figure 39 Takeoff weight limitations for Super King Air 200 at TVY

Figure 39 gives a clear picture of the takeoff weight impacts for turboprop operations at U42. The chart shows the combined structural takeoff limit (12,500 pounds) and climb limit curve (blue) as well as the field length limit line (orange). Both the runway 16 and 34 curves follow closely but slightly below the field length limit curve with runway 34 performing slightly better. This indicates that both runways are impacted slightly by close-in, unavoidable obstacles with runway 16 being slightly more restricted. The difference in takeoff weight between the two runways is consistently approximately 75 pounds of which does not present a significant preference for one runway direction over the other in terms of the overall assessment of operations.

Figure 39 instead reveals that turboprop operations are consistently and significantly degraded as outside ambient temperatures rise. Section 8.1.2 shows that temperatures at U42 routinely exceed 30C in the summer months. The combination of high altitude and high temperature causes a significant reduction in takeoff performance for the "middle" performing King Air 200 selected for this MCMC analysis. This, in turn, is driving the decrease in cumulative likelihood of success for longer range destinations. A closer examination of the MCMC results confirmed this by revealing that nearly all cases where routes were shown to be unsuccessful with the target payload occurred in summer months with elevated temperatures.

This means that an extension of runway 16-34 could favor King Air 200 operations both today, and in the future, but the precise length of the runway extension was not determined using the MCMC methods. This is because the SLC GAMP project team identified that current, and future, King Air operators will not typically consider the airport for long range, non-stop operations beyond the PHX or LAX markets. However, for the purposes of resolving other existing design criteria issues on the airfield and further enabling U42 for future operations, the project team analyzed several alternative runway designs for feasibility. These alternatives were also assessed utilizing Monte Carlo methods to determine the impact on aircraft performance for the proposed runway designs which are discussed in Section 11.

11 Evaluation of 16/34 North Extension

Through the course of the Masterplan analysis at U42, the Project Team examined several options to both extend or relocate runway 16-34 along its centerline. These alternatives are depicted below in Figure 40.

11.1 Description of Planning Alternatives for 16/34 North Extension

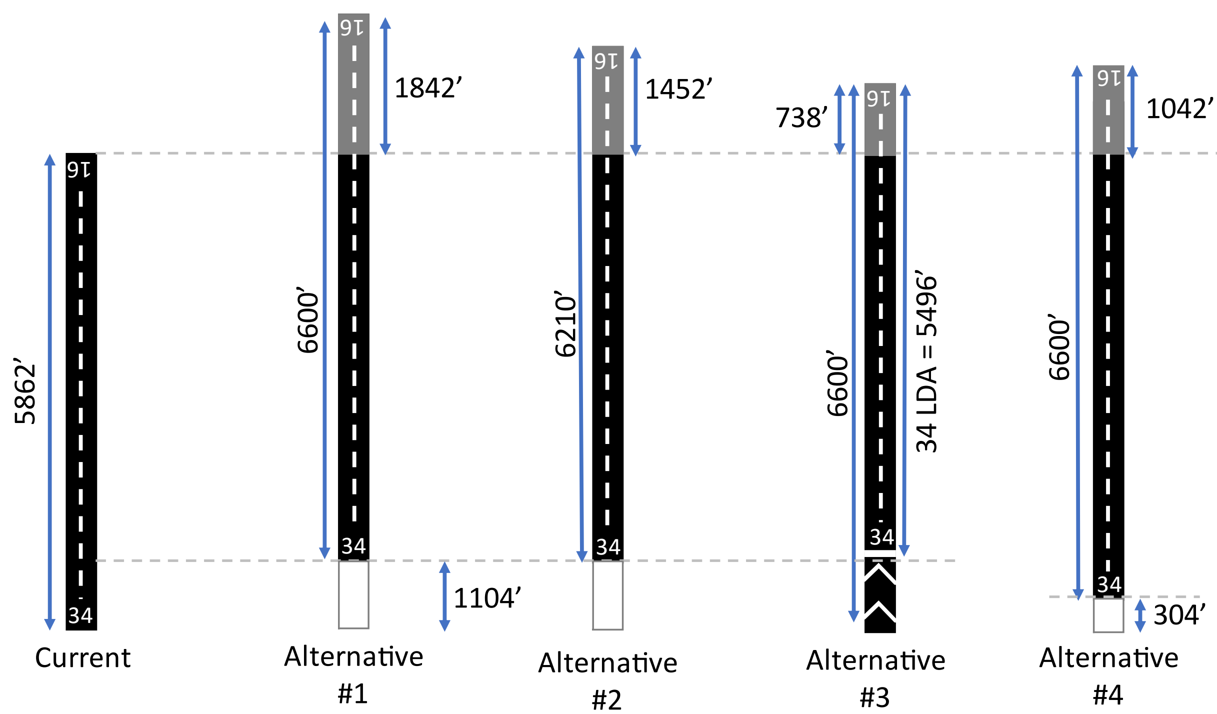


Figure 40 Alternative Runway Extensions Compared to Current 16-34

Alternatives 1 and 2 shift the runway 34 threshold 1,104 feet north to resolve runway protection zone (RPZ) conflicts south of the airport. This relocation is based on a planning alternative in which an RPZ designed to protect for approaches with less than

¾ mile visibility could be established. Alternative 1 extends the runway by 1,842 feet north resulting in a TORA and LDA of 6,600 feet. Alternative 2 only extends 1,452 feet to the north to avoid a potential conflict between the VFR circling areas and the current SLC Class B airspace.

Alternative 3 maintains the same brake release location as the current runway but displaces the threshold by 1,104 feet to achieve the planning alternative goal of resolving ¾ mi visibility RPZ conflicts. Alternative 3 also extends the runway 738 feet to the north, resulting in a TORA of 6,600 feet. The runway 16 LDA becomes 6,600 feet, while the runway 34 LDA is reduced to 5,496 feet.

Alternative 4 shifts the brake release location of runway 16 304 feet to the north and is designed with a smaller RPZ, for approaches with not less than ¾ mile visibility, in mind. The north end is then extended 1,042 feet to achieve the desired runway length of 6,600 feet.

11.2 OEI obstacle Accountability for Planning Alternatives

All of the alternatives considered the same takeoff obstacles discussed in Section 6.1.3 including those identified by the survey team but not included in the final survey submission. These obstacles were adjusted for the difference in distance from liftoff to the obstacle for each of the options.

In all of the alternatives, the obstacle heights above the runway were assumed to be constant (the liftoff end elevations are the same for all alternatives) and the slope of the runway alternatives was also assumed to be a constant.

Figure 41 through Figure 50 below show the obstacle accountability areas for both runway directions for the existing runway and each considered Alternative. These charts show the runway in black, which is assumed to have a constant slope between the known end elevations for the purposes of these analyses, and areas of new runway extension in gray. All obstacles collected within the obstacle accountability splay are indicated in gray and the most limiting obstacles, which are entered into the takeoff performance calculator are indicated in red. A 40:1 slope from the departure end of the runway is shown for reference. The charts show the obstacle accountability picture from the brake release point to 20,000 feet along centerline. Beyond this point in both directions there are either no significant obstacles identified to be cleared within the obstacle accountability area or it is assumed that a skilled operator that would take OEI performance into consideration at U42 will plan an OEI departure procedure to avoid any additional significant terrain or obstruction that would limit performance beyond any impacts caused by the close-in, unavoidable obstructions.

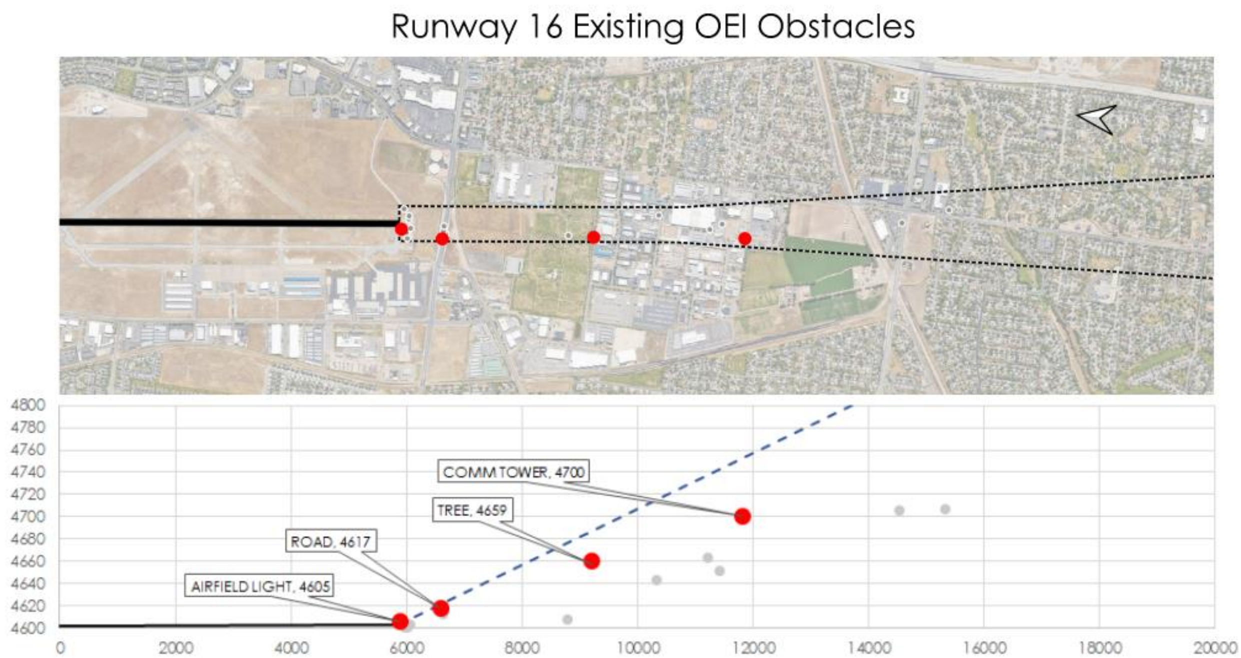


Figure 41 Runway 16 Existing OEI Obstacles

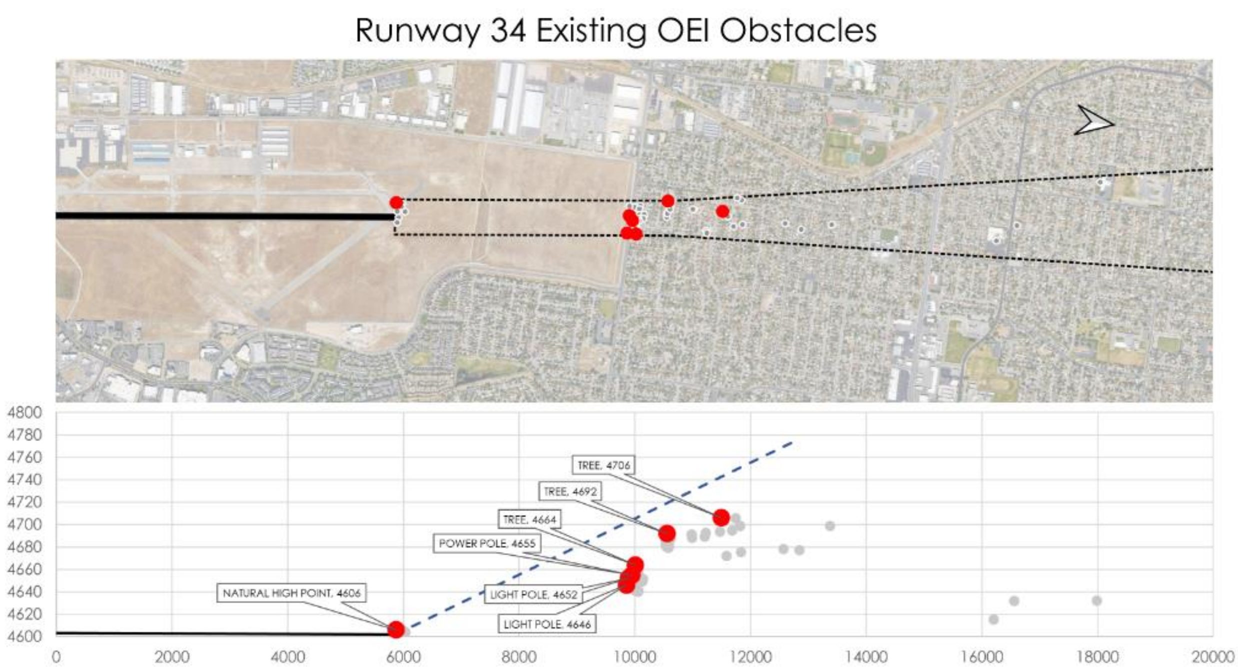


Figure 42 Runway 34 Existing OEI Obstacles

Runway 16 Alternative 1 OEI Obstacles

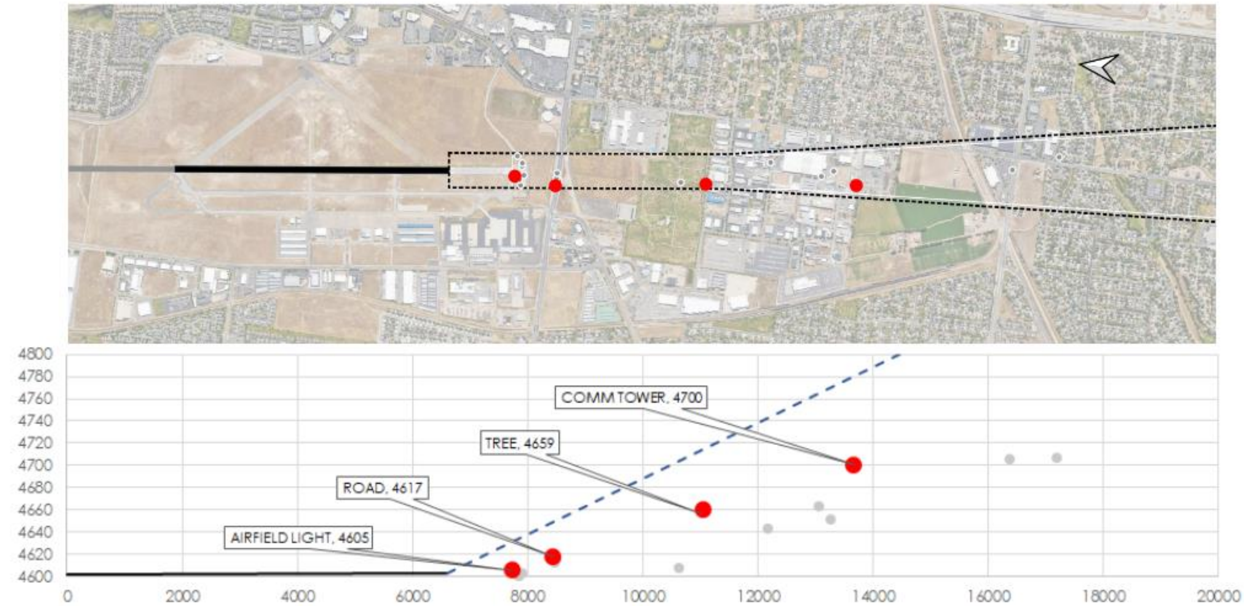


Figure 43 Runway 16 Alternative 1 OEI Obstacles

Runway 34 Alternative 1 OEI Obstacles

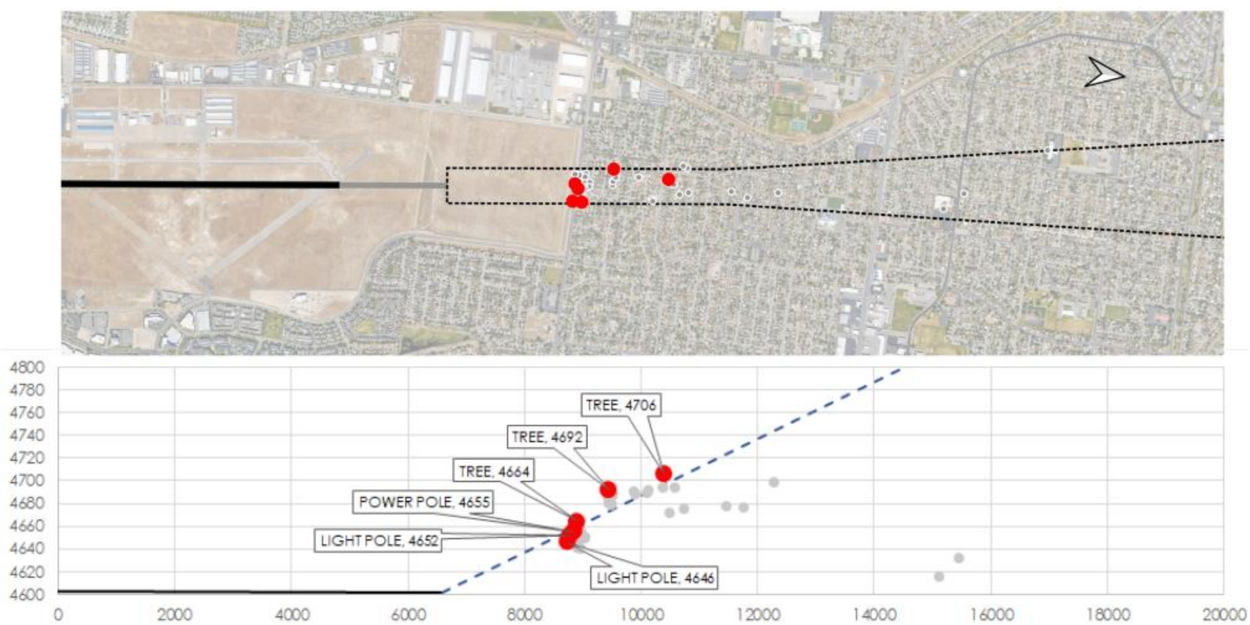


Figure 44 Runway 34 Alternative 1 OEI Obstacles

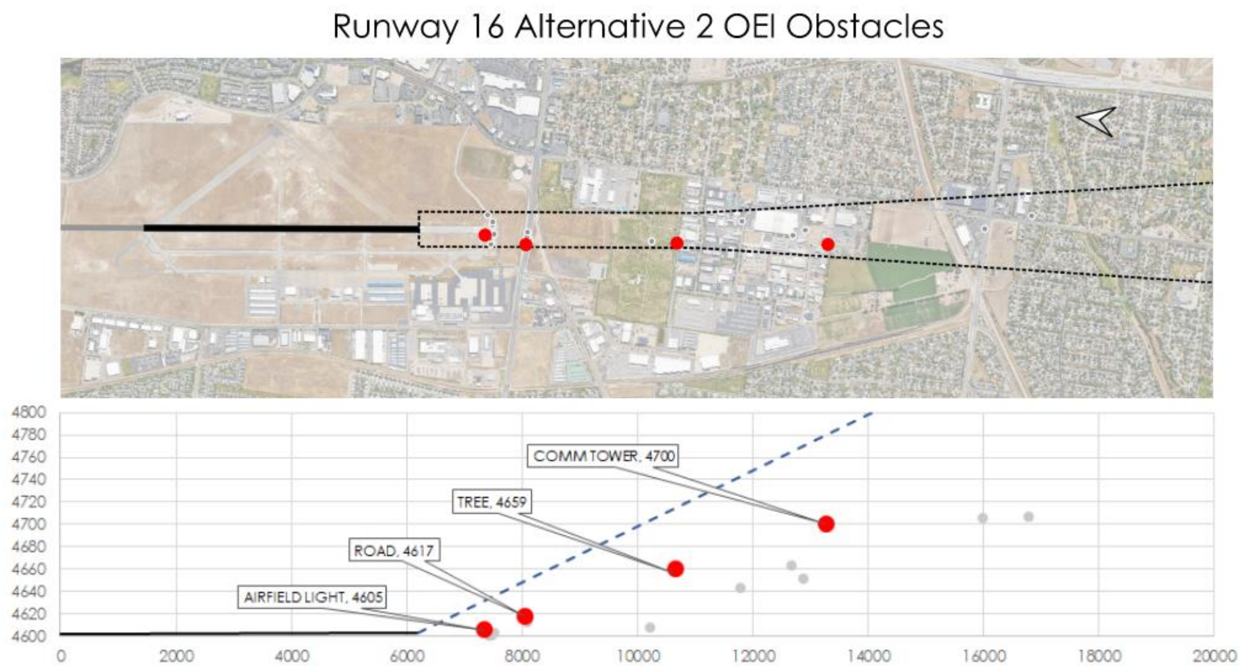


Figure 45 Runway 16 Alternative 2 OEI Obstacles

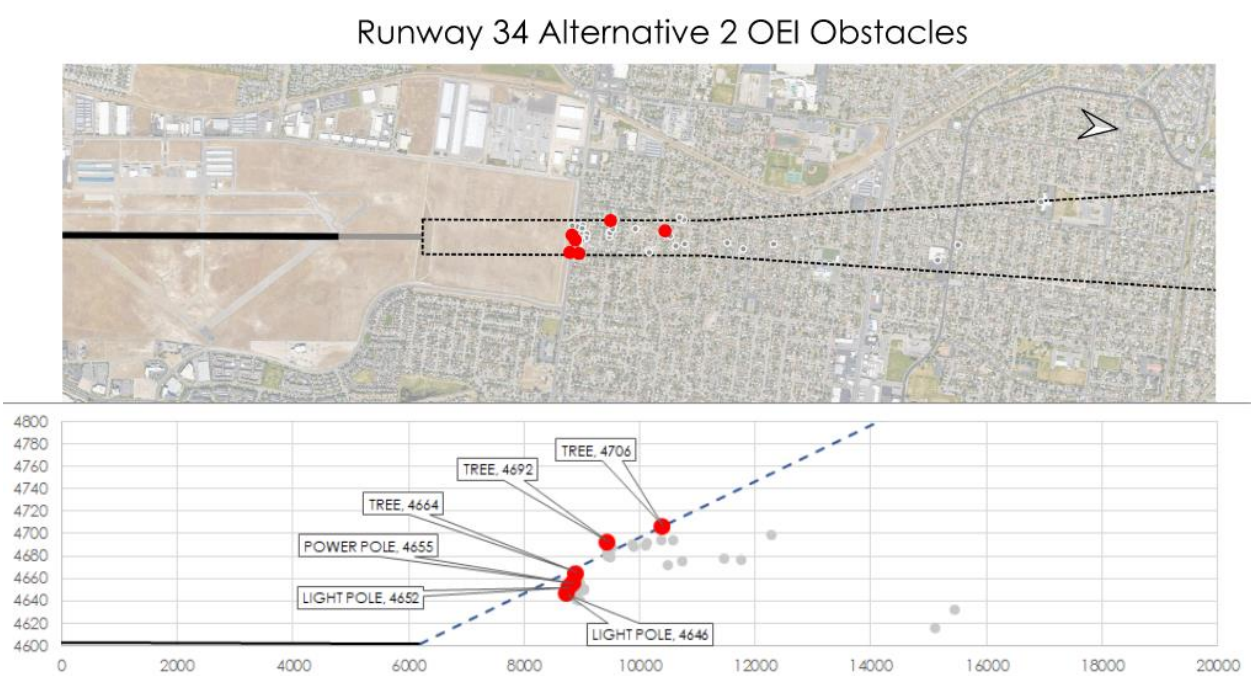


Figure 46. Runway 34 Alternative 2 OEI Obstacles

Runway 16 Alternative 3 OEI Obstacles

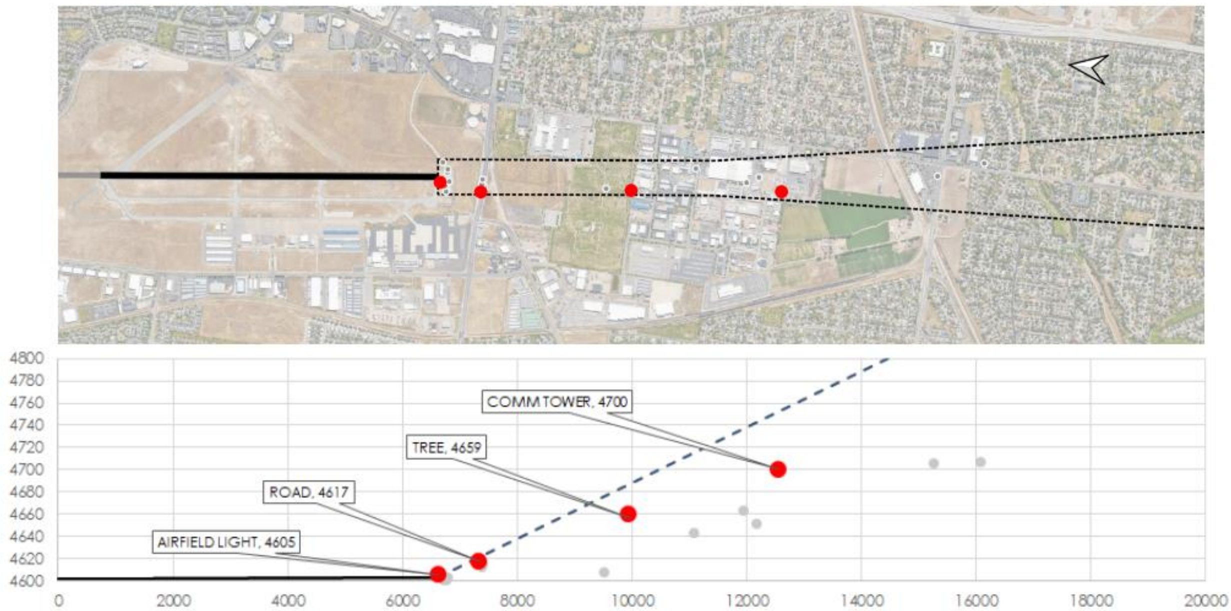


Figure 47. Runway 16 Alternative 3 OEI Obstacles

Runway 34 Alternative 3 OEI Obstacles

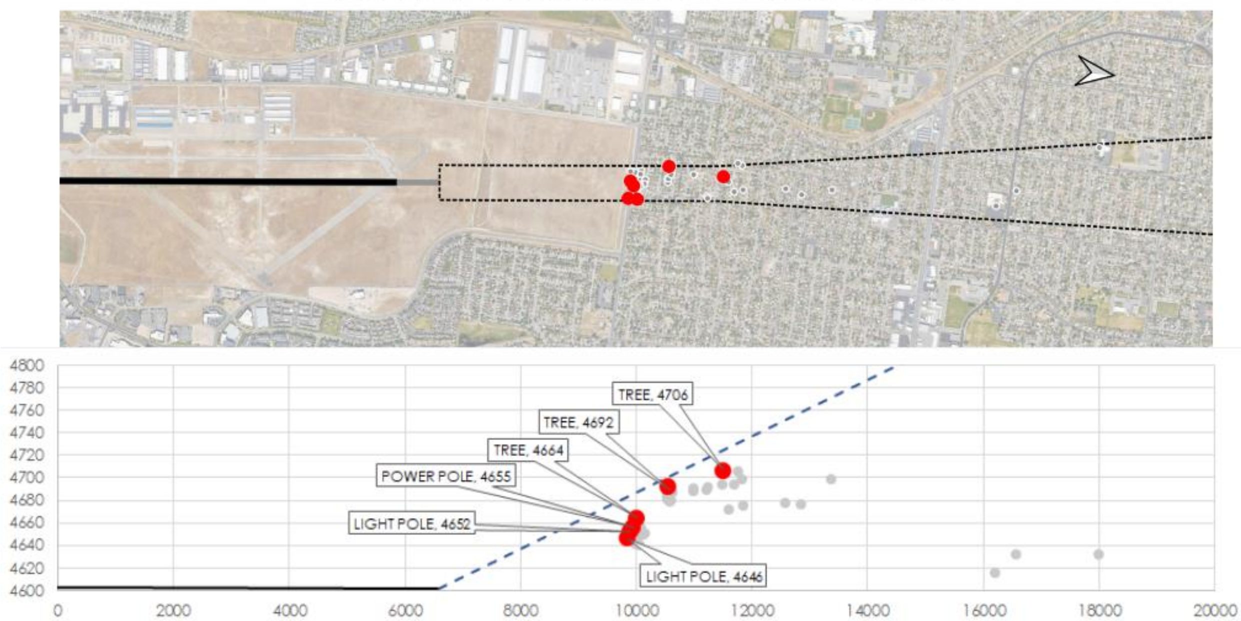


Figure 48. Runway 34 Alternative 3 OEI Obstacles

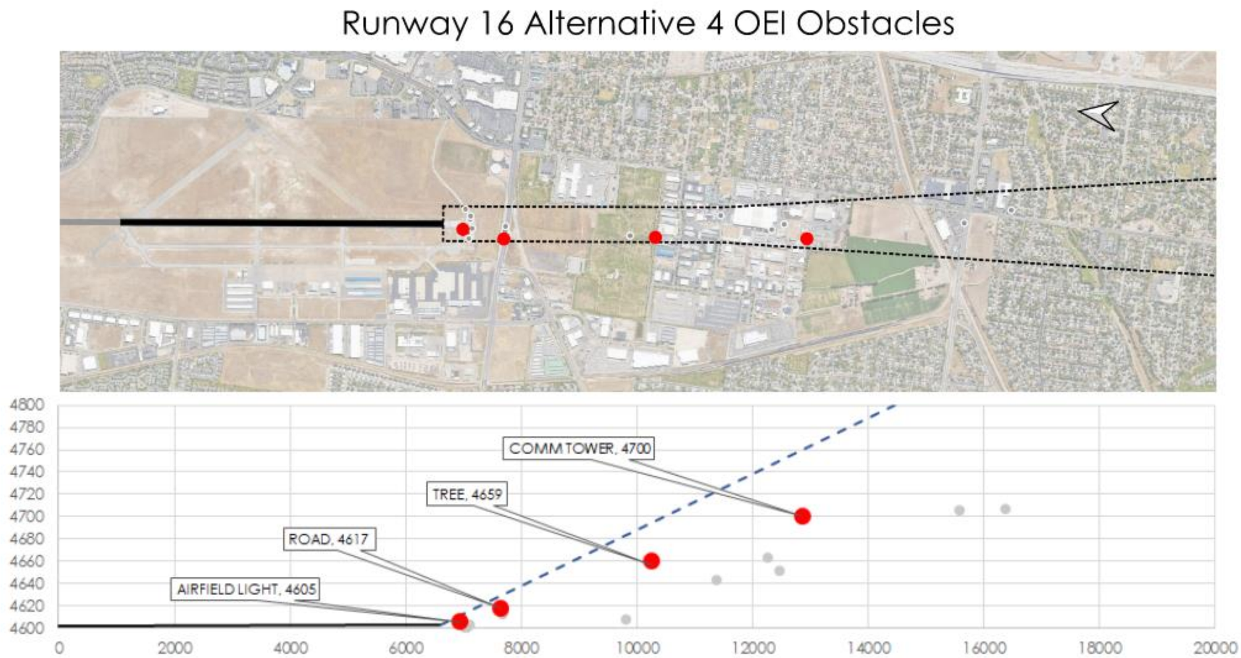


Figure 49. Runway 16 Alternative 4 OEI Obstacles

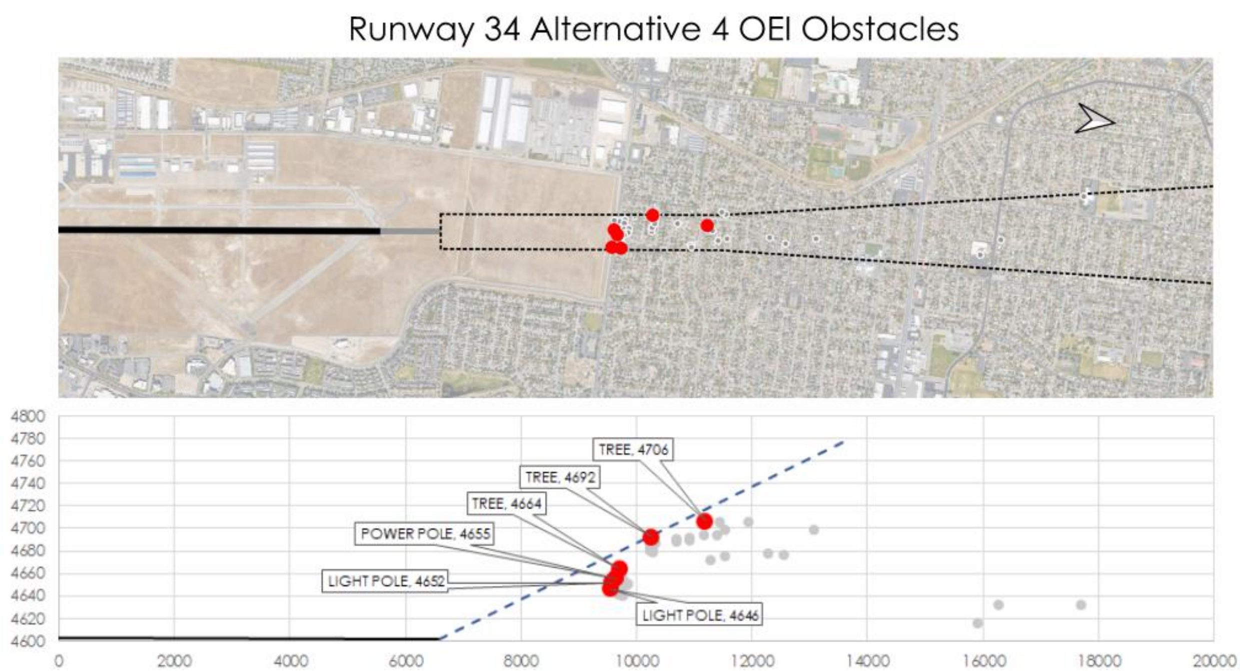


Figure 50. Runway 34 Alternative 4 OEI Obstacles

11.3 Aircraft Performance Analysis for Planning Alternatives

Monte Carlo analysis of the updated runway geometries showed the greatest impact on likelihood of success for the representative large turboprop. This is shown below in Figure 51. As indicated in Section 10.3.3, the primary driver of improved performance for the turboprop aircraft is increased runway length. The increase in available runway length is shown to drive a proportional increase in likelihood of mission success with the three alternatives designed at 6,600 feet grouped at the top of the chart. The remaining variation between alternatives 1, 3 and 4 can be attributed to the change in distance of the runway ends (either closer or farther) to the close-in obstacles impacting performance. Alternative 4 appears to show the most benefit but only marginally more so than the other 6,600-foot alternatives. This chart indicates that, for the turboprop aircraft, any increase in runway length will have a positive impact on aircraft performance.

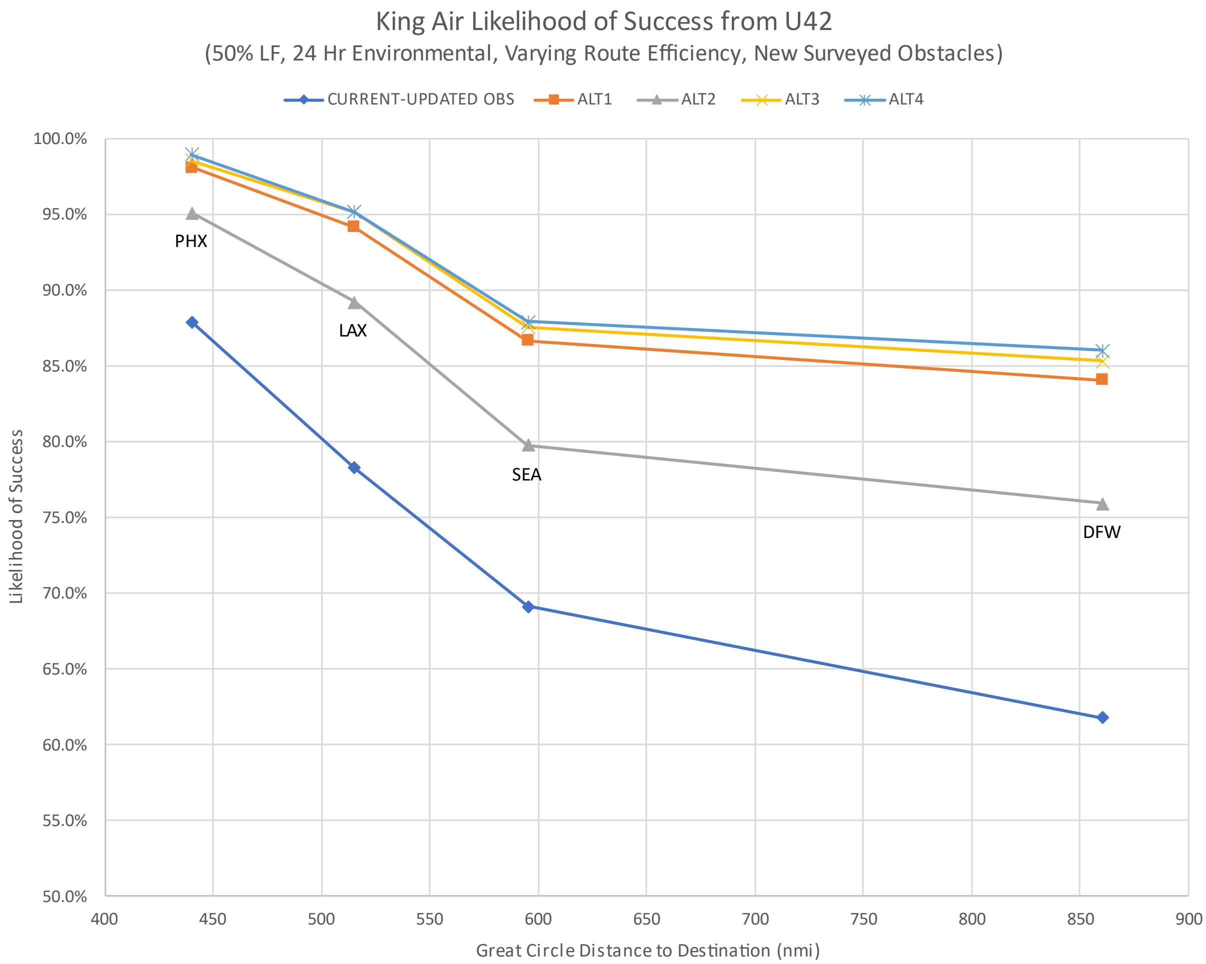


Figure 51 Large Turboprop Likelihood of Mission Success for Alternate Runway Geometries

The small and large business jets showed more modest changes in mission success owing to changes in the distance to obstacles. The likelihoods of success are below in Figure 52 and Figure 53 (note the change in scale on the Y-axis).

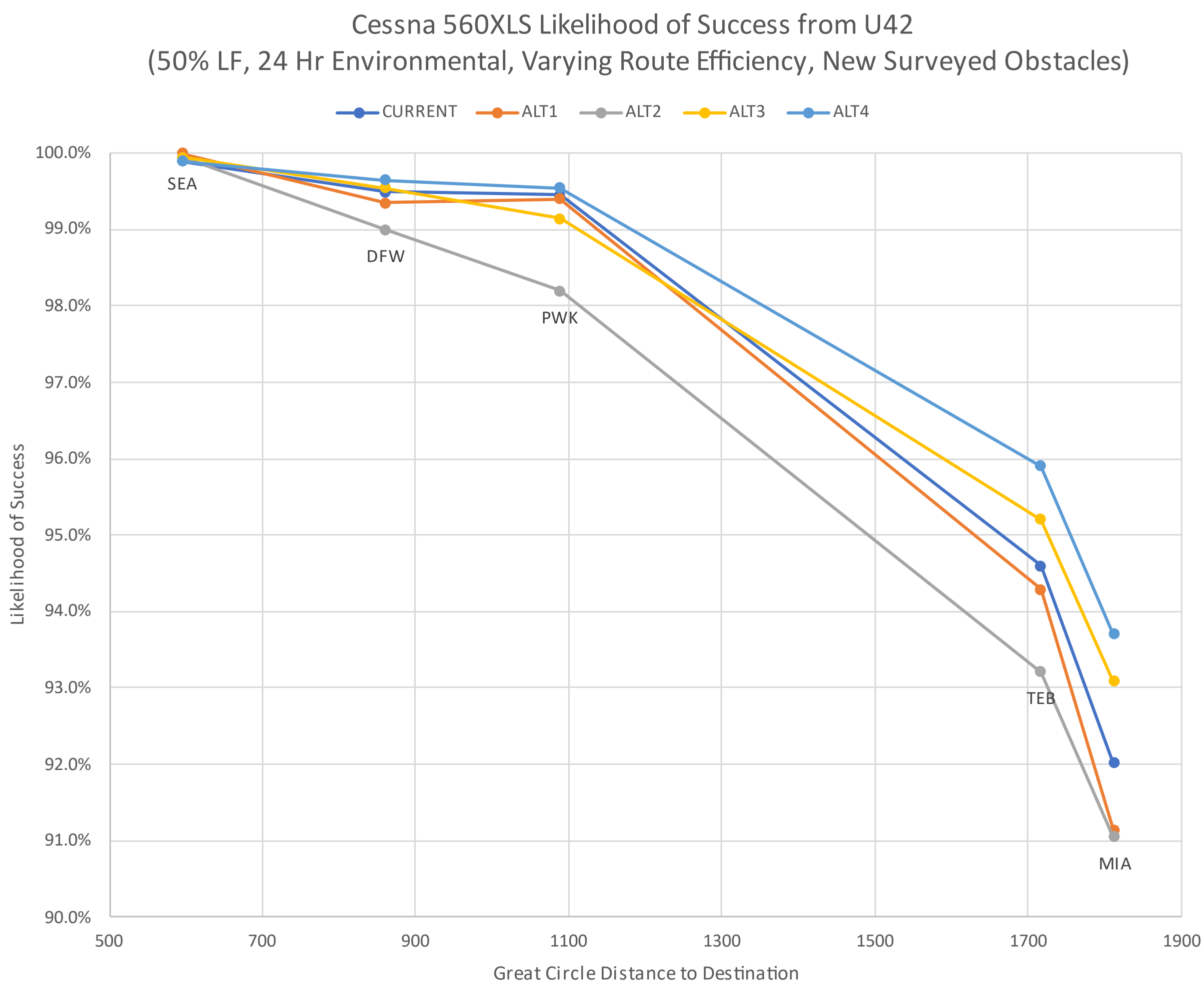


Figure 52 Small Cabin Business Jet Likelihood of Mission Success for Alternate Runway Geometries

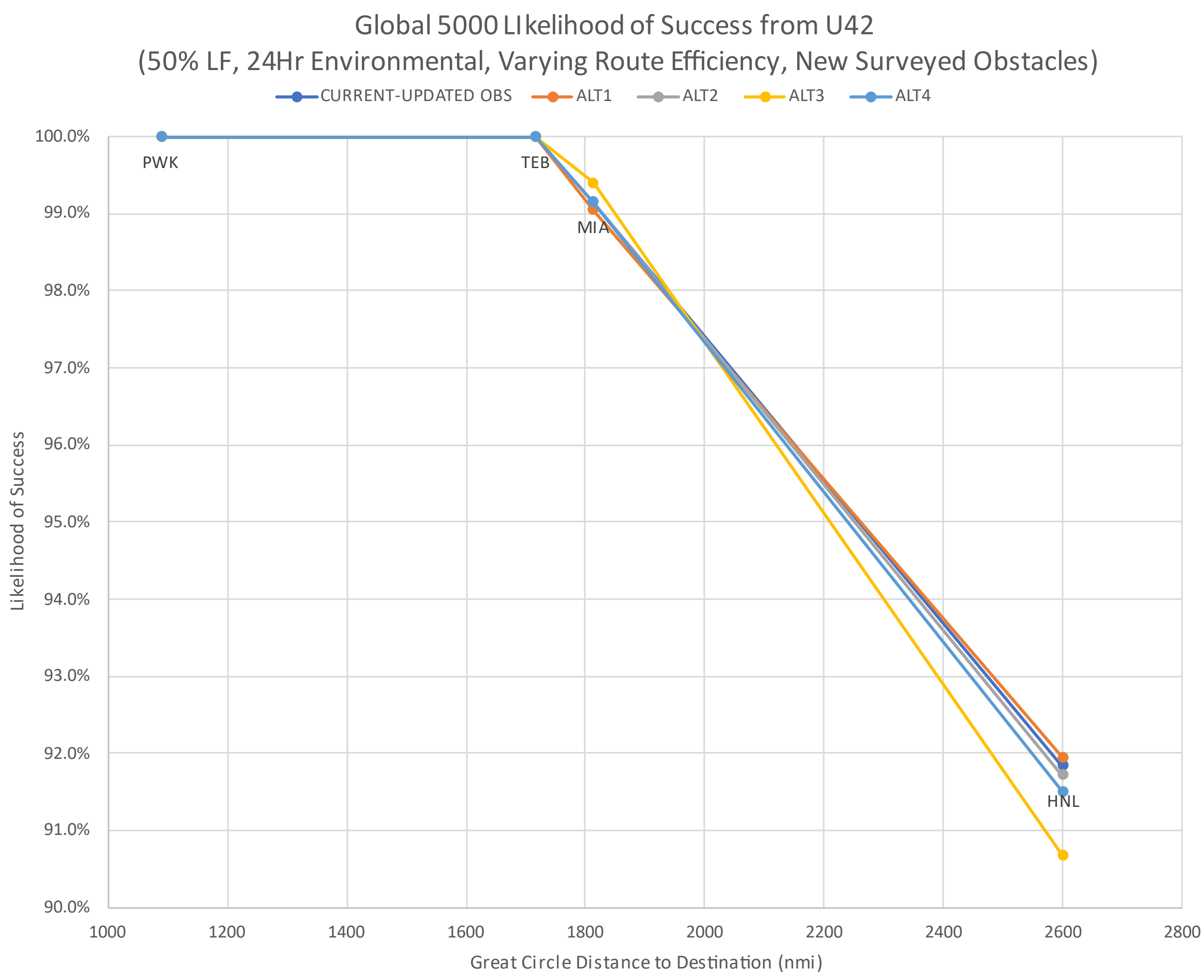


Figure 53 Large Cabin Business Jet Likelihood of Mission Success for Alternate Runway Geometries

11.4 Summary of Aircraft Performance Findings for the Existing and Planned Alternatives

The Monte Carlo Analysis revealed that the cumulative likelihood of aircraft achieving the target market is highly dependent on the type of aircraft. The small and large cabin business jets being studied showed almost no restriction for all likely destinations with the current runway length being more than capable of supporting business jet operations and the proposed alternatives providing a marginal takeoff benefit. The turboprops studied show significantly more impact to takeoff performance due to the hot and high summer conditions at U42, which affect turboprop aircraft are greater than turbojet aircraft. The proposed runway alternatives each provide benefit to the capabilities of the turboprops proportional to the increase in runway length.

Each of the alternatives proposing a 6,600 foot takeoff length, namely alternatives 1, 3 and 4, provide a substantial benefit to turboprop operations with nearly unrestricted payloads to destinations as distant as SEA and DFW. Due to the high altitude and high summer temperatures at U42 the analysis shows that there are still days where even an extended runway will be limiting for turboprop operations.

The project team recommends pursuing Alternative 4 as the best alternative relative to aircraft performance. This alternative provides the best performance for both the turboprop aircraft and the small cabin business jets without negatively impacting the large cabin business jets. Alternative 4 also has the added advantages of increasing the runway length without introducing declared distances while requiring the least amount of additional pavement.

The Monte Carlo Analysis showed no significant preference or particular impact from departing in the 16 direction compared to the 34 direction. The runway is approximately flat reducing the impact of slope on the performance calculation. Neither direction has particularly significant obstacles.

The Monte Carlo Analysis shown in these figures also only represents the obstacle definitions known to the project team at the time of this report. This assessment does include the most recent, although unreleased, VGA survey conducted as a part of the master plan. This means that the draft VGA survey described in Section 6.1.3 has not revealed any significant new challenges to operators. It is important to note that any new obstructions, which were not studied in this report, could impact the runway length and payload range capabilities to a greater extent than what was shown. In order to protect for the existing runway, and a potential alternative 4, it will be important to minimize the likelihood of any new obstacles from being added within the first 6,000ft of both the runway 16 and 34 departure ends of the runway.

12 Summary of Findings

This report analyzed the effectiveness of the existing runway 16-34 to support current and future business jet, turboprop, and GA aircraft flight operations during takeoff and landing. This was achieved by a thorough examination of takeoff performance, landing performance, payload range carrying capabilities and instrument procedure effectiveness for the existing runway and alternative runway definitions.

The existing runway length, and OEI obstacles, appear to be sufficient to support current aircraft operations to and from typical destinations from U42. Additional runway length would ultimately better serve turboprop operators in the future. Several other enhancements to instrument procedures, runway surface treatments and weather sensing equipment were identified and are summarized in the following section. There are no advantages to rotating the runway orientation, but this will be discussed in additional detail in a complementary tech memo discussing U42 and TVY's role in the overall SLC airspace system.

12.1 Summary of Takeoff Performance and Payload-Range

The Monte Carlo analysis determined that the existing length, orientation, slope, and OEI obstacle definition of runway 16-34 is sufficient to enable current aircraft operations to anticipated destinations and beyond.

Small/medium and large cabin business jets can support all anticipated markets in the current planning period including markets as far as the US east and west coast and, for the large business jets specifically, Hawaii. This includes consideration for historical weather conditions both in the terminal environment and those encountered when flying in the enroute structure away from U42, variations in passenger/baggage weight and different variations of route efficiency.

Turboprops were found to be capable of reaching destinations in the southwest including Phoenix and Los Angeles with the current runway configuration. While the data shows the turboprops will not be 100% successful at all times of year with the target payload, the airport provides enough performance for operators to be able to plan and execute trips to these destinations with little concern. For operations to destinations further afield, such as those in Texas or the Pacific Northwest, the analysis showed that the existing runway length at U42 is the limiting factor on these aircraft. A runway extension to the north would provide substantial benefits for turboprop aircraft. While the scope of this Monte Carlo study does not include the prescription of a specific runway length, the proposed runway extension alternatives with 6,600 feet of runway length provide enough takeoff performance to reliably reach these additional destinations.

If a large cabin business jet operator were to consider regular use of U42 (perhaps as part of a future FBO), enhancements to the current pavement strength and runway surface treatment will be required. Runway extensions to the north of the existing runway 16 threshold within the airport's existing property would provide the highest potential benefit, but no specific additional length was determined using the Monte Carlo analysis methods for these aircraft.

12.2 Summary of Landing Performance

The landing performance covered in this report identified that most aircraft that fly into U42 can safely plan and execute a landing into the airport under wet and dry conditions. However, the report identified a key deficiency caused by the lack of runway grooving or porous friction course application. This can have the effect of significantly increasing the in-flight landing distance assessment during periods when operators believe the runway to be wet or contaminated, especially if the precipitation data from the existing weather sensor is unavailable or unreliable. The team recommends the near-term application of grooving or PFC on the runway to enhance the safety of landing and takeoff operations and preserve the payload-range findings in this report for the duration of the masterplan.

12.3 Summary of Historical Weather Conditions

The historical weather information identified a deficiency in the current AWOS-3 weather sensing equipment. At the present time, U42 does not have the ability to accurately identify and report on precipitation events or events that might lead to consideration of a wet runway surface for performance calculations. This is true during periods of dense fog or snow. This deficiency was identified by reviewing the historical weather information over the past 5 years and comparing it to other more accurate sensors, namely the ASOS at SLC

We recommend replacing the existing AWOS-3 with a modern AWOS-3 P/T to enable more accurate reporting on precipitation and wet runway events. This is particularly critical given the findings discussed in Section 12.2.

12.4 Summary of Airspace and Existing Instrument Procedures

The current airspace surrounding U42 is extremely challenging for IFR operations. The airport is surrounded by high terrain with military restricted airspace south of the airport creating another kind of barrier to flight operations. Significant arrival and departure operations at SLC also require U42 operations to remain either below SLC air traffic or for lateral separation to be achieved. This results in significant delays that can only be overcome through future airspace and ATC changes.

The current instrument approach and departure procedures were analyzed both in terms of their current FAA design and their overall effectiveness in enabling aircraft to arrive at U42 at the scheduled (preferred) time.

All existing instrument approaches were found to be consistent with current FAA design standards. The runway 34 RNAV (GPS) approach, with the applicable circling minimums to runway 16, was found to provide adequate minimums coverage for the current operation at U42. However, this approach procedure was found to be in direct conflict with the Camp Williams SUAS which limits the limits its overall effectiveness as it cannot be used while the SUAS is active, which historical NOTAM analysis has found is almost daily.

The team recommends preserving the existing runway 34 RNAV (GPS) approach as it provides the only current published IFR minimums to the airfield.

12.5 Summary of Potential Instrument Procedures

This report determined that adding a new RNAV (GPS) procedure to the runway 34 end is both feasible and useful for TVY. This procedure requires no significant deviations from standard design set forth in FAA 8260.3E, 8260.58C or 8260.19I and could be requested for development by the FAA at the earliest convenience. This approach would not reduce the overall minimums on runway 34 but would potentially increase the overall usability of the airport while reducing pilot and controller workloads.

A new instrument approach, and charted visual approach, were also identified as being possible for implementation to runway 16. However, this report acknowledges the requirement to establish an ATCT and Class D airspace in order to increase the likelihood of using the procedures, and even this might still not provide enough separation between arrivals into U42 and departures from SLC runway 16R.

Future opportunities to refine the departure procedures at TVY should be undertaken to reduce the overall distance required for flights filing an IFR flight plan to depart the airport in the general direction of travel. However, this effort will not likely be accepted by the FAA until such time as U42 has an ATCT and Class D airspace. This will be discussed in further detail in a complementary tech memo discussing U42's roll in the overall SLC airspace.

12.6 Recommended Improvements

1. Maintain the existing runway in its current configuration until such time as the total number of operations and aircraft mix require a runway extension. At such time, pursue the preferred 6,600 foot runway extension alternative that best suits the airport's needs.
2. Continue to protect the OEI Obstacle Accountability Areas shown in this report for the existing runway and for Alternative 4.
3. Consider replacing the existing AWOS-3 with an AWOS-3P/T.
4. Consider development of an additional RNAV (GPS) approach to runway 34 (See the RNAV (GPS) Y Rwy 34 in Section 7.4.4.3).
5. Apply grooving or PFC to runway 16-34
6. Increase the bearing strength of runway 16-34 to accommodate large cabin business jets with GTOW of at least 90,000lbs

7. Do not pursue any additional approach lighting enhancements at either end of the runway (MALSF, MALSR) unless necessary for safety

8. Do not pursue any re-orientation of the runway heading

Appendix 1: Traditional Runway Length Determination

The SLC GAMP project team requested that LEAN perform a "traditional" AC-150-5325-4B compliant runway length determination for existing aircraft derived from airport planning manuals, and simplified aircraft performance tables contained within the AC. The following describes the methods and inputs used to derive the runway lengths listed below in Table 29 and Table 30.

Table 29 AC-150-5325-4B Traditional Runway Length Results for Turboprop Aircraft

Turboprops	
	Required Runway Lengths (ft)
Aircraft	**U42**
PC-12NG	4123
208 Caravan	4045
TBM 850	3882
Mitsubishi MU-2	4750
441 Conquest II	3883
King Air 200	4820

Table 30 AC-150-5325-4B Traditional Runway Length Results for Turbojet Aircraft

Business Jets	
	Required Runway Lengths (ft)
Aircraft	**U42**
Citation X	6557
Eclipse 500	4298
Cessna Sovereign	3645
Cessna CJ2+	5338
Falcon 900EX (East Coast)	5837
Falcon 900EX (Hawaii)	7570
Cessna 560XLS	6248

Appendix 1.1: Turboprop Runway Length Determination

Runway lengths were determined using the following methods/assumptions:

- Source: 14 CFR Part 23 certified pilots operating handbooks or aircraft flight manuals
- Limitations/Considerations: Takeoff to 50ft, Climb limited performance
- Takeoff Power: Maximum/Takeoff
- Temperature: Average Daily Maximum for the Hottest Month

- Pressure: 29.92 inHg
- Winds: Calm
- Runway Condition: Dry
- Runway Slope: Yes (both directions of the runway were assessed, and the longer value was presented)
- Obstacle Accountability: No
- SID Climb Gradient Accountability: No
- Flight Planning: NBAA IFR Reserves
- Destinations: Maximum capable range*
- Payload: 90% usable payload*

*Due to the high altitude and hot temperatures experienced at U42, all of the Turboprop aircraft evaluated either were not limited by existing field lengths at any payload/fuel combination, or the aircraft reached a takeoff weight limited by minimum climb requirements before approaching 90% usable payload. When these conditions occurred no additional runway length would benefit the aircraft and the team no longer explored any additional runway length requirements.

Appendix 1.2: Turbojet Runway Length Determination

Runway lengths were determined using the following methods/assumptions:

- Source: 14 CFR Part 23/25 certified pilots operating handbooks or aircraft flight manuals
- Limitations/Considerations: Balanced field length, Climb limited performance, Brake Energy Limitations
- Thrust: Takeoff
- Temperature: Average Daily Maximum for the Hottest Month
- Pressure: 29.92 inHg
- Winds: Calm
- Runway Condition: Dry
- Runway Slope: Yes (both directions of the runway were assessed, and the longer value was presented)
- Obstacle Accountability: No
- SID Climb Gradient Accountability: No
- Flight Planning: NBAA IFR Reserves

- Destinations: The most restrictive of MIA, JFK and LAX based on annual enroute weather conditions
- Payload: 90% usable payload

Appendix 2: Tower Siting Study

During the analysis of potential airspace improvements at U42, the project team identified the installation of a future ATCT, and establishment of Class D airspace, as a requirement for increased safety and capacity at U42. The following exhibit was created as a part of the analysis to identify optimal locations for a future ATCT with a particular focus on the eastern side of the airfield.

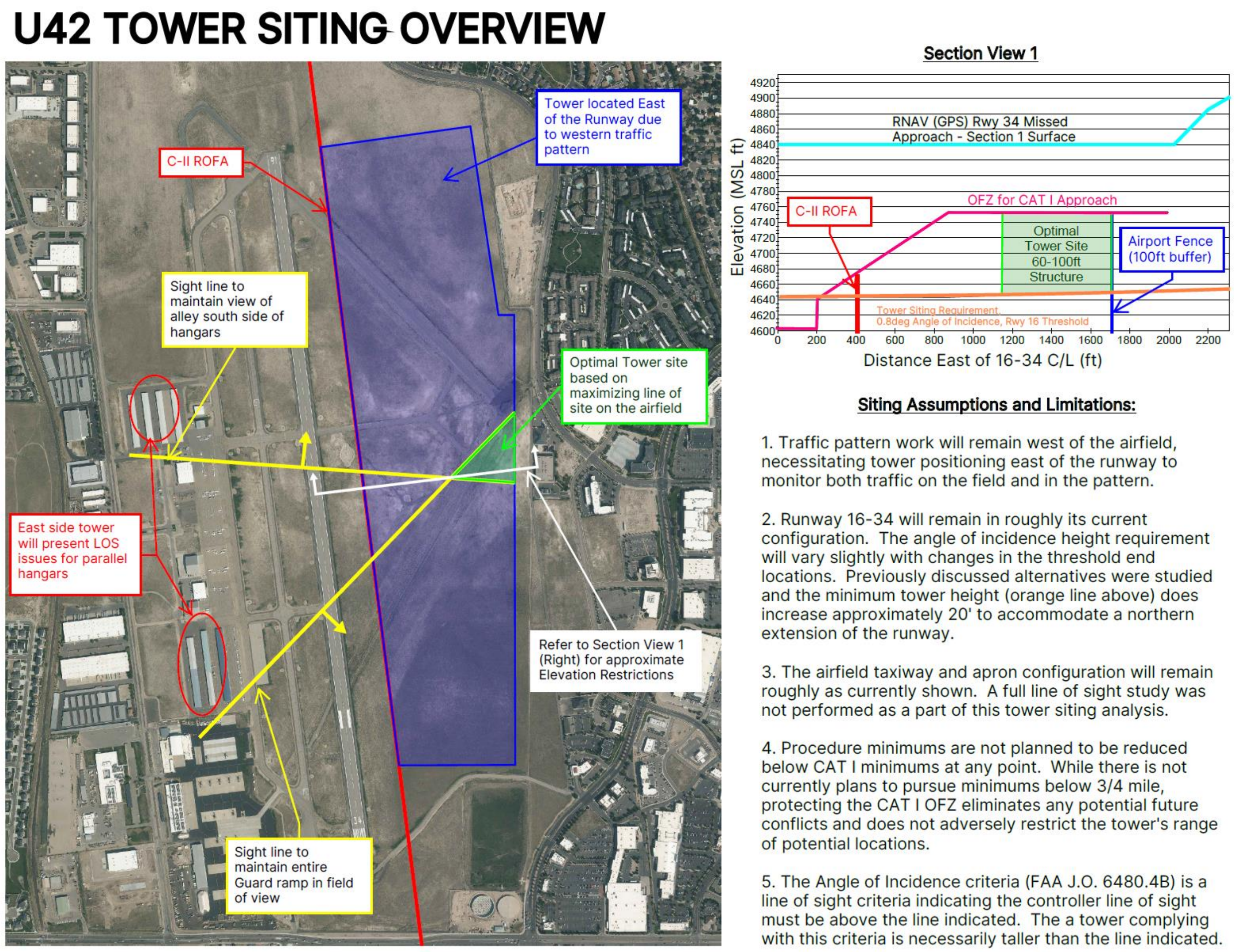
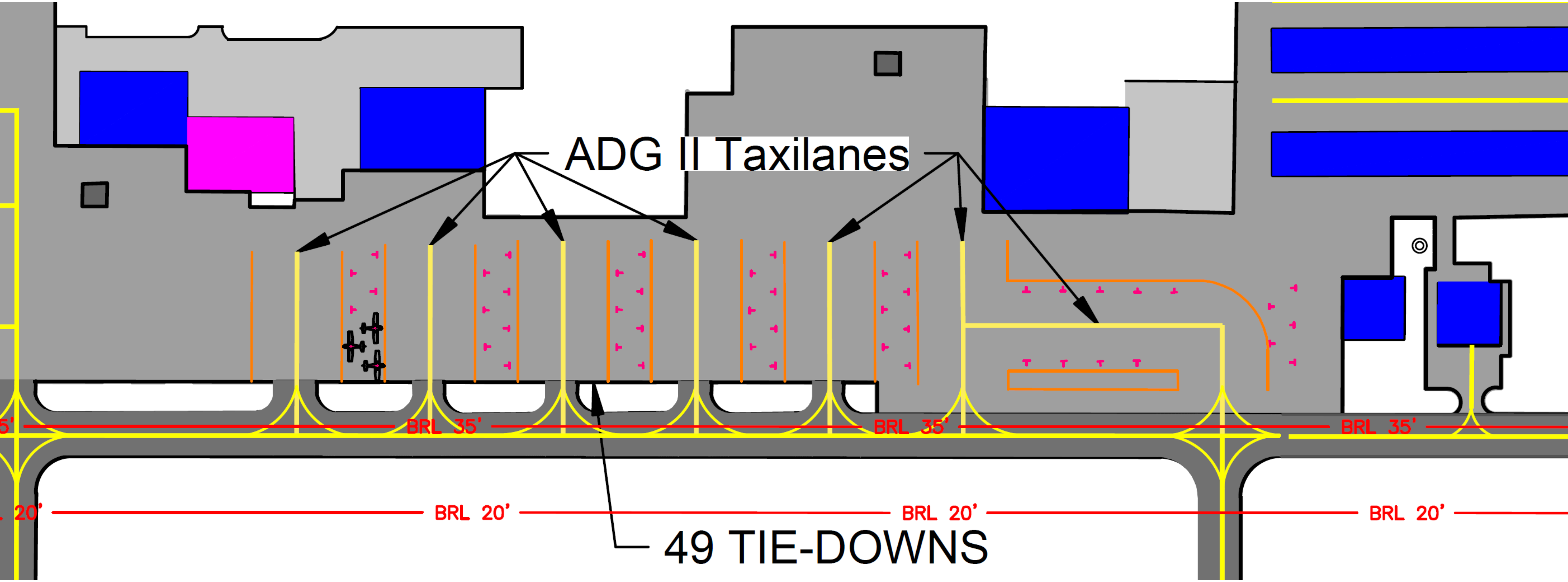


Figure 54 U42 Future ATCT Siting Overview

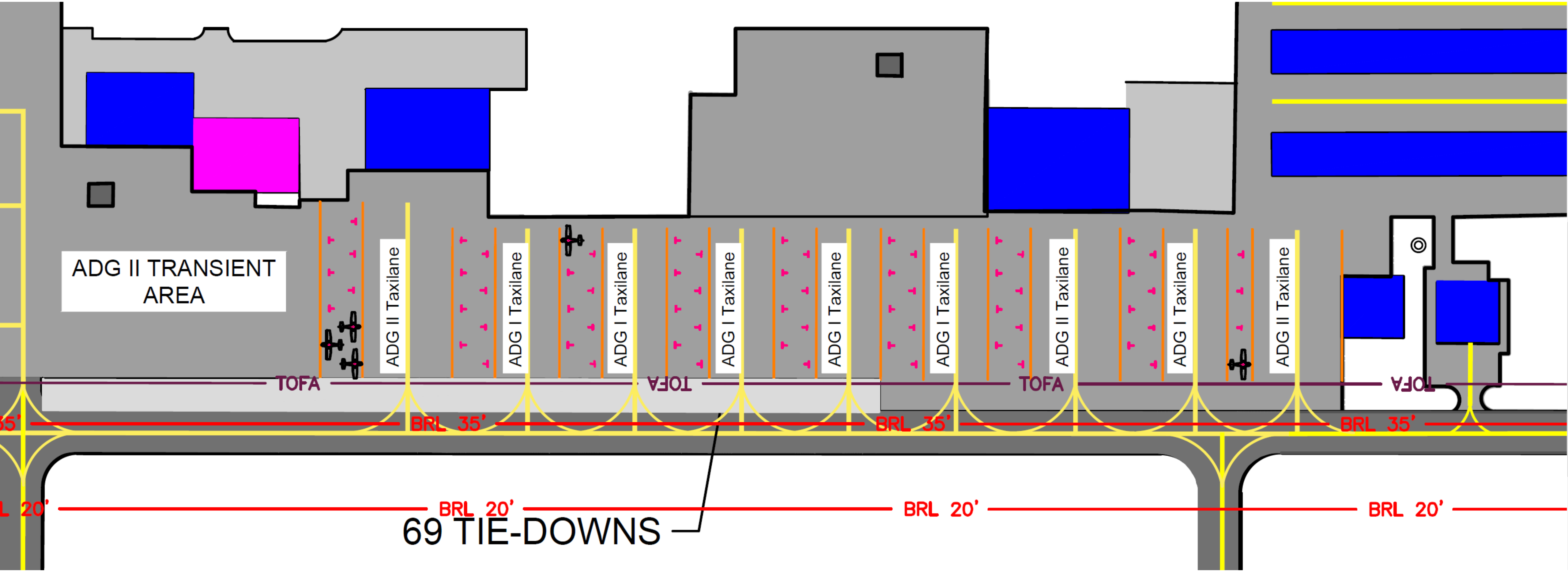
APPENDIX D

Potential Apron Options

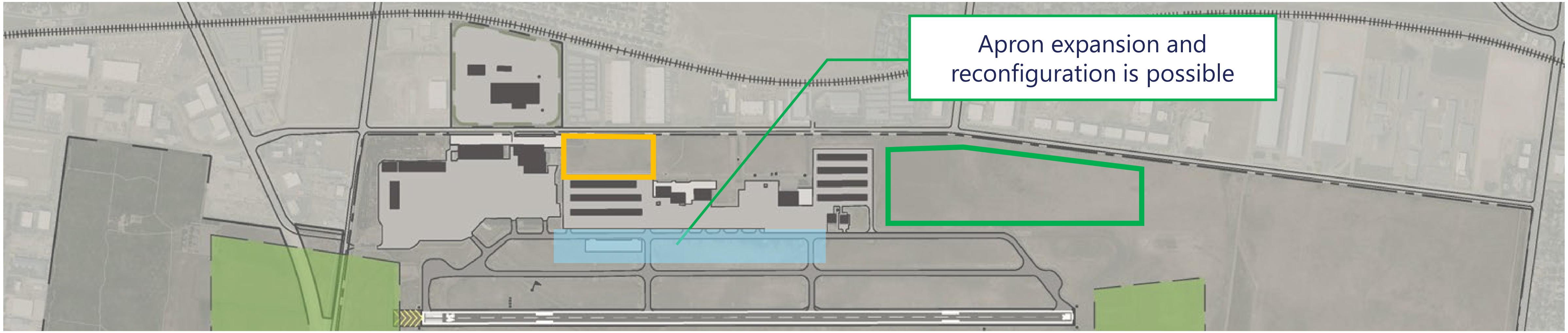
Existing apron tie-down configuration

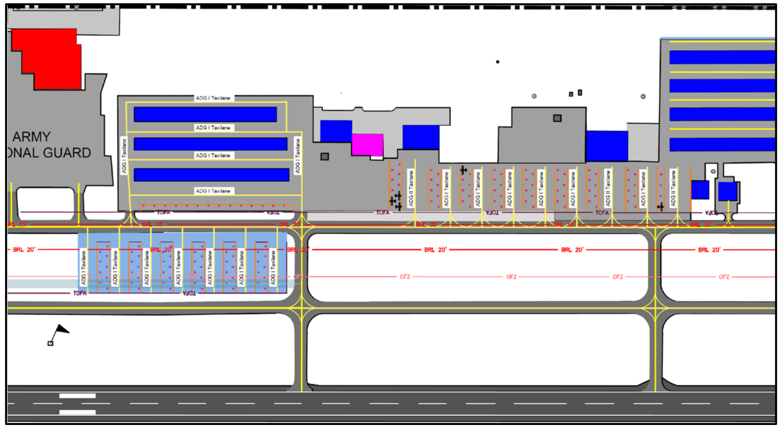


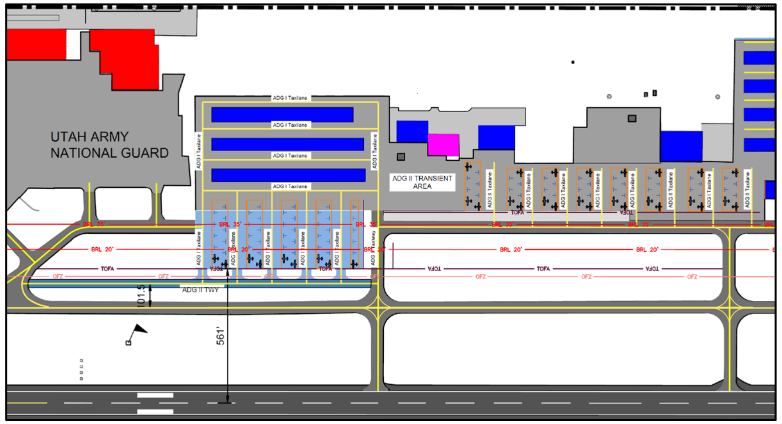
Preliminary apron reconfiguration option

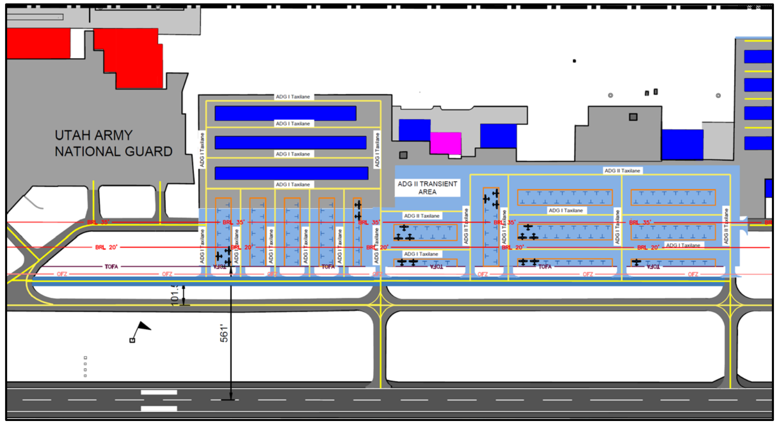


Preliminary apron expansion options









APPENDIX E

Project Pull Pages

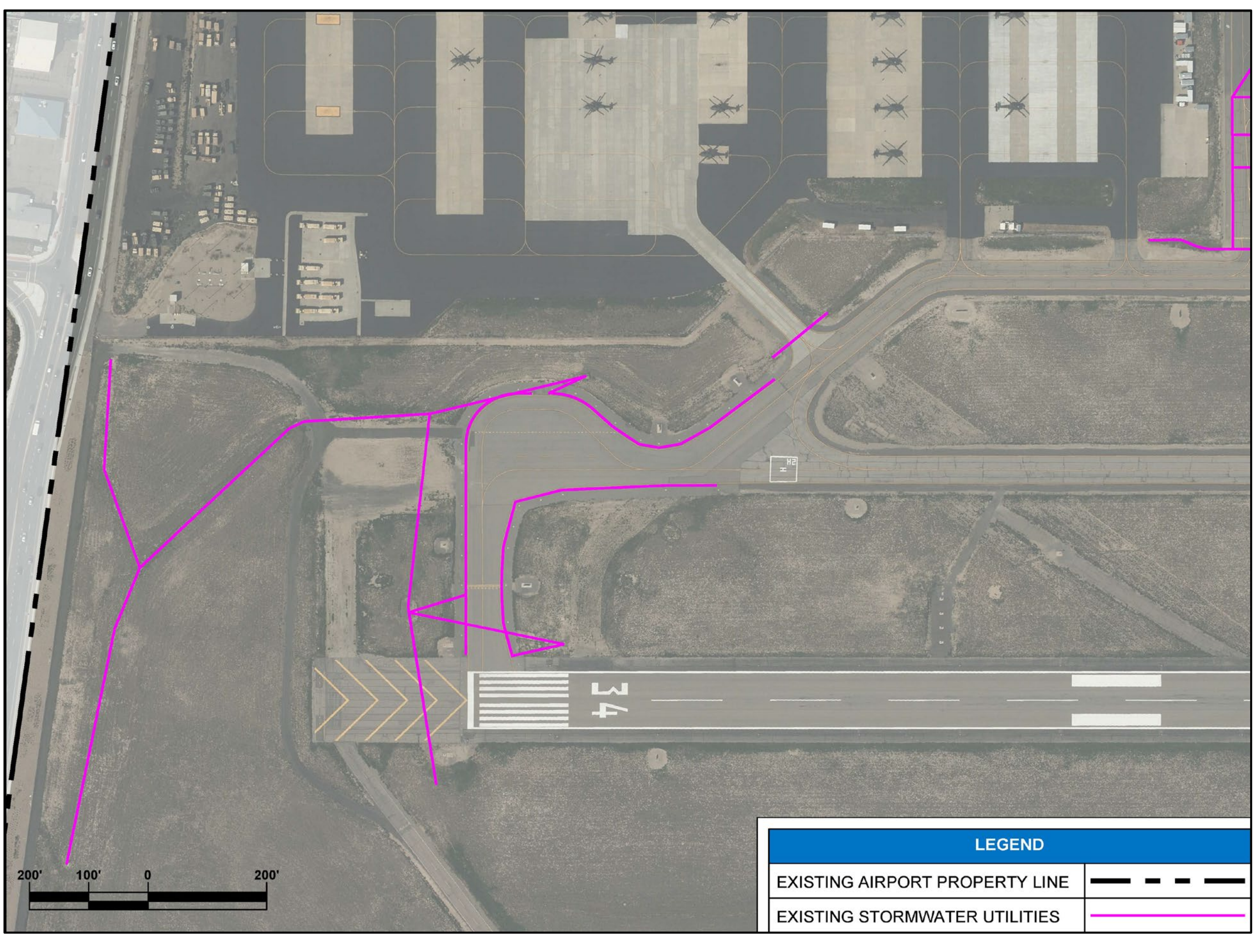
Project Title	Project No.	Program	Recurrence
Existing Stormwater Infrastructure Improvements	1	N/A	N/A

Project Description: Upgrading stormwater infrastructure by piping open channel sections and replacing undersized pipes.
Project Justification: The stormwater system south of the Utah National Guard facilities has a section of open channel swales that are prone to maintenance issues like debris accumulation, leading to clogs and reduced system capacity. Piping the system will mitigate these issues and ensure efficient stormwater disposal. Undersized pipes further south exacerbate runoff problems, necessitating replacement with larger pipelines.

Projected Timeline	Design Start Date	Construction Start Date	CIP Year
	2025	2025	2025

Estimated Costs	NEPA Documentation	Construction	Design & Construction Administration	Utilities	Expenses	Contingency	Estimated Cost at Completion
	$5,000	-	-	$520,000	-	$151,000	$676,000

Anticipated Funding	AIP Entitlement	AIP Discretionary	BIL	State Apportionment	SLCDA	UDOA
	-	-	-	-	$676,000	-



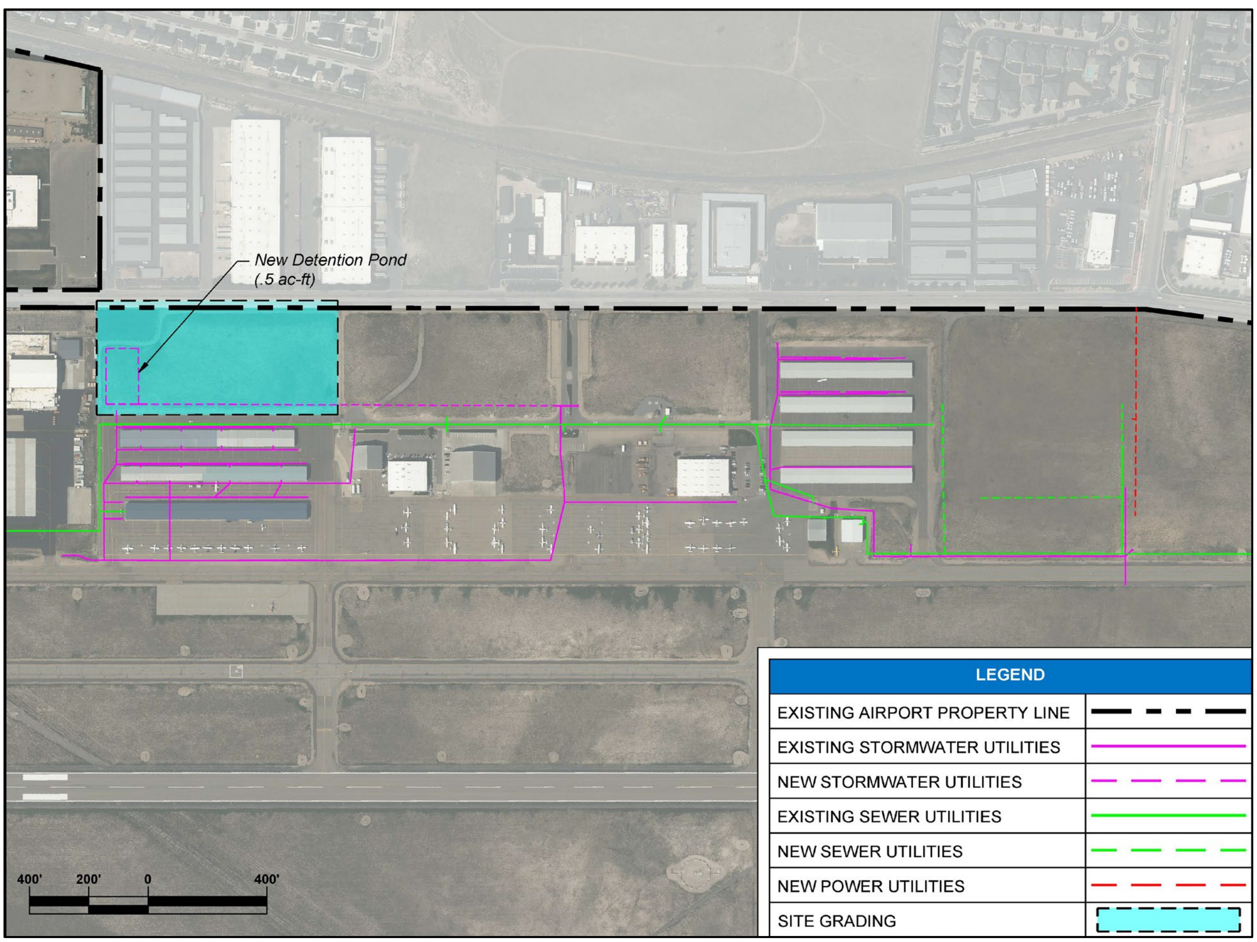
Project Title	Project No.	Program	Recurrence
Utility Infrastructure Expansion (Ph. I) and Site Grading	2	N/A	N/A

Project Description: The initial phase of utility improvements prioritizing extending sanitary sewer, power, and stormwater infrastructure to lay the groundwork for future apron expansion. This phase also addresses existing grading issues and creates a new stormwater detention pond on the southwest side of the airfield.
Project Justification: As U42 continues to accommodate a growing number of based aircraft and aeronautical users, the extension of essential utilities and correction of grading issues will be required to serve future development.

Projected Timeline	Design Start Date	Construction Start Date	CIP Year
	2025	2025	2025

Estimated Costs	NEPA Documentation	Construction	Design & Construction Administration	Utilities	Expenses	Contingency	Estimated Cost at Completion
	$10,000	-	-	$3,941,500	-	$1,172,450	$5,123,950

Anticipated Funding	AIP Entitlement	AIP Discretionary	BIL	State Apportionment	SLCDA	UDOA
	-	-	-	-	$5,123,950	-



Project Title	Project No.	Program	Recurrence
SW Apron/Taxilane Expansion – Design/Construction	3	N/A	N/A

Project Description: Expansion of the existing apron to accommodate an additional taxilane.
Project Justification: To improve aircraft circulation between the apron and the taxiway and support future development related to Project #2 (Utility Infrastructure Expansion (Ph. I) and Site Grading).

Projected Timeline	Design Start Date	Construction Start Date	CIP Year
	2025	2025	2025

Estimated Costs	NEPA Documentation	Construction	Design & Construction Administration	Utilities	Expenses	Contingency	Estimated Cost at Completion
	$5,000	$262,000	$68,000	-	-	$74,000	$409,000

Anticipated Funding	AIP Entitlement	AIP Discretionary	BIL	State Apportionment	SLCDA	UDOA
	$368,100	$40,900	-	-	-	-

			SW Apron/Taxilane Expansion	
WORK ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL AMOUNT
Mobilization & Demobilization	LS	1	$ 19,000.00	$ 19,000.00
Construction Signs, Barricades, Warning Lights & Flagging	LS	1	$ 8,000.00	$ 8,000.00
Unclassified Excavation	CY	1,660	$ 31.00	$ 51,460.00
Unsuitable Excavation (1-foot Depth)	SY	250	$ 15.00	$ 3,750.00
12" Cobble Stabilization	SY	750	$ 36.00	$ 27,000.00
Subbase Course	CY	910	$ 41.00	$ 37,310.00
Aggregate Base Course	CY	490	$ 50.00	$ 24,500.00
Bituminous Surface Course	TON	690	$ 120.00	$ 82,800.00
Pavement Marking (Permanent) with Retroreflective Beads	LS	1	N/A	$ 7,500.00
Contingency (30%)				$ 79,000.00
Total Direct/Construction Costs				**$ 341,000.00**
Design Costs (10%)				$ 34,000.00
Construction Services (10%)				$ 34,000.00
Total Cost				**$ 409,000.00**

Notes:

1. 5% contingency incorporated into quantities
2. Prices inflated/deflated due to project size and/or constructability
3. Original unit prices are adapted using rounded averages from the TVY N Airport Rd. Extension Ph. I Project
4. Cost of NEPA documentation encompassed within contingency

Project Title	Project No.	Program	Recurrence
Apron Rehabilitation	4	N/A	N/A

Project Description: Rehabilitation of a section of the apron at U42 that includes the removal of old asphalt, potential foundation reinforcement as required, the addition of new engineered fill material where needed, and the installation of a new 4-inch-thick asphalt surface.

Project Justification: Portions of the apron at U42 have cracks, ruts, loose material, and debris issues. The surface is also aging, with a 2019 Pavement Condition Index (PCI) score ranging from 56 to 69. This suggests that within the next 5 years, it will likely deteriorate to a "Poor" or "Very Poor" condition and require rehabilitation.

Projected Timeline	Design Start Date	Construction Start Date	CIP Year
	2025	2025	2025

Estimated Costs	NEPA Documentation	Construction	Design & Construction Administration	Utilities	Expenses	Contingency	Estimated Cost at Completion
	$5,000	-	$900,000	-	$95,000	-	$1,000,000

Anticipated Funding	AIP Entitlement	AIP Discretionary	BIL	State Apportionment	SLCDA	UDOA
	-	-	$750,000	-	$203,150	$46,850

Project Title	Project No.	Program	Recurrence
Corporate Hangar Apron/Taxiway Connectors - Design/Construction	5	N/A	N/A

Project Description: Design and construction of three apron areas and two taxiway connectors to support future hangar development.
Project Justification: To provide movement areas and convenient connectivity between future corporate hangars and the taxiway.

Projected Timeline	Design Start Date	Construction Start Date	CIP Year
	2026	2026	2026

Estimated Costs	NEPA Documentation	Construction	Design & Construction Administration	Utilities	Expenses	Contingency	Estimated Cost at Completion
	$5,000	$352,000	$92,000	-	-	$101,000	$550,000

Anticipated Funding	AIP Entitlement	AIP Discretionary	BIL	State Apportionment	SLCDA	UDOA
	-	-	-	-	$550,000	-

			Corporate Hangar Apron/Taxiway Connectors – Design/Construction	
WORK ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL AMOUNT
Mobilization & Demobilization	LS	1	$ 26,000.00	$ 26,000.00
Construction Signs, Barricades, Warning Lights & Flagging	LS	1	$ 11,000.00	$ 11,000.00
Unclassified Excavation	CY	1,910	$ 40.30	$ 76,973.00
Unsuitable Excavation (1-foot Depth)	SY	290	$ 19.50	$ 5,655.00
12" Cobble Stabilization	SY	860	$ 46.80	$ 40,248.00
Subbase Course	CY	1,310	$ 53.30	$ 69,823.00
Aggregate Base Course	CY	360	$ 65.00	$ 23,400.00
Bituminous Surface Course	TON	610	$ 156.00	$ 95,160.00
Pavement Marking (Permanent) with Retroreflective Beads	LS	1	N/A	$ 3,500.00
Contingency (30%)				$ 106,000.00
Total Direct/Construction Costs				**$ 458,000.00**
Design Costs (10%)				$ 46,000.00
Construction Services (10%)				$ 46,000.00
Total Cost				**$ 550,000.00**

Notes:

1. 5% contingency incorporated into quantities
2. Prices inflated/deflated due to project size and/or constructability
3. Original unit prices are adapted using rounded averages from the TVY N Airport Rd. Extension Ph. I Project
4. Cost of NEPA documentation encompassed within contingency

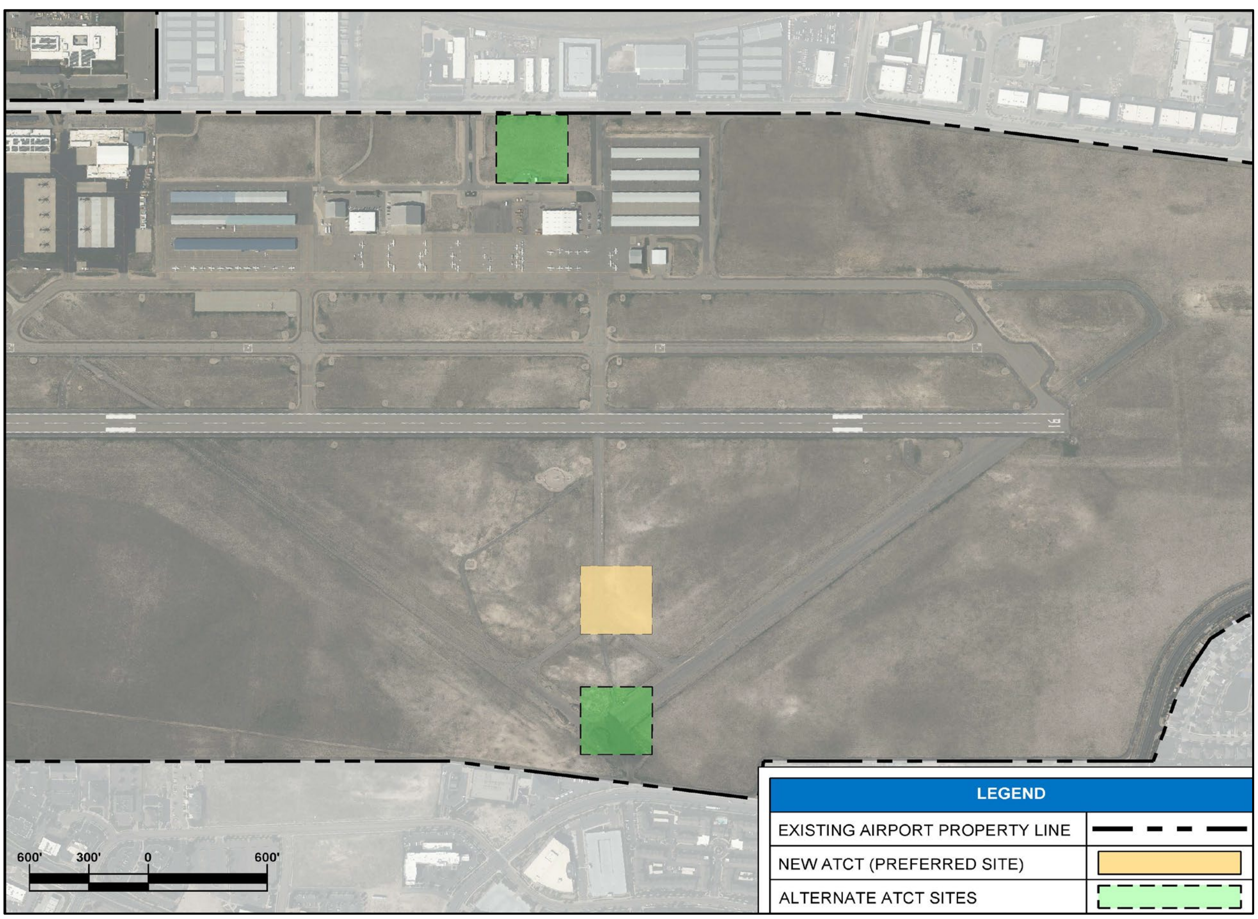
Project Title	Project No.	Program	Recurrence
Airport Traffic Control Tower Siting Study	6	N/A	N/A

Project Description: Conducting a thorough evaluation to identify the ideal site for positioning an airport traffic control tower at U42 that involves in-depth site analysis, feasibility assessments, and the formulation of recommendations for the most suitable location of the control tower.
Project Justification: Ensuring an effective and efficient process for accurately siting new airport traffic control towers, as outlined in FAA Order 6480.4B, *Airport Traffic Control Tower Siting Process*, aligns with the FAA's mission to promote a safe, secure, and efficient aviation system.

Projected Timeline	Design Start Date	Construction Start Date	CIP Year
	N/A	N/A	2026

Estimated Costs	NEPA Documentation	Construction	Design & Construction Administration	Utilities	Expenses	Contingency	Estimated Cost at Completion
	-	-	-	-	$225,000	-	$225,000

Anticipated Funding	AIP Entitlement	AIP Discretionary	BIL	State Apportionment	SLCDA	UDOA
	-	-	-	-	$225,000	-



Project Title	Project No.	Program	Recurrence
Taxiway A/B Rehabilitation	7	N/A	N/A

Project Description: Rehabilitation of taxiways A and B at U42 that involves the removal of the current asphalt surface using cold milling. If necessary, the subgrade will be repaired, and new engineered fill material will be added, followed by the installation of a new 4-inch-thick asphalt surface course.

Project Justification: Taxiways A and B are currently experiencing cracking, rutting, and surface brittleness. A 2019 Pavement Condition Index (PCI) assessment assigned a score of 69 to these taxiways. This suggests that within the next 5 years, they are expected to deteriorate to a "Poor" or "Very Poor" condition, necessitating rehabilitation to maintain the Airport Operations Area (AOA) pavement integrity and lifespan.

Projected Timeline	Design Start Date	Construction Start Date	CIP Year
	2026	2026	2026

Estimated Costs	NEPA Documentation	Construction	Design & Construction Administration	Utilities	Expenses	Contingency	Estimated Cost at Completion
	$10,000	-	$2,550,000	-	$290,000	-	$2,850,000

Anticipated Funding	AIP Entitlement	AIP Discretionary	BIL	State Apportionment	SLCDA	UDOA
	-	$2,500,000	-	-	$216,478	$133,522

Project Title	Project No.	Program	Recurrence
FBO Hangar Apron - Design/Construction	8	N/A	N/A

Project Description: Design and construction of apron space to accommodate prospective FBO tenants and their aircraft.
Project Justification: To ensure U42 can accommodate potential FBO tenants and their aircraft, ultimately enhancing the airport's overall service offerings and competitiveness.

Projected Timeline	Design Start Date	Construction Start Date	CIP Year
	2027	2027	2027

Estimated Costs	NEPA Documentation	Construction	Design & Construction Administration	Utilities	Expenses	Contingency	Estimated Cost at Completion
	$5,000	$217,000	$56,000	-	-	$60,000	$338,000

Anticipated Funding	AIP Entitlement	AIP Discretionary	BIL	State Apportionment	SLCDA	UDOA
	$169,000	-	-	-	$169,000	-

			FBO Hangar Apron - Design/Construction	
WORK ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL AMOUNT
Mobilization & Demobilization	LS	1	$ 16,000.00	$ 16,000.00
Construction Signs, Barricades, Warning Lights & Flagging	LS	1	$ 7,000.00	$ 7,000.00
Unclassified Excavation	CY	1,150	$ 40.30	$ 46,345.00
Unsuitable Excavation (1-foot Depth)	SY	180	$ 19.50	$ 3,510.00
12" Cobble Stabilization	SY	520	$ 46.80	$ 24,336.00
Subbase Course	CY	790	$ 53.30	$ 42,107.00
Aggregate Base Course	CY	220	$ 65.00	$ 14,300.00
Bituminous Surface Course	TON	370	$ 156.00	$ 57,720.00
Pavement Marking (Permanent) with Retroreflective Beads	LS	1	N/A	$ 5,000.00
Contingency (30%)				$ 65,000.00
Total Direct/Construction Costs				**$ 282,000.00**
Design Costs (10%)				$ 28,000.00
Construction Services (10%)				$ 28,000.00
Total Cost				**$ 338,000.00**

Notes:

1. 5% contingency incorporated into quantities
2. Prices inflated/deflated due to project size and/or constructability
3. Original unit prices are adapted using rounded averages from the TVY N Airport Rd. Extension Ph. I Project
4. Cost of NEPA documentation encompassed within contingency

Project Title	Project No.	Program	Recurrence
Perimeter Fence Replacement	9	N/A	N/A

Project Description: Upgrading the perimeter security fence by replacing the current 6-foot chain link fence with an 8-foot one and addressing specific sections of the existing 8-foot fence that require replacement. The new fence will also include three strands of barbed wire on top of the chain link. Demolition of the existing fencing is also part of the project.
Project Justification: The existing 6-foot fence, along with some sections of the older 8-foot fence, pose a security risk and need replacement with a standard 8-foot-high fence that includes barbed wire.

Projected Timeline	Design Start Date	Construction Start Date	CIP Year
	2027	2027	2027

Estimated Costs	NEPA Documentation	Construction	Design & Construction Administration	Utilities	Expenses	Contingency	Estimated Cost at Completion
	$10,000	-	$630,000	-	$60,000	-	$700,000

Anticipated Funding	AIP Entitlement	AIP Discretionary	BIL	State Apportionment	SLCDA	UDOA
	-	-	$337,500	-	$329,705	$32,795

Project Title	Project No.	Program	Recurrence
NW Access Roadway/Auto Parking (Ph. I) - Design/Construction	10	N/A	N/A

Project Description: Design and construction of roadway access and auto parking in an area identified for hangar development. The project is situated in an area where there is an existing access road with deteriorating pavement, which links to the airport perimeter road.
Project Justification: Improved roadway access and parking facilities are necessary to provide convenient access to future hangar development.

Projected Timeline	Design Start Date	Construction Start Date	CIP Year
	2027	2027	2027

Estimated Costs	NEPA Documentation	Construction	Design & Construction Administration	Utilities	Expenses	Contingency	Estimated Cost at Completion
	$10,000	$689,000	$180,000	-	-	$197,000	$1,076,000

Anticipated Funding	AIP Entitlement	AIP Discretionary	BIL	State Apportionment	SLCDA	UDOA
	-	-	-	-	$1,076,000	-

			NW Access Roadway/Auto Parking (Ph. I) - Design/Construction	
WORK ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL AMOUNT
Mobilization & Demobilization	LS	1	$ 40,000.00	$ 40,000.00
Construction Signs, Barricades, Warning Lights & Flagging	LS	1	$ 17,000.00	$ 17,000.00
Asphalt Removal	SF	13,580	$ 10.00	$ 135,800.00
Unclassified Excavation	CY	3,020	$ 31.00	$ 93,620.00
Unsuitable Excavation (1-foot Depth)	SY	460	$ 15.00	$ 6,900.00
12" Cobble Stabilization	SY	1,360	$ 36.00	$ 48,960.00
Subbase Course	CY	2,420	$ 41.00	$ 99,220.00
Aggregate Base Course	CY	1,310	$ 50.00	$ 65,500.00
Bituminous Surface Course	TON	1,430	$ 120.00	$ 171,600.00
Pavement Marking (Permanent) with Retroreflective Beads	LS	1	N/A	$ 10,000.00
Contingency (30%)				$ 207,000.00
Total Direct/Construction Costs				**$ 896,000.00**
Design Costs (10%)				$ 90,000.00
Construction Services (10%)				$ 90,000.00
Total Cost				**$ 1,076,000.00**

Notes:

1. 5% contingency incorporated into quantities
2. Prices inflated/deflated due to project size and/or constructability
3. Original unit prices are adapted using rounded averages from the TVY N Airport Rd. Extension Ph. I Project
4. Cost of NEPA documentation encompassed within contingency

Project Title	Project No.	Program	Recurrence
NW Apron/Taxilane Expansion (Ph. I) – Design/Construction	11	N/A	N/A

Project Description: Expansion of the existing apron and new taxilanes in an area identified for future hangar development.
Project Justification: To support future hangar development and improve aircraft circulation between hangars and the taxiway.

Projected Timeline	Design Start Date	Construction Start Date	CIP Year
	2028	2028	2028

Estimated Costs	NEPA Documentation	Construction	Design & Construction Administration	Utilities	Expenses	Contingency	Estimated Cost at Completion
	$10,000	$1,576,000	$410,000	-	-	$463,000	$2,459,000

Anticipated Funding	AIP Entitlement	AIP Discretionary	BIL	State Apportionment	SLCDA	UDOA
	$212,900	$1,557,580	-	-	$688,520	-

			NW Apron/Taxilane Expansion (Ph. I) – Design/Construction	
WORK ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL AMOUNT
Mobilization & Demobilization	LS	1	$ 114,000.00	$ 114,000.00
Construction Signs, Barricades, Warning Lights & Flagging	LS	1	$ 46,000.00	$ 46,000.00
Unclassified Excavation	CY	10,230	$31.00	$ 317,130.00
Unsuitable Excavation (1-foot Depth)	SY	1,534	$15.00	$ 23,005.50
12" Cobble Stabilization	SY	4,610	$36.00	$ 165,960.00
Subbase Course	CY	5,580	$41.00	$ 228,780.00
Aggregate Base Course	CY	3,030	$50.00	$ 151,500.00
Bituminous Surface Course	TON	4,240	$120.00	$ 508,800.00
Pavement Marking (Permanent) with Retroreflective Beads	LS	1	N/A	$ 20,000.00
Contingency (30%)				$ 473,000.00
Total Direct/Construction Costs				**$ 2,049,000.00**
Design Costs (10%)				$ 205,000.00
Construction Services (10%)				$ 205,000.00
Total Cost				**$ 2,459,000.00**

Notes:

1. 5% contingency incorporated into quantities
2. Prices inflated/deflated due to project size and/or constructability
3. Original unit prices are adapted using rounded averages from the TVY N Airport Rd. Extension Ph. I Project
4. Pavement section taken from SVRA Apron Rehabilitation (2012)
5. Cost of NEPA documentation encompassed within contingency

Project Title	Project No.	Program	Recurrence
T-Hangar (Row "E") – Design/Construction	12	N/A	N/A

Project Description: Design and construction of a new T-hangar row designated as row "E". **Project Justification:** To support future hangar development and improve aircraft circulation between hangars and the taxiway.

Projected Timeline	Design Start Date	Construction Start Date	CIP Year
	2028	2028	2028

Estimated Costs	NEPA Documentation	Construction	Design & Construction Administration	Utilities	Expenses	Contingency	Estimated Cost at Completion
	$5,000	$4,230,000	$1,100,000	-	-	$1,265,000	$6,600,000

Anticipated Funding	AIP Entitlement	AIP Discretionary	BIL	State Apportionment	SLCDA	UDOA
	-	-	-	-	$6,600,000	-

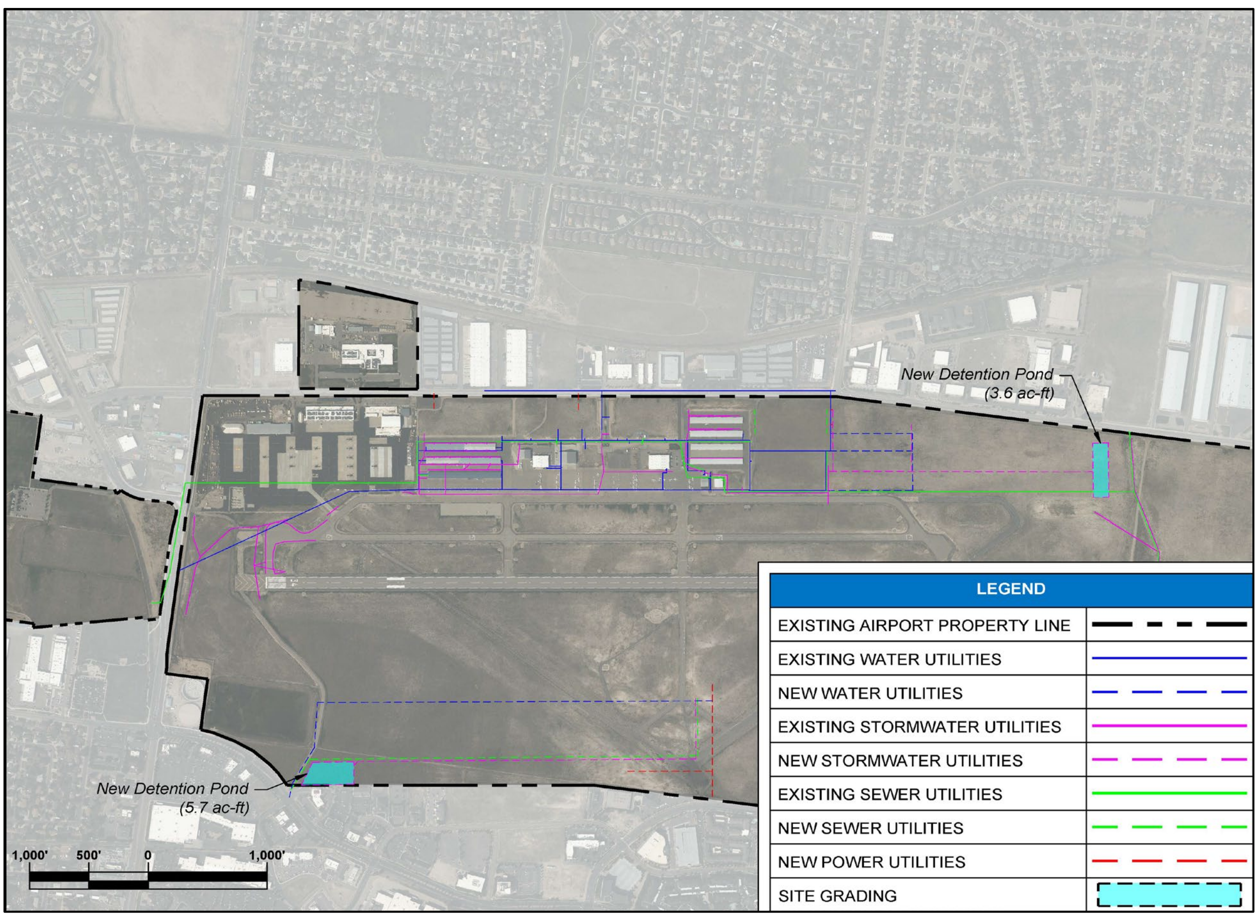
Project Title	Project No.	Program	Recurrence
Utility Infrastructure Expansion (Ph. II)	13	N/A	N/A

Project Description: The second phase of utility improvements focusing on extending sanitary sewer, power, potable water, and stormwater infrastructure to lay the groundwork for future development including a potential airport traffic control tower on the east side of the airfield. This phase also involves the establishment of two new stormwater detention ponds, with one situated on the northwest side of U42 and the other on the southeast side.
Project Justification: As U42 continues to accommodate a growing number of based aircraft and aeronautical users, the extension of essential utilities will be required to serve future development.

Projected Timeline	Design Start Date	Construction Start Date	CIP Year
	2029	2029	2029

Estimated Costs	NEPA Documentation	Construction	Design & Construction Administration	Utilities	Expenses	Contingency	Estimated Cost at Completion
	$10,000	-	-	$2,661,500	-	$788,540	$3,459,950

Anticipated Funding	AIP Entitlement	AIP Discretionary	BIL	State Apportionment	SLCDA	UDOA
	-	-	-	-	$3,459,950	-



Project Title	Project No.	Program	Recurrence
Taxiway A4 Realignment - Design/Construction	14	N/A	N/A

Project Description: Redesign and reconstruction of Taxiway A4.
Project Justification: To ensure operational safety and reduce the potential for runway incursions at U42, this project involves realigning Taxiway A4 into a standard 90-degree configuration, in compliance with current FAA design standards.

Projected Timeline	Design Start Date	Construction Start Date	CIP Year
	2029	2029	2029

Estimated Costs	NEPA Documentation	Construction	Design & Construction Administration	Utilities	Expenses	Contingency	Estimated Cost at Completion
	$5,000	$640,000	$166,000	-	-	$187,000	$998,000

Anticipated Funding	AIP Entitlement	AIP Discretionary	BIL	State Apportionment	SLCDA	UDOA
	$150,000	$748,200	-	-	-	$99,800

			Taxiway A4 Realignment - Design/Construction	
WORK ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL AMOUNT
Mobilization & Demobilization	LS	1	$ 29,000.00	$ 29,000.00
Construction Signs, Barricades, Warning Lights & Flagging	LS	1	$ 12,000.00	$ 12,000.00
Asphalt Removal	SY	24,300	$ 10.00	$ 243,000.00
Unclassified Excavation	CY	2,440	$ 31.00	$ 75,640.00
Unsuitable Excavation (1-foot Depth)	SY	820	$ 15.00	$ 12,300.00
12" Cobble Stabilization	SY	820	$ 36.00	$ 29,520.00
Subbase Course	CY	1,270	$ 41.00	$ 52,070.00
Aggregate Base Course	CY	690	$ 50.00	$ 34,500.00
Bituminous Surface Course	TON	1,180	$ 120.00	$ 141,600.00
Pavement Marking (Permanent) with Retroreflective Beads	LS	1	N/A	$ 10,000.00
Contingency (30%)				$ 192,000.00
Total Direct/Construction Costs				**$ 832,000.00**
Design Costs (10%)				$ 83,000.00
Construction Services (10%)				$ 83,000.00
Total Cost				**$ 998,000.00**

Notes:

1. Unit Prices higher/lower due to project size and/or constructability
2. Original unit prices are adapted using rounded averages from the TVY N Airport Rd. Extension Ph. I Project
3. Costs are in 2023 dollars
4. Cost of NEPA documentation encompassed within contingency

Project Title	Project No.	Program	Recurrence
NW Apron/Taxilane Expansion (Ph. II) – Design/Construction	15	N/A	N/A

Project Description: The second phase of apron and taxilane expansion on the north side of U42.
Project Justification: To support additional hangar development and improve aircraft circulation between hangar facilities and the airfield.

Projected Timeline	Design Start Date	Construction Start Date	CIP Year
	2029	2029	2029

Estimated Costs	NEPA Documentation	Construction	Design & Construction Administration	Utilities	Expenses	Contingency	Estimated Cost at Completion
	$10,000	$1,447,000	$376,000	-	-	$425,000	$2,258,000

Anticipated Funding	AIP Entitlement	AIP Discretionary	BIL	State Apportionment	SLCDA	UDOA
	-	$1,625,760	-	-	$632,240	-

			NW Apron/Taxilane Expansion (Ph. II) – Design/Construction	
WORK ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL AMOUNT
Mobilization & Demobilization	LS	1	$ 104,000.00	$ 104,000.00
Construction Signs, Barricades, Warning Lights & Flagging	LS	1	$ 43,000.00	$ 43,000.00
Unclassified Excavation	CY	9,560	$ 31.00	$ 296,360.00
Unsuitable Excavation (1-foot Depth)	SY	3,190	$ 15.00	$ 47,850.00
12" Cobble Stabilization	SY	3,190	$ 36.00	$ 114,840.00
Subbase Course	CY	5,220	$ 41.00	$ 214,020.00
Aggregate Base Course	CY	2,830	$ 50.00	$ 141,500.00
Bituminous Surface Course	TON	3,960	$ 120.00	$ 475,200.00
Pavement Marking (Permanent) with Retroreflective Beads	LS	1	N/A	$ 10,000.00
Contingency (30%)				$ 435,000.00
Total Direct/Construction Costs				**$ 1,882,000.00**
Design Costs (10%)				$ 188,000.00
Construction Services (10%)				$ 188,000.00
Total Cost				**$ 2,258,000.00**

Notes:

1. Unit Prices higher/lower due to project size and/or constructability
2. Original unit prices are adapted using rounded averages from the TVY N Airport Rd. Extension Ph. I Project
3. Costs are in 2023 dollars
4. Pavement section is from South Valley Regional Airport Apron Rehabilitation (2012)
5. Cost of NEPA documentation encompassed within contingency

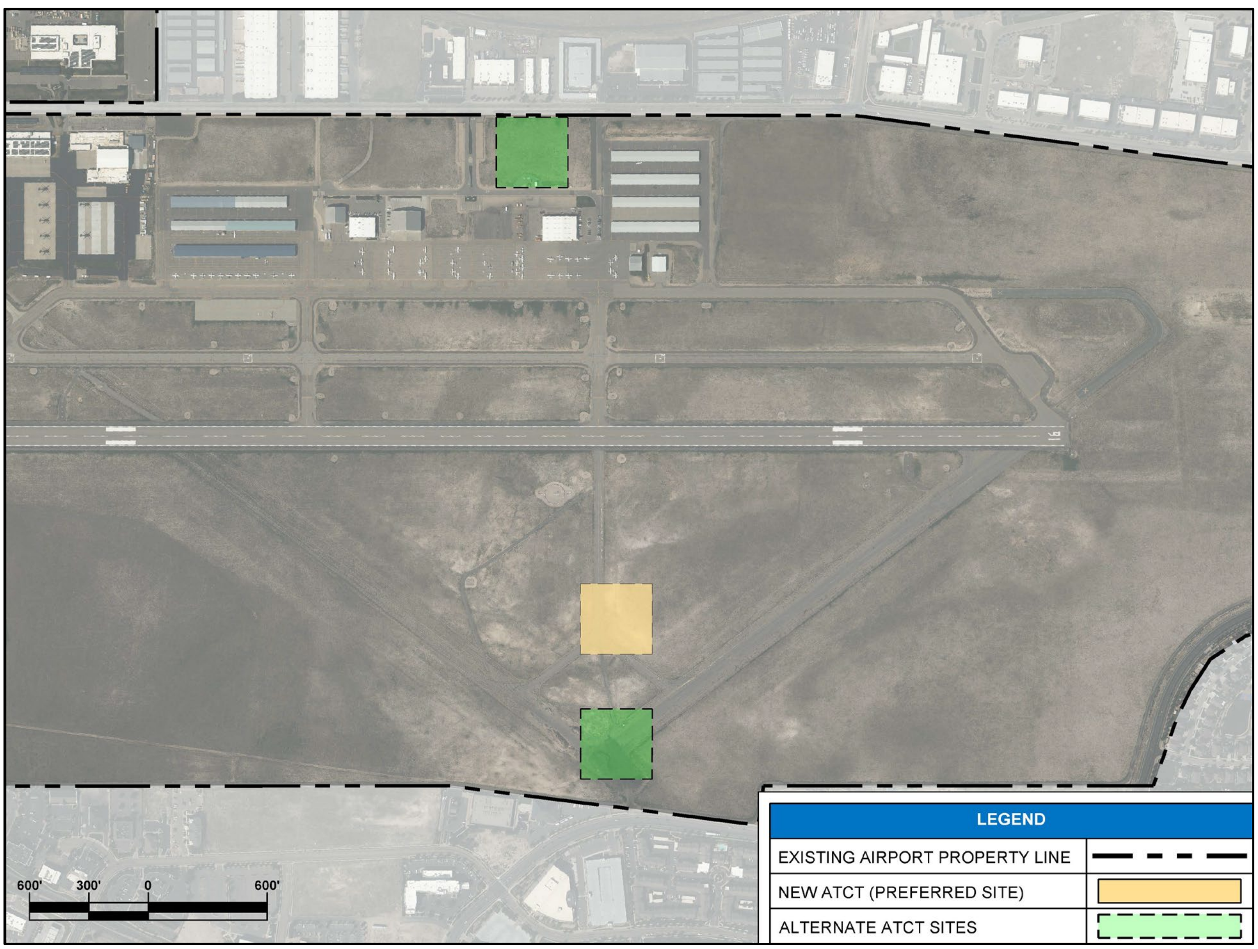
Project Title	Project No.	Program	Recurrence
Airport Traffic Control Tower – Environmental Assessment	16	N/A	N/A

Project Description: At the time of this Master Plan, the level of environmental review for Project #15 (Airport Traffic Control Tower - Design/Construction) is not yet determined. Therefore, an environmental assessment is included for planning and budgetary purposes.
Project Justification: To evaluate and document the expected environmental impacts of a new airport traffic control tower in a location determined by Project #6 (Airport Traffic Control Tower Siting Study).

Projected Timeline	Design Start Date	Construction Start Date	CIP Year
	N/A	N/A	2029

Estimated Costs	NEPA Documentation	Construction	Design & Construction Administration	Utilities	Expenses	Contingency	Estimated Cost at Completion
	$1,000,000	-	-	-	-	-	$1,000,000

Anticipated Funding	AIP Entitlement	AIP Discretionary	BIL	State Apportionment	SLCDA	UDOA
	$150,000	$525,000	-	-	$325,000	-



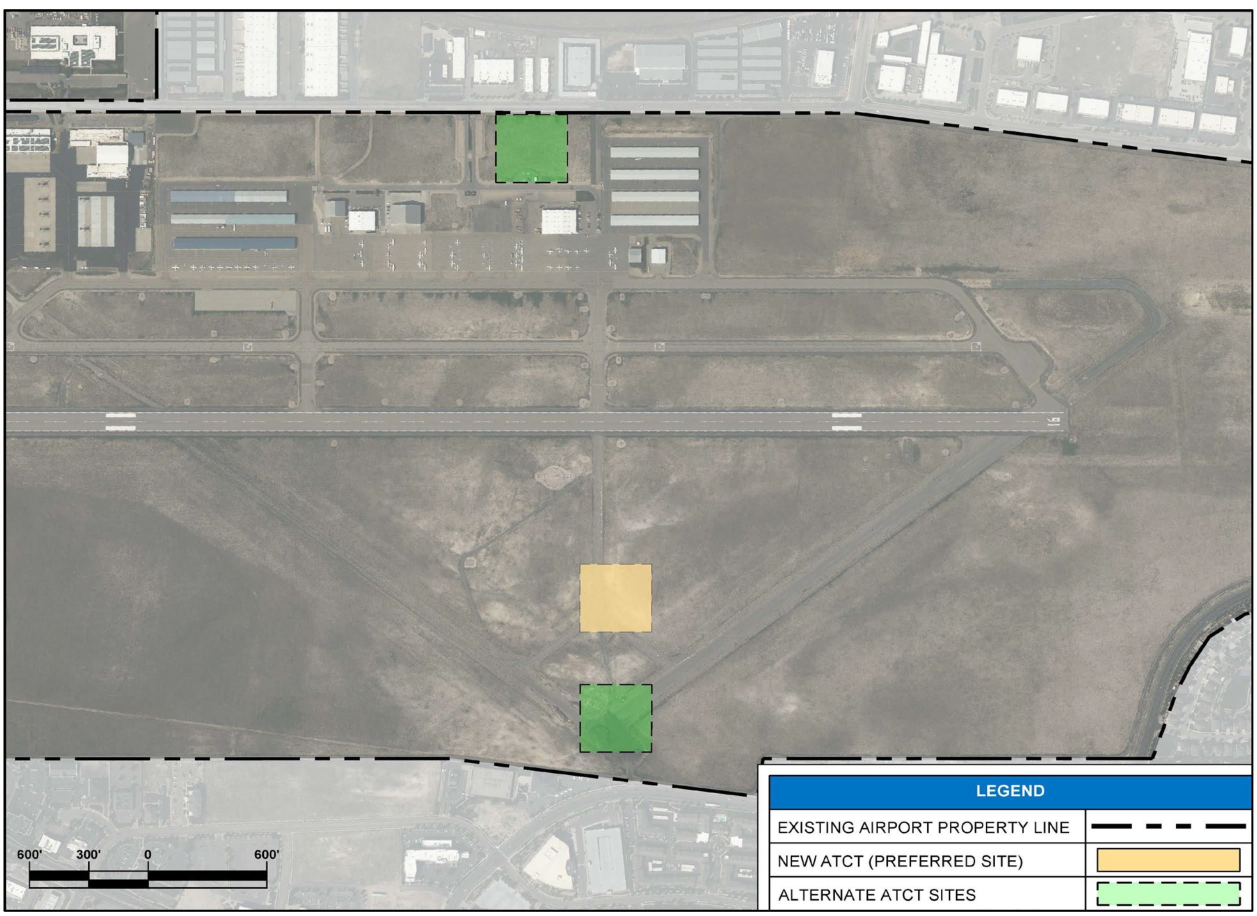
Project Title	Project No.	Program	Recurrence
Airport Traffic Control Tower - Design/Construction	17	N/A	N/A

Project Description: The design and construction of a modern and efficient control tower at U42 is essential for the safe and smooth management of airport traffic operations.
Project Justification: Airports with similar airspace challenges as U42 generally have an Airport Traffic Control Tower (ATCT) if they have more than 200 based aircraft and/or 80,000 operations. At the time of this writing, U42 has approximately 71,000 annual operations and 177 based aircraft. It is expected that U42 will exceed the 200-based aircraft/80,000 annual operations benchmarks within the near or mid-term planning period.

Projected Timeline	Design Start Date	Construction Start Date	CIP Year
	2030	2030	2030

Estimated Costs	NEPA Documentation	Construction	Design & Construction Administration	Utilities	Expenses	Contingency	Estimated Cost at Completion
	-	$5,793,000	$2,034,000	-	-	$2,348,000	$10,175,000

Anticipated Funding	AIP Entitlement	AIP Discretionary	BIL	State Apportionment	SLCDA	UDOA
	$150,000	$6,718,125	-	-	$3,306,875	-



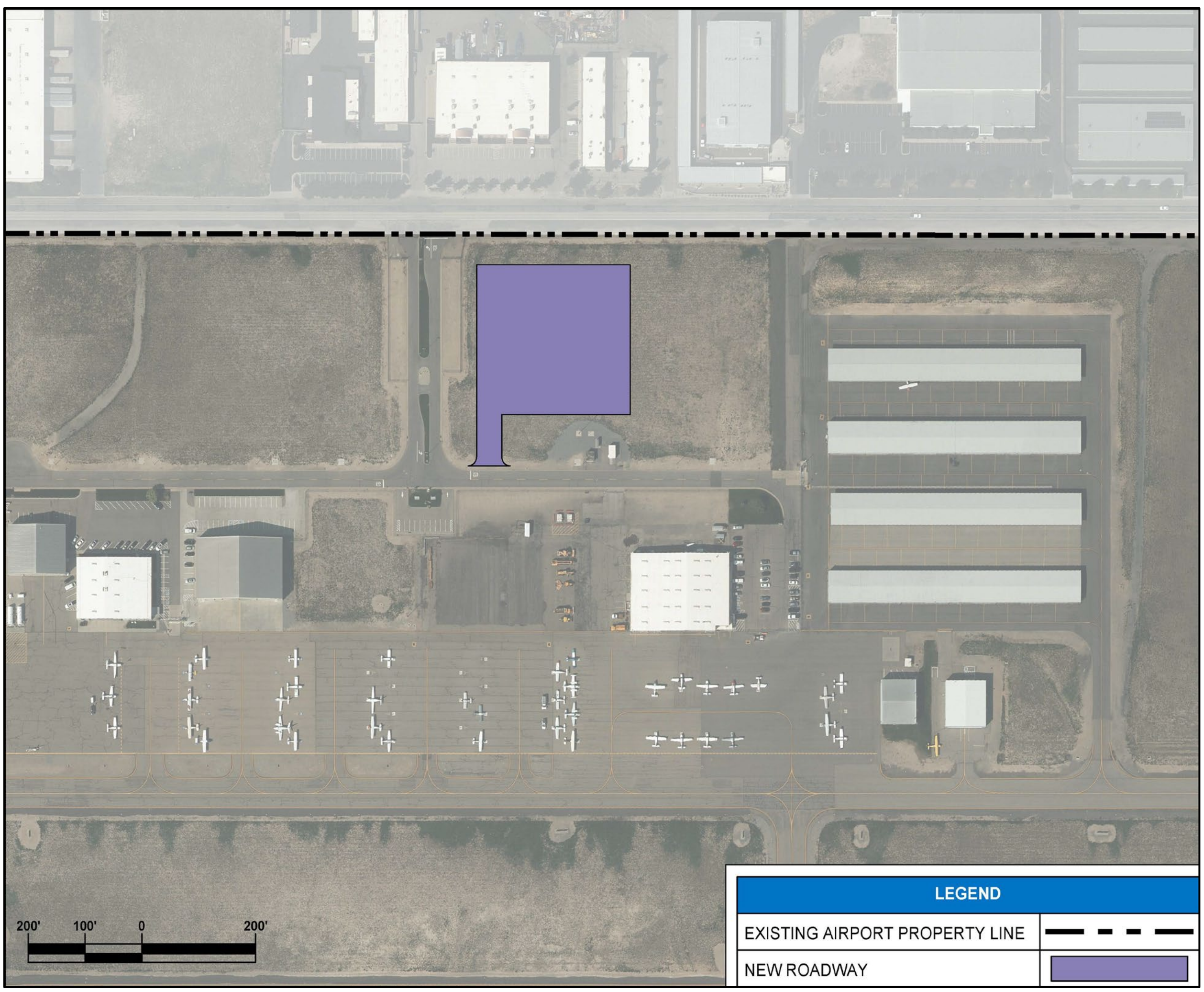
Project Title	Project No.	Program	Recurrence
Airport Entrance Roadway/Auto Parking - Design/Construction	18	N/A	N/A

Project Description: Design and construction of auto parking facilities and roadway infrastructure at U42.
Project Justification: To accommodate auto parking requirements for the planning period.

Projected Timeline	Design Start Date	Construction Start Date	CIP Year
	2031	2031	2031

Estimated Costs	NEPA Documentation	Construction	Design & Construction Administration	Utilities	Expenses	Contingency	Estimated Cost at Completion
	$10,000	$659,000	$172,000	-	-	$188,000	$1,029,000

Anticipated Funding	AIP Entitlement	AIP Discretionary	BIL	State Apportionment	SLCDA	UDOA
	-	-	-	-	$1,029,000	-



			Airport Entrance Roadway/Auto Parking - Design/Construction	
WORK ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL AMOUNT
Mobilization & Demobilization	LS	1	$ 48,000.00	$ 48,000.00
Construction Signs, Barricades, Warning Lights & Flagging	LS	1	$ 20,000.00	$ 20,000.00
Unclassified Excavation	CY	4,540	$ 31.00	$ 140,740.00
Unsuitable Excavation (1-foot Depth)	SY	1,520	$ 15.00	$ 22,800.00
12" Cobble Stabilization	SY	1,520	$ 36.00	$ 54,720.00
Subbase Course	CY	2,600	$ 41.00	$ 106,600.00
Aggregate Base Course	CY	1,410	$ 50.00	$ 70,500.00
Bituminous Surface Course	TON	1,540	$ 120.00	$ 184,800.00
Pavement Marking (Permanent) with Retroreflective Beads	LS	1	N/A	$ 10,000.00
Contingency (30%)				$ 198,000.00
Total Direct/Construction Costs				**$ 857,000.00**
Design Costs (10%)				$ 86,000.00
Construction Services (10%)				$ 86,000.00
Total Cost				**$ 1,029,000.00**

Notes:

1. Unit Prices higher/lower due to project size and/or constructability
2. Original unit prices are adapted using rounded averages from the TVY N Airport Rd. Extension Ph. I Project
3. Costs are in 2023 dollars
4. Cost of NEPA documentation encompassed within contingency

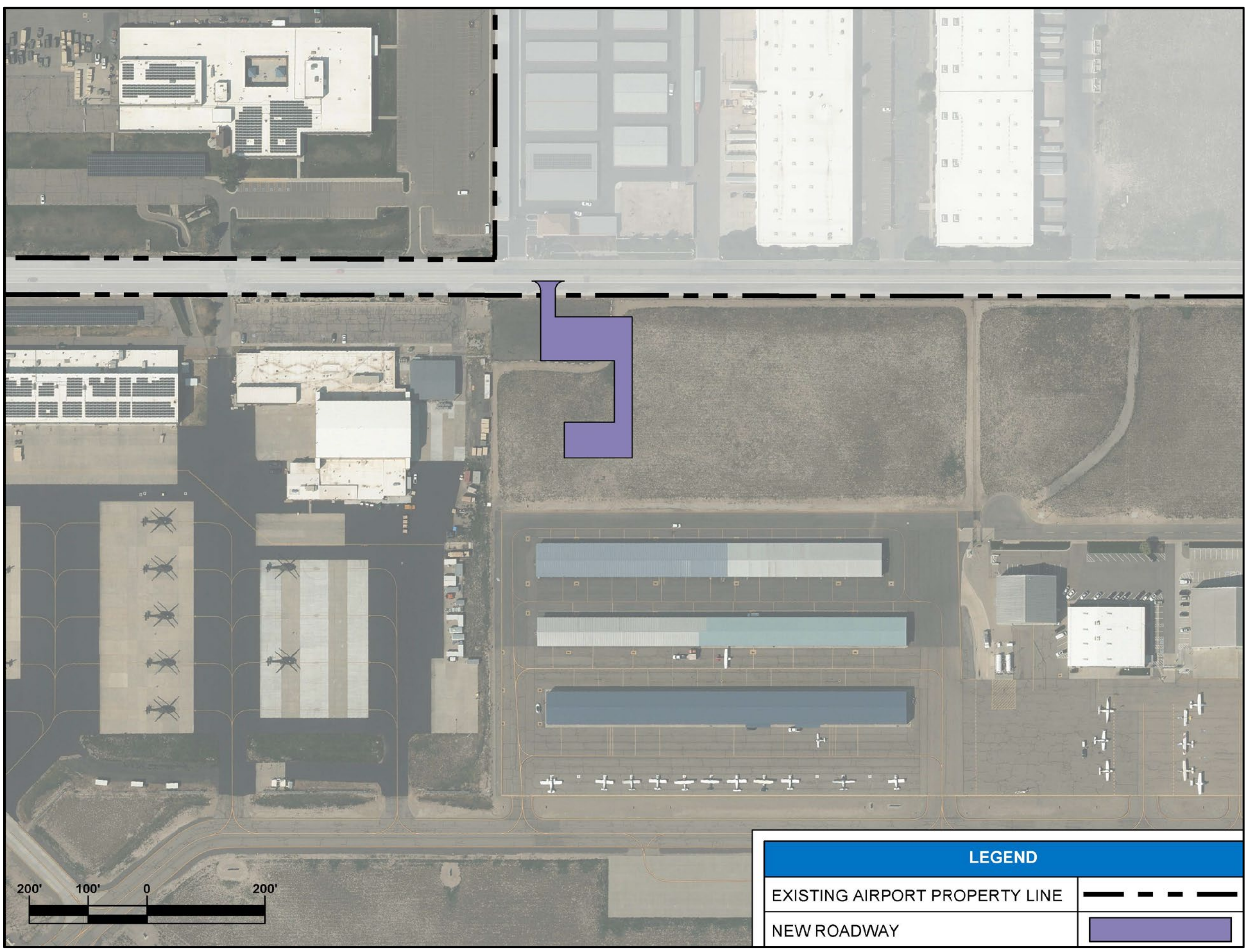
Project Title	Project No.	Program	Recurrence
Maintenance/Operations Building Roadway/Auto Parking - Design/Construction	19	N/A	N/A

Project Description: Project Description: Design and construction of airside pavement that connects Project #21 (Maintenance/Operations Building - Design/Construction) to the airfield.
Project Justification: To provide auto and equipment access between Project #21 (Maintenance/Operations Building - Design/Construction) and the airfield.

Projected Timeline	Design Start Date	Construction Start Date	CIP Year
	2031	2031	2031

Estimated Costs	NEPA Documentation	Construction	Design & Construction Administration	Utilities	Expenses	Contingency	Estimated Cost at Completion
	$5,000	$256,000	$66,000	-	-	$72,000	$399,000

Anticipated Funding	AIP Entitlement	AIP Discretionary	BIL	State Apportionment	SLCDA	UDOA
	-	-	-	-	$399,000	-



			Maintenance/Operations Building Roadway/Auto Parking - Design/Construction	
WORK ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL AMOUNT
Mobilization & Demobilization	LS	1	$ 19,000.00	$ 19,000.00
Construction Signs, Barricades, Warning Lights & Flagging	LS	1	$ 8,000.00	$ 8,000.00
Unclassified Excavation	CY	1,600	$ 31.00	$ 49,600.00
Unsuitable Excavation (1-foot Depth)	SY	600	$ 15.00	$ 9,000.00
12" Cobble Stabilization	SY	600	$ 36.00	$ 21,600.00
Subbase Course	CY	1,000	$ 41.00	$ 41,000.00
Aggregate Base Course	CY	500	$ 50.00	$ 25,000.00
Bituminous Surface Course	TON	600	$ 120.00	$ 72,000.00
Pavement Marking (Permanent) with Retroreflective Beads	LS	1	N/A	$ 10,000.00
Contingency (30%)				$ 77,000.00
Total Direct/Construction Costs				**$ 333,000.00**
Design Costs (10%)				$ 33,000.00
Construction Services (10%)				$ 33,000.00
Total Cost				**$ 399,000.00**

Notes:

1. Unit Prices higher/lower due to project size and/or constructability
2. Original unit prices are adapted using rounded averages from the TVY N Airport Rd. Extension Ph. I Project
3. Costs are in 2023 dollars
4. Cost of NEPA documentation encompassed within contingency

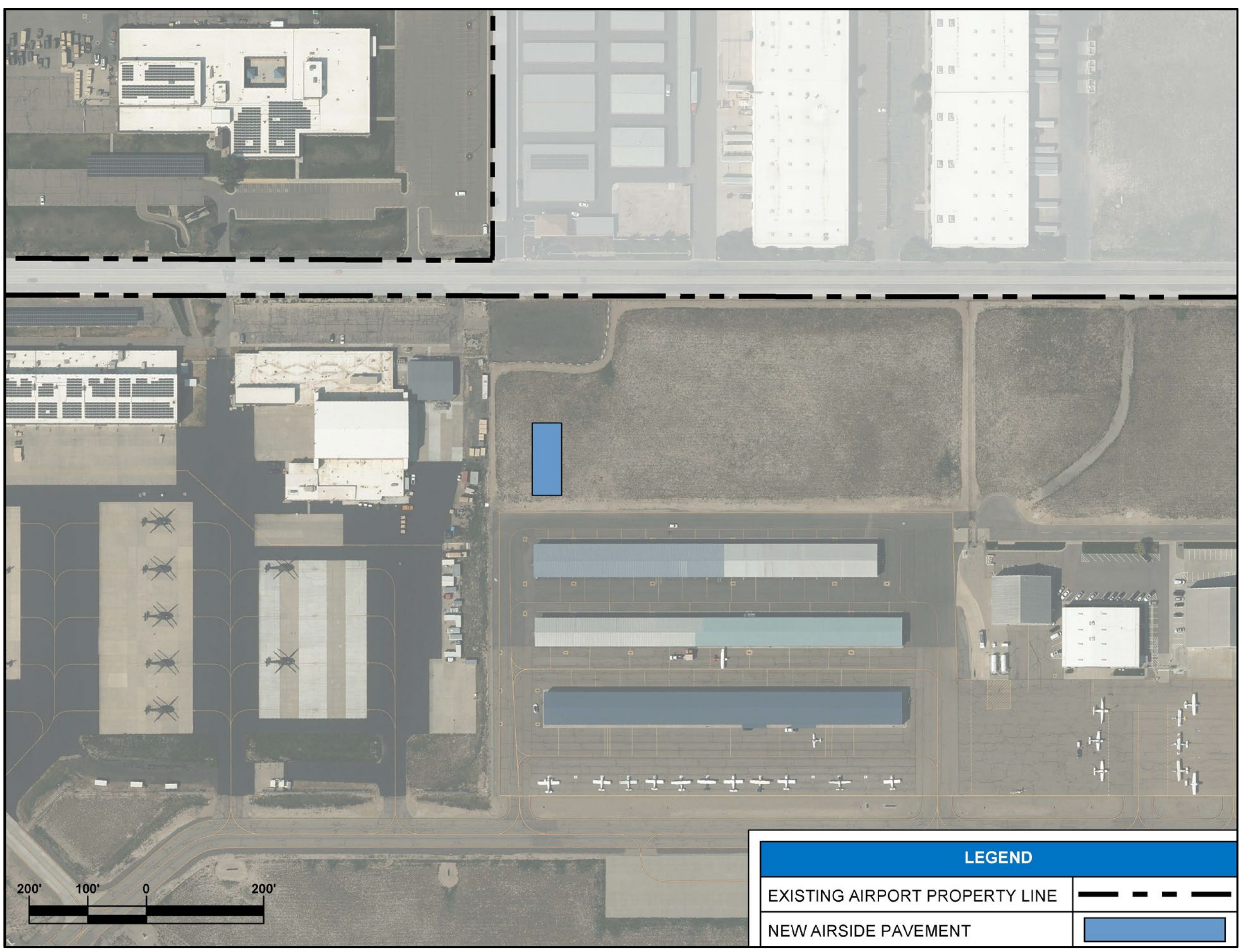
Project Title	Project No.	Program	Recurrence
Maintenance/Operations Building Airside Pavement - Design/Construction	20	N/A	N/A

Project Description: Design and construction of airside pavement that connects Project #21 (Maintenance/Operations Building - Design/Construction) to the airfield.
Project Justification: To provide auto and equipment access between Project #21 (Maintenance/Operations Building - Design/Construction) and the airfield.

Projected Timeline	Design Start Date	Construction Start Date	CIP Year
	2031	2031	2031

Estimated Costs	NEPA Documentation	Construction	Design & Construction Administration	Utilities	Expenses	Contingency	Estimated Cost at Completion
	$5,000	$72,000	$18,000	-	-	$17,000	$112,000

Anticipated Funding	AIP Entitlement	AIP Discretionary	BIL	State Apportionment	SLCDA	UDOA
	-	-	-	-	$112,000	-



			Maintenance/Operations Building Airside Pavement - Design/Construction	
WORK ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL AMOUNT
Mobilization & Demobilization	LS	1	$ 6,000.00	$ 6,000.00
Construction Signs, Barricades, Warning Lights & Flagging	LS	1	$ 3,000.00	$ 3,000.00
Unclassified Excavation	CY	410	$ 31.00	$ 12,710.00
Unsuitable Excavation (1-foot Depth)	SY	140	$ 15.00	$ 2,100.00
12" Cobble Stabilization	SY	140	$ 36.00	$ 5,040.00
Subbase Course	CY	230	$ 41.00	$ 9,430.00
Aggregate Base Course	CY	130	$ 50.00	$ 6,500.00
Bituminous Surface Course	TON	140	$ 120.00	$ 16,800.00
Pavement Marking (Permanent) with Retroreflective Beads	LS	1	N/A	$ 10,000.00
Contingency (30%)				$ 22,000.00
Total Direct/Construction Costs				**$ 94,000.00**
Design Costs (10%)				$ 9,000.00
Construction Services (10%)				$ 9,000.00
Total Cost				**$ 112,000.00**

Notes:

1. Unit Prices higher/lower due to project size and/or constructability
2. Original unit prices are adapted using rounded averages from the TVY N Airport Rd. Extension Ph. I Project
3. Costs are in 2023 dollars
4. Cost of NEPA documentation encompassed within contingency

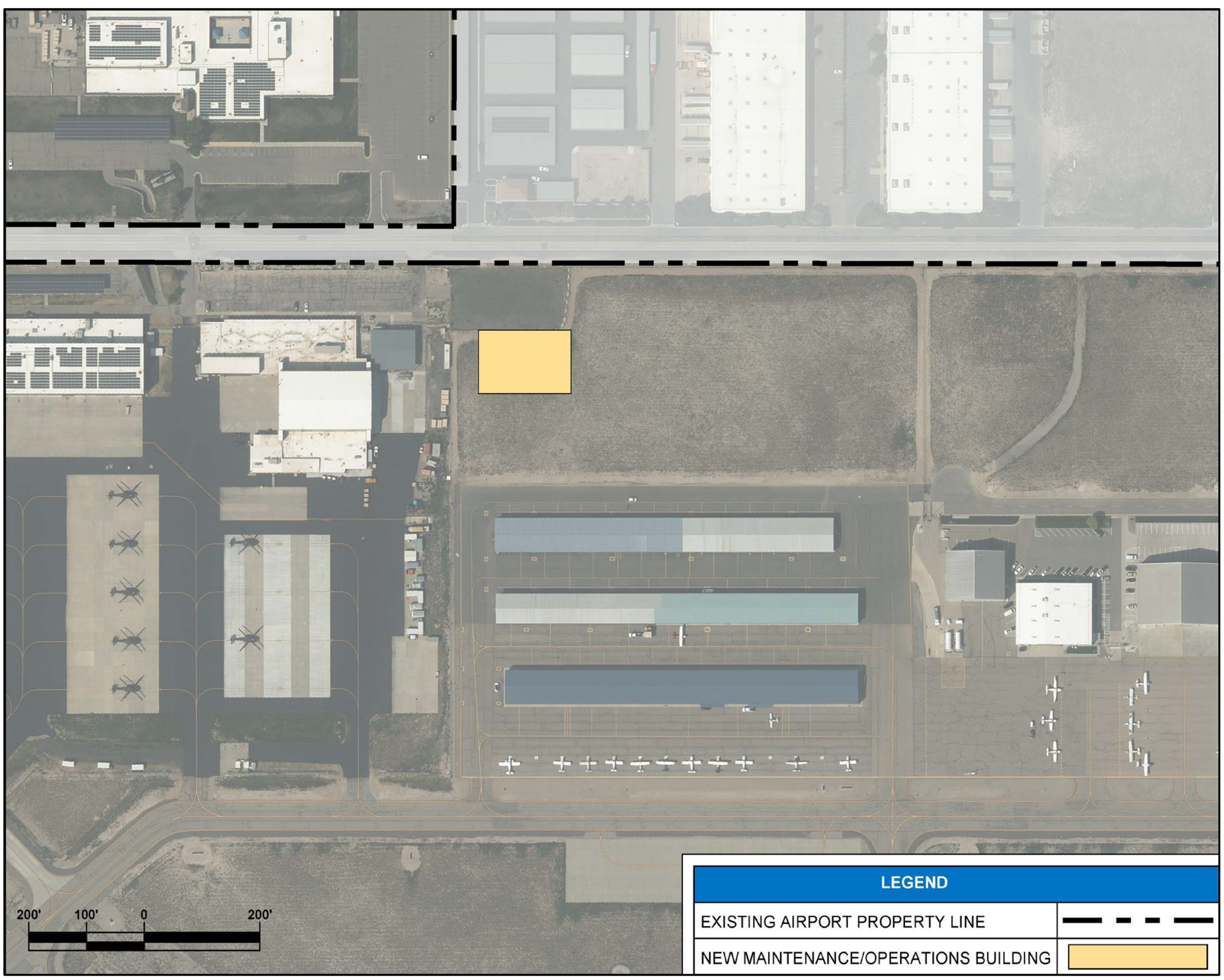
Project Title	Project No.	Program	Recurrence
Maintenance/Operations Building - Design/Construction	21	N/A	N/A

Project Description: Design and construction of an aircraft maintenance and operations building.
Project Justification: An upgraded maintenance and operations facility designed to facilitate the storage of necessary equipment and materials is imperative to bolster the airport's capability to service both based and transient aircraft.

Projected Timeline	Design Start Date	Construction Start Date	CIP Year
	2032	2032	2032

Estimated Costs	NEPA Documentation	Construction	Design & Construction Administration	Utilities	Expenses	Contingency	Estimated Cost at Completion
	$10,000	$5,313,000	$2,125,200	-	-	$3,187,790	$10,626,000

Anticipated Funding	AIP Entitlement	AIP Discretionary	BIL	State Apportionment	SLCDA	UDOA
	-	-	-	-	$10,626,000	-



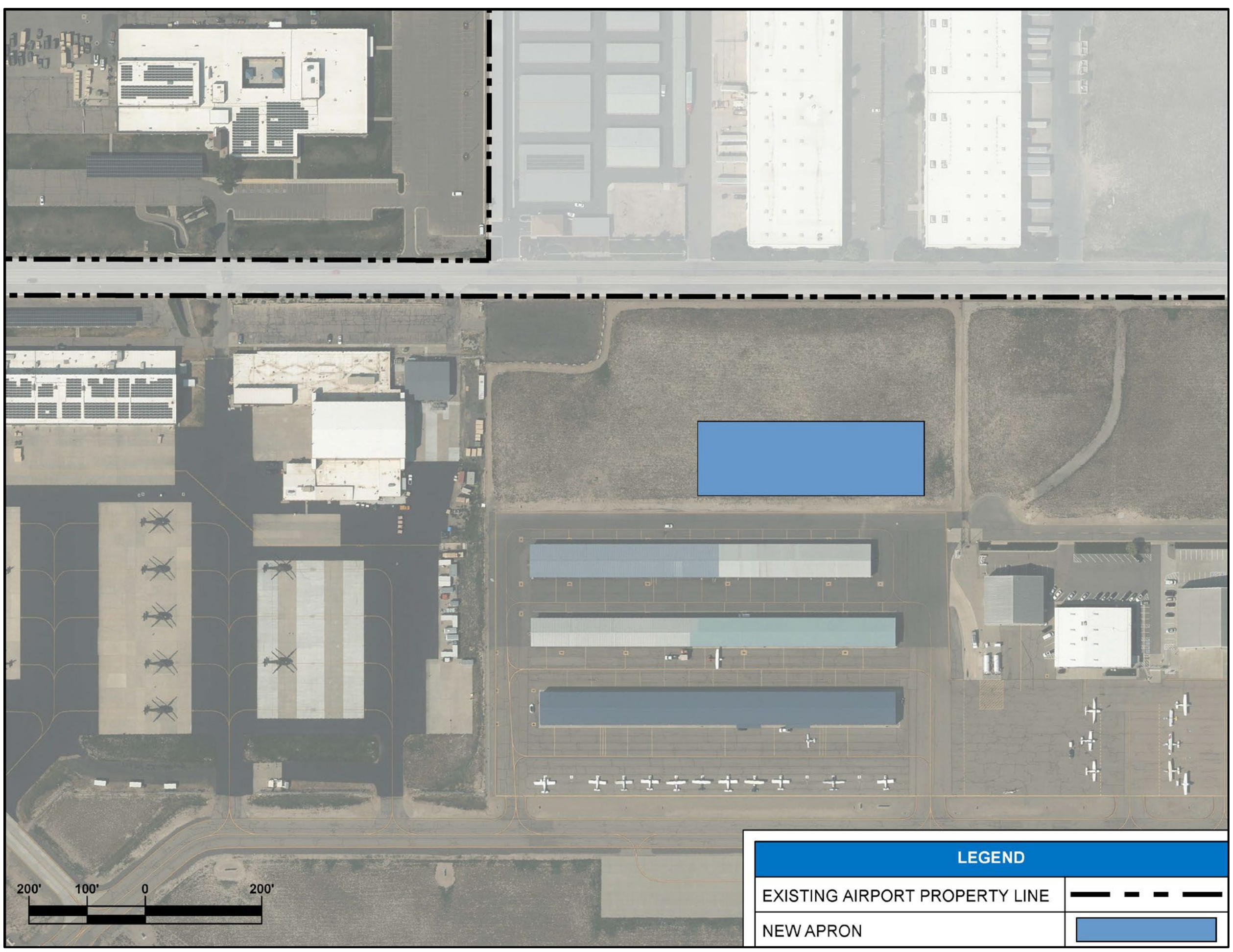
Project Title	Project No.	Program	Recurrence
General Aviation Apron Expansion – Design/Construction	22	N/A	N/A

Project Description: Expansion of the general aviation apron accessible via taxilanes from Project #3 (SW Apron/Taxilane Expansion – Design/Construction) to accommodate a potential aviation tenant and their aircraft.
Project Justification: To provide adequate aircraft parking and circulation in concert with the development of a portion of the area identified in Project #2 (Utility Infrastructure Expansion (Ph. 1) and Site Grading).

Projected Timeline	Design Start Date	Construction Start Date	CIP Year
	2032	2032	2032

Estimated Costs	NEPA Documentation	Construction	Design & Construction Administration	Utilities	Expenses	Contingency	Estimated Cost at Completion
	$5,000	$515,000	$134,000	-	-	$150,000	$804,000

Anticipated Funding	AIP Entitlement	AIP Discretionary	BIL	State Apportionment	SLCDA	UDOA
	$150,000	$573,600	-	-	$80,400	-



			General Aviation Apron Expansion – Design/Construction	
WORK ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL AMOUNT
Mobilization & Demobilization	LS	1	$ 37,000.00	$ 37,000.00
Construction Signs, Barricades, Warning Lights & Flagging	LS	1	$ 15,000.00	$ 15,000.00
Unclassified Excavation	CY	3,350	$ 31.00	$ 103,850.00
Unsuitable Excavation (1-foot Depth)	SY	1,120	$ 15.00	$ 16,800.00
12" Cobble Stabilization	SY	1,120	$ 36.00	$ 40,320.00
Subbase Course	CY	1,830	$ 41.00	$ 75,030.00
Aggregate Base Course	CY	990	$ 50.00	$ 49,500.00
Bituminous Surface Course	TON	1,390	$ 120.00	$ 166,800.00
Pavement Marking (Permanent) with Retroreflective Beads	LS	1	N/A	$ 10,000.00
Contingency (30%)				$ 155,000.00
Total Direct/Construction Costs				**$ 670,000.00**
Design Costs (10%)				$ 67,000.00
Construction Services (10%)				$ 67,000.00
Total Cost				**$ 804,000.00**

Notes:

1. Unit Prices higher/lower due to project size and/or constructability
2. Original unit prices are adapted using rounded averages from the TVY N Airport Rd. Extension Ph. I Project
3. Costs are in 2023 dollars
4. Cost of NEPA documentation encompassed within contingency

Project Title	Project No.	Program	Recurrence
Fuel Farm Access Roadway – Design/Construction	23	N/A	N/A

Project Description: Design and construction of landside access from N Airport Rd and Project #24 (Fuel Farm - Design/Construction).
Project Justification: To ensure the safe flow of fuel transport vehicles to and from Project #24 (Fuel Farm – Design/Construction).

Projected Timeline	Design Start Date	Construction Start Date	CIP Year
	2032	2032	2032

Estimated Costs	NEPA Documentation	Construction	Design & Construction Administration	Utilities	Expenses	Contingency	Estimated Cost at Completion
	$5,000	$303,000	$78,000	-	-	$86,000	$472,000

Anticipated Funding	AIP Entitlement	AIP Discretionary	BIL	State Apportionment	SLCDA	UDOA
	-	-	-	-	$472,000	-

			Fuel Farm Access Roadway – Design/Construction	
WORK ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL AMOUNT
Mobilization & Demobilization	LS	1	$ 22,000.00	$ 22,000.00
Construction Signs, Barricades, Warning Lights & Flagging	LS	1	$ 9,000.00	$ 9,000.00
Unclassified Excavation	CY	1,650	$ 40.30	$ 66,495.00
Unsuitable Excavation (1-foot Depth)	SY	550	$ 19.50	$ 10,725.00
12" Cobble Stabilization	SY	550	$ 46.80	$ 25,740.00
Subbase Course	CY	1,130	$ 53.30	$ 60,229.00
Aggregate Base Course	CY	310	$ 65.00	$ 20,150.00
Bituminous Surface Course	TON	530	$ 156.00	$ 82,680.00
Pavement Marking (Permanent) with Retroreflective Beads	LS	1	N/A	$ 5,000.00
Contingency (30%)				$ 91,000.00
Total Direct/Construction Costs				**$ 394,000.00**
Design Costs (10%)				$ 39,000.00
Construction Services (10%)				$ 39,000.00
Total Cost				**$ 472,000.00**

Notes:

1. Unit Prices higher/lower due to project size and/or constructability
2. Original unit prices are adapted using rounded averages from the TVY N Airport Rd. Extension Ph. I Project
3. Costs are in 2023 dollars
4. Cost of NEPA documentation encompassed within contingency

Project Title	Project No.	Program	Recurrence
Fuel Farm – Design/Construction	24	N/A	N/A

Project Description: Design and construction of a new fuel farm at U42.
Project Justification: To address the inadequacies of the current fuel farm location and expand the capacity to meet accommodate fuel requirements associated with future activity levels.

Projected Timeline	Design Start Date	Construction Start Date	CIP Year
	2033	2033	2033

Estimated Costs	NEPA Documentation	Construction	Design & Construction Administration	Utilities	Expenses	Contingency	Estimated Cost at Completion
	$5,000	$174,000	$46,000	-	-	$48,000	$273,000

Anticipated Funding	AIP Entitlement	AIP Discretionary	BIL	State Apportionment	SLCDA	UDOA
	$150,000	-	-	-	$123,000	-

			Fuel Farm – Design/Construction	
WORK ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL AMOUNT
Mobilization & Demobilization	LS	1	$ 13,000.00	$ 13,000.00
Construction Signs, Barricades, Warning Lights & Flagging	LS	1	$ 6,000.00	$ 6,000.00
Unclassified Excavation	CY	1,050	$31.00	$ 32,550.00
Unsuitable Excavation (1-foot Depth)	SY	350	$15.00	$ 5,250.00
12" Cobble Stabilization	SY	350	$36.00	$ 12,600.00
Subbase Course	CY	600	$41.00	$ 24,600.00
Aggregate Base Course	CY	330	$50.00	$ 16,500.00
Bituminous Surface Course	TON	360	$120.00	$ 43,200.00
Pavement Marking (Permanent) with Retroreflective Beads	LS	1	N/A	$ 20,000.00
Contingency (30%)				$ 53,000.00
Total Direct/Construction Costs				**$ 227,000.00**
Design Costs (10%)				$ 23,000.00
Construction Services (10%)				$ 23,000.00
Total Cost				**$ 273,000.00**

Notes:

1. Unit Prices higher/lower due to project size and/or constructability
2. Original unit prices are adapted using rounded averages from the TVY N Airport Rd. Extension Ph. I Project
3. Pavement section taken from SVRA Apron Rehabilitation (2012)
4. New tanks are not included in estimate
5. Costs are in 2023 dollars
6. Cost of NEPA documentation encompassed within contingency

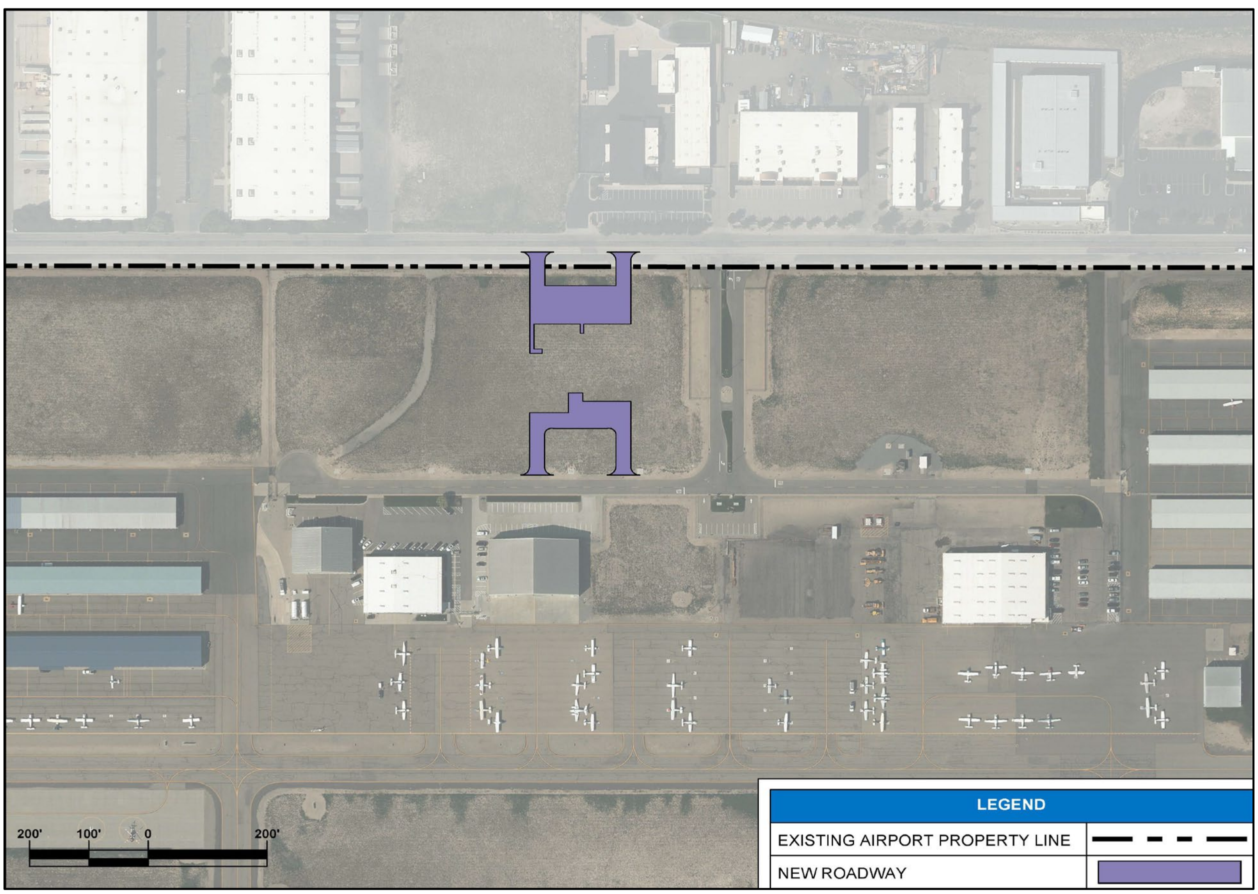
Project Title	Project No.	Program	Recurrence
Administration Building Roadway/Auto Parking – Design/Construction	25	N/A	N/A

Project Description: Design and construction of roadway and auto parking facilities for a new administration building at U42.
Project Justification: To provide adequate access and auto parking capacity to serve Project #26 (Administration Building – Design/Construction).

Projected Timeline	Design Start Date	Construction Start Date	CIP Year
	2033	2033	2033

Estimated Costs	NEPA Documentation	Construction	Design & Construction Administration	Utilities	Expenses	Contingency	Estimated Cost at Completion
	$5,000	$293,000	$76,000	-	-	$83,000	$457,000

Anticipated Funding	AIP Entitlement	AIP Discretionary	BIL	State Apportionment	SLCDA	UDOA
	-	-	-	-	$457,000	-



			Administration Building Roadway/Auto Parking – Design/Construction	
WORK ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL AMOUNT
Mobilization & Demobilization	LS	1	$ 21,000.00	$ 21,000.00
Construction Signs, Barricades, Warning Lights & Flagging	LS	1	$ 9,000.00	$ 9,000.00
Unclassified Excavation	CY	1,890	$ 31.00	$ 58,590.00
Unsuitable Excavation (1-foot Depth)	SY	630	$ 15.00	$ 9,450.00
12" Cobble Stabilization	SY	630	$ 36.00	$ 22,680.00
Subbase Course	CY	1,030	$ 41.00	$ 42,230.00
Aggregate Base Course	CY	560	$ 50.00	$ 28,000.00
Bituminous Surface Course	TON	780	$ 120.00	$ 93,600.00
Pavement Marking (Permanent) with Retroreflective Beads	LS	1	N/A	$ 7,500.00
Contingency (30%)				$ 88,000.00
Total Direct/Construction Costs				**$ 381,000.00**
Design Costs (10%)				$ 38,000.00
Construction Services (10%)				$ 38,000.00
Total Cost				**$ 457,000.00**

Notes:

1. Unit Prices higher/lower due to project size and/or constructability
2. Original unit prices are adapted using rounded averages from the TVY N Airport Rd. Extension Ph. I Project
3. Costs are in 2023 dollars
4. Cost of NEPA documentation encompassed within contingency

Project Title	Project No.	Program	Recurrence
Administration Building – Design/Construction	26	N/A	N/A

Project Description: Design and construction of an administration building, which will serve as a central administrative and operational hub for airport staff at U42.
Project Justification: To provide a modern and efficient on-site workspace for airport staff.

Projected Timeline	Design Start Date	Construction Start Date	CIP Year
	2033	2033	2033

Estimated Costs	NEPA Documentation	Construction	Design & Construction Administration	Utilities	Expenses	Contingency	Estimated Cost at Completion
	$10,000	$2,846,250	$1,138,500	-	-	$1,707,740	$5,692,500

Anticipated Funding	AIP Entitlement	AIP Discretionary	BIL	State Apportionment	SLCDA	UDOA
	$150,000	-	-	-	$5,542,500	-

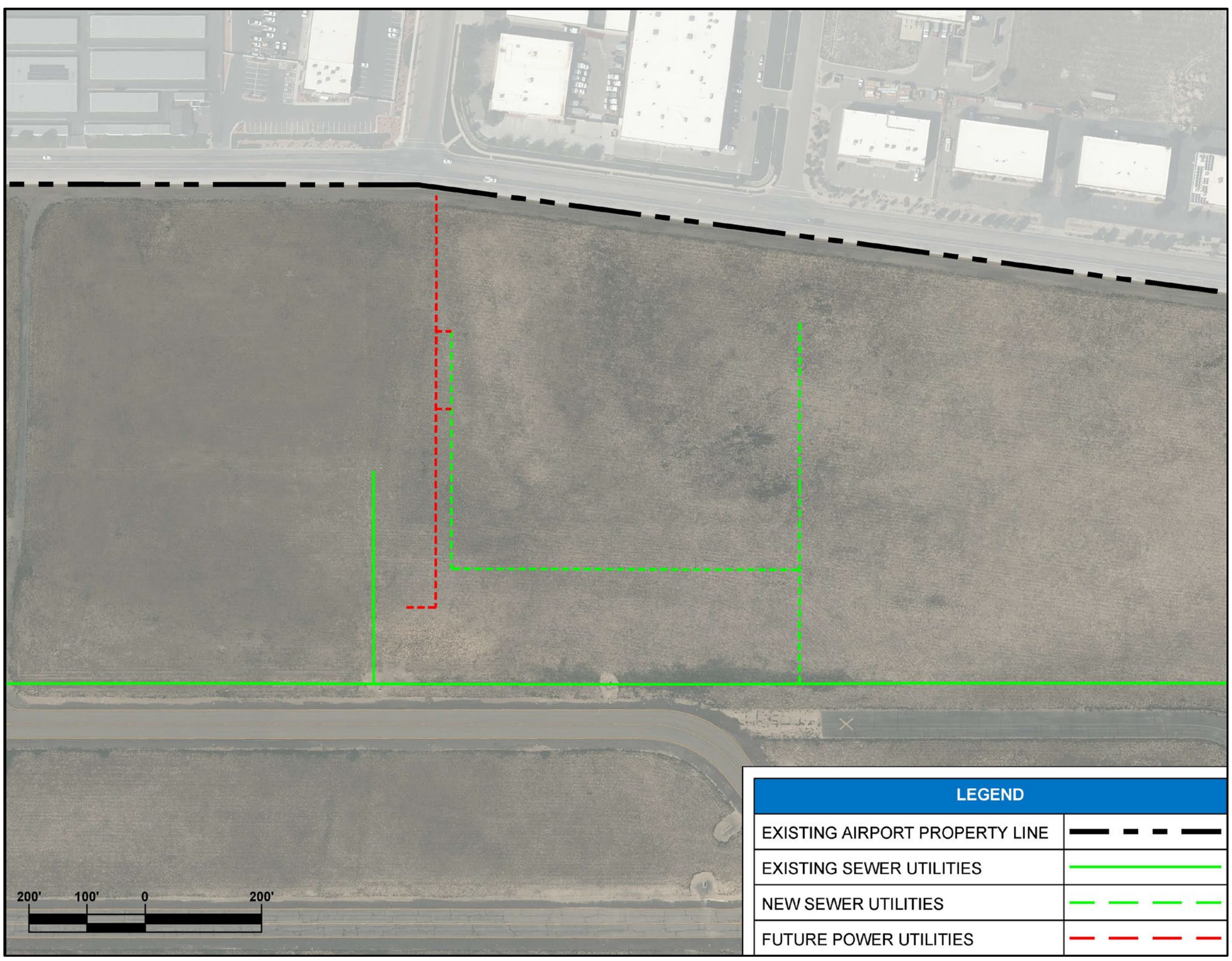
Project Title	Project No.	Program	Recurrence
Utility Infrastructure Expansion (Ph. III)	27	N/A	N/A

Project Description: The third phase of utility improvements focusing on extending sanitary sewer and power infrastructure to lay the groundwork for future apron expansion.
Project Justification: As U42 continues to accommodate a growing number of based aircraft and aeronautical users, the extension of essential utilities will be required to serve future development.

Projected Timeline	Design Start Date	Construction Start Date	CIP Year
	2034	2034	2034

Estimated Costs	NEPA Documentation	Construction	Design & Construction Administration	Utilities	Expenses	Contingency	Estimated Cost at Completion
	$5,000	-	-	$2,901,000	-	$860,800	$3,771,300

Anticipated Funding	AIP Entitlement	AIP Discretionary	BIL	State Apportionment	SLCDA	UDOA
	-	-	-	-	$3,771,300	-



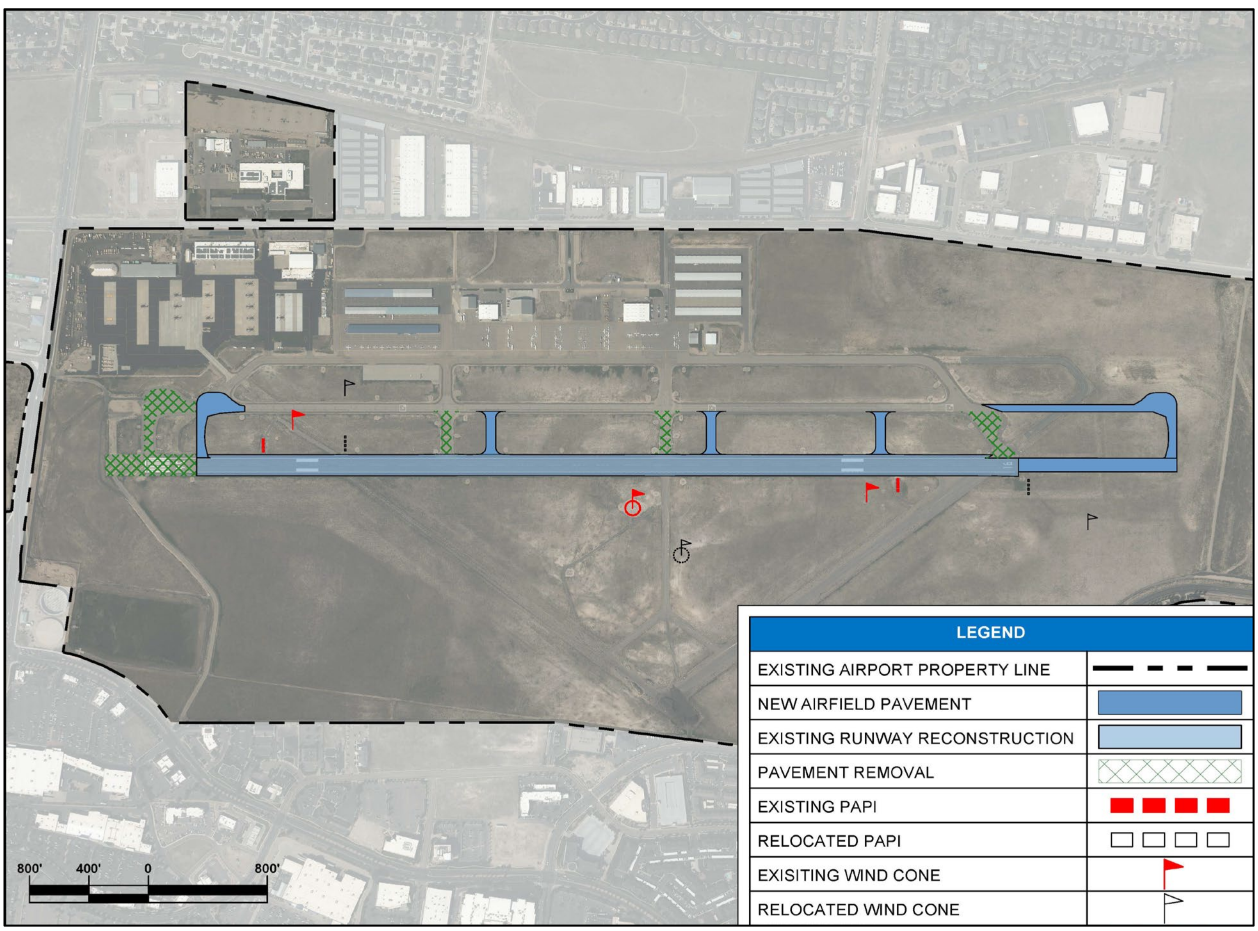
Project Title	Project No.	Program	Recurrence
Extend Runway 16-34 and Taxiway B to 6,600' - Environmental Assessment	28	Runway 16-34 Extension Program	N/A

Project Description: Conduct environmental assessment for the extension of Runway 16-34 to a length of 6,600 feet and Taxiway B to a full-length parallel of equal length. Design alternatives for this project were thoroughly explored and are presented in detail in **Appendix G, Runway 16-34 Extension/Shift Design Alternatives**. **Project Justification:** To evaluate and document the anticipated environmental impacts of extending Runway 16-34 and Taxiway B.

Projected Timeline	Design Start Date	Construction Start Date	CIP Year
	N/A	N/A	2034

Estimated Costs	NEPA Documentation	Construction	Design & Construction Administration	Utilities	Expenses	Contingency	Estimated Cost at Completion
	$350,000	-	-	-	-	-	$350,000

Anticipated Funding	AIP Entitlement	AIP Discretionary	BIL	State Apportionment	SLCDA	UDOA
	$150,000	$165,000	-	-	$35,000	-



Project Title	Project No.	Program	Recurrence
Extend Runway 16-34 and Taxiway B to 6,600' – Design/Construction	29	Runway 16-34 Extension Program	N/A

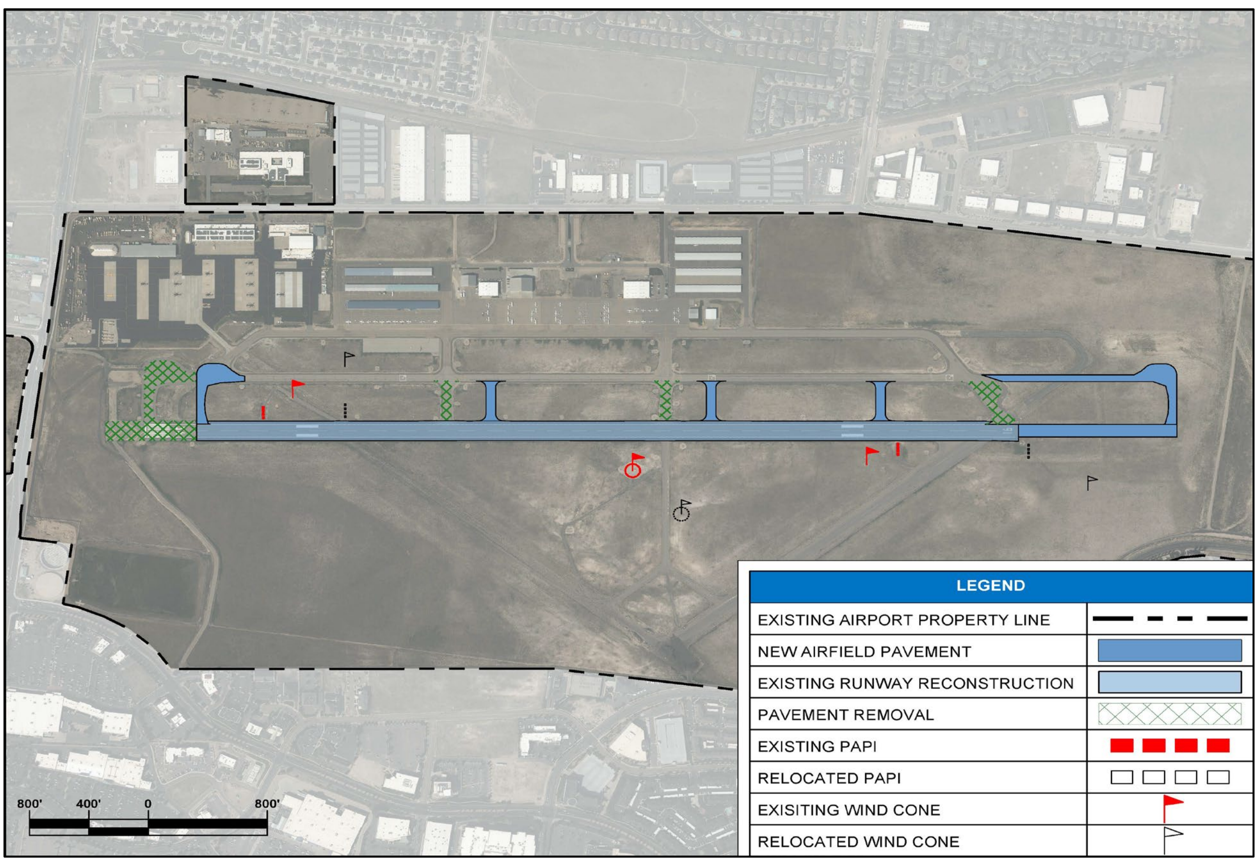
Project Description: The project involves extending Runway 16-34 and Taxiway B to a length of 6,600 feet, including NAVAID relocation, taxiway demolition, and new connector additions. It will be implemented through multiple projects over several years. Design alternatives for this project were thoroughly explored and are presented in detail in **Appendix G, Runway 16-34 Extension/Shift Design Alternatives**.

Project Justification: The extension of Runway 16-34 and Taxiway B is essential to accommodate the increasing demand from larger turboprop and business jet aircraft at U42. This initiative aims to enhance the airport's capacity, establishing U42 as a dependable reliever airport for Salt Lake City International.

Projected Timeline	Design Start Date	Construction Start Date	CIP Year
	2035	2035	2035

Estimated Costs	NEPA Documentation	Construction	Design & Construction Administration	Utilities	Expenses	Contingency	Estimated Cost at Completion
	-	$14,425,000	$3,784,000	-	-	$4,493,000	$22,702,000

Anticipated Funding	AIP Entitlement	AIP Discretionary	BIL	State Apportionment	SLCDA	UDOA
	$150,000	$20,881,800	-	-	$2,270,200	-



			Extend Runway 16-34 and Taxiway B to 6,600’ – Design/Construction	
WORK ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL AMOUNT
Mobilization & Demobilization	LS	1	$ 1,009,000.00	$ 1,009,000.00
Construction Signs, Barricades, Warning Lights & Flagging	LS	1	$ 409,000.00	$ 409,000.00
Pavement Removal	SY	40,160	$ 10.00	$ 401,600.00
Unclassified Excavation	CY	90,540	$ 31.00	$ 2,806,740.00
Unsuitable Excavation (1-foot Depth)	SY	20,530	$ 15.00	$ 307,950.00
12" Cobble Stabilization	SY	20,530	$ 36.00	$ 739,080.00
Subbase Course	CY	45,160	$ 41.00	$ 1,851,560.00
Aggregate Base Course	CY	27,180	$ 50.00	$ 1,359,000.00
Bituminous Surface Course	TON	45,340	$ 120.00	$ 5,440,800.00
Pavement Marking (Permanent) with Retroreflective Beads	LS	1	N/A	$ 100,000.00
Demolition and Relocation of PAPI Light Systems	EA	2	$ 50,000.00	$ 100,000.00
Demolition and Relocation of Wind Cone Systems	EA	3	$ 150,000.00	$ 450,000.00
Contingency (30%)				$ 4,493,000.00
Total Direct/Construction Costs				**$ 18,918,000.00**
Design Costs (10%)				$ 1,892,000.00
Construction Services (10%)				$ 1,892,000.00
Total Cost				**$ 22,702,000.00**

Notes:

1. Unit Prices higher/lower due to project size and/or constructability
2. Original unit prices are adapted using rounded averages from the TVY N Airport Rd. Extension Ph. I Project
3. Pavement Section used for taxiway construction taken from RS&H project "RW 16-34 and Taxiway A Rehabilitation" (2017)
4. Pavement Section used for runway construction created using FAARFIELD using G500, Beechcraft 350, and Cessna Citation X as design Aircraft
5. Wind cone system pricing taken from LEAN estimate provided for TVY Master Plan
6. Costs are in 2023 dollars

Project Title	Project No.	Program	Recurrence
Airport Master Plan Update	30	N/A	N/A

Project Description: Conducting an update to the Airport Master Plan that involves a comprehensive reassessment of activity and facility needs to build a long-term plan to guide sustainable future development.
Project Justification: The FAA advises updating airport master plans every 7-10 years or as needed to address changes in aviation activity. An updated master plan for U42 is crucial to align planned improvements with demand and maintain a safe operating environment for the long term.

Projected Timeline	Design Start Date	Construction Start Date	CIP Year
	N/A	N/A	2036

Estimated Costs	NEPA Documentation	Construction	Design & Construction Administration	Utilities	Expenses	Contingency	Estimated Cost at Completion
	-	-	-	-	$900,000	-	$900,000

Anticipated Funding	AIP Entitlement	AIP Discretionary	BIL	State Apportionment	SLCDA	UDOA
	$90,000	$720,000	-	-	$90,000	-

Project Title	Project No.	Program	Recurrence
NW Apron/Taxilane Expansion (Ph. III) – Design/Construction	31	N/A	N/A

Project Description: The third phase of apron and taxilane expansion on the north side of U42.
Project Justification: To support additional hangar development and improve aircraft circulation between hangar facilities and the airfield.

Projected Timeline	Design Start Date	Construction Start Date	CIP Year
	2037	2037	2037

Estimated Costs	NEPA Documentation	Construction	Design & Construction Administration	Utilities	Expenses	Contingency	Estimated Cost at Completion
	$10,000	$1,668,000	$434,000	-	-	$491,000	$2,603,000

Anticipated Funding	AIP Entitlement	AIP Discretionary	BIL	State Apportionment	SLCDA	UDOA
	$150,000	$1,724,160	-	-	$728,840	-

			NW Apron/Taxilane Expansion (Ph. III) – Design/Construction	
WORK ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL AMOUNT
Mobilization & Demobilization	LS	1	$ 120,000.00	$ 120,000.00
Construction Signs, Barricades, Warning Lights & Flagging	LS	1	$ 49,000.00	$ 49,000.00
Unclassified Excavation	CY	10,960	$ 31.00	$ 339,760.00
Unsuitable Excavation (1-foot Depth)	SY	3,660	$ 15.00	$ 54,900.00
12" Cobble Stabilization	SY	3,660	$ 36.00	$ 131,760.00
Subbase Course	CY	5,980	$ 41.00	$ 245,180.00
Aggregate Base Course	CY	3,240	$ 50.00	$ 162,000.00
Bituminous Surface Course	TON	4,540	$ 120.00	$ 544,800.00
Pavement Marking (Permanent) with Retroreflective Beads	LS	1	N/A	$ 20,000.00
Contingency (30%)				$ 501,000.00
Total Direct/Construction Costs				**$ 2,169,000.00**
Design Costs (10%)				$ 217,000.00
Construction Services (10%)				$ 217,000.00
Total Cost				**$ 2,603,000.00**

Notes:

1. Unit Prices higher/lower due to project size and/or constructability
2. Original unit prices are adapted using rounded averages from the TVY N Airport Rd. Extension Ph. I Project
3. Costs are in 2023 dollars
4. Pavement section is from South Valley Regional Airport Apron Rehabilitation (2012)
5. Cost of NEPA documentation encompassed within contingency

Project Title	Project No.	Program	Recurrence
NW Apron/Taxilane Expansion (Ph. IV) – Design/Construction	32	N/A	N/A

Project Description: The fourth phase of apron and taxilane expansion on the north side of U42.
Project Justification: To support additional hangar development and improve aircraft circulation between hangar facilities and the airfield.

Projected Timeline	Design Start Date	Construction Start Date	CIP Year
	2038	2038	2038

Estimated Costs	NEPA Documentation	Construction	Design & Construction Administration	Utilities	Expenses	Contingency	Estimated Cost at Completion
	$5,000	$801,000	$208,000	-	-	$236,000	$1,250,000

Anticipated Funding	AIP Entitlement	AIP Discretionary	BIL	State Apportionment	SLCDA	UDOA
	$150,000	$750,000	-	-	$350,000	-

			NW Apron/Taxilane Expansion (Ph. IV) – Design/Construction	
WORK ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL AMOUNT
Mobilization & Demobilization	LS	1	$ 58,000.00	$ 58,000.00
Construction Signs, Barricades, Warning Lights & Flagging	LS	1	$ 24,000.00	$ 24,000.00
Unclassified Excavation	CY	5,250	$ 31.00	$ 162,750.00
Unsuitable Excavation (1-foot Depth)	SY	1,750	$ 15.00	$ 26,250.00
12" Cobble Stabilization	SY	1,750	$ 36.00	$ 63,000.00
Subbase Course	CY	2,870	$ 41.00	$ 117,670.00
Aggregate Base Course	CY	1,550	$ 50.00	$ 77,500.00
Bituminous Surface Course	TON	2,180	$ 120.00	$ 261,600.00
Pavement Marking (Permanent) with Retroreflective Beads	LS	1	N/A	$ 10,000.00
Contingency (30%)				$ 241,000.00
Total Direct/Construction Costs				**$ 1,042,000.00**
Design Costs (10%)				$ 104,000.00
Construction Services (10%)				$ 104,000.00
Total Cost				**$ 1,250,000.00**

Notes:

1. Unit Prices higher/lower due to project size and/or constructability
2. Original unit prices are adapted using rounded averages from the TVY N Airport Rd. Extension Ph. I Project
3. Costs are in 2023 dollars.
4. Pavement section is from South Valley Regional Airport Apron Rehabilitation (2012)
5. Cost of NEPA documentation encompassed within contingency

Project Title	Project No.	Program	Recurrence
NW Access Roadway/Auto Parking (Ph. II) - Design/Construction	33	N/A	N/A

Project Description: The second phase of design and construction of roadway access and auto parking in an area identified for hangar development. The project is situated in an area where there is an existing access road with deteriorating pavement, which links to the airport perimeter road.
Project Justification: Improved roadway access and parking facilities are necessary to provide convenient access to future hangar development.

Projected Timeline	Design Start Date	Construction Start Date	CIP Year
	2039	2039	2039

Estimated Costs	NEPA Documentation	Construction	Design & Construction Administration	Utilities	Expenses	Contingency	Estimated Cost at Completion
	$5,000	$352,000	$92,000	-	-	$101,000	$550,000

Anticipated Funding	AIP Entitlement	AIP Discretionary	BIL	State Apportionment	SLCDA	UDOA
	-	-	-	-	$550,000	-

			NW Access Roadway/Auto Parking (Ph. II) - Design/Construction	
WORK ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL AMOUNT
Mobilization & Demobilization	LS	1	$ 26,000.00	$ 26,000.00
Construction Signs, Barricades, Warning Lights & Flagging	LS	1	$ 11,000.00	$ 11,000.00
Unclassified Excavation	CY	2,430	$ 31.00	$ 75,330.00
Unsuitable Excavation (1-foot Depth)	SY	810	$ 15.00	$ 12,150.00
12" Cobble Stabilization	SY	810	$ 36.00	$ 29,160.00
Subbase Course	CY	1,390	$ 41.00	$ 56,990.00
Aggregate Base Course	CY	750	$ 50.00	$ 37,500.00
Bituminous Surface Course	TON	820	$ 120.00	$ 98,400.00
Pavement Marking (Permanent) with Retroreflective Beads	LS	1	N/A	$ 5,000.00
Contingency (30%)				$ 106,000.00
Total Direct/Construction Costs				**$ 458,000.00**
Design Costs (10%)				$ 46,000.00
Construction Services (10%)				$ 46,000.00
Total Cost				**$ 550,000.00**

Notes:

1. Unit Prices higher/lower due to project size and/or constructability
2. Original unit prices are adapted using rounded averages from the TVY N Airport Rd. Extension Ph. I Project
3. Costs are in 2023 dollars
4. Cost of NEPA documentation encompassed within contingency

APPENDIX F

Utility Master Plan

Prepared by:

Prepared for:

SALT LAKE CITY DEPARTMENT OF AIRPORTS

RS&H

BOWEN COLLINS & ASSOCIATES

2024 SOUTH VALLEY REGIONAL AIRPORT UTILITY MASTER PLAN

February 2024

2024 South Valley Regional Airport Utility Master Plan

February 2024

Prepared for:

SALT LAKE CITY DEPARTMENT OF AIRPORTS

Prepared by:

RS&H

BOWEN COLLINS & ASSOCIATES

TABLE OF CONTENTS

Page No.

TABLE OF CONTENTS (continued)

Page No.

TABLE OF CONTENTS
(continued)

LIST OF TABLES

No. Title **Page No.**

LIST OF FIGURES

No. Title **Page No.**

CHAPTER 1
INTRODUCTION

BACKGROUND

The Salt Lake City Department of Airports (SLCDA) owns and operates the South Valley Regional Airport (SVRA) located in West Jordan City. The SLCDA commissioned RS&H to prepare a master plan for the airport in preparation for future development.

As part of development activities at SVRA, SLCDA will be responsible for providing utility services including water, sewer, storm drain, gas, electrical, and communications for any new facilities. To organize and coordinate the development of these utility services, RS&H retained Bowen, Collins & Associates (BC&A) to prepare a utility master plan to support the overall Airport Development Plan developed by RS&H.

SCOPE OF SERVICES

The general project scope involved an analysis of existing and projected utility infrastructure needs at SVRA. These utilities included water, sanitary sewer, storm drainage, natural gas, power, and communications. As part of the SVRA Utility Master Plan, the work performed by BC&A was organized into the following tasks:

Task 1 – Collect and review existing information from airport personnel and local utility service providers including West Jordan City, Dominion Energy, Rocky Mountain Power, and Century Link.

Task 2 – Verify the existing information collected as part of Task 2.1 for accuracy by field reconnaissance and measurement of the project.

Task 3 – Prepare existing utility drawings showing the location of existing and future utility mains and services and provide these drawings in electronic as well as paper format.

Task 4 – Determine future development plans and resulting utility demands for each of the six respective utilities using RS&H's proposed master plan of airport facilities at U42.

Task 5 – Evaluate the capacity of existing utilities to determine the impacts to the existing and proposed facilities resulting from development demands at the airport.

Task 6 – Coordinate with airport personnel to identify existing utilities that require relocation or upgrading. This includes a prioritized plan and cost estimate for extending or upgrading utility mains and services based on the phases of development at SVRA.

Task 7 – Preparation of a Utility Master Plan report to document the results of the present study effort.

Subsequent chapters of this report document the results of these tasks.

CHAPTER 2
AIRPORT DEVELOPMENT PLAN SUMMARY

INTRODUCTION

This chapter provides an overview of the existing and proposed airport improvements relevant to utility master planning. The evaluation provides a basis for projecting future utility requirements and upgrades, as outlined in subsequent chapters.

EXISTING CONDITIONS

Existing facilities at the airport consist of a variety of buildings including a Fixed Base Operations (FBO) hangar, Aeronautical Service hangar, T-hangars, corporate hangars, Army National Guard, and Airport maintenance facilities. All of the airport's existing facilities are located on the west side of the Airport property.

These facilities are supported by various utilities and infrastructure. The follow chapters provide details on each utility individually.

Existing Utilities Summary

The existing utilities supporting the operations at the airport are generally adequate with room to grow. Relatively minor improvements of the stormwater utility are necessary to accommodate existing operations at the airport's west side. These existing utilities include sanitary sewer, potable water, storm water, electrical power, natural gas, and communications.

FUTURE SYSTEM

As with all planning, the prediction of future conditions is inherently uncertain. BC&A, RS&H, and SLCDA have worked together on developing a reasonable and viable vision of both what will happen at the Airport and when it will happen. Based on this vision, the utility plan has been created. The plan, however, is flexible and can be modified and implemented as needed to accommodate the reality of how, where, and when future development occurs.

The projection of future development at the airport has been divided into three general phases based on when they are expected to occur. These phases are summarized in Table 2.1 along with the phase indicators presented in the RS&H airport development plan.

Table 2.1
Future Development Phases

Utility Development Phase	Corresponding RS&H Planning Phase
Next 10 Years	Phase 1A, 1B, 2A
Next 10-20 Years	Phase 2B
Beyond 20 Years	Phases 3 and 4

Anticipated Development in Each Phase

A summary of the development plan is provided here as context for the utility needs presented in the following chapters. Additional detail regarding the development plan can be found in the RS&H Planning Document.

Table 2.2
Airport Development Plan

Next 10 years
14 box hangars (west side)
13 corporate hangars (west side)
72 T-hangars (west side)
1 Fuel Farm /parking lot (west side)
1 maintenance building (west side)
1 flight school (west side)
1 office building (west side)
Next 10-20 years
48 T-hangars (west side)
Beyond 20 years
44 box hangars (west side)
5 large corporate style hangars (east side)
1 ATC (east side)
1 non-aeronautical campus (east side)

CHAPTER 3
WATER IMPROVEMENT PLAN

INTRODUCTION

This chapter provides an overview of the existing and future water infrastructure needs at the SVRA. The evaluation is based on mapping and water usage information provided by the SLCDA and West Jordan.

EXISTING SYSTEM

Water Demand

Existing water demands at SVRA are comprised of domestic and fire flow demands. Domestic demand consists of all indoor and outdoor demand for typical operations at the airport. This demand varies significantly depending on time of day and time of year. For evaluation purposes, average day demand (ADD), peak day demand (PDD), and peak hour demand (PHD) were determined for the existing airport water distribution system.

Existing water demands are summarized in Table 3.1 below.

Table 3.1
Existing Water Demands

Type	Demand (gpm)
ADD	6
PDD	20
PHD	30

Average Day Demand. Annual average day demand at SVRA was estimated using meter usage bills provided by the SLCDA. There are two water meters located at the SVRA. The two water meters were recently updated to reliably recorded usage data from April to October 2021 . This data was used to calculate the domestic average day demand.

Peak Day Demands. Peak day demand was estimated by applying a peaking factor of 3.3 to the ADD. This was developed by a statistical analysis of the airport's metered water usage data. Consideration was also given to the events held at the national guard facilities. Based on input from staff, these events disproportionately increase the water and sewer usage. The design factor selected for this evaluation exceeds the minimum peaking factor for West Jordan is 2.7 ADD to PDD as established by the Utah Department of Environmental Quality Division of Drinking Water.

Peak Hour Demands (PHD). Peak hour demand at SVRA was estimated by applying a peaking factor of 1.5 to the peak day demands. This factor was selected based on staff description of typical water usage patterns. No hourly data for water usage was available.

Fire Flow Requirements

Fire flow comprises the largest water demand at SVRA. The 2010 utility master plan identified a fire flow requirement of 2,500 gpm for existing infrastructure. This assumption was carried forward to this study.

EXISTING SYSTEM EVALUATION

Hydraulic Modeling

The SVRA water distribution system was modeled using InfoWater. The model was based on SLCDA's existing model, the estimated domestics and fire flow demands, and additional data from West Jordan. The model was used to evaluate the existing system against current demands.

UDDW Rule 309-510 requires that the SVRA water system meet two criteria:

Operating Pressures – The system must be capable of maintaining minimum system pressures during peak instantaneous demands (without fire flow). While the UDDW rule defines minimum pressure as 30 psi, BC&A recommends a minimum pressure of 60 psi to meet projected municipal demands.

Fire Flow – The system must be capable of producing the required fire flows during peak day demands with a residual system pressure of at least 20 psi.

Additionally, the City of West Jordan requires that system velocities remain below 10 fps.

Boundary Conditions. The SVRA water distribution system connects to the West Jordan distribution system at two locations shown in Figure 3.1. BC&A determined the static and residual water pressure at both locations. The results were used as boundary conditions for the model.

Model Results. Model results show the existing system adequately meets current PHD and peak day plus fire flow demands. Operating pressures during PHD conditions ranged from 100 – 117 psi and residual pressure during fire flow simulations ranged from 65-93 psi. During both simulations water velocities in the pipes stayed safely below 10 fps.

FUTURE SYSTEM

Water Demand

Existing water demands were projected forward based on anticipated uses from future development. The development plan summarized in Chapter 2 yields the projected demands shown here in Table 3.2

Table 3.2
Future Water Demands

Potable Water Demand Scenario	Existing (2023)	Next 10 Years (2033)	10-20 Years (2043)	Beyond 20 years (2043+)
Average Day Demand (gpm)	6	10	10	63
Peak Day Demand (gpm)	20	36	37	226
Peak Hour Demand (gpm)	30	54	56	339
Fire Flow Demand (gpm)	2500	2500	2500	2500

These overall demands are broken down further into the east side and west side of the airport since these will essentially act as separate water systems with independent connections to West Jordan's distribution system. The breakdown is shown in Table 3.3.

Table 3.3
Future Water Demands for the West and East Side of SVRA

West Side Water				
Potable Water Demand Scenario	**Existing (2023)**	**Next 10 Years (2033)**	**10-20 Years (2043)**	**Beyond 20 years (2043+)**
Average Day Demand (gpm)	6	10	10	15
Maximum Day Demand (gpm)	20	36	37	54
Peak Hour Demand (gpm)	30	54	56	81
Fire Flow Demand (gpm)	2500	2500	2500	2500
East Side Water				
Potable Water Demand Scenario	**Existing (2023)**	**Next 10 Years (2033)**	**10-20 Years (2043)**	**Beyond 20 years (2043+)**
Average Day Demand (gpm)	0	0	0	48
Maximum Day Demand (gpm)	0	0	0	172
Peak Hour Demand (gpm)	0	0	0	258
Fire Flow Demand (gpm)	0	0	0	3500

Fire Flow Requirements

The future development is anticipated to be like the existing development on the west side of the airport, so the fire flow demand did not increase. The development on the east of the airport, however, is less certain. To be safe, a fire flow demand of 3,500 gpm was assumed for the future east side water system.

FUTURE SYSTEM DESIGN

Hydraulic Modeling

The SVRA InfoWater model was modified to include the future development demands and the water mains were sized to carry the water demands while maintaining required pressures and velocities. The existing and recommended future system layout for the airport is shown in Figure 3.1.

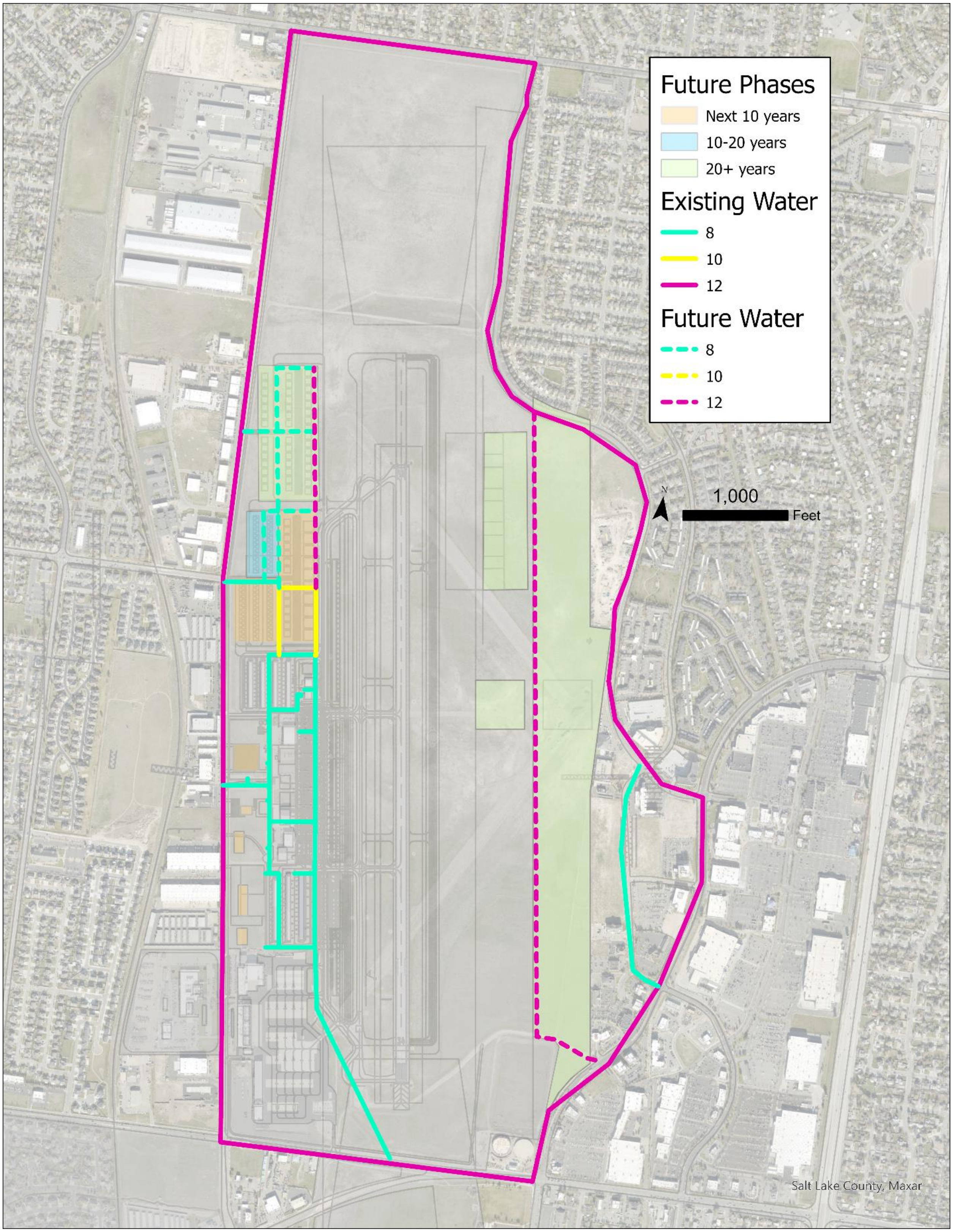


Figure 3.1 – Existing and Future Water Distribution System Layout

CHAPTER 4
SEWER IMPROVEMENT PLAN

INTRODUCTION

This chapter provides an overview of the existing and future wastewater infrastructure needs at the SVRA. The evaluation is based on mapping and information by the SLCDA.

EXISTING SYSTEM

Wastewater Flowrates

There is no wastewater flowrate data available for the airport. The next best source of information is water usage. Since the airport's potable water demand is primarily domestic use with little to no irrigation, it is safe to assume that most of the potable water usage returns to the sewer system and generally follows water usage patterns for peaking. For this evaluation, wastewater flows are assumed to be 90% of potable water demands.

For sewer, only the average day flows and peak hour flows are necessary for an evaluation of this system. Existing sewer flowrates are summarized in Table 4.1 below.

Table 4.1
Existing Sewer Flowrates

Type	Flowrate (gpm)
ADF	5
PHF	27

EXISTING SYSTEM EVALUATION

Wastewater Modeling

The SVRA wastewater collection system was modeled using InfoSWMM. The model was based on SLCDA's existing mapping and staff input on the collection system.

The criteria for sewer system performance is that it must be able to convey peak hour flows without the water level rising above the top of the pipe. Sewer mains must have at least 2 feet per second but not greater than 10 feet per second velocity for the design flows. The model was used to evaluate the system performance under peak hour conditions.

Model Results. Model results suggest the existing system adequately conveys current wastewater loads. The weakest link in the system is currently running at 33% of full capacity (67% capacity remaining). Generally, it is recommended that a sewer main should retain 85% capacity or less during peak hour flows.

The airport sewer system discharges to West Jordan's collection system. The City's 2019 Sewer Master Plan show the sewer lines receiving airport's flows have excess capacity.

Recommendations

The GIS mapping shows an existing sewer pump at the north end of the sewer system. However, 2009 record drawings reviewed as part of this effort state that the pump was removed. The mapping should be updated to reflect this system change.

The inverts recorded in the Airport's GIS database appeared to be perfectly consistent throughout the system. This is unusual for most sewer systems. This is not a problem by itself nor is it a problem if that is how the system really is constructed. However, there is a chance that it is too good be true and there are some problems with the system we don't know about. It is recommended that the Airport measure down from the rim to the lowest point in the manhole and compare these to the GIS mapping records to confirm the accuracy of the GIS.

FUTURE SYSTEM

Wastewater Flowrates

Existing sewer flowrates were projected forward based on anticipated uses from future development. The development plan summarized in Chapter 2 yields the projected flowrates shown here in Table 4.2.

Table 4.2
Future Sewer Flowrates

WEST SIDE SEWER				
Wastewater Flow Scenario	**Existing (2023)**	**Next 10 Years (2033)**	**10-20 Years (2043)**	**Beyond 20 years (2043+)**
Average Day Flows (gpm)	5	9	9	14
Peak Hour Flows (gpm)	27	49	50	73
EAST SIDE SEWER				
Wastewater Flow Scenario	**Existing (2023)**	**Next 10 Years (2033)**	**10-20 Years (2043)**	**Beyond 20 years (2043+)**
Average Day Flows (gpm)	0	0	0	43
Peak Hour Flows (gpm)	0	0	0	232

FUTURE SYSTEM DESIGN

Hydraulic Modeling

The SVRA InfoSWMM model was modified to include the future development loads and the sewer mains were sized to carry these loads while maintain less 75% of their full capacity. Where applicable, velocities were checked to ensure they fall within the 2-10 feet per second range. The existing and recommended future system layout for the airport is shown in Figure 4.1.

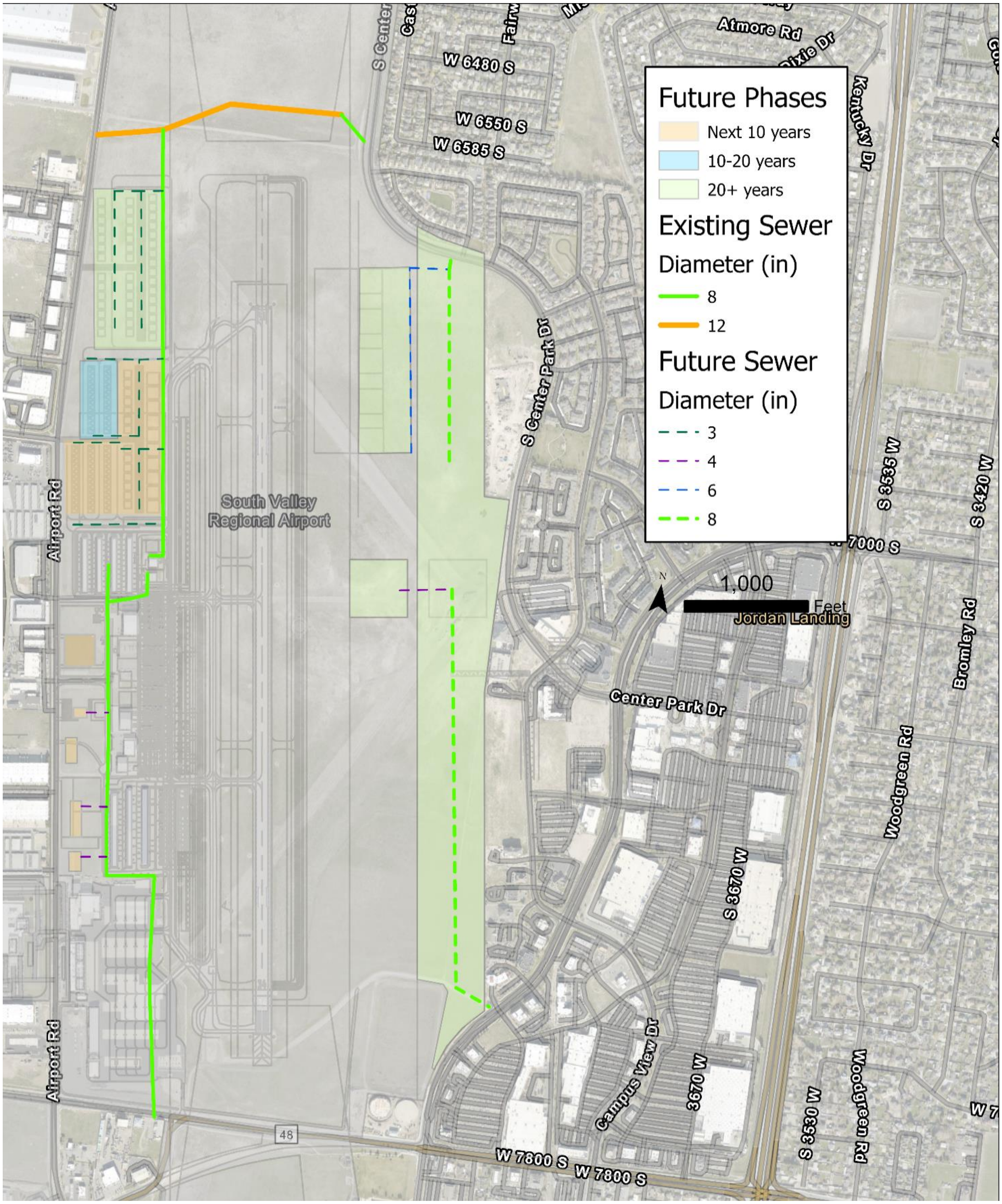


Figure 4.1 - Existing and Future Sewer System

Recommendations for Future Sewer

The future system connections to West Jordan's sewer system includes two points along South Center Park Drive. West Jordan's sewer master plan identified the sewer in this location to be undersized. The City has already identified the improvement for the area and it is in their plan to correct the issue. It is recommended that the Airport coordinate with the City on the timing of these future connections to ensure the planned improvements have been implemented.

CHAPTER 5
NATURAL GAS IMPROVEMENT PLAN

INTRODUCTION

This chapter provides an overview of the existing and future natural gas infrastructure needs at the SVRA. The evaluation is based on mapping and natural gas usage information provided by the SLCDA and Dominion Energy (DE).

EXISTING SYSTEM

Facilities and Usage

Based on a detailed review of the natural gas usage and billing information, there are seven metered service connections on airport property. Two of these services (SVR-5 and SVR-6) are private and the remaining five are under the department's account. Meter 26100465 on the department's account is for heated water at the wash bay west of building SVR-6. The service locations are shown on Figure 5.1 and summarized in Table 5.1

Table 5.1
Existing Natural Gas Demands

Dominion Energy Meter ID	Service Address	Building Name	Building Number	Square Feet (SF)	Peak Gas Usage Average Monthly Value (CCF[2]/day)	Estimated Heated Space (CF/h/SF)
26100465	7151 S 4400 W, West Jordan, UT 84088	Plane Wash	SVR-17	N/S	9	N/A
15600189	7221 S 4400 W, West Jordan, UT 84088	Maintenance Shop	SVR-7	22,477	76	0.03
15100663	7315 S 4450 W, West Jordan, UT 84084	Air Center	SVR-8	15,00	63	0.04
34600419	7365 S 4450 W, West Jordan, UT 84084	FBO	SVR-9	13,300	26	0.02
15907352	7403 S 4450 W, West Jordan, UT 84084	Air Center of Salt Lake	SVR-10	8,000	20	0.02

[1] Estimated usage based on total monthly usage of peak month, divided by billing days, converted to cubic feet, divided by 24 hours, multiplied by a peak month to peak hour factor of 2, and divided by reported square foot of heated space.

[2] CCF = Centum cubic feet

Because the two private hangar connections are not part of the airport's account, their usage cannot be summarized.

EXISTING AND FUTURE SYSTEM EVALUATION

The natural gas utility is owned and operated by DE up to and including the meter on the various buildings. BC&A related the future airport development plan to DE and their system engineers evaluated the airport's current usage, the private hangar's usage, and projected the future development usage.

DE indicated that the existing facilities are more than adequate to meet both the existing and future demands of the airport. The development on the east side of the airport will connect to the gas main on South Center Park Drive.

Because DE manages the facilities, they have stated that any costs associated with required upgrades to DE system will not be assessed to SLCDA.

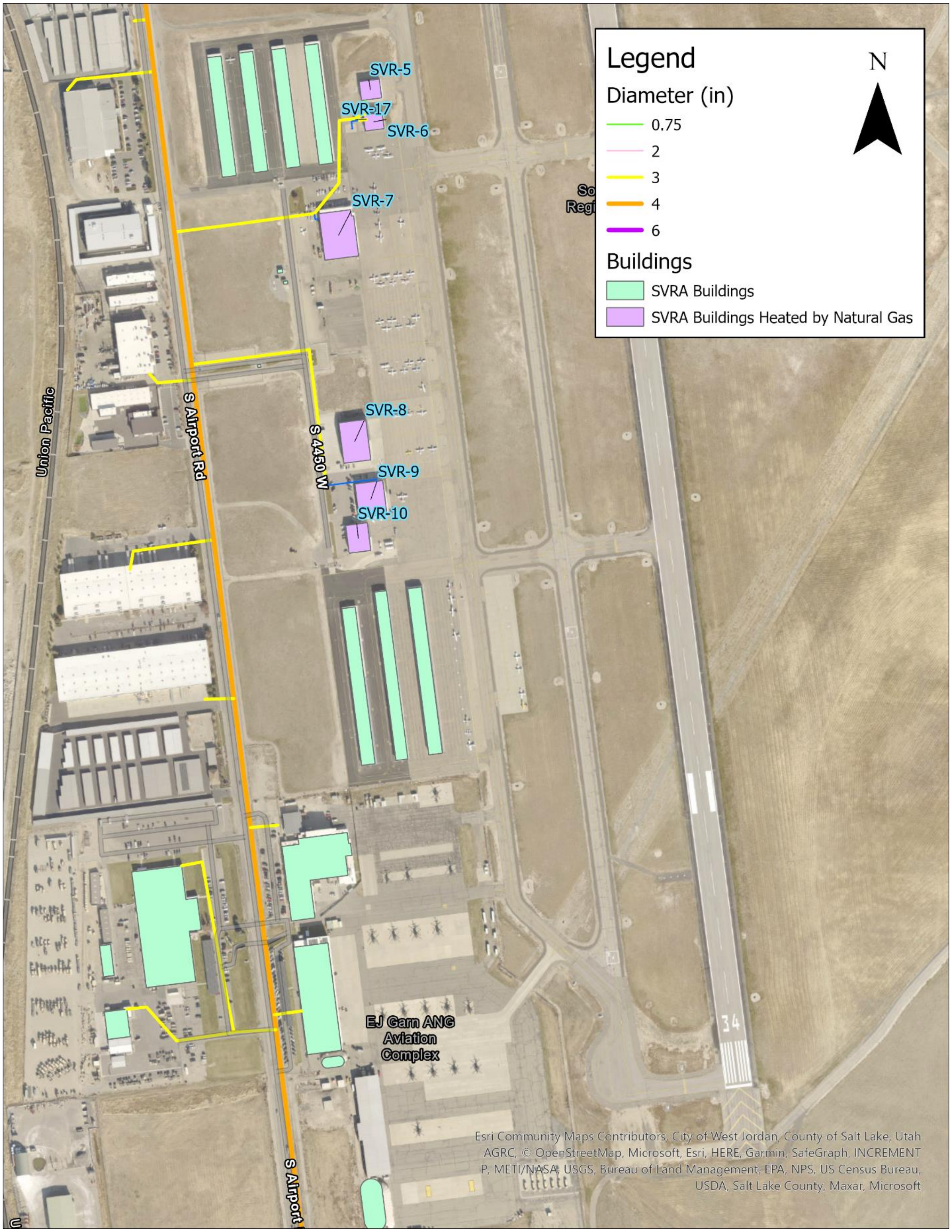


Figure 5.1. Gas-heated Buildings and Gas Utilities at SVRA.

CHAPTER 6
STORM DRAINAGE IMPROVEMENT PLAN

INTRODUCTION

This chapter provides an overview of the existing and future storm drainage infrastructure needs at the SVRA. The evaluation is based on information provided by the SLCDA and West Jordan City.

EXISTING SYSTEM

Drainage Areas

New and more accurate ground elevation data has become available since the last master plan was completed. This new information was used to redefine the natural drainage paths and general drainage areas at the airport. Figure 6.1 illustrates the five drainage areas and their general direction of flow.

Figure 6.1. Stormwater Drainage Areas

EXISTING SYSTEM EVALUATION

The drainage areas labeled NW and SW in Figure 6.1 are currently the only developed areas with stormwater infrastructure. The other drainage areas naturally infiltrate, evaporate, or runoff the airport's property. The airport's stormwater system on the west side currently has formal drainage running southeast to the retention area near the City's water storage tanks. This facility has an estimated storage volume of 100 acre-feet. The stormwater system on the west side running north has open ditches leading to a detention pond at the northwest corner of the runway. This detention pond has an estimate volume of 9.75 acre-feet and drains through a 48-inch pipeline leading to a regional stormwater pond in West Jordan.

Hydrologic Modeling

The existing infrastructure was modeled to evaluate its capability to collect, convey, and detain a design storm event. The selected design storm event for the stormwater evaluation is the 10-year, 3-hour Farmer-Fletcher Distribution storm with a total rainfall depth of 1.39 inches. This value is adjusted from the NOAA Atlas 14 Precipitation Frequency Estimates.

The drainage areas were characterized in the model based on their soil types, ground cover, and typical slopes. These parameters determine the typical amount of runoff expected from the various areas.

Hydraulic Modeling

The runoff generated from the drainage areas, was directed to the open channels, storage ponds, swales, pipelines, and other stormwater facilities.

The facilities were evaluated based on their capabilities to convey runoff away from the buildings, runway, and roads. Piped stormwater systems should be capable of carrying the runoff from the design event while keeping the water levels below the manhole rim elevations.

Existing System Results and Recommendations

Based on the model analysis, the stormwater facilities are generally adequate with a few exceptions.

The system south of the Utah National Guard facilities has a section of open channel swales followed by culverts and more underground piping.

The swales can help with stormwater disposal through infiltration; however, they can be a maintenance problem. If the swales are filled with trash or accumulated soil, they act as a dam and mosquito breeding grounds. During larger events, accumulated debris can be pushed into the downstream piping causing clogs and decreasing the capacity of the piped system.

It is recommended that the Airport consider piping all sections of the stormwater system. A 42-inch pipeline is recommended for everything running south to the outlet discharge point from the Airport property.

Figure 6.2 identifies the open channel sections to be considered for piping.

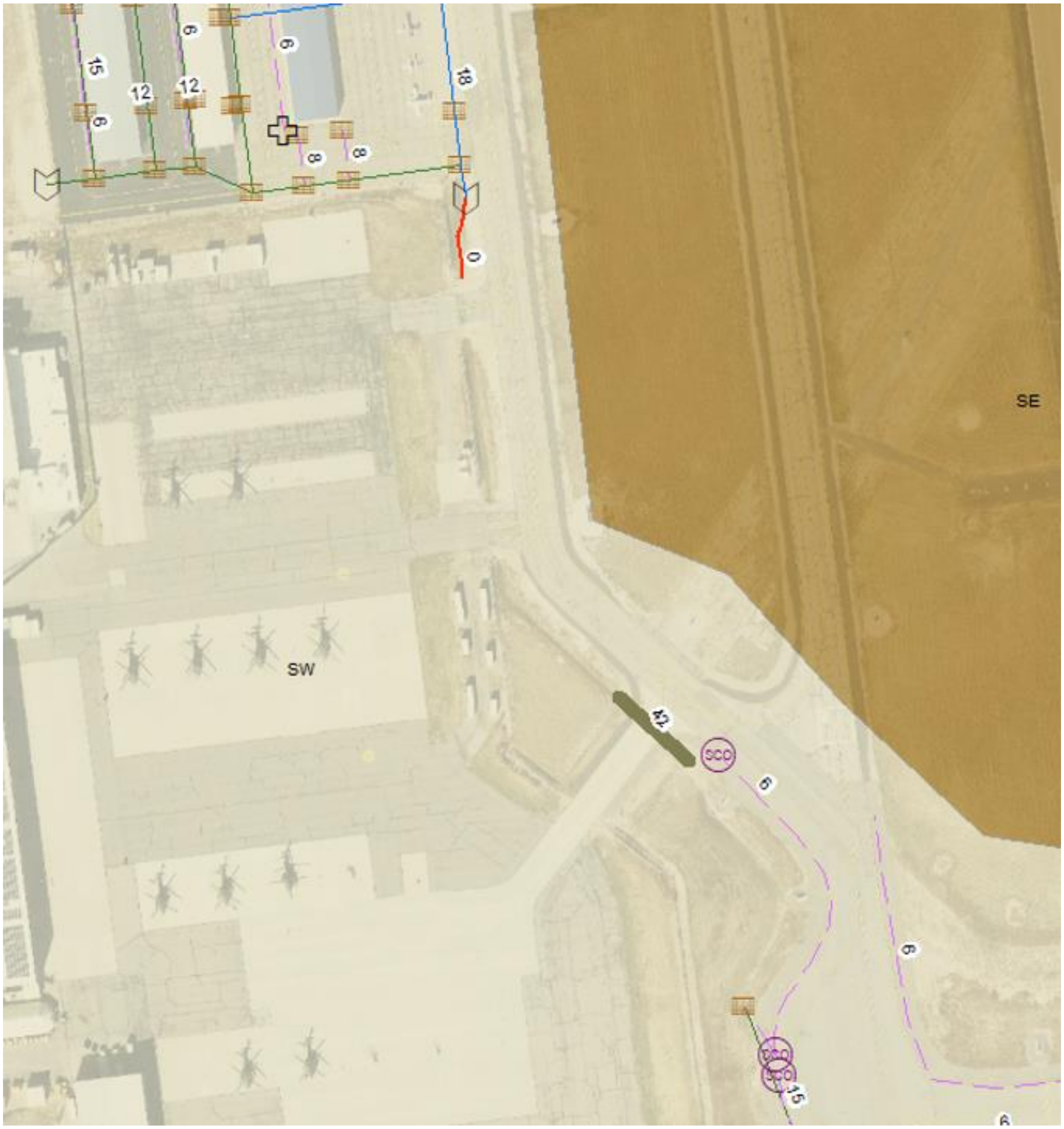


Figure 6.2. Existing Open Channel Sections to be Considered for Piping

Further south of this open channel section of the system, there are two runs of pipe that are undersized for the amount of runoff they need to convey. These sections are recommended for replacement with a 42-inch pipeline. The downstream sections of pipe are smaller (36-inch), however, they are laid at a steeper slope and therefore have adequate capacity to receive the flow from the proposed 42-inch storm drain. The sections are shown in Figure 6.3.

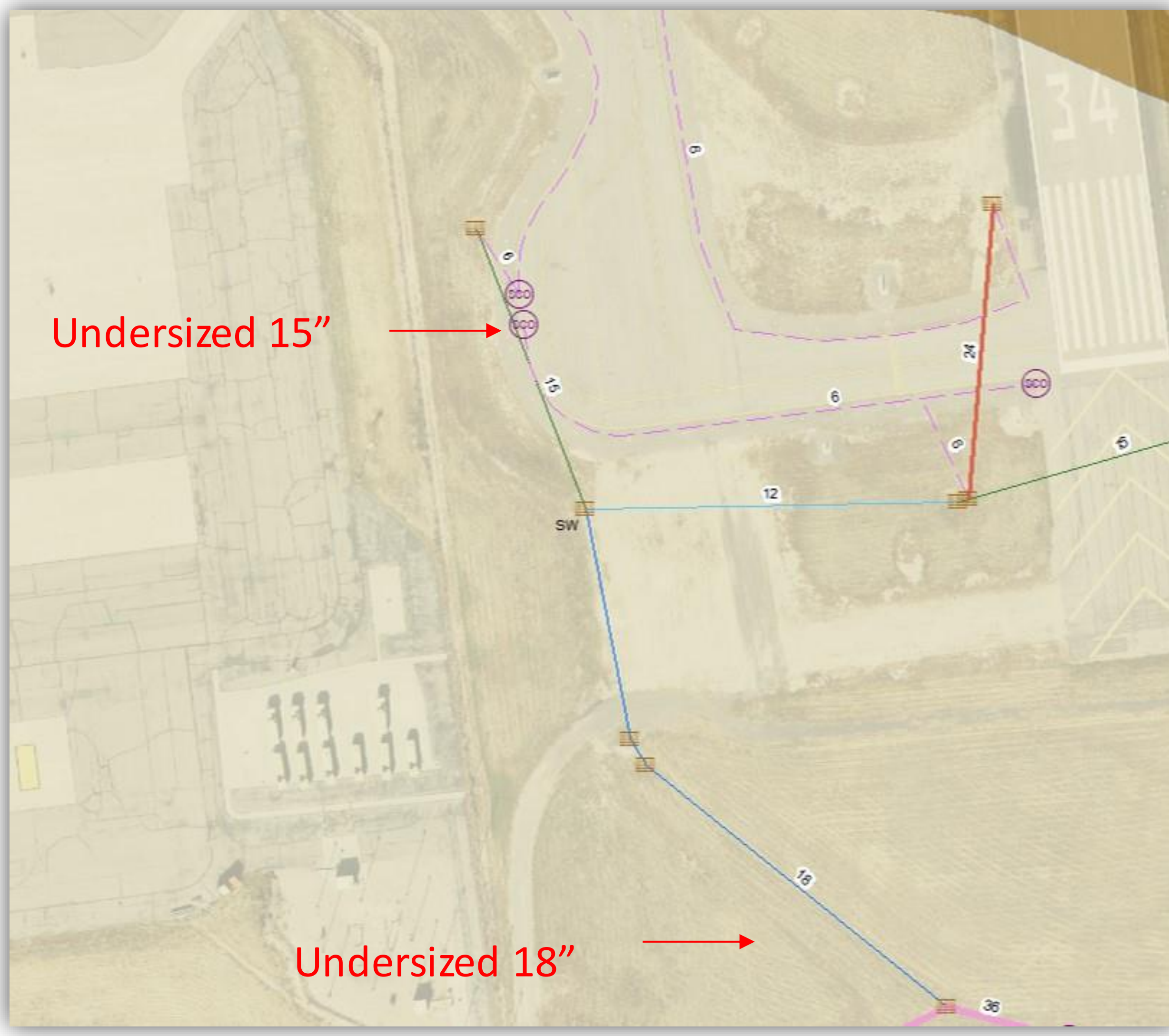


Figure 6.3. Undersized Stormwater Pipe Sections.

FUTURE SYSTEM

Future development will increase the impervious area at the airport, and thereby generate more runoff from the design storm event. The future development plan was modeled, and future stormwater infrastructure has been designed to convey the expected runoff from the design storm event.

The USDA-NRCS soil database indicates that the soil on the west side of the airport has severely limited infiltration capacity. This means runoff will remain ponded on the surface of the soil until it evaporates. Standing water can attract waterfowl and that can be a safety hazard for planes. Therefore, the ponds should either be wide and shallow to promote rapid evaporation or the soil beneath the pond should be excavated and replaced with a more permeable fill. The existing pond at the north end of the west side should be considered for consolidation with future detention storage and moved away from the runway. This is a design detail that can be worked as the projects move from the concept to phase to the design phase. The recommended storage volumes of these ponds are noted in this plan, and how those volumes are achieved can be determined later.

Future System Recommendations

Based on the model analysis, the recommended stormwater facilities are illustrated in Figures 6.4, 6.5, and 6.6.

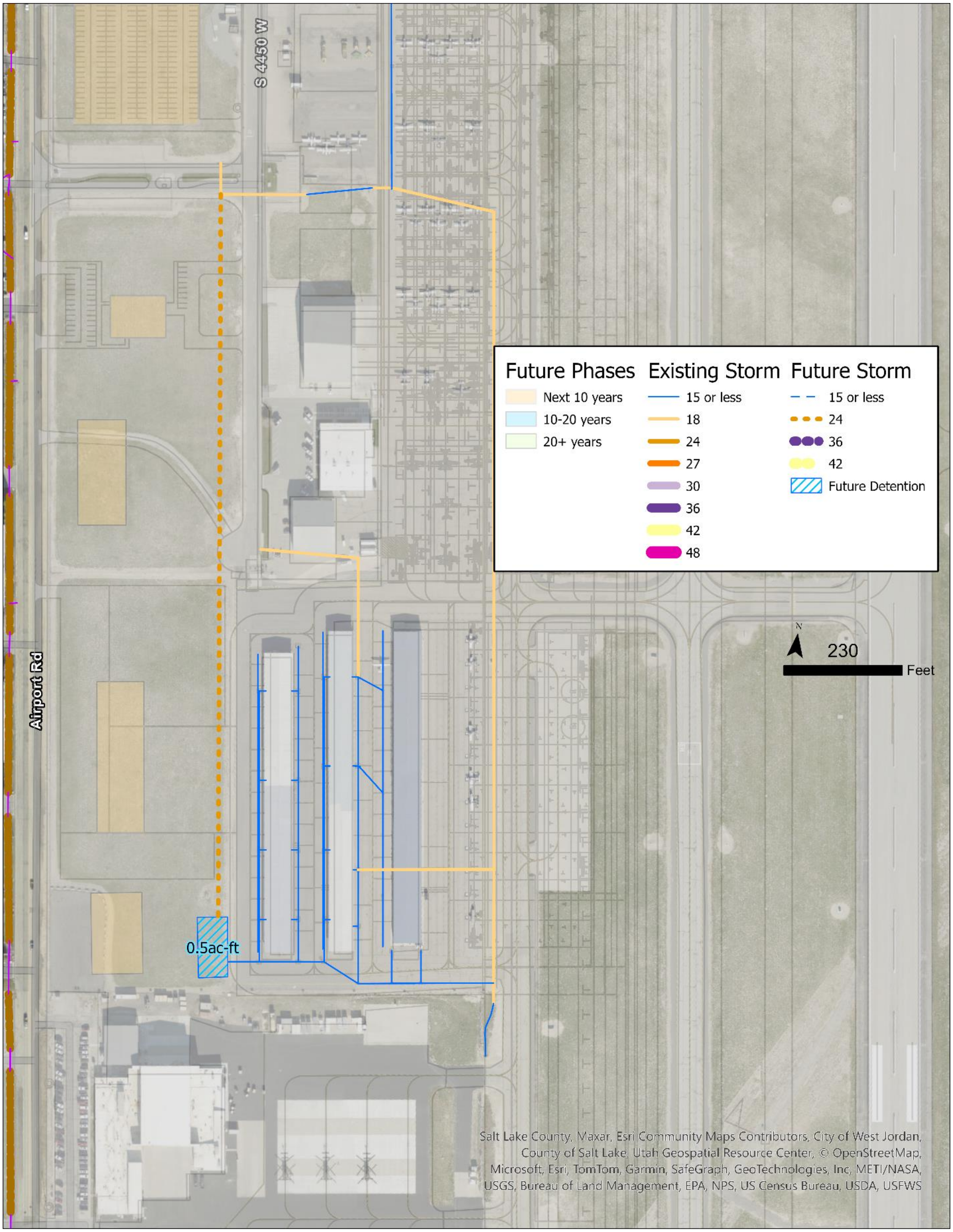


Figure 6.4. Recommended Stormwater Infrastructure for West Side South

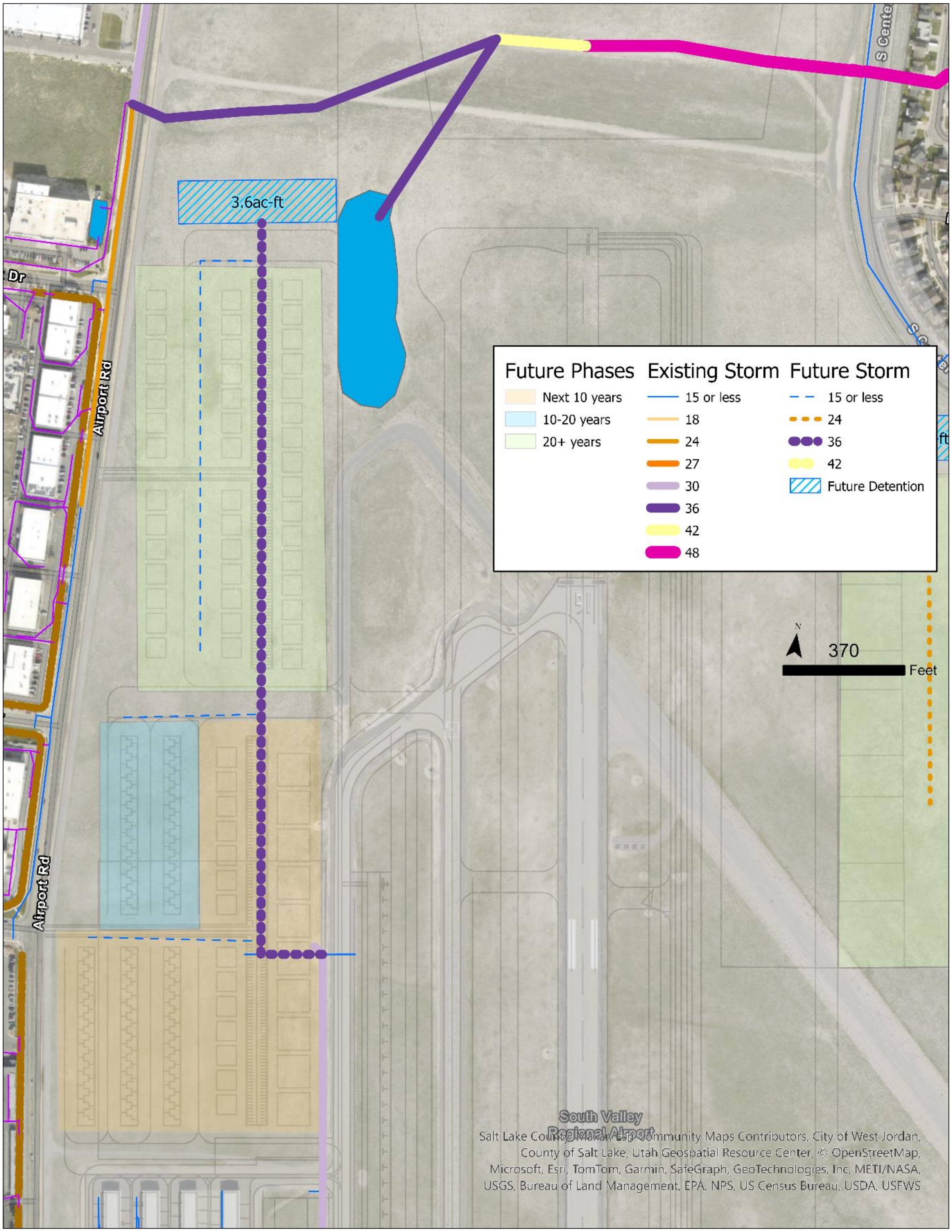


Figure 6.5. Recommended Stormwater Infrastructure for West Side North

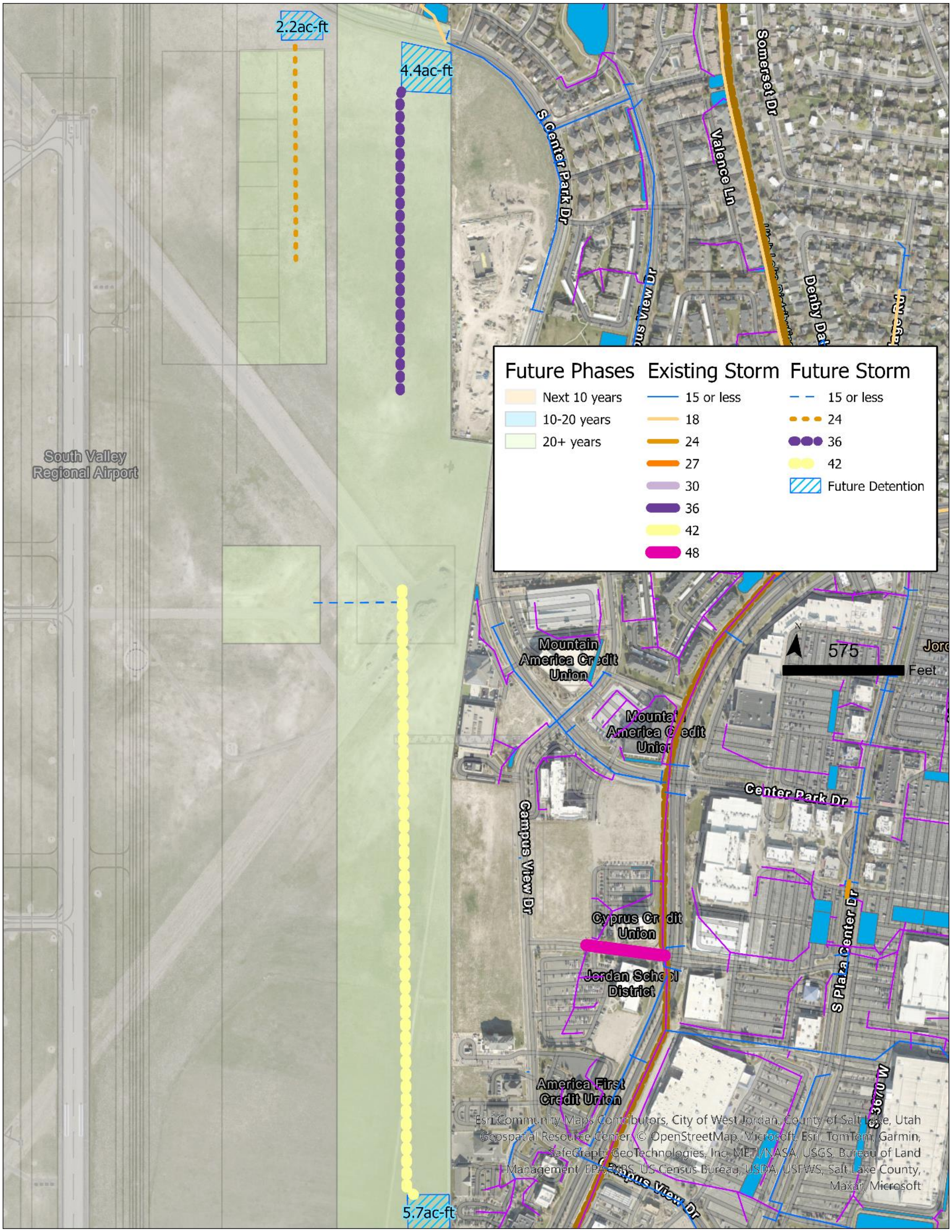


Figure 6.6. Recommended Stormwater Infrastructure for East Side

CHAPTER 7
ELECTRIC SYSTEM IMPROVEMENT PLAN

INTRODUCTION

This chapter provides an overview of the existing and future electrical infrastructure needs at the SVRA. The evaluation is based on mapping and electrical power demands provided by the SLCDA and Rocky Mountain Power (RMP)

EXISTING SYSTEM

Facilities and Usage

Power is supplied to the SVRA through two 15kV, 2 megawatt (MW) underground connections from Airport Road into the airport at its main entrances. The 2 MW power lines extend underground to 5 transformers. From these transformers, secondary power lines feed power to airport buildings (Figure 7.1). There are currently ten metered connections across the existing airport buildings.

EXISTING SYSTEM EVALUATION

The power utility is owned and operated by RMP up to and including the meter on the various buildings. BC&A related the future airport development plan to RMP and their system engineers evaluated the airport's current usage, the private hangar's usage, and projected the future development usage.

RMP indicated that the existing primary facilities on Airport Road are adequate to meet the existing demands of the airport and have capacity for power demands from future developments. RMP declined to comment on how much capacity is available for future power demands.

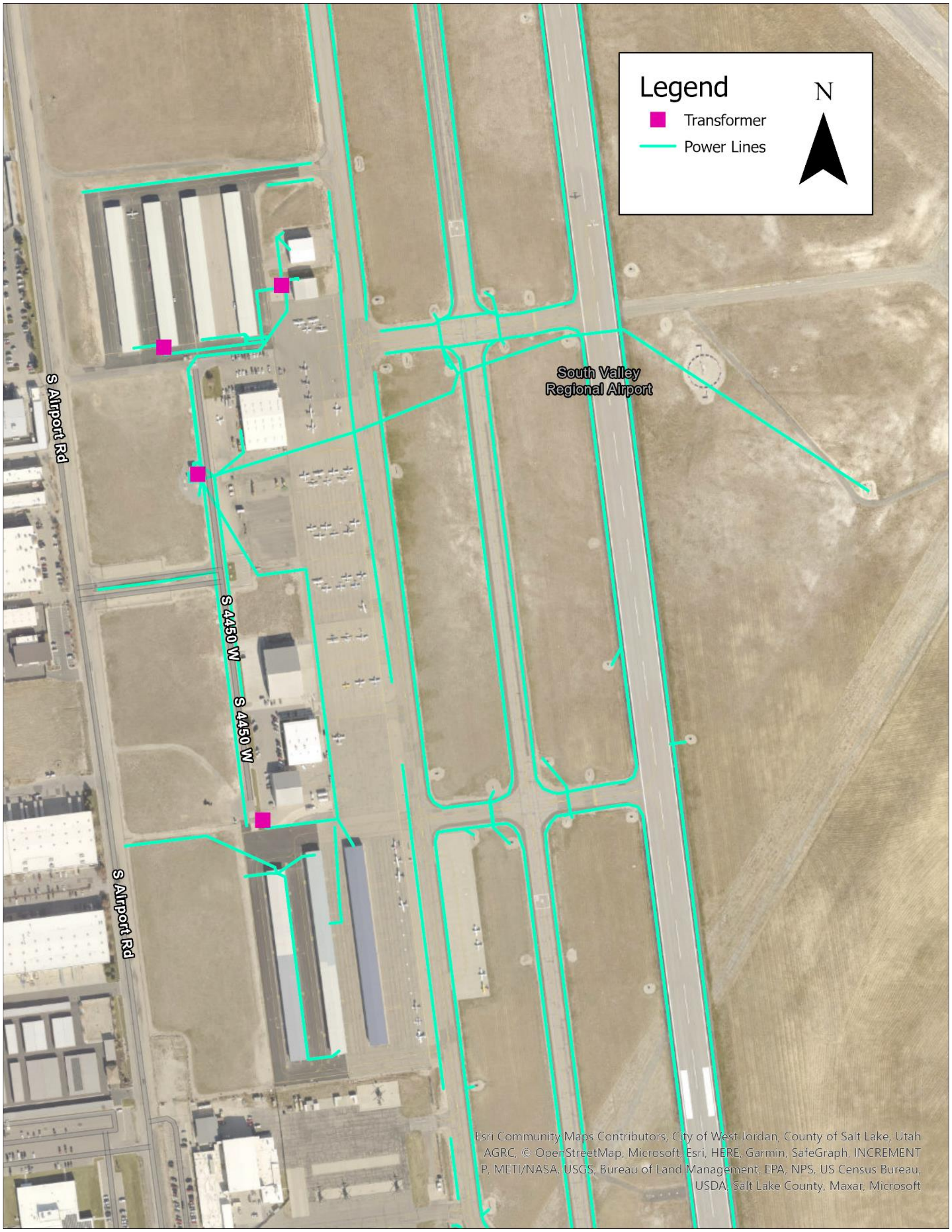


Figure 7.1. Existing Electrical Utilities at SVRA

FUTURE SYSTEM EVALUATION

General Requirements from the Utility Provider

RMP manages the power utility, but costs associated with connecting new buildings and airport facilities to the power grid will be paid by the Airport or the developer. A credit for the cost to extend new services is credited back to the Airport or the developer through their power bills.

If the peak demand from the Airport increases more than 1 MW over a 2-to-3-year period, RMP will require the Airport to pay for offsite improvements needed to support the increased power demand. Offsite improvements can include the construction of substations, upsizing of transmission power lines, or generating more power from new or existing power sources.

Projected Power Demands

With input from SLCDA and RS&H on the potential future power uses, BC&A developed projected power loads presented in Table 7.1

Table 7.1. Projected Future Power Loads

Phase	Estimated Power Loads per Phase
West Side Development	
Next 10 years	2.2 MW
10-20 years	0.5 MW
20+ years	1.7 MW
East Side Development	
20+years	1 MW

As shown in Table 7.1, the current phasing plan would allow the Airport to develop while keeping under the RMP trigger of 1 MW every 2-3 years.

The recommended improvements for the power utility on both the west and east sides of the airport are summarized in Table 7.2 The layout and locations of the of the improvements summarized in Table 7.2 are illustrated in Figures 7.2, 7.3, and 7.4.

Table 7.2. Recommended Power Utility Improvements for Future Development

West Side South Improvements
Next 10 Years • (1) 750 kW Transformer at Parking Lot for EV charging stations • (1) 225 kW Transformer at Flight School • (3) 150 kW Transformer at Maintenance Building, Fuel Farm, and Office Building • (5) new service connections with Ground Sleeves • (5) meter boards at new transformers
West Side North Improvements
Next 10 Years • (3) 225 kW/ (2) 150 kW/ (2) 750 kW Transformers • (2) new service connections with Ground Sleeves • (7) Meter Boards at row ends for new hangars In 10-20 Years • (2) 225 kW Transformers • (2) Meter Boards at row ends for new hangars In 20+ Years • (6) 150 kW Transformers • (6) Meter Boards at row ends for new hangars • (2) new service connections with Ground Sleeves
East Side Improvements
In 20+ Years • (1) 750 kW Transformer at Parking Lot for EV charging stations • (1) 225 kW Transformer at Flight School • (3) 150 kW Transformer at Maintenance Building, Fuel Farm, and Office Building • (5) new service connections with Ground Sleeves • (5) meter boards at new transformers

Figure 7.2. Power Utility Improvements West Side - South

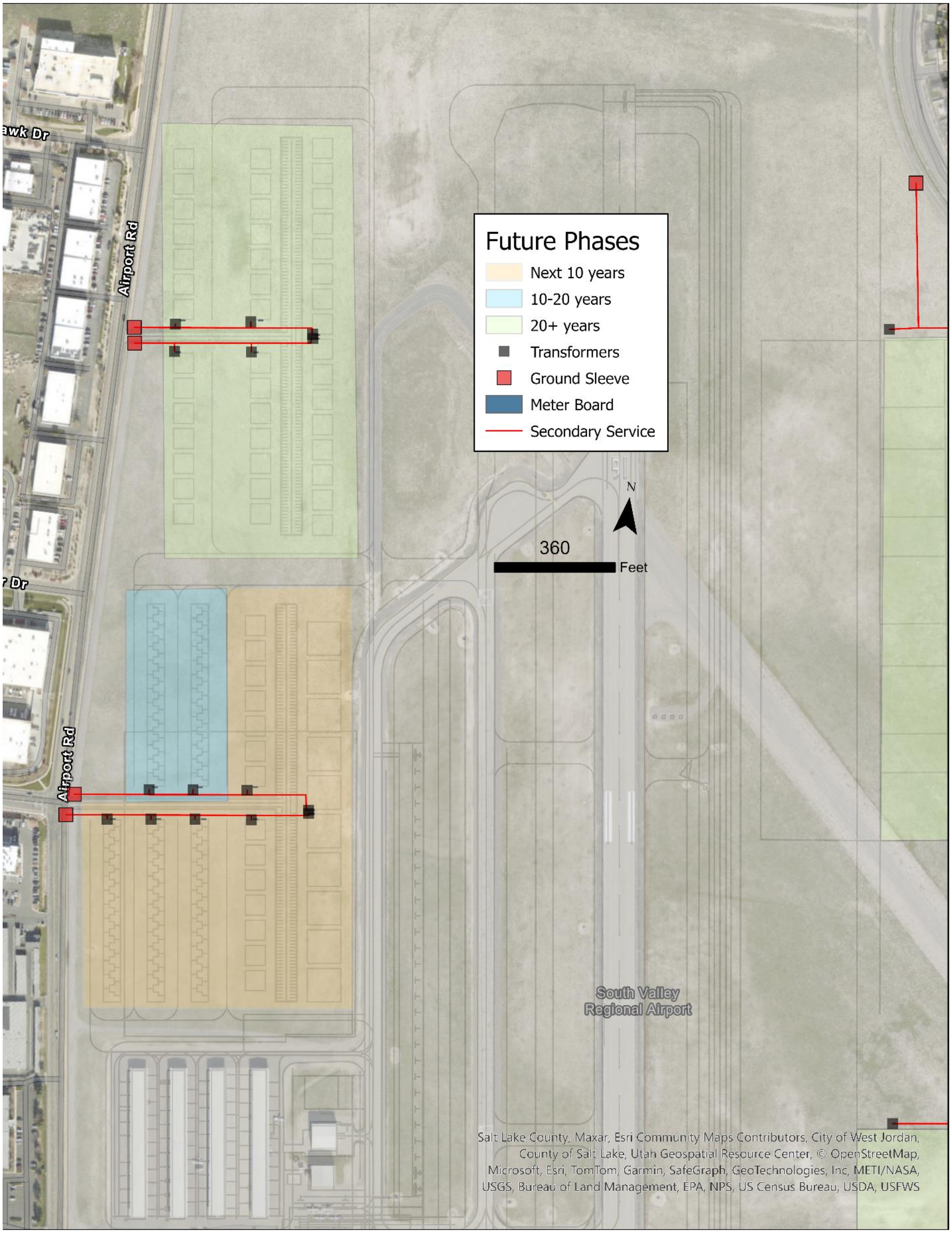


Figure 7.3. Power Utility Improvements West Side - North

Figure 7.4. Power Utility Improvements East Side

CHAPTER 8
COMMUNICATIONS IMPROVEMENT PLAN

INTRODUCTION

This chapter discusses the communications infrastructure required for the SVRA future development. The evaluation includes consideration of existing facilities and projected demands based on information provided by SLCDA and the local communication provider.

This chapter provides an overview of the existing and future communications infrastructure needs at the SVRA. The evaluation is based on mapping and discussion with airport personnel and CenturyLink.

EXISTING SYSTEM

Facilities and Usage

The existing communication facilities at the SVRA are comprised of CenturyLink communication lines and facilities and airport owned systems (Figure 8.1).

BC&A has worked with CenturyLink to establish the extent and location of existing CenturyLink facilities at the SVRA. The SVRA property is surrounded by CenturyLink communication lines on all sides. CenturyLink's main communication lines and pads are located on the west side of the airport on Airport Road. Main lines along Airport Road connect to the surrounding system at 7800 S and 6200 S. CenturyLink communication lines extend from the pads to airport facilities including the FBO and existing corporate hangars.

SVRA owns and operates two CASS gates and an airport warning and weather system (AWOS). One of the CASS gates is located adjacent to the existing FBO facility at the south end of S 4450 W and includes a security camera. The other CASS gate is located next to the existing T-hangars at the north end S 4450 W. The airport CASS system, including the two gates, was updated in 2020 as part of a larger infrastructure improvement project. The AWOS is located on the east side of the SVRA. This facility includes a weather information system for pilots and airport personnel. Both the AWOS and warning system are connected to the FBO.

EXISTING AND FUTURE SYSTEM EVALUATION

CenturyLink reviewed the existing facilities and future development plans and indicated that the existing primary infrastructure has the capacity to support future needs.

Airport personnel over internal telecommunications infrastructure such as the CASS, reported that a comprehensive evaluation of the systems completed in 2020 concluded that the system is adequate for both existing and future needs.

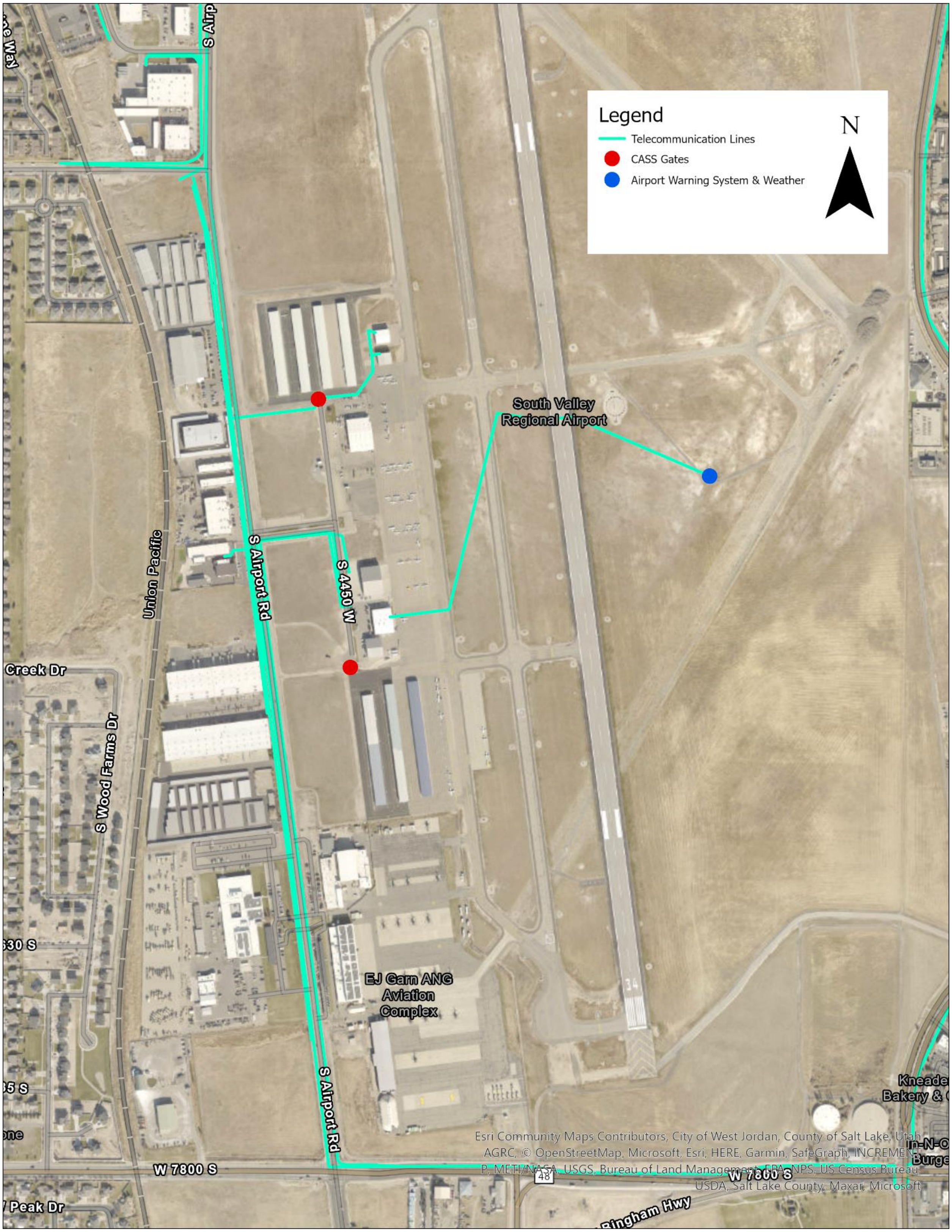


Figure 8.1. Existing Communication Utilities at SVRA

CHAPTER 9
CAPITAL IMPROVEMENT PLAN

INTRODUCTION

The previous chapters have identified required improvements for individual airport utilities including water, sewer, natural gas, storm drainage, electrical, and communication systems. This chapter provides a phased summary with an opinion of probable cost.

OPINION OF PROBABLE COST

Capital improvement project costs are determined by numerous factors that cannot be accurately predicted. Costs typically change even during the construction phase.

The costs presented in Table 9.1 are for planning purposes and are based on conceptual planning level project features. They should be considered only as an opinion of probable cost.

DESIGN DEVELOPMENT

As capital improvement projects move closer to implementation, they will enter a pre-design and design phase. In these phases, it is recommended to consider alternative methods to obtain the project objective. The concepts presented in this plan are viable but should not be considered final.

Because natural gas and telecommunications have no recommended improvements and will be managed separately by either the utility provider or Airport Staff, these utilities are not included in the capital improvement plan.

Table 9-1
Capital Improvement Plan

Phase	OPC in 2024 Dollars
Existing	
Storm	$520,000
Next 10 years	
Water	$1,205,000
Sewer	$1,027,000
Storm	$1,565,000
Power	$1,526,000
Phase Subtotal	*$5,323,000*
10-20 years	
Water	$329,000
Sewer	$180,000
Storm	$81,000
Power	$2,311,000
Phase Subtotal	*$2,901,000*
20+ years	
Water	$5,092,000
Sewer	$3,409,000
Storm	$2,359,000
Power	$2,989,000
Phase Subtotal	*$13,849,000*

Get in Touch

154 East 14075 South
Draper, Utah 84020

(801) 495-2224

rrocha@bowencollins.com
bowencollins.com

BOWEN COLLINS & ASSOCIATES

APPENDIX G

Runway 16-34 Extension/Shift

Design Alternatives

APPENDIX G | Runway 16-34 Extension/Shift Design Alternatives

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

G.1 U42 RUNWAY 16-34 EXTENSION/SHIFT DESIGN ALTERNATIVES MEMORANDUM

MEMORANDUM:

Date:	March 4, 2025
To:	Salt Lake City Department of Airports, South Valley Regional Airport
From:	RS&H
Subject:	U42 Runway 16-34 Extension/Shift Design Alternatives

In November 2023, the Salt Lake City Department of Airports (SLCDA) and RS&H met with the FAA Denver ADO staff to give an update on the long-term plans for the three SLCDA airports. During this meeting, the FAA acknowledged support for the U42 runway extension but asked for more details regarding design standard concerns. The Runway 16-34 Extension/Shift Design Alternatives Appendix G was developed to address these design concerns. The goal of the Appendix was to preserve the analysis and collaboration between SLCDA and the FAA knowing this project might not occur for another ten years. By capturing this correspondence, advanced planning for the runway extension would not need to start from scratch and can build from this material when the runway extension becomes an eligible project in the future. This Appendix was sent to the FAA on July 9, 2024, with the expectation that they would review and comment. Approximately eight months had passed, during which time there were changes in the FAA ADO staff. John Sweeney eventually became the FAAs point of contact to review and respond to the Appendix. John requested a meeting, and this memo captures that meeting and the FAA opinion and direction.

Appendix G of the South Valley Regional Airport (U42) Master Plan update outlines Runway 16-34 extension/shift design alternatives. There is a future need at U42 to extend Runway 16-34 from 5,862 feet to 6,600 feet to accommodate both the existing and future critical aircraft at the airport for U42 to better serve as a reliever airport for SLCIA.

The current airfield topography poses a unique challenge for the future extension/shift. The elevation of the runway's centerline is lower than the parallel Taxiway A centerline. According to FAA Advisory Circular 150/5300-13B, *Airport Design*, taxiway crown elevations should be at or below the crown elevation of the corresponding point on the runway to avoid adversely affecting safety-critical runway surfaces. In addition to the elevation discrepancy between Taxiway A and the runway, neither Taxiway A nor Runway 16-34 is crowned along their centerlines. These design challenges served as the basis for the exploration of two runway extension alternatives outlined in Master Plan Appendix G.

In 2017, Runway 16-34 was rehabilitated to remove and replace the top three inches of asphalt surface. The scope of the project was limited to evaluating the runway's line of sight, but specifically excluded correcting the design challenges outlined in Appendix G. The project also included the removal of Taxiways A1 and A2, construction of a new Taxiway A1 that lined up with the Runway 34 threshold, and construction of a new run-up apron on the south end of the renamed parallel Taxiway A. The new connector Taxiway A1 centerline profile design highlighted the need to raise the runway centerline, but the FAA allowed it to be designed and constructed to a non-standard condition to avoid the significant cost.

Outlined in Appendix G, Alternative 1 aims to resolve the centerline elevation disparity between parallel Taxiway A and Runway 16-34 by raising the existing Runway 16-34 centerline elevation above the Taxiway A centerline. While this approach would support a safe operational environment for aircraft and pilots at U42 by strictly adhering to FAA design standards, it does pose significant constructability and financial challenges due to the downward cross slope from Taxiway A to the east side of airport property. Alternative 2 involves extending both Runway 16-34 and parallel Taxiway A from their current length of 5,862 feet to a future length of 6,600 feet without correcting the existing non-standard conditions. The two alternatives were discussed with John Sweeney, Lead Airport Planner at the Federal Aviation Administration (FAA) Denver Airports District Office, on March 4, 2025.

John Sweeney shared that the FAA cannot, under current guidance, support the preferred master plan solution (Alternative 2). However, FAA confirmed its position that the Salt Lake City Department of Airports could pursue Alternative 1 as a justified and eligible project. John recommended SLCDA not let the current topography challenges hold up development to the east of Runway 16-34, particularly the proposed airport traffic control tower (ATCT). These actions will require a conversation with the FAA prior to design beginning on a Runway 16-34 extension project. He acknowledged that a hybrid solution may be possible and without a compromise, development to the east of the runway is not realistic. An overall grading plan agreed upon by the FAA may be a good start when any new development or the ATCT is being sited.

The Master Plan Appendix G report confirmed the shed section of Runway 16-34 and Taxiway A is higher than Runway 16-34, creating a non-standard condition under FAA AC 150/5300-13B guidance. The Salt Lake City Department of Airports, in coordination with the FAA, would be required to pursue a modification to agency airport design, construction, and equipment standards through the FAA Modification of Standards (MOS) tool prior to proceeding with any Runway 16-34 project that made use of federal Airport Improvement Program (AIP) grant funds and did not meet current FAA design standards. SLCDA should program Alternative 1 into their CIP and continue to collaborate with the FAA as development to the east side of the Runway 16-34 begins to materialize.

G.2 INTRODUCTION

As detailed in **Chapter 4, Identification and Evaluation of Alternatives**, there is a future need at U42 to extend Runway 16-34 from 5,862 feet to 6,600 feet to adequately accommodate both the existing and future critical aircraft at the airport. The preferred runway alternative involves extending the end of Runway 34 by 1,092 feet and shifting the threshold of Runway 16 northward 350 feet. However, the current airfield topography poses a unique challenge for the future extension/shift. As it stands, the elevation of the runway's centerline is lower than that of parallel Taxiway A's centerline. According to FAA Advisory Circular 150/5300-13B, *Airport Design,* taxiway crown elevations should be at or below the crown elevation of the corresponding point on the runway to avoid adversely affecting safety-critical runway surfaces. This design challenge served as the basis for the exploration of two runway extension alternatives, which are elaborated upon in the following sections.

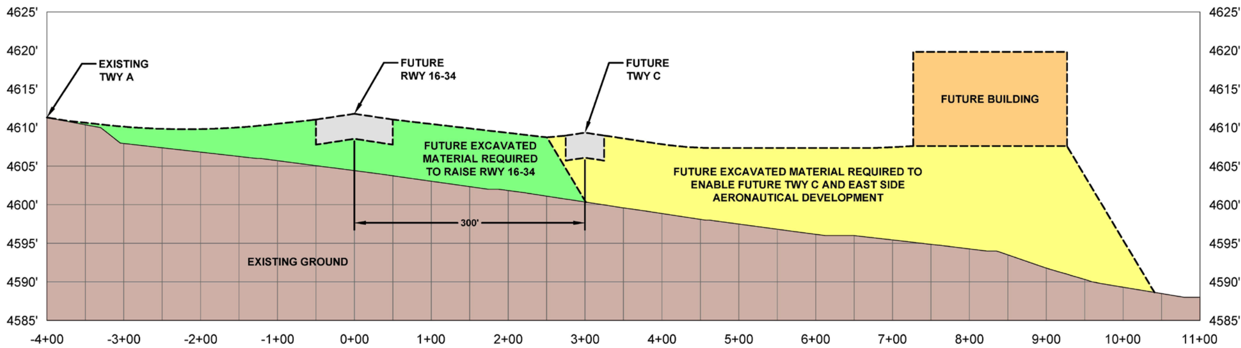
G.3 ALTERNATIVE 1

Alternative 1 aims to resolve the centerline elevation disparity between parallel Taxiway A and Runway 16-34 by raising the existing Runway 16-34 centerline elevation above Taxiway A's centerline. While this approach would ensure a safe operational environment for aircraft and pilots at U42 by strictly adhering to FAA design standards, it does pose significant grading challenges due to the downward cross slope from Taxiway A to the east side of airport property.

Figure G 1 depicts the grading requirements for Taxiway A4 to traverse the elevated Runway 16-34 (highlighted in green), as well as to link with future Taxiway C and provide access to upcoming developments (highlighted in yellow).

Figure G-1 illustrates the grading necessary for Taxiway A4 to cross the raised Runway 16-34 (highlighted in green), as well as to connect with future Taxiway C and provide access to future aeronautical development on the east side of airport property (highlighted in yellow). The existing ground is represented by brown shading, while additional fill required for development is depicted in green and yellow. It is apparent that future Taxiway C might necessitate enough excavated material to raise the ground 11 feet for enablement, while a future building, such as an aircraft hangar, might necessitate enough excavated material to raise the ground 15 feet. In addition to this large amount of excavated material that would be needed to enable development on the east side of the runway, a retaining wall would also need to be built to support the excavated material. The substantial amount of excavated material needed for potential airfield expansion east of the raised Runway 16-34, in addition to the necessary retaining wall, would incur prohibitively high costs. Consequently, the airport property east of the runway would become too costly and unsuitable for future airfield expansion.

FIGURE G-1
RUNWAY CROSS-SECTION ALONG TAXIWAY A4 – ALTERNATIVE 1



Source: RS&H, 2024

This alternative is the more expensive of the two, requiring nearly 800,000 cubic yards of excavated material to raise Runway 16-34 and align the centerlines of Taxiway A and Runway 16-34. While this method would guarantee adherence to FAA design standards, the projected cost of approximately $42 million for Alternative 1, as shown in **Table G-1**, greatly exceeds that of Alternative 2, which is discussed in the subsequent section.

TABLE G-1
ALTERNATIVE 1 ROM COST ESTIMATE

			Extend Runway 16-34 and Taxiway B to 6,600' – Design/Construction	
WORK ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL AMOUNT
Mobilization & Demobilization	LS	1	$ 1,914,000.00	$ 1,914,000.00
Construction Signs, Barricades, Warning Lights & Flagging	LS	1	$ 775,000.00	$ 775,000.00
Pavement Removal	SY	26,780	$ 10.00	$ 267,800.00
Unclassified Excavation	CY	90,350	$ 25.00	$ 2,258,750.00
Unclassified Excavation (In Situ Material to Raise Runway and Taxiways)	CY	799,660	$ 15.00	$ 11,994,900.00
Unsuitable Excavation (1-foot Depth)	SY	18,740	$ 15.00	$ 281,100.00
12" Cobble Stabilization	SY	18,740	$ 36.00	$ 674,640.00
Subbase Course	CY	44,890	$ 41.00	$ 1,840,490.00
Aggregate Base Course	CY	27,180	$ 50.00	$ 1,359,000.00
Bituminous Surface Course	TON	45,480	$ 120.00	$ 5,457,600.00
Pavement Marking (Permanent) with Retroreflective Beads	LS	1	N/A	$ 100,000.00
Demolition and Relocation of PAPI Light Systems	EA	2	$ 50,000.00	$ 100,000.00
Demolition and Relocation of Wind Cone Systems	EA	3	$ 150,000.00	$ 450,000.00
Contingency (30%)				$ 8,242,000.00
Total Direct/Construction Costs				**$ 35,166,000.00**
Design Costs (10%)				$ 3,517,000.00
Construction Services (10%)				$ 3,517,000.00
Total Cost				**$ 42,200,000.00**

Notes:
1. Unit Prices higher/lower due to project size and/or constructability
2. Original unit prices are adapted using rounded averages from the TVY N Airport Rd. Extension Ph. I Project
3. Pavement Section used for taxiway construction taken from RS&H project "RW 16-34 and Taxiway A Rehabilitation" (2017)
4. Pavement Section used for runway construction created using FAARFIELD using G500, Beechcraft 350, and Cessna Citation X as design Aircraft
5. Wind Cone System Pricing taken from LEAN estimate provided for TVY Master Plan
6. Costs are in 2023 dollars
Source: RS&H, 2024

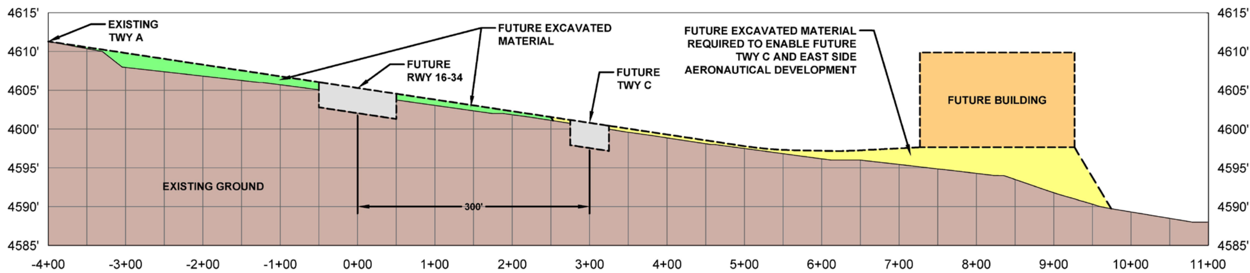
G.4 ALTERNATIVE 2

Alternative 2 involves extending both Runway 16-34 and parallel Taxiway A from their current length of 5,862 feet to a future length of 6,600 feet without correcting the following existing non-standard conditions:

- The elevation of Taxiway A is higher than Runway 16-34.
- Neither Taxiway A nor Runway 16-34 is crowned along their centerlines.

Should the FAA permit the persistence of these non-standard conditions, Alternative 2 emerges as the more cost-effective option, facilitating future development on the east side of Runway 16-34. While these conditions are non-standard, they have a negligible impact on safety at U42. The cross-section for Taxiway A4 at the existing Runway 16-34 centerline elevation is illustrated in **Figure G-2**. The existing ground is represented by brown shading, while additional fill required for development is depicted in green and yellow. The estimated cost for Alternative 2 is approximately $23 million, as detailed in **Table G-2**.

FIGURE G-2
RUNWAY CROSS-SECTION ALONG TAXIWAY A4 – ALTERNATIVE 2



Source: RS&H, 2024

TABLE G-2
ALTERNATIVE 2 ROM COST ESTIMATE

			Extend Runway 16-34 and Taxiway B to 6,600' – Design/Construction	
WORK ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL AMOUNT
Mobilization & Demobilization	LS	1	$ 1,009,000.00	$ 1,009,000.00
Construction Signs, Barricades, Warning Lights & Flagging	LS	1	$ 409,000.00	$ 409,000.00
Pavement Removal	SY	40,160	$ 10.00	$ 401,600.00
Unclassified Excavation	CY	90,540	$ 31.00	$ 2,806,740.00
Unsuitable Excavation (1-foot Depth)	SY	20,530	$ 15.00	$ 307,950.00
12" Cobble Stabilization	SY	20,530	$ 36.00	$ 739,080.00
Subbase Course	CY	45,160	$ 41.00	$ 1,851,560.00
Aggregate Base Course	CY	27,180	$ 50.00	$ 1,359,000.00
Bituminous Surface Course	TON	45,340	$ 120.00	$ 5,440,800.00
Pavement Marking (Permanent) with Retroreflective Beads	LS	1	N/A	$ 100,000.00
Demolition and Relocation of PAPI Light Systems	EA	2	$ 50,000.00	$ 100,000.00
Demolition and Relocation of Wind Cone Systems	EA	3	$ 150,000.00	$ 450,000.00
Contingency (30%)				$ 4,493,000.00
Total Direct/Construction Costs				**$ 18,918,000.00**
Design Costs (10%)				$ 1,892,000.00
Construction Services (10%)				$ 1,892,000.00
Total Cost				**$ 22,702,000.00**

Notes:
1. Unit Prices higher/lower due to project size and/or constructability
2. Original unit prices are adapted using rounded averages from the TVY N Airport Rd. Extension Ph. I Project
3. Pavement Section used for taxiway construction taken from RS&H project "RW 16-34 and Taxiway A Rehabilitation" (2017)
4. Pavement Section used for runway construction created using FAARFIELD using G500, Beechcraft 350, and Cessna Citation X as design Aircraft
5. Wind Cone System Pricing taken from LEAN estimate provided for TVY Master Plan
6. Costs are in 2023 dollars
Source: RS&H, 2024

Alternative 2 offers an additional advantage of shortening the construction schedule. The extension of the runway can be completed without the need to close Runway 16-34 entirely. Instead, it involves temporarily shifting the Runway 16 threshold southward, enabling continued airport operations for smaller aircraft with a shortened runway length. The initial construction phase will encompass the extension of the runway and taxiway, along with improvements to the northern half of the existing runway for C-II aircraft. The second construction phase will involve relocating the Runway 34 threshold and implementing improvements to the southern half of the existing runway for C-II aircraft.

G.5 PREFERRED ALTERNATIVE

Following discussions with SLCDA personnel in February 2024 regarding the benefits and drawbacks of the two alternatives, Alternative 2 has been selected as the preferred option for extending Runway 16-34 at South Valley Regional Airport. With its lower estimated cost of approximately $23 million and the potential for future development to the east of Runway 16-34, Alternative 2 represents the most cost-effective option and offers the greatest potential for future facilities expansion.

G.6 U42 CRITICAL AIRCRAFT

The extension of Runway 16/34 at South Valley Regional Airport is contingent on the current B-II critical aircraft transitioning to a C-II critical aircraft in the future. FAA Advisory Circular 150/500-17, *Critical Aircraft and Regular Use Determination,* defines an airport's critical aircraft as follows:

> *The critical aircraft is the most demanding aircraft type, or grouping of aircraft with similar characteristics, that make regular use of the airport. Regular use is 500 annual operations, including both itinerant and local operations but excluding touch-and-go operations. An operation is either a takeoff or landing.*

With commercial aircraft operations continuing to grow at the Salt Lake City International Airport, the strategic plan of the Salt Lake City Department of Airports involves making operations more appealing over time at U42 for corporate jet traffic. While operations by C-II aircraft at the airport do not presently exceed 500 annual operations, it is anticipated that C-II aircraft operations will progressively increase and surpass this threshold within the planning period as the demands on the system of airports managed by the Salt Lake City Department of Airports continues to evolve. The extension of the runway will be warranted once the annual number of operations of C-II aircraft at U42 exceeds 500.

APPENDIX H

Stakeholder Outreach and Collaboration Program

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

H.1 AIRPORT ADMINISTRATION INTRODUCTION

The Salt Lake City Department of Airports (SLCDA), a department of Salt Lake City Corporation, manages and operates three airports: Salt Lake City International Airport (SLCIA) and its two reliever airports South Valley Regional Airport (U42) in West Jordan and Tooele Valley Airport (TVY) in Tooele County.

H.2 PURPOSE OF PUBLIC INVOLVEMENT

The Stakeholder Outreach and Collaboration Program (SOCP) was developed to facilitate the engagement of citizen stakeholders, airport business interests, and community representatives, allowing them to receive information and participate formally in the airport planning process. This program outlines the mechanisms and techniques employed to involve stakeholders and the public during both the South Valley Regional and Tooele Valley Airport Master Plans.

The SOCP guided public involvement throughout the entire master planning process and served as a living document, updated as necessary. It details target stakeholder groups, stakeholder participation goals, and a communication plan comprising communication strategies and methods for information delivery and reception. Federal Aviation Administration (FAA) resources, including Advisory Circular 150/5050-4A and the FAA Community Involvement Manual, were referenced in the creation of the SOCP, as needed.

H.3 STAKEHOLDER OUTREACH AND COLLABORATION GOALS

Stakeholder involvement played a crucial role in the development of both the South Valley Regional and Tooele Valley Airport Master Plans. The aim of public participation throughout each project was to establish an ongoing, transparent process within each airport community, fostering cooperation and positive relationships among the Airport, commercial airport stakeholders, general aviation airport users, and surrounding communities. Throughout the studies, the public involvement programs encouraged information-sharing and collaboration among Airport Sponsors, users and tenants, resource agencies, elected and appointed public officials, residents, travelers, and the general public. This approach sought to balance the needs of multiple stakeholder groups and garner community support for future airport development solutions. Key goals of the public involvement process included:

- Providing active, early, and continuous public involvement.
- Creating opportunities for members of the public to provide input on actions that could impact their lives before final decisions are made.
- Providing stakeholders and the public with access to the information necessary to allow meaningful participation.
- Communicating to participants the way their input affects the final decision.
- Using the public involvement process to recognize and communicate the needs and interests of all participants, including decision-makers, to make sustainable decisions.
- Soliciting and facilitating the involvement of those potentially affected by or interested in a decision and upholding environmental justice principles as directed under Executive Order 12898.
- Providing the public an opportunity to comment prior to key decisions.

- Soliciting and considering public input on plans, proposals, alternatives, impacts, mitigation, and final decisions.
- Fulfilling FAA regulatory requirements for public participation during planning and project development where federal AIP funding is sought.

H.4 STAKEHOLDER IDENTIFICATION

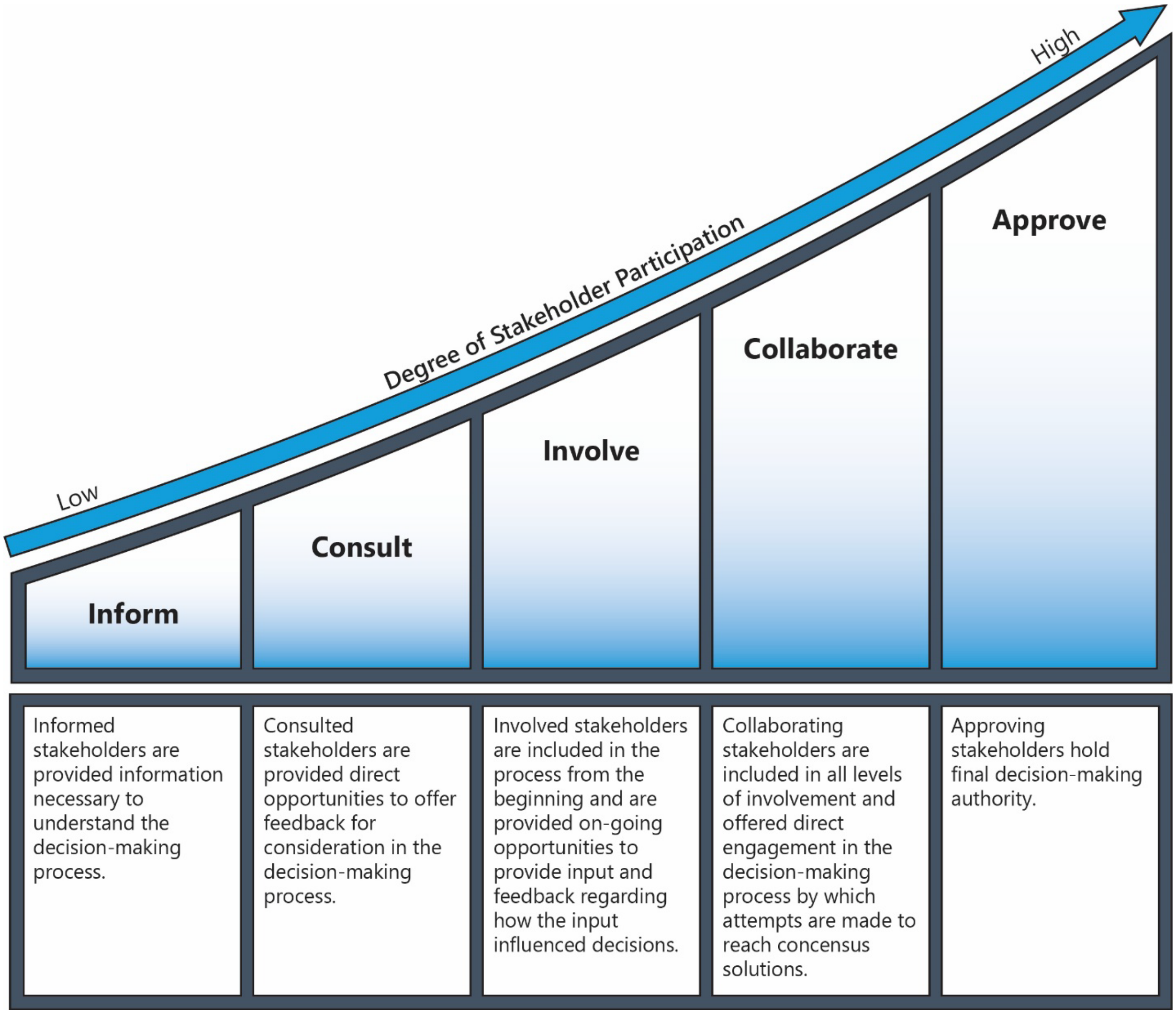
Identifying key stakeholders and understanding their roles in the master planning process was a critical step in developing the SOCP. This involved recognizing diverse perspectives and conducting a comprehensive assessment of relevant issues, expectations for participation, and the desired types of information. Through proper stakeholder identification, appropriate informational materials were developed to effectively communicate project details to the relevant audiences. Importantly, engaging stakeholders throughout the process aimed to enhance support for the final plan recommendations.

The final list of targeted stakeholders and their respective roles was vetted and approved by SLCDA leadership. Targeted stakeholders were documented in a master contact/distribution list and organized according to their role within the master planning process. Stakeholder roles were identified in a matrix format, which assigned responsibilities based on the participant's appropriate level of influence on master planning outcomes. Participant roles varied in degree as follows:

- **Informed** – Provided information necessary to understand the decision-making process.
- **Consulted** – Provided direct opportunities to offer feedback to be considered in decision making process.
- **Involved** – Included in the process from the beginning and is provided ongoing opportunities to provide input and feedback regarding how input influenced the decision(s).
- **Collaborating** – Included in all levels of involvement and offered direct engagement in the decision-making process by which attempts are made to reach consensus solutions. However, the approver remains the ultimate decision-maker.
- **Approving** – Final decision-making authority (It is important to note that government agencies are generally not permitted to delegate decision making authority to the public).

Figure H-1 illustrates the extent of participation by varying stakeholders in the master planning process.

FIGURE H-1
STAKEHOLDER ROLES IN THE AIRPORT MASTER PLANNING PROCESS



Source: RS&H, 2021

H.5 STAKEHOLDER WORKING GROUPS AND ADVISORY COMMITTEES

The formation of master plan stakeholder working groups and advisory committees allowed for an efficient and effective planning process, providing appropriate levels of stakeholder involvement at key milestones. The public engagement process for the two airports was the same, but stakeholder groups for each airport were tailored to the specific airport. The following sections describe the different stakeholder groups and identified individual representatives for each airport.

H.5.1 U42 and TVY Airports Working Group

An internal Airports Working Group (AWG), comprising SLCDA executive leadership and the Master Plan Study Team (Consultant), was tasked with conducting working meetings to address ongoing master plan studies, as well as content creation (Consultant) and review (SLCDA) for upcoming Advisory Committee and Public Information Meetings. Detailed agendas for these meetings were determined prior to the meetings and developed according to ongoing/upcoming master plan tasks. AWG members are shown in **Table H-1** along with their representative organizations and roles within the master plan.

TABLE H-1
U42 AND TVY AIRPORTS WORKING GROUP MEMBERS

Name	Organization and Title	Role
Bill Wyatt	SLCDA - Executive Director	Approving
Brady Fredrickson	SLCDA – Planning Director	Approving
Sean Nelson	SLCDA – GA Master Plans Project Manager	Approving
Nancy Volmer	SLCDA - Director of Public Relations & Marketing	Collaborating
Shane Andreasen	SLCDA - Director of Airport Administration/Commercial Properties	Collaborating
Kevin Robins	SLCDA - Director of Engineering	Collaborating
Pete Higgins	SLCDA – Director of Airport Operations	Collaborating
Ed Clayson	SLCDA – Director of Airport Maintenance	Collaborating
Brian Butler	SLCDA – Director of Airport Finance and Accounting	Collaborating
Ed Cherry	SLCDA – Director of Information Technology	Collaborating
Al Stuart	SLCDA – Landside Administrative Manager	Collaborating
Treber Andersen	SLCDA – Landside Director	Collaborating
Dave Korzep	SLCDA – Airport Security Superintendent	Collaborating
Dave Teggins	SLCDA – General Aviation Manager	Collaborating
Patty Nelis	SLCDA – Environmental Program Manager	Collaborating
Bob Bailey	SLCDA – Civil Engineer	Collaborating
Scott Martin	SLCDA – Airport Architect	Collaborating
Dusty Bills	SLCDA – Airfield Maintenance Superintendent	Collaborating
Medardo Gomez	SLCDA –Director Operations and Readiness	Collaborating

Cyndy Miller	SLCIA – Airport Advisory Board Vice Chair	Collaborating
Larry Pinnock	SLCIA – Airport Advisory Board Chair	Collaborating

The Master Plan Study Team met and collaborated with the AWG, either virtually or in-person, a total of nine times, as detailed in **Table H-2**.

TABLE H-2
U42 AND TVY AIRPORTS WORKING GROUPS MEETINGS

Date	Topic	In-Person/Virtual
October 20, 2021	Kick-Off/Visioning	In-Person
February 1, 2022	Progress Update	Virtual
April 18, 2022	Inventory and Forecast	In-Person
July 20, 2022	Facility Requirements	In-Person
October 19, 2022	Preliminary Airport Development Alternatives	In-Person
February 7, 2023	Progress Update	Virtual
April 13, 2023	Airport Development Alternatives	In-Person
October 18, 2023	Progress Update	Virtual
February 29, 2024	Final Results	In-Person

H.5.2 Master Plan Advisory Committees

Advisory Committees were established to review technical analyses at crucial junctures during the studies, offer input to the study team, and act as conduits for disseminating Master Plan Study Team data to represented agencies, communities, organizations, and interested parties. These committees included representatives from both the aviation and community sectors and were divided into two groups: the Technical Advisory Committee (TAC) and the Policy Advisory Committee (PAC).

H.5.2.1 Technical Advisory Committees

The Technical Advisory Committee (TAC) focused its efforts on reviewing master planning analyses and various tasks from a technical perspective. This committee comprised representatives from SLCDA staff (across various divisions), West Jordan representatives, Utah Department of Transportation (UDOT), Metropolitan Planning Organization (MPO), Community and Transportation Planning, FAA including Air Traffic Control Tower (ATCT) and the regional Airports District Office (ADO), the Utah Air National Guard (UTANG), general aviation tenants, and other key airport users. Its responsibility was to review planning data/analyses to provide feedback and recommendations to the Master Plan Study Team from both technical and operational standpoints. TAC members, along with their representative organizations and roles within the master plan for U42, are displayed in **Table H-3**, while those for TVY are presented in **Table H-4**.

TABLE H-3
U42 TAC MEMBERS

Name	Organization/Title	Role
Christine Yaffa	FAA ADO – Airport Planner	Approving[1]
Melissa Worthen	West Jordan City Council – District Two	Involved
Zach Jacob	West Jordan City Council – District Three	Involved
Ray McCandless	West Jordan - Senior Planner	Involved
Larry Gardner	West Jordan - Planning Director	Involved
Kayla Mauldin	Greater Salt Lake Municipal Services – Senior Long-Range Planner	Involved
Richard Meyer	West Jordan – Airport Advisory Committee	Involved
Greg Bessar	West Jordan – Airport Advisory Committee	Involved
Steve Schiele	West Jordan – Airport Advisory Committee	Involved
Jim Dearden	West Jordan – Airport Advisory Committee	Involved
Jason Hess	West Jordan – Airport Advisory Committee	Involved
James Sidwell	West Jordan – Airport Advisory Committee AOPA Representative	Involved
Nikki Navio	Wasatch Front Regional Council	Involved
Jory Johner	Wasatch Front Regional Council	Involved
Jared Esselman	UDOT – Director of Aeronautics	Involved
Clint Bradley	FAA Tower Operations Manager	Involved
Scott Penn	FAA Support Manager	Involved
Kevin Davis	FAA ATC	Involved
Megan Leonard	UDOT – Traffic and Safety	Involved
Randon Russell	Randon Aviation	Involved
Aldin Pope	Upper Limit Aviation	Involved
Neil Amonson	Absolute Flight	Involved
Doug Frix	Aerotech Aviation	Involved
Lorri Hansen	Utah Helicopter Flight School	Involved
Huy Bui	Advantage Aviation	Involved
Lorri Hansen	Platinum Aviation	Involved
Shawn O'Brien	Vintage Aviation Museum	Involved
Col Gordon Pedersen	Utah Air National Guard (UTANG)	Involved
Major Noe Vazquez	Utah Air National Guard (UTANG)	Involved

[1] FAA ADO is responsible for approving final Aviation Demand Forecast and Airport Layout Plans.

Bryce Royle	SLCDA – Airport Operations Manager	Collaborating
Al Stuart	SLCDA – Airfield Administrative Manager	Collaborating
Medardo Gomez	SLCDA –Director Operations and Readiness	Collaborating
Scott Martin	SLCDA – Airport Architect	Collaborating
Bob Bailey	SLCDA – Civil Engineer	Collaborating
Dean Warner	SLCDA – Network Administrator (IT)	Collaborating
David Miller	SLCDA – Airport Engineering	Collaborating
David Teggins	SLCDA – General Aviation Manager	Collaborating
Matt Brown	SLCDA – Airside Airport Operation Manager	Collaborating
Teresa Griffiths	SLCDA – FBO Airport Operation Manager	Collaborating
Kristian Wade	SLCDA – Operations Manager	Collaborating
Phil Bevan	SLCDA – Airport Properties Specialist	Collaborating

TABLE H-4
TVY TAC MEMBERS

Name	Organization/Title	Role
Christine Yaffa	FAA ADO – Airport Planner	Approving[2]
Clint Bradley	FAA Tower Operations Manager	Involved
Scott Penn	FAA Support Manager	Involved
Kevin Davis	FAA ATC	Involved
Scott Droubay	Erda City Council – District One	Involved
Joshua Martin	Erda City Council – District Three	Involved
Jess Bird	Erda City Council – District Five (Chair)	Involved
Kristy Clark	Grantsville - Planning	Involved
Marc Warran	Skydive Utah	Involved
Kelly Rudger	BLM – Unit Aviation Manager	Involved
Trent Duncan	BLM – Asst District Manager West Desert District	Involved
Scott Baird	Utah Department of Environmental Quality – Deputy Director	Involved
Rachelle Custer	Tooele County - Planning Director	Involved
Jeff Miller	Tooele County Planner	Involved
Craig Smith	Tooele County Planning Commission	Involved
Jeff McNeill	Tooele County Planning Commission	Involved
Mark Israelsen	AOPA Representative	Involved

[2] FAA ADO is responsible for approving final Aviation Demand Forecast and Airport Layout Plans.

Anthon Stauffer	The Romney Group	Involved
Grant Farnsworth	Midvalley Highway Project	Involved
Jared Esselman	UDOT – Director of Aeronautics	Involved
Megan Leonard	UDOT – Traffic and Safety	Involved
Andy Welch	Tooele County Manager	Involved
Britney Lopez	Tooele County Assistant Manager	Involved
Jared Hamner	Tooele County Council – District Four (Vice Chair)	Involved
Tom Tripp	Tooele County Council – District Five	Involved
Buck Peck	North Tooele Fire Department – Fire Marshall	Involved
Nikki Navio	Wasatch Front Regional Council	Involved
Wayne Bennion	Wasatch Front Regional Council	Involved
Bryce Royle	SLCDA – Airport Operations Manager	Collaborating
Al Stuart	SLCDA – Airfield Administrative Manager	Collaborating
Medardo Gomez	SLCDA – Director Operations and Readiness	Collaborating
Scott Martin	SLCDA – Airport Architect	Collaborating
Bob Bailey	SLCDA – Civil Engineer	Collaborating
Dean Warner	SLCDA – Network Administrator (IT)	Collaborating
David Miller	SLCDA – Airport Engineering	Collaborating
David Teggins	SLCDA – General Aviation Manager	Collaborating
Matt Brown	SLCDA – Airside Airport Operation Manager	Collaborating
Kristian Wade	SLCDA – Operations Manager	Collaborating
Phil Bevan	SLCDA – Airport Properties Specialist	Collaborating

H.5.2.2 Policy Advisory Committees

The Policy Advisory Committee (PAC) was comprised of local elected leaders and SLCDA senior leadership, as well as key members of other business and economic development agencies, governmental and community groups, and policymakers. This Committee was tasked with providing input to the Master Plan Study Team on macro-level policy issues, considerations, near-term and long-range aviation goals of their respective areas, and other factors that shaped or affected the role of each airport in the Salt Lake Valley. This committee also contributed feedback regarding facility or operational needs that affected the diversity and breadth of analyses undertaken in the master planning process. Additionally, the PAC provided valuable insight regarding community issues and concerns relating to the system of airports and each airport's relationship to the individual municipalities and overall community. PAC members, alongside their representative organizations and roles within the master plan for U42, are displayed in **Table H-5**, and shown in
Table H-6 for TVY.

TABLE H-5
U42 POLICY ADVISORY COMMITTEE MEMBERS

Name	Organization and Title	Role
Christine Yaffa	FAA ADO – Airport Planner	Approving[3]
Paul Coates	West Jordan – Director of Planning	Involved
Chris McConnehey	West Jordan City Council – District One	Involved
David Pack	West Jordan City Council – District Four	Involved
Chris Pegra	West Jordan - Economic Development Director	Involved
Korban Lee	West Jordan - City Administrator	Involved
Scott Langord	West Jordan - Community Development Director	Involved
Larry Pinnock	SLCIA – Airport Advisory Board Chair	Involved
Cyndy Miller	SLCIA – Airport Advisory Board Vice Chair	Involved
Theresa Foxley	SLCIA – Airport Advisory Board Vice Chair	Involved
Steve Price	SLCIA – Airport Advisory Board Chair	Involved
Nancy Volmer	SLCDA - Director of Public Relations & Marketing	Collaborating
Shane Andreasen	SLCDA - Director of Airport Administration/Commercial Properties	Collaborating
Kevin Robins	SLCDA - Director of Engineering	Collaborating
Pete Higgins	SLCDA – Director of Airport Operations	Collaborating
Ed Clayson	SLCDA – Director of Airport Maintenance	Collaborating
Brian Butler	SLCDA – Director of Airport Finance and	Collaborating
Ed Cherry	SLCDA – Director of Information Technology	Collaborating

TABLE H-6
TVY POLICY ADVISORY COMMITTEE MEMBERS

Name	Organization and Title	Role
Christine Yaffa	FAA ADO – Airport Planner	Approving[4]
Brittany Lopez	Tooele Assistant County Manager	Involved
Tye Hoffmann	Tooele County Council – District Three	Involved
Scott Wardle	Tooele County Council – District One	Involved
Neil Critchlow	Grantsville Mayor	Involved
Brent Marshall	Former Grantsville Mayor	Involved
Jesse Wilson	Grantsville City Manager	Involved

[3] FAA ADO is responsible for approving final Aviation Demand Forecast and Airport Layout Plans.
[4] FAA ADO is responsible for approving final Aviation Demand Forecast and Airport Layout Plans.

Terry Miner	Erda City Council – District Two	Involved
Jared Stewart	Tooele City – Economic Development	Involved
Larry Pinnock	SLCIA – Airport Advisory Board Chair	Involved
Cyndy Miller	SLCIA – Airport Advisory Board Vice Chair	Involved
Theresa Foxley	SLCIA – Airport Advisory Board Vice Chair	Involved
Steve Price	SLCIA – Airport Advisory Board Chair	Involved
John Wright	Tooele County Planning Commission	Involved
Brad Bartholomew	Tooele County Planning Commission	Involved
Ryan Englund	Better City Consulting President	Involved
Nancy Volmer	SLCDA - Director of Public Relations & Marketing	Collaborating
Shane Andreasen	SLCDA - Director of Airport Administration/Commercial Properties	Collaborating
Kevin Robins	SLCDA - Director of Engineering	Collaborating
Pete Higgins	SLCDA – Director of Airport Operations	Collaborating
Ed Clayson	SLCDA – Director of Airport Maintenance	Collaborating
Brian Butler	SLCDA – Director of Airport Finance and Accounting	Collaborating
Ed Cherry	SLCDA – Director of Information Technology	Collaborating

There were six critical milestones within the master planning process at which time the TACs and PACs were engaged to solicit feedback on study analysis. These were as follows:

1. Project initiation/visioning (Phase 1 – Pre-planning)
2. Inventory review and Forecast development/facility requirements (Phase 2 – Investigation)
3. Alternatives identification and analysis (Phase 3 – Solutions)
4. Selection of preferred alternative (Phase 3 – Solutions)
5. Implementation strategy and Capital Improvement Plan (CIP) (Phase 4 – Implementation)
6. Final Airport Layout Plan (ALP) and project results (Phase 4 – Implementation)

The Master Plan Study Team met and collaborated with the PACs and TACs a total of six times, as detailed in **Table H-7**. With the exception of the kick-off meeting, which was a joint PAC and TAC meeting, subsequent meetings were dedicated PAC or TAC meetings for U42 and TVY, respectively.

TABLE H-7
U42 AND TVY PAC/TAC MEETINGS

Date	Topic	In-Person/Virtual
October 20-21, 2021	Kick-Off/Visioning	In-Person
April 19-20, 2022	Inventory and Forecast	In-Person
July 21, 2022	Facility Requirements	In-Person
October 19-20, 2022	Preliminary Airport Development Alternatives	In-Person
April 11-12, 2023	Airport Development Alternatives	In-Person
February 27-28, 2024	Final Results	In-Person

H.5.3 General Aviation Strategy Advisory Committee

The General Aviation Strategy Advisory Committee (GASAC) consisted of selected stakeholders advising on matters concerning general aviation activities within the entire airport system. These committee members represented general aviation business and user interests within the region, including adjacent community representatives, pilot groups, the Airport Board, and others. The GASAC was structured to address topics for both TVY and U42. The members of this working group are listed in **Table H-8** along with their representative organizations and roles within the master plan.

TABLE H-8
GENERAL AVIATION STRATEGIC ADVISORY COMMITTEE

Name	Organization and Title	Role
Theresa Foxley	SLCIA – Airport Advisory Board Vice	Collaborating
Tye Hoffmann	Tooele County Council – District Three	Collaborating
Dirk Burton	Airport Advisory Board West Jordan Mayor	Collaborating
Steve Price	SLCIA – Airport Advisory Board Chair	Collaborating
Bill Wyatt	SLCDA - Executive Director	Approving
Brady Fredrickson	SLCDA – Planning Director	Approving
Sean Nelson	SLCDA – GA Master Plans Project	Approving

The Master Plan Study Team met and collaborated with the GASAC, either virtually or in-person, a total of nine times, as detailed in **Table H-9**.

TABLE H-9
U42 AND TVY GENERAL AVIATION STRATEGIC ADVISORY COMMITTEE MEETINGS

Date	Topic	In-Person/Virtual
November 10, 2021	Kick-Off/Visioning	In-Person
February 1, 2022	Progress Update	Virtual
April 18, 2022	Inventory and Forecast	In-Person
July 20, 2022	Facility Requirements	In-Person
October 18, 2022	Preliminary Airport Development Alternatives	In-Person
February 7, 2023	Progress Update	Virtual
April 13, 2023	Airport Development Alternatives	In-Person
October 17, 2023	Progress Update	Virtual
February 29, 2024	Final Results	In-Person

H.5.4 Airport Board

The SLCDA Board was also engaged throughout the Master Plans, with meetings aligning with five key milestones throughout the projects. The first meeting was presented by the Master Plan Study Team, while the subsequent updates were provided by Brady Fredrickson (SLCDA – Planning Director). SLCDA Updates provided to the SLCDA Board during the master planning process are detailed in **Table H-10**.

TABLE H-10
SLCDA BOARD UPDATES

Date	Topic	In-Person/Virtual
February 16, 2022	Progress Update	Virtual
August 3, 2022	Facility Requirements Update - Brady	In-Person
September 21, 2022	Progress Update - Brady	In-Person
October 19, 2022	Progress Update - Brady	In-Person
May 17, 2023	Progress Update - Brady	In-Person

H.6 PUBLIC INVOLVEMENT

In addition to engaging with the identified stakeholder groups discussed above, there was also a significant effort to involve the general public in this master plan. Three public meetings for both TVY and U42 were conducted during the master planning process to disseminate information and gather feedback from the community, as shown in **Table H-11**.

TABLE H-11
PUBLIC INFORMATION MEETINGS

Date	Topic	In-Person/Virtual
October 18, 2022 (U42) **October 20, 2022 (TVY)**	Master Plan Overview, Aviation Demand Forecast, Facility Requirements	In-Person
April 11, 2023 (U42) **April 13, 2023 (TVY)**	Master Plan Overview/Recap, Airport Development Alternatives, Comprehensive Development Plan	In-Person
February 27, 2024 (U42) **February 29, 2024 (TVY)**	Master Plan Overview/Recap, Final Results	In-Person

These meetings were advertised through various channels, including web announcements, email, newspaper public notices, and social media platforms. **Figure H-2** displays two social media announcements from SLCDA promoting the final public information meetings in February 2024.

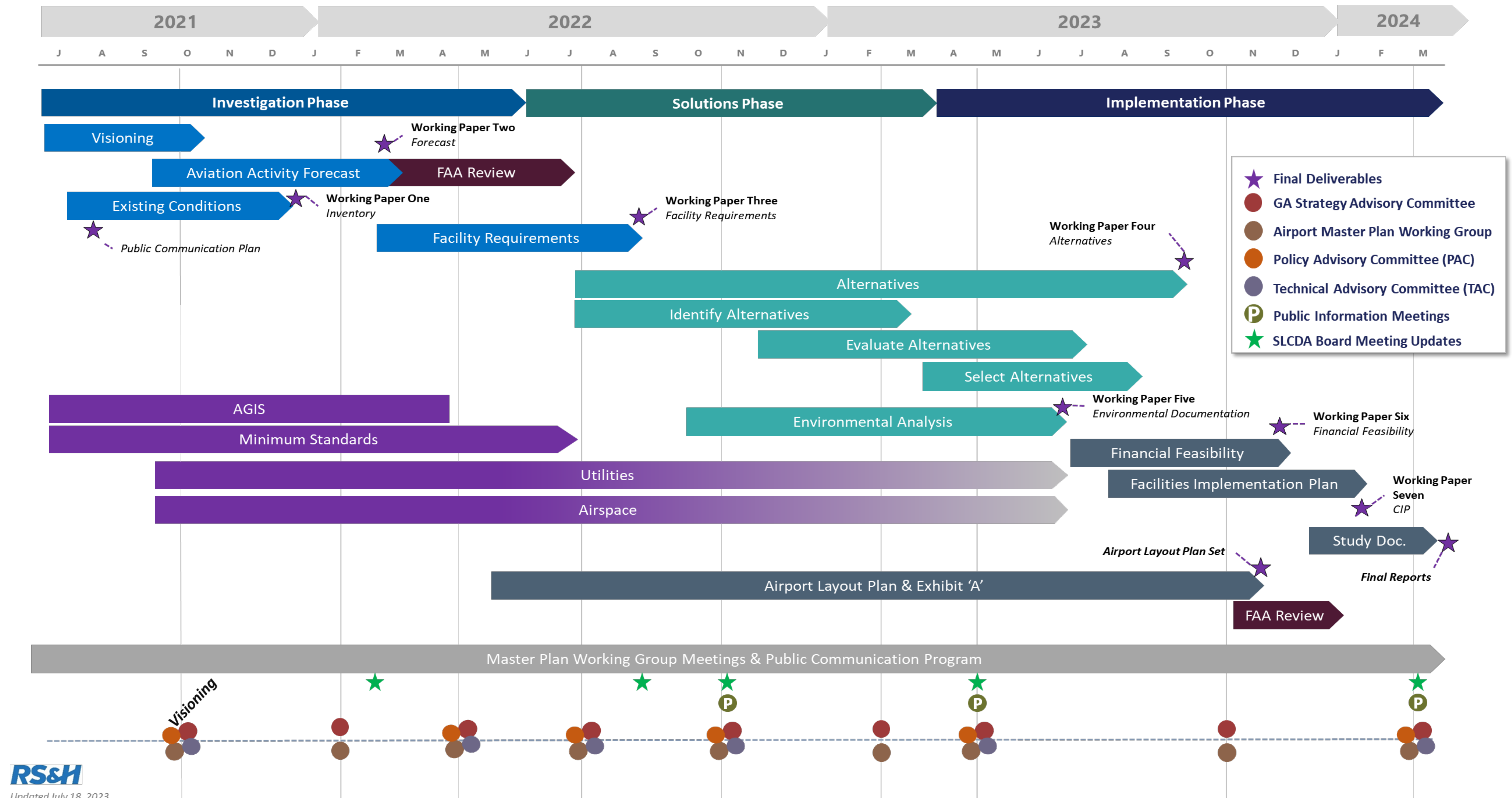
FIGURE H-2
PUBLIC INFORMATION MEETINGS - SOCIAL MEDIA ANNOUNCEMENTS

Source: X (@slcairport)

H.7 MASTER PLAN SCHEDULE

The Master Plan Study Team engaged stakeholders and the public based on the schedule outlined in **Figure H-3**, which guided the master plan from inception to completion.

FIGURE H-3
MASTER PLAN SCHEDULE



APPENDIX I

Airport Layout Plan Sheet Set

FAA APPROVAL LETTER

From: Sweeney, John (FAA)
To: Bill Wyatt
Cc: Fredrickson, Brady; Becker, Michael; Faulkner, Brian; Nelson, Sean
Subject: [External] South Valley ALP Approval
Date: Wednesday, March 12, 2025 2:09:15 PM
Attachments: image001.png

External Sender: Please use caution with links and attachments.

U.S. Department of Transportation
Federal Aviation Administration

Northwest Mountain Region
Colorado · Idaho · Montana · Oregon · Utah
Washington · Wyoming

Denver Airports District Office
26805 E. 68th Ave., Suite 224
Denver, CO 80249

3/12/2025

Mr. Bill Wyatt
Executive Director
Salt Lake City Department of Airports
3920 W Terminal Drive
Salt Lake City, UT 84112

South Valley Regional
Salt Lake City, UT
3-49-0032-019-2021
Airspace Case: 2024-ANM-2852-NRA
Airport Layout Plan (ALP)

Dear Mr. Wyatt:

The ALP for the subject airport, prepared by RS&H and bearing your signature, is conditionally approved. A signed copy of the Federal Aviation Administration (FAA) approved ALP will be distributed by RS&H.

Notwithstanding, all items of development shall comply with the requirements of the National Environmental Policies Act of 1969 (P.L. 91-190), FAA order 1050.1F and 5050.4B. Early coordination is critical to ensure that project schedules as well as NEPA compliance can be met.

The referenced FAA aeronautical study (Airspace Case) was conducted during the review. This study found proposed development will not adversely affect the safe and efficient use of airspace by aircraft. This airspace study determination does not constitute FAA approval or disapproval of the physical development involved in the proposal. It is a determination with respect to the safe and efficient use of navigable airspace by aircraft and with respect to the safety of persons and property on the ground.

In making this determination, the FAA has considered matters such as the effects the proposal would have on existing or planned traffic patterns of neighboring airports, existing airspace structure and projected programs of the FAA, the safety of person and property on the ground, and existing or proposed manmade objects (on file with the FAA), and the known natural objects within the affected area.

The FAA has only limited means to prevent the construction of structures near an airport. The airport sponsor has the primary responsibility to protect the airport environs through such means as local zoning ordinances, property acquisition, avigation easements, letters of agreement or other means. We encourage communication with the appropriate local agencies to adopt zoning or other policies based on the revised plan.

Approval of the plan does not indicate that the United States will participate in the cost of any development proposed. AIP funding requires evidence that a project is eligible, justified, and reasonable at the time a funding request is ready for consideration.

When construction of any proposed structure or development indicated on the plan is undertaken, such construction requires normal 45 day advance notification to FAA for review in accordance with applicable Federal Aviation Regulation (FAR) (i.e., Parts 77, 157, 152, etc.). More notice is generally beneficial to ensure that all statutory, regulatory, technical and operational issues can be addressed in a timely manner.

The FAA Reauthorization Act of 2024 has limited the FAA's review and approval authority for Airport Layout Plans (ALP). The FAA's approval of this ALP is limited to existing facilities only for which the FAA retains approval authority. The FAA has not determined whether it retains review and approval authority for any proposed facilities depicted on the ALP associated with this letter (unless otherwise noted). FAA will determine whether it retains approval authority for ALP changes reflecting future facilities when such facilities are ripe for consideration (when such facilities are intended to be built), and such approval, if required, must be granted before construction occurs. Although the FAA's review and approval authority of proposed projects depicted on an ALP is limited, airport sponsors must continue to maintain an up-to-date ALP in accordance with Federal law, 49 U.S.C. § 47107(a)(16).

Please attach this letter to the ALP and retain it at the airport.

If you have questions, please call me at 303-342-1263.

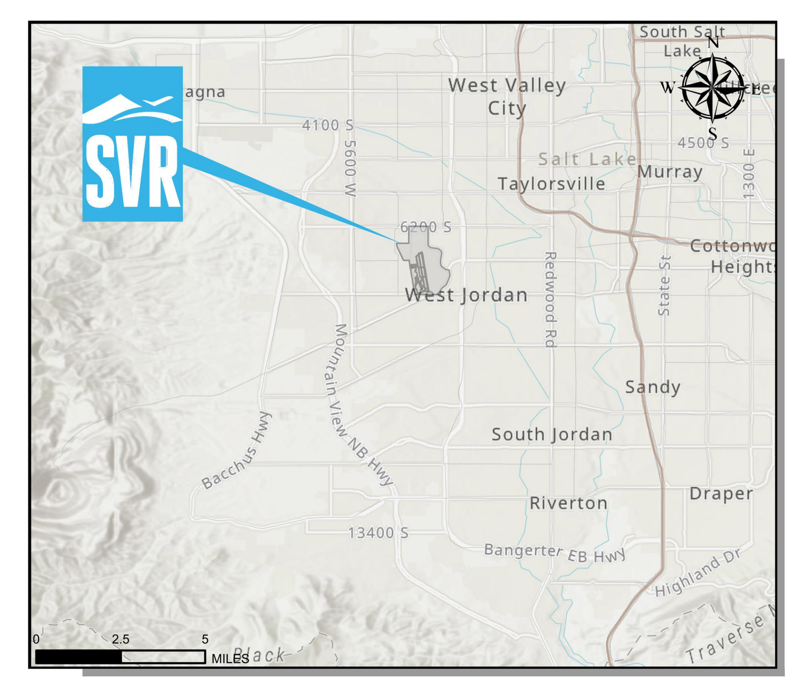
Sincerely,

John Sweeney,
Community Planner
Denver ADO

AIRPORT LAYOUT PLAN
FOR
SOUTH VALLEY REGIONAL AIRPORT (U42)
WEST JORDAN, UTAH

MARCH 2025

LOCATION MAP



VICINITY MAP

PLANS PREPARED BY:
RS&H
RS&H, Inc.
5215 WILEY POST WAY, SUITE 510
SALT LAKE CITY, UT 84116
(801) 924-8555
www.rsandh.com

REVISIONS		
NO.	DESCRIPTION	DATE

SALT LAKE CITY DEPARTMENT OF AIRPORTS

APPROVED Bill Wyatt 3/4/2025
NAME DATE

AIRPORT DATA TABLE			
		EXISTING	FUTURE
AIRPORT REFERENCE CODE		B-II	C-II
MEAN MAXIMUM TEMPERATURE / HOTTEST MONTH		94.0° F / JULY	SAME
AIRPORT ELEVATION (NAVD 88)		4,606.7'	SAME
AIRPORT NAVIGATIONAL AIDS		BEACON	SAME
AIRPORT REFERENCE POINT (NAD 83)	LAT.	40° 37' 10" N	40° 37' 17" N
	LONG.	111° 59' 34" W	111° 59' 35" W
MISCELLANEOUS FACILITIES		AWOS III, SEGMENTED CIRCLE	SAME
AIRPORT REFERENCE CODE AND CRITICAL AIRCRAFT		B-II / BEECH KING AIR B-200	C-II / CESSNA CITATION X+ /BEECH KING AIR B-200
MAGNETIC VARIATION		10° 56' EAST SEPTEMBER, 2023 ANNUAL CHANGE 0° 6' WEST	SAME
NPIAS SERVICE LEVEL		RELIEVER AIRPORT	SAME
STATE EQUIVALENT SERVICE ROLE		GENERAL AVIATION REGIONAL AIRPORT	SAME

MAGNETIC VARIATION SOURCE: NOAA NATIONAL CENTERS FOR ENVIRONMENTAL INFORMATION, WORLD MAGNETIC MODEL (WMM) (2019-2024)

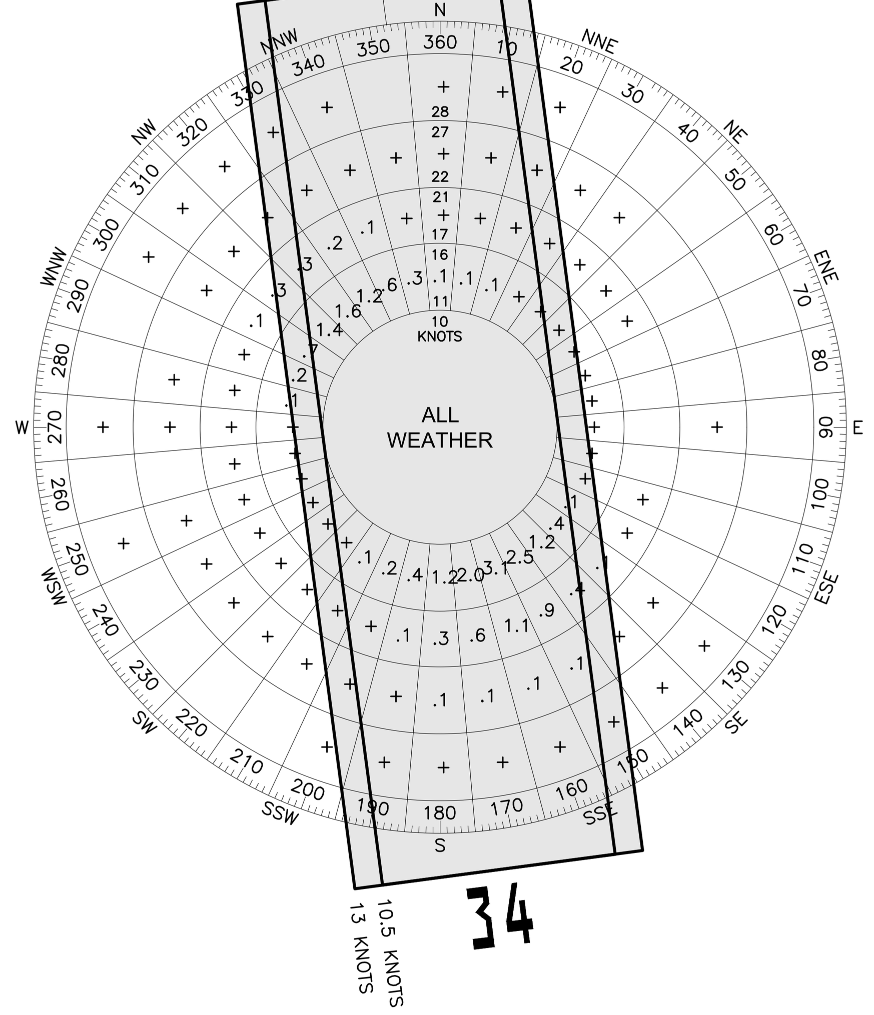
MODIFICATION TO STANDARDS			
DESCRIPTION	STANDARD TO BE MODIFIED	AIRSPACE CASE NO.	APPROVAL DATE
NONE REQUIRED			

DECLARED DISTANCES					
RUNWAY END		TORA	TODA	ASDA	LDA
RUNWAY 16	EXISTING	5,862'	5,862'	5,862'	5,862'
	FUTURE	6,600'	6,600'	6,600'	6,600'
RUNWAY 34	EXISTING	5,862'	5,862'	5,862'	5,862'
	FUTURE	6,600'	6,600'	6,600'	6,600'

SURVEY MONUMENTS					
IDENTIFIER	NGS PID	PACS OR SACS	LATITUDE	LONGITUDE	ELEVATION
FAA U42 E	AA3672	PACS	40° 37' 39.02" N	111° 59' 43.32" W	4,607.0'

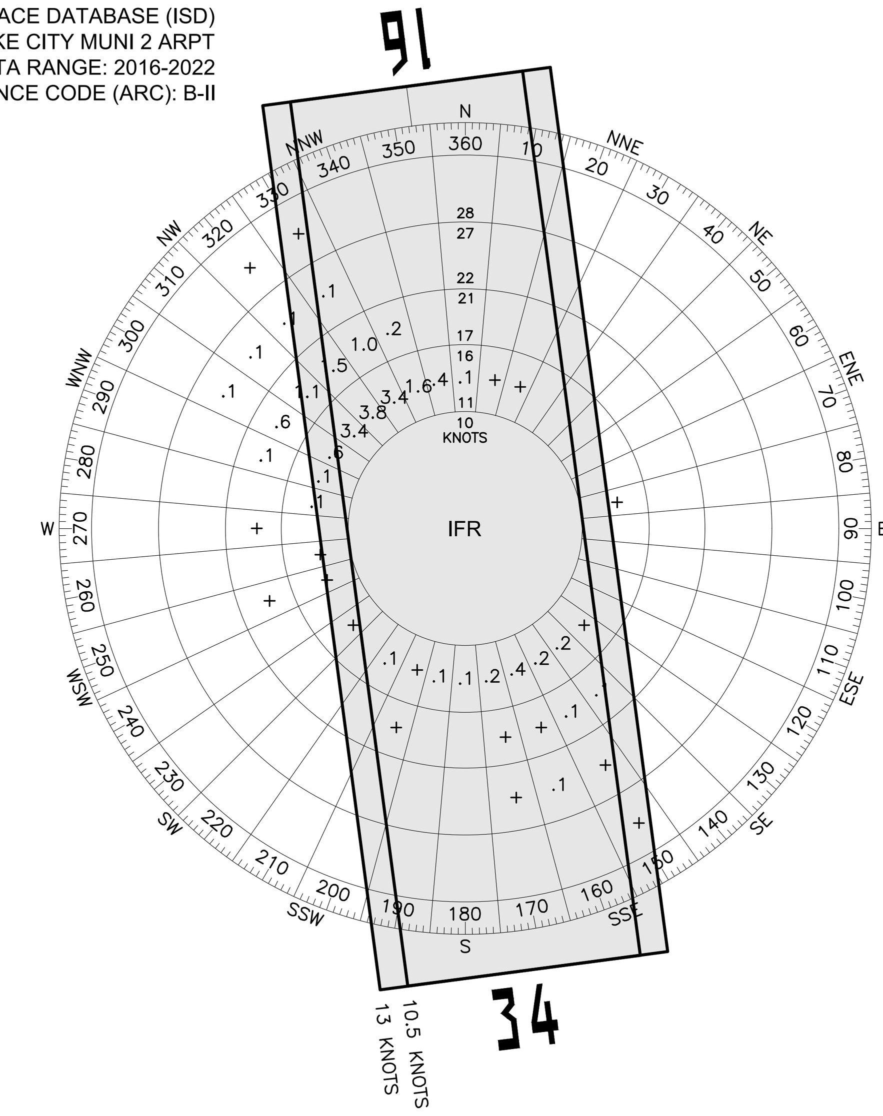
SOURCE: NATIONAL GEODETIC SURVEY, NAD 83 (2011), NAVD 88
NOTE: NO SACS ESTABLISHED FOR THIS AIRPORT.

WIND ROSE DATA SOURCE: NOAA INTEGRATED SURFACE DATABASE (ISD)
STATION: A00028 SALT LAKE CITY MUNI 2 ARPT
DATA RANGE: 2016-2022
AIRPORT REFERENCE CODE (ARC): B-II



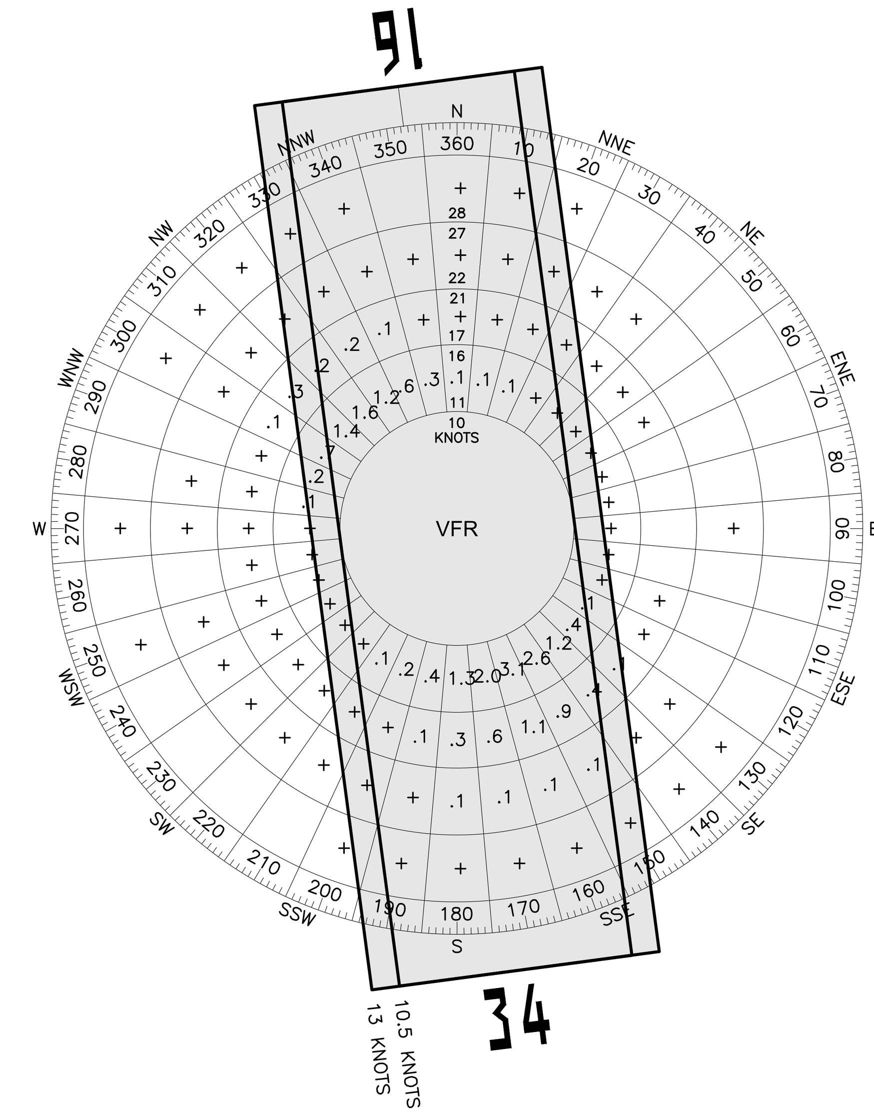
ALL WEATHER WIND DATA		
RUNWAY	10.5 KNOTS	13 KNOTS
RUNWAY 16-34	97.64%	99.18%

ALL WEATHER OBSERVATIONS: 156,929



IFR WIND DATA		
RUNWAY	10.5 KNOTS	13 KNOTS
RUNWAY 16-34	95.80%	98.24%

IFR OBSERVATIONS: 4,101



VFR WIND DATA		
RUNWAY	10.5 KNOTS	13 KNOTS
RUNWAY 16-34	97.68%	99.21%

VFR OBSERVATIONS: 150,974

ABBREVIATIONS:

ADG AIRPLANE DESIGN GROUP
ARP AIRPORT REFERENCE POINT
ASDA ACCELERATE STOP DISTANCE AVAILABLE
AWOS AUTOMATED WEATHER OBSERVING SYSTEM
D DUAL WHEEL (AIRCRAFT LANDING GEAR)
GPS GLOBAL POSITIONING SYSTEM
IFR INSTRUMENT FLIGHT RULES
LDA LANDING DISTANCE AVAILABLE
MIRL MEDIUM INTENSITY RUNWAY LIGHTS
MITL MEDIUM INTENSITY TAXIWAY LIGHTS
NGS NATIONAL GEODETIC SURVEY
NPIAS NATIONAL PLAN OF INTEGRATED AIRPORT SYSTEMS
PACS PRIMARY AIRPORT CONTROL STATION
PAPI PRECISION APPROACH PATH INDICATOR
PCN PAVEMENT CONDITION NUMBER
REIL RUNWAY END IDENTIFIER LIGHTS
RNAV AREA NAVIGATION
S SINGLE WHEEL (AIRCRAFT LANDING GEAR)
SACS SECONDARY AIRPORT CONTROL STATION
TDG TAXIWAY DESIGN GROUP
TDZ TOUCHDOWN ZONE
TODA TAKEOFF DISTANCE AVAILABLE
TORA TAKEOFF RUN AVAILABLE
VFR VISUAL FLIGHT RULES
(E) EXISTING CONDITIONS
(F) FUTURE CONDITIONS (1-20 YEARS)
(U) ULTIMATE CONDITIONS (20+ YEARS)

RUNWAY DATA TABLE		RUNWAY 16		RUNWAY 34	
		EXISTING	FUTURE	EXISTING	FUTURE
RUNWAY DESIGN CODE (RDC)		B-II-VIS	C-II-4000	B-II-4000	C-II-4000
APPROACH REFERENCE CODE (APRC)		D-IV-VIS	D-IV-4000	D-IV-4000	D-IV-4000
DEPARTURE REFERENCE CODE (DPRC)		D-IV D-V	D-IV D-V	D-IV D-V	D-IV D-V
PAVEMENT SURFACE		ASPHALT	ASPHALT	ASPHALT	ASPHALT
SURFACE TREATMENT		N/A	SAME	N/A	SAME
PAVEMENT STRENGTH - WHEEL LOADING (POUNDS)	S	30,000	SAME	30,000	SAME
	D	43,000		43,000	
PAVEMENT STRENGTH - PCN		N/A	N/A	N/A	N/A
RUNWAY GRADIENT		0.02%	0.01%	0.02%	0.01%
PERCENT WIND COVERAGE (ALL WEATHER)	10.5 KNOTS	97.64%	SAME	97.64%	SAME
	13 KNOTS	99.18%		99.18%	
RUNWAY LENGTH		5,862'	6,600'	5,862'	6,600'
RUNWAY WIDTH		100'	SAME	100'	SAME
RUNWAY END - COORDINATES (NAD 83)	LAT.	40° 37' 39.07" N	40° 37' 49.75" N	40° 36' 41.66" N	40° 36' 45.10" N
	LONG.	111° 59' 39.40" W	111° 59' 41.26" W	111° 59' 29.40" W	111° 59' 30.00" W
RUNWAY END - ELEVATION (NAVD 88)		4,603.2'	4,601.5' (EST.)	4,601.9'	SAME
DISPLACED THRESHOLD - LENGTH		N/A	SAME	N/A	SAME
DISPLACED THRESHOLD - COORDINATES (NAD 83)	LAT.	N/A	SAME	N/A	SAME
	LONG.	N/A	SAME	N/A	SAME
DISPLACED THRESHOLD - ELEVATION (NAVD 88)		N/A	SAME	N/A	SAME
RUNWAY LIGHTING		MIRL	SAME	MIRL	SAME
RUNWAY PROTECTION ZONE (RPZ)	APP.	500' x 1,000' x 700'	1,000' x 1,700' x 1,510'	1,000' x 1,700' x 1,510'	SAME
	DEP.		500' x 1,700' x 1,010'	500' x 1,000' x 700'	500' x 1,700' x 1,010'
RUNWAY MARKING		BASIC	SAME	NON-PRECISION	SAME
14 CFR PART 77 APPROACH CATEGORY		20:1	34:1	34:1	SAME
APPROACH TYPE		VISUAL	NON-PRECISION	NON-PRECISION	SAME
VISIBILITY MINIMUMS		VISUAL	>3/4 MILE	>3/4 MILE	SAME
AERONAUTICAL SURVEY		NON-VERTICALLY GUIDED	SAME	NON-VERTICALLY GUIDED	SAME
RUNWAY DEPARTURE SURFACE		YES	SAME	YES	SAME
RUNWAY SAFETY AREA (RSA)	WIDTH	150'	500'	150'	500'
	LENGTH BEYOND RWY END	300'	1000'	300'	1000'
RUNWAY OBJECT FREE AREA (ROFA)	WIDTH	500'	800'	500'	800'
	LENGTH BEYOND RWY END	300'	1,000'	300'	1000'
RUNWAY OBSTACLE FREE ZONE (ROFZ)	WIDTH	400'	SAME	400'	SAME
	LENGTH BEYOND RWY END	200'		200'	
PRECISION OBSTACLE FREE ZONE (POFZ)	WIDTH	N/A	SAME	N/A	SAME
	LENGTH BEYOND RWY END				
AC 150/5300-13B APPROACH SURFACE (APP)		20:1 (Surface 3) [1]	20:1 (Surface 4) [1]	20:1 (Surface 4) [1]	20:1 (Surface 4) [1]
VISUAL AND INSTRUMENT NAVAIDS		PAPI, REIL	SAME	RNAV (GPS), PAPI, REIL	SAME
CRITICAL AIRCRAFT		BEECH KING AIR B-200	CESSNA CITATION X+ / BEECH KING AIR B-200	BEECH KING AIR B-200	CESSNA CITATION X+ / BEECH KING AIR B-200
TOUCHDOWN ZONE ELEVATION (NAVD 88)		4,606.7'	4,606.2'	4,606.0'	4,606.6'

1. TABLE 3-2, TABLE 3-3, OR TABLE 3-4, AC 150/5300-13B
2. RUNWAYS MEET LINE OF SIGHT REQUIREMENTS.
3. NO PENETRATIONS TO AC 150/5300-13B APPROACH SURFACE.

EXISTING TAXIWAY / TAXILANE DATA TABLE	TWY A	TWY A1	TWY A2	TWY A3 (E) TWY A4 (F)	TWY A4	TWY B
TAXIWAY / TAXILANE WIDTH	50' (TDG 2A)	55' (TDG 2A)	50' (TDG 2A)	51' (TDG 2A)	52' (TDG 2A)	50' (TDG 2A)
TAXIWAY EDGE SAFETY MARGIN (TESM)	16.5'	19'	16.5'	17'	17.5'	16.5'
TAXIWAY SHOULDER WIDTH	12'	11'	11'	14'	14'	12'
TAXIWAY / TAXILANE SAFETY AREA (TSA)	79' (ADG II)	79' (ADG II)	79' (ADG II)	79' (ADG II)	79' (ADG II)	79' (ADG II)
OBJECTS WITHIN TSA	NONE	NONE	NONE	NONE	NONE	NONE
TAXIWAY / TAXILANE OBJECT FREE AREA (TOFA)	124' (ADG II)	124' (ADG II)	124' (ADG II)	124' (ADG II)	124' (ADG II)	124' (ADG II)
OBJECTS WITHIN TOFA	NONE	NONE	NONE	NONE	NONE	NONE
RUNWAY HOLDING POSITION	N/A	200'	200'	200'	200'	N/A
TAXIWAY / TAXILANE LIGHTING	MITL	MITL	MITL	MITL	MITL	MITL

TAXIWAY / TAXILANE TO BE REMOVED (FUTURE CONDITION)

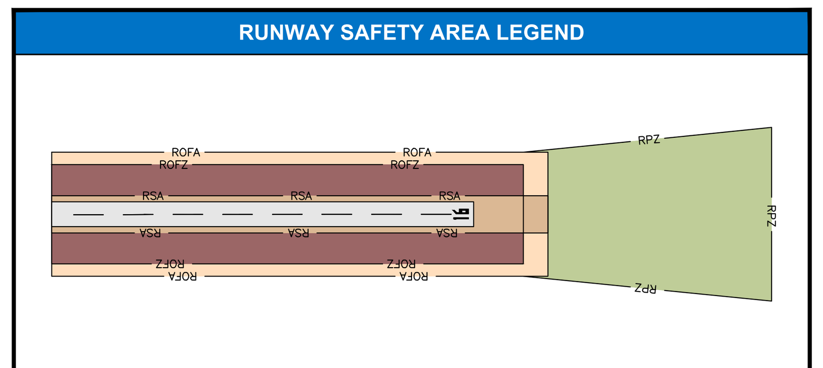
FUTURE TAXIWAY / TAXILANE DATA TABLE	TWY A	TWY A1	TWY A3	TWY A5	TWY A6	TWY A7	TWY A8
TAXIWAY / TAXILANE WIDTH	50' (TDG 2A)	50' (TDG 2A)	50' (TDG 2A)	50' (TDG 2A)	50' (TDG 2A)	50' (TDG 2A)	50' (TDG 2A)
TAXIWAY EDGE SAFETY MARGIN (TESM)	7.5'	7.5'	7.5'	7.5'	7.5'	7.5'	7.5'
TAXIWAY SHOULDER WIDTH	15'	15'	15'	15'	15'	15'	15'
TAXIWAY / TAXILANE SAFETY AREA (TSA)	79' (ADG II)	79' (ADG II)	79' (ADG II)	79' (ADG II)	79' (ADG II)	79' (ADG II)	79' (ADG II)
OBJECTS WITHIN TSA	NONE	NONE	NONE	NONE	NONE	NONE	NONE
TAXIWAY / TAXILANE OBJECT FREE AREA (TOFA)	124' (ADG II)	124' (ADG II)	124' (ADG II)	124' (ADG II)	124' (ADG II)	124' (ADG II)	124' (ADG II)
OBJECTS WITHIN TOFA	NONE	NONE	NONE	NONE	NONE	NONE	NONE
RUNWAY HOLDING POSITION	N/A	250'	250'	250'	250'	N/A	N/A
TAXIWAY / TAXILANE LIGHTING	MITL	MITL	MITL	MITL	MITL	MITL	MITL

FUTURE TAXIWAY / TAXILANE DATA TABLE	TWY B	TWY C	TWY C1	TWY C2	TWY C3	TWY C4
TAXIWAY / TAXILANE WIDTH	50' (TDG 2A)	50' (TDG 2A)	50' (TDG 2A)	50' (TDG 2A)	50' (TDG 2A)	50' (TDG 2A)
TAXIWAY EDGE SAFETY MARGIN (TESM)	7.5'	7.5'	7.5'	7.5'	7.5'	7.5'
TAXIWAY SHOULDER WIDTH	15'	15'	15'	15'	15'	15'
TAXIWAY / TAXILANE SAFETY AREA (TSA)	79' (ADG II)	79' (ADG II)	79' (ADG II)	79' (ADG II)	79' (ADG II)	79' (ADG II)
OBJECTS WITHIN TSA	NONE	NONE	NONE	NONE	NONE	NONE
TAXIWAY / TAXILANE OBJECT FREE AREA (TOFA)	124' (ADG II)	124' (ADG II)	124' (ADG II)	124' (ADG II)	124' (ADG II)	124' (ADG II)
OBJECTS WITHIN TOFA	NONE	NONE	NONE	NONE	NONE	NONE
RUNWAY HOLDING POSITION	N/A	N/A	250'	250'	250'	250'
TAXIWAY / TAXILANE LIGHTING	MITL	MITL	MITL	MITL	MITL	MITL

GENERAL NOTES

1. ALL COORDINATES ARE IN NORTH AMERICAN DATUM OF 1983 (NAD 83).
2. ALL ELEVATIONS ARE IN NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).
3. ALL ELEVATIONS EXPRESSED IN FEET ABOVE MEAN SEA LEVEL (MSL).

RUNWAY SAFETY AREA LEGEND



(Not To Scale)

RS&H, Inc.
5215 WILEY POST WAY, SUITE 510
SALT LAKE CITY, UT 84116
(801) 924-8555
www.rsandh.com

SOUTH VALLEY REGIONAL AIRPORT
WEST JORDAN, UTAH

AIRPORT LAYOUT PLAN

CONSULTANTS

REVISIONS

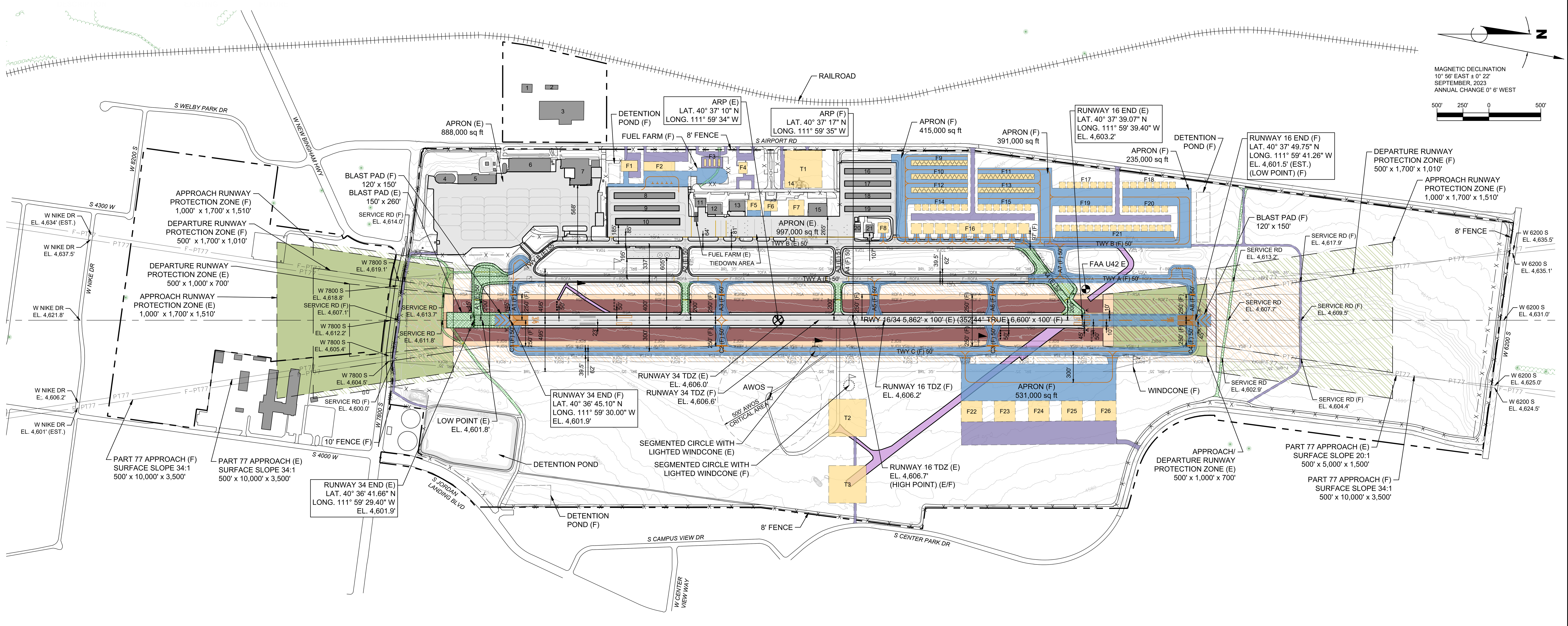
NO.	DESCRIPTION	DATE

DATE ISSUED: FEBRUARY 2025
REVIEWED BY:
DRAWN BY: BP
DESIGNED BY: TJM
PROJECT NUMBER
1025-0064-001

SHEET TITLE
AIRPORT DATA SHEET

SHEET NUMBER

Drawing: T:\P\2250064.001 SLC U42 Master Plan\CAD\ALP\C\U42_02_Data.dwg Plotted on: 2/12/2025 10:10 AM Plotted by: Peddie, Brendan



SALT LAKE CITY DEPARTMENT OF AIRPORTS

APPROVED: ________ 3/4/2025
NAME DATE

FAA CONDITIONAL APPROVAL

SUBJECT TO LETTER DATED: March 12, 2025

Digitally signed by JESSE A LYMAN
Date: 2025.03.12 13:57:26 -06'00'

FEDERAL AVIATION ADMINISTRATION
DENVER AIRPORTS DISTRICT OFFICE

DATED: March 12, 2025

AIRSPACE CASE NO: 2024-ANM-2852-NRA

NOTES:
1. ALL COORDINATES ARE IN NORTH AMERICAN DATUM OF 1983 (NAD 83).
2. ALL ELEVATIONS ARE IN NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).
3. ALL ELEVATIONS EXPRESSED IN FEET ABOVE MEAN SEA LEVEL (MSL).
4. ROADWAY ELEVATIONS INCLUDE TRAVERSEWAY ADJUSTMENT (23' RAILROADS | 17' HIGHWAYS | 15' PUBLIC ROADS | 10' PRIVATE ROADS).

EXISTING BUILDING LEGEND

BUILDING NO.	BUILDING DESCRIPTION	ELEVATION HIGHEST POINT (MSL)
1	UTAH ARMY NATIONAL GUARD	4,657' (EST.)
2	UTAH ARMY NATIONAL GUARD	4,640' (EST.)
3	UTAH ARMY NATIONAL GUARD	4,658' (EST.)
4	UTAH ARMY NATIONAL GUARD	4,661.3'
5	UTAH ARMY NATIONAL GUARD MAINTENANCE/STORAGE HANGAR	4,652.1'
6	UTAH ARMY NATIONAL GUARD MAINTENANCE/STORAGE HANGAR	4,663.9'
7	UTAH ARMY NATIONAL GUARD MAINTENANCE/STORAGE HANGAR	4,671.5'
8	T-HANGAR	4,639.7'
9	T-HANGAR	4,639.8'
10	T-HANGAR	4,639.1'
11	FBO AERONAUTICAL SERVICE HANGAR	4,661.3'
12	FBO AERONAUTICAL SERVICE HANGAR	4,657.7'
13	COMMERCIAL/MAINTENANCE/STORAGE HANGAR	4,668.4'
14	BEACON	4,676.8'
15	AERONAUTICAL SERVICE HANGAR	4,655.1'
16	T HANGAR (SHADE)	4,648.7'
17	T-HANGAR	4,650.1'
18	T-HANGAR (SHADE)	4,648.9'
19	T-HANGAR	4,647.6'
20	CORPORATE HANGAR	4,651.7'
21	CORPORATE HANGAR	4,648.3'

SURVEY MONUMENTS

IDENTIFIER	NGS PID	PACS OR SACS	LATITUDE	LONGITUDE	ELEVATION
FAA U42 E	AA3672	PACS	40° 37' 39.02" N	111° 59' 43.32" W	4,607.1'

SOURCE: NATIONAL GEODETIC SURVEY, NAD 83 (2011), NAVD 88
NOTE: NO SACS ESTABLISHED FOR THIS AIRPORT.

FUTURE BUILDING LEGEND

BUILDING NO.	BUILDING DESCRIPTION	ELEVATION HIGHEST POINT (MSL)
F1	MAINTENANCE HANGAR	4,668'
F2	FLIGHT SCHOOL	4,670'
F3	FUEL TANKS	4,659'
F4	OFFICE	4,657'
F5	BOX HANGAR	4,661'
F6	BOX HANGAR	4,661'
F7	BOX HANGAR	4,662'
F8	BOX HANGAR	4,659'
F9	NESTED T-HANGARS	4,662'
F10	NESTED T-HANGARS	4,660'
F11	NESTED T-HANGARS	4,656'
F12	NESTED T-HANGARS	4,658'
F13	NESTED T-HANGARS	4,654'
F14	BOX HANGARS	4,661'
F15	BOX HANGARS	4,657'
F16	BOX HANGARS	4,662'
F17	BOX HANGARS	4,652'
F18	BOX HANGARS	4,650'
F19	BOX HANGARS	4,649'
F20	BOX HANGARS	4,647'
F21	BOX HANGARS	4,648'
F22	CORPORATE HANGAR	4,639'
F23	CORPORATE HANGAR	4,639'
F24	CORPORATE HANGAR	4,635'
F25	CORPORATE HANGAR	4,635'
F26	CORPORATE HANGAR	4,634'
T1	POTENTIAL AIRPORT TRAFFIC CONTROL TOWER (ATCT) SITE	4,711'
T2	POTENTIAL AIRPORT TRAFFIC CONTROL TOWER (ATCT) SITE	4,671'
T3	POTENTIAL AIRPORT TRAFFIC CONTROL TOWER (ATCT) SITE	4,665'

NOTE: FUTURE BUILDING ELEVATIONS ARE ESTIMATED.

DESCRIPTION	EXISTING	FUTURE
PROPERTY LINE		N/A
RUNWAY SAFETY AREA	RSA	F-RSA
RUNWAY OBJECT FREE AREA	ROFA	F-ROFA
RUNWAY OBSTACLE FREE ZONE		
RUNWAY PROTECTION ZONE		
TAXIWAY SAFETY AREA	TSA	F-TSA
TAXIWAY OBJECT FREE AREA	TOFA	F-TOFA
35' BUILDING RESTRICTION LINE	BRL 35'	F-BRL 35'
PART 77 SURFACE	PT77	F-PT77
AIRFIELD PAVEMENT		
ABANDONED AIRFIELD PAVEMENT		N/A
AIRFIELD PAVEMENT TO BE REMOVED	N/A	
BUILDINGS		
MOVEMENT AREA BOUNDARY		
AIRCRAFT HOLDING POSITION		
PAVEMENT MARKING		
ROADWAY/PARKING		
ROADWAY/PARKING TO BE REMOVED	N/A	
UNPAVED ROADWAY/PARKING		N/A
AIRFIELD LIGHT		
REIL		
PAPI		
ARP		
BEACON		N/A
WINDCONE		
TREES		N/A
FENCE	— X — X — X —	— XX — XX —
SURVEY MONUMENT	PACS/SACS	N/A
DETENTION POND		
GROUND CONTOURS	100	N/A

RS&H
RS&H, Inc.
5215 WILEY POST WAY, SUITE 510
SALT LAKE CITY, UT 84116
(801) 924-8555
www.rsandh.com

SVR
SOUTH VALLEY REGIONAL AIRPORT
WEST JORDAN, UTAH

AIRPORT LAYOUT PLAN

CONSULTANTS

REVISIONS

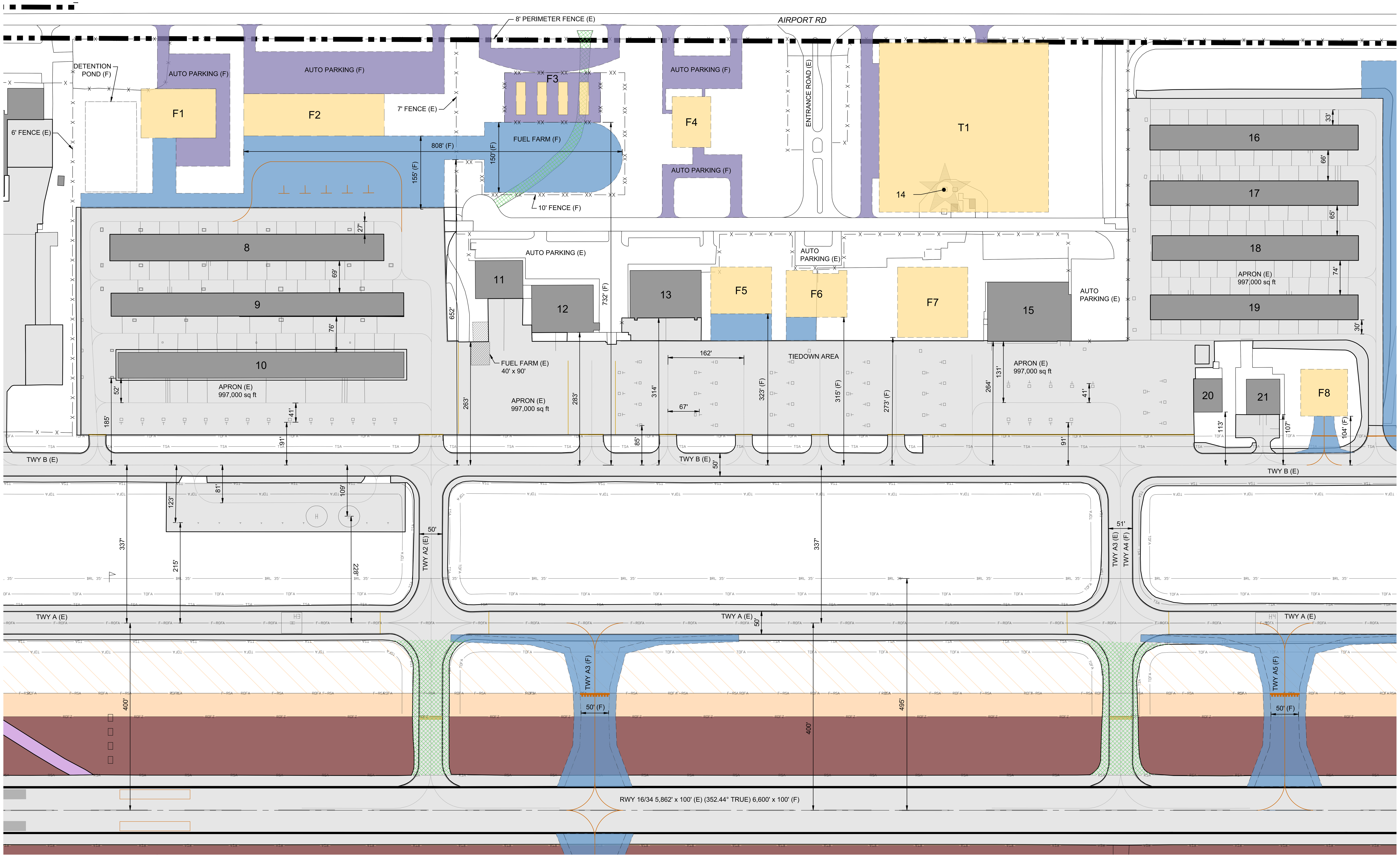
NO.	DESCRIPTION	DATE

DATE ISSUED: FEBRUARY 2025
REVIEWED BY:
DRAWN BY: BP
DESIGNED BY: TJM

PROJECT NUMBER
1025-0064-001

SHEET TITLE
AIRPORT LAYOUT DRAWING

SHEET NUMBER
3 OF 16



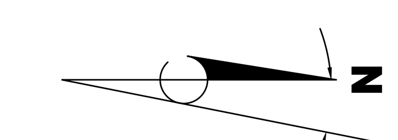
EXISTING BUILDING LEGEND		
BUILDING NO.	BUILDING DESCRIPTION	ELEVATION HIGHEST POINT (MSL)
8	T-HANGAR	4,639.7'
9	T-HANGAR	4,639.8'
10	T-HANGAR	4,639.1'
11	FBO AERONAUTICAL SERVICE HANGAR	4,661.3'
12	FBO AERONAUTICAL SERVICE HANGAR	4,657.7'
13	COMMERCIAL/MAINTENANCE/STORAGE HANGAR	4,668.4'
14	BEACON	4,676.8'
15	AERONAUTICAL SERVICE HANGAR	4,655.1'
16	T HANGAR (SHADE)	4,648.7'
17	T-HANGAR	4,650.1'
18	T-HANGAR (SHADE)	4,648.9'
19	T-HANGAR	4,647.6'
20	CORPORATE HANGAR	4,651.7'
21	CORPORATE HANGAR	4,648.3'

FUTURE BUILDING LEGEND		
BUILDING NO.	BUILDING DESCRIPTION	ELEVATION HIGHEST POINT (MSL)
F1	MAINTENANCE HANGAR	4,668'
F2	FLIGHT SCHOOL	4,670'
F3	FUEL TANKS	4,659'
F4	OFFICE	4,657'
F5	BOX HANGAR	4,661'
F6	BOX HANGAR	4,661'
F7	BOX HANGAR	4,662'
F8	BOX HANGAR	4,659'
T1	POTENTIAL AIRPORT TRAFFIC CONTROL TOWER (ATCT) SITE	4,711'

NOTE: FUTURE BUILDING ELEVATIONS ARE ESTIMATED.

DESCRIPTION	EXISTING	FUTURE
PROPERTY LINE		N/A
RUNWAY SAFETY AREA	RSA	F-RSA
RUNWAY OBJECT FREE AREA	ROFA	F-ROFA
RUNWAY OBSTACLE FREE ZONE	ROFZ	F-ROFZ
TAXIWAY SAFETY AREA	TSA	F-TSA
TAXIWAY OBJECT FREE AREA	TOFA	F-TOFA
35' BUILDING RESTRICTION LINE	BRL 35'	F-BRL 35'
AIRFIELD PAVEMENT		
ABANDONED AIRFIELD PAVEMENT		N/A
AIRFIELD PAVEMENT TO BE REMOVED	N/A	
BUILDINGS		
ROADWAY/PARKING		

DESCRIPTION	EXISTING	FUTURE
UNPAVED ROADWAY/PARKING		N/A
MOVEMENT AREA BOUNDARY		
AIRCRAFT HOLDING POSITION		
PAVEMENT MARKING		
PAPI		
BEACON		N/A
WINDCONE		
FENCE	— X — X — X —	— XX — XX —
DETENTION POND		



MAGNETIC DECLINATION
10° 56' EAST ± 0° 22'
SEPTEMBER, 2023
ANNUAL CHANGE 0° 6' WEST

100' 50' 0 100'

RS&H, Inc.
5215 WILEY POST WAY, SUITE 510
SALT LAKE CITY, UT 84116
(801) 924-8555
www.rsandh.com

SVR

SOUTH VALLEY REGIONAL AIRPORT

WEST JORDAN, UTAH

AIRPORT LAYOUT PLAN

CONSULTANTS

REVISIONS

NO.	DESCRIPTION	DATE

DATE ISSUED: FEBRUARY 2025
REVIEWED BY:
DRAWN BY: BP
DESIGNED BY: TJM

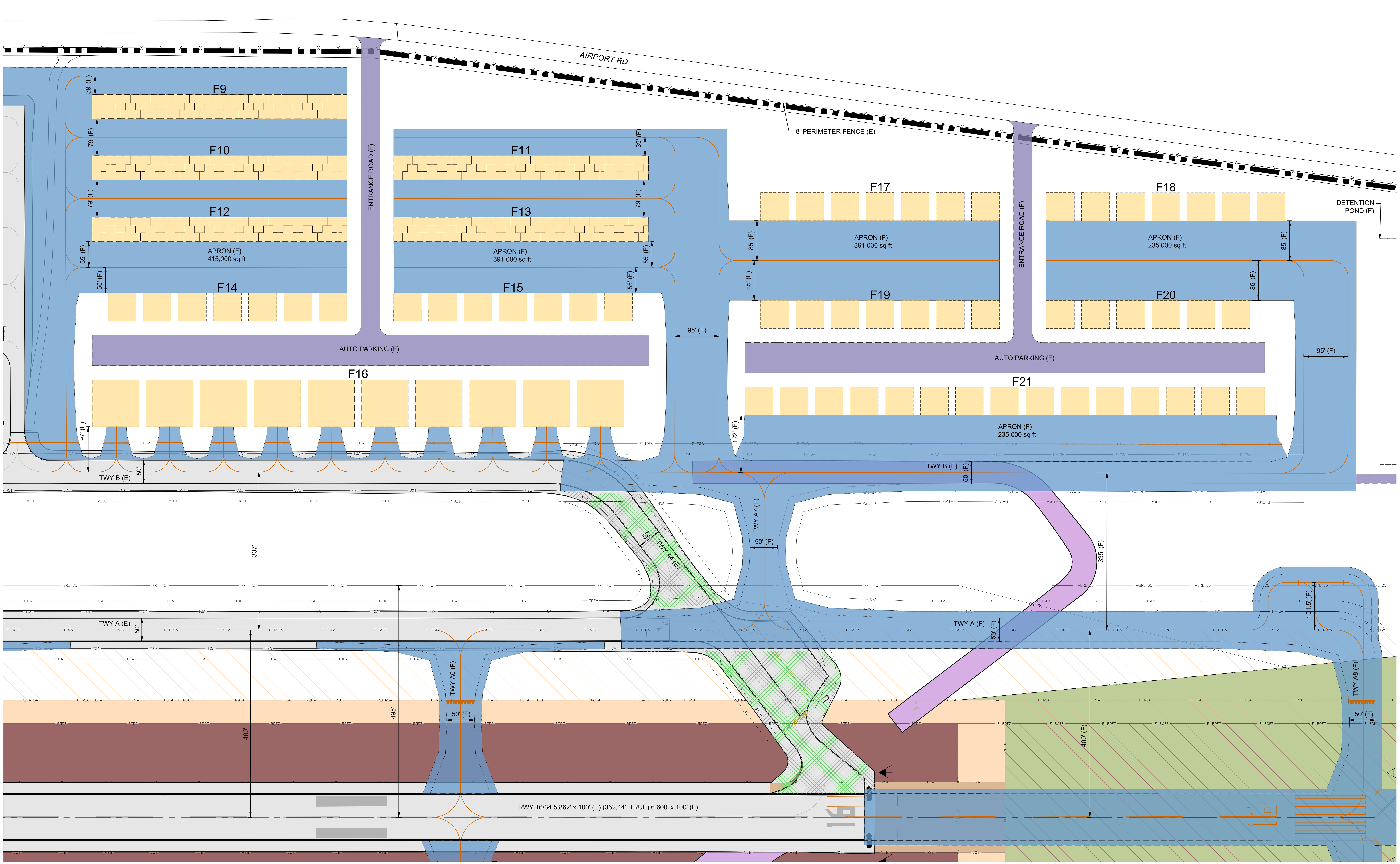
PROJECT NUMBER
1025-0064-001

SHEET TITLE

TERMINAL AREA PLAN SOUTH END

SHEET NUMBER

Drawing: T:\P\2250064.001 SLC U42 Master Plan\CAD\ALP\C\U42_04-05_Term.dwg Plotted on: 2/12/2025 10:13 AM Plotted by: Peddie, Brendan



FUTURE BUILDING LEGEND

BUILDING NO.	BUILDING DESCRIPTION	ELEVATION HIGHEST POINT (MSL)
F9	NESTED T-HANGARS	4,662'
F10	NESTED T-HANGARS	4,660'
F11	NESTED T-HANGARS	4,656'
F12	NESTED T-HANGARS	4,658'
F13	NESTED T-HANGARS	4,654'
F14	BOX HANGARS	4,661'
F15	BOX HANGARS	4,657'
F16	BOX HANGARS	4,662'
F17	BOX HANGARS	4,652'
F18	BOX HANGARS	4,650'
F19	BOX HANGARS	4,649'
F20	BOX HANGARS	4,647'
F21	BOX HANGARS	4,648'

NOTE: FUTURE BUILDING ELEVATIONS ARE ESTIMATED.

DESCRIPTION	EXISTING	FUTURE
PROPERTY LINE		N/A
RUNWAY SAFETY AREA		
RUNWAY OBJECT FREE AREA		
RUNWAY OBSTACLE FREE ZONE		
RUNWAY PROTECTION ZONE		
TAXIWAY SAFETY AREA	TSA	F-TSA
TAXIWAY OBJECT FREE AREA	TOFA	F-TOFA
35' BUILDING RESTRICTION LINE	BRL 35'	F-BRL 35'
PART 77 SURFACE	PT77	F-PT77
AIRFIELD PAVEMENT		
ABANDONED AIRFIELD PAVEMENT		N/A
AIRFIELD PAVEMENT TO BE REMOVED	N/A	

DESCRIPTION	EXISTING	FUTURE
BUILDINGS		
ROADWAY/PARKING		
MOVEMENT AREA BOUNDARY	N/A	
AIRCRAFT HOLDING POSITION		
PAVEMENT MARKING		
AIRFIELD LIGHT	●	N/A
REIL		
FENCE	— X — X — X —	— XX — XX —
DETENTION POND		

RS&H

RS&H, Inc.
5215 WILEY POST WAY, SUITE 510
SALT LAKE CITY, UT 84116
(801) 924-8555
www.rsandh.com

SVR

SOUTH VALLEY REGIONAL AIRPORT

WEST JORDAN, UTAH

AIRPORT LAYOUT PLAN

CONSULTANTS

REVISIONS

NO.	DESCRIPTION	DATE

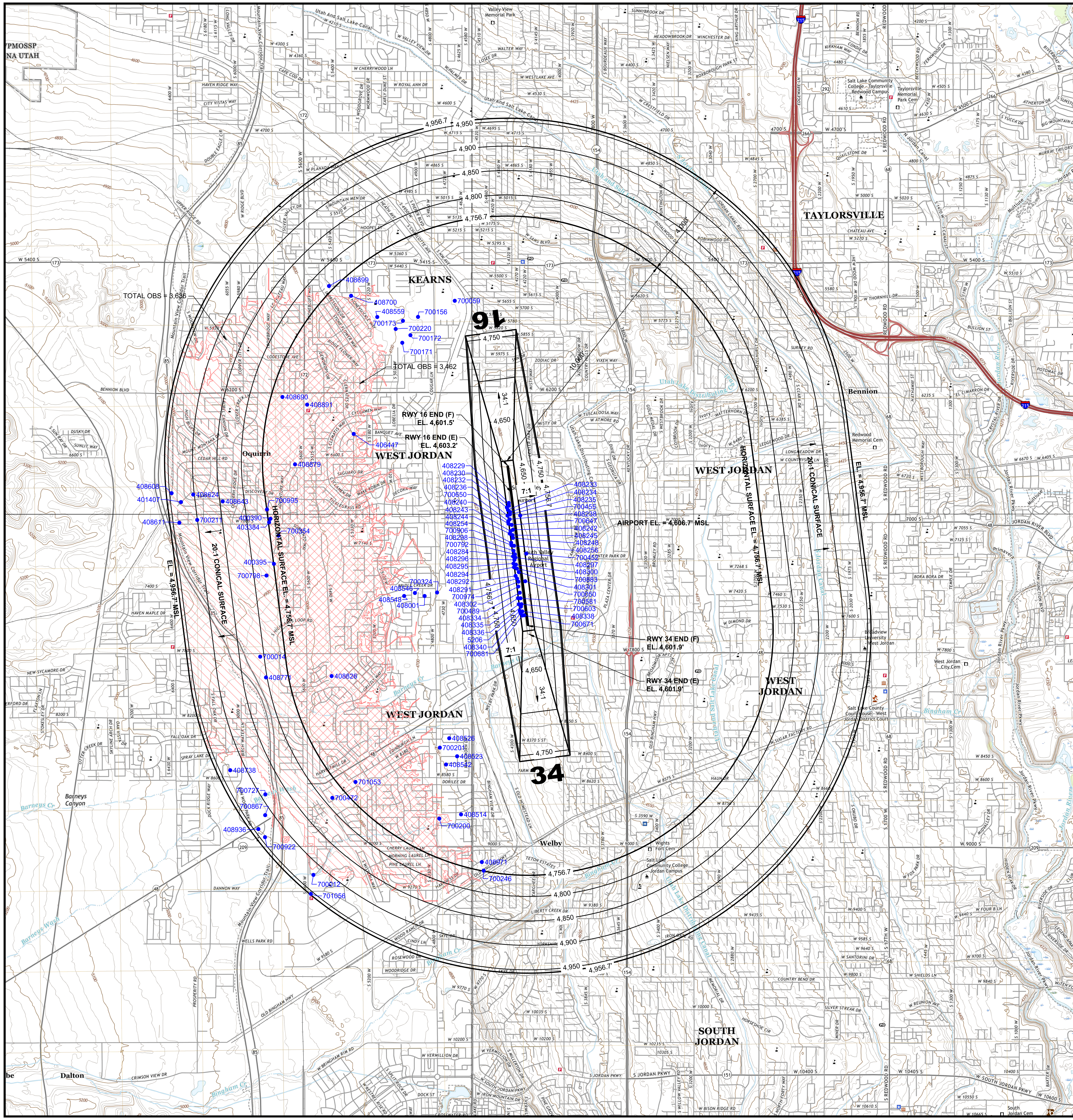
DATE ISSUED: FEBRUARY 2025
REVIEWED BY:
DRAWN BY: BP
DESIGNED BY: TJM

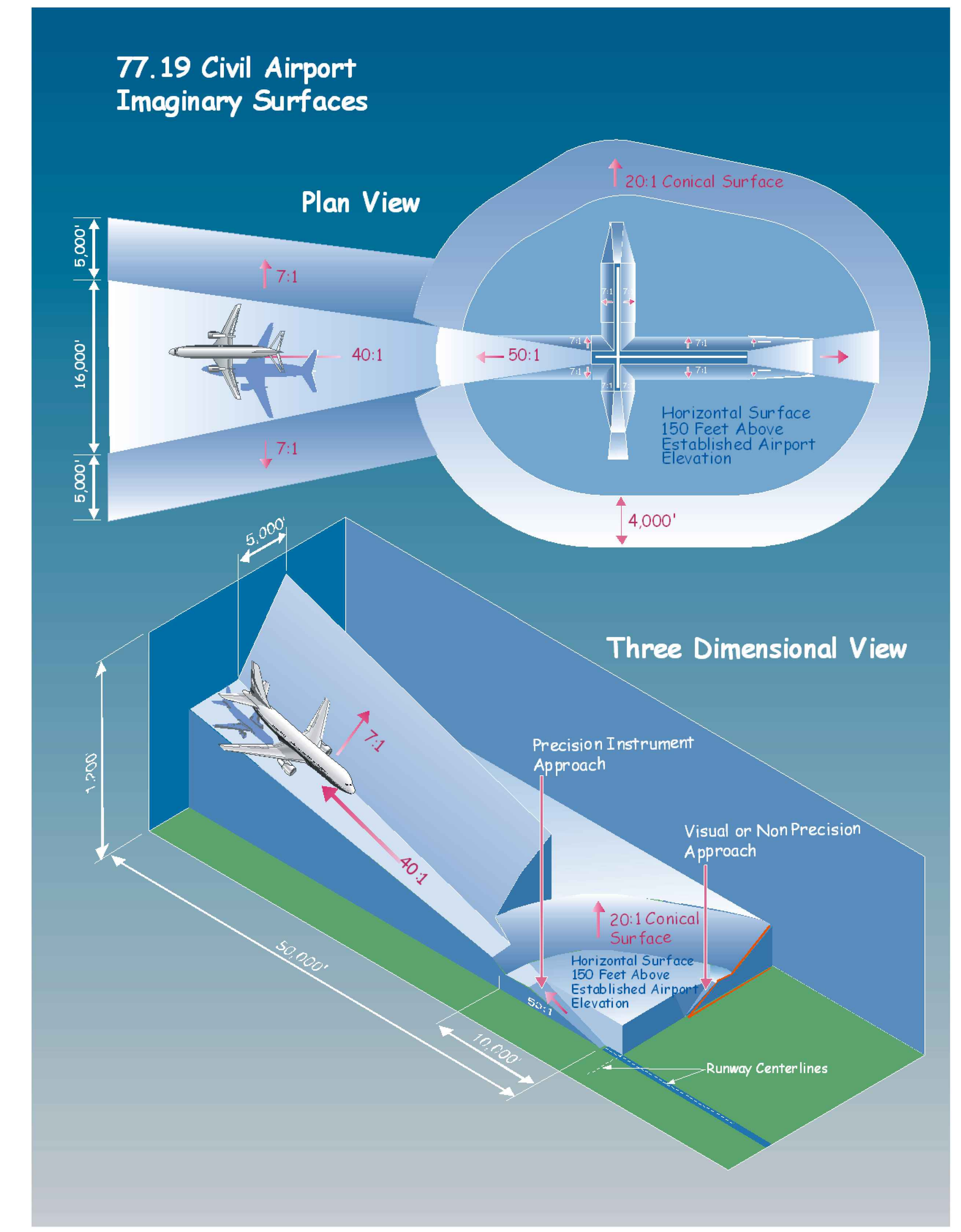
PROJECT NUMBER
1025-0064-001

SHEET TITLE

TERMINAL AREA PLAN NORTH END

SHEET NUMBER





DIM	ITEM	DIMENSIONAL STANDARDS (FEET)					
		VISUAL RUNWAY		NON-PRECISION INSTRUMENT RUNWAY			PRECISION INSTRUMENT RUNWAY
		A	B	A	B		
					C	D	
A	WIDTH OF PRIMARY SURFACE AND APPROACH SURFACE AT INNER END	250	500	500	500	1,000	1,000
B	RADIUS OF HORIZONTAL SURFACE	5,000	5,000	5,000	10,000	10,000	10,000
		VISUAL APPROACH		NON-PRECISION INSTRUMENT APPROACH			PRECISION INSTRUMENT RUNWAY
		A	B	A	B		
					C	D	
C	APPROACH SURFACE WIDTH AT END	1,250	1,500	2,000	3,500	4,000	16,000
D	APPROACH SURFACE LENGTH	5,000	5,000	5,000	10,000	10,000	*
E	APPROACH SLOPE	20:1	20:1	20:1	34:1	34:1	*

A - UTILITY RUNWAYS
B - RUNWAYS LARGER THAN UTILITY
C - VISIBILITY MINIMUMS GREATER THAN 3/4 MILE
D - VISIBILITY MINIMUMS AS LOW AS 3/4 MILE
* - PRECISION INSTRUMENT APPROACH SLOPE IS 50:1 FOR INNER 10,000 FEET AND 40:1 FOR AN ADDITIONAL 40,000 FEET

ZONING RESTRICTIONS
WEST JORDAN CITY CODE, TITLE 13, CHAPTER 6, ARTICLE A, AIRPORT OVERLAY ZONE AND KEARNS MUNICIPAL CODE, TITLE 19, CHAPTER 19,70, AOZ AIRPORT OVERLAY ZONE

LEGEND	
DESCRIPTION	SYMBOL
OBSTRUCTION	● 200000
OBSTRUCTION GRID AREA 1	
OBSTRUCTION GRID AREA 2	

NOTE:
1. SEE SHEET 7 FOR PART 77 OBSTRUCTION TABLE.
2. OBSTRUCTION GRID AREAS SHOWN DUE TO HIGH DENSITY OF OBSTRUCTIONS.

N

MAGNETIC DECLINATION
10° 56' EAST ± 0° 22'
SEPTEMBER, 2023
ANNUAL CHANGE 0° 6' WEST

2000' 1000' 0 2000'

RS&H

RS&H, Inc.
5215 WILEY POST WAY, SUITE 510
SALT LAKE CITY, UT 84116
(801) 924-8555
www.rsandh.com

SVR

SOUTH VALLEY REGIONAL AIRPORT
WEST JORDAN, UTAH

AIRPORT LAYOUT PLAN

CONSULTANTS

REVISIONS

NO.	DESCRIPTION	DATE

DATE ISSUED: FEBRUARY 2025
REVIEWED BY:
DRAWN BY: BP
DESIGNED BY: TJM

PROJECT NUMBER
1025-0064-001

SHEET TITLE

AIRPORT AIRSPACE DRAWING

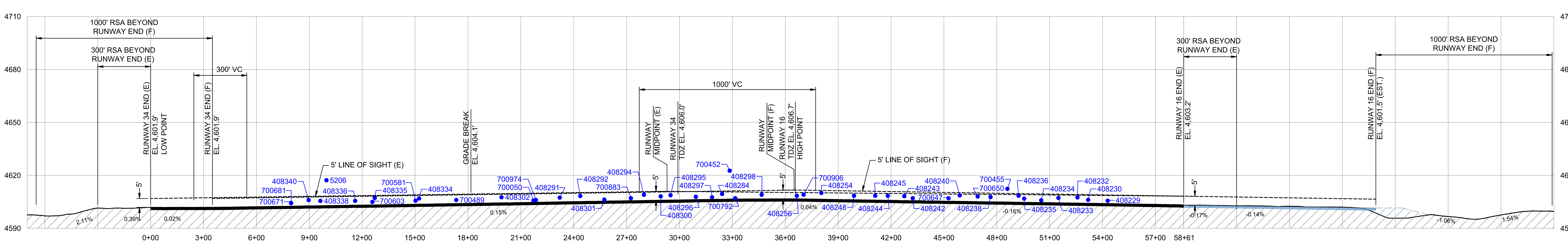
SHEET NUMBER

6 OF 16

OBSTRUCTION TABLE							
OBJECT NO.	OBJECT DESCRIPTION	GROUND SURFACE ELEVATION (FT.)	OBJECT TOP ELEVATION (FT.)	PART 77 SURFACE ELEVATION (FT.)	PART 77 CLEARANCE (+ PENETRATE) (- CLEAR)	PART 77 SURFACE VIOLATION	PROPOSED DISPOSITION
5206	WINDSOCK	4,606.3	4,617.2	4,603.4	13.8	TRANSITIONAL	RELOCATE
400390 [4]	TREE	4,915.0	4,946.3	4,756.7	189.6	HORIZONTAL	TRIM
400395 [4]	GROUND	4,910.6	4,910.6	4,756.7	153.9	HORIZONTAL	NONE
401407 [3]	PRIMARY ROAD	5,064.6	5,079.6	4,930.9	148.8	CONICAL	NONE
403384 [4]	PRIMARY ROAD	4,921.5	4,936.5	4,756.7	179.8	HORIZONTAL	NONE
406447	PRIMARY ROAD	4,741.8	4,756.8	4,756.7	0.1	HORIZONTAL	NONE
408001	TREE	4,708.0	4,770.6	4,756.7	13.9	HORIZONTAL	TRIM
408229 [2]	GROUND	4,605.6	4,605.6	4,604.0	1.6	PRIMARY	NONE
408230	GROUND	4,606.1	4,606.1	4,604.1	2.0	PRIMARY	NONE
408232 [2]	GROUND	4,607.5	4,607.5	4,604.3	3.2	PRIMARY	NONE
408233 [2]	GROUND	4,607.2	4,607.2	4,604.4	2.8	PRIMARY	NONE
408234 [2]	GROUND	4,605.9	4,605.9	4,604.6	1.3	PRIMARY	NONE
408235 [2]	GROUND	4,606.8	4,606.8	4,604.7	2.1	PRIMARY	NONE
408236	GROUND	4,608.4	4,608.4	4,606.7	1.7	TRANSITIONAL	NONE
408238 [2]	GROUND	4,607.7	4,607.7	4,605.0	2.7	PRIMARY	NONE
408240 [2]	GROUND	4,608.6	4,608.6	4,607.3	1.3	TRANSITIONAL	NONE
408242 [2]	GROUND	4,607.0	4,607.0	4,605.6	1.4	PRIMARY	NONE
408243 [2]	GROUND	4,608.2	4,608.2	4,605.7	2.5	PRIMARY	NONE
408244 [2]	GROUND	4,608.4	4,608.4	4,607.9	0.5	TRANSITIONAL	NONE
408245	GROUND	4,608.4	4,608.4	4,606.0	2.4	PRIMARY	NONE
408248 [2]	GROUND	4,608.4	4,608.4	4,606.1	2.3	PRIMARY	NONE
408254 [2]	GROUND	4,610.0	4,610.0	4,607.1	3.0	TRANSITIONAL	NONE
408256 [2]	GROUND	4,608.4	4,608.4	4,606.7	1.7	PRIMARY	NONE
408284 [2]	GROUND	4,609.4	4,609.4	4,606.4	3.0	PRIMARY	NONE
408291 [2]	GROUND	4,607.4	4,607.4	4,605.0	2.4	PRIMARY	NONE
408292 [2]	GROUND	4,608.3	4,608.3	4,605.1	3.1	PRIMARY	NONE
408294	GROUND	4,609.0	4,609.0	4,607.9	1.1	TRANSITIONAL	NONE
408295	GROUND	4,608.7	4,608.7	4,608.0	0.7	TRANSITIONAL	NONE
408296	GROUND	4,607.8	4,607.8	4,606.2	1.6	PRIMARY	NONE
408297	GROUND	4,607.6	4,607.6	4,606.4	1.2	PRIMARY	NONE
408298	GROUND	4,609.0	4,609.0	4,606.6	2.3	PRIMARY	NONE
408300 [2]	GROUND	4,608.0	4,608.0	4,605.9	2.2	PRIMARY	NONE
408301 [2]	GROUND	4,606.2	4,606.2	4,605.4	0.8	PRIMARY	NONE
408302 [2]	GROUND	4,607.6	4,607.6	4,604.4	3.2	PRIMARY	NONE
408334	GROUND	4,606.9	4,606.9	4,605.6	1.3	TRANSITIONAL	NONE
408335	GROUND	4,607.1	4,607.1	4,604.7	2.4	TRANSITIONAL	NONE
408336 [2]	GROUND	4,605.5	4,605.5	4,603.1	2.4	PRIMARY	NONE
408338 [2]	GROUND	4,605.5	4,605.5	4,602.8	2.8	PRIMARY	NONE
408340	GROUND	4,606.0	4,606.0	4,602.7	3.3	PRIMARY	NONE
408514	TREE	4,702.0	4,776.1	4,756.7	19.4	HORIZONTAL	TRIM
408523	TREE	4,682.0	4,757.1	4,756.7	0.4	HORIZONTAL	TRIM
408526	TREE	4,683.0	4,757.9	4,756.7	1.2	HORIZONTAL	TRIM
408542	TREE	4,692.0	4,761.5	4,756.7	4.8	HORIZONTAL	TRIM
408546	TREE	4,719.0	4,781.6	4,756.7	24.9	HORIZONTAL	TRIM
408548	TREE	4,719.0	4,762.3	4,756.7	5.6	HORIZONTAL	TRIM
408559	TREE	4,716.0	4,758.0	4,756.7	1.3	HORIZONTAL	TRIM
408608 [3]	BUSH	5,047.0	5,051.8	4,949.5	102.2	CONICAL	TRIM
408611 [3]	GROUND	5,057.2	5,057.2	4,937.4	119.8	CONICAL	NONE
408624 [3]	TREE	5,025.0	5,064.5	4,905.5	159.1	CONICAL	TRIM
408643 [3]	FENCE	4,990.0	4,999.8	4,845.6	154.2	CONICAL	NONE
408690 [4]	BUSH	4,848.0	4,858.2	4,758.0	100.2	HORIZONTAL	TRIM
408699	TREE	4,759.0	4,823.7	4,810.5	13.2	CONICAL	TRIM

OBSTRUCTION TABLE							
OBJECT NO.	OBJECT DESCRIPTION	GROUND SURFACE ELEVATION (FT.)	OBJECT TOP ELEVATION (FT.)	PART 77 SURFACE ELEVATION (FT.)	PART 77 CLEARANCE (+ PENETRATE) (- CLEAR)	PART 77 SURFACE VIOLATION	PROPOSED DISPOSITION
408700	TREE	4,718.0	4,779.6	4,765.9	13.8	HORIZONTAL	TRIM
408738	BUILDING	4,896.0	4,931.9	4,925.2	6.7	CONICAL	OBSTRUCTION LIGHT
408771 [3]	POWER TRANSMISSION PYLON	4,848.0	5,000.1	4,801.5	198.6	CONICAL	OBSTRUCTION LIGHT
408826 [4]	PARKING LOT	4,780.4	4,795.4	4,756.7	38.7	HORIZONTAL	NONE
408879 [4]	FENCE	4,837.0	4,847.8	4,756.7	91.1	HORIZONTAL	NONE
408891 [4]	SIGN	4,815.0	4,828.6	4,756.7	71.9	HORIZONTAL	NONE
408936	TREE	4,900.0	4,958.8	4,934.0	24.8	CONICAL	TRIM
408971	TREE	4,698.0	4,767.5	4,756.7	10.8	HORIZONTAL	TRIM
700012	COMMUNICATION TOWER	4,866.0	4,946.5	4,910.8	35.6	CONICAL	OBSTRUCTION LIGHT
700014 [3]	COMMUNICATION TOWER	4,867.0	4,953.7	4,807.8	145.9	CONICAL	OBSTRUCTION LIGHT
700050	AIRPORT SIGN	4,602.8	4,605.7	4,604.7	1.0	PRIMARY	RELOCATE
700059	COMMUNICATION TOWER	4,658.0	4,777.0	4,756.7	20.3	HORIZONTAL	OBSTRUCTION LIGHT
700156	STADIUM	4,677.0	4,789.5	4,756.7	32.8	HORIZONTAL	OBSTRUCTION LIGHT
700171	POLE	4,687.0	4,764.0	4,756.7	7.3	HORIZONTAL	OBSTRUCTION LIGHT
700172	POLE	4,684.0	4,762.0	4,756.7	5.3	HORIZONTAL	OBSTRUCTION LIGHT
700173	POLE	4,694.0	4,772.8	4,756.7	16.1	HORIZONTAL	OBSTRUCTION LIGHT
700200 [4]	SPIRE	4,721.0	4,803.3	4,756.7	46.6	HORIZONTAL	OBSTRUCTION LIGHT
700201	BUILDING	4,691.0	4,765.0	4,756.7	8.3	HORIZONTAL	OBSTRUCTION LIGHT
700211 [3]	BUILDING	5,031.0	5,107.0	4,900.5	206.4	CONICAL	OBSTRUCTION LIGHT
700220	POLE	4,697.0	4,774.3	4,756.7	17.6	HORIZONTAL	OBSTRUCTION LIGHT
700246	POLE	4,701.0	4,768.5	4,756.7	11.8	HORIZONTAL	OBSTRUCTION LIGHT
700324	BUILDING	4,699.0	4,767.9	4,756.7	11.2	HORIZONTAL	OBSTRUCTION LIGHT
700354 [4]	BUILDING	4,901.0	4,928.9	4,756.7	172.2	HORIZONTAL	OBSTRUCTION LIGHT
700452	WINDSOCK	4,602.8	4,622.6	4,613.7	9.0	TRANSITIONAL	RELOCATE
700455	WINDSOCK	4,601.0	4,612.3	4,605.4	6.9	TRANSITIONAL	RELOCATE
700472 [3]	PARKING LOT	4,817.0	4,832.0	4,774.5	57.5	CONICAL	NONE
700489 [2]	GROUND	4,606.0	4,606.0	4,604.0	2.0	PRIMARY	NONE
700581	GROUND	4,605.6	4,605.6	4,603.6	2.0	PRIMARY	NONE
700603	GROUND	4,604.9	4,604.9	4,603.2	1.7	PRIMARY	NONE
700647	GROUND	4,607.0	4,607.0	4,605.3	1.7	PRIMARY	NONE
700650	GROUND	4,608.0	4,608.0	4,607.1	0.9	TRANSITIONAL	NONE
700671	AIRFIELD LIGHT	4,602.0	4,604.4	4,602.5	1.8	PRIMARY	RELOCATE
700681	AIRFIELD LIGHT	4,603.1	4,604.2	4,602.5	1.7	PRIMARY	RELOCATE
700727	POLE	4,872.0	4,986.8	4,883.5	103.3	CONICAL	OBSTRUCTION LIGHT
700792	GROUND	4,607.0	4,607.0	4,606.6	0.4	PRIMARY	NONE
700798 [3]	POLE	4,922.0	5,059.8	4,774.1	285.7	CONICAL	OBSTRUCTION LIGHT
700867	POLE	4,880.0	5,006.7	4,906.3	100.4	CONICAL	OBSTRUCTION LIGHT
700883	GROUND	4,607.0	4,607.0	4,605.6	1.4	PRIMARY	NONE
700906	GROUND	4,609.0	4,609.0	4,607.5	1.6	TRANSITIONAL	NONE
700922	POLE	4,901.0	5,018.6	4,932.5	86.1	CONICAL	OBSTRUCTION LIGHT
700974	GROUND	4,606.0	4,606.0	4,604.7	1.3	PRIMARY	NONE
700995 [4]	POLE	4,918.0	5,050.3	4,756.7	293.6	HORIZONTAL	OBSTRUCTION LIGHT
701053 [4]	COMMUNICATION TOWER	4,796.0	4,879.7	4,756.7	123.0	HORIZONTAL	OBSTRUCTION LIGHT
701056	COMMUNICATION TOWER	4,869.0	4,974.1	4,943.3	30.8	CONICAL	OBSTRUCTION LIGHT

1. OBSTRUCTION SURVEY COMPLETED BY WOOLPERT INC. JANUARY, 2022.
2. OBJECT IS HIGHEST GROUND POINT WITHIN 200'x200' GRID STARTING AT EACH RUNWAY END.
3. HIGHEST OBJECT TYPE WITHIN OBSTRUCTION GRID AREA 1. SHOWN ON SHEET 6.
4. HIGHEST OBJECT TYPE WITHIN OBSTRUCTION GRID AREA 2. SHOWN ON SHEET 6.
5. OBJECTS WITHIN OBSTRUCTION GRID AREAS OUTSIDE OF GROUND SURVEY LIMITS. GROUND SURFACE ELEVATIONS APPROXIMATE.
6. USGS QUADRANGLE BASE MAPS DATED 2019.
7. ELEVATIONS IN TABLE REFLECT THE RECOMMENDED AIRSPACE CLEARANCES: 23' RAILROADS | 17' HIGHWAYS | 15' PUBLIC ROADS | 10' PRIVATE ROADS.
8. SEE INNER APPROACH PLAN AND PROFILE SHEETS FOR ADDITIONAL OBSTRUCTIONS.



RUNWAY 16-34 CENTERLINE PROFILE

300' 150' 0 300'
HORIZONTAL SCALE

30' 15' 0 30'
VERTICAL SCALE

LEGEND	
DESCRIPTION	SYMBOL
OBSTRUCTION	● 200000

NOTES:
1. RUNWAY AND RUNWAY SAFETY AREA GRADIENTS AND VERTICAL CURVES HAVE BEEN ESTIMATED AND SHOULD BE USED FOR PLANNING PURPOSES ONLY.

RS&H
RS&H, Inc.
5215 WILEY POST WAY, SUITE 510
SALT LAKE CITY, UT 84116
(801) 924-8555
www.rsandh.com

SVR
SOUTH VALLEY REGIONAL AIRPORT
WEST JORDAN, UTAH

AIRPORT LAYOUT PLAN

CONSULTANTS

REVISIONS

NO.	DESCRIPTION	DATE

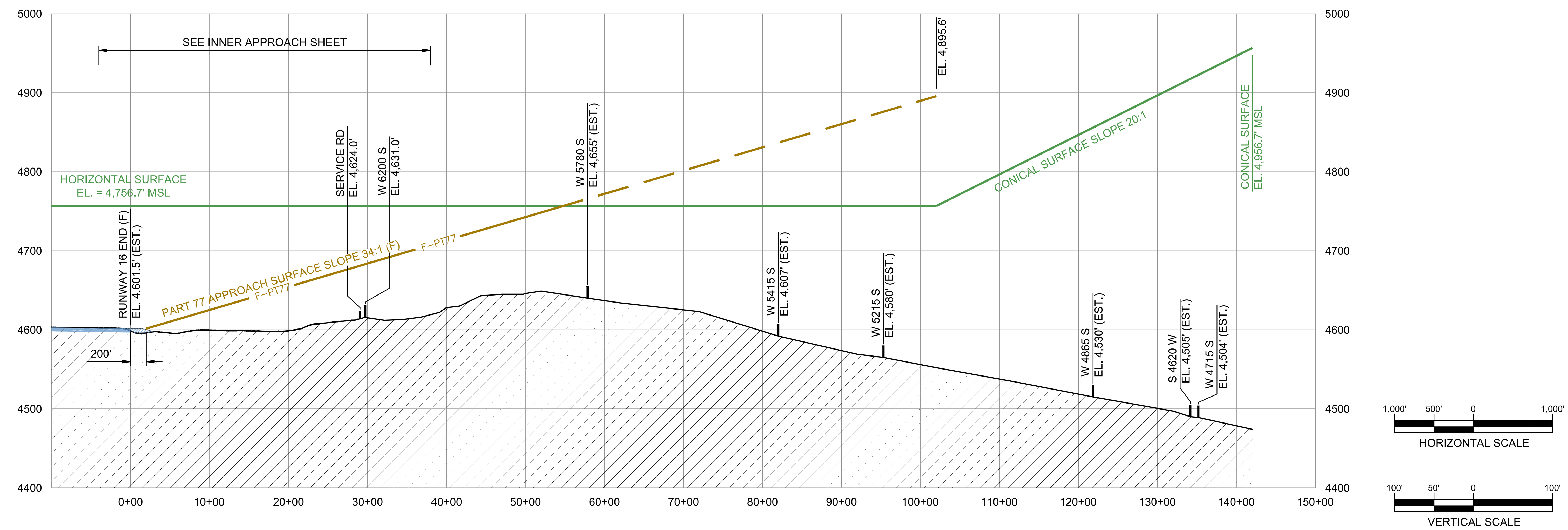
DATE ISSUED: FEBRUARY 2025
REVIEWED BY:
DRAWN BY: BP
DESIGNED BY: TJM

PROJECT NUMBER
1025-0064-001

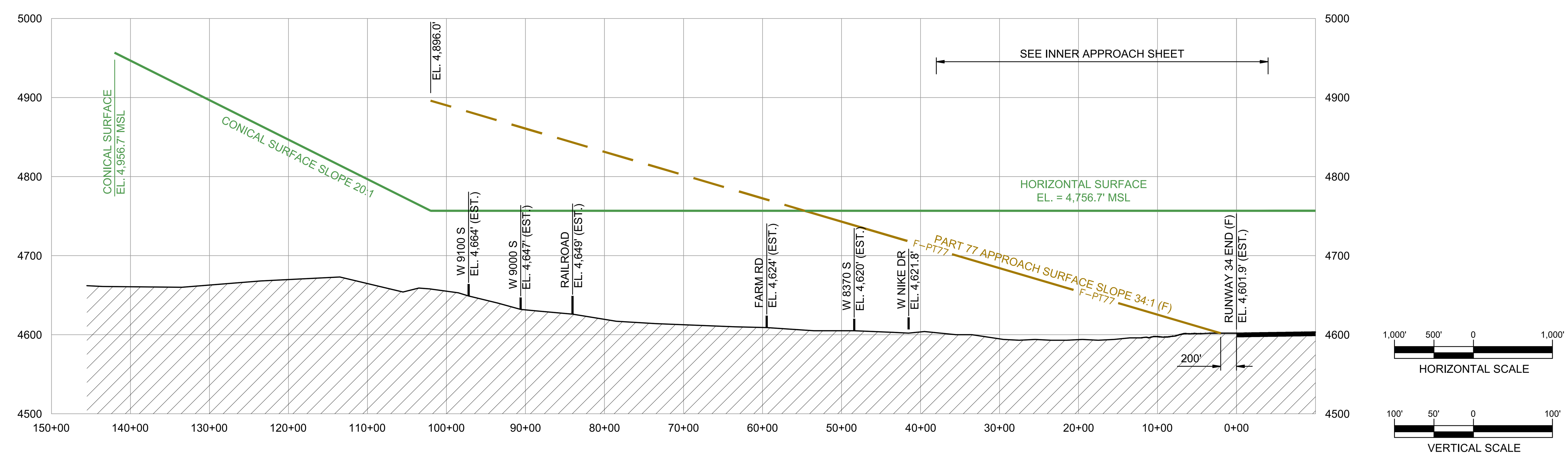
SHEET TITLE
AIRPORT AIRSPACE OBSTRUCTION TABLES AND RUNWAY CENTERLINE PROFILE

SHEET NUMBER
7 OF 16

FUTURE RUNWAY 16 AIRSPACE PROFILE



FUTURE RUNWAY 34 AIRSPACE PROFILE



RS&H

RS&H, Inc.

5215 WILEY POST WAY, SUITE 510
SALT LAKE CITY, UT 84116
(801) 924-8555
www.rsandh.com

SVR

SOUTH VALLEY REGIONAL AIRPORT

WEST JORDAN, UTAH

AIRPORT LAYOUT PLAN

CONSULTANTS

REVISIONS

NO.	DESCRIPTION	DATE

DATE ISSUED: FEBRUARY 2025
REVIEWED BY:
DRAWN BY: BP
DESIGNED BY: TJM

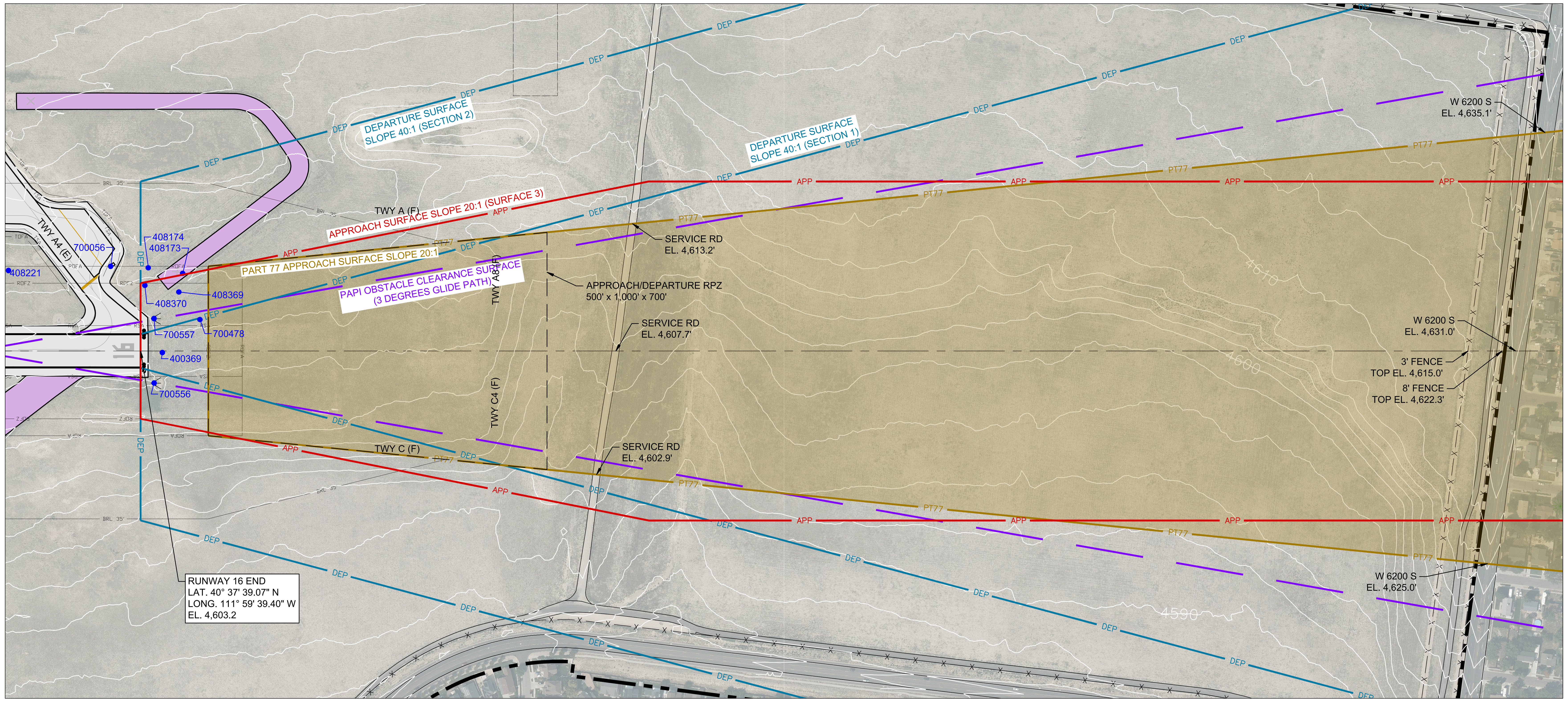
PROJECT NUMBER
1025-0064-001

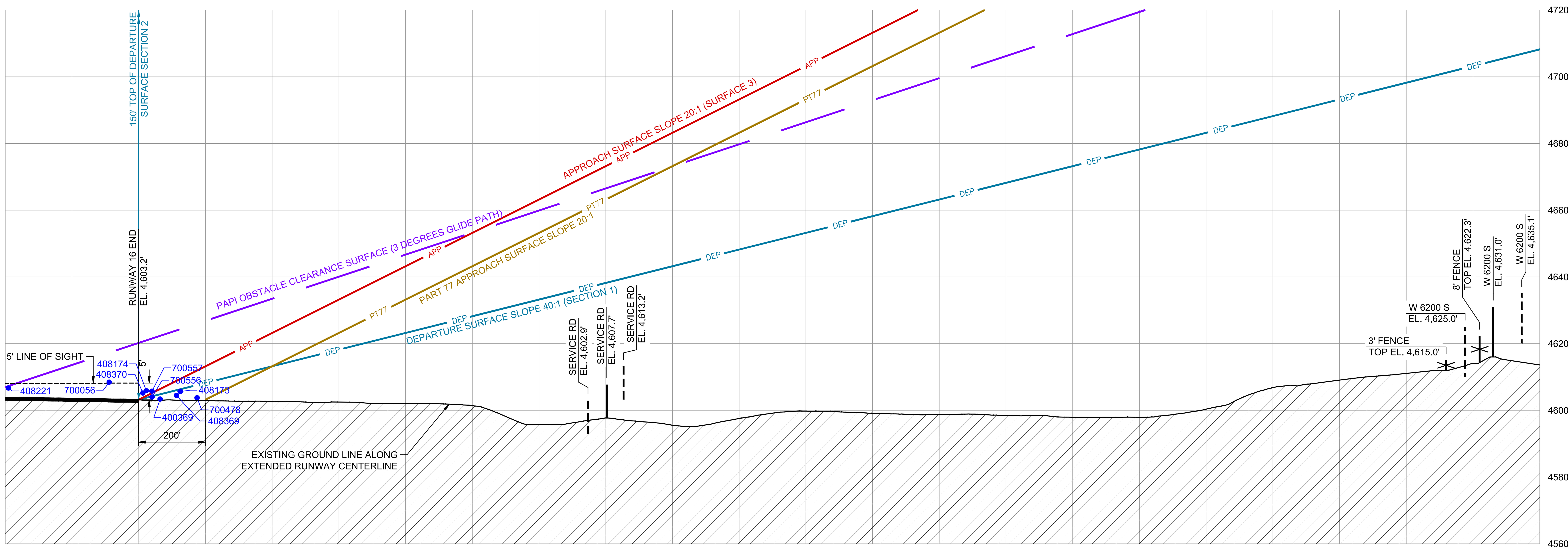
SHEET TITLE

AIRPORT AIRSPACE PROFILES

SHEET NUMBER

Drawing: T:\P\2250064.001 SLC U42 Master Plan\CAD\ALP\C\U42_06-08_Pt77.dwg Plotted on: 2/12/2025 10:17 AM Plotted by: Peddie, Brendan





DESCRIPTION	EXISTING
PROPERTY LINE	
PART 77 SURFACE	PT77
APPROACH SURFACE	APP
DEPARTURE SURFACE	DEP
PAPI OBSTACLE CLEARANCE SURFACE	
OBSTRUCTION	200000

NOTES:
1. ROADWAY ELEVATIONS INCLUDE TRAVERSEWAY ADJUSTMENT (23' RAILROADS | 17' HIGHWAYS | 15' PUBLIC ROADS | 10' PRIVATE ROADS).

RUNWAY 16 EXISTING OBSTRUCTION TABLE

OBJECT NO.	OBJECT DESCRIPTION	ABOVE GROUND LEVEL (FT.)	OBJECT TOP ELEVATION (FT.)	CLEARANCE (+ PENETRATE) (- CLEAR) PART 77 SURFACE (FT.)	DEPARTURE SURFACE (FT.)	13B APPROACH SURFACE (FT.)	PROPOSED DISPOSITION	PART 77 SURFACE VIOLATION	TRIGGERING EVENT
400369	GROUND	0.0	4,603.4	0.2	-1.4	N/A	NONE	PRIMARY	NONE
408173	AIRFIELD DRIVE	0.0	4,605.6	2.5	-150.7	N/A	ABANDONED PAVEMENT	PRIMARY	NONE
408174	GROUND	0.0	4,605.9	2.7	-147.9	N/A	NONE	PRIMARY	NONE
408221	GROUND	0.0	4,606.7	2.7	N/A	N/A	NONE	PRIMARY	NONE
408369	GROUND	0.0	4,604.5	1.3	-151.5	N/A	NONE	PRIMARY	NONE
408370	GROUND	0.0	4,605.2	2.0	-148.3	N/A	NONE	PRIMARY	NONE
700056	AIRPORT SIGN	2.5	4,608.5	5.0	N/A	N/A	FIXED BY FUNCTION	PRIMARY	NONE
700478	GROUND	0.0	4,603.8	0.6	-3.8	N/A	NONE	PRIMARY	NONE

RUNWAY 16 EXISTING OBSTRUCTION TABLE

OBJECT NO.	OBJECT DESCRIPTION	ABOVE GROUND LEVEL (FT.)	OBJECT TOP ELEVATION (FT.)	CLEARANCE (+ PENETRATE) (- CLEAR) PART 77 SURFACE (FT.)	DEPARTURE SURFACE (FT.)	13B APPROACH SURFACE (FT.)	PROPOSED DISPOSITION	PART 77 SURFACE VIOLATION	TRIGGERING EVENT
700556	AIRFIELD LIGHT	2.0	4,604.0	0.8	-150.2	N/A	FIXED BY FUNCTION	PRIMARY	NONE
700557	AIRFIELD LIGHT	1.6	4,605.7	2.6	-148.5	N/A	FIXED BY FUNCTION	PRIMARY	NONE

1. OBSTRUCTION SURVEY COMPLETED BY WOOLPERT INC. JANUARY, 2022.
2. NO OBSTRUCTIONS TO PAPI OBSTACLE SURFACE.

200' 100' 0 200'
HORIZONTAL SCALE

20' 10' 0 20'
VERTICAL SCALE

N

MAGNETIC DECLINATION
10° 56' EAST ± 0° 22'
SEPTEMBER, 2023
ANNUAL CHANGE 0° 6' WEST

RS&H, Inc.
5215 WILEY POST WAY, SUITE 510
SALT LAKE CITY, UT 84116
(801) 924-8555
www.rsandh.com

SOUTH VALLEY REGIONAL AIRPORT
WEST JORDAN, UTAH

AIRPORT LAYOUT PLAN

CONSULTANTS

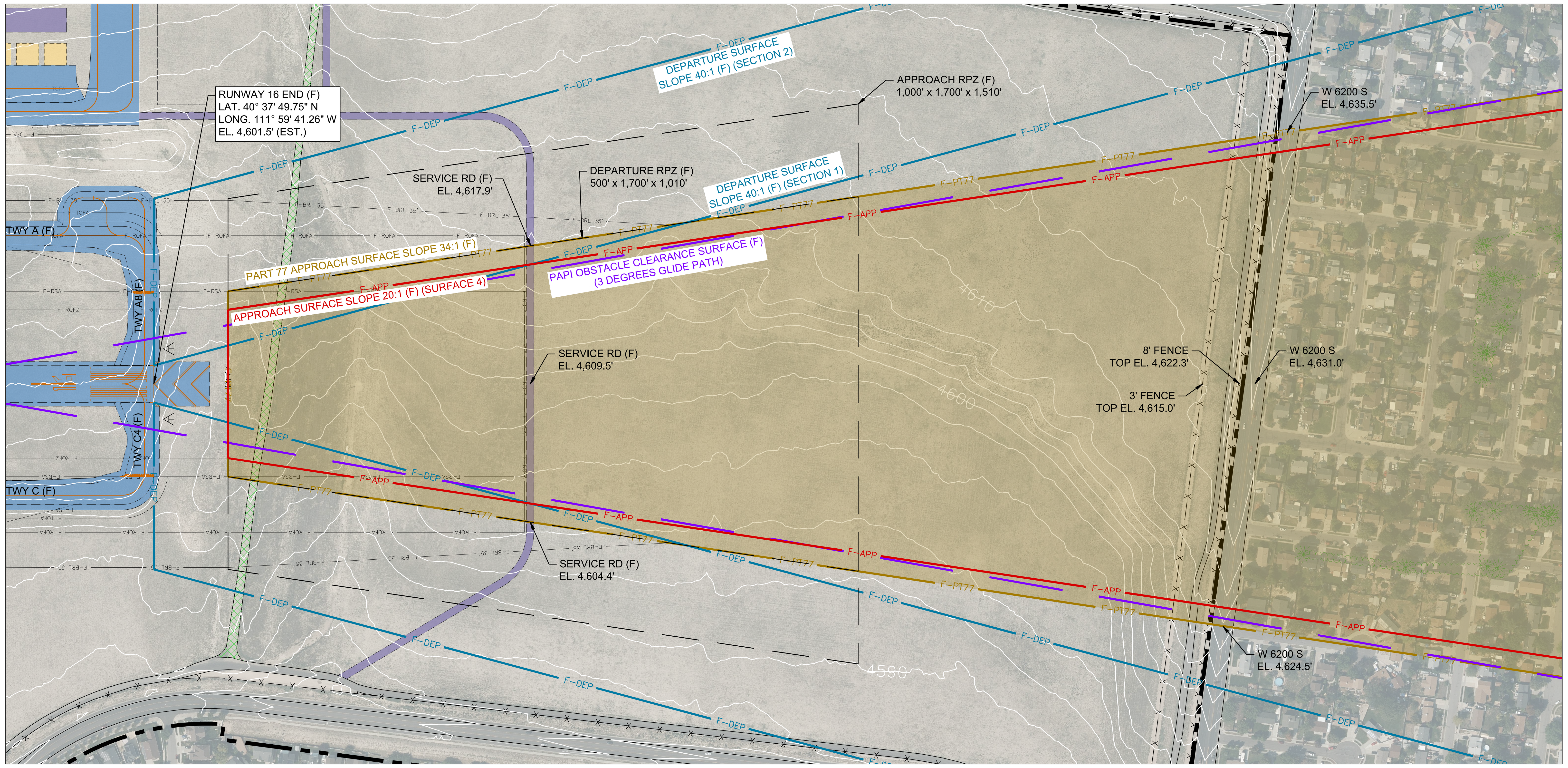
REVISIONS

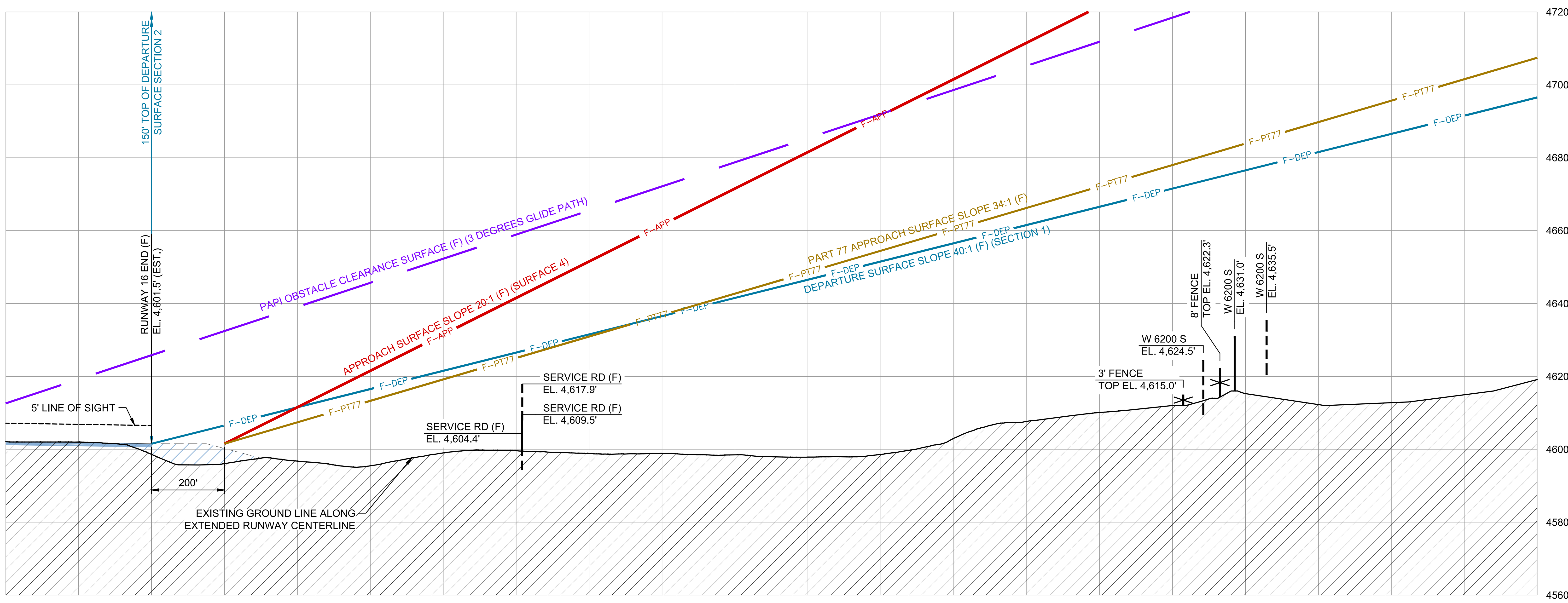
NO.	DESCRIPTION	DATE

DATE ISSUED: FEBRUARY 2025
REVIEWED BY:
DRAWN BY: BP
DESIGNED BY: TJM
PROJECT NUMBER
1025-0064-001

SHEET TITLE
INNER PORTION OF THE APPROACH SURFACE RUNWAY 16 (EXISTING)

SHEET NUMBER
9 OF 16





RUNWAY 16 FUTURE OBSTRUCTION TABLE

OBJECT NO.	OBJECT DESCRIPTION	ABOVE GROUND LEVEL (FT.)	OBJECT TOP ELEVATION (FT.)	CLEARANCE (+ PENETRATE) (- CLEAR)			PROPOSED DISPOSITION	PART 77 SURFACE VIOLATION	TRIGGERING EVENT
				PART 77 SURFACE (FT.)	DEPARTURE SURFACE (FT.)	13B APPROACH SURFACE (FT.)			
NO OBSTRUCTIONS									

1. OBSTRUCTION SURVEY COMPLETED BY WOOLPERT INC. JANUARY, 2022.

DESCRIPTION	FUTURE
PROPERTY LINE	N/A
PART 77 SURFACE	F-PT77
APPROACH SURFACE	F-APP
DEPARTURE SURFACE	F-DEP
PAPI OBSTACLE CLEARANCE SURFACE	

NOTES:
1. ROADWAY ELEVATIONS INCLUDE TRAVERSEWAY ADJUSTMENT (23' RAILROADS | 17' HIGHWAYS | 15' PUBLIC ROADS | 10' PRIVATE ROADS).

200' 100' 0 200'
HORIZONTAL SCALE

20' 10' 0 20'
VERTICAL SCALE

N

MAGNETIC DECLINATION
10° 56' EAST ± 0° 22'
SEPTEMBER, 2023
ANNUAL CHANGE 0° 6' WEST

RS&H, Inc.
5215 WILEY POST WAY, SUITE 510
SALT LAKE CITY, UT 84116
(801) 924-8555
www.rsandh.com

SVR

SOUTH VALLEY REGIONAL AIRPORT

WEST JORDAN, UTAH

AIRPORT LAYOUT PLAN

CONSULTANTS

REVISIONS

NO.	DESCRIPTION	DATE

DATE ISSUED: FEBRUARY 2025
REVIEWED BY:
DRAWN BY: BP
DESIGNED BY: TJM

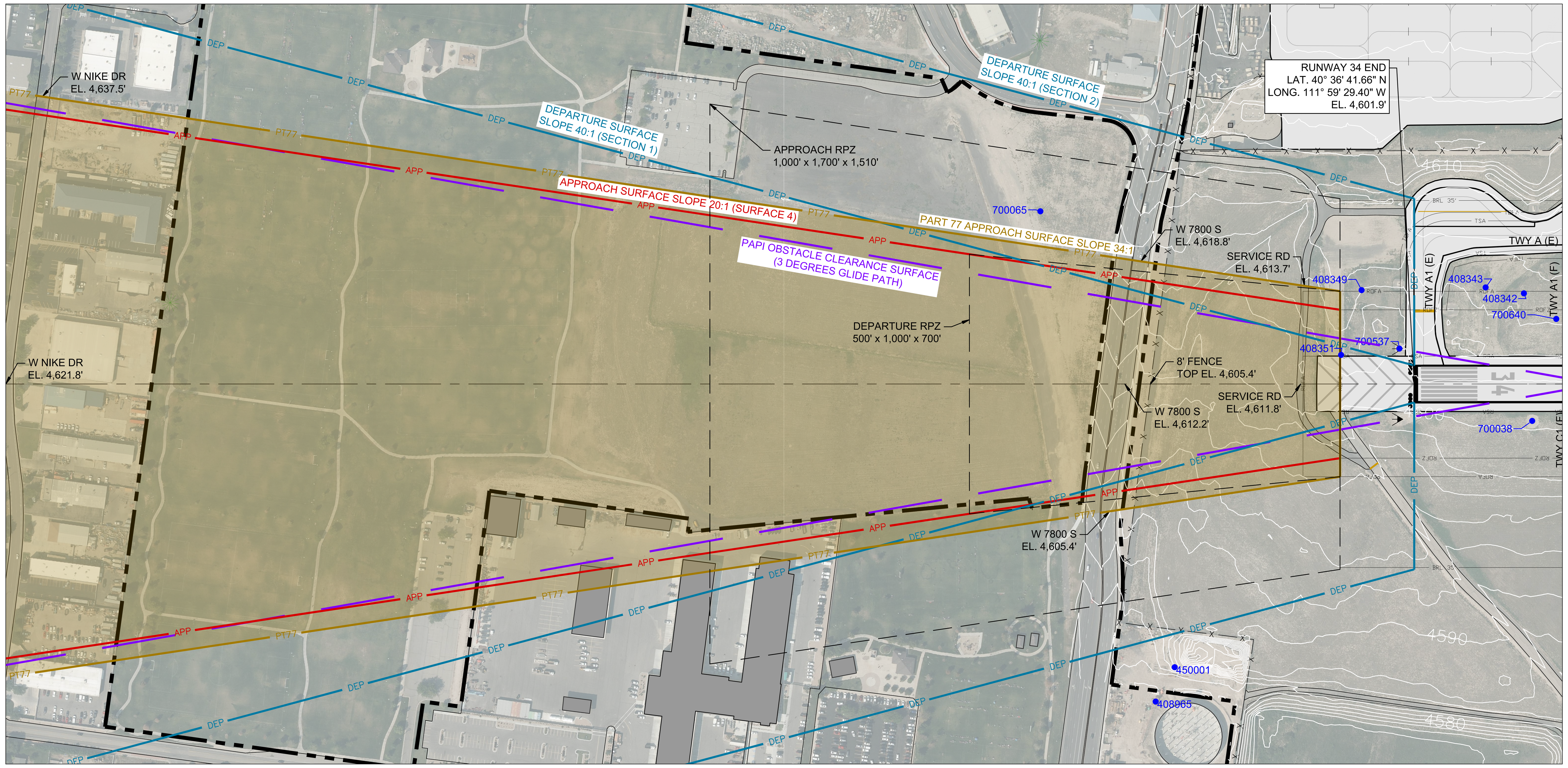
PROJECT NUMBER
1025-0064-001

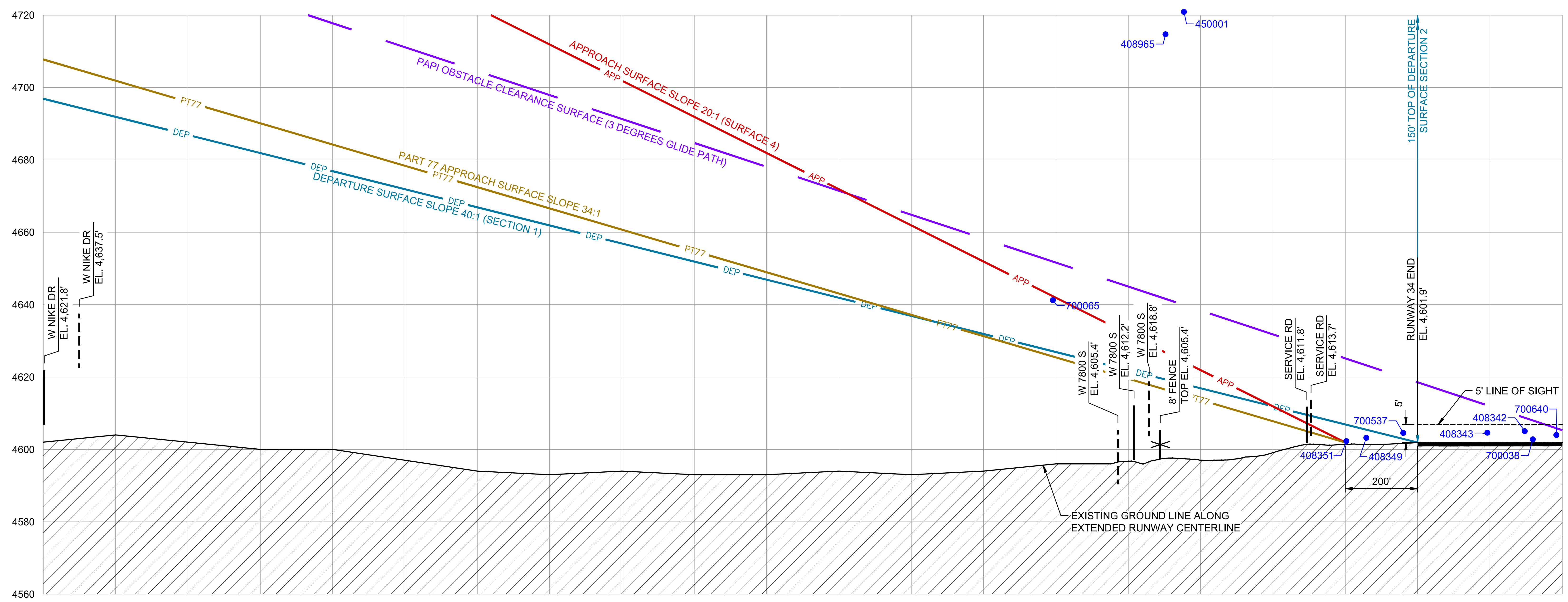
SHEET TITLE

INNER PORTION OF THE APPROACH SURFACE RUNWAY 16 (FUTURE)

SHEET NUMBER

Drawing: T:\P\2250064.001 SLC U42 Master Plan\CAD\ALP\C\U42_09-12_InnApps.dwg Plotted on: 2/12/2025 10:20 AM Plotted by: Peddie, Brendan





RUNWAY 34 EXISTING OBSTRUCTION TABLE									
OBJECT NO.	OBJECT DESCRIPTION	ABOVE GROUND LEVEL (FT.)	OBJECT TOP ELEVATION (FT.)	CLEARANCE (+ PENETRATE) (- CLEAR)			PROPOSED DISPOSITION	PART 77 SURFACE VIOLATION	TRIGGERING EVENT
				PART 77 SURFACE (FT.)	DEPARTURE SURFACE (FT.)	13B APPROACH SURFACE (FT.)			
408342	GROUND	0.0	4,605.1	3.2	N/A	N/A	NONE	PRIMARY	NONE
408343	GROUND	0.0	4,604.6	1.2	N/A	N/A	NONE	TRANSITIONAL	NONE
408349	GROUND	0.0	4,603.2	0.9	-152.2	N/A	NONE	TRANSITIONAL	NONE
408351	GROUND	0.0	4,602.3	0.4	-4.5	N/A	NONE	PRIMARY	NONE
408965	CRANE	131.0	4,714.7	22.2	N/A	N/A	FLAG/OBSTRUCTION LIGHT	TRANSITIONAL	NONE
450001	EME	130.8	4,720.9	42.0	N/A	N/A	OBSTRUCTION LIGHT	TRANSITIONAL	NONE
700038	AIRPORT SIGN	2.5	4,602.8	0.9	N/A	N/A	NONE	PRIMARY	NONE
700065	POLE	35.2	4,641.2	2.1	-135.9	N/A	OBSTRUCTION LIGHT	TRANSITIONAL	NONE

RUNWAY 34 EXISTING OBSTRUCTION TABLE									
OBJECT NO.	OBJECT DESCRIPTION	ABOVE GROUND LEVEL (FT.)	OBJECT TOP ELEVATION (FT.)	CLEARANCE (+ PENETRATE) (- CLEAR)			PROPOSED DISPOSITION	PART 77 SURFACE VIOLATION	TRIGGERING EVENT
				PART 77 SURFACE (FT.)	DEPARTURE SURFACE (FT.)	13B APPROACH SURFACE (FT.)			
700537	AIRFIELD LIGHT	2.6	4,604.6	2.7	-148.3	N/A	FIXED BY FUNCTION	PRIMARY	NONE
700640	GROUND	0.0	4,604.0	2.0	N/A	N/A	NONE	PRIMARY	NONE

1. OBSTRUCTION SURVEY COMPLETED BY WOOLPERT INC. JANUARY, 2022.
2. NO OBSTRUCTIONS TO PAPI OBSTACLE SURFACE.

DESCRIPTION	EXISTING
PROPERTY LINE	
PART 77 SURFACE	PT77
APPROACH SURFACE	APP
DEPARTURE SURFACE	DEP
PAPI OBSTACLE CLEARANCE SURFACE	
OBSTRUCTION	200000

NOTES:
1. ROADWAY ELEVATIONS INCLUDE TRAVERSEWAY ADJUSTMENT (23' RAILROADS | 17' HIGHWAYS | 15' PUBLIC ROADS | 10' PRIVATE ROADS).

200' 100' 0 200'
HORIZONTAL SCALE

20' 10' 0 20'
VERTICAL SCALE

N
MAGNETIC DECLINATION
10° 56' EAST ± 0° 22'
SEPTEMBER, 2023
ANNUAL CHANGE 0° 6' WEST

RS&H

RS&H, Inc.
5215 WILEY POST WAY, SUITE 510
SALT LAKE CITY, UT 84116
(801) 924-8555
www.rsandh.com

SVR

SOUTH VALLEY REGIONAL AIRPORT

WEST JORDAN, UTAH

AIRPORT LAYOUT PLAN

CONSULTANTS

REVISIONS

NO.	DESCRIPTION	DATE

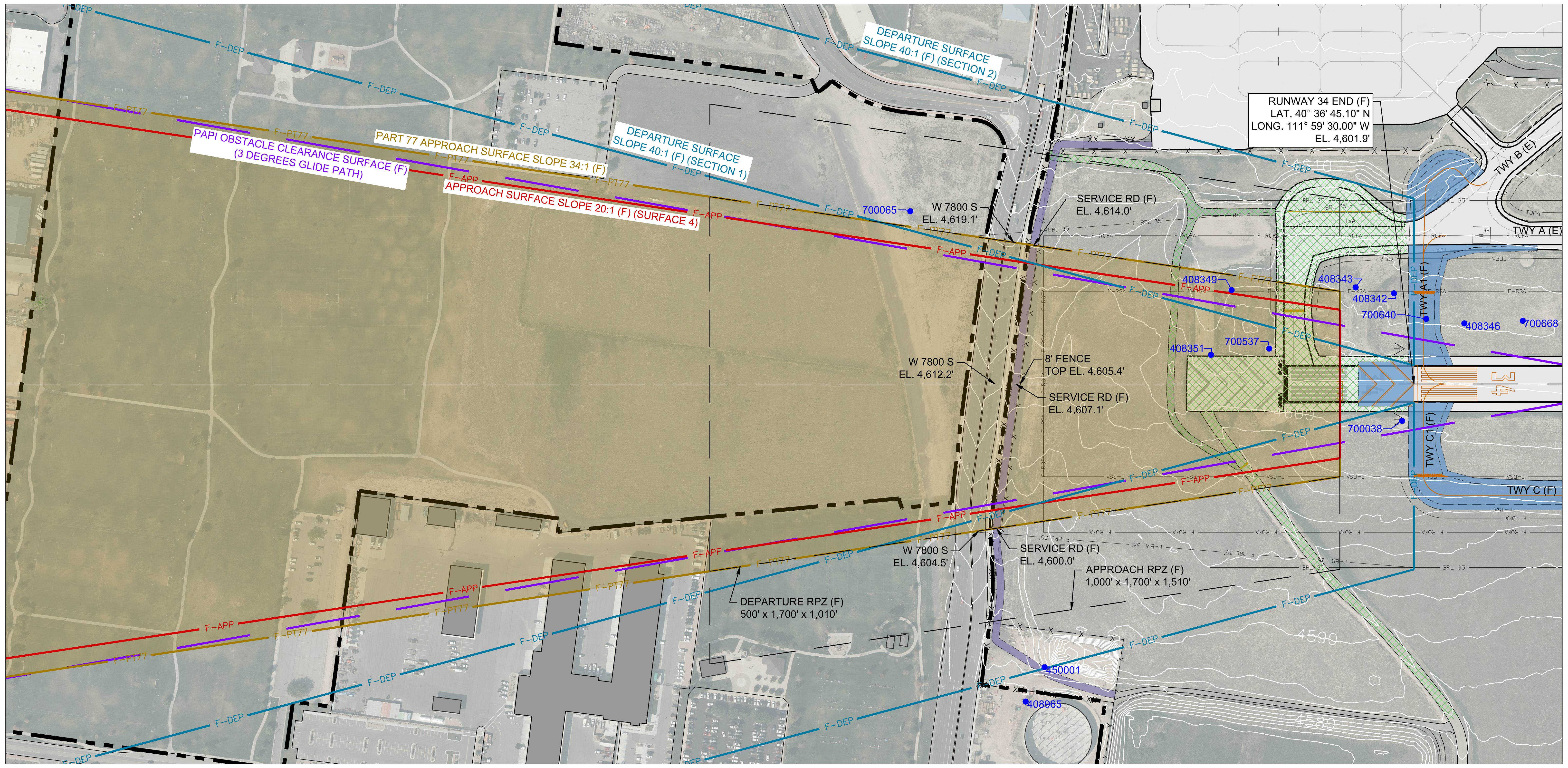
DATE ISSUED: FEBRUARY 2025
REVIEWED BY:
DRAWN BY: BP
DESIGNED BY: TJM

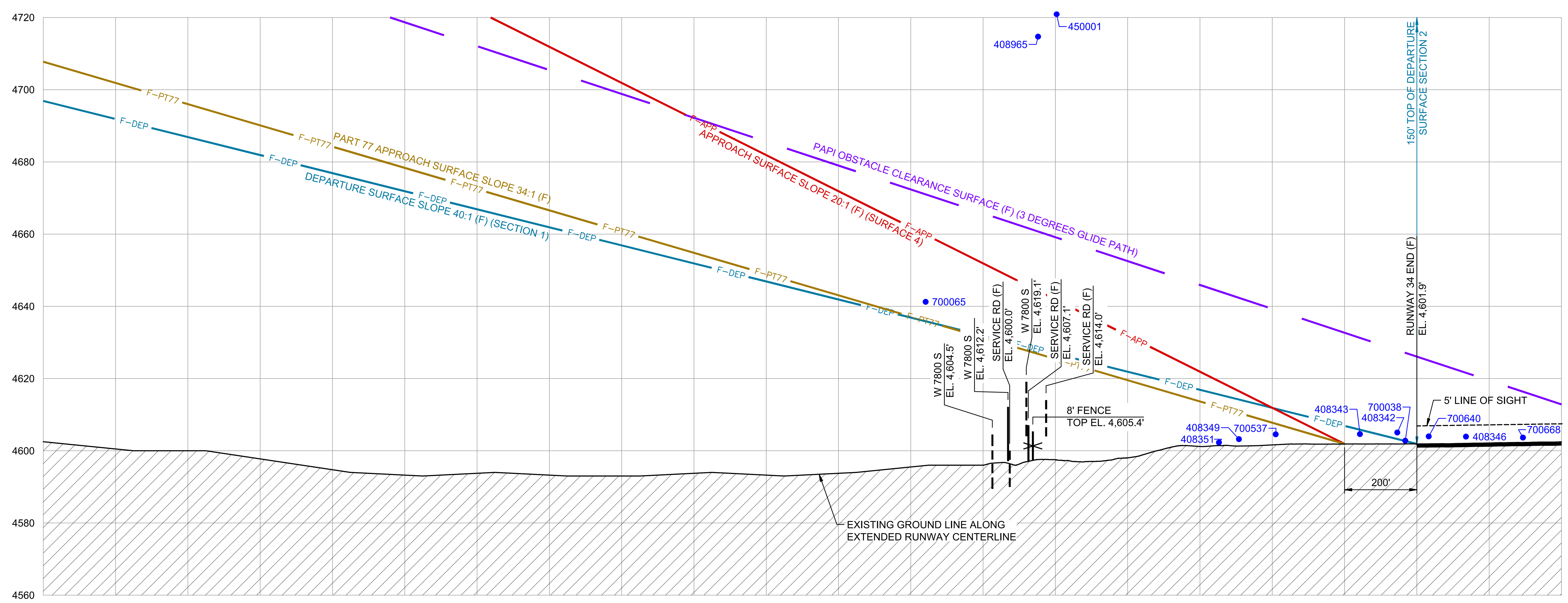
PROJECT NUMBER
1025-0064-001

SHEET TITLE

INNER PORTION OF THE APPROACH SURFACE RUNWAY 34 (EXISTING)

SHEET NUMBER





RUNWAY 34 FUTURE OBSTRUCTION TABLE

OBJECT NO.	OBJECT DESCRIPTION	ABOVE GROUND LEVEL (FT.)	OBJECT TOP ELEVATION (FT.)	CLEARANCE (+ PENETRATE) (- CLEAR)			PROPOSED DISPOSITION	PART 77 SURFACE VIOLATION	TRIGGERING EVENT
				PART 77 SURFACE (FT.)	DEPARTURE SURFACE (FT.)	13B APPROACH SURFACE (FT.)			
408342	GROUND	0.0	4,605.1	3.2	-58.2	N/A	NONE	PRIMARY	NONE
408343	GROUND	0.0	4,604.6	1.2	-57.3	N/A	NONE	TRANSITIONAL	NONE
408346	GROUND	0.0	4,603.9	1.9	N/A	N/A	NONE	PRIMARY	NONE
408349	GROUND	0.0	4,603.2	-7.3	-34.7	N/A	NONE	NONE	NONE
408351	GROUND	0.0	4,602.3	-9.8	-13.3	-17.0	NONE	NONE	NONE
408965	CRANE	131.0	4,714.7	22.2	N/A	N/A	FLAG/OBSTRUCTION LIGHT	TRANSITIONAL	NONE
450001	EME	130.8	4,720.9	42.0	N/A	N/A	OBSTRUCTION LIGHT	TRANSITIONAL	NONE
700038	AIRPORT SIGN	2.5	4,602.8	0.9	-13.6	N/A	RELOCATE	PRIMARY	RWY SHIFT

RUNWAY 34 FUTURE OBSTRUCTION TABLE

OBJECT NO.	OBJECT DESCRIPTION	ABOVE GROUND LEVEL (FT.)	OBJECT TOP ELEVATION (FT.)	CLEARANCE (+ PENETRATE) (- CLEAR)			PROPOSED DISPOSITION	PART 77 SURFACE VIOLATION	TRIGGERING EVENT
				PART 77 SURFACE (FT.)	DEPARTURE SURFACE (FT.)	13B APPROACH SURFACE (FT.)			
700065	POLE	35.2	4,641.2	2.1	-11.8	N/A	OBSTRUCTION LIGHT	TRANSITIONAL	NONE
700537	AIRFIELD LIGHT	2.6	4,604.6	-2.9	-7.1	-6.9	NONE	NONE	NONE
700640	GROUND	0.0	4,604.0	2.0	N/A	N/A	NONE	PRIMARY	NONE
700668	GROUND	0.0	4,603.6	1.3	N/A	N/A	NONE	PRIMARY	NONE

1. OBSTRUCTION SURVEY COMPLETED BY WOOLPERT INC. JANUARY, 2022.
2. NO OBSTRUCTIONS TO PAPI OBSTACLE SURFACE.

DESCRIPTION	FUTURE
PROPERTY LINE	N/A
PART 77 SURFACE	F-PT77
APPROACH SURFACE	F-APP
DEPARTURE SURFACE	F-DEP
PAPI OBSTACLE CLEARANCE SURFACE	
OBSTRUCTION	200000

NOTES:
1. ROADWAY ELEVATIONS INCLUDE TRAVERSEWAY ADJUSTMENT (23' RAILROADS | 17' HIGHWAYS | 15' PUBLIC ROADS | 10' PRIVATE ROADS).

200' 100' 0 200'
HORIZONTAL SCALE

20' 10' 0 20'
VERTICAL SCALE

N

MAGNETIC DECLINATION
10° 56' EAST ± 0° 22'
SEPTEMBER, 2023
ANNUAL CHANGE 0° 6' WEST

RS&H
RS&H, Inc.
5215 WILEY POST WAY, SUITE 510
SALT LAKE CITY, UT 84116
(801) 924-8555
www.rsandh.com

SVR

SOUTH VALLEY REGIONAL AIRPORT
WEST JORDAN, UTAH

AIRPORT LAYOUT PLAN

CONSULTANTS

REVISIONS

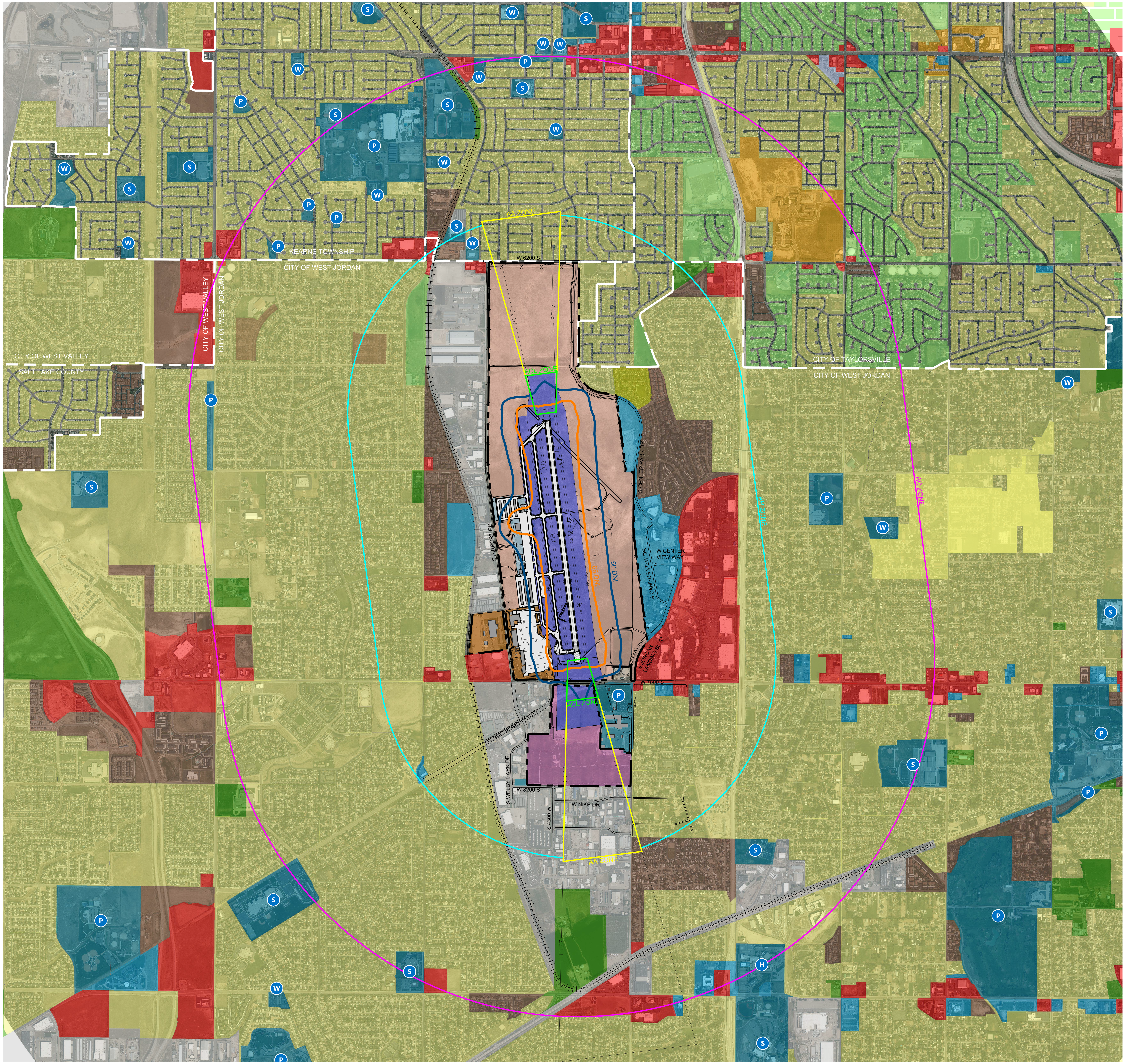
NO.	DESCRIPTION	DATE

DATE ISSUED: FEBRUARY 2025
REVIEWED BY:
DRAWN BY: BP
DESIGNED BY: TJM

PROJECT NUMBER
1025-0064-001

SHEET TITLE
INNER PORTION OF THE APPROACH SURFACE RUNWAY 34 (FUTURE)

SHEET NUMBER
12 OF 16



GENERAL	
PROPERTY LINE	
CITY LIMITS	
65 DNL NOISE CONTOUR	
60 DNL NOISE CONTOUR	
HOSPITAL	H
PARK	P
SCHOOL	S
PLACE OF WORSHIP	W

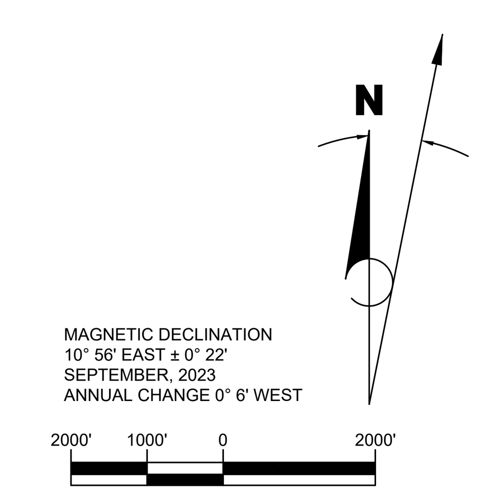
WEST JORDAN AIRPORT OVERLAY ZONE	
CLEAR ZONE (ACL)	
APPROACH ZONE (AA)	
HORIZONTAL ZONE (AH)	
CONICAL ZONE (AC)	

ON-AIRPORT LAND USE LEGEND	
AIRPORT OPERATIONS AREA	
AERONAUTICAL	
NON-AERONAUTICAL	
PRESERVED FOR FUTURE USE	
UTAH ARMY NATIONAL GUARD	

SALT LAKE COUNTY OFF-AIRPORT LAND USE LEGEND	
AGRICULTURAL	
COMMERCIAL	
INDUSTRIAL	
MANUFACTURING	
MEDICAL / HOSPITAL	
MIXED USE	
MULTI-FAMILY RESIDENTIAL	
OFFICE	
PARKS AND OPEN SPACE	
PLANNED UNIT DEVELOPMENT	
PUBLIC	
SINGLE-FAMILY RESIDENTIAL	

NOTES:
1. SALT LAKE COUNTY COMBINED ZONING - SLCO SURVEYORS OFFICE.

ZONING RESTRICTIONS
WEST JORDAN CITY CODE, TITLE 13, CHAPTER 6, ARTICLE A, AIRPORT OVERLAY ZONE AND KEARNS MUNICIPAL CODE, TITLE 19, CHAPTER 19.70, AOZ AIRPORT OVERLAY ZONE



RS&H

RS&H, Inc.
5215 WILEY POST WAY, SUITE 510
SALT LAKE CITY, UT 84116
(801) 924-8555
www.rsandh.com

SVR

SOUTH VALLEY REGIONAL AIRPORT

WEST JORDAN, UTAH

AIRPORT LAYOUT PLAN

CONSULTANTS

REVISIONS

NO.	DESCRIPTION	DATE

DATE ISSUED: FEBRUARY 2025
REVIEWED BY:
DRAWN BY: BP
DESIGNED BY: TJM

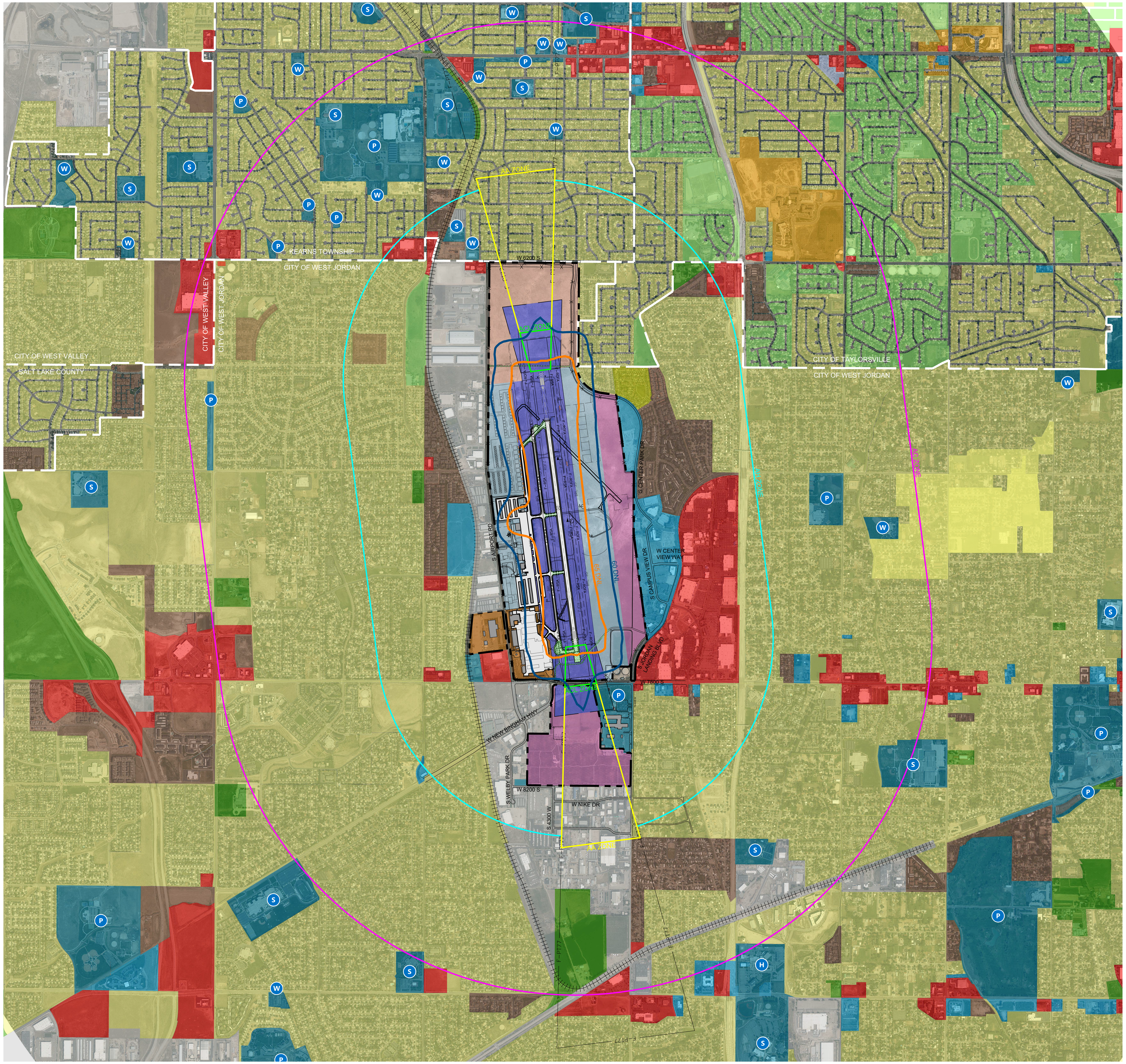
PROJECT NUMBER
1025-0064-001

SHEET TITLE

LAND USE PLAN (EXISTING)

SHEET NUMBER

Drawing: T:\P\2250064.001 SLC U42 Master Plan\CAD\ALP\C\U42_13_ExLand.dwg Plotted on: 2/12/2025 10:25 AM Plotted by: Peddie, Brendan



GENERAL	
PROPERTY LINE	
CITY LIMITS	
FUTURE 65 DNL NOISE CONTOUR	
FUTURE 60 DNL NOISE CONTOUR	
HOSPITAL	H
PARK	P
SCHOOL	S
PLACE OF WORSHIP	W

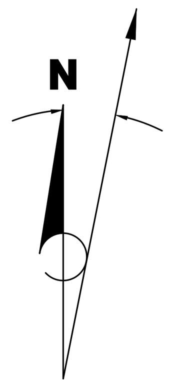
WEST JORDAN AIRPORT OVERLAY ZONE	
FUTURE CLEAR ZONE (ACL)	
FUTURE APPROACH ZONE (AA)	
FUTURE HORIZONTAL ZONE (AH)	
FUTURE CONICAL ZONE (AC)	

ON-AIRPORT LAND USE LEGEND	
AIRPORT OPERATIONS AREA	
AERONAUTICAL	
NON-AERONAUTICAL	
PRESERVED FOR FUTURE USE	
UTAH ARMY NATIONAL GUARD	

SALT LAKE COUNTY OFF-AIRPORT LAND USE LEGEND	
AGRICULTURAL	
COMMERCIAL	
INDUSTRIAL	
MANUFACTURING	
MEDICAL / HOSPITAL	
MIXED USE	
MULTI-FAMILY RESIDENTIAL	
OFFICE	
PARKS AND OPEN SPACE	
PLANNED UNIT DEVELOPMENT	
PUBLIC	
SINGLE-FAMILY RESIDENTIAL	

NOTES:
1. SALT LAKE COUNTY COMBINED ZONING - SLCO SURVEYORS OFFICE.

ZONING RESTRICTIONS
WEST JORDAN CITY CODE, TITLE 13, CHAPTER 6, ARTICLE A, AIRPORT OVERLAY ZONE AND KEARNS MUNICIPAL CODE, TITLE 19, CHAPTER 19,70, AOZ AIRPORT OVERLAY ZONE



MAGNETIC DECLINATION
10° 56' EAST ± 0° 22'
SEPTEMBER, 2023
ANNUAL CHANGE 0° 6' WEST

2000' 1000' 0 2000'

RS&H

RS&H, Inc.
5215 WILEY POST WAY, SUITE 510
SALT LAKE CITY, UT 84116
(801) 924-8555
www.rsandh.com

SVR

SOUTH VALLEY REGIONAL AIRPORT

WEST JORDAN, UTAH

AIRPORT LAYOUT PLAN

CONSULTANTS

REVISIONS

NO.	DESCRIPTION	DATE

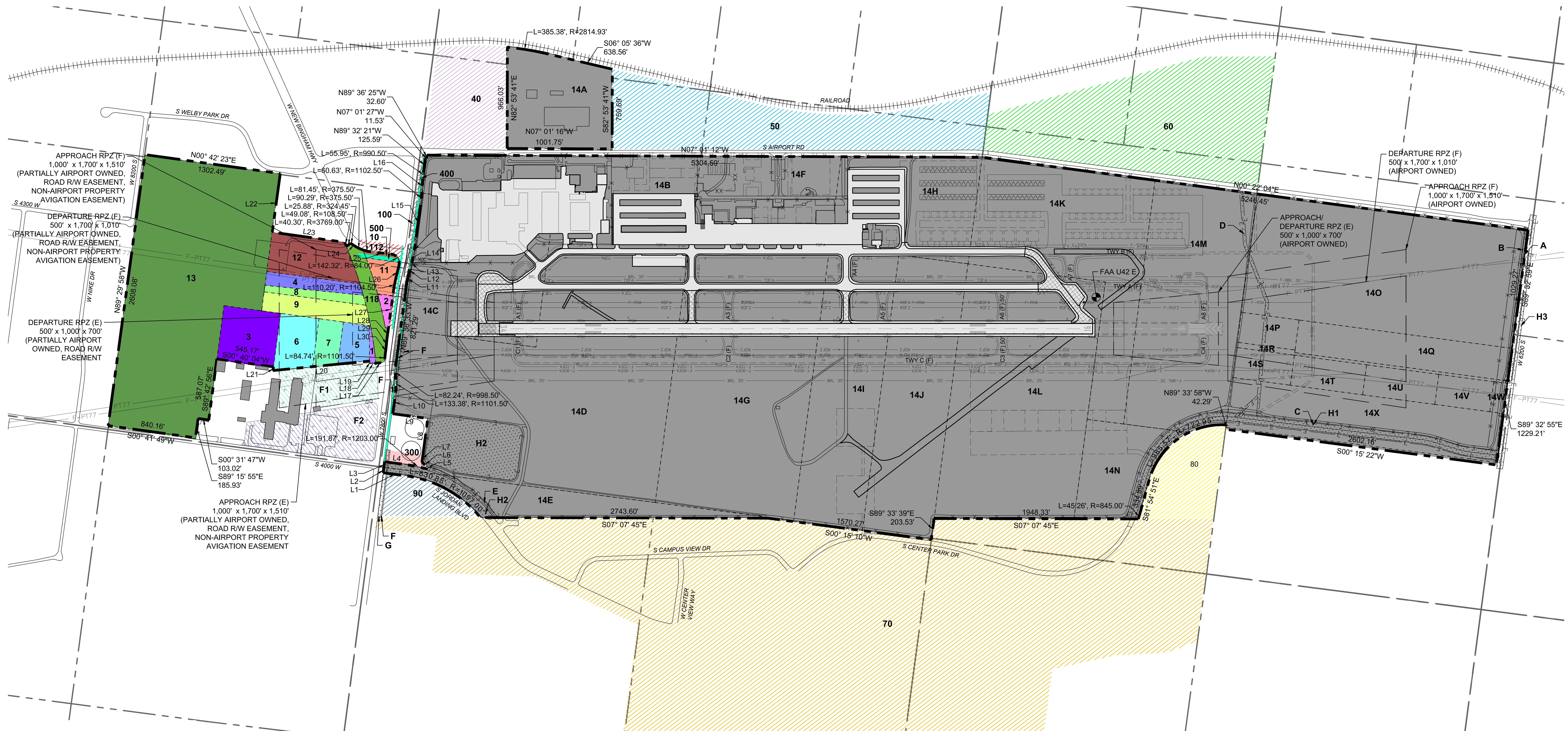
DATE ISSUED: FEBRUARY 2025
REVIEWED BY:
DRAWN BY: BP
DESIGNED BY: TJM

PROJECT NUMBER
1025-0064-001

SHEET TITLE

LAND USE PLAN (FUTURE)

SHEET NUMBER
14 OF 16



LINE TABLE		
LINE	BEARING	DISTANCE
L1	S00° 25' 42"W	224.29'
L2	N89° 38' 34"W	49.72'
L3	N89° 48' 28"W	56.28'
L4	N00° 25' 42"E	224.59'
L5	N80° 26' 02"W	20.88'
L6	S28° 52' 12"W	74.58'
L7	N89° 22' 15"W	73.19'
L8	N89° 40' 22"W	349.48'
L9	S00° 30' 13"W	336.97'
L10	N89° 37' 38"W	222.31'
L11	N83° 50' 11"W	80.06'
L12	N81° 41' 15"W	80.00'
L13	N83° 50' 11"W	64.42'
L14	N89° 34' 32"W	40.00'
L15	N89° 37' 29"W	415.13'
L16	S87° 13' 28"W	168.52'
L17	S13° 24' 25"E	82.59'
L18	S13° 21' 46"E	53.15'
L19	S63° 43' 09"W	27.60'
L20	S12° 49' 56"E	923.87'
L21	N89° 59' 03"W	35.70'
L22	S89° 33' 10"E	564.78'
L23	N00° 42' 23"E	697.14'
L24	N25° 21' 07"E	24.22'
L25	N00° 51' 14"W	191.87'
L26	S83° 46' 33"E	137.83'
L27	S89° 29' 32"E	366.44'
L28	S89° 29' 25"E	110.80'
L29	N88° 21' 30"E	79.98'
L30	S89° 29' 31"E	49.67'

DESCRIPTION	EXISTING	FUTURE
PROPERTY LINE		N/A
EASEMENT		
PARCEL LINE		N/A
RUNWAY SAFETY AREA	RSA	F - RSA
RUNWAY OBJECT FREE AREA	ROFA	F - ROFA
RUNWAY OBSTACLE FREE ZONE	ROFZ	F - ROFZ
RUNWAY PROTECTION ZONE		
TAXIWAY OBJECT FREE AREA	TOFA	F - TOFA
BUILDING RESTRICTION LINE	BRL 35'	N/A
PART 77 SURFACE	PT77	F - PT77
AIRFIELD PAVEMENT		
AIRFIELD PAVEMENT TO BE REMOVED	N/A	
BUILDINGS		
ROADWAY/PARKING		
UNPAVED ROADWAY/PARKING		N/A
FENCE	— X — X — X —	— XX — XX —
NGS MONUMENT	PACS/SACS	N/A

SALT LAKE CITY DEPARTMENT OF AIRPORTS

APPROVED _______ 3/4/2025
NAME DATE

SURVEY MONUMENTS					
IDENTIFIER	NGS PID	PACS OR SACS	LATITUDE	LONGITUDE	ELEVATION
FAA U42 E	AA3672	PACS	40° 37' 39.01875" N	111° 59' 43.31660" W	4607.1'

SOURCE: NATIONAL GEODETIC SURVEY, NAD 83 (2011), NAVD 88
NOTE: NO SACS ESTABLISHED FOR THIS AIRPORT

NOTES:
1. THIS EXHIBIT 'A' IS TO BE USED FOR PRELIMINARY PLANNING ONLY. THIS DRAWING HAS BEEN COMPILED USING BEST INFORMATION AVAILABLE AT TIME OF PREPARATIONS AND UPDATES. NO BOUNDARY SURVEY WAS DONE FOR THIS EXHIBIT 'A'

MAGNETIC DECLINATION
10° 56' EAST ± 0° 22'
SEPTEMBER, 2023
ANNUAL CHANGE 0° 6' WEST

N

500' 250' 0 500'

RS&H

RS&H, Inc.
5215 WILEY POST WAY, SUITE 510
SALT LAKE CITY, UT 84116
(801) 924-8555
www.rsandh.com

SVR

SOUTH VALLEY REGIONAL AIRPORT

WEST JORDAN, UTAH

AIRPORT LAYOUT PLAN

CONSULTANTS

REVISIONS

NO.	DESCRIPTION	DATE

DATE ISSUED: FEBRUARY 2025
REVIEWED BY:
DRAWN BY: BP
DESIGNED BY: TJM

PROJECT NUMBER
1025-0064-001

SHEET TITLE
EXHIBIT 'A' AIRPORT PROPERTY INVENTORY MAP

SHEET NUMBER
15 OF 16

EXISTING AIRPORT PROPERTY

DRAWING REFERENCE	PARCEL ID	GRANTOR	TYPE OF INTEREST ACQUIRED	ACREAGE	CONVEYANCE INSTRUMENT	RECORDING DATE	BOOK & PAGE / RECORDING INFO	GRANT NO.	PURPOSE OF ACQUISTION
AREA 1	21-31-200-005	W. JORDAN CITY	FEE SIMPLE	0.26	WARRANTY DEED	3/3/2000	BK 8218 / PG 001		RPZ PROTECTION
AREA 2	21-31-200-009	W. JORDAN CITY	FEE SIMPLE	1.00	WARRANTY DEED	2/5/1990	BK 7302 / PG 001		RPZ PROTECTION
AREA 3	21-31-200-026	W. JORDAN CITY	FEE SIMPLE	6.42	WARRANTY DEED	7/28/1981	BK 5436 / PG 2131	349003201	AIRSPACE PROTECTION
AREA 4	21-31-200-016	W. JORDAN CITY	FEE SIMPLE	2.52	WARRANTY DEED	5/28/1991	BK 6317 / PG 1267	349003208	RPZ PROTECTION
AREA 5	21-31-200-022	W. JORDAN CITY	FEE SIMPLE	2.32	WARRANTY DEED	7/28/1981	BK 5437 / PG 0494	349003201	RPZ PROTECTION
AREA 6	21-31-200-020	W. JORDAN CITY	FEE SIMPLE	4.28	WARRANTY DEED	7/28/1981	BK 5363 / PG 0246	349003201	RPZ PROTECTION
AREA 7	21-31-200-018	W. JORDAN CITY	FEE SIMPLE	2.33	WARRANTY DEED	7/28/1981	BK 5363 / PG 0245	349003201	RPZ PROTECTION
AREA 8	21-31-200-017	W. JORDAN CITY	FEE SIMPLE	1.71	WARRANTY DEED	7/28/1981	BK 5363 / PG 0244	349003201	RPZ PROTECTION
AREA 9	21-31-200-004	W. JORDAN CITY	FEE SIMPLE	4.33	WARRANTY DEED	7/28/1981	BK 5363 / PG 0243	349003201	RPZ PROTECTION
AREA 10	21-31-226-006	KIRBY F. CRUMP	FEE SIMPLE	1.50	WARRANTY DEED	9/12/1991	BK 7302 / PG 0001		AIRSPACE PROTECTION
AREA 11	21-31-226-008	KIRBY F. CRUMP	FEE SIMPLE	2.02	WARRANTY DEED	2/22/2002	BK 8218 / PG 0001		RPZ PROTECTION
AREA 12	21-31-200-037	LAZZARINI	FEE SIMPLE	6.89	WARRANTY DEED	9/19/1990	BK 6252 / PG 2943		RPZ PROTECTION
AREA 13	21-31-200-041	MONTWOOD CORP	FEE SIMPLE	68.49	WARRANTY DEED	3/21/1996	BK 7081 / PG 0001		AIRSPACE PROTECTION
AREA 14A	21-30-376-001	HENRY W. & LAURA E. COOLEY	FEE SIMPLE	20.29	WARRANTY DEED	4/17/1941	BK 268 / PG 560		
AREA 14B	21-30-300-302	HENRY W. & LAURA E. COOLEY	FEE SIMPLE	30.97	WARRANTY DEED	4/17/1941	BK 268 / PG 560		
AREA 14C	21-30-400-009	ALBERT P. & BEATRICE GARDNER DIMOND	FEE SIMPLE	39.77	WARRANTY DEED	4/7/1941	BK 269 / PG 428		
AREA 14D	21-30-400-112	ROSE M. THENN	FEE SIMPLE	115.36	WARRANTY DEED	4/12/1941	BK 270 / PG 316		
AREA 14E	21-29-301-013	WALTER T. & MARY N. STEADMAN	FEE SIMPLE	13.25	WARRANTY DEED	5/20/1941	BK 272 / PG 109		
AREA 14F	21-30-100-0062	LEONARD R. & NORMA S. STEADMAN, WILLIAM H. & ALBERTA R. STEADMAN, ELVINA STEADMAN	FEE SIMPLE	23.64	WARRANTY DEED	4/17/1941	BK 280 / PG 189		
AREA 14G	21-30-200-003	THE FEDERAL LAND BANK OF BERKELEY	FEE SIMPLE	80.81	SPECIAL WARRANTY DEED	5/6/1941	BK 270 / PG 317		
AREA 14H	21-30-100-0022	WILFORD E. & OLIVIA M. EGBERT	FEE SIMPLE	28.80	WARRANTY DEED	5/9/1941	BK 271 / PG 638		
AREA 14I	21-30-200-002	THE FEDERAL LAND BANK OF BERKELEY	FEE SIMPLE	40.38	SPECIAL WARRANTY DEED	5/6/1941	BK 270 / PG 317		
AREA 14J	21-30-200-001	THE FEDERAL LAND BANK OF BERKELEY	FEE SIMPLE	40.45	SPECIAL WARRANTY DEED	5/6/1941	BK 270 / PG 317		
AREA 14K	21-19-400-008	THE FEDERAL LAND BANK OF BERKELEY	FEE SIMPLE	49.68	SPECIAL WARRANTY DEED	5/6/1941	BK 270 / PG 317		
AREA 14L	21-19-400-008	THE FEDERAL LAND BANK OF BERKELEY	FEE SIMPLE	71.76	SPECIAL WARRANTY DEED	5/6/1941	BK 270 / PG 317		ESTABLISHMENT OF SOUTH VALLEY REGIONAL AIRPORT
AREA 14M	21-19-400-008	THE FEDERAL LAND BANK OF BERKELEY	FEE SIMPLE	51.94	SPECIAL WARRANTY DEED	5/6/1941	BK 270 / PG 317		
AREA 14N	21-19-400-008	FREDERICK D. JAYNES	FEE SIMPLE	14.93	QUIT-CLAIM DEED	5/2/1941	BK 270 / PG 320		
AREA 14O	21-19-100-004	FARNSWORTH INVESTMENT COMPANY	FEE SIMPLE	72.00	WARRANTY DEED	7/6/1972	BK 3110 / PG 278		
AREA 14P	21-19-200-041	CAPITOL THRIFT AND LOAN	FEE SIMPLE	3.68	WARRANTY DEED	10/31/1972	BK 3192 / PG 200		
AREA 14Q	21-19-200-001	G. EUGENE & DORA M. ENGLAND	FEE SIMPLE	15.00	WARRANTY DEED	7/10/1972	BK 3110 / PG 288		
AREA 14R	21-19-200-002	C.R. & EVELYN P. HENRIKSEN	FEE SIMPLE	1.83	WARRANTY DEED	11/16/1973	BK 3455 / PG 3		
AREA 14S	21-19-200-042	ENTRADA INDUSTRIES, INC.	FEE SIMPLE	3.68	WARRANTY DEED	12/21/1972	BK 3225 / PG 377		
AREA 14T	21-19-200-007	DARREL WM. JACKSON, GEORGE K. & SHIRLEY H. GROVER	FEE SIMPLE	4.60	WARRANTY DEED	1/15/1974	BK 3501 / PG 328		
AREA 14U	21-19-200-005 21-19-200-006	WAYNE & HELEN STAKER, DAVID J. & NORMA B. STAKER AND STUART H. & DONNA STAKER	FEE SIMPLE	4.60	WARRANTY DEED	6/18/1973	BK 3357 / PG 39A		
AREA 14V	21-19-200-004	ERMA L. WOOD, HAROLD N. OLSEN & BESSIE OLSEN	FEE SIMPLE	3.51	WARRANTY DEED	2/13/1973	BK 3264 / PG 75		
AREA 14W	21-19-200-003	RUSSELL N. & ALICE B. OLSEN	FEE SIMPLE	0.88	WARRANTY DEED	2/6/1973	BK 3256 / PG 209		
AREA 14X	21-19-200-009	G. EUGENE & DORA M. ENGLAND	FEE SIMPLE	28.16	WARRANTY DEED	7/10/1972	BK 3110 / PG 288		
AREA 118	21-31-201-017	W. JORDAN CITY	FEE SIMPLE	3.44	SPECIAL WARRANTY DEED	7/18/2018	BK 10695 / PG 3878-3882		RPZ PROTECTION

EASEMENTS

DRAWING REFERENCE	PARCEL ID	GRANTOR	GRANTEE	TYPE OF INTEREST ACQUIRED	ACREAGE	CONVEYANCE INSTRUMENT	RECORDING DATE	BOOK & PAGE / RECORDING INFO	EASEMENTS	PARCEL NOTES
AREA A	21-19-100-004 21-19-200-001 21-19-200-003 21-19-200-009 21-19-200-002	SALT LAKE CITY CORPORATION	WEST JORDAN CITY CORPORATION	ROADWAY EASEMENT	0.3683	ROADWAY EASEMENT	8/17/2004	BK 9111 / PG 8392	SEVEN FOOT ROAD WIDENING EASEMENT, AVIGATION EASEMENT	
AREA B	21-19-100-004 21-19-200-001 21-19-200-003 21-19-200-009 21-19-200-002	SALT LAKE CITY CORPORATION	WEST JORDAN CITY CORPORATION	UTILITY EASEMENT	1.04	UTILITY EASEMENT	8/17/2004	BK 9111 / PG 8400	TWENTY FOOT UTILITY EASEMENT, AVIGATION EASEMENT	
AREA C	21-19-200-009 21-19-400-008	SALT LAKE CITY CORPORATION	WEST JORDAN CITY CORPORATION	ROADWAY EASEMENT	8.08	ROADWAY EASEMENT	9/21/2000	BK 8389 / PG 2219	ROADWAY EASEMENT, AVIGATION EASEMENT	AFFIDAVIT TO CORRECT LEGAL DESCRIPTION OF ROADWAY EASEMENT RECORDED 8/10/2000
AREA D	21-19-100-004 21-19-200-041 21-19-200-002 21-19-200-042 21-19-200-009 21-19-400-008	SALT LAKE CITY CORPORATION	THE CITY OF WEST JORDAN	PERPETUAL SEWER AND STORM WATER EASEMENT	1.598	PERPETUAL SEWER AND STORM WATER EASEMENT	12/7/2015	BK 10390 / PG 4216	PERPETUAL SEWER AND STORM WATER EASEMENT	
AREA E	21-30-400-005-2000 21-29-301-013-0000	SALT LAKE CITY CORPORATION	THE CITY OF WEST JORDAN	ROADWAY EASEMENT	0.3028	ROADWAY EASEMENT	3/3/2016	BK 10408 / PG 2594	ROADWAY EASEMENT, AVIGATION EASEMENT	AMENDMENT TO ROADWAY EASEMENT RECORDED 11/15/1998
AREA F	21-30-300-031 21-30-400-011-2000 21-30-400-008 21-29-301-013 21-29-351-011 21-29-351-012	SALT LAKE CITY CORPORATION	WEST JORDAN CITY CORPORATION	WATERLINES, STORM DRAIN, AND ASSOCIATED FACILITIES EASEMENT	1.767	WATERLINES, STORM DRAIN, AND ASSOCIATED FACILITIES EASEMENT	5/22/2003	BK 8803 / PG 7157	WATERLINES, STORM DRAIN, AND ASSOCIATED FACILITIES EASEMENT	
AREA G	21-30-400-008 21-29-301-013 21-29-351-011 21-29-351-012	SALT LAKE CITY CORPORATION	WEST JORDAN CITY CORPORATION	WATERLINES AND ASSOCIATED FACILITIES EASEMENT	0.549	WATERLINES AND ASSOCIATED FACILITIES EASEMENT	4/3/2001	BK 8444 / PG 3063	WATERLINES AND ASSOCIATED FACILITIES EASEMENT	EASEMENT "AREA G" ENCOMPASSES THE SAME PARCEL OF LAND OF A PORTION OF EASEMENT "AREA F"
AREA H1	21-19-200-009 21-19-400-008	SALT LAKE CITY CORPORATION	THE CITY OF WEST JORDAN		8.08	MEMORANDUM OF AGREEMENT	1/7/2016		CENTER PARK DRIVE ROADWAY EASEMENT	EASEMENT "AREA H1" PERTAINS TO THE IDENTICAL ROADWAY EASEMENT OUTLINED IN EASEMENT "AREA C"
AREA H2	21-30-400-005-2000 21-29-301-013-0000	SALT LAKE CITY CORPORATION	THE CITY OF WEST JORDAN		12.7	MEMORANDUM OF AGREEMENT	1/7/2016		JORDAN LANDING BOULEVARD ROADWAY EASEMENT, DETENTION BASIN EASEMENT	
AREA H3	21-19-100-004 21-19-200-001 21-19-200-003 21-19-200-009 21-19-200-002	SALT LAKE CITY CORPORATION	THE CITY OF WEST JORDAN		3.21	MEMORANDUM OF AGREEMENT	1/7/2016		6200 SOUTH ROADWAY EASEMENT	

RELEASED / SOLD AIRPORT PROPERTY

DRAWING REFERENCE	PARCEL ID	GRANTEE	TYPE OF RELEASE	ACREAGE	CONVEYANCE INSTRUMENT	RECORDING DATE	BOOK & PAGE / RECORDING INFO	RELEASE DATE	PURPOSE OF RELEASE
AREA 40	21-30-300-003	W. JORDAN CITY		16.09	WARRANTY DEED	4/17/1941	BK 268 / PG 560	1997	
AREA 50	21-30-300-003	W. JORDAN CITY		12.96	WARRANTY DEED	4/17/1941	BK 268 / PG 560	1997	
AREA 60	21-30-100-003	W. JORDAN CITY		12.96	WARRANTY DEED	4/17/1941	BK 280 / PG 189	1997	
AREA 60	21-30-100-002	W. JORDAN CITY		12.96	WARRANTY DEED	4/17/1941	BK 271 / PG 638	1997	
AREA 60	21-19-300-001	W. JORDAN CITY		52.96	WARRANTY DEED	5/6/1941	BK 270 / PG 317	1997	
AREA 70	21-29-300-001	W. JORDAN CITY		50.15	WARRANTY DEED	8/1/1941	BK 8304 / PG 5585	1997	
AREA 70	21-29-301-001	W. JORDAN CITY		50.15	WARRANTY DEED	8/1/1941	BK 8304 / PG 5585	1997	
AREA 70	21-29-100-001	W. JORDAN CITY		100.3	WARRANTY DEED	8/1/1941	BK 8160 / PG 2627	1997	
AREA 70	21-20-376-002	W. JORDAN CITY		25.1	WARRANTY DEED	8/1/1941	BK 270 / PG 612	1997	
AREA 70	21-20-351-001	W. JORDAN CITY		25.1	WARRANTY DEED	8/1/1941	BK 268 / PG 660	1997	
AREA 70	21-20-301-004	W. JORDAN CITY		25.1	WARRANTY DEED	8/1/1941	BK 268 / PG 659	1997	
AREA 70	21-19-300-001	W. JORDAN CITY		25	WARRANTY DEED	8/1/1941	BK 270 / PG 322	1997	
AREA 80	21-20-301-004	W. JORDAN CITY		12.23	WARRANTY DEED	8/1/1941	BK 8204 / PG 5570	1999	
AREA 90	21-29-300-001	W. JORDAN CITY		6.56	WARRANTY DEED	8/1/1941	BK 8160 / PG 2608	1998	
AREA 100	21-30-300-031	W. JORDAN CITY		2.576	SPECIAL WARRANTY DEED	6/13/2018	BK 10695 / PG 3856 - 3861	2018	
AREA 112	21-31-201-013	W. JORDAN CITY		1.685	SPECIAL WARRANTY DEED	6/13/2018	BK 10695 / PG 3862 - 3866	2018	

FUTURE AIRPORT PROPERTY

DRAWING REFERENCE	PARCEL ID	GRANTOR	TYPE OF INTEREST TO BE ACQUIRED	ACREAGE	PURPOSE OF ACQUISTION
AREA F-1	21-31-200-006 21-31-200-023 21-31-200-042 21-31-200-043	W. JORDAN CITY	AVIGATION EASEMENT	13.6	RPZ PROTECTION
AREA F-2	21-31-200-006 21-31-200-023 21-31-200-042 21-31-200-043	W. JORDAN CITY	AVIGATION EASEMENT	19.5	AIRSPACE PROTECTION

AIRPORT PROPERTY TO BE SOLD

DRAWING REFERENCE	PARCEL ID	GRANTEE	TYPE OF INTEREST TO BE ACQUIRED	ACREAGE	PURPOSE OF RELEASE
AREA 300	21-30-400-005	W. JORDAN CITY		0.9807	
AREA 400		W. JORDAN CITY		1.3	
AREA 500		W. JORDAN CITY		0.8	

RS&H

RS&H, Inc.
5215 WILEY POST WAY, SUITE 510
SALT LAKE CITY, UT 84116
(801) 924-8555
www.rsandh.com

SVR

SOUTH VALLEY REGIONAL AIRPORT

WEST JORDAN, UTAH

AIRPORT LAYOUT PLAN

CONSULTANTS

REVISIONS

NO.	DESCRIPTION	DATE

DATE ISSUED: FEBRUARY 2025
REVIEWED BY:
DRAWN BY: BP
DESIGNED BY: TJM

PROJECT NUMBER
1025-0064-001

SHEET TITLE

EXHIBIT 'A' AIRPORT PROPERTY INVENTORY MAP DATA TABLES

SHEET NUMBER

Drawing: T:\P\2250064.001 SLC U42 Master Plan\CAD\ALP\C\U42_15_ExhA.dwg Plotted on: 2/12/2025 10:30 AM Plotted by: Peddie, Brendan

RS&H

5215 Wiley Post Way
Suite 510
Salt Lake City, UT 84116

(801) 924-8555

rsandh.com