REDDING REGIONAL AIRPORT

Chapter One
Inventory

The initial step in the preparation of the master plan for the Redding Regional Airport (RDD) is the collection of information pertaining directly to or influencing RDD and the area it serves. The information summarized in this chapter will be used in subsequent analyses within this study and includes:

- Background information related to the City of Redding, Shasta County, and the service area region, including descriptions of the local geography, regional climate, and surface transportation systems.
- Physical inventories and descriptions of current facilities and services offered at RDD. The analysis will include airfield and landside infrastructure and services as well as local and regional airspace, competing airport facilities, air traffic control, and aircraft operating procedures.
- Redding Regional Airport's role in regional, state, and national aviation systems. Development at the airport since the completion of the previous master plan (2015) will also be discussed.

Socioeconomic data including population, employment, and income activity sectors will be analyzed. These sectors typically offer an indication of future trends that could influence aviation activity at RDD.

- A review of existing local and regional plans and studies which will be utilized later in the process to determine their potential influence on the development and implementation of this sustainable airport master plan.
- Review of existing environmental conditions and sensitivities, on or near RDD, to be factored into the recommended development plan.

The information outlined in this chapter provides a foundation for all subsequent chapters. Much of the information was obtained through on-site inspections of RDD and interviews with airport staff, control tower staff, commercial operators, and other tenants. Information was also obtained from outside resources including documents prepared by the Federal Aviation Administration (FAA), California Department of Transportation (Caltrans), City of Redding, Shasta County, the Shasta Regional Transportation Agency, and other pertinent regional planning and economic development agencies.

REGIONAL SETTING

The City of Redding is in north-central California and is the economic and cultural capital of the Shasta Cascade region and the county seat of Shasta County. Redding lies along the Sacramento River, 160 miles north of Sacramento and 120 miles south of the Oregon border. Mount Shasta is a potentially active volcano located 60 miles north of Redding, rising to an elevation of 14,179 feet and providing a spectacular backdrop to the city. Redding is approximately 495 feet above sea level, and it is at the northwestern end of the California Central Valley, which transitions into the Cascade foothills. The city is surrounded by mountains to the north, east, and west, with fertile farmlands to the south. **Exhibit 1A** presents the regional setting for RDD.

Mount Shasta – 60 miles north of RDD

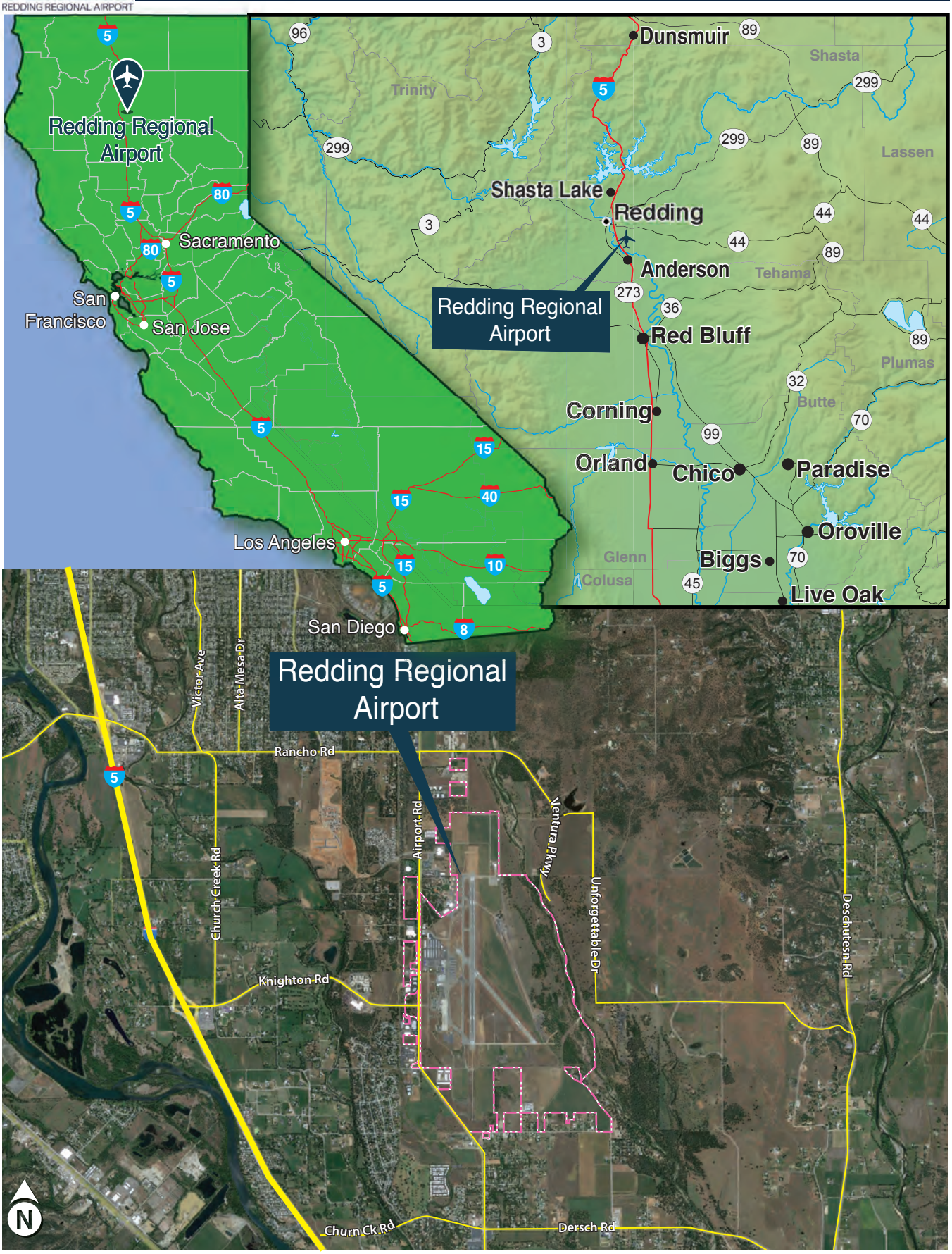
Redding is home to 93,611 people as of the 2020 census. The Redding Metropolitan Statistical Area (MSA - which coincides with Shasta County) had a 2020 census population of 182,155.

REGIONAL ECONOMY

Redding has experienced sizable economic growth in recent years. The Miliken Institute, an economic think-tank, ranked Redding as the fourth-best economic small city in the country. According to the Shasta Economic Development Corporation (EDC), the Redding MSA was the only area in the state that added jobs during the COVID pandemic. The Redding MSA has a diversified economy which is summarized as follows by the EDC:

Since the days of the gold rush Shasta has been a resource-based economy. In the 30's it was mining copper, then on to the lumber days from the 40's to the 80's. There is still a strong lumber base today being home to Sierra Pacific Industries, the second largest private lumber company in the US. In addition, agriculture has continued to be a part of the resource economy as it has evolved from traditional ranching to the more intensive nuts and viticulture seen today.

Today the greater Redding area has become a regional hub. As is typical of a regional hub city, a major portion of the economy is based on service, retail, and local government services to the Shasta Region.


Redding Regional Airport
Sacramento
San Francisco
San Jose
Los Angeles
San Diego
Dunsmuir
Shasta Lake
Redding
Anderson
Red Bluff
Corning
Orland
Chico
Paradise
Oroville
Biggs
Live Oak
Trinity
Shasta
Lassen
Tehama
Plumas
Butte
Glenn
Colusa
Redding Regional Airport
Victor Ave
Alta Mesa Dr
Rancho Rd
Airport Rd
Ventura Pkwy
Church Creek Rd
Knighton Rd
Unforgettable Dr
Deschutes Rd
Churn Ck Rd
Dersch Rd
N

Resources today have attracted and developed new sectors of business. These resources include some of the cheapest electricity in the state, a skilled labor force, affordable housing, Interstate-5 Freeway, rail and air, abundant water, and affordable land with strong infrastructure.

Driven by these resources, Shasta County has developed into an area for small to medium sized manufacturing driven by a well-trained labor force and competitive cost of business. Manufacturing sectors include recreational manufacturing with Seabreacher, Jetovator, Sky Ski, Tru Rec, The Fly Shop, and Yates Gear, all choosing to headquarter in Shasta County, where their product testing can be done within minutes of the lab. There are also numerous businesses specializing in fabrication and medical devices such as AB Technologies, D&G Glassblowing, and Industrial Optics.

In 2022, Shasta County was recognized as the fifth fastest growing tech region in the State of California by Washington think tank, Progressive Policy Institute. Established companies in the county include Ted Pella Inc. in electron microscopy, Op-Test in silicon chip development and testing, Development Group Inc. in large scale networking systems, Limelight in software development, and Technisoil a polymer road paving company now distributing their products around the globe.

The tech sector is seeing rapid growth both at advanced and entrepreneurial levels with over 50 new companies, including drone technology development, application design companies, online gaming and crowd sourcing platforms, along with a host of other applications. Another tech area the region is well suited for is 'Back Office Service'. With a well-educated labor force and close proximity to Silicon Valley, many companies in the Silicon Valley have moved their Back Office Service to this region, including Axcient, N-Computing, and Citelighter.

The regional unemployment rate has dropped from 17 percent in 2010 to 3.4 percent as of May 2022. **Table 1A** shows the top employers in the Redding region in 2021 and in 2012.

TABLE 1A | Redding Region - Top Employers

Employer	2012			2021		
	Employees	Rank	% of Total Area Employment	Employees	Rank	% of Total Area Employment
Mercy Medical Center	1,600	2	2.17%	1,906	1	2.77%
Shasta County	1,838	1	2.49%	1,800	2	2.64%
City of Redding	773	3	1.05%	800	3	1.28%
Shasta Regional Medical Center	700	4	0.95%	746	4	1.08%
Redding Rancheria	310	9	0.42%	733	5	1.06%
CA Transportation Department	-	-	-	532	6	0.77%
Shasta Union High School District	-	-	-	507	7	0.74%
Shasta Community Health	-	-	-	475	8	0.69%
Wal Mart	-	-	-	413	9	0.60%
Shasta Community College	650	5	0.88%	407	10	0.59%
Blue Shield of California	470	8	0.64%	-	-	-
Oakdale Heights Management	300	10	0.41%	-	-	-
United States Post Office	580	6	0.79%	-	-	-
Total	**7,221**			**8,319**		

Source: City of Redding Annual Comprehensive Financial Report (Fiscal Year ended June 30, 2021)

AIRPORT ECONOMIC IMPACT

Airports are a significant economic engine for any region. Redding Regional Airport is especially impactful because it serves not only commercial passengers, but also numerous other aviation industry segments including air ambulance, U.S. Forest Service, California Department of Forestry and Fire Protection (Cal Fire), business aviation, and general aviation.

In 2021, the airport contracted to have an economic impact study completed. The study was developed utilizing an economic input-output model which provides three *measures* (employment, payroll, and output), broken into three *categories* (on-airport, visitors, and capital projects), which are expressed as three types of *economic impact* (direct, multiplier, and total).

Table 1B summarizes the results of the economic impact model. The airport supports more than 1,300 jobs, $72 million in payroll, and it generates more than $218 million in annual economic output.

TABLE 1B | Airport Economic Impact

Year	Employment	Payroll	Output
2019	1,377	$71,833,000	$220,893,000
2021	1,303	$72,487,000	$218,366,000

Source: RDD Economic Contribution Assessment (Mead & Hunt - 2022)

AIRPORT TENANTS

Table 1C lists those private businesses that operate from the airport. Services provided by the fixed base operators (FBO) and other limited-service operators include aircraft storage, fuel sales, aircraft rental, transient aircraft parking, aircraft maintenance, avionics, charter flights, and flight instruction. IASCO is a flight training company that specializes in training international students. Both Reach and PHI provide air medical services utilizing both fixed wing and helicopters.

TABLE 1C | Airport Businesses

Business Name	Primary Function
United Airlines	Passenger Service
Avelo Airlines	Passenger Service
Alaska Air	Passenger Service
Redding Jet Center	Fixed Base Operator and Charter Service
Air Shasta Rotor and Wind	Fixed Base Operator and Charter Service
Redding Air Service Inc.	Fixed Base Operator and Charter Service
IASCO Flight Training	Flight School (Part 141 certified)
PHI Air Medical	Air Medical Services
Reach Air Medical Services	Air Medical Services
AVIS, Budget, Hertz	Rental Cars
Peter Chu's Sky Room	Restaurant
Republic Parking Systems	Parking

Source: www.cityofredding.org/departments/airports/redding-municipal-airport/services/airport-businesses

AREA BUSINESS PARKS

There are two designated business parks neighboring the airport. The Stillwater Business Park is located to the immediate east and northeast of the airport within the City of Redding boundary. The City of Redding has approved a Planned Development Plan which makes it possible for companies to receive a building permit in a short period of time. The business park encompasses approximately 678 acres, and383 acres are developable.

On the east side of the airport (east of Airport Road) is the Redding Airport Business and Industrial Park. This business park is approximately 224 acres, of which 55 acres are owned by the airport. Several parcels are developed within the business park including one which is on airport property. The neighboring business parks are shown on **Figure 1-1**.

Figure 1-1: Area Business Parks

REGIONAL TRANSPORTATION NETWORK

Primary regional access to the City of Redding is provided by U.S. Interstate 5, which passes north/south through the city. Interstate 5 extends from the Canadian border south to the Mexican border, the only continuous interstate highway to do so. Interstate 5 is approximately two miles west of the airport.

Primary access to the airport is via Kingston Road, which extends from an interchange with I-5 leading directly to the airport terminal building. Airport Road extends north/south along the west side of the airport providing access to other airport facilities and hangars.

AIRPORT ADMINISTRATION

The airport is owned and operated by the City of Redding. The city employs a professional airport staff that manages day-to-day operations and capital development projects for both RDD and Benton Airpark (O85). The Airports Manager reports directly to the Assistant City Manager. The Airports Manager oversees a staff of 14 people which includes an Assistant Airport Manager - Capital Improvements, Operations, and Maintenance, and an Assistant Manager – Administration and Security. **Figure 1-2** shows the airport organization chart.

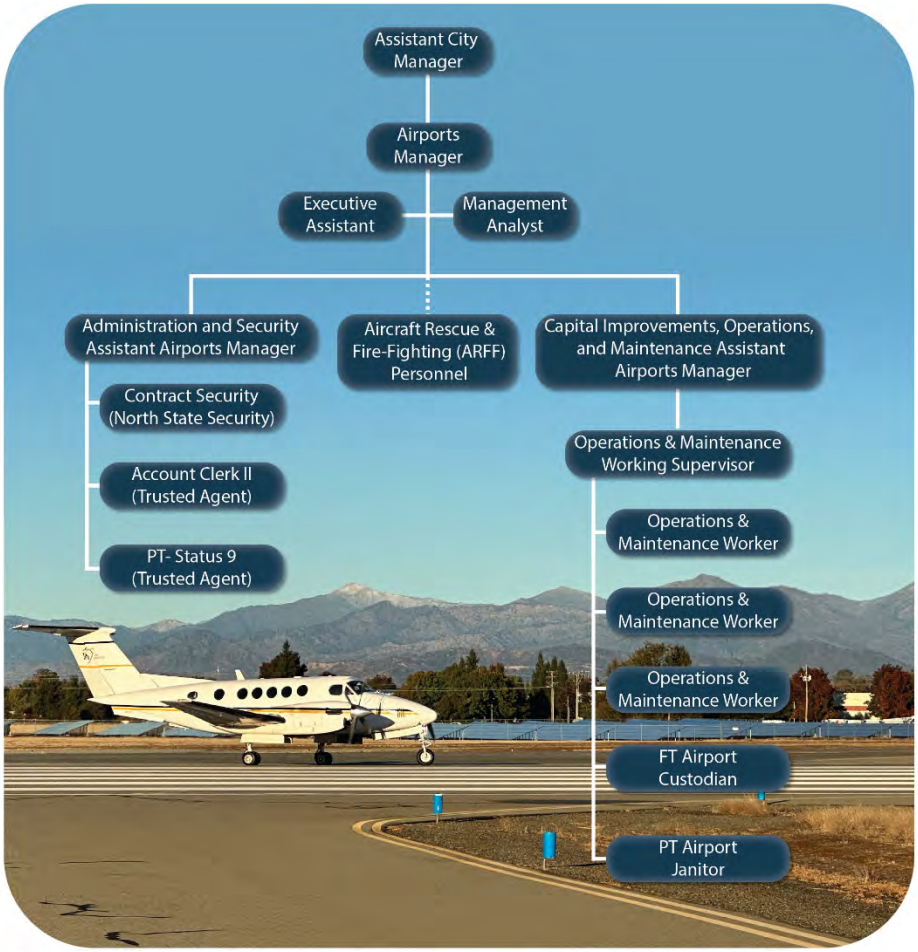


Figure 1-2: Airport Organizational Chart

REGIONAL CLIMATE

Weather conditions are important to the planning and development of an airport. Temperature is an important factor in determining runway length requirements, while wind direction and speed are used to determine optimum and adequate runway orientation. The need for navigational aids and lighting is determined by the percentage of time that visibility is impaired due to cloud coverage or other conditions.

Redding has a hot-summer Mediterranean climate (Köppen: Csa), with very hot, dry summers and cool, wet winters. Redding is known for very high summer temperatures, despite being located just north of the 40th Parallel North. Winter (October–April) provides the most precipitation of any season in Redding - the weather tends to be either rainy or foggy and, at times, snow occurs. While summers are mostly hot and dry, thunderstorms are not uncommon. The average daily maximum temperature in July is 99.9 °F (37.8 °C). The highest official recorded temperature in Redding was 118 °F (48 °C) on July 20, 1988, recorded at the Redding Regional Airport. Redding has an average possible sunshine of 88 percent, the second-highest percentage (after Yuma, Arizona) of any US city.

Summer overnight lows are unusually warm by Sacramento Valley standards and average warmer than coastal towns' daytime highs. The warmest night annually averages 79 °F (26 °C). Since the station opened in 1986, the hottest night was 86 °F (30 °C) in June 2004. Redding's warm summer days and nights compared to areas further south are a result of a greater distance to maritime influences than the lower end of the valley.

Redding occasionally receives snow, and it rarely gets sleet or freezing rain. Frost occurs commonly in December through February but less often in March through November. Rainfall is common in the spring, and due to being located near the foothills of the Cascade Mountain range, it receives much more rain than most places in the Sacramento Valley. Temperature differentials between land and sea cause moist air from the latter to flow over the southern Sacramento valley during the summer months, producing intense heat in Redding. The direction of these winds switches from the north and east in the summer, as hot, high-pressure air flows from land to sea, making the area very dry. Tornadoes are extremely rare; flooding occurs only around the area near the Sacramento River. **Figure 1-3** summarizes climate data for the region as sourced from the on-airport automated surface observation system (ASOS).

Climate data for Redding Regional Airport, California (1991–2020 normals,[a] extremes 1893–present[b]) [hide]

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Record high °F (°C)	87 (31)	87 (31)	93 (34)	98 (37)	109 (43)	117 (47)	118 (48)	118 (48)	116 (47)	106 (41)	99 (37)	83 (28)	118 (48)
Mean maximum °F (°C)	70.5 (21.4)	74.3 (23.5)	80.7 (27.1)	88.0 (31.1)	97.4 (36.3)	106.5 (41.4)	110.5 (43.6)	108.2 (42.3)	104.9 (40.5)	94.9 (34.9)	79.8 (26.6)	68.9 (20.5)	112.0 (44.4)
Average high °F (°C)	57.2 (14.0)	61.0 (16.1)	65.7 (18.7)	71.8 (22.1)	82.0 (27.8)	91.9 (33.3)	99.9 (37.7)	98.1 (36.7)	92.3 (33.5)	79.4 (26.3)	64.4 (18.0)	56.0 (13.3)	76.6 (24.8)
Daily mean °F (°C)	47.5 (8.6)	50.5 (10.3)	54.4 (12.4)	59.4 (15.2)	68.2 (20.1)	77.1 (25.1)	83.4 (28.6)	81.0 (27.2)	75.3 (24.1)	64.8 (18.2)	52.9 (11.6)	46.6 (8.1)	63.4 (17.4)
Average low °F (°C)	37.7 (3.2)	40.1 (4.5)	43.2 (6.2)	47.0 (8.3)	54.3 (12.4)	62.4 (16.9)	67.0 (19.4)	63.9 (17.7)	58.2 (14.6)	50.2 (10.1)	41.5 (5.3)	37.2 (2.9)	50.2 (10.1)
Mean minimum °F (°C)	27.0 (−2.8)	28.8 (−1.8)	32.0 (0.0)	34.5 (1.4)	42.6 (5.9)	51.3 (10.7)	58.0 (14.4)	56.1 (13.4)	48.9 (9.4)	39.1 (3.9)	29.7 (−1.3)	25.7 (−3.5)	23.5 (−4.7)
Record low °F (°C)	16 (−9)	20 (−7)	27 (−3)	28 (−2)	31 (−1)	38 (3)	48 (9)	44 (7)	39 (4)	29 (−2)	21 (−6)	16 (−9)	16 (−9)
Average precipitation inches (mm)	6.04 (153)	5.48 (139)	4.62 (117)	2.41 (61)	1.81 (46)	0.75 (19)	0.07 (1.8)	0.13 (3.3)	0.45 (11)	1.92 (49)	3.53 (90)	6.31 (160)	33.52 (851)
Average snowfall inches (cm)	1.5 (3.8)	0.2 (0.51)	0.2 (0.51)	0.0 (0.0)	0.2 (0.51)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	2.0 (5.1)	4.1 (10.43)
Average precipitation days (≥ 0.01 in)	12.2	10.9	11.7	8.1	6.1	2.9	0.5	0.6	1.4	4.7	8.8	12.6	80.6
Source 1: NOAA[14][17]													
Source 2: WRCC[18]													

Figure 1-3: Climate Data from Redding Regional Airport (Source: NOAA 1991-2020 normals/ Graphic from Wikipedia (https://en.wikipedia.org/wiki/Redding,_California#Climate)

AIRPORT HISTORY AND BACKGROUND

The Redding Regional Airport is located approximately seven miles to the southeast of the Redding central business district. Airport property encompasses approximately 1,535 acres. The airport is one of two owned and operated by the City of Redding, the other being Benton Airpark, which caters to operators of small general aviation aircraft.

The airport is bound on the north by Avtech Parkway, on the south by Fig Tree Lane, and on the west by Airport Road. Stillwater Creek, on the east side of the airport, separates airport property from the Stillwater Business Park, a 700-acre site offering large lots for office and industrial development.

In 1942, land was acquired by the United States Corps of Engineers for the U.S. Army Air Force. Redding Army Airfield was used for advanced flight training of new airmen prior to deployment overseas. By 1944, the local airfield's mission was changed from aircrew training to refueling and maintenance for transient aircraft. Following WWII, the military declared the airfield surplus, and in late1946, the airfield was turned over to the City of Redding for a municipal airport.

Redding has had direct or connecting passenger service to several west coast cities during its history, including to San Francisco, Los Angeles, Portland, Seattle, and Las Vegas.

GRANT HISTORY

The federal government makes available significant levels of funding for eligible capital improvements at airports across the country. The primary funding mechanism is through the Airport Improvement Program (AIP). AIP is funded through the Aviation Trust Fund, which was established in 1970 to provide funding for aeronautical capital investment programs (aviation development, facilities and equipment, and research and development). The Aviation Trust Fund also finances a portion of FAA operations. The AIP is funded by user fees such as taxes on airline tickets, aviation fuel taxes, and taxes on the sale of various aircraft parts and equipment.

AIP provides entitlement funds which are based on annual passenger enplanements (boardings). AIP also has a pool of discretionary funding that is distributed based on the priority ranking of the proposed project.

Airports have recently been eligible for additional funding through several programs passed by the U.S. Congress to blunt the negative impact of the COVID-19 pandemic. The CARES Act provided immediate funding to airports that increased the federal share of AIP projects to 100 percent (up from 90 percent) in 2020. This was a one-time program. Congress then passed the Coronavirus Response and Relief Supplemental Appropriation Act (CRRSAA) (Public Law 116-260) which provided additional funding for airports. Then Congress passed the Bipartisan Infrastructure Law (BIL) which invests an additional $25 billion into airport infrastructure. **Table 1D** summarizes the primary capital improvement funds that RDD has received since 2010.

TABLE 1D | Grant History

Fiscal Year	Project Description	Entitlement	Discretionary	CARES General	COVID Relief General	COVID Relief Local Match	Grand Total
2010	Expand Terminal Building	$237,449	-	-	-	-	$237,449
2011	Expand Terminal Building	$1,781,467	$4,888,531	-	-	-	$6,669,998
2012	Expand Terminal Building	$677,496	$101,624	-	-	-	$779,120
2012	Install Airfield Guidance Signs	$154,285	-	-	-	-	$154,285
2012	Install Miscellaneous NAVAIDS	$154,286	-	-	-	-	$154,286
2012	Install Rwy Visual Guidance	$6,330	-	-	-	-	$6,330
2013	Expand Terminal Building	$749,176	$108,184	-	-	-	$857,360
2014	Acquire ARFF Vehicle	$666,610	-	-	-	-	$666,610
2014	Update Airport Master Plan Study	$434,855	-	-	-	-	$434,855
2015	Acquire Handicap Lift Device	$36,264	$13,388	-	-	-	$49,652
2015	Conduct Miscellaneous Study	$47,253	-	-	-	-	$47,253
2015	Improve ARFF Building	$22,665	-	-	-	-	$22,665
2015	Rehabilitate Apron	$157,921	-	-	-	-	$157,921
2015	Rehabilitate Taxiway	$281,805	$4,703	-	-	-	$286,508
2016	Rehabilitate Apron	$1,757,857	$1,106,716	-	-	-	$2,864,573
2017	Rehabilitate Taxiway	$1,274,630	$2,264,340	-	-	-	$3,538,970
2018	Reconstruct Access Road	$658,596	-	-	-	-	$658,596
2018	Rehabilitate Runway	$170,042	-	-	-	-	$170,042
2018	Rehabilitate Taxiway	$170,042	-	-	-	-	$170,042
2020	CARES Act Funds	-	-	$1,248,075	-	-	$1,248,075
2021	Conduct or Update Study	$430,748	-	-	-	$44,376	$475,124
2021	CRRSA Act Concessions	-	-	-	$11,060	-	$11,060
2021	CRRSA Act Funds	-	-	-	$1,017,617	-	$1,017,617
2021	General ARPA	-	-	-	$1,254,511	-	$1,254,511
2021	Reconstruct Access Road	$1,043,559	-	-	-	$107,509	$1,151,068
TOTAL		**$15,735,437**	**$12,810,240**	**$1,248,075**	**$2,283,188**	**$151,885**	**$32,904,918**

Source: FAA Records accessed on 11.10.14. http://www.faa.gov/airports/aip/grantapportion_data/

HISTORICAL AERONAUTICAL ACTIVITY

At commercial service airports, the number of enplanements (passenger boardings) is a key indicator of operational strength and is the basis for certain federal grants-in-aid programs, most notably the Airport Improvement Program (AIP). Enplanement activity is also a good barometer of operational conditions as they can be used to measure the strength of commercial passenger airline services. Another commercial airline indicator is the measure of air cargo shipped, typically recorded in annual enplaned pounds or tons. The number of based aircraft and annual operations (takeoffs and landings) in aggregate and by aircraft type are also important aeronautical activity measures to factor. These indicators will be used in subsequent analyses in this master plan to project future aeronautical activity and determine future facility needs. Each of the activity segments is briefly described below.

HISTORIC PASSENGER LEVELS

Regional commercial service airports provide access to the national and international aviation systems. As such, these airports are vital to interstate commerce as well as a key component to local and regional economic infrastructure. These facilities support and drive growth in all socioeconomic categories.

An enplanement is any passenger that boards an aircraft for a fare at an airport. Enplanements are classified as either "revenue" or "non-revenue". Non-revenue enplanements are those not paying a fare for the flight such as those using rewards programs or airline employees travelling to get to work. The revenue enplanement statistic is important in that it is utilized by the FAA to determine the annual level of entitlement funding dedicated to an airport under the AIP. Airports with at least 10,000 annual revenue enplanements are eligible for a minimum of one million dollars in annual entitlement funds. **Exhibit 1B** presents historical passenger levels at RDD since 2000.

In 2022, there were an estimated 100,890 passenger enplanements.

In 2022, there were 97,968 revenue enplanements and 100,890 total enplanements. This equates to 201,780 total passengers for 2022 which is a 67 percent increase over 2021 and an all-time high for the airport. The next closest enplanement total was approximately 66,000 achieved in 2000 and 2008. Airline passenger activity interrelates with the number of airlines serving the airport, frequency of daily departures, size and type of aircraft used, and the number of non-stop destinations.

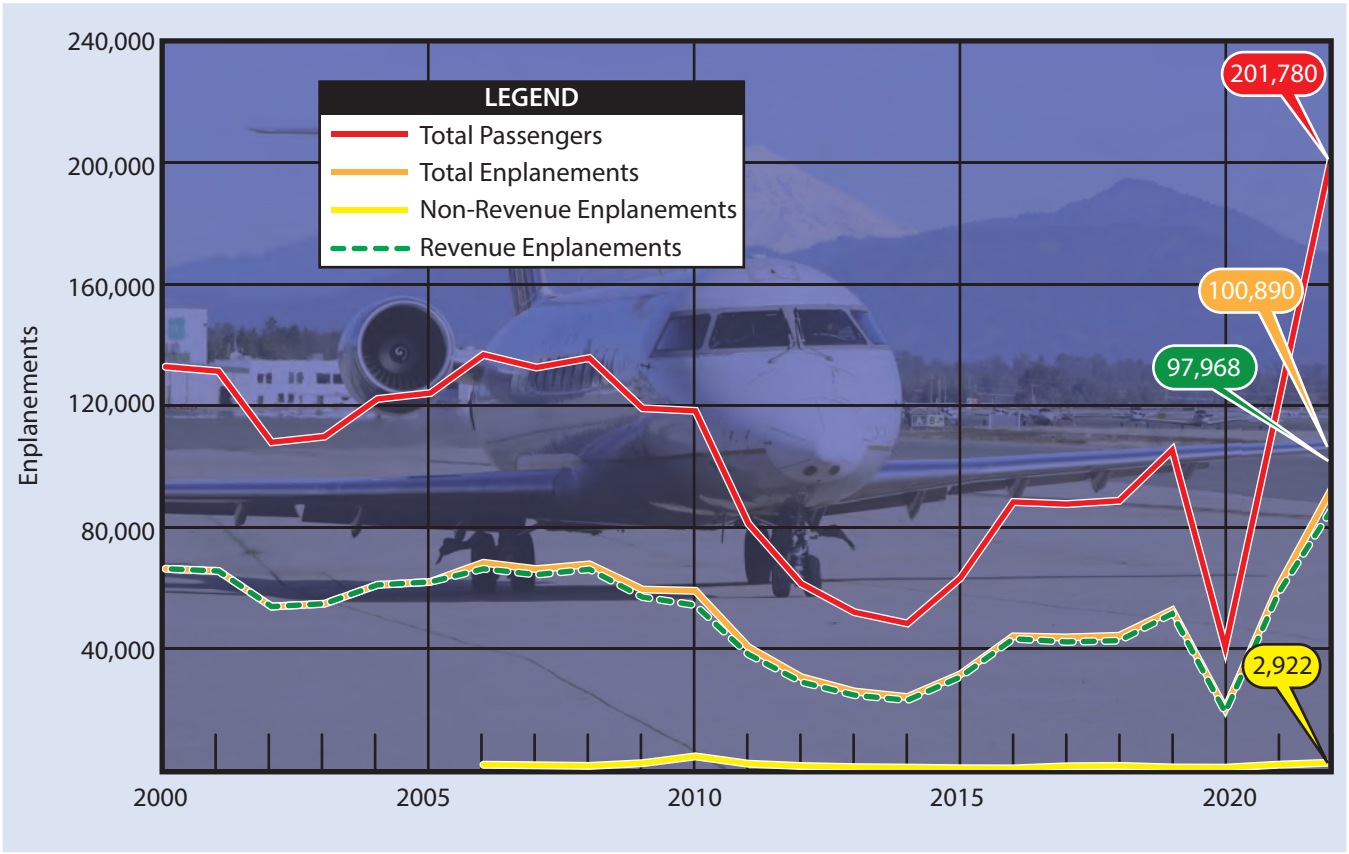
RDD is currently served by three regularly scheduled airlines. Skywest is a regional carrier operating under a code share with United Airlines, and they provide twice daily departures to San Francisco (SFO) and a once-a-day departure to Los Angeles (LAX). Skywest utilizes the 50-seat Canadair regional jet. Alaska Airlines offers a daily departure to Seattle (SEA) utilizing the Embraer 175 aircraft configured for 76-seats. Avelo offers twice-a-week departures to both Burbank (BUR) and Las Vegas (LAS) utilizing the 189-seat Boeing 737-800. The airport has also received a commitment from Skywest/United to provide daily service to Denver sometime within the 2023-2025 timeframe (the current pilot shortage has delayed the start of this service).

AIR CARGO

There are two primary air cargo/freight service providers at the airport. West Air is contracted with FedEx, and they utilize the Cessna Caravan 208B aircraft. Redding Aero (owned by the Redding Jet Center) contracts with UPS. Redding Aero utilizes the Cessna Caravan 208B, Cessna 402, and Cessna 404 aircraft. Over the last five years, these cargo carriers have combined to average 2,235 annual operations and 2.8 million pounds of cargo (enplaned and deplaned).

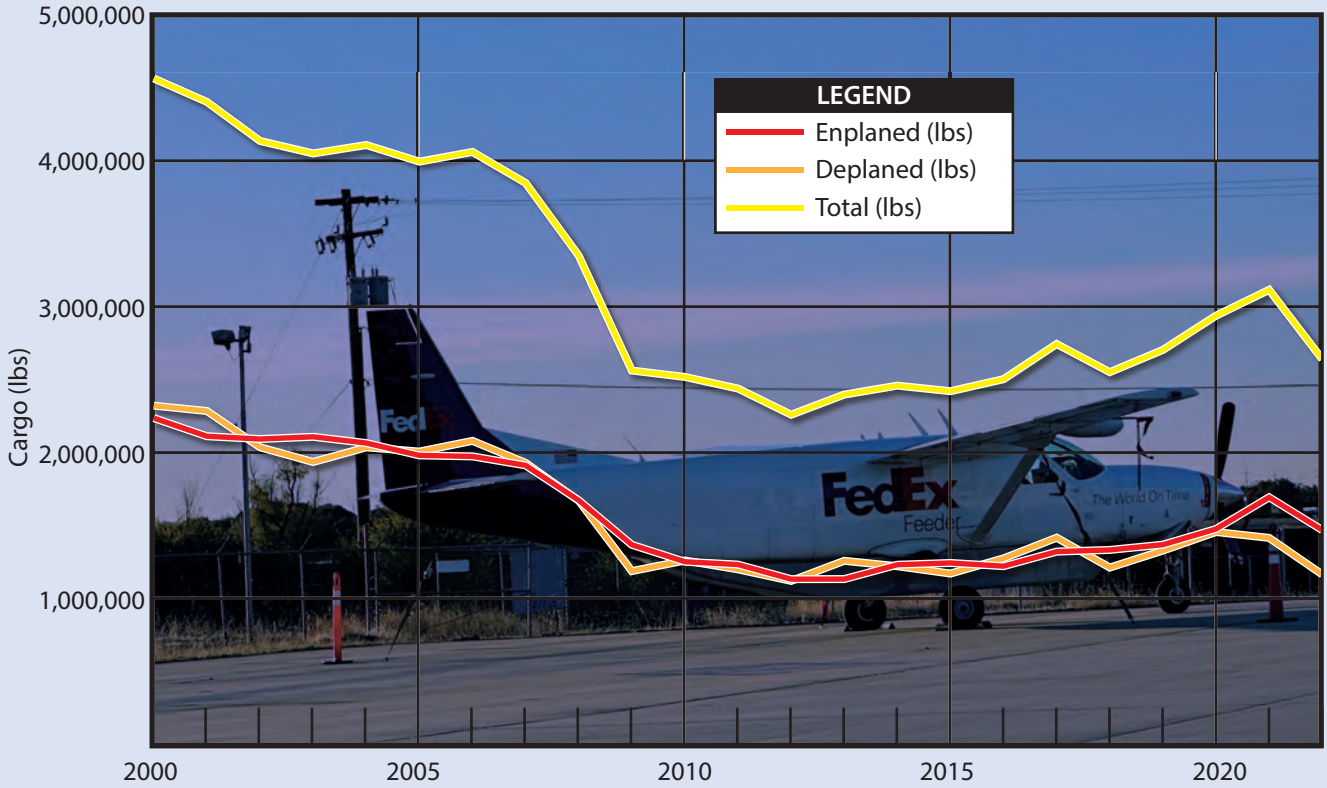
Exhibit 1C presents the historical air cargo activity at the airport from 2000 through 2022. In the early 2000's the airport regularly had more than four million pounds of enplaned and deplaned cargo. Over the last five years the airport has averaged approximately 2.8 million pounds of cargo annually.

Air cargo activity is important to the local economy as goods are moved to and from the region. It is also important to document air cargo operations and weight. Through the federal AIP program, airports that reach the threshold of 100 million landed pounds of cargo are eligible for additional entitlement funds for capital projects.



Year	Revenue Enplanements [1]	Non-Revenue Enplanement [2]	Total Enplanements	Total Passengers [3]
2022	97,968[2]	2,922	100,890	201,780
2021	58,295	1,997	60,292	120,584
2020	19,270	1,016	20,286	40,572
2019	51,639	1,087	52,726	105,452
2018	42,775	1,601	44,376	88,752
2017	42,361	1,466	43,827	87,654
2016	43,414	769	44,183	88,366
2015	30,852	821	31,673	63,346
2014	23,170	1,044	24,214	48,428
2013	24,875	1,184	26,059	52,118
2012	29,175	1,561	30,736	61,472
2011	38,290	2,316	40,606	81,212
2010	54,420	4,732	59,152	118,304
2009	57,094	2,495	59,589	119,178
2008	66,239	1,598	67,837	135,674
2007	64,478	1,799	66,277	132,554
2006	66,390	1,986	68,376	136,752
2005	62,085		62,085	124,170
2004	61,113		61,113	122,226
2003	54,921		54,921	109,842
2002	53,987		53,987	107,974
2001	65,666		65,666	131,332
2000	66,405		66,405	132,810

Sources: [1]Air Carrier Activity Information System (ACAIS) - FAA [2]Airport records.
[3]Total enplanements times two(2)



Year	Enplaned (lbs.)	Deplaned (lbs.)	Total (lbs.)
2000	2,239,789	2,324,864	4,564,653
2001	2,115,652	2,288,441	4,404,093
2002	2,096,649	2,040,146	4,136,795
2003	2,111,870	1,939,474	4,051,344
2004	2,069,134	2,039,980	4,109,114
2005	1,984,582	2,010,715	3,995,297
2006	1,977,683	2,083,972	4,061,655
2007	1,916,281	1,933,197	3,849,478
2008	1,677,111	1,674,694	3,351,805
2009	1,372,770	1,192,675	2,565,445
2010	1,256,632	1,265,026	2,521,658
2011	1,237,329	1,204,506	2,441,835
2012	1,137,413	1,125,593	2,263,006
2013	1,137,986	1,263,039	2,401,025
2014	1,236,097	1,225,921	2,462,018
2015	1,248,288	1,175,817	2,424,105
2016	1,226,341	1,279,960	2,506,301
2017	1,325,885	1,421,124	2,747,009
2018	1,337,574	1,216,931	2,554,505
2019	1,373,585	1,333,053	2,706,638
2020	1,480,850	1,460,195	2,941,045
2021	1,697,830	1,419,916	3,117,746
2022*	1,473,547	1,169,570	2,643,117

*Oct 2021-Sept 2022

Source: Airport records

AIRCRAFT OPERATIONS

Aircraft operations are classified as either local or itinerant. Local operations consist mostly of training flights conducted in the airport traffic pattern, such as touch-and-go training and practice instrument approaches. Itinerant operations are arriving or departing aircraft which have an origin or destination away from the airport.

In 2022, there were 62,387 operations at RDD.

Aircraft operations are further sub-classified into four general categories: air carrier, air taxi, general aviation, and military. Air carrier operations are defined as those conducted commercially by aircraft having a seating capacity of 60 or more and/or a maximum payload capacity of 18,000 pounds. Air taxi operations can include small commercial service aircraft operations as well as general aviation type aircraft for the "on-demand" commercial transport of persons and property in accordance with 14 Code of Federal Regulations (CFR) Part 135 and Subchapter K of 14 CFR Part 91.

Exhibit 1D presents the annual aircraft operations as counted by the air traffic control tower (ATCT) at RDD since 2000. The exhibit includes two categories of itinerant operations: IFR and VFR operations. IFR operations are those conducted during instrument weather conditions or during VFR but under a completed instrument flight plan.

Commercial service operations at RDD fall under both air carrier and air taxi categories. Air carrier operations typically include mainline passenger and cargo airlines. Commercial service operations counted as air taxi are represented by regional airlines utilizing small regional jets or turboprop aircraft while hauling under the banner of the mainline carriers. General aviation operations include a wide array of aircraft uses ranging from personal to business and corporate. Military aircraft also operate at RDD, as detailed on **Exhibit 1D**.

BASED AIRCRAFT

Identifying the current number of based aircraft is important to the master plan analysis, yet it can be challenging because of the transient nature of aircraft storage. The airport maintains a record of aircraft based on the airport. There are currently approximately 240 aircraft based at RDD, which includes 175 single engine piston, 15 multi-engine piston, 19 turboprops, 12 business jets, and 19 helicopters. Historical based aircraft information is also presented on **Exhibit 1D**.

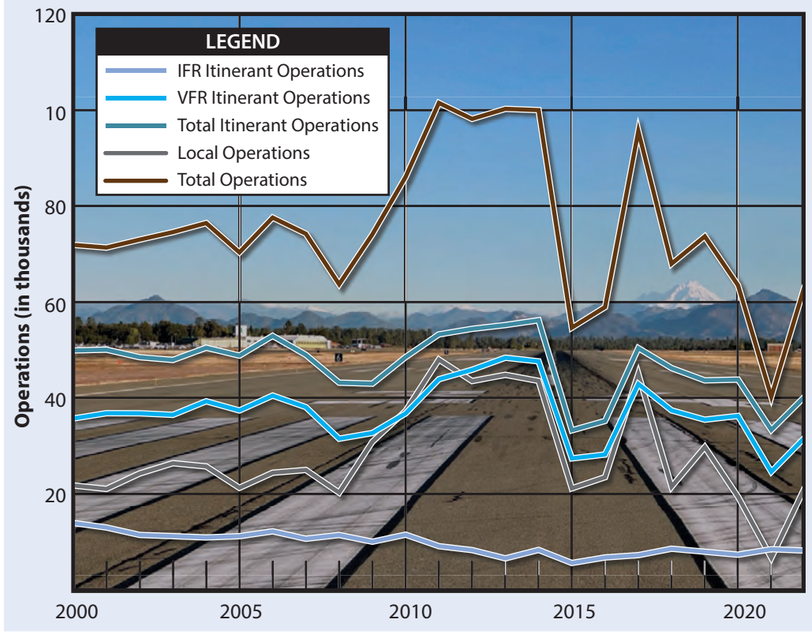
In 2022, there were approximately 240 aircraft based at RDD.

FIRE FIGHTING

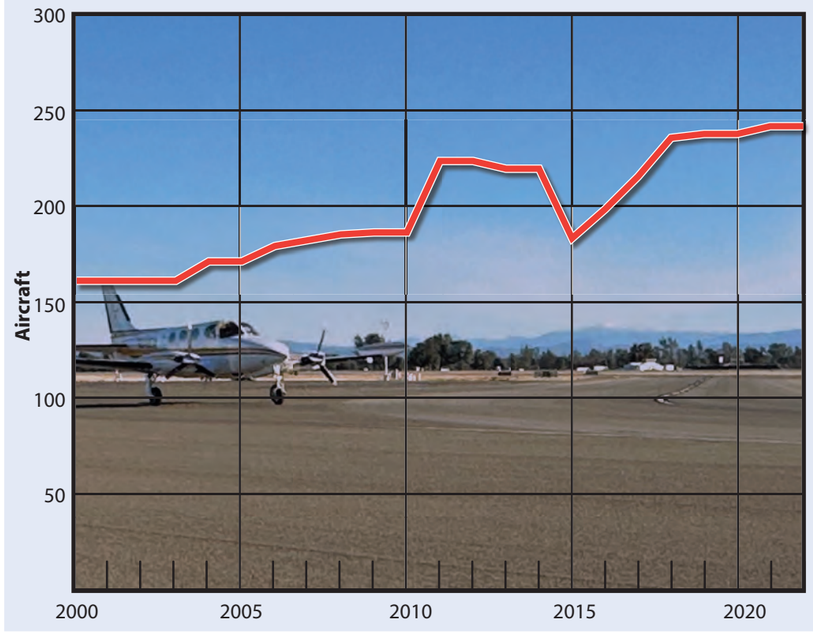
The airport also provides support to the United States Forest Service (USFS) and the California Department of Forestry and Fire Protection (CAL FIRE), although the hangar and office facilities are located outside of airport property. The USFS and CAL FIRE operate a variety of aircraft (through contract carriers) on the airfield, with the season generally falling between June 15th and October 15th each year. The USFS fixed-wing fleet includes:

Year	IFR Itinerant Operations					VFR Itinerant Operations					Total Itinerant Operations					Local Operations			Total Operations	Based Aircraft
	Air Carrier	Air Taxi	GA	Military	Subtotal	Air Carrier	Air Taxi	GA	Military	Subtotal	Air Carrier	Air Taxi	GA	Military	Subtotal	GA	Military	Subtotal		
2000	0	9,514	4,477	144	14,135	7	5,506	29,727	583	35,823	7	15,020	34,204	727	49,958	21,368	562	21,930	71,888	160
2001	16	9,011	4,049	117	13,193	25	6,064	30,387	453	36,929	41	15,075	34,436	570	50,122	20,822	380	21,202	71,324	160
2002	197	7,470	3,767	218	11,652	71	5,266	30,975	596	36,908	268	12,736	34,742	814	48,560	24,119	299	24,418	72,978	160
2003	1,279	6,053	3,966	101	11,399	197	6,317	29,636	438	36,588	1,476	12,370	33,602	539	47,987	26,366	184	26,550	74,537	160
2004	1,397	5,886	3,675	166	11,124	164	6,024	32,753	465	39,406	1,561	11,910	36,428	631	50,530	25,608	274	25,882	76,412	170
2005	1,905	5,540	3,731	217	11,393	51	5,837	31,249	363	37,500	1,956	11,377	34,980	580	48,893	21,128	304	21,432	70,325	170
2006	2,263	5,877	3,991	267	12,398	18	6,230	33,829	514	40,591	2,281	12,107	37,820	781	52,989	24,219	346	24,565	77,554	178
2007	2,284	4,764	3,590	219	10,857	102	5,624	31,829	635	38,190	2,386	10,388	35,419	854	49,047	24,726	418	25,144	74,191	181
2008	2,294	5,261	3,848	236	11,639	154	4,578	26,424	476	31,632	2,448	9,839	30,272	712	43,271	20,100	332	20,432	63,703	184
2009	2,151	5,060	2,828	201	10,240	5	11,121	21,194	501	32,821	2,156	16,181	24,022	702	43,061	30,697	306	31,003	74,064	185
2010	1,760	6,922	2,813	209	11,704	0	19,926	16,761	195	36,882	1,760	26,848	19,574	404	48,586	37,324	92	37,416	86,002	185
2011	267	6,938	1,944	165	9,314	0	27,123	16,524	334	43,981	267	34,061	18,468	499	53,295	47,939	138	48,077	101,372	222
2012	44	6,134	2,118	204	8,500	0	27,372	18,252	324	45,948	44	33,506	20,370	528	54,448	43,481	125	43,606	98,054	222
2013	67	4,908	1,661	148	6,784	6	30,516	17,685	245	48,452	73	35,424	19,346	393	55,236	44,695	206	44,901	100,137	218
2014	51	6,087	2,178	221	8,537	0	28,545	18,667	486	47,698	51	34,632	20,845	707	56,235	43,420	217	43,637	99,872	218
2015	66	3,428	2,126	205	5,825	2	8,910	18,026	604	27,542	68	12,338	20,152	809	33,367	21,182	143	21,325	54,692	182
2016	40	4,624	2,045	268	6,977	0	13,395	14,726	226	28,347	40	18,019	16,771	494	35,324	23,508	137	23,645	58,969	197
2017	223	4,789	2,239	200	7,451	92	25,668	16,976	260	42,996	315	30,457	19,215	460	50,447	44,984	84	45,068	95,515	214
2018	27	5,925	2,544	293	8,789	0	19,811	17,192	513	37,516	27	25,736	19,736	806	46,305	21,556	105	21,661	67,966	234
2019	66	5,632	2,220	244	8,162	107	17,890	17,403	185	35,585	173	23,522	19,623	429	43,747	29,857	48	29,905	73,652	236
2020	42	4,880	2,377	247	7,546	1	19,310	16,637	412	36,360	43	24,190	19,014	659	43,906	19,443	130	19,573	63,479	236
2021	798	4,615	3,045	232	8,690	18	6,188	17,874	684	24,764	816	10,803	20,919	916	33,454	6,672	234	6,906	40,360	240
2022	1,134	4,772	2,177	332	8,415	107	16,430	14,923	216	31,676	1,241	21,202	17,100	548	40,091	21,951	345	22,296	62,387	240

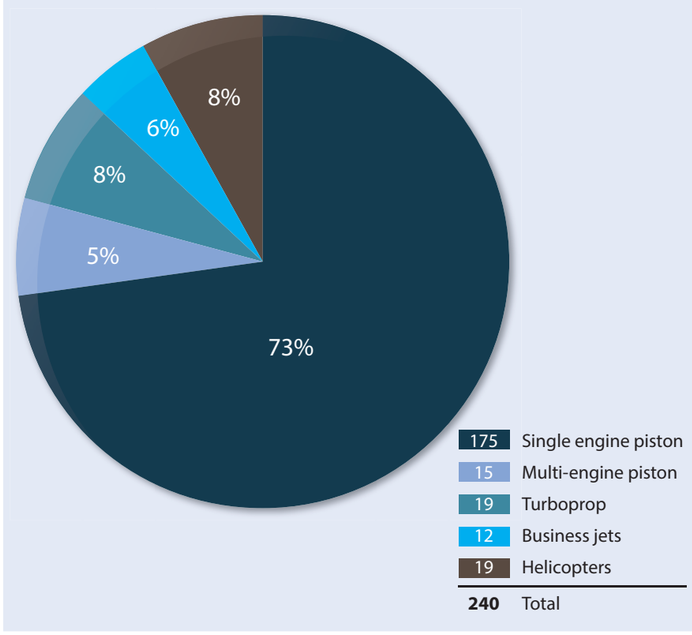
Annual Operations



Based Aircraft



Based Aircraft Fleet Mix



Source: FAA Operational Network (OPSNET) database access on 6.19.23 at - https://aspm.faa.gov/

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- Lockheed P-2V "Neptune" (2,500-gallon retardant capacity);
- Lockheed C-130 (3,500-gallon retardant capacity);
- McDonnell Douglas MD-87 (4,000-gallon retardant capacity);
- BAe-146/RJ-85 (3,000-gallon retardant capacity);
- DC-10 (9,400-gallon retardant capacity);
- Air Tractor AT-802 (800-gallon retardant capacity).

The USFS has a variety of other aircraft used in service of fighting fires including water scoopers (CL-415 and Air Tractor Fire Boss), smokejumper aircraft (Twin Otter, Shorts, Dornier 228, and CASA 212), supervision lead airplanes (King Air 90 and 200), and air attack aircraft (Twin Commander 500/600).

CAL FIRE's fixed wing fleet includes:

- Grumman S-2T (1,200-gallon retardant capacity);
- OV-10A "Bronco" (3,200-gallon cargo capacity);
- C-130H (3,500-gallon retardant capacity).

CAL FIRE's helicopter fleet includes:

- Bell UH-1H Super Huey (360-gallon retardant capacity);
- Sikorsky S70i (1,000-gallon retardant capacity).

Grumman S-2T Air Tanker

Both CAL FIRE and the USFS are located at the northwest end of the flightline. The airport has partnered with both agencies to undertake a capital project to reconstruct the existing staging apron/taxilane areas for firefighting aircraft. The apron/taxilanes in this area have deteriorated over time and need to be reconstructed. The reconstruction will feature a new geometry to improve operational efficiency. **Exhibit 1E** shows the apron/taxilane improvements planned to be constructed beginning in 2023.

AIRPORT SYSTEM PLANNING ROLE

Airport planning exists on many levels: national, state, and local. Each level has a different emphasis and purpose. On a national level, Redding Regional Airport (RDD) is included in the *National Plan of Integrated Airport Systems* (NPIAS). At the state level, the airport is included in the *California Aviation System Plan* (CASP). Locally, the primary planning document is the airport master plan. The previous airport master plan was completed in 2015 and had a base forecast year of 2013.

NATIONAL AIRPORT PLANNING

The nationwide system of airports which exists today is a direct result of federal policy that promotes the development of civil aviation. Most of the nation's network of existing airports were initially constructed by the federal government. Also, in most cases, their maintenance and developments are still primarily funded through various federal grant programs that aid communities in the care of their

prospective airfields. The NPIAS is published every two years as required by 49 U.S.C. § 47103, as part of the continuing effort to maintain a thriving national airport system. As maintained by the FAA, the NPIAS identifies the amounts and types of airport development eligible for federal funding under the Airport Improvement Program (AIP) and the Infrastructure Investment and Jobs Act (Public Law 117-58, also referred to as the Bipartisan Infrastructure Law (BIL)) over the next five years. BIL establishes formula and competitive grants for airport terminal projects, on-airport rail access projects, and airport owned air traffic control towers, which historically have received little or no AIP funding.

There are more than 19,000 airports and landing strips in the U.S. The NPIAS identifies 3,287 of these as public use facilities that are important to the national airport system and are therefore eligible for federal development grants. NPIAS airports are grouped as either "primary" of which there are 383 or "nonprimary" of which there are 2,904. Primary airports are those with 10,000 or more passenger enplanements annually. Nonprimary airports are general aviation airports.

RDD is classified in the current NPIAS (2023-2027) as a nonhub primary commercial service airport. Nonhub airports account for less than 0.05 percent of all commercial passenger enplanements but have more than 10,000 annual enplanements. As a point of reference, small hub airports account for 0.05-0.25 percent of enplanements or at least 348,000 annual enplanements. Nonhub airports account for three percent of all enplanements and are heavily used by general aviation aircraft. Nonhub airports account for the largest number of primary airports and 12 percent ($7.6 billion) of the development needs. **Table 1E** outlines and describes the different categories of general aviation airports.

TABLE 1E | Activity and Development at NPIAS Airports

Airport Category	No. of Airports	% of 2021 Enplanements	% of GA aircraft	% of Total Operations	% of NPIAS Cost
Large Hub	30	69	1	10	32
Medium Hub	35	18	2	5	14.9
Small Hub	80	9	5	7	9.7
Nonhub	238	3	10	10	12.2
Primary Subtotal	***383***	***99***	***18***	***32***	***68.8***
National	107	-	12	11	5.3
Regional	501	-	22	25	9
Local	1,179	-	20	23	10.3
Basic	904	-	3	7	6
Unclassified	213	-	1	2	0
Nonprimary Subtotal	***2,904***	***0.07***	***58***	***68***	***30.6***
Total NPIAS Airports	**3,287**	**100**	**76**	**100**	**100**

Source: NPIAS 2023-2027

14 CFR PART 139 CERTIFICATION

An airport must have an Airport Operating Certificate (AOC) if it is serving scheduled passenger service aircraft with more than nine seats or serving unscheduled air carrier aircraft with more than 30 passenger seats. 14 CFR Part 139 (Part 139) describes the requirements for obtaining and maintaining an AOC. This includes meeting various Federal Aviation Regulations (FARs) now codified under the CFR.

LEGEND

- Airport Property Line
- Reconstructed Pavement
- Pavement to be Removed
- Area of Potential Effect (11.4 Acres)
- Proposed Zipper Road

USFS Aviation Center of Excellence Project

Taxiway D

Construction Zone Two (on airport)

Construction Zone One (off airport)

Runway 16-34

16

Taxiway D

On-Airport Taxilane/Apron Planned Reconfiguration

Runway 12-30

12

Taxiway M

N

0 300

SCALE IN FEET

Source: Martinez Geospatial 9/2/2022

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Airports are classified in the following categories based on the type of air carrier operations served:

- **Class I Airport** – an airport certificated to serve scheduled operations of large air carrier aircraft that can also serve unscheduled passenger operations of large air carrier aircraft and/or scheduled operations of small air carrier aircraft.

- **Class II Airport** – an airport certificated to serve scheduled operations of small air carrier aircraft and the unscheduled passenger operations of large air carrier aircraft. A Class II airport cannot serve scheduled large air carrier aircraft.

- **Class III Airport** – an airport certificated to serve scheduled operations of small air carrier aircraft. A Class III airport cannot serve scheduled or unscheduled large air carrier aircraft.

- **Class IV Airport** – an airport certificated to serve unscheduled passenger operations of large air carrier aircraft. A Class IV airport cannot serve scheduled air carrier aircraft regulated under CFR Part 121.

RDD is currently classified as a Class I CFR Part 139 commercial service airport. This designation supports the regularly (or irregularly) scheduled operations of large and/or small air carrier aircraft conducting commercial passenger services at the airport.

RDD is a Class I CFR Part 139 commercial service airport.

Part 139 regulations set standards for: the marking and lighting of areas used for operations; firefighting and rescue equipment and services; the handling and storing of hazardous materials; the identification of obstructions; and safety inspection and reporting procedures. It also requires airport operators to have an FAA-approved Airport Certification Manual (ACM).

The ACM is a required document that defines the procedures to be followed in the routine operation of the airport and for response to emergency situations. The ACM is a working document that is updated annually as necessary. It reflects the current condition and operation of the airport and establishes the responsibility, authority, and procedures as required. There are required sections for the ACM covering administrative detail and procedural detail. RDD has a current, approved ACM which includes the following information:

- General Information
- Organization and Management
- Airport Information
- Maintenance and Inspection Program
- Operational Safety
- Hazardous Materials
- Aircraft Rescue and Firefighting
- Snow and Ice Control
- Airport Emergency Plan
- Wildlife Hazard Management
- Maintenance of Certification Manual

STATE AIRPORT PLANNING

At the state level, RDD is included in the *California Aviation System Plan* (CASP-2020) and falls under the jurisdiction of CALTRANS. The CASP has been created by the Division of Aeronautics, which includes every California airport designated in the NPIAS and any other existing or proposed public use airports, as designated by the division. According to the *Aviation in California Fact Sheet (February 2019)*, there are 215 general aviation airports, 27 commercial service airports, 68 special-use airports, 365 permitted heliports, 22 federal air bases, and one joint use facility in the State of California. The purpose of CASP is to provide a framework for the integrated planning, operation, and development of California's aviation assets. The CASP provides policy guidelines that promote and maintain a safe aviation system in the state, assess the state's airport capital improvement needs, and identify resources and strategies to implement the plan. The CASP provides important insight into how California's airports can remain highly advanced, safe, and responsive to the public's needs today and throughout the 20-year planning horizon. The CASP identifies RDD as a Primary Commercial Service airport, which has the same definition as the FAA classification of 10,000 annual enplanements.

LOCAL AIRPORT PLANNING

The airport master plan and airport layout plan (ALP) are the primary local planning documents. Guidelines for the development of an airport master plan and an ALP are provided in FAA Advisory Circular (AC) 150/5070-6B, *Airport Master Plans*. The AC identifies the following functions of a master planning study:

A. The airport master plan is the sponsor's conceptual design for the long-term development of the airport. Master plans are prepared to support the modernization or expansion of existing airports or the creation of new airports.

B. The goal of a master plan is to provide the framework needed to guide future airport development that will cost-effectively satisfy aviation demand, while also addressing relevant environmental and socioeconomic issues.

C. Each master plan should meet the following objectives:

    1) Justify the plan through technical, economic, and environmental investigation of concepts and alternatives.
    2) Provide an effective graphic presentation of the future development of the airport and anticipated land use in the vicinity of the airport.
    3) Establish a realistic schedule for the implementation of the development proposed in the plan, particularly the short-term capital improvement program.
    4) Propose an achievable financial plan to support the implementation schedule.
    5) Provide sufficient project definition and detail for subsequent environmental evaluations that may be required before the project is approved.
    6) Present a plan that adequately addresses the issues and satisfies local, state, and federal regulations.

7) Document policies and future aeronautical demand to support municipal or local deliberations on spending, debt, land use controls, and other policies necessary to preserve the integrity of the airport and its surroundings.
8) Set the stage and establish the framework for a continuing planning process. Such a process should monitor key conditions and permit changes in plan recommendations as required.

The products of the master planning process vary with the complexity of the study and may include a variety of supporting studies and appendices. However, all products will fall within one of two basic types: Airport Master Plans or ALP Updates.

Master Plan Reviews by the FAA

The recommendations contained in an airport master plan represent the views, policies, and development plans of the airport sponsor and do not necessarily represent the views of the FAA. Acceptance of the master plan by the FAA does not constitute a commitment on the part of the United States to participate in any development depicted in the plan, nor does it indicate that the proposed development is environmentally acceptable in accordance with appropriate public law. The FAA reviews all elements of the master plan to ensure that sound planning techniques have been applied. However, the FAA only approves the following elements of airport master plans:

1) **Forecasts of Demand** – The master plan forecast should be reviewed to ensure that the underlying assumptions and forecast methodologies are appropriate. Paragraph 704.h of this guidance (AC 150/5070-6B, *Airport Master Plans*) should be used to determine consistency of the master plan forecast with the Terminal Area Forecast (TAF). Inconsistencies between the master plan forecast and TAF must be resolved, and the forecast approved, before proceeding with subsequent planning work.

2) **Airport Layout Plan** – All airport development at federally obligated airports must be done in accordance with an FAA-approved ALP. Furthermore, proposed development must be shown on an approved ALP to be eligible for AIP funding. FAA approval of the ALP indicates that the existing facilities and proposed development depicted on the ALP conforms to the FAA airport design standards in effect at the time of the approval or that an approved modification to standard has been issued. Such approval also indicates that the FAA finds the proposed development to be safe and efficient.

In many regards, an airport master plan can be considered a feasibility study of what may be possible or desired as part of the long-term vision for an airport. Included in a master plan are multiple alternative development scenarios, each of which may be feasible; however, implementation of which will require FAA approval. While a single long-term vision is included in a master plan, it can be revised in the future by updating the ALP or by updating the master plan.

AIRFIELD FACILITIES

Airfield facilities are those which facilitate aircraft movements between the air and ground. Generally, these facilities include runways, taxiways, airport lighting and markings, and navigational aids. **Exhibit 1F** summarizes and depicts airfield facility information atop an aerial photograph for visual reference.

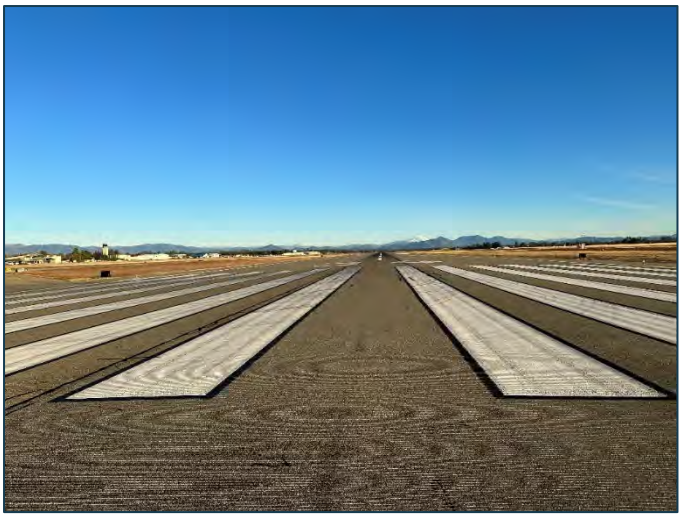
RUNWAYS

Redding Regional Airport is served by two runways. Runway 16-34 is the airport's primary runway. Runway 12-30 is an additional runway that serves as a crosswind runway. Both runways are capable and certified to accommodate air carrier aircraft operations.

Runway 16-34 is 7,003' x 150';
Runway 12-30 is 5,067' x 150'

Primary Runway 16-34

Runway 16-34 is 7,003 feet long by 150 feet wide and oriented in a north/south manner and is the primary runway. The asphalt pavement has a grooved surface treatment and is reported as being in good condition by official FAA publications. Runway 16-34 has precision markings. The runway slopes generally from north to south with the north end being the high point of the runway, approximately 14 feet higher than the south end. The runway gradient is 0.2 percent. Both ends of the runway have 200-foot by 200-foot blast pads. This runway is scheduled to be reconstructed in the summer of 2023.



Runway 34 looking north

Additional Runway 12-30

Runway 12-30 is 5,067 feet long and 150 feet wide and generally oriented in an east/west manner. The runway is constructed of asphalt and is characterized in FAA publication as being in good condition. The runway slopes gently from west to east with the west end (Runway 12) being approximately eight feet higher than the east end (Runway 30). The runway gradient is 0.2 percent. Runway 12-30 has non-precision markings that include threshold bars, threshold markings, runway designation, touchdown zone, centerline, and edges. There are partial blast pads on each end.

RUNWAYS

	Runway 16	Runway 34	Runway 12	Runway 30
Field Elevation: 505' Above Sea Level				
Runway Length (feet)	7,003		5,067	
Runway Width (feet)	150		150	
Blast Pad Dimensions (feet)	200 x 200	200 x 200	200 x 200	200 x 200
Pavement Type	Asphalt			
Pavement Treatment	Grooved		NA	
Pavement Condition (FAA Reported)	Good		Good	
Gradient	0.20%		0.20%	
Runway Load Bearing Strength (lbs.)				
Single Wheel (S)	98,000		60,000	
Duel Wheel (D)	128,000		72,000	
Double Dual Wheel in Tandem (DT)	195,000		110,000	
Pavement Classification Number (PCN)	60/F/C/X/T		60/F/C/X/T	
Runway Markings/Condition	Precision/Good		Nonprecision/Good	
Touchdown Point Marking/Lighting	Yes/No Lights		Yes/No Lights	
Runway Edge Lights	High Intensity (HIRL)		Medium Intensity (MIRL)	
Distance Remaining Signs	Yes (Lighted)		Yes (Reflective)	
Usable for Air Carrier Operations	Yes		Yes	
Traffic Pattern	Left		Left	

WEATHER AND NAVIGATIONAL AIDS

Airport Beacon
Lighted Wind Cones (4)
Wind Tee
Segmented Circle
Automated Surface Observation System (ASOS) - 530-221-7144
Airport Traffic Control Tower (ATCT) - 119.8 Mhz (6:30am-9:30pm daily)
Redding Ground ATCT - 121.7 Mhz (6:30am-9:30pm daily)
Automated Terminal Information System (ATIS) - 124.1 Mhz
Universal Communication Frequency (UNICOM) - 122.95 Mhz
Common Traffic Advisory Frequency (CTAF) - 119.8 Mhz
Remote Communications Outlet - 122.1R Mhz/108.4T (Rancho Murieta Radio)

LEGEND

- Airport Property Line
- A — Taxiway Designation
- Runway Protection Zone (RPZ)

N
0 1,000
SCALE IN FEET
Source: Google Earth 02/2024

Shasta Kart Klub
Redding Drag Strip
PAPI
Windcone
VOR
Glideslope
MALSR
Windsock
PAPI
REILs
Localizer
Old Oregon Trail
Runway 12-30 (5,067' x 150')
Runway 16-34 (7,003' x 150')
ASOS
ATCT
Solar Farm
Lighted Windcone/ Segmented Circle/ Windtee
Airport Road
H
E
D1
M
D
D2
D3
L
B
A
C

Designation	Service	Width	Safety Area Width
Taxiway A	Air Carrier/GA	50'	171'
Taxiway B	Air Carrier/GA	50'	171'
Taxiway D (Inc. D1, D2, D3)	Air Carrier/GA	50'	171'
Taxiway E	Air Carrier/GA	50'	118'
Taxiway H	GA	50'	118'
Taxiway L	Air Carrier/GA	50'	118'
Taxiway M	Air Carrier/GA	50'	171'
Taxilane C	GA	50'	118'

	Runway 16	Runway 34	Runway 12	Runway 30
Instrument Landing System (ILS) or Localizer (LOC)	NA	Yes	NA	
Localizer Backcourse	Yes	NA	NA	
Global Positioning System (GPS)	Yes	Yes	NA	
RNAV (GPS)	Yes	Yes	NA	
VOR	NA	Yes	NA	NA
Approach Lighting System (ALS)	NA	MALSR	NA	NA
Visual Glidepath Indicator/Slope	PAPI-4L (3.43°)	PAPI-4L (3.00°)	NA	PAPI-2L (3.00°)
Runway End Identifier Lights (REIL)	Yes	No	NA	NA

KEY

ILS	-	Instrument Landing System
RNAV	-	Area Navigation (GPS variant)
ODALS	-	Omnidirectional Approach Lighting System
MALSR	-	Medium Intensity Approach Lighting System with Runway Alignment Indicator Lights
REIL	-	Runway End Identifier Lights
VOR	-	VHF Omnidirectional Radio Range
PAPI	-	Precision Approach Path Indicator
HIRL	-	High Intensity Runway Lights
MIRL	-	Medium Intensity Runway Lights

Source: Airport/Facility Directory - Southwest U.S. (Effective Sept. 8, 2022); Airport records.

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This runway is specifically identified by FAA as an "additional" runway because it does not meet the FAA wind coverage threshold for a crosswind runway, nor does it meet the capacity threshold for it to be designated as a "secondary" runway (both terms are related to FAA eligibility for maintenance and/or rehabilitation funding). As a result, upkeep of Runway 12-30 is the financial responsibility of the airport.

Runway Markings

Various runway markings are used to provide information to pilots. Runways intended for use by only small aircraft typically have basic markings. Runways available for larger transport aircraft have more complex markings providing more information. Runways that support instrument approach procedures with both horizontal and vertical guidance (precision approach or CAT-I approaches) have additional markings. Runway 16-34 has precision markings that include threshold bars, threshold markings, runway end designations, touchdown zone, aiming point, centerline, and edge markings. Runway 12-30 has non-precision markings which include all the precision markings except for the aiming point markings.

- *Threshold Bar:* The threshold bar is a 10-foot-wide white stripe at the end of each runway end that visually designates the runway landing threshold and the end of the runway. Threshold bars are typically associated with precision markings and/or a displaced landing threshold. Both runways have threshold bars.
- *Threshold Markings:* Runway threshold markings are a series of white stripes 150 feet long and six feet wide. These markings provide a visual grid that alerts pilots to the location of the landing threshold. The total number of threshold markings indicate to pilots the width of the runway. There are 12 threshold stripes on each end of both runways, which is the standard for showing that the runways are 150 feet wide.
- *Runway Designators:* The end of each runway at RDD is marked with a number which indicates the approximate magnetic azimuth of the direction of operation. Runway designators are white with a height of 60 feet.
- *Touchdown Zone Markings*: Touchdown zone markings are used for precision runways and are thus installed on Runway 16-34 but not Runway 12-30. The touchdown zone markings identify the touchdown zone for landing operations and are coded to provide distance information in increments of 500 feet. These markings consist of groups of one, two, and three rectangular bars symmetrically arranged in pairs about the runway centerline.
- *Aiming Point Markings:* Aiming point markings are used to provide an enhanced visual guidance to pilots when landing. At RDD, these markings consist of two white stripes 150 feet long, 30 feet wide, and spaced 70 feet apart. The aiming point markings are approximately 1,000 feet from the landing thresholds for both runways.
- *Centerline and Edge Stripes:* The runway centerline is a dashed white line positioned on the centerline of the runway. The runway edge stripes are solid white lines designating the edges of the runway.

TAXIWAYS

The taxiway system at RDD consists of parallel, connector, and entrance/exit taxiways. The width of each taxiway varies based on aircraft design and usage, with each listed on **Exhibit 1F**. The taxiway safety area extending from the centerline of each taxiway meets the design standard for the design aircraft type using the taxiway. All taxiways are 50 feet wide.

Taxiway E looking east

Parallel taxiways are primarily designed to route aircraft efficiently and quickly between the runway and the originating/destination location. Taxiway D extends the full length of primary Runway 16-34. Taxiway D is 400 feet from the runway centerline to centerline. Taxiways D1 and D2 are exit taxiways from the runway connecting to Taxiway D. Taxiway D1 is an angled taxiway.

Taxiway A extends north from an intersection at the south end of Taxiway D to an intersection with Taxiway B. Taxiway A provides access to the commercial terminal building and air cargo facilities.

Taxiway B extends from the north end of Taxiway A and angles back to an intersection with Taxiway D. Taxiway B then continues across Taxiway D, at an angle to an intersection with Runway 16-34.

Taxiway E extends from the east threshold of Runway 34 to the Runway 30 threshold. There are five short taxilanes with turnarounds extending from Taxiway E that were once used for the loading/unloading of military aircraft.

Taxiway L provides threshold access to Runway 12, and it extends from an intersection with Taxiway M.

Taxiway M extends from the itinerant apron, north to an intersection with Taxiway D. It then continues across Taxiway D, at an angle, to an intersection with Runway 16-34.

Taxiway H extends from the east side threshold to Runway 16 to a general aviation apron and associated hangars.

Taxiway C is a taxilane extending west from an intersection with Taxiway M which provides access to general aviation hangars.

Taxiway Markings

Taxiway and taxilane centerline markings are provided to assist pilots in maintaining proper clearance from pavement edges and objects near the taxiway/taxilane edges. Enhanced taxiway centerline markings begin 150 feet out from all hold position markings. Each runway holding position marking is accompanied with appropriate surface painted holding position signs indicating the approaching runway intersection.

Aircraft movement areas on various ramps are identified with centerline markings. Aircraft tie-down positions are identified on various apron surfaces. The undesignated taxilane on the west edge of the general aviation tie-down apron is not included in the control tower movement area.

PAVEMENT STRENGTH

The strength rating of pavement strength has traditionally been measured in terms of the number of wheels on each landing gear strut of an aircraft. Additional wheels on each landing gear provides greater dispersal of the aircraft weight, enabling the pavement to withstand heavier aircraft. The strength rating, expressed in pounds, indicates that the pavement can withstand repeated usage by aircraft within that weight limitation and experience normal wear and tear. Repeated usage of the runway by aircraft that are heavier than the strength rating will exert greater wear and tear and will shorten the useful life of the pavement.

Aircraft with a single wheel on each landing gear strut are classified as single (S). Two wheels on each landing gear strut is classified as dual (D), and dual tandem wheel (DT) has four tires on the landing gear strut.

Runway 16-34 has a currently published pavement strength rating of 98,000 pounds S, 128,000 pounds D, and 195,000 pounds DT. Runway 12-30 has a pavement strength rating of 60,000 pounds S, 72,000 pounds D, and 110,000 pounds DT.

The FAA has recently moved to implementing the International Civil Aviation Organization (ICAO) pavement classification number (PCN) for identifying strength of airport pavements. The PCN is a five-part code described as follows:

1) *PCN Numerical Value:* Indicates the load-carrying capacity of the pavement expressed as a whole number. The value is calculated based on several engineering factors such as aircraft geometry and pavement usage.

2) *Pavement Type:* Expressed as either R for rigid pavement (most typically concrete) or F for flexible pavement (most typically asphalt).

3) *Subgrade Strength:* Expressed as A (High), B (Medium), C (Low), or D (Ultra Low). A subgrade of A would be considered very strong, like concrete-stabilized clay, and a subgrade of D would be very weak, similar to un-compacted soil.

4) *Maximum Tire Pressure:* Expressed as W (Unlimited/No Pressure Limit), X (High/254 psi), Y (Medium/181 psi), or Z (Low/72 psi), this indicates the maximum tire pressure the pavement can support. Concrete surfaces are usually rated W.

5) *Process of Determination:* Expressed as either T (technical evaluation) or U (physical evaluation), this indicates the method of pavement testing.

The published PCN for both runways is expressed as 60/F/C/X/T. This means that the underlying pavement value has a load-carrying capacity of 60 (unitless), is flexible (asphalt), is low subgrade strength, has high allowable tire pressure capability, and was calculated through a technical evaluation.

In 2017, the airport contracted to have a pavement condition assessment. The assessment serves as a tool to identify pavement needs, shape programming decisions for federal and state grant aid, and assist airport management in making informed planning decisions. The program also developed accurate pavement inventories and identified necessary maintenance, repair, rehabilitation, and reconstruction projects. **Table 1F** shows the results of the assessment for all airfield pavements.

TABLE 1F | Pavement Condition Survey Results

Pavement ID	Estimated SWL (lbs.)	Estimated DWL (lbs.)	Estimated PCN
Runway 16-34	120,000	211,000	60/F/C/X/T
Runway 12-30	120,000	21,000	60/F/C/X/T
Taxiway A & B	117,000	194,000	47/F/A/X/T
Taxiway C	45,500	66,000	13/F/A/X/U
Taxiway D	120,000	211,000	60/F/C/X/T
Taxiway E	120,000	177,000	50/F/C/X/T
Taxiway H	38,000	55,500	14/F/C/X/T
Taxiway M	76,000	111,000	27/F/A/X/T
FBO Taxilane	94,000	130,000	37/F/C/X/T
T-Hangars/Tiedowns	23,000	<min.	8/F/C/Y/U
Terminal Apron	73,000	90,000	27/R/C/W/T

SWL: Single wheel load on each landing gear strut.
DWL: Dual wheel load on each land gear strut.
PCN: Pavement Classification Number
Note: The letters following the PCN value indicate type of pavement (flexible or rigid), subgrade strength category (A-D), allowable tire pressure (W for no pressure limit, X for 254 psi), and PCN determination method (technical evaluation or using aircraft).

Source: RDD Pavement Management System (Mead & Hunt 2017)

PAVEMENT CONDITION

Airport sponsors are required to maintain the pavement surfaces in suitable condition as outlined in Federal Grant Assurance No. 11. To this end, the airport sponsor must implement an effective airport pavement maintenance/management program. Essentially, airport sponsors must continually assess the condition of the pavements and provide preventative maintenance to preserve the useful life of the pavements. A pavement condition survey was completed in 2017 (referenced above).

The surveys were conducted using the pavement condition index (PCI) procedure documented in the following publications:

1. The Federal Aviation Administration's (FAA's) Advisory Circular 150/5380-6B, *Guidelines and Procedures for Maintenance of Airport Pavements*.
2. The American Society for Testing and Material's (ASTM's) D-5340, *Standard Test Method for Airport Pavement Condition Index Surveys*.

The PCI procedure is the standard used by the aviation industry to visually assess pavement condition. It was developed to provide engineers with a consistent, objective, and repeatable tool to represent the overall pavement condition. During a PCI survey, visible signs of deterioration within a selected sample area are identified, recorded, and analyzed.

The results of a PCI evaluation provide an indication of the structural integrity and functional capabilities of the pavement. However, it should be recognized that during a PCI inspection only the top layer of the pavement is examined and that no direct measure is made of the structural capacity of the pavement system. Nevertheless, the PCI does provide an objective basis for determining maintenance and repair needs, as well as for establishing rehabilitation priorities in the face of constrained resources. Furthermore, the results of repeated PCI monitoring over time can be used to determine the rate of deterioration and to estimate the time at which certain rehabilitation measures can be implemented.

Exhibit 1G shows the pavement condition index map from 2017. The 2017 pavement condition report is somewhat dated as of this writing (December 2022). A general rule of thumb is to subtract one to two PCI index points for each year removed from the survey date.

In 2017, several pavement surfaces were showing distress. Runway 16-34 was in fair condition with a PCI value of 57. This is very low for a primary runway and is the reason a full reconstruction is planned for 2023. Runway 12-30 was in fair to satisfactory condition with a PCI value of 74 for the eastern section and 63 for the remaining portions. Parallel Taxiway D was in mostly satisfactory condition with an average PCI of 79. The T-hangar area was shown to have failed pavement in need of replacement. The terminal loop road is also shown to be failed; however, it was reconstructed in 2022.

AIRFIELD LIGHTING

Airfield lighting systems extend an airport's usefulness into periods of darkness and/or poor visibility. A variety of lighting systems are installed at the airport for this purpose. These lighting systems, categorized by function, are summarized as follows.

Airfield signage and taxiway lighting

Identification Lighting: The location of the airport at night is universally identified by a rotating beacon. The rotating beacon projects two beams of light, one white and one green, 180 degrees apart. The rotating beacon at RDD is situated on top of the airport traffic control tower, and it operates from sunset to sunrise. The beacon and control tower are owned by the airport.

Runway and Taxiway Lighting/Signage: Runway and taxiway edge lighting utilize light fixtures placed near the edge of the pavement to define the lateral limits of the pavement. This lighting is essential for safe operations during night and/or times of low visibility to maintain safe and efficient access to and from the runways and aircraft parking areas.

Runway 16-34 is equipped with high intensity runway edge lights (HIRL). Runway 12-30 is served by medium intensity runway lights (MIRL). All runway edge light lenses are split white-yellow to mark the caution zone on the last 2,000 feet of each runway end. All taxiways are equipped with medium intensity taxiway edge lighting (MITL).

The airport also has a runway/taxiway signage system. The presence of runway/taxiway signage is an essential component of a surface movement guidance control system necessary for the safe and efficient operation of the airport. The signage system installed at RDD includes runway and taxiway designations, holding positions, instrument landing system (ILS) critical areas, routing/directional, and runway ends and exits. Runway 16-34 has distance remaining signs which are lighted. Runway 12-30 also has distance remaining signs which are reflective but not lighted.

Visual Glide Slope Approach Aids: Visual glide slope approach aids provide a visual cue to pilots alerting them to whether they are on the correct glide path to landing. The approach to Runway 16 is equipped with four light precision approach path indicator lights on the left side of the runway (PAPI-4L) with 3.43° glide path (3.00° is the standard) to avoid potential obstructions on the approach. Runway 34 is equipped with a PAPI-4L with a standard 3.00° glide path. Runway 30 is equipped with a two-light PAPI on the left side of the runway with a standard 3.00° glide path. The PAPIs are owned by the airport.

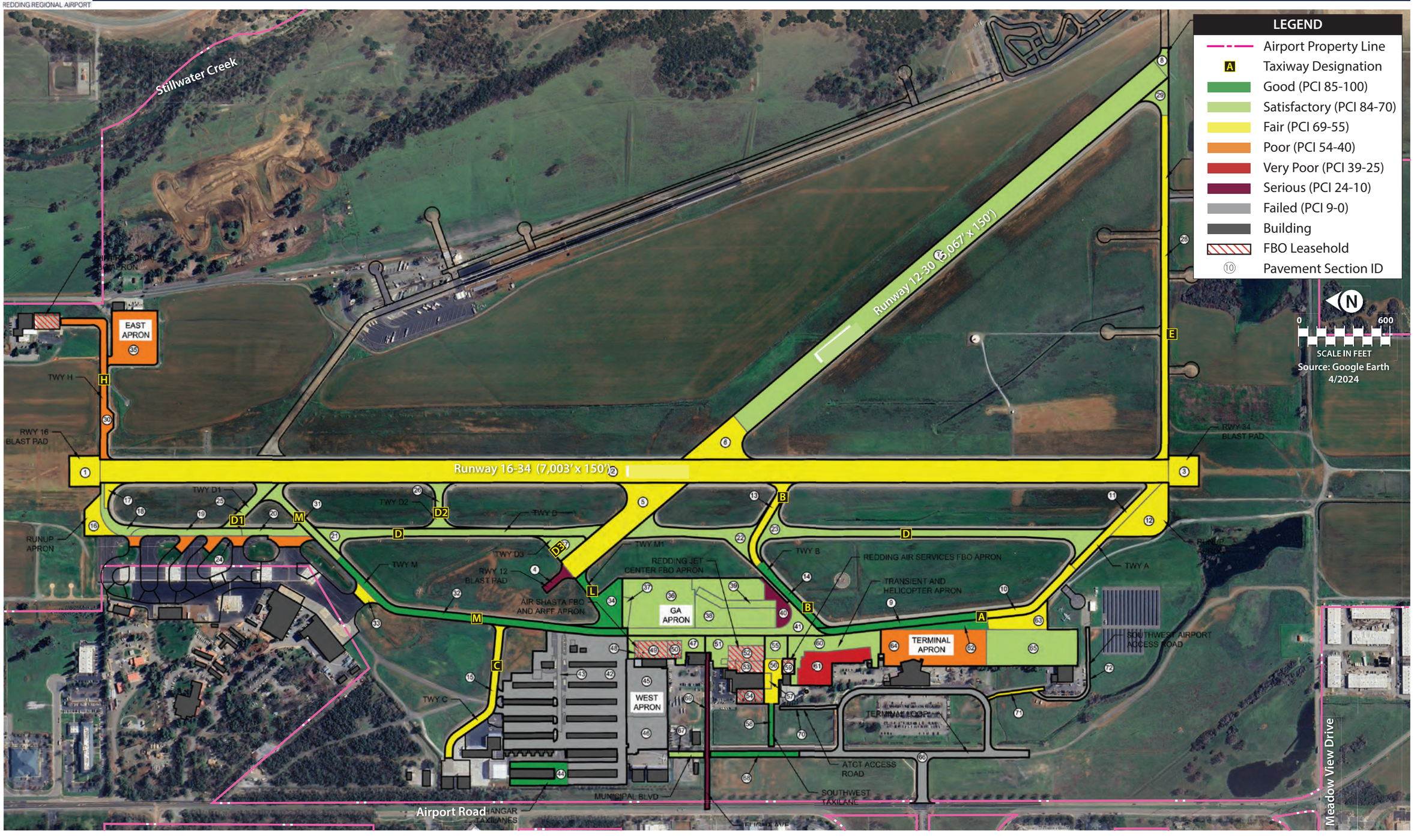
Approach Light Systems (ALS): Runway 34 is equipped with a medium intensity approach light system with runway alignment indicator lights (MALSR). The MALSR provides a lighted, visual grid for pilots to identify and align to the runway end while on final approach. The MALSR is owned by the FAA. No other runway ends have an approach lighting system.

Runway End Identification Lighting
Runway end identifier lights (REILs) are strobe lights placed at the edge of the landing thresholds to provide rapid identification of the landing threshold for up to 20 miles. The approach to Runway 16, is equipped with a REIL system. The MALSR on Runway 34 serves the same purpose as the REIL. The REIL is owned by the airport.

After-Hours Lighting: Airfield lighting is controlled by the ATCT. The airfield lights are typically off during the day, weather permitting. When the tower is closed, pilots can activate the following lighting systems through the CTAF: MALSR (34); REIL (16); PAPI (16); HIRL (16-34); MIRL (12-30); MITL.

WEATHER AND COMMUNICATION AIDS

RDD is equipped with four lighted wind cones. The wind cones provide information to pilots regarding wind conditions, such as direction and intensity, and are rated for 30-knot winds. The primary wind cone is located between Taxiways D and A. It is situated within a segmented circle which provides traffic pattern information to pilots. Also located within the segmented circle is a lighted wind tee which also provides visual wind direction information to pilots. Supplemental wind cones are located near thresholds of Runways 16, 30, and 34. All this equipment is owned by the airport.


LEGEND
Airport Property Line
Taxiway Designation
Good (PCI 85-100)
Satisfactory (PCI 84-70)
Fair (PCI 69-55)
Poor (PCI 54-40)
Very Poor (PCI 39-25)
Serious (PCI 24-10)
Failed (PCI 9-0)
Building
FBO Leasehold
Pavement Section ID
N
0
600
SCALE IN FEET
Source: Google Earth 4/2024
Stillwater Creek
Runway 12-30 (5,067' x 150')
Runway 16-34 (7,003' x 150')
EAST APRON
TWY H
RWY 16 BLAST PAD
RWY 34 BLAST PAD
RUNUP APRON
TWY D1
TWY D2
TWY D
TWY D3
TWY M
TWY M1
TWY B
TWY A
TWY C
RWY 12 BLAST PAD
REDDING JET CENTER FBO APRON
REDDING AIR SERVICES FBO APRON
TRANSIENT AND HELICOPTER APRON
AIR SHASTA FBO AND ARFF APRON
GA APRON
WEST APRON
TERMINAL APRON
SOUTHWEST AIRPORT ACCESS ROAD
ATCT ACCESS ROAD
SOUTHWEST TAXILANE
MUNICIPAL BLVD
Airport Road
Meadow View Drive

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RDD has an automated surface observation system (ASOS). An ASOS automatically records weather conditions such as temperature, dew point, wind speed, altimeter setting, visibility, sky condition, and precipitation. The ASOS updates observations each minute, 24 hours a day, and this information is transmitted to pilots in the airport vicinity via an FAA very high frequency (VHF) ground-to-air radio transmitter. Pilots can receive these broadcasts on the automated terminal information service (ATIS) frequency or via a dedicated ASOS local telephone number (530-221-7144), where a computer-generated voice will present airport weather information. ATIS broadcasts are updated hourly and provide arriving and departing pilots the current surface weather conditions, communication frequencies, and other important airport-specific information. The ATIS frequency at RDD is 124.1 MHz.

The RDD Universal Communication Frequency (UNICOM) is available for pilots to receive information pertaining to the airport. The frequency is 122.95 MHz. The Common Traffic Advisory Frequency (CTAF) is 119.8 Mhz, which allows pilots in the vicinity of the airport to communicate with each other when the tower is closed.

RDD is also equipped with a remote communications outlet (RCO) which is a remote aviation radio transceiver providing communications with Flight Information Centers (FIC) and Flight Service Stations (FSS). For RDD this includes the Oakland Center Air Route Traffic Control Center and the Rancho Murieta Flight Service Station. The RCO frequency is 122.1R Mhz/108.4T.

AIRPORT TRAFFIC CONTROL TOWER (ATCT)

The ATCT is owned by the FAA. It is staffed by FAA certified controllers and is part of the contract tower program. The tower is open from 6:30 a.m. to 9:30 p.m. daily. The tower was constructed in 1972, and it has a top elevation of 95 feet above the ground and a cab-eye elevation of 83 feet. The control tower can be reached at 119.8 Mhz. Redding ground control can be reached at 121.7 Mhz.

RDD airport traffic control tower

AREA AIRSPACE AND AIR TRAFFIC CONTROL

The *Federal Aviation Administration Act of 1958* established the FAA as the responsible agency for the control and use of navigable airspace within the United States. The FAA has established the National Airspace System (NAS) to protect persons and property on the ground and to establish a safe and efficient airspace environment for civil, commercial, and military aviation. The NAS covers the common network of U.S. airspace, including air navigation facilities; airports and landing areas; aeronautical charts; associated rules, regulations, and procedures; technical information; and personnel and material. The system also includes components shared jointly with the military.

AIRSPACE STRUCTURE

Airspace within the United States is broadly classified as either "controlled" or "uncontrolled." The difference relates primarily to requirements for pilot qualifications, ground-to-air communications, navigation and air traffic services, and weather conditions. Six classes of airspace have been designated in the United States, as shown on **Exhibit 1H**. Airspace designated as Class A, B, C, D, or E is considered controlled airspace. Aircraft operating within controlled airspace are subject to varying requirements for positive air traffic control.

Class A Airspace: Class A airspace includes all airspace from 18,000 feet mean sea level (MSL) to flight level (FL) 600 (60,000 feet MSL). This airspace is designated in FAR Part 71.193, for positive control of aircraft. The Positive Control Area (PCA) allows flights governed only under IFR operations. The aircraft must have appropriate radio and navigation equipment, and the pilot must obtain clearance from an ATC facility to enter Class A airspace. In addition, the pilot must possess an instrument rating.

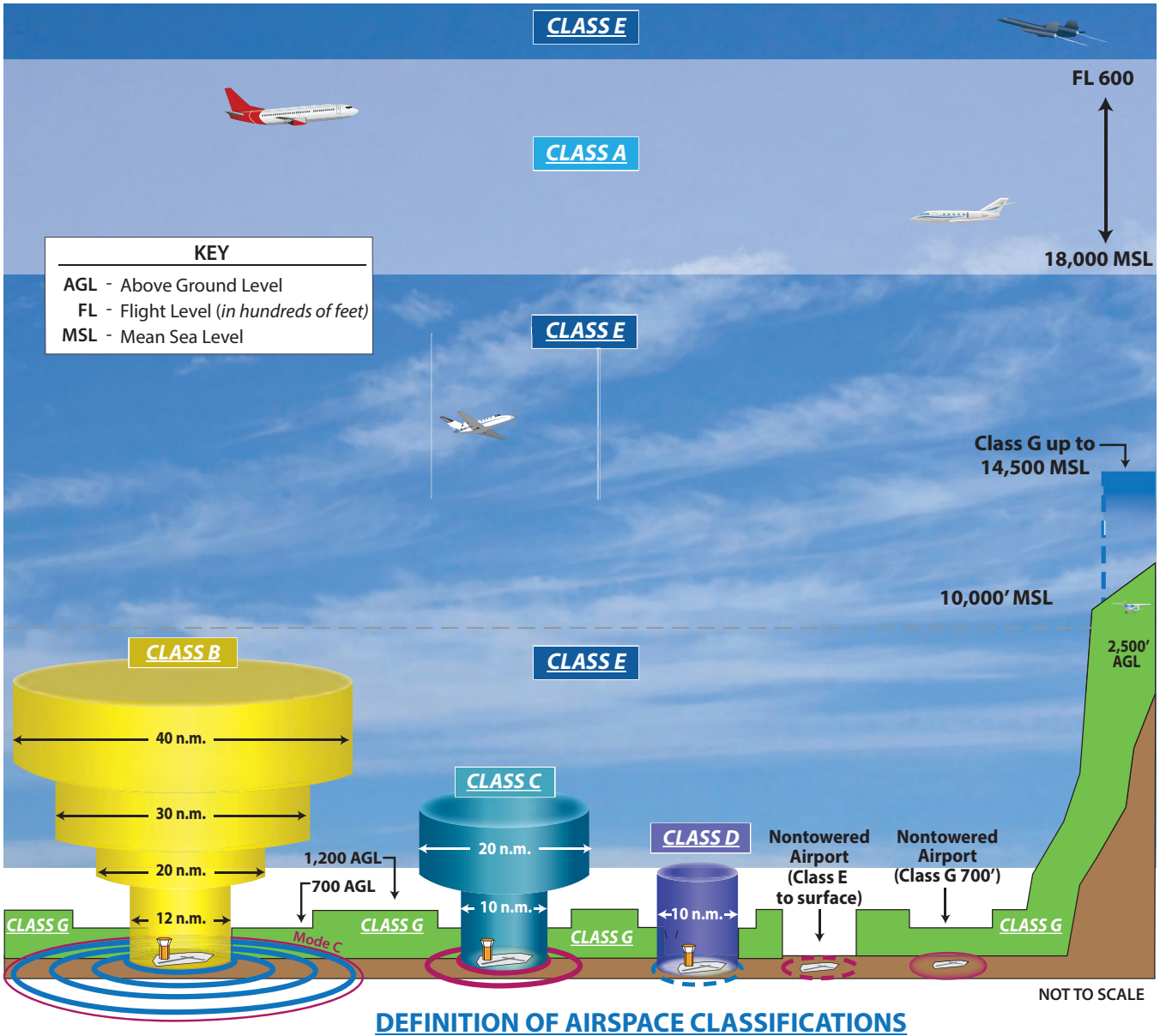
Class B Airspace: Class B airspace has been designated around some of the country's busiest commercial service airports, such as the San Francisco International (SFO). Class B airspace is designed to regulate the flow of uncontrolled traffic, above, around, and below the arrival and departure airspace required for high-performance, passenger-carrying aircraft at busy commercial service airports. This airspace is the most restrictive controlled airspace encountered by pilots operating under VFR.

In order to fly within Class B airspace, an aircraft must be equipped with special radio and navigation equipment and must obtain clearance from air traffic control. Moreover, a pilot must have at least a private pilot's certificate or be a student pilot who has met the requirements of FAR Part 61.95, which requires special ground and flight training for Class B airspace. Helicopters do not need special navigation equipment or a transponder if they operate at or below 1,000 feet and have made prior arrangements in the form of a Letter of Agreement with the FAA controlling agency. Aircraft are also required to have and utilize a Mode C transponder within a 30-nautical mile (nm) range of the center of Class B airspace. A Mode C transponder allows the ATCT to track the altitude of the aircraft.

Class C Airspace: The FAA has established Class C airspace at 120 airports around the country, including RDD, as a means of regulating air traffic in these areas. Class C airspace is designed to regulate the flow of uncontrolled traffic above, around, and below the arrival and departure airspace required for high-performance, passenger-carrying aircraft at some commercial service airports. In order to fly inside Class C airspace, the aircraft must have a two-way radio, an encoding transponder, and have established communication with the ATCT. Aircraft may fly below the floor of the Class C airspace, or above the Class C airspace ceiling without establishing communication with ATC. The closest Class C airspace surrounds Beale Air Force Base and Sacrament International Airport (SAC).

Class D Airspace: Class D airspace is controlled airspace surrounding airports with an ATCT. The Class D airspace typically constitutes a cylinder with a horizontal radius of five miles from the airport, extending from the surface up to a designated vertical limit, typically set at approximately

RDD is in Class D airspace when the ATCT is open and Classes E and G when closed.



DEFINITION OF AIRSPACE CLASSIFICATIONS

CLASS A Think A - Altitude. Airspace above 18,000 feet MSL up to and including FL 600. Instrument Flight Rule (IFR) flights only, ADS-B 1090 ES transponder required, ATC clearance required.

CLASS B Think B - Busy. Multi-layered airspace from the surface up to 10,000 feet MSL surrounding the nation's busiest airports. ADS-B 1090 ES transponder required, ATC clearance required.

CLASS C Think C - Mode C. Mode C transponder required. ATC communication required. Generally airspace from the surface to 4,000 feet AGL surrounding towered airports with service by radar approach control.

CLASS D Think D - Dialogue. Pilot must establish dialogue with tower. Generally airspace from the surface to minimum 2,500 feet AGL surrounding towered airports.

CLASS E Think E - Everywhere. Controlled airspace that is not designated as any other Class of airspace.

CLASS G Think G - Ground. Uncontrolled airspace. From surface to a 1,200 AGL (in mountainous areas 2,500 AGL) Exceptions: near airports it lowers to 700' AGL; some airports have Class E to the surface. Visual Flight Rules (VFR) minimums apply.

Source: www.faa.gov/regulations_policies/handbooks_manuals/aviation/phak/media/15_phak_ch15.pdf

2,500 feet above the airport elevation. If an airport has an instrument approach or departure, the Class D airspace sometimes extends along the approach or departure path. During periods when the airport's ATCT is closed, Class D airspace typically reverts to Class E airspace.

Class E Airspace: Class E airspace consists of controlled airspace designed to contain IFR operations near an airport, and while aircraft are transitioning between the airport and enroute environments. Unless otherwise specified, Class E airspace terminates at the base of the overlying airspace. Only aircraft operating under IFR are required to be in contact with air traffic control when operating in Class E airspace. While aircraft conducting visual flights in Class E airspace are not required to be in radio communications with air traffic control facilities, visual flight can only be conducted if minimum visibility and cloud ceilings exist.

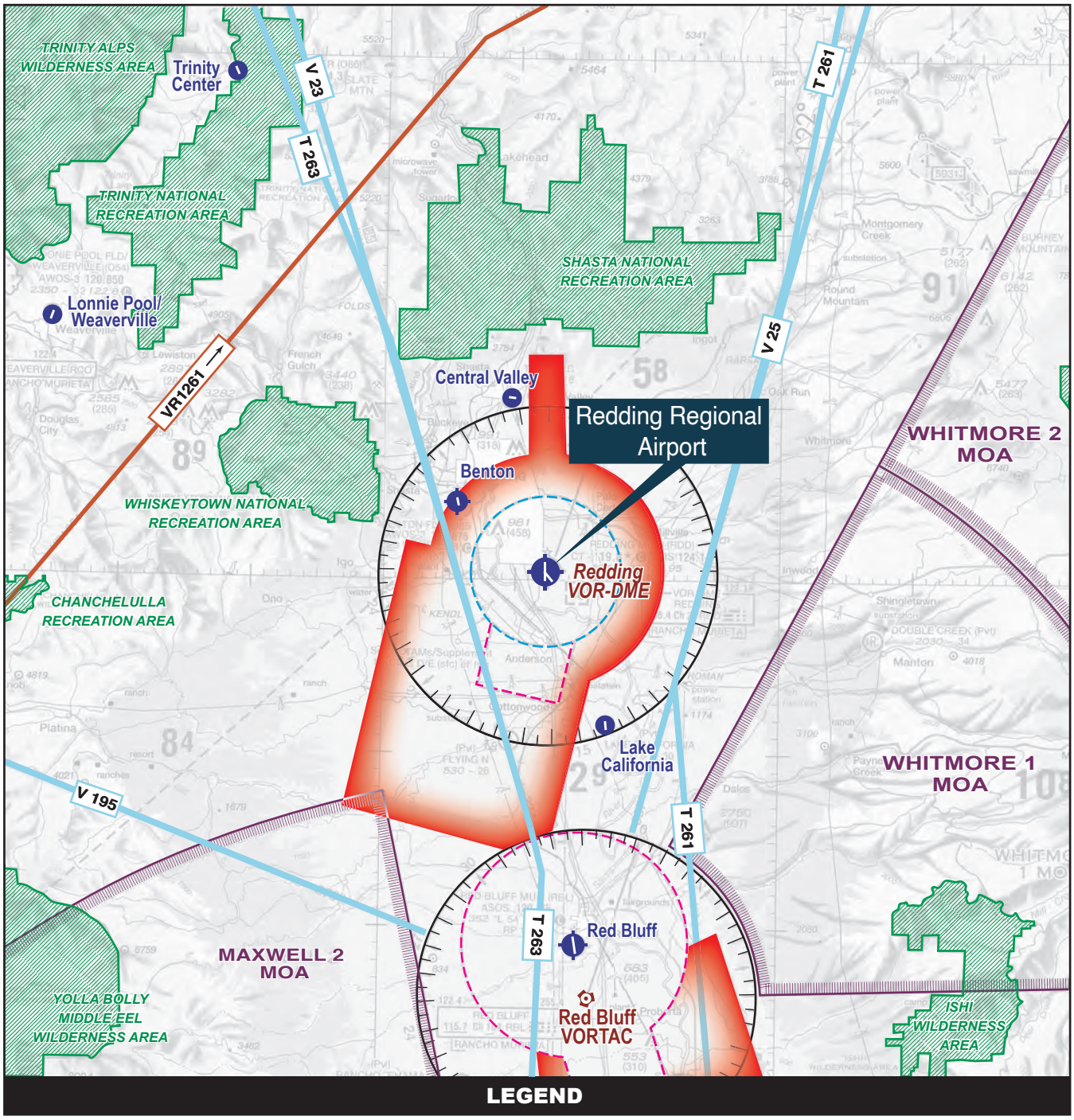
Class G Airspace: Airspace not designated as Class A, B, C, D, or E is considered uncontrolled, or Class G, airspace. Air traffic control does not have the authority or responsibility to exercise control over air traffic within this airspace. Class G airspace lies between the surface and the overlaying Class E airspace (700 to 1,200 feet above ground level [AGL]).

Exhibit 1J shows the Class D surrounding RDD. FAA Order JO 7400.11E, Airspace Designations and Reporting Points, describes the Redding Class D airspace as follows: That airspace extending upward from the surface to and including 3,000 feet MSL within a 4.3-mile radius of RDD. This Class D airspace area is effective during specific dates and times when the control tower is open (Daily 6:30am-9:30pm). When the tower is closed the airspace reverts to Class E with the following description: That airspace extending upward from the surface within 2.3-miles west and 2.5-miles east of the 193° bearing from the airport, extending from the 4.3-mile radius of airport to 7.3 miles south of RDD. This portion of Class E airspace encompasses the approach to Runway 34. Class E airspace also encompasses an area extending upward from 700 feet above the surface to within 6.8-mile radius of the airport and within 1.1-miles west and 1-mile east of the 360° bearing from the airport, extending from the 6.9-mile radius to 12.5-miles north of the airport and within 8.1-miles west and 4-miles east of the 193° bearing extending from the airport to 16-miles south of RDD.

SPECIAL USE AIRSPACE

Special use airspace is defined as airspace where activities must be confined because of their nature or where limitations are imposed on aircraft not taking part in those activities. The designation of special use airspace identifies for other users the areas where military activity occurs, provides for segregation of that activity from other fliers, and allows charting to keep airspace users informed. These areas are depicted on **Exhibit 1J**.

Military Operating Areas (MOAs): This special use airspace is established outside positive control areas to separate/segregate certain nonhazardous military activities from IFR traffic and to identify for VFR traffic where these activities are conducted. MOAs are established to contain certain military activities such as air combat maneuvers, air intercepts, acrobatics, etc. The Whitmore and Maxwell MOAs are the closest to RDD. The Whitmore MOA encompasses airspace from 11,000 feet MSL or 3,000 feet AGL to



Source: Klamath Falls Sectional Chart, US Department of Commerce, National Oceanic and Atmospheric Administration. July 14, 2022

17,999 feet MSL. This MOA is in effect is from 7:30am to 4:30pm and other times by a Notice to Airmen (NOTAM). The primary using agency is USAF, 9th Operations Group out of Beale Air Force Base. The Maxwell MOA encompasses airspace from 11,000 feet MSL or 3,000 feet AGL to 17,999 feet MSL. This MOA is in effect is from 5:00am to 8:00pm and other times by a Notice to Airmen (NOTAM). The primary using agency is USAF, 9th Operations Group out of Beale Air Force Base.

Military Training Routes: Military training routes (MTRs) are designated airspace that has been generally established for use by high performance military aircraft to train below 10,000 feet AGL and in excess of 250 knots. There are VR (visual) and IR (instrument) designated MTRs. MTRs with no segment above 1,500 feet AGL will be designated with the VR or IR, followed by a four-digit number (e.g., VR1261). MTRs with one or more segments above 1,500 feet AGL are identified by the route designation followed by a three-digit number (e.g., VR202). The arrows on the route show the direction of travel. VR1261 is the closest MTR to RDD, and it is approximately 20 miles to the northwest.

Victor Airways: For aircraft arriving or departing the regional area using very high frequency omni-directional range (VOR) facilities, a system of Federal Airways, referred to as Victor Airways, has been established. Victor Airways are corridors of airspace eight miles wide that extend upward from 1,200 feet AGL to 18,000 feet MSL and extend between VOR navigational facilities. There are no Victory Airways using the Redding VOR as a waypoint, however T263, T261, V25, and V23 pass in proximity to the airport.

Wilderness Areas: While not specifically considered part of the U.S. airspace structure, the boundaries of National Parks, Wildlife Service areas, Forest Wilderness, and Primitive areas are noted on aeronautical charts. Aircraft operations are not specifically restricted over these areas; however, pilots are requested to maintain a minimum altitude of 2,000 feet above the surface. FAA Advisory Circular 91-36C defines the “surface” as the highest terrain within 2,000 feet laterally of the route of flight or the uppermost rim of a canyon or valley. The Shasta National Recreation Area to the north and Whiskeytown National Recreational Area to the west are in proximity of RDD.

AIRSPACE CONTROL

The FAA has established 22 Air Route Traffic Control Centers (ARTCCs) throughout the continental United States to control aircraft operating under IFR within controlled airspace and while enroute to a destination. The primary responsibility of the ARTCC is the assignment of specific routes and altitudes along Federal Airways to maintain proper separation and orderly traffic flow. Oakland Center, located in the east San Francisco Bay Area, controls enroute airspace in most of northern California and parts of Nevada.

The Northern California TRACON (Terminal Radar Approach Control), also known as NorCal Approach, is an air traffic control facility that provides safety alerts, aircraft separation, and sequencing of aircraft arriving, departing, and transitioning the airspace and airports in the northern California region. The TRACON is the step between local control (on-airport control tower) and Oakland Center ARTCC. Flight plans can be opened or closed utilizing the Rancho Murieta Flight Service Station (FSS).

The RDD ATCT operates daily from 6:30 a.m. to 9:30 p.m. The tower is owned by the FAA and operated, through the contract tower program, by FAA certified controllers. The tower is 95 feet high with a

cab-eye elevation of 83 feet. Tower controllers provide services to aircraft operating on the airfield and generally within a five-mile radius of RDD. Primary air traffic services for the airport are provided within the airport's Class D airspace.

ELECTRONIC NAVIGATIONAL AIDS

Navigational aids are electronic devices that transmit radio frequencies, which pilots of properly equipped aircraft can translate into point-to-point guidance and position information. The types of electronic navigational aids available for aircraft flying to or from RDD include a very high frequency omni-directional range (VOR) facility and the global positioning system (GPS).

The VOR, in general, provides azimuth readings to pilots of properly equipped aircraft transmitting a radio signal at every degree to provide 360 individual navigational courses. Frequently, distance measuring equipment (DME) is combined with a VOR facility (VOR-DME) to provide distance as well as direction information to the pilot. Military tactical air navigation aids (TACANs) and civil VORs are commonly combined to form a VORTAC which provides distance and direction information to both civil and military pilots. The Redding VOR is located on the airfield, and the Red Bluff VORTAC is located approximately 25 miles to the south.

GPS was initially developed by the United States Department of Defense for military navigation around the world. GPS differs from a VOR in that pilots are not required to navigate using a specific facility. GPS uses satellites placed in orbit around the earth to transmit electronic radio signals, which pilots of properly equipped aircraft use to determine altitude, speed, and other navigational information. With GPS, pilots can navigate directly to any airport in the country and are not required to navigate to a specific ground-based navigation facility.

Many commercial service airports are equipped with an Instrument Landing System (ILS). Runway 34 is served by an ILS system. The ILS systems at RDD are comprised of dual transmitter localizer equipment and dual transmitter glideslope equipment. The localizer provides an instrument approach course for horizontal alignment with the runway centerline. The glideslopes provide vertical guidance for landing aircraft. Additionally, the MALSR serving Runway 34 provides visual runway alignment information to the pilot.

INSTRUMENT APPROACH PROCEDURES

Instrument approach procedures are a series of predetermined maneuvers established by the FAA, using electronic navigational aids that assist pilots in locating and landing at an airport, especially during instrument flight conditions. There are currently five published instrument approach procedures at RDD, including the ILS precision instrument approach to Runway 34. Precision instrument approaches provide vertical descent information and course guidance information to the pilot. Non-precision approaches only provide course guidance to the pilot.

There are currently five published instrument approach procedures.

The capability of an instrument approach procedure is defined by the visibility and cloud ceiling minimums associated with the approach. Visibility minimums define the horizontal distance the pilot must be able to see to complete the approach. Cloud ceilings define the lowest level a cloud layer (defined in feet above the ground) can be situated for the pilot to complete the approach. If the observed visibility or cloud ceilings are below the minimums prescribed for the approach, the pilot cannot complete the instrument approach. **Table 1G** summarizes the instrument approach procedures available at RDD. **Exhibit 1K** shows the FAA approved and published approach plates.

TABLE 1G | Instrument Approach Data

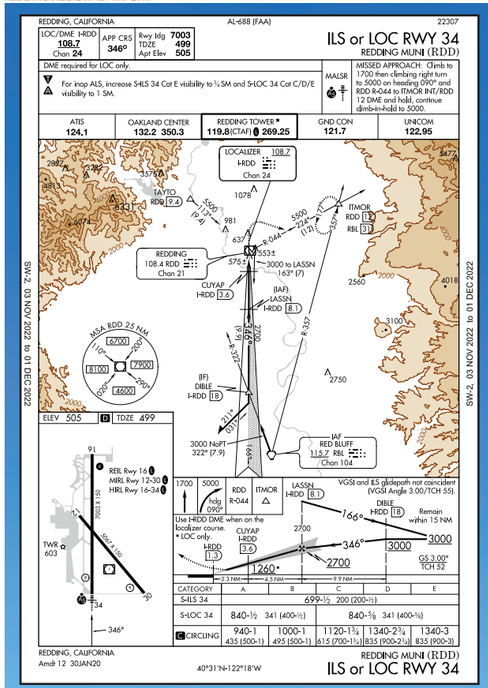
	WEATHER MINIMUMS BY AIRCRAFT TYPE				
	Category A	Category B	Category C	Category D	Category E
ILS or LOC Rwy 34					
ILS Straight-In 34	200'/½-mile				
LOC Straight-In 34	341'/½-mile		341'/⅝-mile		
Circling	435'/1-mile	495'/1-mile	615'/1¾-mile	835'/2¾-mile	835'/3-mile
RNAV (GPS) Rwy 34					
LPV - DA	200'/½-mile				NA
LNAV/VNAV - DA	255'/½-mile				NA
LNAV - MDA	361'/½-mile		361'/⅝-mile		NA
Circling	435'/1-mile	495'/1-mile	615'/1¾-mile	835'/2¾-mile	NA
LOC BC Rwy 16					
Straight-In 16	455'/1-mile		455'/1⅜-mile		NA
Circling	455'/1-mile	495'/1-mile	615'/1¾-mile	835'/2¾-mile	NA
RNAV (GPS) Rwy 16					
LPV - DA	250'/¾-mile		270'/⅞-mile		NA
LNAV/VNAV DA	387'/1⅛-mile				NA
LNAV MDA	455'/1-mile		455'/1⅜-mile		NA
Circling	455'/1-mile	495'/1-mile	615'/1¾-mile	835'/2¾-mile	NA
VOR Rwy 34					
Straight-In 34	1181'/¾-mile	1181'/1-mile	1181'/3-mile		NA
Circling	1175'/1¼-mile	1175'/1½-mile	1175'/3-mile		NA
MACHL FIX MINIMUMS					
Straight-In 8	601'/½-mile		601'/1⅜-mile		NA
Circling	595'/1-mile		615'/1¾-mile	835'/2¾-mile	NA

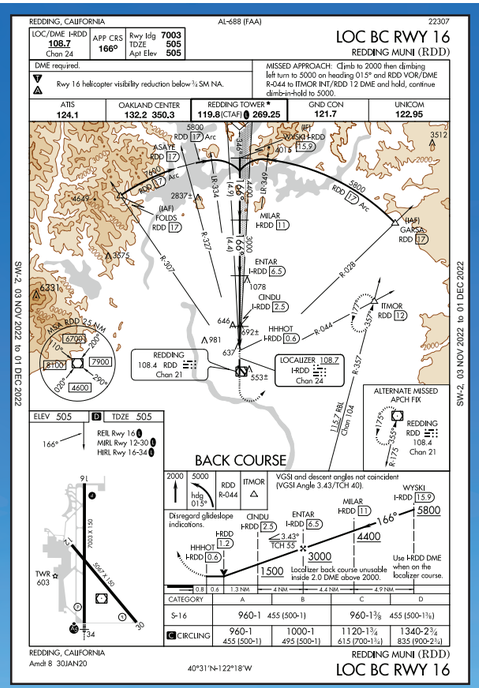
Aircraft categories are based on the approach speed of aircraft, which is determined as 1.3 times the stall speed in landing configuration. The approach categories are as follows:

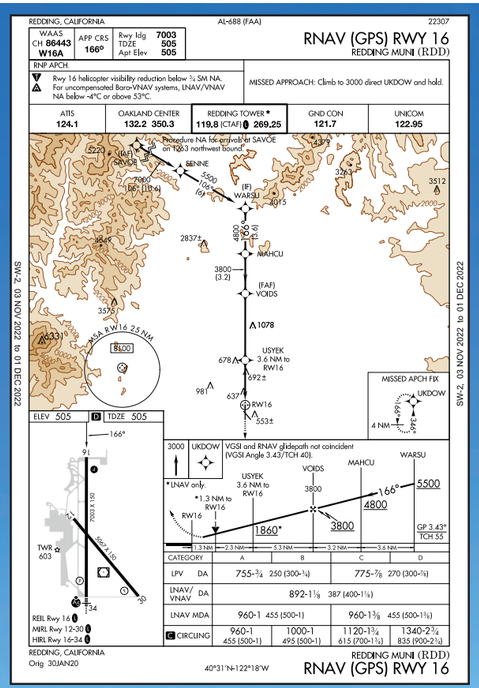
Category A: 0-90 knots (e.g., Cessna 172)
Category B: 91-120 knots (e.g., Beechcraft KingAir)
Category C: 121-140 knots (e.g., B-737, Regional Jets, Canadair Challenger)
Category D: 141-166 knots (e.g., B-747, Gulfstream IV)
Category E: Greater than 166 knots (e.g., Certain large military or cargo aircraft)

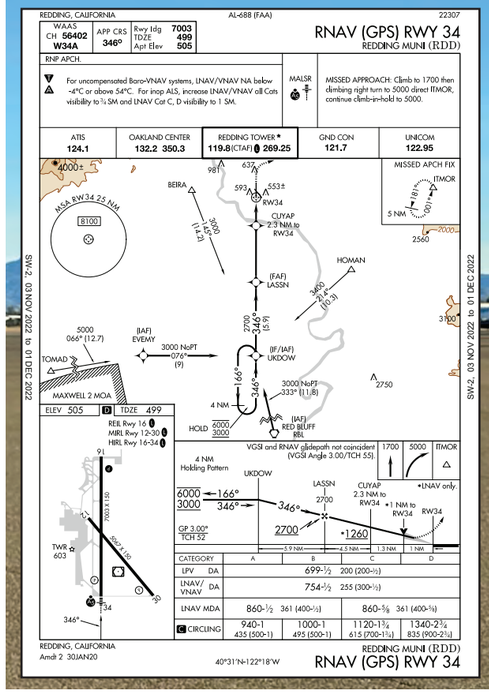
Abbreviations:
ILS - Instrument Landing System
LOC - Localizer
GPS - Global Positioning System
LNAV/RNAV/VNAV - A technical variant of GPS (Lateral, Area, Vertical Navigation)
DA - Decision Altitude (Used for vertically guided approaches)
MDA - Minimum Descent Altitude (Used for non-precision approaches)
Note: (xxx'/ x-mile) = Visibility (in feet)/Cloud ceiling height (in miles)

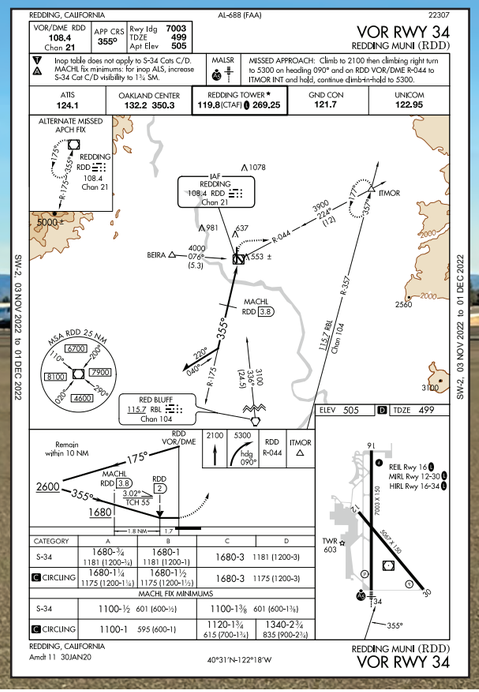
Source: U.S. Terminal Procedures (Effective Nov. 3, 2022)


REDDING, CALIFORNIA
AL-688 (FAA)
22307
LOC/DME I-RDD 108.7 Chan 24
APP CRS 346°
Rwy Idg 7003
TDZE 499
Apt Elev 505
ILS or LOC RWY 34
REDDING MUNI (RDD)
DME required for LOC only.
For knap ALS, increase S-ILS 34 Cat E visibility to ½ SM and S-LOC 34 Cat C/D/E visibility to 1 SM.
MALSR
MISSED APPROACH: Climb to 1700 then climbing right turn to 5000 on heading 090° and RDD R-044 to ITMOR INT/RDD 12 DME and hold, continue climb-in-hold to 5000.
ATIS 124.1
OAKLAND CENTER 132.2 350.3
REDDING TOWER* 119.8 (CTAF) 269.25
GND CON 121.7
UNICOM 122.95
LOCALIZER 108.7 I-RDD Chan 24
REDDING 108.4 RDD Chan 21
HAYSO RDD 9.4
CUYAP I-RDD 3.6
LASSN I-RDD 8.1
ITMOR RDD 12 RBL 31
RED BLUFF 115.7 RBL Chan 104
3000 to LASSN 163° (7)
3000 NoPT 322° (7.9)
MSA RDD 25 NM
ELEV 505
D TDZE 499
REIL Rwy 16
MIRL Rwy 12-30
HIRL Rwy 16-34
TWR 603
7003 X 150
3004 X 150
VGSI and ILS glidepath not coincident (VGSI Angle 3.00/TCH 55).
Use I-RDD DME when on the localizer course.
* LOC only.
DBLE I-RDD 18
Remain within 15 NM
GS 3.00° TCH 32
CATEGORY A B C D E
S-ILS 34 699-½ 200 (200-½)
S-LOC 34 840-½ 341 (400-½) 840-⅝ 341 (400-⅝)
C CIRCLING 940-1 435 (500-1) 1000-1 495 (500-1) 1120-1¾ 615 (700-1¾) 1340-2¾ 835 (900-2¾) 1340-3 835 (900-2)
REDDING, CALIFORNIA
Amdt 12 30JAN20
40°31'N-122°18'W
REDDING MUNI (RDD)
ILS or LOC RWY 34
SW-2, 03 NOV 2022 to 01 DEC 2022


REDDING, CALIFORNIA
AL-688 (FAA)
22307
LOC/DME I-RDD 108.7 Chan 24
APP CRS 166°
Rwy Idg 7003
TDZE 505
Apt Elev 505
LOC BC RWY 16
REDDING MUNI (RDD)
DME required.
Rwy 16 helicopter visibility reduction below ½ SM NA.
MISSED APPROACH: Climb to 2000 then climbing left turn to 5000 on heading 015° and RDD VOR/DME R-044 to ITMOR INT/RDD 12 DME and hold, continue climb-in-hold to 5000.
ATIS 124.1
OAKLAND CENTER 132.2 350.3
REDDING TOWER* 119.8 (CTAF) 269.25
GND CON 121.7
UNICOM 122.95
REDDING 108.4 RDD Chan 21
ASAYE RDD 17
(IAF) FCLDS RDD 17
(IAF) GARSA RDD 17
MILAR I-RDD 11
ENTAR I-RDD 6.5
CINDU I-RDD 2.5
HHHOT I-RDD 0.6
ITMOR RDD 12
LOCALIZER 108.7 I-RDD Chan 24
ALTERNATE MISSED APCH FIX
REDDING RDD 108.4 Chan 21
MSA RDD 25 NM
ELEV 505
D TDZE 505
REIL Rwy 16
MIRL Rwy 12-30
HIRL Rwy 16-34
TWR 603
7003 X 150
3004 X 150
BACK COURSE
VGSI and descent angles not coincident (VGSI Angle 3.43/TCH 40).
Divergent glideslope indications.
WYSKI I-RDD 15.9
Localizer back course unusable inside 2.0 DME above 2000.
Use I-RDD DME when on the localizer course.
CATEGORY A B C D
S-16 960-1 455 (500-1) 960-1⅞ 455 (500-1⅛) 1120-1¾ 615 (700-1¾) 1340-2¾ 835 (900-2¾)
C CIRCLING 960-1 455 (500-1) 1000-1 495 (500-1) 1120-1¾ 615 (700-1¾) 1340-2¾ 835 (900-2¾)
REDDING, CALIFORNIA
Amdt 8 30JAN20
40°31'N-122°18'W
REDDING MUNI (RDD)
LOC BC RWY 16
SW-2, 03 NOV 2022 to 01 DEC 2022


REDDING, CALIFORNIA
AL-688 (FAA)
22307
WAAS CH 86443 W16A
APP CRS 166°
Rwy Idg 7003
TDZE 505
Apt Elev 505
RNAV (GPS) RWY 16
REDDING MUNI (RDD)
RNP APCH.
Rwy 16 helicopter visibility reduction below ½ SM NA.
For uncompensated Baro-VNAV systems, LNAV/VNAV NA below -4°C or above 53°C.
MISSED APPROACH: Climb to 3000 direct UKDOW and hold.
ATIS 124.1
OAKLAND CENTER 132.2 350.3
REDDING TOWER* 119.8 (CTAF) 269.25
GND CON 121.7
UNICOM 122.95
Procedure NA for arrivals at SAVOE on 163 northwest bound
(IAF) SAVOE
SENNE
(IF) WARSU
NAHCU
(FAF) VOIDS
USYEK 3.6 NM to RW16
RW16
MISSED APCH FIX
UKDOW
4 NM
MSA RW16 25 NM
ELEV 505
D TDZE 505
REIL Rwy 16
MIRL Rwy 12-30
HIRL Rwy 16-34
TWR 603
7003 X 150
3004 X 150
3000 UKDOW
VGSI and RNAV glidepath not coincident (VGSI Angle 3.43/TCH 40).
* LNAV only.
*1.3 NM to RW16
VOIDS
MAHCU
WARSU
GP 3.43° TCH 55
CATEGORY A B C D
LPV DA 755-¾ 250 (300-½) 775-⅝ 270 (300-½)
LNAV/VNAV DA 892-1⅛ 387 (400-1⅛)
LNAV MDA 960-1 455 (500-1) 960-1⅞ 455 (500-1⅛)
C CIRCLING 960-1 455 (500-1) 1000-1 495 (500-1) 1120-1¾ 615 (700-1¾) 1340-2¾ 835 (900-2¾)
REDDING, CALIFORNIA
Orig 30JAN20
40°31'N-122°18'W
REDDING MUNI (RDD)
RNAV (GPS) RWY 16
SW-2, 03 NOV 2022 to 01 DEC 2022


REDDING, CALIFORNIA
AL-688 (FAA)
22307
WAAS CH 56402 W34A
APP CRS 346°
Rwy Idg 7003
TDZE 499
Apt Elev 505
RNAV (GPS) RWY 34
REDDING MUNI (RDD)
RNP APCH.
For uncompensated Baro-VNAV systems, LNAV/VNAV NA below -4°C or above 54°C. For inop ALS, increase LNAV/VNAV all Cats visibility to ¾ SM and LNAV Cat C, D visibility to 1 SM.
MALSR
MISSED APPROACH: Climb to 1700 then climbing right turn to 5000 direct ITMOR, continue climb-in-hold to 5000.
ATIS 124.1
OAKLAND CENTER 132.2 350.3
REDDING TOWER* 119.8 (CTAF) 269.25
GND CON 121.7
UNICOM 122.95
MISSED APCH FIX
ITMOR
5 NM
BEIRA
CUYAP 2.3 NM to RW34
RW34
(FAF) LASSN
HOMAN
(IAF) EVEMY
3000 NoPT 076° (9)
TOMAD
MAXWELL 2 MOA
(IF/IAF) UKDOW
3000 NoPT 333° (11.8)
4 NM
HOLD 5000 3000
(IAF) RED BLUFF RBL
MSA RW34 25 NM
ELEV 505
D TDZE 499
REIL Rwy 16
MIRL Rwy 12-30
HIRL Rwy 16-34
TWR 603
7003 X 150
3004 X 150
4 NM Holding Pattern
VGSI and RNAV glidepath not coincident (VGSI Angle 3.00/TCH 55).
*LNAV only.
*1 NM to RW34
GP 3.00° TCH 52
CATEGORY A B C D
LPV DA 699-½ 200 (200-½)
LNAV/VNAV DA 754-½ 255 (300-½)
LNAV MDA 860-½ 361 (400-½) 860-⅝ 361 (400-⅝)
C CIRCLING 940-1 435 (500-1) 1000-1 495 (500-1) 1120-1¾ 615 (700-1¾) 1340-2¾ 835 (900-2¾)
REDDING, CALIFORNIA
Amdt 2 30JAN20
40°31'N-122°18'W
REDDING MUNI (RDD)
RNAV (GPS) RWY 34
SW-2, 03 NOV 2022 to 01 DEC 2022


REDDING, CALIFORNIA
AL-688 (FAA)
22307
VOR/DME RDD 108.4 Chan 21
APP CRS 355°
Rwy Idg 7003
TDZE 499
Apt Elev 505
VOR RWY 34
REDDING MUNI (RDD)
Inop table does not apply to S-34 Cats C/D. MACHL fix minimums: for inop ALS, increase S-34 Cat C/D visibility to 1¼ SM.
MALSR
MISSED APPROACH: Climbs to 2100 then climbing right turn to 5300 on heading 090° and on RDD VOR/DME R-044 to ITMOR INT and hold, continue climb-in-hold to 5300.
ATIS 124.1
OAKLAND CENTER 132.2 350.3
REDDING TOWER* 119.8 (CTAF) 269.25
GND CON 121.7
UNICOM 122.95
ALTERNATE MISSED APCH FIX
REDDING RDD 108.4 Chan 21
IAF REDDING 108.4 RDD Chan 21
ITMOR
BEIRA
MACHL RDD 3.8
RED BLUFF 115.7 RBL Chan 104
MSA RDD 25 NM
Remain within 10 NM
RDD VOR/DME
MACHL RDD 3.8
RDD Z
3.02° TCH 55
ELEV 505
D TDZE 499
REIL Rwy 16
MIRL Rwy 12-30
HIRL Rwy 16-34
TWR 603
7003 X 150
3004 X 150
CATEGORY A B C D
S-34 1680-¾ 1181 (1200-½) 1680-1 1181 (1200-1) 1680-3 1181 (1200-3)
C CIRCLING 1680-1¼ 1175 (1200-1½) 1680-1½ 1175 (1200-1½) 1680-3 1175 (1200-3)
MACHL FIX MINIMUMS
S-34 1100-½ 601 (600-½) 1100-1⅜ 601 (600-1⅜)
C CIRCLING 1100-1 595 (600-1) 1120-1¾ 615 (700-1¾) 1340-2¾ 835 (900-2½)
REDDING, CALIFORNIA
Amdt 11 30JAN20
40°31'N-122°18'W
REDDING MUNI (RDD)
VOR RWY 34
SW-2, 03 NOV 2022 to 01 DEC 2022

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The most sophisticated instrument approach procedure at RDD is associated with the ILS to Runway 34. The ILS to Runway 34 provides visibility minimums as low as ½-mile (2,400 feet RVR) and cloud ceilings of 200 feet AGL (referred to as a Cat-I approach). Generally, this type of approach is considered the minimum for a commercial service airport.

Instrument approaches based on GPS have become very common across the country. GPS does not require a significant investment in ground-based systems by the airport or FAA. Both ends of Runway 16-34 are served by GPS approaches. A variant of GPS referred to as LPV (localizer performance with vertical guidance) is an instrument approach based on a navigation system that is not required to meet the precision approach standards of ICAO Annex 10 (i.e., ILS) but that provides both course and glidepath deviation information. The GPS approaches to both ends of Runway 16-34 have the LPV variant.

TERMINAL DEPARTURE PROCEDURES

Standard instrument departure (SID) routes, also known as simple departure procedures, are published flight procedures followed by pilots on an IFR flight plan immediately after takeoff from an airport. SIDs have been developed to optimize the route of flight when considering a variety of factors such as terrain, obstacles, noise abatement, and overall airspace management. There are four SIDs available for use at RDD (Homan Three, Kendl Four, Krest Three, and Shasta Four).

LOCAL OPERATING PROCEDURES

Redding Regional Airport (RDD) is situated at 505 feet MSL. All runways utilize a standard left hand traffic pattern. The traffic pattern altitude for small aircraft is 1,000 AGL (1,500 MSL) and 1,500 feet AGL (2,000 feet MSL) for large aircraft.

Other local operating procedures of note include:

- US Forest Service and CAL FIRE operate heavy air tanker aircraft during fire season.
- For noise abatement pilots are to avoid overflights of residential areas.
- Wildlife, including birds are on and in the vicinity of the airport.
- Runway 16: There are 44-foot-tall trees, 1,700 feet from the Runway 16 end, located 650 feet right of centerline. Pilots should use a 34:1 slope to clear.
- Runway 12: There are 65-foot-tall trees, 1,600 feet from the Runway 12 end, located 300 feet right of centerline. Pilots should use a 21:1 slope to clear.
- Runway 30: There are 88-foot-tall trees, 2,075 feet from the Runway 30 end, located 275 feet right of centerline. Pilots should use a 21:1 slope to clear.

LANDSIDE FACILITIES

For purposes of this master plan, landside facilities are those not directly related to the airfield system. The landside facilities include the aircraft parking aprons/ramps, all hangars and buildings, various support facilities, and the passenger terminal complex. **Exhibit 1L** shows detail of the landside facilities

BUILDINGS AND HANGARS

Redding Regional Airport serves multiple segments of the aviation industry. It is a commercial service airport; however, it also serves the general aviation community including corporate aviation, air ambulance, and forest fire protection. As a result, the airport has not only its commercial terminal building but also numerous other buildings and hangars. **Table 1H** summarizes information about the buildings and hangars on the airport.

TABLE 1H | Airport Hangar and Building Facilities

Building/Hangar	Approximate Area (sf)	Estimated Aircraft Storage Space
Terminal Building	37,550	0
ARFF Building	12,000	0
Airport Maintenance Buildings	1,500	0
Exchange Club Storage	5,000	0
Air Shasta A (FBO)	10,500	8,000
Redding Jet Center Maintenance	1,200	0
IASCO Maintenance	3,200	1,200
Redding Jet Center Hangar	20,000	16,000
Redding Jet Center Office	7,400	0
Redding Air Service (2 Hangars)	12,300	10,200
FedEx Sort Building	13,200	0
Eastside PHI Hangar	10,000	10,000
Eastside REACH Hangar	4,400	4,400
Private Hangar (1)	11,200	10,500
Private Hangar (2)	8,000	7,200
Sierra Pacific Private Hangar (3)	6,400	6,000
Sierra Pacific Private Hangar (4)	9,500	9,000
Sierra Pacific Private Hangar (5)	12,100	11,200
Private Hangar (6)	6,400	6,200
Private Hangar (7)	6,400	6,200
Civil Air Patrol Building	2,200	0
Office Building	4,000	0
Rental Car Service Building	1,800	0
Individual Aircraft Storage Hangars		
T-Hangars (98 units)	119,250	110,000
Box Hangars (6 units)	15,000	12,800
Twin Hangars (8 units)	11,600	10,200
Port-a-Ports (6 units)	12,000	12,000
Total Area	**364,100**	**251,100**

sf = square feet


East Side Hangars Detail
REACH Hangar
PHI Hangar
LEGEND
Airport Property Line
A Taxiway Designation
N
0
400
SCALE IN FEET
Source: Google Earth
4/2024
Runway 16-34 (7,003' x 150')
Runway 12-30 (5,067' x 150')
12
30
D2
D
D3
B
L
M
C
A
USFS/CDF
Redding Jet Center Maintenance
Air Shasta
ARFF
Itinerant Ramp
Helicopter Ramp
Rental Car Parking
Terminal Building
CAP Building
Air Carrier Apron
IASCO Maintenance
A (1-10)
B (11-20)
C (21-30)
D (31-40)
E (41-50)
F (1-6)
G (1-8)
H (81-88)
I (51-60)
J (61-70)
K (71-80)
L (1-6)
M (88-99)
Redding Jet Center
Permanant Tie-Down Ramp
Redding Air Service
Airway Ave
ATCT
Woodrum Circle
Public Parking
Employee Parking
FedEx
Sierra Pacific Hangars
Air Shasta Fuel Farm
Maintenance Buildings
Gate 39
Office Building
Flight Ave
Municipal Blvd
Rental Car Service Center
Private Hangars
Private Hangars
Airport Road
Lockheed Drive
Knighton Road
Redding Airport Business and Industrial Park

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General Aviation Hangars

General aviation facilities are those intended to support private and corporate aviation. These typically include aircraft hangars and aircraft parking aprons. There are numerous private hangars at the airport as well as individual aircraft storage hangars, all of which are listed in **Table 1H**. It is estimated that there are approximately 251,100 square feet of storage space for private aircraft at the airport. While the individual aircraft storage hangars (i.e., T-Hangars, box hangars, etc.) are typically occupied by a single aircraft, the larger private hangars may also house only one aircraft. Therefore, there is not a direct correlation between hangar space and the number of aircraft stored.

General aviation hangars

General Aviation Apron Area

There are three general aviation apron areas utilized by general aviation operators. The local tie-down apron is located immediately west of the Air Shasta FBO. This apron area has 36 tie-down positions. Generally, these tie-down positions are leased by people who base their aircraft at the airport. This apron encompasses approximately 12,500 square yards. The itinerant general aviation apron is located to the immediate west of the Air Shasta and Redding Jet Center FBOs. This apron encompasses approximately 30,000 square yards and has 77 tie-down positions marked. This apron also has unmarked areas between the taxilanes that can be utilized by up to eight larger transient aircraft. The third apron area is immediately east of the control tower. It is a dedicated helicopter apron with nine parking positions which encompasses approximately 5,000 square yards. In addition, there are five transient fixed wing aircraft parking positions immediately south of the helicopter apron.

AIR CARGO

As noted previously, there are two primary air cargo/freight operators on the airport. West Air is contracted with FedEx, and they utilize the Cessna Caravan 208B aircraft. They operate out of a 13,200 square-foot sort facility at the southwest end of the flightline. Aircraft are positioned on a 5,200 square yard apron where loading and unloading takes place. Redding Aero contracts with UPS utilizing the Cessna Caravan 208B, Cessna 402, and Cessna 404 aircraft. Loading and unloading occurs on the Redding Jet Center FBO apron.

FedEx Building

AIRPORT SUPPORT FACILITIES

Airport Rescue and Firefighting (ARFF)

ARFF Building

14 CFR Part 139 airports are required to provide aircraft rescue and firefighting (ARFF) services during air carrier operations. Each certificated airport maintains equipment and personnel based on an ARFF index established according to the length of aircraft and scheduled daily flight frequency. There are five indices, A through E, with A applicable to the smallest aircraft and E the largest (based on length). RDD falls within ARFF Index B which includes aircraft at least 90 feet but less than 126 feet in length. As such, RDD is required to maintain a fleet of equipment and properly trained personnel consistent with this standard. **Table 1J** is the list of the airports ARFF equipment including firefighting agent capacities. The ARFF equipment is housed in a dedicated fire station building. The ARFF building is approximately 12,000 square feet in size and is centrally located to the airfield allowing for quick access to the runway system.

TABLE 1J | Aircraft Rescue and Fire Fighting Equipment (Index B)

Vehicle Model/Color	Year	Make	Condition	Extinguishing Agents[1]	Discharge Rate[2]
AR-7, Crash Truck - Lime Yellow	2015	Oshkosh	Excellent	1,500 gal. water 210 gal. AFFF 550 lbs. dry chemical	2,000 gal. water/minute
AR-72, Crash Truck - Lime Yellow	1999	Oshkosh	Good	1,500 gal. water 210 gal. AFFF 500 lbs. dry chemical 20 lbs. CO_2	1,520 gal. water/minute
Other Available Agents				30 lbs. Halon 60 lbs. Purple K 60 lbs. MET-L	

[1]Quantity of Extinguishing Agent
[2]Discharge Rate in Gal./Min. or Lbs./Sec.
AFFF: Aqueous Film Forming Foam

Source: Airport Certification Manual; Airport staff

ARFF personnel and duties are provided by the City of Redding Fire Department personnel assigned to Airport Fire Station #7. At least one ARFF qualified firefighter is on duty continuously to provide for any aircraft emergency response needed. The ARFF equipment is owned by the airport.

Airport Maintenance and Snow Removal

Major snowfall events are infrequent in Redding. RDD personnel handle most airport maintenance and all snow removal operations as necessary.

Fuel Storage

Under revised 14 CFR Part 139.321, *Handling and Storing of Hazardous Substances and Materials*, the FAA has clarified the airport operator's responsibility for fuel storage areas owned or operated by tenant air carriers. Specifically, the FAA has deleted paragraph (h), which exempted the airport operator from overseeing Part 121 or 135 air carrier fueling operations to ensure compliance with Part 139 fuel fire safety requirements. Accordingly, the FAA holds airport operators responsible for protecting against fire and explosion in air carrier fuel storage facilities. This will ensure that all fuel storage facilities at Part 139 airports are inspected in the same manner and held to the same fuel fire safety standards.

A wide range of fuel types are stored on the airport in tanks ranging from small personal containers to large bulk storage tanks. The significant facilities are listed in **Table 1K**.

TABLE 1K | Fuel Storage Capacity (gallons)

	JET A			AVGAS		
Owner	**Static**	**Truck**	**Total Jet A**	**Static**	**Truck**	**Total Avgas**
Redding Jet Center	60,000 (U)	19,200	79,200	20,000 (U)	4,000	24,000
Air Shasta	12,000 (A)	1,500	13,500	12,000 (A)	3,700	15,700
Air Shasta Self-Serve	-	-	-	1,000 (A)	-	1,000
Sierra Pacific Industries	10,000 (U)	-	10,000	-	-	-
Private (Wong)	10,000 (A)	-	10,000	-	-	-
TOTAL	**92,000**	**20,700**	**112,700**	**33,000**	**7,700**	**40,700**

U: Underground/A: Above Ground

Source: Airport Certification Manual

Both airport FBOs provide fueling services and have static storage tanks and mobile fuel delivery trucks. In total there is storage capacity of 112,700 gallons for Jet A fuel and 40,700 for Avgas. In addition, the Redding Jet Center has dedicated truck storage capacity of 750 gallons for Mogas (automobile) and 650 gallons for diesel.

Security Fencing

The airport operations area (AOA) and other areas required to be secure on the airport property are enclosed with security fencing topped with three strands of barbed/razor wire.

Utilities

Redding Regional Airport is served by all primary utilities. Electricity, water, sanitary sewer, and garbage collection are provided by Redding Municipal Utilities. Natural gas is provided by Pacific Gas & Electric. Cable is available from Spectrum Cable.

Water is supplied by the City of Redding's domestic water system. The city obtains the water from two sources: Surface water and ground water are pumped from a well in the enterprise area and around the airport. Water to the airport is supplied by the groundwater well system and through surface water treatment plants via the municipal water system.

The city has 9.5 million gallons of reservoir storage dedicated to the airport areas to meet water demands and fire flows. Water supply for the airport is provided by 12-inch and 16-inch water mains running north, east, and west of the airport. Enterprise Well No. 8 is located in front of the airport passenger terminal building, and Enterprise Well No's 9, 12, and 13 are also located on the airport.

The city uses 150-pound cylinders of chlorine gas for the deflection of the groundwater. Public Works Field Operations has a Hazardous Material Response Team that is available 24 hours a day to respond to any chlorine leaks.

The passenger terminal building is served by a six-inch gravity sewer which flows to a sewer main parallel to Airport Road. This sewer main runs to the city's Stillwater Treatment Plan.

Commercial power to the airport is supplied by the City of Redding Electric Utility. The primary distribution system provides 12,000 volts to step down transformers, including transformers at the airport. A PV solar array was installed in 2011 near the approach end of Runway 34. The Airport Solar Field provides just less than one full megawatt of power, which is utilized for the terminal building and the entire runway/taxiway system lighting.

PASSENGER TERMINAL COMPLEX

The passenger terminal complex is the most prominent element of a commercial service airport. It provides that critical link between air travel and ground travel. The terminal complex includes the terminal building, access to the terminal building, vehicle parking as well as access to passenger aircraft and the aircraft parking apron. The terminal complex is physically located at the southwest end of the flightline. The terminal complex includes the following traditional elements:

- Main entrance/exit access and terminal loop road.
- A curb in-front of the terminal building for passenger pickup and drop off.
- A main vehicle parking lot, within the loop road for short- and long-term parking.
- The terminal building.
- The aircraft parking apron.

Exhibit 1M shows passenger terminal complex.

Terminal Access and Curb Areas

Knighton Road is the primary access point to the terminal complex. Knighton Road extends from I-5 to the west and terminates at Municipal Boulevard. From Municipal Boulevard, vehicles access Woodrum


LEGEND
Airport Property Line
A Taxiway Designation
N
0
300
SCALE IN FEET
Source: Martinez Geospatial
9/2/2022
Rental Car Parking
Long-Term Parking
Terminal Building
Terminal Curb
Air Carrier Apron
Employee Parking
Short-Term Parking
Terminal Loop Road
Air Carrier Apron (RON/ Overflow)
Air Cargo Building (FedEx)
Air Cargo Apron
CAP Building
Solar Farm
Airport Road
Municipal Blvd
Woodrum Circle
Knighton Road
A
B
D

Circle, which is the one-way terminal loop road. Woodrum Circle Road is a two-lane roadway that expands to three lanes in front of the terminal building to allow the loading and unloading of passengers. The terminal curb is 250 feet long in front of the building with another 75 feet available at the south end for a total curb length of 325 feet.

Vehicle Parking

There are three vehicle parking lots in the terminal complex. Employee parking is immediately to the south of the terminal building where there are 34 spaces. The rental car ready/return lot is immediately to the north of the terminal building, and it encompasses approximately 75 spaces. Public vehicle parking is located within the terminal loop road. The first two rows closest to the terminal building and spaces on the north and south sides of the lot are designated for short-term parking. There are 98 short-term spaces which include nine handicap spaces. There are 230 long-term vehicle parking spaces.

Terminal Aircraft Apron

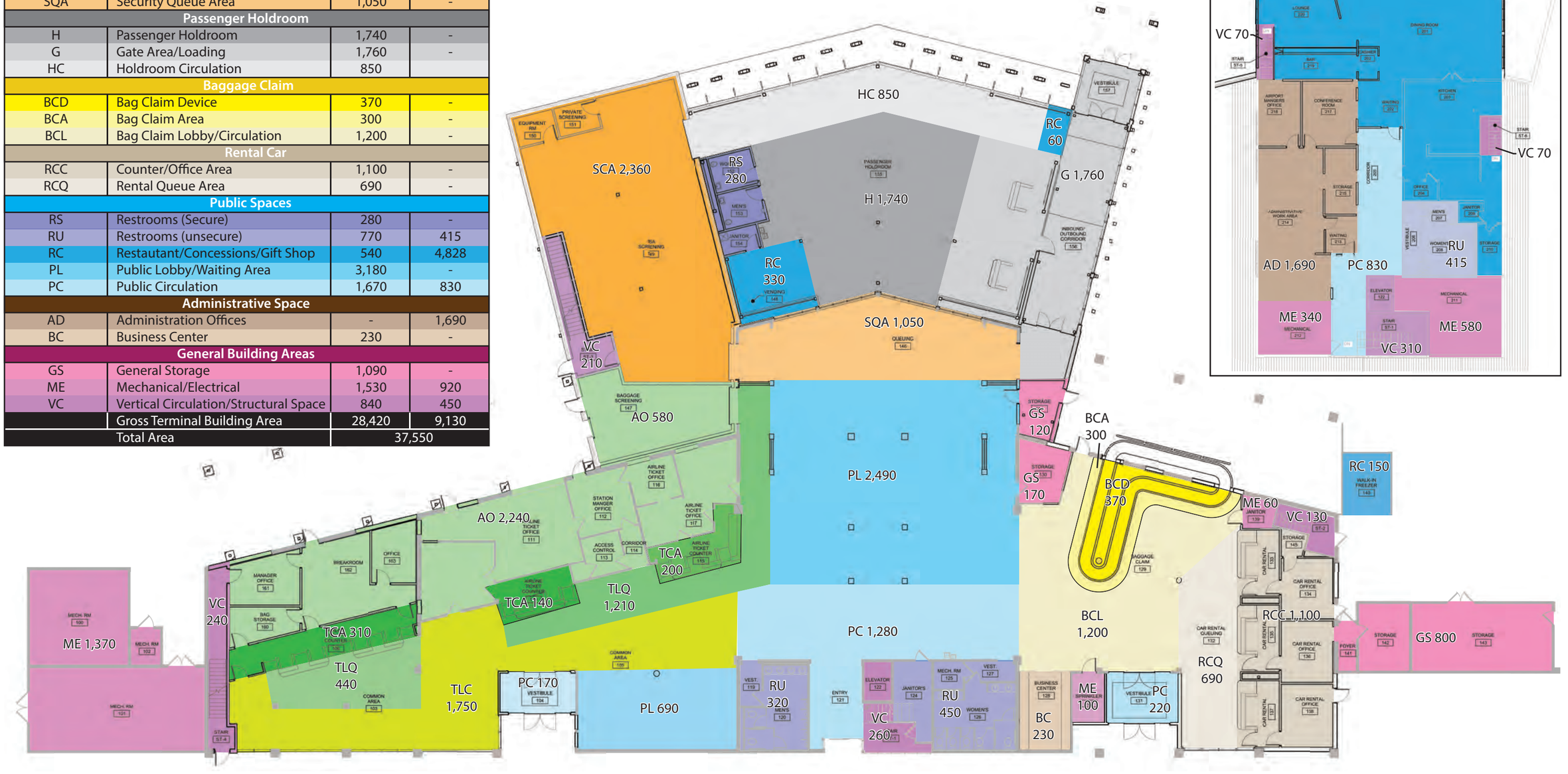
The main terminal air carrier apron encompasses approximately 14,800 square yards. It is marked to position three aircraft at one time. This apron is included in the primary secure area of the airport. Immediately south is a secondary air carrier apron that encompasses approximately 10,500 square yards. This apron area is used for remain-over-night (RON) parking and for overflow aircraft parking needs. An airport cargo apron is at the south end of the RON/overflow apron, and it encompasses approximately 5,200 square yards. All aircraft loading and unloading is done at ground level from which passengers will walk a short distance across the apron to the gate.

Terminal Building

The terminal building is of a simple design type, which is typical of airports of this size. There are two levels to the terminal building. The main level includes all arrival and departure processing elements. At the north end of the building are the ticketing and bag check functions. Passengers then flow south to the main unsecured public waiting lobby where they can then proceed through the security checkpoint to the secure passenger hold room. Arriving passengers will deplane and enter the building through the single gate entrance to the building. They will emerge into the public waiting lobby, then flow south to the baggage claim and rental car counters. The main floor of the terminal building encompasses approximately 28,240 square feet of space.

The second level of the terminal building houses the airport administration offices and the airport restaurant. The second level is approximately 9,130 square feet. The total building size is approximately 37,550 square feet. **Exhibit 1N** shows the floorplan of the terminal building which is color coded by functional area.

Abbreiviation	Functional Area	Level 1 (sf)	Level 2 (sf)
Ticketing/Check-In			
TCA	Ticket Counter Area	650	-
TLQ	Ticket Lobby Que Area	1,650	-
TLC	Ticket Lobby Circulation	1,750	-
AO	Airline Ops/Bag Makeup	2,820	-
Security Screening			
SCA	Security Checkpoint Area	2,360	-
SQA	Security Queue Area	1,050	-
Passenger Holdroom			
H	Passenger Holdroom	1,740	-
G	Gate Area/Loading	1,760	-
HC	Holdroom Circulation	850	
Baggage Claim			
BCD	Bag Claim Device	370	-
BCA	Bag Claim Area	300	-
BCL	Bag Claim Lobby/Circulation	1,200	-
Rental Car			
RCC	Counter/Office Area	1,100	-
RCQ	Rental Queue Area	690	-
Public Spaces			
RS	Restrooms (Secure)	280	-
RU	Restrooms (unsecure)	770	415
RC	Restautant/Concessions/Gift Shop	540	4,828
PL	Public Lobby/Waiting Area	3,180	-
PC	Public Circulation	1,670	830
Administrative Space			
AD	Administration Offices	-	1,690
BC	Business Center	230	-
General Building Areas			
GS	General Storage	1,090	-
ME	Mechanical/Electrical	1,530	920
VC	Vertical Circulation/Structural Space	840	450
	Gross Terminal Building Area	28,420	9,130
	Total Area	37,550	



Level 2

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Terminal entrance


Passenger holdroom


Public lobby & security queue

AREA ZONING

The Redding Regional Airport is situated in the southeast corner of the City of Redding. It is approximately six miles from the central business district. The airport borders with Shasta County land to the east, south, and west. The City of Anderson is approximately two miles to the south of the airport.

Land uses and zoning in the vicinity of the airport can have an impact on airport operations and growth potential. By understanding the land use issues surrounding the airport, more appropriate recommendations can be made for the future development of the airport.

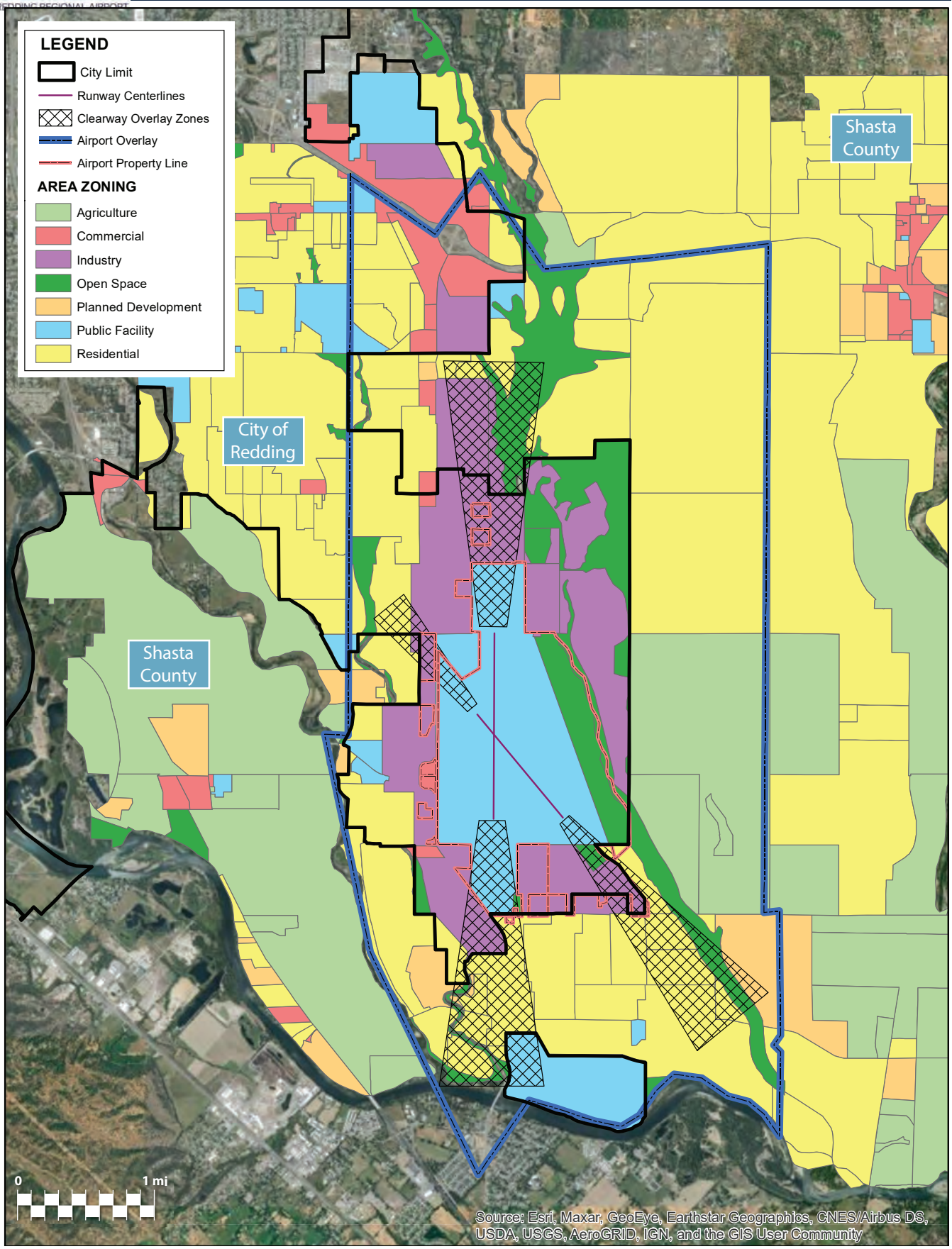
Exhibit 1P shows the zoning in the immediate airport area for both the City of Redding and Shasta County. Zoning is the current planned land uses. It is appropriate for, and recommended that, lands immediately surrounding airports be zoned and developed with compatible uses. Since airports are industrial facilities, industrial and commercial zoning are appropriate potential land uses for areas around airports.

As can be seen on the exhibit, most of the zoning around the airport is for industrial uses and open space. Areas a little further removed from the airport are zoned agricultural or residential.

SOCIOECONOMIC CHARACTERISTICS

Socioeconomic information related to the approximate airport service area is an important consideration in the master planning process by providing an understanding of the demographic dynamics of the area. The historic demographic trends in population, employment, and income provide insight into the long-term socioeconomic condition of the region. This information is essential in determining aviation service level requirements, as well as forecasting aviation demand elements for airports. Aviation forecasts are typically related to the population base, economic strength of the region, and the ability of the region to sustain a strong economic base over an extended period of time.

Socioeconomic baseline information was obtained from Woods & Poole Economics - *Complete Economic and Demographic Data Source (CEDDS)*, 2022. Woods & Poole utilizes information from the U.S. Census Bureau, as well as other national and state organizations for historic data and for future projections. Woods & Poole is an FAA-approved source for socioeconomic data. The historic socioeconomic information is presented on **Table 1L**.



Source: City of Reding GIS Zoning Data Set Updated 3.7.22; County of Shasta GIS Base Zoning Layers Updated 10.13.22

TABLE 1L | Socioeconomic Data

	STATE OF CALIFORNIA			SHASTA COUNTY		
Year	Population	Employment	Income	Population	Employment	Income
2010	37,319,550	19,642,445	$45,170	177,277	84,019	$35,939
2015	38,970,142	22,687,200	$52,892	179,819	89,872	$39,401
2016	39,228,179	23,177,898	$54,300	180,312	90,411	$40,020
2017	39,429,950	23,549,113	$55,449	181,409	90,805	$40,451
2018	39,542,790	24,078,518	$56,776	181,959	92,252	$40,609
2019	39,556,110	24,227,563	$58,514	182,224	92,610	$41,630
2020	39,499,738	22,743,903	$62,897	181,893	88,680	$44,212
2021	39,237,836	24,197,137	$61,997	182,139	91,893	$43,704
2022	39,522,028	24,923,822	$62,867	183,102	93,499	$44,212
CAGR 2010-2021	**0.48%**	**2.00%**	**2.79%**	**0.27%**	**0.89%**	**1.74%**

CAGR: Compound annual growth rate

Source: Woods & Poole - Complete Economic and Demographic Data Source (CEEDS) 2022

The Shasta County population has increased by 0.27 percent annually since 2010 which is an increase of 5,825 residents. Employment has increased 0.89 percent annually, and income has increased by 1.74 percent. Increases in income often relate more directly to growth in aviation spending than population or employment.

ENVIRONMENTAL INVENTORY

The purpose of the following environmental inventory is to identify potential environmental sensitivities that should be considered when planning future improvements at the airport. Research was performed for each of the 13 impact categories within FAA Order 1050.1G, *FAA National Environmental Policy Act Implementing Procedures* (§1.2(b)(1)). When considering the effects to the impact categories listed below, the FAA may examine both the short and long-term effects, beneficial and adverse effects, effects on public health and safety, economic effects, and the effects on the quality of life to American people.

i. Aviation Emissions and Air Quality
ii. Biological Resources (including fish, wildlife, and plants)
iii. Coastal Resources
iv. *Department of Transportation Act*, Section 303 (referred to as "Section 4(f)") and Land and Water Conservation Fund (referred to as "Section 6(f)")
v. Farmlands
vi. Hazardous Materials, Solid Waste, and Pollution Prevention
vii. Historical, Architectural, Archeological, and Cultural Resources
viii. Land Use
ix. Natural Resources and Energy Supply
x. Noise and Noise-Compatible Land Use
xi. Socioeconomic and Children's Health and Safety Risks
xii. Visual Effects (including light emissions)
xiii. Water Resources (including wetlands, floodplains, surface waters, groundwater, and wild and scenic rivers)

AVIATION EMISSIONS AND AIR QUALITY

The concentration of various pollutants in the atmosphere describes the local air quality. The significance of a pollutant's concentration is determined by comparing it to the state and federal air quality standards. In 1971, the U.S. Environmental Protection Agency (EPA) established standards that specify the maximum permissible short- and long-term concentrations of various air contaminants. The National Ambient Air Quality Standards (NAAQS) consist of primary and secondary standards for criteria pollutants: ozone (O_3), carbon monoxide (CO), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), coarse particulate matter (PM_{10}), fine particulate matter ($PM_{2.5}$), and lead (Pb).

Based on federal air quality standards, a specific geographic area can be classified as an "attainment," "maintenance," or "nonattainment" area for each pollutant. The threshold for nonattainment designation varies by pollutant.

Redding Regional Airport is located six miles southeast of Redding in Shasta County, California. Shasta County is in attainment for all federal criteria pollutants, as of December 31, 2022.[1]

BIOLOGICAL RESOURCES

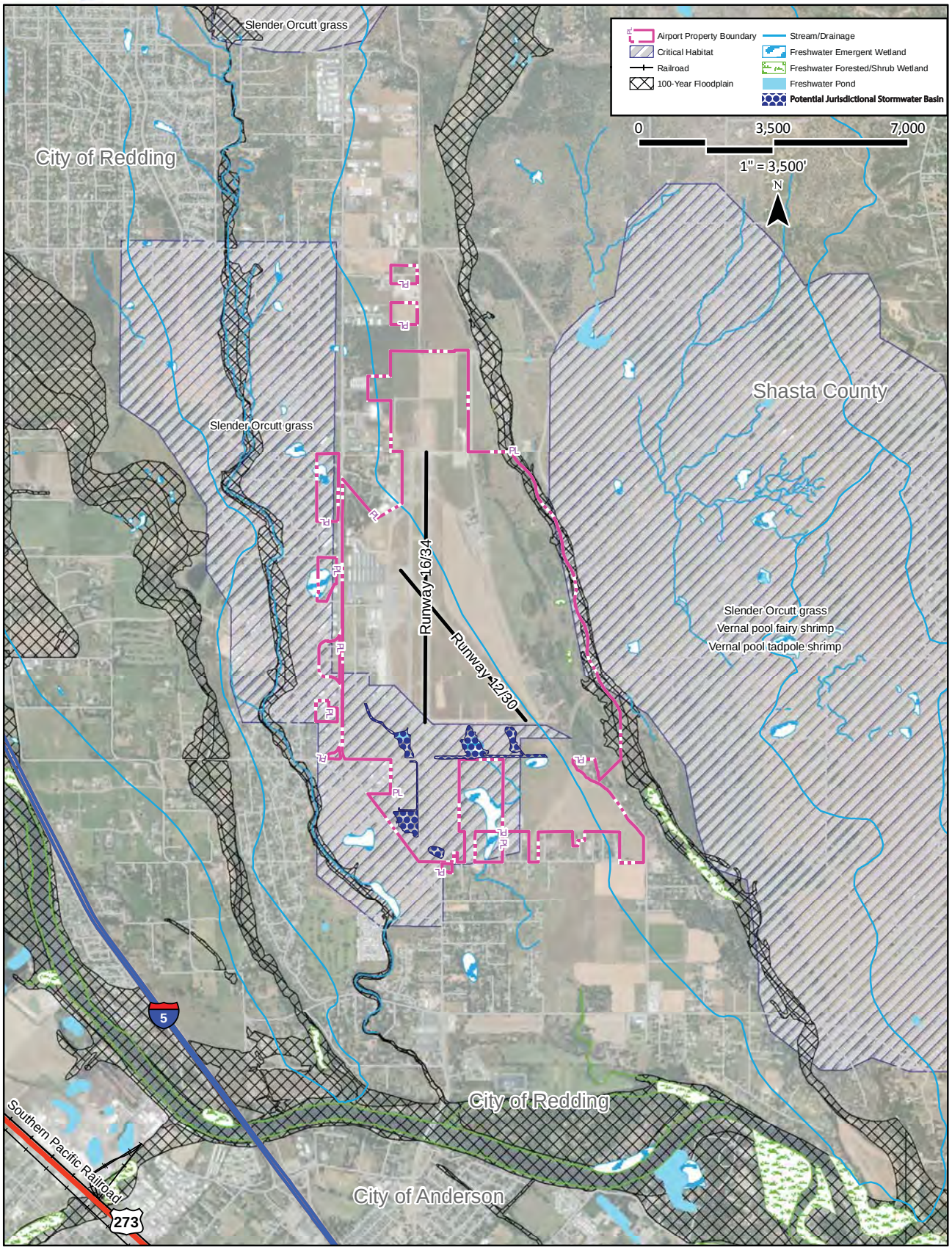
Biotic resources include the various types of plants and animals that are present in an area. The term also applies to rivers, lakes, wetlands, forests, and other habitat types that support plants and animals.

The U.S. Fish and Wildlife Service (USFWS) is charged with overseeing the requirements contained within Section 7 of the *Endangered Species Act* (ESA). The ESA provides a framework to conserve and protect animal or plant species whose populations are threatened by human activities. The FAA and USFWS review projects to determine if a significant impact to protected species will result from implementation of a proposed project. Significant impacts occur when a proposed action could jeopardize the continued existence of a protected species or would result in the destruction or adverse modification of federally designated critical habitat in the area. The USFWS's Information for Planning and Consultation (IPaC) resource list describes species and habitat protected under ESA within the vicinity of the airport (**Table 1M**).

Section 3 of the ESA is used to protect critical habitat areas. Designated critical habitat areas are geographically defined and have been determined to be essential to the recovery of a specific species. There is critical habitat for slender Orcutt grass along the southwestern portion of the airport near Runway 34. Additionally, there is critical habitat for slender Orcutt grass that is associated with vernal pool/fairy shrimp at the airport, located along the western, southwestern, and eastern portion of airport property boundaries (**Exhibit 1Q**).

The *California Endangered Species Act* (CESA) ensures legal protection for plants listed as rare or endangered and species of wildlife formally listed as endangered or threatened under the Act. (The state law also lists Species of Special Concern [SSC] based on limited distribution, declining populations,

[1] United States Environmental Protection Agency – Green book – California Nonattainment/Maintenance Status for Each County by Year for All Criteria Pollutants (https://www3.epa.gov/airquality/greenbook/anayo_ca.html)



Critical Habitat
Source: ESRI Basemap Imagery (2022),City of Redding

diminishing habitat, or unusual scientific, recreational, or educational value.) Under state law, the California Department of Fish and Wildlife is empowered to review projects for their potential to impact state-listed species, SSC species, and their habitats. **Table 1M** also identifies CESA species with potential to occur at the airport.

The federal *Migratory Bird Treaty Act* (MBTA) (and sections of the California Fish and Game Code) protect migratory birds, their eggs, nests, and their feathers. Potential impacts to species protected under the MBTA are evaluated by USFWS in consultation with other federal agencies.

Habitat for migratory birds may occur if bushes or other ground nesting substrate is present. Natural communities at the airport include agricultural wheat fields, mixed oak forest and woodland, non-native annual grassland, willow cottonwood riparian, whiteleaf manzanita chapparal, and valley oak woodland. The tricolored blackbird is a migratory bird common throughout the Central Valley and has been listed as a state-threatened species. A nesting colony of tricolored blackbirds was documented by field biologists within the willow cottonwood riparian habitats in a stormwater basin within the southern part of the airport, as well as well as within a drainage known as the Secondary Stillwater Drainage.[2]

TABLE 1M | U.S. Fish and Wildlife Service List of Federally Endangered, Threatened and Candidate Species within Airport Boundaries

Common Name (*Scientific Name*)	Federal/CESA State Status	Habitat and Range	Potential for Occurrence
California condor (*Gymnogyps californianus*)	Federal Proposed Experimental, Non-essential	Condors have been observed roosting on large trees, rock outcrops, and cliffs. This species nests in caves, ledges of rocky terrain or in cavities.	Unlikely to occur. Suitable habitat for this species is located within a mile of the airport; however, ongoing human activity within the airport restricts the likelihood of this species nesting on the airport.
Northern spotted owl (*Strix occidentalis caurina*)	Federal Threatened/State Threatened	This species inhabits land covered by evergreen trees in cool, northern latitudes. Prefer old-growth forests, particularly Douglas fir forests that have high canopy layers, snags (standing dead trees), and open spaces for flying underneath and between trees.	Unlikely to occur. No suitable habitat present, as the airport does not support old-growth forest.
tricolored blackbird (*Agelaius tricolor*)	State Threatened	This species inhabits freshwater marshes, swamps, wetlands, and agricultural fields throughout coastal California and the Central Valley. The tricolored blackbird requires open water, protected nesting substrate, and foraging area with insect prey.	May occur. This species has been documented within less than a mile of the airport in nearby riparian habitat.
Swainson's hawk (*Buteo swainsoni*)	State Threatened	This species breeds in grasslands, juniper-sage flats, riparian areas, savannahs, and agricultural/ranch lands containing groves of trees. Suitable foraging areas include grasslands and alfalfa or grain fields that support rodent populations.	Unlikely to occur. Suitable habitat for this species is located within a mile of the airport; however, ongoing human activity within the airport restricts the likelihood of this species nesting on the airport.

Continues on next page

[2] SWCA Biological Constraints Analysis for the Redding Municipal Airport Proposed Runway Safety Area improvements – Runway 16-34 NEPA Documentation, Redding, Shasta County, California (August 2022).

TABLE 1M | U.S. Fish and Wildlife Service List of Federally Endangered, Threatened and Candidate Species within Airport Boundaries (cont.)

Common Name (*Scientific Name*)	Federal/CESA State Status	Habitat and Range	Potential for Occurrence
delta smelt (*Hypomesus transpacificus*)	Federal Threatened/State Endangered	The delta smelt species can tolerate a wide range of salinity and temperatures but are commonly found in brackish water below 25 degrees Celsius. Adults of this species require adequate flow and suitable water quality for access to spawning habitat and transport of juveniles to Bay rearing habitat.	Unlikely to occur. No suitable habitat present. There have been no occurrences of the delta smelt documented within five miles of the airport in the California Natural Diversity Database (CNNDB).
western spadefoot (*Spea hammondii)*	Federal Proposed Threatened	Western spadefoots are found in grassland habitats and pine oak woodlands. Primarily found in burrows that are approximately 3 feet deep and migrate to vernal pools to reproduce.	May occur. Grassland habitats are present within one mile of the airport.
monarch butterfly (*Danaus plexippus)*	Federal Proposed Threatened	A migratory species found in a variety of habitats; monarch butterfly requires milkweed (*Asclepias* spp.) for breeding. In the southwestern United States, migrating monarch butterflies often occur near water sources (e.g., rivers, creeks, riparian corridors, roadside ditches, and irrigated gardens).	Unlikely to occur. The airport does not appear to support the host plant (i.e., milkweed) necessary for the species' reproduction. Furthermore, monarchs are not known to overwinter within Shasta County.
Suckley's cuckoo bumble bee (*Bombus suckleyi*)	Federal Proposed Endangered	Observed in a variety of habitat types such as prairies, grasslands, meadows, woodlands, and agricultural and urban areas.	May occur. Suitable habitat for this species is present within one mile of the airport.
valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*)	Federal Threatened	Valley elderberry longhorn beetle is dependent upon its host plant, the blue elderberry, a shrub that can be found in riparian areas and foothill oak woodlands in California (from Redding to Bakersfield). Females lay their eggs on the bark of the elderberry shrub.	May occur. Habitat suitable to the blue elderberry may be present at the airport. Additional habitat surveys may be necessary to determine the presence of this species or its habitat.
conservancy fairy shrimp (*Branchinecta conservation*)	Federal Endangered	Conservancy fairy shrimp are only found in California's Central Valley. This species can be found in a variety of habitats; grassland (land where dominant plant forms are grasses and forbs), rural (environments influenced by humans in a less substantial way than cities. Including agriculture, silvaculture, aquaculture, etc.), and wetland (marshes or swamps covered with shall water or soil saturated with moisture) environments. They prefer to inhabit relatively large, turbid freshwater vernal pools called playa pools and have been found at elevations ranging from 16 to 5,557 feet (5 to 1,700 meters) above sea level. This species can also be found at sites that are low in alkalinity that range from 16 to 47 parts per million.	May occur. Wetland habitat (i.e., vernal pools) and stormwater basins are present at the airport, that mimic the hydrologic conditions of vernal pools required for this species' reproduction.

Continues on next page

TABLE 1M | U.S. Fish and Wildlife Service List of Federally Endangered, Threatened and Candidate Species within Airport Boundaries (cont.)

Common Name (*Scientific Name*)	Federal/CESA State Status	Habitat and Range	Potential for Occurrence
vernal pool fairy shrimp (*Branchinecta lynchi*)	Federal Threatened	The species lives in a variety of vernal pool habitats. Vernal pool fairy shrimp can also be found in a variety of habitats; grassland (land where dominant plant forms are grasses and forbs), rural (environments influenced by humans in a less substantial way than cities. Including agriculture, silvaculture, aquaculture, etc.), and wetland (marshes or swamps covered with shall water or soil saturated with moisture) environments	May occur. Wetland habitat (i.e., vernal pools) is present at the airport. There have been occurrences of vernal pool fairy shrimp within five miles of the airport documented in the CNDDB.
vernal pool tadpole shrimp (*Lepidurus packardi*)	Federal Endangered	Vernal pool tadpole shrimp have a patchy distribution across the Central Valley of California, from Shasta County southward to northwestern Tulare County, with isolated occurrences in Almeda and Contra Costa counties. This species requires vernal pool habitats and prefers large, undisturbed, high-quality vernal pool habitats.	May occur. Wetland habitat and stormwater basins that mimic the hydrologic conditions of the vernal pools are present at the airport. There have been documented occurrences of this species at and near the airport in the CNDDB.
slender Orcutt grass (*Orcuttia tenuis*)	Federal Threatened	Slender Orcutt grass is found throughout the Moduc Plateau and Sacramento Valley in Modoc, Siskiyou, Shasta, Lassen, Plumas, Butte, Tehama, Lake and Sacramento Counties. The species grow from 90 to 5,671 feet in elevation and may grow in a variety of habitats such as grassland, oak woodland, or conifer forest habitats.	Likely to occur. Slender Orcutt grass is present at the airport. The runway area drains into multiple stormwater basins that mimic hydrologic conditions of vernal pools. Additionally, certain drainage ditches at the airport may also support marginal habitat for this species. There have been several occurrences of this species documented on and directly adjacent to the airport in the CNDDB.
Boggs Lake hedge-hyssop (*Gratiola heterosepala)*	State Endangered	Boggs Lake hedge-hyssop is found on the margins of vernal pools, sometimes on marshes, swamps (freshwater), and lake margins. Clay soils are necessary to provide the suitable conditions necessary for this species.	May occur. The airport runway area drains into multiple basins that mimic the hydrologic conditions of vernal pools. These basins support marginal suitable habitat in the southern portion of the airport. There have been 15 records of this species in Shasta County, with the closest occurrence located 3.5 miles east of airport property, documented in the CNDDB. This occurrence was in 2012.
Shasta snow-wreath (*Neviusia cliftonii*)	State Candidate	Found along streambanks and riparian areas within cismontane woodland and lower montane coniferous forest. Occurs where volcanic soils and sometimes occurs where carbonate soils are present.	Unlikely to occur. The airport lacks montane conifer forest and volcanic or carbonate soils to support this species.

*USFWS Status Definitions for federally listed species –

- *Candidate:* species for which the USFWS has sufficient information on biological vulnerability and threats to support proposals to list as endangered or threatened under the ESA. However, these proposed rules have not yet been issued because such actions are precluded at present by other listing activity.
- *Endangered:* an animal or plant species that is in danger of extinction throughout all or a significant portion of its habitat range.
- *Proposed Endangered:* an animal or plant species in danger of extinction through all or a significant portion of its range and has been proposed to be listed as "endangered"; proposed endangered species are not protected by the take prohibitions of section 9 of the ESA.
- *Proposed Experimental Population, Non-Essential:* A population that is established within its historical range under section 10(j) of the ESA to aid recovery of the species. A non-essential population is not necessary for the continued existence of a species.
- *Proposed Threatened:* an animal or plant species in danger of extinction throughout all or a significant portion of its habitat range; proposed threatened species are not protected by the take prohibitions of section 9 of the ESA.
- *Threatened:* an animal or plant species in danger of extinction throughout all or a significant portion of its habitat range.

Source: USFWS, IPaC (https://ipac.ecosphere.fws.gov/); USFWS, Species habitats (various) (https://www.fws.gov/); Center for Biological Diversity (https://www.biologicaldiversity.org/); SWCA Environmental Consultants, Biological Constraints Analysis for the Redding Regional Airport Master Plan, Redding, Shasta County, California (March 2024); SWCA Environmental Consultants, Biological Constraints Analysis for the Redding Municipal Airport Proposed Safety Area Improvements – Runway 16-34 NEPA Documentation, Redding, Shasta County, California (August 2022).

CLIMATE

Increasing concentrations of greenhouse gases (GHG) can affect global climate by trapping heat in Earth's atmosphere. Scientific measurements have shown that Earth's climate is warming with concurrent impacts, including warmer air temperatures, rising sea levels, increased storm activity, and greater intensity in precipitation events. Climate change is a global phenomenon that can also have local impacts. GHGs, such as water vapor (H_2O), carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and O_3, are both naturally occurring and anthropogenic (man-made). The research has established a direct correlation between fuel combustion and GHG emissions. GHGs from anthropogenic (i.e., human made) sources include CO_2, CH_4, N_2O, hydrofluorocarbons (HFC), perfluorocarbons (PFC), and sulfur hexafluoride (SF_6). CO_2 is the most important anthropogenic GHG because it is a long-lived gas that remains in the atmosphere for up to 100 years.

The U.S. EPA's *Inventory of U.S. Greenhouse Gas Emissions and Sinks 1990-2021* shows total U.S. emissions have decreased by two percent from 1990 to 2021, down from a high of 15.8 percent above 1990 levels in 2007. From 2020 to 2021, the U.S. saw an increase in economic activity driven by businesses and persons rebounding after the COVID-19 pandemic. This resulted in an increase in total U.S. GHG emissions, of which CO_2 emissions accounted for the majority.

In 2021, the transportation sector and power generation accounted for 79.3 percent of total CO_2 emissions. However, the overall aviation industry (excluding international bunkers) has shown a decrease in CO_2 emissions by 18 percent between 1990 and 2021. Between 1990 and 2021, emissions from military aircraft decreased 65 percent. Commercial aircraft emissions have highly fluctuated over the past thirty years, with a 27 percent increase between 1990 and 2007, a 2 percent decrease from 2007 to 2019, and a 33 percent decrease from 2019 to 2020, followed by a 23 percent increase from 2020 to 2021. Overall, this represents an 8 percent difference between 1990 and 2021 commercial aircraft emissions.

Information regarding the climate for the airport and surrounding environments – including wind, temperature, and precipitation – is found earlier in this Airport Master Plan.

In November 2022, California released its 2022 Climate Change Scoping Plan. The plan includes strategies and policies to aid the state's goal of reducing GHG emissions at least by 40 percent below 1990 levels by 2030. Key aspects of the 2022 plan include targeting carbon neutrality by 2045 or sooner, updating the cap-and-trade program to support the GHG emissions reduction goals, phasing down oil and gas extractions by 2045, and conserving 30 percent of the state's natural and working lands by 2030. Prior to this 2022 update, California had released its latest scoping plan in 2017.

COASTAL RESOURCES

Federal activities involving or affecting coastal resources are governed by the *Coastal Barriers Resource Act*, the *Coastal Zone Management Act*, and Executive Order (E.O.) 13089, *Coral Reef Protection*.

The airport is not located within a coastal zone. The nearest National Marine Sanctuary is the Greater Farallones National Marine Sanctuary located 127 miles away.[3]

DEPARTMENT OF TRANSPORTATION ACT, SECTION 4(f)

Section 4(f) of the *Department of Transportation Act,* which was recodified and renumbered as Section 303(c) of 49 United States Code, provides that the Secretary of Transportation will not approve any program or project that requires the use of any publicly or privately owned historic sites, public parks or recreation areas, or waterfowl and wildlife refuges of national, state, regional, or local importance unless there is no feasible and prudent alternative to the use of such land, and the project includes all possible planning to minimize harm resulting from the use.[4]

Table 1N and **Exhibit 1R** identify potential Section 4(f) resources within one mile of the airport. School playgrounds or athletic fields may be considered a Section 4(f) resource if the recreational facilities at the school are readily available to the public.

TABLE 1N | U.S. Dept. of Transportation Section 4(f) Resources within One Mile of the Vicinity of the Airport

Potential Resource	Location	Distance from Airport (miles)	Direction from Airport
Public Recreational Facilities			
Churn Creek Golf Course	7335 Churn Creek Rd	0.70	West
Tucker Oaks Golf Course	6241 Church Creek	0.50	Southwest
Clover Creek Ecological Reserve	6515 Flicker Way	1.0	South
Public Schools[1]			
Prairie Elementary School	20981 Dersch Road	0.80	Southeast

[1] Only public schools that have playgrounds and/or athletic fields open for public use are considered a Section 4(f) resource.

Source: Google Earth Aerial Imagery (January 2023); U.S. Department of the Interior, National Park Service, National Register of Historic Places (https://www.nps.gov/maps/full.html?mapId=7ad17cc9-b808-4ff8-a2f9-a99909164466)

There are no National Register of Historic Places (NRHP)-listed resources within one mile of the airport.

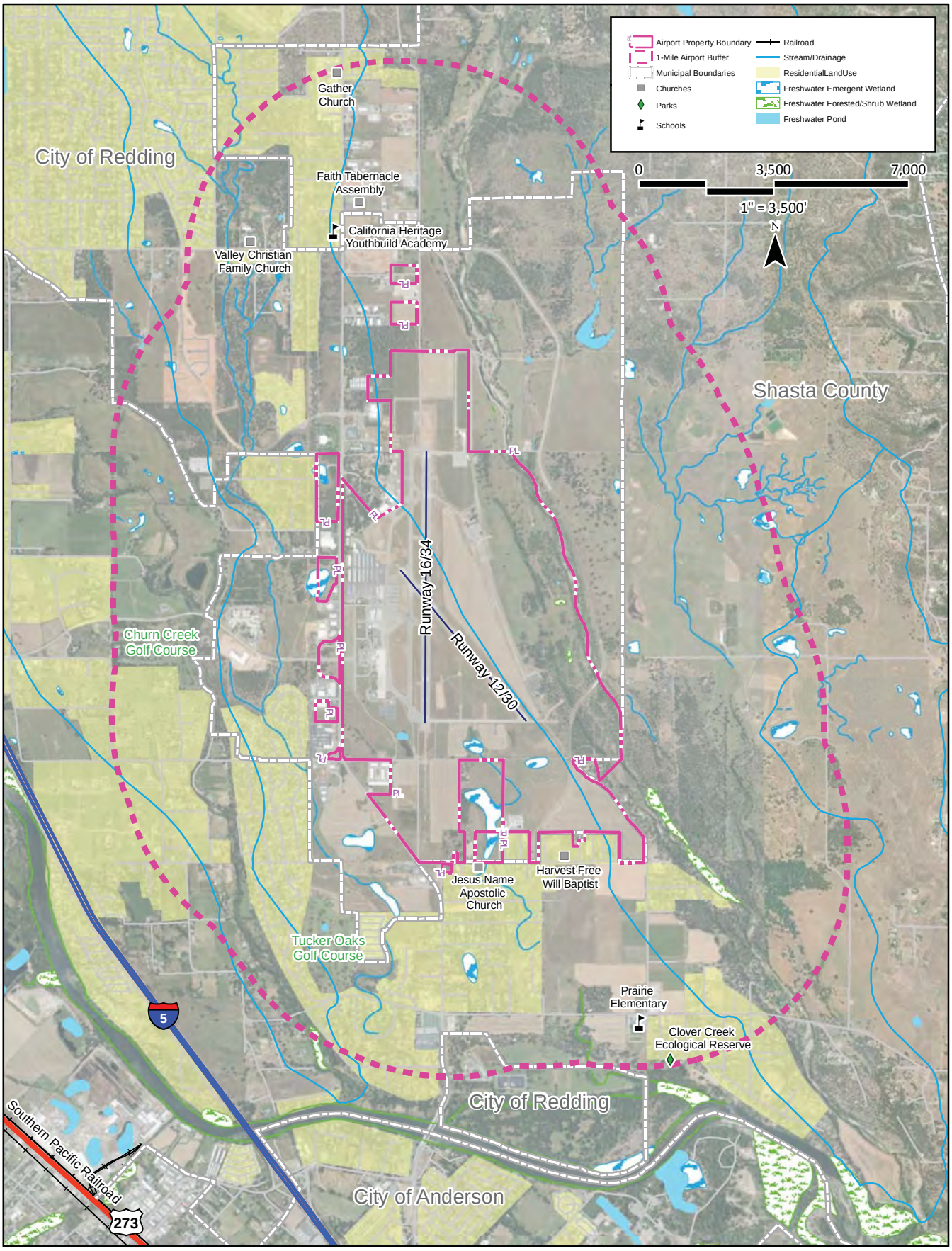
There are no waterfowl and wildlife refuges within one mile of the airport. The nearest wilderness and national recreation areas are listed below:

- Nearest Wilderness Area: Ishi Wilderness (31 miles from airport)
- Nearest National Recreation Area: Whiskeytown-Shasta-Trinity National Recreation Area (11 miles from airport)

FARMLANDS

Under the *Farmland Protection Policy Act* (FPPA), federal agencies are directed to identify and consider the adverse effects of federal programs on the preservation of farmland, to consider appropriate

[3] Google Earth Aerial Imagery (January 2023)
[4] 49 U.S. Code § 303 - Policy on lands, wildlife and waterfowl refuges, and historic sites


Airport Property Boundary
1-Mile Airport Buffer
Municipal Boundaries
Churches
Parks
Schools
Railroad
Stream/Drainage
ResidentialLandUse
Freshwater Emergent Wetland
Freshwater Forested/Shrub Wetland
Freshwater Pond
0
3,500
7,000
1" = 3,500'
N
City of Redding
Gather Church
Faith Tabernacle Assembly
California Heritage Youthbuild Academy
Valley Christian Family Church
Shasta County
Runway 16/34
Runway 12/30
Churn Creek Golf Course
Jesus Name Apostolic Church
Harvest Free Will Baptist
Tucker Oaks Golf Course
Prairie Elementary
Clover Creek Ecological Reserve
City of Redding
City of Anderson
5
Southern Pacific Railroad
273

alternative actions which could lessen adverse effects, and to assure that such federal programs are, to the extent practicable, compatible with state or local government programs and policies to protect farmland. The FPPA guidelines, developed by the U.S. Department of Agriculture (USDA), apply to farmland classified as prime, unique, or of state or local importance as determined by the appropriate government agency, with concurrence by the Secretary of Agriculture.

The U.S. Department of Agriculture, Natural Resources Conservation Service (USDA-NRCS) Web Soil Survey shows the types of soils and their farmland classification on and adjacent to the airport. The airport is classified into two types of farmland classification "prime farmland if irrigated" and "not prime farmland," with the majority of the land within the airport recognized as "prime farmland if irrigated" (**Exhibit 1S**). **Table 1P** describes the farmland classification based on the soil inhabiting the airport's boundaries. The airport is primarily within urbanized area boundaries.[5] Therefore, the FPPA is not applicable to "urban-designated" parts of the airport. However, there are small portions of the airport located on the western side of Airport Road that are not designated within an urbanized area (**Exhibit 1S**).

TABLE 1P | Farmland Classification – Summary by Map Unit Shasta County Area, California (CA607)

Web Soil Survey symbol	Soil Type	Farmland Rating
CeA	Churn gravelly loam, 0 to 3 percent slopes	Prime farmland if irrigated
CfA	Churn gravelly loam, deep, 0 to 3 percent slopes	Prime farmland if irrigated
Ck	Cobbly alluvial land, frequently flooded	Not prime farmland
Gp	Gravel pits	Not prime farmland
He	Honcut gravelly loam	Prime farmland if irrigated
MhA	Moda loam, seeped, 0 to 3 percent slopes	Not prime farmland
MkB	Moda loam, shallow, 0 to 5 percent slopes	Not prime farmland
NeD	Newtown gravelly loam, 30 to 50 percent slopes, eroded	Not prime farmland
NeE2	Newtown gravelly loam, 30 to 50 percent slopes, eroded	Not prime farmland
PmA	Perkins gravelly loam, gravelly clay loam substratum, 0 to 3 percent slopes, MLRA 17, moist	Prime farmland if irrigated
RbA	Red Bluff loam, 0 to 3 percent slopes, MLRA 17, moist	Prime farmland if irrigated
RbB	Red Bluff loam, 3 to 8 percent slopes	Prime farmland if irrigated

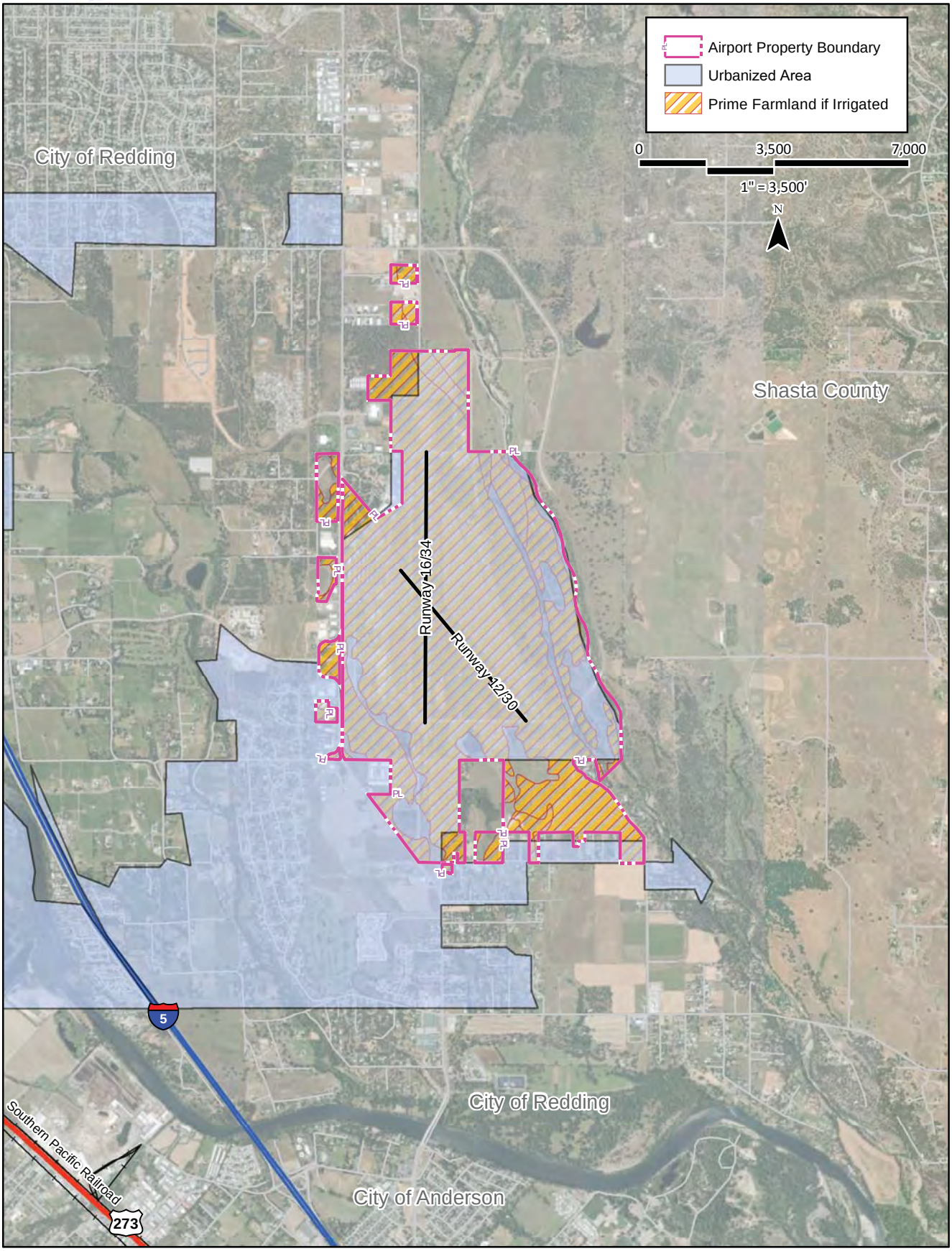
Source: USDA-NRCS, Web Soil Survey (https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx)

Open areas south and north of the runways and taxiways are farmed on an interim basis. The fields are currently composed almost entirely of cultivated wheat.

HAZARDOUS MATERIALS, SOLID WASTE AND POLLUTION PREVENTION

Federal, state, and local laws regulate hazardous materials use, storage, transport, and disposal. These laws may extend to past and future landowners of properties containing these materials. In addition, disrupting sites containing hazardous materials or contaminants may cause significant impacts to soil, surface water, groundwater, air quality, and the organisms using these resources. According to the U.S. EPA's *NEPAssist* online tool, there are no Superfund or brownfields sites within one mile of the airport.

[5] U.S. EPA, NEPAssist (https://nepassisttool.epa.gov/nepassist/nepamap.aspx) (July 2025)



Source: ESRI Basemap Imagery (2022), U.S Census Reference Map, City of Redding

The California Department of Toxic Substances Control (DTSC) EnviroStor website identifies one Formerly Used Defense Site (FUDS) associated with previous military use of the airport, i.e., Redding Army Airfield (80000698). The site is listed as inactive and is not on the National Priorities list (NPL), i.e., Superfund. The DTSC Regulatory Profile notes that past uses of the Redding Army Airfield that caused contamination are aircraft maintenance, airfield operations, battery storage, fuel (aircraft storage/refueling, vehicle storage/refueling, and fuel hydrant pumping stations), landfill-domestic machine shop, maintenance/cleaning, vehicle maintenance with potential containments of concern of explosives (UXO), and potential media affected (soil).[6]

There are several recycling centers within Redding, CA. The closest recycling center is Big Foot Recycling Center located three miles north of airport property boundaries on the western side of the State Route 44. The closest landfill is City of Redding Transfer Station three miles north of airport property boundaries on the eastern side of State Route 44.

National Pollutant Discharge Elimination System (NPDES) permits outline the regulatory requirements of municipal storm water management programs and establish requirements to help protect the beneficial uses of the receiving waters. They require permittees to develop and implement Best Management Practices (BMPs) to control/reduce the discharge of pollutants to waters of the United States to the maximum extent practicable (MEP). The NPDES program manages wastewater, construction, stormwater, and pretreatment. In California, NPDES permits are also referred to as water discharge requirements (WDRs) that regulate discharges to waters of the United States.[7] Additionally, the airport operates under a Stormwater Pollution Prevention Plan (SWPPP). The SWPPP was initially prepared in 2015 and its most recent revision was in 2020.

According to the 2020 SWPPP, the following industrial activities are potential sources of pollution covered by the SWPPP:

- Aircraft fueling/fuel storage
- Aircraft maintenance
- Aircraft/vehicle washing
- Equipment storage
- Deicing

Based on stormwater sampling, the SWPPP's best management practices (BMP) have proven beneficial in preventing known pollutants from entering the stormwater.[8]

[6] California Department of Toxic Substances Control, EnviroStor (https://www.envirostor.dtsc.ca.gov/public/profile_report?global_id=80000698)
[7] California Water Boards, National Pollutant Discharge Elimination System (NPDES) Wastewater (https://www.waterboards.ca.gov/water_issues/programs/npdes/)
[8] Airport California Monitoring Group, Stormwater Pollution Prevention Plan (SWPPP), Redding Municipal Airport, WDID Number: 5R45I002363, prepared June 2015, updated July 2020 (page 10, 12, 14-16).

HISTORICAL, ARCHITECTURAL, ARCHAEOLOGICAL, AND CULTURAL RESOURCES

Determination of a project's environmental impact to historic and cultural resources is made under guidance in the *National Historic Preservation Act* (NHPA) *of 1966*, as amended, the *Archaeological and Historic Preservation Act* (AHPA) *of 1974*, the *Archaeological Resources Protection Act* (ARPA), and the *Native American Graves Protection and Repatriation Act* (NAGPRA) *of 1990*. In addition, the *Antiquities Act of 1906*, the *Historic Sites Act of 1935*, and the *American Indian Religious Freedom Act of 1978* also protect historical, architectural, archaeological, and cultural resources. Impacts may occur when a proposed project causes an adverse effect on a resource which has been identified (or is unearthed during construction) as having historical, architectural, archaeological, or cultural significance.

The nearest tribal lands to the airport are the Redding Rancheria Reservation located more than five miles west of the airport on the western border of the State Route 273.[9]

According to a cultural resources records search and pedestrian survey for Redding Regional Airport, to date, no historic properties or historical resources have been identified at the airport.[10] The pedestrian survey for the airport was conducted at the airport between May 8th and 12th, 2023. The pedestrian survey identified one prehistoric isolate, which consists of a unifacially worked chopper hand tool, and one isolated historic feature, which consists of a concrete trough.[11] Ultimately, the two isolates identified lack the context and potential to yield information important in prehistory or history to meet National Register of Historic Places (NRHP) Criterion D or California Register of Historical Resources (CRHR) Criterion 4, under which archaeological resources are found to be significant. Thus, the two isolates are recommended as ineligible for either the NRHP or CRHR, and no further consideration is warranted.

One historic archaeological site was also identified during the pedestrian survey and consists of a concrete foundation and multiple black walnut trees. The historical archaeological resource identified is heavily damaged, lacks integrity, and is not likely considered a historic property or historical resource. If development associated with the airport master plan were to occur in this area the resource should be formally evaluated.

LAND USE

Land use regulations near airports are achieved through local government codes, city policies, and plans that include airport districts and planning areas. Regulations are used to avoid land use compatibility conflict around airports.

The City of Redding is currently undergoing a process to update its General Plan, called *General Plan 2021-2040*. The last General Plan was adopted in October of 2000. For the upcoming General Plan, the

[9] U.S. EPA, Map of Federally – Recognized Tribes in EPA's Pacific Southwest (Region 9) (https://www.epa.gov/tribal-pacific-sw/map-federally-recognized-tribes-epas-pacific-southwest-region-9)
[10] SWCA Environmental Consultants, Inc., *Cultural Resources Records Search and Survey for the Redding Municipal Airport Master Plan Project, Redding, Shasta County, California, No. 707027*
[11] SWCA, Environmental Consultants, *Archaeological Survey Report for the Redding Municipal Airport Master Plan Project, Redding, Shasta County, California*, No. 70727, September 2023

City of Redding will be focusing on several areas such as: land use, urban design, historic preservation, parks, transportation, and public health and safety.[12]

According to the City of Redding's Zoning Map, airport property is primarily zoned as "PF" (Public Facility) with a portion of the airport along the eastern boundary zoned as "OS" (Open Space).[13] Much of the land to the north of the airport is zoned as "GI" (General Industry). East of the airport lies portions of protected open space along Stillwater Creek and Stillwater Business Park. Stillwater Business Park was created by the City of Redding in response to the high demand for office and industrial spaces.[14] West and south of the airport lie residential single-family, general commercial, and public facility land uses.

One of these public facilities is the Northern Operations Emergency Command Center. Located to the west of Runway 16 in the northwestern portion of the airport, the Northern Operations Emergency Command Center is a cooperative organization that manages resource distribution for All-Risk Management Incidents.[15] In addition to this, the emergency center partners with the US Forest Service and Cal Fire to respond to emergency situations, utilizing the airport's runway for transportation routes during emergencies.

NATURAL RESOURCES AND ENERGY SUPPLY

Natural resources and energy supply provide an evaluation of a project's consumption of natural resources. It is the policy of FAA Order 1053.1C, *Energy and Water Management Program for FAA Buildings and Facilities*, to encourage the development of facilities that exemplify the highest standards of design, including principles of sustainability.

Water at the airport is supplied by the City of Redding. The city's water supply is obtained from both surface water and groundwater. The Sacramento River and Whiskeytown Lake provides customers of the city with roughly 74 percent of the water they use. The remaining 26 percent of water supply is obtained from the Redding Groundwater Basin which consists of 16 wells.[16] As of April 19, 2022, the City of Redding's Water Utility is in Stage 2 of year-round conservation measures due to a decrease in rain and snowfall levels which has resulted in a drought in the region.[17]

The California Environmental Protection Agency (CalEPA) was formally established July 17, 1991, and was created to preserve, conserve, and enhance the environment, to ensure public health, environmental quality, and economic vitality. Continuing with its initial mission, CalEPA acts as a regulatory body that monitors the state's natural resources. CalEPA consists of the California Air Resources Board (CARB), the

[12] City of Redding – General Plan and Development Guidelines and General Plan 2023 Update (https://www.cityofredding.org/departments/development-services/planning/general-plan-and-development-guidelines)
[13] City of Redding Zoning Map (https://www.cityofredding.org/home/showdocument?id=10567)
[14] City of Redding California – Why Stillwater Business Park (https://www.cityofredding.org/departments/economic-development/stillwater-business-park)
[15] Northern California Geographic Coordination Center (ONCC) (https://gacc.nifc.gov/oncc/about.php)
[16] City of Redding Public Works – Water Utility – Our Water Supply (https://www.cityofredding.org/departments/public-works/public-works-utilities/water-utility/water-supply)
[17] City of Redding Public Works – Water Conservation (https://www.cityofredding.org/departments/public-works/public-works-utilities/water-utility/mandatory-water-use-restrictions)

Department of Pesticide Regulation (DPR), CalRecycle, DTSC, the Office of Environmental Health Hazard Assessment (OEHHA), and the State Water Resources Control Board (SWRCB).[18]

NOISE AND NOISE COMPATIBLE LAND USE

Federal land use compatibility guidelines are established under 14 Code of Federal Regulations (CFR) Part 150, *Airport Noise Compatibility Planning*. According to 14 CFR Part 150, residential land and schools are noise-sensitive land uses that are not considered compatible with a 65 decibel (dB) Day-Night Average Sound Level (Ldn or DNL). Other noise-sensitive land uses (such as religious facilities, hospitals, or nursing homes), if located within a 65 dB DNL contour, are generally compatible when an interior noise level reduction of 25 dB is incorporated into the design and construction of the structure. Special consideration should also be given to noise-sensitive areas within Section 4(f) properties where the land use compatibility guidelines in 14 CFR Part 150 do not account for the value, significance, and enjoyment of the area in question.[19]

However, in California, Community Noise Equivalent Level (CNEL) is used in place of DNL. DNL accounts for the increased sensitivity to noise at night (10:00 p.m. to 7:00 a.m.), whereas CNEL also accounts for increased sensitivities during the evening hours (7:00 p.m. to 10:00 p.m.).

Table 1Q below identifies noise-sensitive land uses within one mile of the airport. These land uses are also shown on **Exhibit 1R**. The closest residential areas are located 0.1 mile away on the southern portion of airport boundaries across Fig Tree Lane and Aviator Lane.

TABLE 1Q | Noise-Sensitive Land Uses within One Mile of Airport

Facility	Location	Distance from Airport (miles)	Direction from Airport
Schools			
Prairie Elementary	20981 Dersch Road	0.8	Southeast
California Heritage Youthbuild Academy	8544 Airport Road	0.4	North
Places of Worship			
Jesus Name Apostolic Church	20651 Fig Tree Lane	0.1	South
Harvest Free Will Baptist	20866 Fig Tree Lane	0.1	Southeast
Valley Christian Family Church	3180 Rancho Road	0.8	Northwest
Gather Church	20276 Skypark Drive	1.0	North
Faith Tabernacle Assembly	8595 Airport Road	0.4	North

Source: U.S. EPA, EJScreen (https://ejscreen.epa.gov/mapper/); Google Earth Aerial Imagery (January 2023)

SOCIOECONOMICS AND CHILDREN'S ENVIRONMENTAL HEALTH AND SAFETY RISKS

Socioeconomics | *Socioeconomics* is an umbrella term used to describe aspects of a project that are either social or economic in nature. A socioeconomic analysis evaluates how elements of the human environment such as population, employment, housing, and public services might be affected by the proposed action and alternative(s).

[18] California Environmental Protection Agency (CalEPA) (https://calepa.ca.gov/about/), January 2023
[19] 49 U.S. Code § 47141 – Compatible land use planning and projects by state and local governments

FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures* specifically requires that a federal action causing disproportionate impacts to an environmental justice population (i.e., a low-income or minority population) be considered, as well as an evaluation of environmental health and safety risks to children. The FAA has identified factors to consider when evaluating the context and intensity of potential environmental impacts.

Would the proposed action…?

- Induce substantial economic growth in an area, either directly or indirectly;
- Disrupt or divide the physical arrangement of an established community;
- Cause extensive relocation when sufficient replacement housing is unavailable;
- Cause extensive relocation of community business what would cause severe economic hardship for affected communities;
- Disrupt local traffic patterns and substantially reduce the levels of service of roads serving an airport and its surrounding communities; or
- Produce a substantial change in the community tax base.

Children's Environmental Health and Safety | Federal agencies are directed, per E.O. 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, to make it a high priority to identify and assess the environmental health and safety risks that may disproportionately impact children. Such risks include those that are attributable to products or substances that a child is likely to encounter or ingest (air, food, water – including drinking water) or to which they may be exposed.

See **Tables 1N** and **1Q** for lists of schools and recreational facilities that are used by children within one mile of the airport.

VISUAL EFFECTS

Visual effects deal broadly with the extent to which a proposed action or alternative(s) would either (1) produce light emissions that create an annoyance or interfere with activities; or (2) contrast with, or detract from, the visual resources and/or the visual character of the existing environment. Each jurisdiction will typically address outdoor lighting, scenic vistas, and scenic corridors in zoning ordinances and their general plan.

Light Emissions | These impacts typically relate to the extent to which any light or glare results from a source that could create an annoyance for people or would interfere with normal activities. Generally, local jurisdictions will include ordinances in the local code addressing outdoor illumination to reduce the impact of light on surrounding properties.

Airfield lighting at the airport include a rotating beacon, medium intensity runway lighting (MIRL) at Runway 12-30, high intensity runway edge lights (HIRL) at Runway 16-34, runway end identifier lights (REILS) at Runway 16, and runway alignment indicator lights (MALSR) at Runway 34. Additionally, the airport has four light precision approach path indicator lights (PAPI-4L) at Runway 16-34. Runway 30 is equipped with a two-light precision PAPI. The airfield lights utilize pilot-controlled lighting (PCL), and

thus, the airfield lights are only lit when activated by pilots using the airport. For further information, see the discussion of the types of airfield lighting and visual approach aids earlier in the inventory.

Visual Resources and Visual Character | "Visual character" refers to the overall visual makeup of the existing environment where a proposed action or its alternative(s) would be located. For example, areas near densely populated areas generally have a visual character that could be defined as urban, whereas less developed areas could have a visual character defined by the surrounding landscape features, such as open grass fields, forests, mountains, deserts, etc.

Visual resources include buildings, sites, traditional cultural properties, and other natural or manmade landscape features that are visually important or have unique characteristics. Visual resources may include structures or objects that obscure or block other landscape features. In addition, visual resources can include the cohesive collection of various individual visual resources that can be viewed at once or in concert from the area surrounding the site of the proposed action or alternative(s).

Although the airport environment is within an urban area, visually it is characterized not only by trees and vegetated open areas, but by both buildings and streets. Views of the airport are accessible from surrounding roadways on the western portion of airport property boundaries due to the vegetation being spread out rather than densely put together. Long-range views are not readily available due to the relatively flat topography of the airport environs.

The state of California has a designated department called the California Department of Transportation (Caltrans) which manages the state scenic Highway Program.[20] According to the Scenic Highway Program, the development of scenic highways is to not only add to the pleasure of residents in California but should further encourage the growth of both recreation and tourism industries. Existing legislation provides Caltrans with full possession and control of all state highways, with a county highway component later added to the Scenic Highway Program in Section 154 of the Streets and Highways Code.

There are a total of five nationally designated scenic byways in California. However, the five scenic byways are not with Shasta County, and therefore, there are no national scenic byways near the airport.[21] In addition to this, California has a State Scenic Highway System which lists highways that are eligible or designated as a state scenic highway. According to the California State Scenic Highway System Map, U.S. Route 44 is eligible for a state scenic highway listing and is about 2 miles north of the nearest airport boundary point.[22]

WATER RESOURCES

Wetlands | The U.S. Army Corps of Engineers regulates the discharge of dredged and/or fill material into waters of the United States, including adjacent wetlands, under Section 404 of the *Clean Water Act*

[20] Caltrans, California State Scenic Highways (https://dot.ca.gov/programs/design/lap-landscape-architecture-and-community-livability/lap-liv-i-scenic-highways)
[21] U.S. Department of Transportation, Federal Highways Administration, National Scenic Byways & All-American Roads (https://fhwaapps.fhwa.dot.gov/bywaysp/States/Show/CA)
[22] Caltrans, California State Scenic Highway System Map (https://caltrans.maps.arcgis.com/apps/webappviewer/index.html?id=465dfd3d807c46cc8e8057116f1aacaa)

(CWA). Wetlands are defined in E.O. 11990, *Protection of Wetlands*, as "those areas that are inundated by surface or groundwater with a frequency sufficient to support and under normal circumstances does or would support a prevalence of vegetative or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction." Wetlands can include swamps, marshes, bogs, sloughs, potholes, wet meadows, river overflows, mudflats, natural ponds, estuarine areas, tidal overflows, and shallow lakes and ponds with emergent vegetation. Wetlands exhibit three characteristics: the soil is inundated or saturated to the surface at some time during the growing season (hydrology), has a population of plants able to tolerate various degrees of flooding or frequent saturation (hydrophytes), and soils that are saturated enough to develop anaerobic (absent of air or oxygen) conditions during the growing season (hydric).

There are typically two types of federal Waters of the U.S. (WOTUS), which are regulated by the U.S. Army Corps of Engineers (USACE):

1. Wetlands, which include features where all three wetland parameters (hydrophytic vegetation, hydric soil, and wetland hydrology) are present.
2. Other waters, which typically encompass drainages and other features bounded by a definable ordinary high-water mark with connectivity to jurisdiction waters and contain WOTUS lacking one or more of the three wetland parameters.

USFWS manages the National Wetlands Inventory on behalf of all federal agencies. The National Wetlands Inventory identifies surface waters and wetlands in the nation.[23] Within airport boundaries, there are numerous human-made ditches and culverts located throughout the various runways, taxiways, and movement areas. Certain ditches and culvert systems, as well as five stormwater detention basins located on the southern portion of the airport, are likely to meet the definition of other waters or wetlands. As such, they are labeled as "Potentially Jurisdictional Features" in a recent biological constraints analysis completed for a runway safety improvements project.[24] There is also riverine habitat (i.e., Stillwater Creek) that abuts the eastern airport property line. Additionally, there are multiple vernal pools mapped in the western, southern, and eastern portions of the airport boundaries outside the developed airfield (**Exhibit 1Q**).

Floodplains | E.O. 11988, *Floodplain Management*, directs federal agencies to take action to reduce the risk of flood loss, minimize the impact of floods on human safety, health, and welfare, and restore and preserve the natural and beneficial values served by the floodplains. U.S. Department of Transportation (DOT) Order 5650.2, *Floodplain Management and Protection* implements the guidelines contained in E.O. 11988.

A review of the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) panel numbers 06089C1570G and 06089C1935G, effective March 17, 2011, indicates that the airport is in Zone X, an area of minimal flood hazard.[25] To the east of the airport lies a 100-year floodplain along Stillwater Creek.

[23] National Wetlands Inventory (https://fwsprimary.wim.usgs.gov/wetlands/apps/wetlands-mapper/)
[24] SWCA *Biological Constraints Analysis for the Redding Municipal Airport Proposed Runway Safety Area improvements – Runway 16-34 NEPA Documentation, Redding, Shasta County, California* (August 2022).
[25] FEMA Flood Map (https://msc.fema.gov/portal/search?AddressQuery=redding%20municipal%20airport)

Surface Waters | The CWA establishes water quality standards, controls discharges, develops waste treatment management plans and practices, prevents or minimizes the loss of wetlands, and regulates other issues concerning water quality. Water quality concerns related to airport development most often relate to the potential for surface runoff and soil erosion, as well as the storage and handling of fuel, petroleum products, solvents, etc. Additionally, Congress has mandated (under the CWA) the NPDES. The airport is in Salmon Creek-Stillwater Creek and Clover Creek-Sacramento River watersheds.[26] There is one impaired waterbody, the Sacramento River located in Clover Creek Sacramento River Watershed south (and downstream) of the airport boundaries.

Some of the airport's drainage outfalls are on the west side where the ground surface is predominantly pervious. Outfalls on the west side of the airport discharge into an open conveyance (i.e., ditch) that flows south into a small stormwater detention basin that drains to the southwest towards Clover Creek.

The runway environment is mainly flat with drainage ditches and culverts that drain to stormwater detention basins in the southern part of the airport. According to a drainage master plan, the northern end of the Runway 16 has drainage that flows to the east through a series of culverts and ditches that discharges to Stillwater Creek. There is also existing drainage at the southern end of the airfield to the southeast of the end approach of Runway 34.[27] Both Clover Creek and Stillwater Creek ultimately discharge into the Sacramento River.

Groundwater | Groundwater is subsurface water that occupies the space between sand, clay, and rock formations. The term aquifer is used to describe the geologic layers that store or transmit groundwater, such as wells, springs, and other water sources. Examples of direct impacts to groundwater could include withdrawal of groundwater for operational purposes or reduction of infiltration or recharge area due to new impervious surfaces. The City of Redding utilizes vertical turbine or submersible pumps, designed to pump water from deeper wells, with a range from a depth of 170 feet to a depth of 600 feet below the surface.[28]

Based on past geotechnical investigations conducted at the airport in the 1990s, the average deepest measured depth to groundwater was 13.3 feet and the average shallowest groundwater was 8.6 feet. In 2021, as part of the drainage master plan, groundwater was not encountered except at one location at depths of 3 to 4.5 feet below ground surface.[29]

U.S. EPA's Sole Source Aquifer (SSA) Program was established under Section 1424(e) of the *Safe Drinking Water Act* (SDWA). Since 1977, it has been used by communities to help prevent contamination of groundwater from federally funded projects. It has increased public awareness of the vulnerability of groundwater resources. The SSA program is authorized by Section 1424(e) of the SDWA (Public Law 93-523, 42 U.S.C. 300 et. seq), which states:

[26] U.S. EPA How's My Waterway (https://mywaterway.epa.gov/community/redding%20municipal%20airport/overview)
[27] Mead and Hunt, Redding Regional Airport, Airport Drainage Master Plan Improvements Runway Safety Area (RSA) Project Phase (Revised February 1, 2023), page 9.
[28] City of Redding Public Works, Groundwater and Wells (https://www.cityofredding.org/departments/public-works/public-works-utilities/water-utility/water-supply/groundwater-and-wells)
[29] Mead and Hunt, Redding Regional Airport, Airport Drainage Master Plan Improvements Runway Safety Area (RSA) Project Phase (Revised February 1, 2023), page 9.

"*If the Administrator determines, on his own initiative or upon petition, that an area has an aquifer which is the sole or principal drinking water source for the area and which, if contaminated, would create a significant hazard to public health, he shall publish notice of that determination in the Federal Register.*"[30]

According to the U.S. EPA Sole Source Aquifer for Drinking Water website, there are no sole source aquifers located within airport boundaries. The nearest sole source aquifer is the Fresno County Aquifer 260 miles away from the airport.[31]

Wild and Scenic Rivers | The *National Wild and Scenic Rivers Act* was established to preserve certain rivers with outstanding natural, cultural, and recreational values in a free-flowing condition for the enjoyment of present and future generations.

The Nationwide River Inventory (NRI) is a list of over 3,400 rivers or river segments that appear to meet the minimum *Wild and Scenic Rivers Act* eligibility requirements based on their free-flowing status and resource values. The development of the NRI resulted from Section 5(d)(1) in the *Wild and Scenic Rivers Act*, directing federal agencies to consider potential wild and scenic rivers in the comprehensive planning process.

The closest designated National Wild and Scenic River identified is the Trinity River, located more than 29 miles from the airport.[32] The nearest National River Inventory feature is the Sacramento River, located just over one mile away from the airport.[33]

DOCUMENT SOURCES

A variety of data sources were used during the inventory process. The following listing reflects a partial compilation of these sources. In addition, considerable information was provided directly to the consultant by staff at RDD.

Airport/Facility Directory, Southwest, U.S. Department of Transportation, Federal Aviation Administration, National Aeronautical Charting Office, effective Sept. 8, 2022.

Klamath Falls Sectional Aeronautical Chart, U.S. Department of Transportation, Federal Aviation Administration, National Aeronautical Charting Office, effective July 14, 2022.

National Plan of Integrated Airport Systems (NPIAS), U.S. Department of Transportation, Federal Aviation Administration, 2023-2027.

U.S. Terminal Procedures, Southwest, U.S. Department of Transportation, Federal Aviation Administration, National Aeronautical Charting Office, effective Nov. 3, 2022.

[30] U.S. EPA, Overview of the Drinking Water Sole Source Aquifer Program (https://www.epa.gov/dwssa/overview-drinking-water-sole-source-aquifer-program#Authority)
[31] U.S. EPA, Sole Source Aquifers (https://epa.maps.arcgis.com/apps/webappviewer/index.html?id=9ebb047ba3ec41ada1877155fe31356b)
[32] U.S. Department of the Interior, National Park Service, National Wild and Scenic River System in the U.S. (https://nps.maps.arcgis.com/apps/MapJournal/index.html?appid=ba6debd907c7431ea765071e9502d5ac#)
[33] U.S. Department of the Interior, National Park Service, Nationwide River Inventory (https://www.nps.gov/maps/full.html?mapId=8adbe798-0d7e-40fb-bd48-225513d64977)

California Aviation System Plan 2021. Prepared by Mead & Hunt.

Airport Master Plan, 2015. Prepared by Coffman Associates.

A number of official internet websites were also used to collect information for the inventory chapter. These include the following:

U.S. Census Bureau: http://www.census.gov

U.S. Bureau of Labor Statistics: http://www.bls.gov

Bureau of Economic Analysis, U.S. Department of Commerce: http://www.bea.gov

FAA 5010 Data: http://www.airnav.com; http://www.gcr1.com/5010Web

California Department of Transportation – Aviation Division: http://nmshtd.state.nm.us/main.asp?secid=10871

City of Redding: www.cityofredding.org

Shasta County: www.shastacounty.gov

U.S. Fish and Wildlife Service Information, Planning, and Conservation System: http://ecos.fws.gov/ipac/

FEMA Map Service Center: https://msc.fema.gov/portal/

EPA MyWaters Mapper: http://watersgeo.epa.gov/