PRINEVILLE AIRPORT

AIRPORT LAYOUT PLAN REPORT

Prepared for the

City of Prineville
Crook County

July 2003

CENTURY WEST
ENGINEERING CORPORATION

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INTRODUCTION AND CONCLUSIONS

The preparation of this document may have been supported, in part, through the Airport Improvement Program financial assistance from the Federal Aviation Administration as provided under Title 49, United States Code, section 47104. The contents do not necessarily reflect the official views or policy of the FAA. Acceptance of this report by the FAA does not in any way constitute a commitment on the part of the United States to participate in any development depicted therein nor does it indicate that the proposed development is environmentally acceptable with appropriate public laws.

The City of Prineville and Crook County, with the support of the Oregon Department of Aviation (ODA) has undertaken the Airport Layout Plan Report project. The project was funded with the support of the Federal Aviation Administration (FAA). FAA's approval of the updated Airport Layout Plan will enable Prineville Airport to continue to qualify for federal Airport Improvement Program (AIP) grants for eligible facility improvement projects.

PROJECT OBJECTIVES

This study will evaluate the configuration and condition of existing facilities and address the current and long-term needs of Prineville Airport. The plan will also examine prior planning recommendations and evaluate any changes in activity or utilization, which may affect future demand for aviation facilities. The current airport layout plan (ALP) was approved in 1984 and has not been updated since that time. Previous airport development recommendations will also be reviewed and modified as necessary to reflect current planning.

The primary objective of this Airport Layout Plan Report is to identify current and future facility needs and the improvements necessary to maintain a safe, efficient, economical, and environmentally acceptable air transportation facility. The Airport Layout Plan Report will:

- *Examine previous recommendations and development alternatives as appropriate to meet the current and projected airport facility needs;*
- *Determine current and future activity and facility requirements;*
- *Update the airport layout plan and airspace plan, and prepare a land-use plan for the airport and its surrounding areas; and*
- *Schedule priorities of improvements and estimate development costs for the 20-year planning period.*

OVERVIEW

Central Oregon is a sparsely populated region with many small communities located along the main highways traveling throughout the area. Like most general aviation airports, Prineville serves a wide range of local and itinerant general aviation users. However, Prineville Airport also accommodates state and federal government fire response activities. The majority of fire-related aircraft activity (fixed wing and rotor) occurs during the peak summer season, although on-airport facilities are maintained year-round.

General aviation airports like Prineville are significant components in the statewide transportation system. These airports typically generate both direct (i.e. employment) and indirect economic activity within the local community or region and provide small communities with access to the state's transportation system. For smaller, remote communities without convenient access to commercial air travel, general aviation airports provide an option for reducing the time required for business and personal travel. The availability of a safe, well-maintained general aviation airport is often the key factor that allows a business to be located in a small community.

Prineville Airport plays a vital role in the joint effort by the City of Prineville and Crook County to attract new, large employers to the area. Crook County owns most of the available undeveloped industrial land adjacent to the airport and expanding a diversified industrial base within the county is a primary component of the region's economic development strategy.

PUBLIC INVOLVEMENT

The public involvement element for this planning process provided opportunities for all interested individuals, organizations, or groups to participate in the project. As part of the project kickoff, a Joint Planning Conference (JPC) was held in December 2001 in which all parties with

specific interest in the airport were invited to attend. The purpose of the JPC was to identify any concerns or issues, which needed to be addressed as part of this airport layout plan update. The input provided by the local Airport Commission, airport users, local citizens, ODA staff, and a variety of state and federal government agencies, provided valuable information that was used in formulating the plan. A summary of JPC discussion items is presented in Appendix 1.

During the study, draft working papers and other technical documents were prepared and coordination meetings were held with the Airport Commission, all of which were open to the general public. Through this coordination process, a preferred development alternative was selected by the Airport Commission for integration into the airport layout plan. The Draft ALP Report contains the entire work effort and reflects the input provided by all participants in the planning process. Following a final review period, public and agency comments were integrated into the Final Airport Layout Plan Report and drawing set.

AIRPORT LAYOUT PLAN REPORT CONCLUSIONS

1. Prineville Airport, built in 1942, is owned by Crook County. The airport is operated by an Airport Commission, formed through an intergovernmental agreement between the City of Prineville and Crook County.

2. Prineville Airport is categorized as a "Community General Aviation Airport" in the 2000 Oregon Aviation Plan and is included in Oregon's core system of airports, which denotes its significance in Oregon's aviation system. Community GA Airports serve small communities and have a broad mix of general aviation activity. The airport is also included in the National Plan of Integrated Airport System (NPIAS), making it eligible for federal funding assistance through the Federal Aviation Administration (FAA).

3. Prineville Airport has two paved and lighted intersecting runways: Runway 10/28 (5,000 feet by 60 feet) and Runway 15/33 (4,000 feet x 40 feet). The main runway and other major airfield facilities routinely accommodate general aviation and business aviation aircraft included in airplane design group II (ADG II); the secondary runway accommodates small general aviation aircraft included in airplane design group I (ADG I). All existing landside facilities (FBO, aircraft parking apron, hangars, etc.) are located on the east side of the airport, adjacent to the main access taxiway that connects the two runways. Runway 15/33 is not currently eligible for FAA funding assistance based on the wind coverage of the airport's primary runway.

4. Based on evaluations conducted in 2000, the condition of pavements at Prineville Airport range from "failed" (small apron sections) to "excellent" (Runway 15/33). In general, the

airfield pavements are in "good" condition, but will require a significant ongoing investment in maintenance and repair to maintain current condition.

5. The critical design aircraft identified in the 1994 Airport Layout Plan was a Cessna Citation II business jet. This aircraft is representative of a wide range of local and itinerant aircraft using the airport on a regular basis. The Citation II weighs more than 12,500 pounds and is included in Airplane Design Group (ADG) II and Approach Category B. Aircraft weighing more than 12,500 pounds are categorized as "large" aircraft. Les Schwab currently bases two Citation business jets at Prineville Airport.

6. According to FAR Part 77 criteria, runways designed for aircraft weighing 12,500 pounds or more are classified as "other than utility." Runways designed for aircraft weighing 12,500 pounds or less, are classified as "utility." Based on the design criteria applied to the airport, Runway 10/28 is categorized "other than utility" and Runway 15/33 is categorized as "utility."

7. Based on existing approach capabilities, Runway 10/28 is classified as a non-precision instrument runway (other than utility); Runway 15/33 is classified as a visual runway (utility) for airspace planning purposes.

8. Based on data provided by airport management, it is estimated that Prineville Airport had 74 based aircraft in February 2002. This included two business jets, one single engine business turbo-prop, and one turbine power spray aircraft (Ayres Turbo Thrush). The Bureau of Land Management operates five helicopters from the airport during the fire season; two Dromedary spray planes with a large radial engine and a 62-foot wingspan are also based at the airport during fire season. The airport also accommodates several experimental aircraft and ultralights.

9. In 2001, annual aircraft operations at Prineville Airport were estimated to be 8,892. Air traffic activity at the airport was measured from October 2000 to September 2001 as part of the Aircraft Monitoring Program by the Oregon Department of Aviation.

10. Prineville Airport operates under day and night visual flight rules (VFR) and instrument flight rules (IFR) conditions. The airport currently has three non-precision instrument approaches, including two stand-alone GPS approaches and a non-directional beacon (NDB) approach.

11. The existing zoning associated with Prineville Airport does not fully comply with ORS Ch. 836.600 *et. Seq* (see Chapter Six for detailed discussion of existing zoning).

12. The east side of the airport currently accommodates all landside facilities. It is anticipated that this area will not have sufficient landside capacity to accommodate projected facility demands without redevelopment and/or reconfiguration of existing facilities. If existing facility configurations are maintained, expansion to the north side of Runway 10/28 will be required during the current planning period.

13. The planned expansion of landside facilities into undeveloped areas of the airport will require the extension of utility service (water, electrical, telephone, sanitary sewer, etc.) and airport access roads. Utility improvements are not eligible for FAA funding, therefore will require local funding. Access roads that serve aviation developments are generally eligible for FAA funding.

AIRPORT LAYOUT PLAN RECOMMENDATIONS

The recommendations of previous planning efforts were examined and revalidated or modified as appropriate based on current considerations and design standards.

1. Runway 10/28 and other major airfield components at Prineville Airport should be designed to meet ADG II dimensional standards. The existing weight bearing capacity of 30,000 pounds (single wheel) should be maintained to allow the runway to accommodate a wide variety of larger business aircraft.

2. The markings on Runway 10/28 need to be upgraded from basic to non-precision instrument based on the runway's existing instrument approach capabilities. Aircraft hold lines should be added on all taxiways connecting to the runway to provide pilot guidance for maintaining required runway clearances.

3. Runway 10/28 should be widened from the existing 60 feet to 75 feet as part of the next major project to comply with ADG II standards. Replacement of the existing runway edge lights and threshold lights should be considered when the runway is reconstructed, depending on the remaining useful life of the lighting components.

4. Although not eligible for federal funding, Runway 15/33 should be designed to meet ADG I (small aircraft exclusively) dimensional standards where economically feasible. The runway should be widened from 40 feet to 60 feet as part of a future reconstruction or rehabilitation project. A weight bearing capacity of 12,500 pounds (single wheel) is recommended for runways designed to accommodate small general aviation aircraft.

5. A regular schedule of pavement maintenance (vegetation control, crack filling, fog seals, patching, etc.) should be conducted on airfield pavements to maximize the useful life and optimize life cycle maintenance expenditures.

6. A 720-foot runway extension is recommended for Runway 10/28 to accommodate a greater portion of the large aircraft fleet weighing less than 60,000 pounds. The timing of the runway extension will be demand-driven by increased levels of large aircraft activity. The undeveloped area located beyond the end of Runway 10 is reserved for potential runway extensions that may be needed beyond the current planning period.

7. Any future improvements to Highway 126 in the vicinity of the airport should be designed to avoid creating obstructions to the approach surfaces of Runway 28 and 33, as depicted on the updated airspace drawings contained in this report.

8. An automated weather observation system (AWOS) is recommended for Prineville Airport to support current instrument and airport operations. A site is depicted on the ALP in the infield area between the two runways that will meet FAA location and clearance requirements for AWOS installations.

9. A north-side parallel taxiway is recommended for Runway 10/28 to support future north side airport development.

10. An infield access taxiway is recommended to improve aircraft movement between the east terminal area and the primary runway.

11. A west side parallel taxiway reserve is recommended for Runway 15/33 to ensure long-term development compatibility in the western section of the airport.

12. Extensions of access roadways and utilities within the airport will be required to serve new aviation-related development areas.

13. Precision approach path indicators are recommended for Runways 10 and 28; the existing visual approach slope indicator (VASI) on Runway 28 should be replaced in conjunction with the next airfield lighting project or at the end of its useful life. If still operational, the airport sponsor should consider installing the older VASI unit on Runway 15 or 33.

14. Lighted wind cones are recommended near the ends of Runway 10 and 28 to improve the representation of surface wind conditions.

15. Overhead flood lighting should be increased in the existing terminal area and other existing landside areas (hangars, aircraft parking, fueling, etc.) to improve safety and

security for airport users, parked aircraft and other airport facilities. Development of new landside areas should include overhead lighting.

16. Fencing should be added along the airport boundary to limit unauthorized human, animal and vehicle access to the airfield. In addition, fencing and electronic (keypad combination) gates should be provided within the airport to further protect aircraft operations areas from unauthorized vehicle or pedestrian access.

17. The zoning of Prineville Airport should be reviewed to ensure that all developable portions of the airport permit aviation related uses as "outright permitted" consistent with Oregon Revised Statutes (ORS) Chapter 836.600 through 836.630.

18. Crook County and the City of Prineville should update existing airport overlay zoning to reflect the updated boundaries of the FAR Part 77 airspace surfaces defined in this plan to comply with state law (ORS Ch. 836.600-630). In addition to ensuring quality and cohesive mapping of the areas affected by the required airport overlay zone, in both the City and Crook County jurisdictions, the existing zoning and transportation plan languages of the City of Prineville and Crook County, as applicable, should also be reviewed and amended to ensure compliance with ORS Chapter 836.600-630.

19. Crook County and the City of Prineville should ensure that development of rural lands in the vicinity of the airport be highly compatible with airport activities. Maintaining the Agricultural or Manufacturing zoning in the areas surrounding the airport provides effective land use compatibility with airport operations. Development of residential areas within the boundaries of the protected airspace surfaces of Prineville Airport should be discouraged to ensure the long-term viability of the airport.

20. Any planned improvements to Highway 126 in the vicinity of the airport should be designed to avoid any obstruction to the Prineville Airport's FAR Part 77 imaginary surfaces. In addition, any lighting associated with the highway in the vicinity of the airport should be designed to avoid producing excessive upward light emissions that could create a hazard for aircraft operating at the airport.

21. The Prineville Airport Commission should require that applicants for all leases or development proposals involving construction of structures demonstrate compatibility with the airport's protected airspace surfaces. The applicant should be required to provide documentation of "no objection" by FAA resulting from the review of FAA Form 7460-1 – Notice of Proposed Construction or Alteration, prior to approval of ground leases. Any proposal that receives an objection by FAA should not be approved without first addressing FAA concerns.

22. City and/or county planning officials should require that applicants for all proposed development on the airport or within the boundaries of the airport overlay zone (as depicted on the updated Airport Land Use Plan - Drawing 7) provide documentation of "no objection" by FAA resulting from review of proposed development (FAA Form 7460-1), as a condition for issuing building permits or zoning modification.

23. The Prineville Airport Commission should adopt the Airport Layout Plan Report and drawings in a timely manner to guide airport activities. Crook County and the City of Prineville should also adopt the Airport Layout Plan Report and drawings for incorporation into local comprehensive and transportation planning.

24. An updated Exhibit "A" property plan should be prepared for Prineville Airport to clarify airport property boundaries and acreage. The updated Exhibit "A" should be submitted to FAA for review and approval.

25. The Prineville Airport Commission should initiate the recommended improvements and major maintenance items in a timely manner, requesting funding assistance under FAA and other federal, state or county funding programs for all eligible capital improvements.

CHAPTER TWO
INVENTORY AND FORECASTS

INTRODUCTION

The purpose of this chapter is to document existing conditions and aviation activity at the airport. Existing forecasts of aviation activity will be evaluated and updated as necessary, to identify in broad terms, anticipated trends that may affect development needs at Prineville Airport through the twenty-year planning period and beyond. The existing airfield facilities were also examined during recent on-site inspections. Historical data from a variety of sources are used in this evaluation:

- **Prineville Airport Layout Plan and Airport Layout Plan Report** (Morrison Maierle, Inc., 1994/1995)
- **Prineville Airport Industrial Park Master Plan** (Century West Engineering, 1981)
- **Prineville Airport Master Plan** (Century West Engineering, 1979)
- **Prineville Airport Pavement Evaluation Maintenance-Management Program** (Pavement Consultants, Inc., 2000)
- **Oregon Continuous Aviation System Plan – Volume I: Inventory and Forecasts; Volume III: Recommended Development Plan** (AirTech, 1997)
- **Oregon Aviation Plan** (Dye Management Group, 2000)
- **City of Prineville Transportation System Plan** (W&H Pacific, 1998)
- **City of Prineville and Crook County Zoning Ordinance**
- **Phase I Environmental Site Assessment – Prineville Airport Industrial Park** (DEA, 1996)
- **FAA Airport Master Record Form** (5010-1), **APO Terminal Area Forecasts**.
- **Klamath Falls Sectional Aeronautical Chart; IFR Enroute Low Altitude (L-2) Chart** – US DOT Federal Aviation Administration National Charting Office.
- **Instrument Approach Procedure Charts** - Jeppesen Airway Manual
- Other local documents and regional socioeconomic data.

AIRPORT LOCALE

Prineville Airport is located approximately three miles southwest of the City of Prineville, in northwestern Crook County. Established in 1868, Prineville is the largest community and the only incorporated city within Crook County. Prineville is also the county seat. Crook County, located in the geographical center of Oregon, borders Jefferson and Wheeler counties to the north; Deschutes County to the west and south; and Harney and Grant counties to the east. The nearest major city is Bend, located approximately 35 miles southwest of Prineville. An airport location map is provided in **Figure 2-1**.

Crook County is situated mainly within the Deschutes River Basin with a land area of 2,991 square miles (1,907,200 acres). The region is comprised mainly of farmland, rangeland, and moderately mountainous terrain. The elevation at Prineville Airport is 3,250 feet above mean sea level (msl).

Crook County's primary north-south highway route is U.S. Route 97, which is approximately 18 miles west of Prineville. U.S. Route 26 provides a direct route from Portland to Prineville (147 miles southeast). U.S. Route 20 serves as the primary east-west route connecting Crook County to Idaho (east) and Salem (west). Prineville Airport is located just north of State Route 126, which provides a direct route from Prineville west to the Oregon coast. Recreational activities in the local area include fishing, hunting, golf, skiing, hiking, and visiting historical sites.

CLIMATE

The geographical climate for Central Oregon is mainly High Desert. The climate of Crook County is semi-arid, with annual precipitation varying from eight inches on the Deschutes plateau to more than 19 inches in the high valleys used for agriculture. Detailed climatic data for Prineville was available for a 29-year period between 1961 and 1990.[1] The average maximum temperature is 86.6 degrees Fahrenheit (July) and the average minimum temperature is 21.7 degrees (December/January). Prineville averages 10.4 inches of precipitation and 12 inches of snowfall annually. The daily extreme temperatures for Prineville are 34 degrees Fahrenheit (December) and 105 degrees (July/August). The prevailing winds are for Prineville are primarily from the northwest and the southeast.

[1] Western Regional Climate Center.

FIGURE 2-1: LOCATION MAP

PHYSICAL CHARACTERISTICS

Crook County has an area of 2,991 square miles and encompasses the Blue Mountains along the northern boundary, and the Maury Mountains to the south. The area is drained by the Crooked River and is generally categorized as a broad high plateau with fertile valley, range and forest lands typical of Central Oregon. Land ownership in the county is nearly equally divided between private and government. Slightly less than half of Crook County is privately owned, primarily farms and forestlands. Approximately the same amount of the County is in federal ownership, including large areas of forestland administered by the U.S. Forest Service in the northern and eastern sections of the county. The remaining federally owned land is managed by the BLM or the Bureau of Reclamation. State- and county-owned lands account for less than 2 percent of the Crook County's land area.

The geologic history of eastern Crook County is one of recurrent episodes of volcanism that can be traced back nearly 40 million years to early Tertiary time. Prineville Airport is located on top of more recent basaltic lava flows a million years old, with the thickness varying anywhere from ten to a hundred feet.

The terrain at the airport site is generally level. The soils in the vicinity of the airport were recently mapped (not yet published in a soil survey) and are classified as Redmond ashy sandy loams, moderately deep and well drained with 0 to 3 percent slope.[2] Surface gravel and cobbles are found in many areas around the airport. The depth to the basalt bedrock is 20 to 40 inches. Typical vegetation includes Idaho fescue, needleandthread, Sandberg bluegrass, basin big sagebrush and western juniper. The area surrounding the airport is largely undeveloped rangeland.

SOCIOECONOMIC CONDITIONS

Population

According to data compiled by the U.S. Census Bureau and Portland State University Center for Population Research and Census, the population of Crook County was 19,182 in 2000. Unincorporated areas account for 62 percent of the county's population. The remaining 38 percent is in Prineville, Crook County's only incorporated city, with a population of 7,356 in 2000.

[2] U.S. Department of Agriculture (2001).

Overall population growth for both the city of Prineville and Crook County was approximately 36 percent between 1990 and 2000, which equals an annual average growth rate of approximately 3.1 percent. This growth was up sharply from the previous ten-year period between 1980 and 1990, where population growth averaged less than 1 percent per year for both Prineville and Crook County.

According to published forecasts, the area's recent population growth trend is expected to continue, but at a more moderate pace in the future.[3] The current long-term forecasts project Crook County's population to increase to 31,752 by the year 2040. This represents an overall increase of approximately 66 percent, or an annual average increase of approximately 1.3 percent. If current distributions continue, the population for Prineville would be expected to increase to approximately 12,211 residents by 2040.

Economy

Crook County's economy is comprised of forest products, livestock, manufacturing, agriculture, recreation, and wholesale trade. According to the 2002 Regional Economic Profile for Central Oregon, Crook County's economy is most dependent on the lumber and wood products industry, which accounted for 24 percent of the nonfarm employment and over 90 percent of manufacturing employment in Crook County in 2000. Currently, Prineville has Oregon's highest per capita of manufacturing jobs. Beef cattle, wheat, and hays are the principal crops. The average farm size is 1,759 acres. Hunting, fishing, skiing and tourism are secondary industries.

The largest individual employer in Crook County and third largest employer in Central Oregon is Les Schwab Tire Centers, which employs close to 1,000 people in Prineville, its headquarters. Les Schwab continues to grow and has expanded its Prineville facilities. Two new warehouse/distribution centers were recently constructed east of the airport, increasing their total warehousing facilities in Prineville to two million square feet. Les Schwab has a hangar and currently bases two Cessna Citation business jets at Prineville Airport.

Other large manufacturers include Clear Pine Molding and American Pine Products, each employing nearly 500 employees.[4] The county has begun diversifying its employment and economic base, with an emphasis on growth in the trade sector. Other sources of jobs for the county are in the government and trade industries. The 2000 average annual unemployment rate in Crook County was 8.4 percent, well above the 4.9 percent statewide average. According to the Oregon Employment Department, Crook County's higher unemployment rate can be attributed to

[3] State of Oregon, Office of Economic Analysis.
[4] Central Oregon Area Profile, Economic Development for Central Oregon.

both the decline of the lumber and wood products coupled with the population growth over the last decade.

Job growth in the next decade for Crook County is projected to be lower (10%) than in the rate experienced in the 1990's (24%). Most of the anticipated job growth is expected to occur primarily in the non-manufacturing sector. The sectors expected to have the most growth are trade (60 percent) and service (35 percent) industries. Employment within the manufacturing sector, which includes the area's traditional wood products employers, is projected to decline by about 4 percent during this period.

Airport History

In 1931, the City of Prineville acquired title to a 160-acre tract just northeast of the present site for the purpose of construction of an airport. In 1942, a new airfield, just across Highway 126 and to the west of the original airfield was established. During the next few years, many improvements were made, including adding hangars. It was determined that there was a need for an Airport Commission to coordinate efforts to make improvements at the airport. The first Airport Commission was created in February 1946, by a joint resolution of Crook County and the City of Prineville, for the purpose of "supervising certain property owned by said municipal corporations."

The current airport configuration was established in the early 1940's. Through the years various improvements were made to increase the efficiency and safety of the airport. These included the lengthening and paving of Runway 15/33 in 1964, the addition of a low intensity lighted system and another extension of Runway 15/33 in 1967, and the paving of the taxiway and parking area in 1972. Runway 10/28 was paved in the late 1970's.

On October 1, 1975, a three member Airport Commission was formed, with one commissioner from the County Court, the second from the City Council, and the third selected from the general public (preferably someone with an interest and expertise in aviation).

The airport area now consists of approximately 400 acres and was annexed into the Prineville's city limits in 1995. City water and sewer service was subsequently extended to the airport to support airport development. In 1998, the current Airport Commission was created with five appointed commissioners, selected by the County Court and City Council. Although the management of Prineville Airport is a joint venture between the city and county, it is the County Court that has the final authority in major decisions affecting the airport.

Airport Environment

Prineville Airport is located in Crook County, approximately three miles southwest of Prineville's city center, just north and west of State Route 126. Currently, all landside developments (hangars, aircraft parking, services, etc.) are located at the east end of the airport served by an access road that connects to State Route 126. According to information provided by the local chamber of commerce, the airport has three industrial parks nearby with more than 100 acres of land zoned for heavy industry. **Figure 2-2** includes a site map and existing conditions at the airport.

AIRFIELD FACILITIES

Historically, Prineville Airport has served a variety of general aviation users, including business, commercial, and government aviation. The United States Forest Service (USFS) and the Bureau of Land Management (BLM) utilize the airport to support their operations. **Figure 2-3** depicts a detailed view of existing terminal area facilities at the airport, located at the east end of the airport. **Table 2-1** summarizes airport data.

TABLE 2-1
AIRPORT DATA

Airport Name/Designation	Prineville Airport (S39)
Airport Owner	City of Prineville and Crook County
Date Established	1942
Airport Category	National Plan of Integrated Airport Systems (NPIAS) General Aviation FAA Airport Reference Code: B-II
Airport Acreage	Approximately 400 Acres
Airport Coordinates	N 44º17.22' W 120º 54.23'
Airport Elevation	3,250 feet Mean Sea Level (MSL)
Airport Traffic Pattern Configuration/Altitude	Left Traffic - 1,000 feet above ground level

FIGURE 2-2: SITE MAP

FIGURE 2-3: TERMINAL AREA FACILITIES

Runways and Taxiways

Prineville Airport has two paved, lighted runways (10/28 and 15/33) with the southern/eastern runway ends configured in an "Open-V." Runway 10/28 is the primary runway, oriented in an east-west direction. Runway 15/33 is the airport's secondary runway, oriented in a north-south direction and intersecting Runway 10/28 near its north end. Both runways have basic markings, although Runway 10/28 supports straight-in non-precision instrument approaches and should have non-precision runway markings. The airport is an uncontrolled field, which effectively limits operations to one runway at a time. Both runways utilize a standard left traffic pattern.

The southern/eastern ends of the two runways are connected by a single taxiway that provides access between the runways and aircraft parking and hangar areas. At the Runway 33 end, the taxiway splits into two separate sections with a connection at the end of the runway and approximately 450 feet to the north. Aircraft hold lines are located on the access taxiway near the Runway 28 and 33 thresholds.

The runways are not served with parallel taxiways. This requires aircraft to back-taxi on the runways for departures on Runways 10 and 15 and following landing on Runways 28 and 33; Runway 15/33 is also used to provide access to/from the west end of Runway 10/28. A small aircraft holding area is located on the south side of the Runway 10 threshold. A small taxiway/turnaround is located on the west side of the Runway 15 threshold that connects to Runway 10/28. **Tables 2-2, 2-3, and 2-4** summarize existing runway and taxiway facilities.

TABLE 2-2
RUNWAY 10/28 DATA

Dimensions	5,000 x 60 feet; Aircraft Turnaround at Runway 10 end
Effective Gradient	.02%
Surface	Asphalt
Weight Bearing Capacity (WBC)	30,000 pounds – Single Wheel Landing Gear[1]
Marking	Basic (runway numbers, centerline stripe)
Lighting	Medium Intensity Runway Edge Lighting (MIRL); Threshold Lights; Visual Approach Slope Indicator (Rwy 28)
Wind Coverage	99.3 percent (All Weather) with a 12 mph crosswind; combined coverage with Rwy 15/33: 99.9%. Data: 8/00-7/01

1. Pavement Strength as published in U.S. Airport/Facility Directory

TABLE 2-3
RUNWAY 15/33 DATA

Dimensions	4,000 x 40 feet; Aircraft Turnaround at Runway 15 end
Effective Gradient	.015%
Surface	Asphalt
Weight Bearing Capacity (WBC)	5,000 pounds (limited to 5,000 pounds by airport operator) – Single Wheel Landing Gear[1]
Marking	Basic (runway numbers, centerline stripe)
Lighting	Low Intensity Runway Edge Lighting (LIRL); Threshold Lights
Wind Coverage	Approximately 97.4 percent at 12 mph

1. Pavement Strength as published in U.S. Airport/Facility Directory

TABLE 2-4
TAXIWAY DATA

Taxiway	Dimensions/Configuration
Main Access Taxiway	
Dimension/Description	2,950 x 35 feet. Access to apron and hangar areas from Runway 28 & 33 ends.
Surface	Asphalt
Marking	Centerline stripe; hold lines.
Lighting/Reflectors	None
Runway-Parallel Taxiway Separation	N/A
Other Taxiways	
Runway 15 Access Taxiway/Turnaround	190 x 30 feet. Asphalt surface.
Runway 33 Connecting Taxiway	415 x 35 feet. Bituminous Surface Treatment (BST).
Agricultural Area Access Taxiway	550 x 20 feet. Gravel surface.
South T-Hangar Access Taxiway	240 x 20 feet. Asphalt surface.

During a recent site visit, the runways and taxiway appeared to be in fair condition. Aircraft parking aprons ranged from good to poor condition. Sections of pavement around the aircraft fueling area appeared to be in poor condition. It was observed that the runway numbers and other markings on the runways and taxiway were in fair condition.

A wind study for Runway 10/28 was completed in September 2001. Data was collected beginning in August 1, 2000 through July 31, 2001. The data indicates that Runway 10/28 provides 99.3% wind coverage with a 12 mph crosswind. Runway 10/28 meets FAA wind coverage requirements for small runways. Local pilots indicate that Runway 10/28 is the calm

wind runway, with take-offs on Runway 28 and landings on Runway 10. Runway 15/33 provides additional crosswind coverage for smaller aircraft.

Aircraft Apron

Prineville Airport has two aircraft parking aprons located at the east end of the airport. The aprons provide parking for permanently- and seasonally-based aircraft and itinerant aircraft. **Table 2-5** summarizes existing apron facilities at the airport.

TABLE 2-5
AIRCRAFT APRON DATA

Terminal Apron	Approximately 540 x 170-230 ' (varies) (12,650 square yards) Light aircraft tiedowns, aircraft fueling. Asphalt Concrete
Central Apron	Approximately 595 x 210' (13,950 square yards) Light aircraft tiedowns, SEAT Ground Operations Asphalt Concrete
Hangar Apron (Fronting Les Schwab Hangar)	Approximately 340 x 65 ' (2,700 square yards) Temporary aircraft parking, aircraft fueling. Coal Tar Seal over Asphalt Concrete
USFS Helicopter Parking Pad (1)	Hard Surfaced Pad
BLM Helicopter Parking Pads (2)	Hard Surfaced Pads
Helicopter Parking Area	Unimproved Surface (adjacent to AG Apron)
AG Aircraft Apron	Hard Surfaced Pad (north side of Runway 10/28)

The main terminal apron is located at the south end of the terminal area with the fixed base operator (FBO)/general aviation terminal building, the aircraft fueling area, and several conventional hangars located adjacent to the apron. The terminal apron is configured with several rows of light aircraft tiedowns, although larger business itinerant aircraft also park on the apron. A compass rose is painted on the apron near the aircraft fueling area. Based on the most recent pavement evaluation, the condition of the terminal apron ranges from failed (near the fuel area) to excellent directly in front of the FBO.

A second larger apron is located near the center of the terminal area, which is also configured with several rows of aircraft tiedowns. The northern end of the central apron is used for the single engine air tanker (SEAT) aircraft parking and ground operations associated with seasonal

fire response activities. The central apron pavement was rated as very good to excellent during the last inspection. Both aprons are connected to the main access taxiway.

Helicopter parking on the airport includes three designated areas for aircraft used by BLM or USFS. Other itinerant helicopters park on the aircraft aprons in the terminal area.

Agricultural Aircraft Facilities

Prineville Airport has a designated agricultural (AG) aircraft loading area located on the north side of Runway 10/28, near the Runway 28 end. The AG area includes one 30 x 30' concrete loading pad and a taxiway that connects to the end of Runway 28. Vehicle access to the AG area is provided by gravel roadways connecting to the main airport access road.

Airfield Pavement Condition

As part of the **Oregon Aviation System Plan**, the Oregon Department of Aviation manages a program of pavement evaluation and maintenance for Oregon's general aviation airports. This evaluation provides standardized pavement condition index (PCI) ratings, pavement features and current conditions. Through the use of MicroPAVER computer software, current pavement condition ratings are entered into the system with the specifics of each pavement section. The program is able to predict the future condition of the pavements if no action is taken (i.e. rate of deterioration) while also identifying the recommended measures needed to extend the useful life of the pavement section.

Table 2-6 summarizes airfield pavement conditions for Prineville Airport based on the most recent inspections conducted in 2000. During the most recent pavement inspection, the ratings for the pavements ranged from "excellent" to "failed". Runway 15/33 was rated excellent based on the overlay project completed in 2000. Currently, the average PCI for all airfield pavements at Prineville is 70, which is rated "good."

TABLE 2-6
SUMMARY OF AIRFIELD PAVEMENT CONDITION
(AUGUST 2000)

Pavement	Section Design/Age	PCI Rating[1]	Condition
Runway 10/28	2" AC (1980). Eastern 3,155-foot section 3" Crushed Aggregate (1980); 3.5" Aggregate (1966); Western 1,845-foot section 6" Crushed Aggregate (1980).	72 (West Section) 65 (East Section) 92 (Rwy 10 turnaround)	Very Good Good Excellent
Runway 15/33	1.5" AC (2000); 1" Cold Mix AC (1990 - southeast 2,870 feet only); TBST Cinder Mat (1960); 6" Aggregate (1960).	100 (Southeast Section) 100 (Northwest Section) 54-80 (North end Rwy 15)	Excellent Excellent Fair to Very Good
Access Taxiway	2" AC (1988); 6" Crushed Aggregate (1988).	54 (Main taxiway) 0 (Rwy 33 connector)	Fair Failed
Terminal Apron	1.5 to 3" AC (1960-1991); 2-6" Aggregate or Crushed Aggregate (1960-1991).	30 (Southeast Section) 90 (FBO Section) 6-72 (North Section)	Poor Excellent Failed to Very Good
Central Apron	2" AC (1991) main apron; north & south extensions (2000). Various depth of pit run or Crushed Aggregate (1991 & 2000).	83 (Main Apron) 100 (North & South Extensions)	Very Good Excellent

1. The Pavement Condition Index (PCI) scale ranges from 0 to 100, with seven general condition categories ranging from "failed" to "excellent." For additional details, see *Oregon Aviation System Plan Pavement Evaluation/Maintenance Management Program* for Prineville Airport.

LANDSIDE FACILITIES

Hangars and Airport Buildings

In early 2003, the airport had eleven conventional hangars, three T-hangars, and one conventional/T-hangar. The hangars are used primarily for aircraft storage. Other facilities include an airport maintenance equipment storage building, an airport terminal/FBO building, and a caretaker residence.

The Interagency Fire Dispatch Center is located on the airport, adjacent to the terminal area. The facility is used for coordinating wildfire response crews throughout central Oregon and includes operations and equipment storage buildings. Another non-aviation building is located on east side of the airport access road. The building is used primarily for equipment storage and

maintenance. Existing airport buildings are summarized in **Table 2-7**. The identification numbers listed for each building correspond to the buildings depicted in **Figure 2-3**, on Page 2-9.

TABLE 2-7
AIRPORT BUILDINGS

Building ID No. (See Figure 2-3)	Building	Existing Use
1	T-Hangar	Aircraft Storage
2	Conventional Hangar	Aircraft Storage
3	Conventional Hangar	Aircraft Storage
4	Conventional Hangar	Aircraft Storage
6	Interagency Fire Dispatch Buildings	Operations, Equipment Storage
7	Large Conventional Hangar (Quonset)	Aircraft Storage
8	Conventional Hangar	Aircraft Storage, Maintenance
9	Airport Terminal/FBO Building	FBO office, terminal
10	Airport Maintenance Building	Airport Maintenance Equipment Storage
11	Non-Aviation Building	Equipment Storage, Maintenance
13	Large Conventional Hangar (Les Schwab)	Aircraft Storage
14	Conventional Hangar	Aircraft Storage
15	Conventional Hangar (Peverrieri)	Aircraft Storage
16	Conventional Hangar (Riley)	Aircraft Storage
17	Conventional Hangar (EAA)	Aircraft Storage
18	T-Hangar (Zerbe)	Aircraft Storage
19	T-Hangar (Zerbe)	Aircraft Storage
21	T-Hangar/Conventional Hangar (C&V)	Aircraft Storage
22	Conventional Hangar (Grizzly Mtn.)	Aircraft Storage
25	Caretaker Residence	Residence

Airport Lighting

Prineville Airport accommodates day and night operations. Both runways are equipped with edge lighting and threshold lights; Runway 28 is equipped with a visual guidance indicator (VGI). These lights are pilot-activated on the radio frequency 122.8 MHz.

The airport has a lighted wind cone located near the intersection of the two runways. A second unlighted wind cone is located near the terminal apron and the end of Runway 33. The airport beacon is mounted on a wooden tower on the south side of the taxiway between the fuel pump island and the airport maintenance storage building in the terminal area. **Table 2-8** summarizes existing airport lighting at Prineville Airport.

Runway 10/28 has medium intensity runway edge lighting (MIRL) and Runway 15/33 has low intensity runway edge lighting (LIRL). The runway edge lights are set on a dusk-to-dawn automatic switch. The runway lights are generally in good condition, although during a recent site visit, several threshold lights on Runway 33 were observed to be broken. Local pilots indicate that powered parachutes and ultra-lights occasionally land short of the runway damaging these lights.

The taxiway does not have any lighting or edge reflectors. Some limited overhead lighting is available in the aircraft hangar area, with building- or pole-mounted floodlights.

Local pilots that attended the joint planning conference for this project requested that visual guidance indicators (VGI), such as visual approach slope indicators (VASI) or precision approach path indicators (PAPI) be provided on Runway 10.

TABLE 2-8
AIRPORT LIGHTING

Component	Type	Condition
Runway 10/28 Edge Lighting	Medium Intensity Runway Edge Lighting (MIRL)	Good
Runway 15/33 Edge Lighting	Low Intensity Runway Edge Lighting (LIRL)	Fair
Taxiway Lighting or Reflectors	None	N/A
Lighted Airfield Signage	None	N/A
Visual Guidance Indicators	Visual Approach Slope Indicator (VASI) – Rwy 28	Good
Airport Lighting	Airport Rotating Beacon; Lighted Wind Cone	Good

AIRSPACE AND NAVIGATIONAL AIDS

Prineville Airport operates under visual flight rules (VFR) and instrument flight rules (IFR) conditions. The airport has two published global positioning system (GPS) instrument approaches, one non-directional beacon (NDB) approach and a published Departure Procedure (DP). The fixed base operator provides limited weather information, but the airport does not have certified 24-hour weather data available. The instrument approaches for Prineville require the use of the Roberts Field altimeter setting. The airport has no ground-based electronic navigational aids. **Table 2-9** summarizes existing navigational aids and related items.

TABLE 2-9
NAVIGATIONAL AIDS AND RELATED ITEMS

Type	Facilities
Electronic Navigational Aids	None on site. Nearest Locations: Bodey NDB (5.1 nm NW) 411 KHz Deschutes VORTAC (17.3 nm W) 117.6 MHz
Instrument Procedures	RNAV (GPS) Runway 10 - MDA 4,020 feet (770 AGL) 1 to 2 ½ mile visibility RNAV (GPS) Runway 28 - MDA 3,840 feet (594 AGL) 1 to 1 ¾ mile visibility NDB Runway 10 - MDA 4,100 feet (850 AGL) 1 to 2 ¾ mile visibility Deschutes RNAV One Departure (DSD1.DSD) (Pilot Nav)
Weather Observation	Local conditions via FBO; no certified on-field weather data available
Communication	Common Traffic Advisory Frequency (CTAF) (122.8 MHz)

The area surrounding the airport consists mostly of open rangeland with minimal trees. Oregon Highway 126 crosses through the runway protection zones (RPZ) for Runway 33 and Runway 28. Airport property also extends south of the highway. It appears that vehicles traveling on the highway remain below the runway approach surfaces and do not create an obstruction to the approaches. Because the airport's runways intersect, a runway visibility zone (RVZ) is established, which should be free of obstructions to provide adequate visibility between the two runways. The 1994 ALP indicated that areas of terrain penetration and vegetation may be located within the RVZ; the airport sponsor has indicated that these areas have been cleared.

The local airport traffic pattern altitude is 800 feet AGL (larger aircraft typically use 1,000 feet) with standard left traffic. Prineville Airport is located in an area of Class E airspace with floor 700 feet above ground level, although there are no mandatory radio communication requirements during visual flight rules (VFR) conditions.

Tables 2-10 and 2-11 summarize notable obstructions, special airspace designations and IFR routes in the vicinity of Prineville Airport, as identified on the Klamath Fall Sectional Aeronautical Chart. Local airport operations and flight activity is not affected by the noted airspace or obstructions located in the vicinity of the airport.

TABLE 2-10
LOCAL AIRSPACE OBSTRUCTIONS/FEATURES
(10 NAUTICAL MILE RADIUS)

Type of Obstruction	Description	Distance From Airport
Tower	Single 305-foot (AGL) Tower	4 miles northwest
Overhead Power Line	Transmission Line	1-1.5 miles west of airport

TABLE 2-11
AIRSPACE/INSTRUMENT ROUTES

Airspace Item	*Description*	Location
Low Altitude Enroute Airway	Victor 121 – 9,000 feet mean sea level minimum enroute altitude (MEA)	10 nautical miles north. Connects Deschutes and Kimberly VORTACs on a 052-231 degree course.
Low Altitude Enroute Airway	Victor 269 – 9,500 feet mean sea level minimum enroute altitude (MEA)	13 nautical miles south. Connects Deschutes VORTAC and Wildhorse VOR/DME on a 088-272 degree course.
Class D Airspace	Associated with Redmond Airport (towered airport)	5 miles west
Class E Airspace	Associated with low altitude federal airways (700 feet above ground level)	Directly over airport, extending 5-20 miles in all directions.

AIRPORT SUPPORT FACILITIES/SERVICES

Aircraft Fuel

Aviation gasoline (AVGAS) and jet fuel are available for sale at the airport. There are two 12,400-gallon underground fuel storage tanks with leak detection systems. The FBO provides 24-hour call-out fuel service. The fuel storage tanks and fuel pumps are located adjacent to the FBO at the north end of the terminal apron. A second fueling area (pump), located adjacent to the Les Schwab hangar, is privately owned and is connected to the main jet fuel storage tank by a hard-piped underground fuel line.

Surface Access and Vehicle Parking

Vehicle access to the airport apron and hangar areas is provided by an airport access road from State Route 126. All landside facilities are located in the southeastern part of the airport parallel to the connecting taxiway. Vehicle parking on the airport includes a paved parking area behind the FBO on the east side of the apron. Several unpaved access roads serve developments beyond the immediate terminal area, including the single T-hangar located near Runway 33 and the AG area and helicopter area located north of Runway 28.

Preliminary design has been completed for a reconfiguration of the existing airport access road. The roadway will be reconfigured to serve lease areas between Highway 126 and the existing access road. The existing road will be gated and new road will be realigned along the eastern edge of the airport, immediately adjacent to Highway 126.

Fencing

The airport has range fencing located along the outer property boundaries. Chain-link fencing is limited to the area along the east side of the airport access road and around the Interagency Fire Dispatch Center and adjacent non-aviation developments. Local airport users indicate that wildlife, primarily deer, are present at the airport and occasionally need to be cleared from the runways or taxiway in order for aircraft to operate.

Utilities

Prineville Airport is located within the city limits and has city water and sewer service, in addition to electric and telephone service. Electrical service at the airport on the airfield side of the access road is provided by Pacific Power. Central Electric Co-op provides electrical service on the other east side of the road. The City of Prineville supplies sewer and water. Qwest provides telephone and data service, which includes fiber capability. Natural gas (provided by Cascade Natural Gas) is not yet available at the airport, but access is located nearby. Fire protection is provided by Crook County Rural Fire District #1, with the closest station located approximately three miles away. The airport owns and operates a snowplow.

The FBO, Prineville Aviation provides airport management, aviation fuel, aircraft maintenance, aircraft parking (ramp or tiedown), pilot supplies, passenger terminal and lounge, flight school/flight training, aircraft rental, public telephone and public restrooms. Courtesy transportation is also provided to incoming pilots and passengers.

LAND USE PLANNING AND ZONING

Prineville Airport is located entirely within the City of Prineville's Urban Growth Boundary (UGB) and city limits. The facility is jointly operated by the City of Prineville and Crook County. Portions of the airport are zoned City of Prineville, Airport Operations (A-O); Prineville Airport Development (A-D); Prineville Airport Business – Industrial (A-M); Prineville Airport Commercial (A-C); and Crook County Heavy Industrial (HM). City and/or County industrial zoning is located to the southeast, east, and north of the site, with the remaining areas in Crook County Exclusive Farm Use (EFU3) Zoning. The City's Airport Approach (AA) Zone extends off either runway end, and is intended to protect against incompatible land uses directly aligning with those areas. In addition, the various City of Prineville airport/commercial and industrial zones described above contain certain height restrictions that are intended to protect aviation from incompatible development and activities in those locations. These provisions, however, do not meet the full requirements for an Airport Overlay Zone as those are currently expressed in Oregon's Revised Statutes Chapters 836.600-630 and FAR Part 77, and the City and County zoning documents and mapping should be amended to demonstrate this compliance. **Table 2-12** summarizes the existing land uses and zoning in the vicinity of the airport.

AIRPORT SERVICE AREA

The airport service area refers to the area surrounding an airport that is directly affected by the activities at that airport. Normally a 30 or 60-minute surface travel time is used to approximate the boundaries of a service area. Several public use airports are located within a 50-mile (air) radius of Prineville, in addition to several private use airports. The number of well-developed airports located within the local service area illustrates the level of competition that exists between airports to attract aircraft and tenants. **Table 2-13** lists the public airports in the vicinity of Prineville.

TABLE 2-12
AIRPORT VICINITY LAND USE AND ZONING

Land Use	Zoning
Airport Site:	City of Prineville Airport Operations (A-O); City of Prineville Airport Development (A-D); City of Prineville Airport Business – Industrial (A-M); City of Prineville Airport Commercial (A-C); City of Prineville Airport Approach (AA); Crook County Heavy Industrial (HM)
North: Houston Lake Road Open Space, Range Land Industrial Uses	 Crook County Exclusive Farm Use (EFU) Crook County Industrial (H-M); Prineville Manufacturing (M-1)
South: Ochoco Highway / U.S. 126 Open Space, Range Land City Airport Industrial Park	 Crook County Exclusive Farm Use (EFU) Prineville Manufacturing (M-3; M-1)
East: Tom McCall Road, U.S. 126 Industrial, Open Space, Airport Land	Prineville Manufacturing (M-3), Crook County Light Industrial (L-M)
West: Open Space, Range Land	 Crook County EFU

TABLE 2-13
PUBLIC USE AIRPORTS IN VICINITY
(WITHIN 50 NAUTICAL MILES)

Airport	Location	Runway Dimension (feet)	Surface	Fuel Available ?
Bend Municipal	17 NM southwest	5,005 x 75	Asphalt	Yes
Redmond-Roberts Field	11 NM west	7,040 x 150 (primary rwy)	Asphalt	Yes
Lake Billy Chinook	23 NM northwest	5,000 x 80	Dirt	No
Sunriver	34 NM southwest	5,455 x 70	Asphalt	Yes
Sisters Eagle Air	27 NM west	3,550 x 30	Asphalt	No
Madras City-County	24 NM northwest	5,100 x 75 (primary rwy)	Asphalt	Yes

FORECASTS OF AVIATION ACTIVITY

Overview

The purpose of this section is to update the forecasts of aviation activity for the twenty-year planning period addressed in the Airport Layout Plan Update (2002-2022). The scope of work for this project suggests use of the most recent Oregon Aviation System Plan forecasts, with revision as required, to reflect current conditions. However, a review of these forecasts failed to show sufficient applicability to current conditions at Prineville. In addition, the forecasts from the 1994 Airport Layout Plan Update[5] were reviewed and they too, were found to no longer reflect recent activity or current trends at the airport. For this reason, a more in-depth review of recent airport activity data and available forecasts was required to provide reasonable basis for projecting future activity.

A review of historical data indicates that over the last forty years, Prineville Airport has experienced a series of upward and downward shifts in activity. As a result, most previous forecasts have been unable to accurately predict aviation activity beyond the short term. Although the substantial growth in based aircraft experienced at the airport over the last three to four years may provide a more stable user base, and therefore more predictability of overall activity, there is no assurance that all of the factors contributing to the past fluctuations in activity have changed significantly. Based on the airport's extended history, it seems plausible that future activity will continue to periodically rise and fall, rather than following a linear (upward) trend line.

It is important to note that over the last several years, Prineville Airport has experienced growth that has exceeded statewide or national averages, particularly for based aircraft. This recent growth may be partly attributed to Central Oregon's growing fleet of general aviation aircraft and the associated demand for hangar space, but may be more specifically related to the airport's effectiveness in attracting new users in a highly competitive airport market. The underlying strength of the community, as reflected in the long-term projections of growth in population and employment, coupled with the airport's operational and development potential, and its proven ability to respond to market opportunities, suggests that the potential exists to sustain modest-to-moderate growth over the long-term. Based on these factors, it is reasonable that the updated forecasts of aviation activity reflect this potential.

The Airport Layout Plan Report will provide updated aviation activity forecasts for short- (0-5 years), intermediate- (6-10 years), and long-term (11-20 years) periods for based aircraft, aircraft

[5] Prineville Airport Layout Plan Report (Morrison-Maierle, 1994)

operations (takeoffs and landings), and other related items such as design aircraft operations and fleet mix. Once developed, the forecasts of aviation activity can then be translated into gross facility needs for the planning period. The definition of the airport's facility requirements and the development alternatives capable of meeting projected facility needs will be presented in the next two chapters of the study.

Historical Aviation Activity

The first step in updating the forecasts of aviation activity is to review available historical data and forecasts. For Prineville Airport, this review included previous airport master planning documents (1979 and 1994), state aviation system planning documents (1989, 1997 and 2000), and the Federal Aviation Administration (FAA) Terminal Area Forecast (TAF). Data generated through the RENS Aircraft Monitoring Program, conducted by the Oregon Department of Aviation (ODA), was also reviewed. In the absence of air traffic control tower records, the RENS data generally provides the most reliable estimates of activity for uncontrolled airports.

Historic aviation activity data for Prineville Airport is summarized in **Table 2-14**. The historical data indicates that the number of based aircraft at Prineville has increased nearly six-fold over the last forty years. However, it is interesting to note that the number of based aircraft at the airport nearly doubled between 1998 and early 2002, after fluctuating between 13 and 43 based aircraft during the preceding 35 years. A review of recent aerial photographs for the airport (August 1998 and October 2001) confirms that construction of eight new hangars, including two T-hangars and six small/medium conventional hangars occurred during the three-year period. This construction effectively doubled the hangar capacity at the airport and appears to be a primary factor in the recent increase in based aircraft reported by airport management. **Figure 2-4** depicts the historic trend in based aircraft at Prineville Airport since 1977.

The current estimate of based aircraft is 74, including year-round and seasonally based aircraft.[6] The majority of based aircraft at Prineville Airport are single engine piston, although two Cessna Citation business jets and one TBM 700 single engine turboprop are currently based at the airport. The airport also accommodates a variety of fixed wing and rotor aircraft during the fire season, most of which are turbine-powered. **Table 2-15** summarizes current based aircraft at the airport.

[6] Based aircraft totals include FAA-registered aircraft only. Unregistered aircraft such as powered parachutes are not included in the airport based aircraft totals.

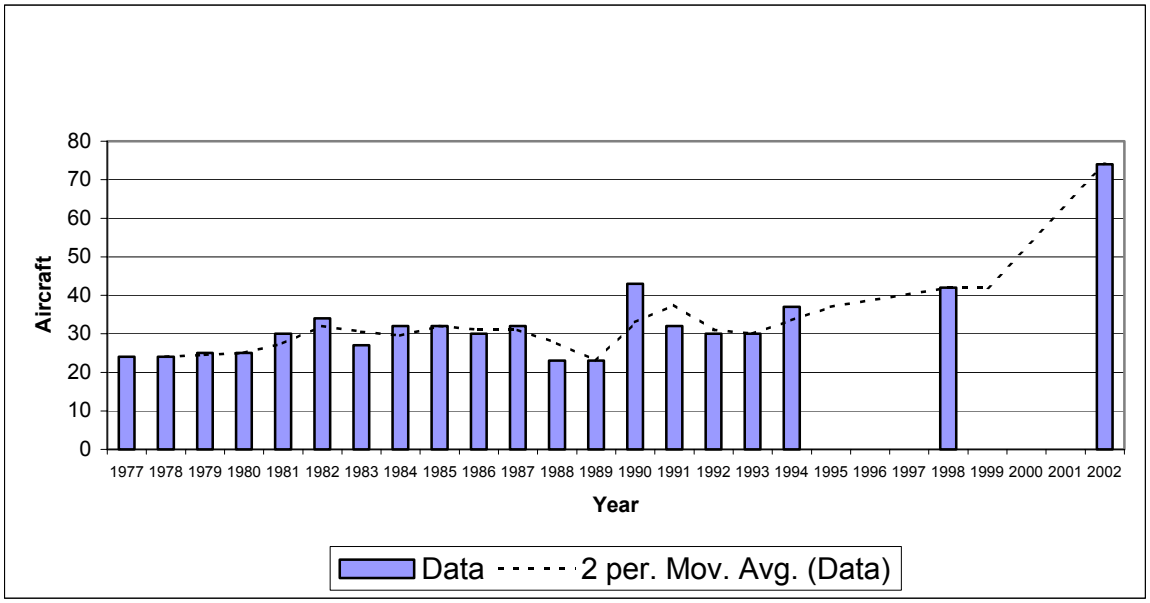
TABLE 2-14
HISTORICAL AVIATION ACTIVITY
PRINEVILLE AIRPORT

Year	Based Aircraft	Aircraft Operations	Operations Per Based Aircraft	Data Source
1963	13	2,000	154	1
1965	15	5,800	387	1
1970	13	7,000	539	1
1977	24	13,000	542	2
1980	25	11,200	448	3
1981	30	13,610	454	3
1982	34	13,610	400	3
1985	32	3,010	94	4, 3
1986	30	4,886	163	4, 5
1987	32	--	--	7
1988	23	4,886	212	7
1989	23	3,271	142	7
1990	43	3,271	76	7
1992	30	7,600	253	7
1993	30	4,082	136	7, 5
1994	37	4,600	124	6
1994	30	4,500	150	7
1997	--	2,818	--	5
1998	44	13,985	318	5, 8
2001	74	8,892	120	5, 9, 10
1963-2001 Average	*30.6*	*6,949*	*261.7*	*11*
1985-2001 Average	*35.7*	*5,483*	*162.5*	*11*

Data Sources/Notes:

1. 1979 Airport Master Plan; data originated from FAA Form 5010.
2. 1979 Airport Master Plan; FBO Estimate
3. FAA TAF Data
4. Oregon Aviation System Plan – 1989 Inventory 1990-2000 Forecasts
5. ODA RENS Aircraft Activity Counter Program
6. 1994 Airport Layout Plan Report
7. Oregon Continuous Aviation System Plan. Volume 1: Inventory and Forecasts (1997)
8. Century West Estimate (Based AC)
9. Airport Records (Based AC)
10. Includes only FAA registered aircraft.
11. Statistical Mean for available data only.

FIGURE 2-4: PRINEVILLE AIRPORT HISTORIC BASED AIRCRAFT



Source: Airport Records, Oregon Aviation System Plan Data, FAA Form 5010.

TABLE 2-15
2002 BASED AIRCRAFT
PRINEVILLE AIRPORT

Aircraft Type	Quantity
Single Engine Piston	52
Multi-Engine Piston	0
Single Engine Turboprop	4
Business Jet	2
Helicopters	5
Other (Experimental, Ultralights)	11
Total	**74**

Source: Updated airport inventory (2002). FAA registered aircraft only; does not include powered parachutes, etc.

Based on the most recent activity counts and based aircraft records, Prineville currently has a ratio of approximately 120 operations per based aircraft; the airport has averaged 162.5 operations per based aircraft over the last sixteen years. This utilization is relatively low compared to many other general aviation airports. However, specific activities such as the volume of flight training can significantly affect utilization levels. The 1994 Airport Layout Plan Report used a ratio of 160 operations per based aircraft in its forecasts. By comparison, aircraft utilization at Bend Municipal Airport in the year 2000 was 238 operations per based aircraft (36,652 operations/154 based aircraft).

Estimates of aircraft operations (takeoffs and landings) at Prineville Airport have fluctuated widely over the last forty years. Prior to the introduction of the Oregon Department of Aviation's aircraft activity counter program, estimates of aircraft operations (including master plan estimates) at non-towered airports were frequently higher than the statistically derived estimates subsequently generated. This may be have been the case at Prineville in the 1970s and 1980s, when activity was routinely estimated to be between 10,000 and 13,000 operations per year, with fewer than 35 based aircraft. It is also possible that the active general aviation industry of the period, which included record numbers for new aircraft deliveries and pilot training, may have contributed to higher activity levels. Although the general aviation industry has enjoyed a sustained rebound since the mid-1990s, the peak activity levels previously experienced at most small airports have not been matched in recent years. The most recent activity estimate for Prineville was generated for the twelve months ending in October 2001 (8,892 operations).

Airport Activity Counts (RENS Data)

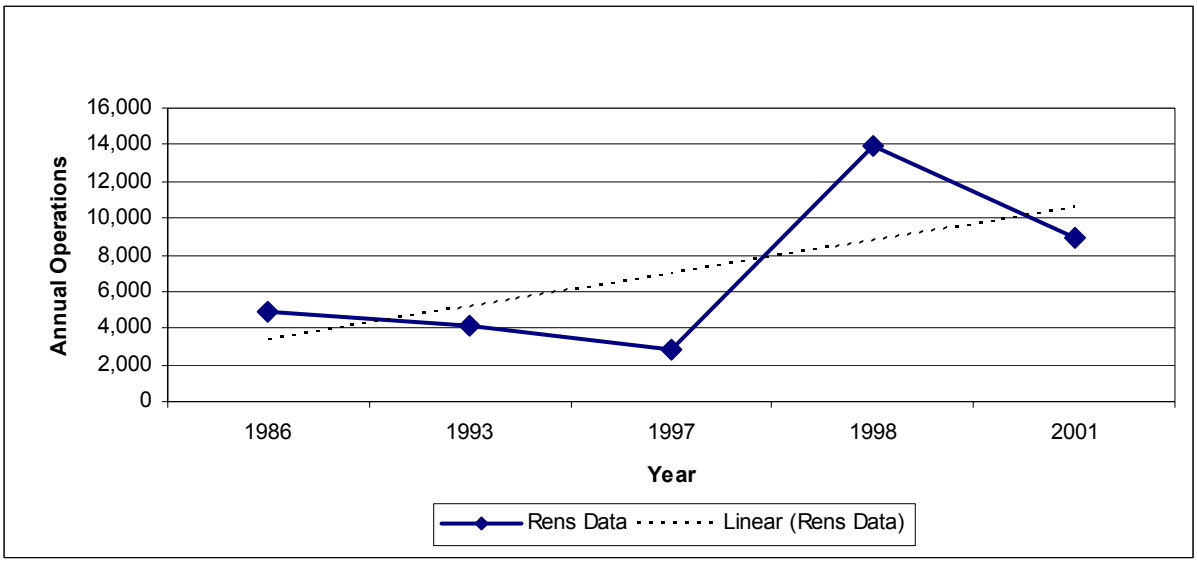
Prineville Airport had five separate activity counts generated through the RENS Aircraft Activity Counter Program between 1986 and 2001. The availability of these estimates over an extended period of time is helpful in defining airport activity levels, general trends and significant relationships between activity segments. **Figure 2-5** illustrates the annual estimates of aircraft operations from the counting program at Prineville Airport.

Although some significant fluctuations appear in individual activity counts, particularly between the 1997 and 1998 counts (+397 %), the full range of data available for Prineville provides a reasonable indication of an overall growth trend. This is further supported when comparing the airport's overall increase in based aircraft that occurred during the same period. While it is possible that the extreme high and low estimates for two of the five years may be attributed to unusually busy or slow flight activities, it is possible that an anomaly in counting may be partly responsible for the sharp fluctuations. In either event, neither the high or low estimates appear to provide a reliable indication of current activity. Future activity counts may help to better define the nature of the apparent anomaly. Even when factoring in a relatively flat period of activity

through the mid-1990s, aircraft operations increased by 82% between 1986 and 2001. This represents an annual average growth rate of 4.1 percent over the fifteen-year period.

The most recent RENS estimates for Prineville Airport are summarized in **Table 2-16**. The data indicates that the majority of air traffic at Prineville consists of single engine aircraft, with jet operations representing the second largest activity segment. The most recent activity count (the twelve months ending in October 2001) seems to closely correspond to the airport's recent hangar construction and increase in based aircraft. The operations-per-based aircraft ratio for this period is similar to the airport's historical average. For the purposes of developing updated forecasts of aircraft activity, the 2000-2001 data provides a reasonable "base year."

FIGURE 2-5: PRINEVILLE AIRPORT RENS DATA



Air traffic at Prineville Airport is predominately general aviation with a small amount of government activity. The airport accommodates fire related fixed-wing and helicopter operations, which vary from to year based on the level of fire activity. Local fire agency staff estimates that this activity ranges between 500 and 1,000 annual operations. The airport accommodates locally based and itinerant business aviation activity, including business jets. Based the most recent activity counts, business jet activity now accounts for more than 12% of annual operations and may be expected to increase in the future as additional jet aircraft may be located at the airport.

TABLE 2-16
2000-2001 AIR TRAFFIC ESTIMATES
PRINEVILLE AIRPORT

Operations by Type	Annual Estimate	Percent by Type
Single-Engine	6,912	77.7%
Multi-Engine	443	5.0%
Jet Engine	1,117	12.6%
Rotary Engine	211	2.4%
Other	211	2.4%
Total Aircraft Operations	**8,892**	**100%**

Source: Oregon Department of Aviation Aircraft Monitoring Program.

Regional Evaluation

As noted earlier in this chapter, several public and privately owned airports are located in the vicinity of Prineville Airport. Available data for these airports indicates that there are more than 430 aircraft located within Prineville's airport service area, as summarized in **Table 2-17**. Prineville currently accounts for about 17 percent of the area's based aircraft, with Bend and Redmond accounting for more than 60 percent. This data illustrates two important points about Prineville's airport service area. First, the total number of general aviation aircraft in the service area is substantial, which is a key element in creating and sustaining demand. Second, the number of airports in the service area is significant, which contributes to increased competition in attracting aircraft and tenants. As a result, competition among airports (services and facilities) is expected to continue being a primary factor affecting aviation activity at all airports within the local service area.

TABLE 2-17
BASED AIRCRAFT LOCATED AT AIRPORTS IN PRINEVILLE AIRPORT SERVICE AREA

Airport	Location (from Prineville)	Based Aircraft (Estimated)
Prineville Airport		74
Madras City-County Airport	24 miles northwest	45
Redmond – Roberts Field	11 miles west	110
Bend Municipal Airport	17 miles southwest	154
Dry Creek Airpark (private)	8 miles south	3
Tailwheel Airport (private)	3 miles southeast	0
Wilson Ranch Airport (private)	16 miles southeast	N/A
Sunriver (private)	34 miles southwest	47
Total Based Aircraft in Local Service Area		**433**

Source: FAA 5010 Record Forms as summarized on AIRNAV.COM; airport records from master plan updates. N/A: data not available, but estimated to be less than 10 aircraft.

A review of historic and forecast based aircraft at the primary public use airports in the local airport service area is presented in **Table 2-18**. This data demonstrates that aviation activity at area airports has experienced recent growth that reflects the strong regional economy and population growth that has been experienced throughout central Oregon. In recent years, this area has outpaced broader statewide or other regional averages for population growth and aviation activity.

Table 2-19 illustrates the historic relationship between Prineville's based aircraft and Crook County population over the last thirty years. Since 1970, the number of based aircraft at Prineville Airport has increased at a rate nearly three times higher than Crook County population. As a result of this trend, the ratio of population to based aircraft has shifted considerably. Currently, there is approximately one based aircraft (at Prineville Airport) for every 286 Crook County residents. In 1970, the ratio was 1 aircraft per 768 residents.

TABLE 2-18
LOCAL AREA BASED AIRCRAFT FORECAST

Airport	Based Aircraft (1994)	Current Based Aircraft [1]	Long-Term Forecast	Average Annual Growth *(Forecast)*
Bend Municipal	112	154	250[2]	2.5%
Redmond – Roberts Field	61	110	170[3]	2.6%
Madras City-County	45	46	55[4]	1.0%
Sunriver	37	47	48[5]	1.1%[6]
Total	**255**	**357**	**523**	
Overall Change	--	*+ 40%*	*+46.5%*	
Average Annual Growth	--	*4.9%*	*2.3%*	
Prineville Airport	37	74	--	
Total Including Prineville	**292**	**431**	--	
Overall Change	--	*+47.6%*	--	
Average Annual Growth	--	*5.7%*	--	

1. FAA 5010 record forms, local airport master plans or airport records.
2. Airport Plan Update (2020 Forecast), Century West Engineering (2001)
3. Airport Master Plan (2017 Forecast), Coffman Associates (1997)
4. Airport Layout Plan Report (2017 Forecast), Aron Faegre & Assoc. (1997)
5. Oregon Aviation Plan (2018 Forecast), Dye Management (2000)
6. AAR from OASP forecast 1994-2018.

TABLE 2-19
HISTORIC POPULATION AND PRINEVILLE BASED AIRCRAFT

Year	Crook County Population	Prineville Airport Based Aircraft	Ratio of Residents Per Based Aircraft
1970	9,985	13	768
1980	13,091	25	524
1990	14,214	43	331
2000	19,182	60[1]	320
30-Year Straight Line Growth	*2.2% Annual Average Growth*	*5.2% Annual Average Growth*	

Source: Oregon Office of Economic Analysis, Airport Records. 1. Interpolated between 1998 and 2001counts.

Previous Forecasts

A review of existing aviation forecasts for Prineville Airport was conducted to identify information that may be useful in projecting future activity. The previous forecast of aircraft operations is depicted in **Figure 2-6**.

1979 Prineville Airport Master Plan

The 1979 Airport Master Plan provided forecasts of aviation activity through the year 2000. Based aircraft were forecast to increase from 24 (1977) to 42 by 2000, which represented an annual average increase of 2.5 percent. Aircraft operations were projected to increase from an estimated 13,000 (1977) to 30,200, which represented an annual average increase of 3.7 percent. By comparison, the Crook County population was forecast to increase at annual average rate of 1.34 percent between 1977 and 2000.

As noted earlier, estimates of aircraft operations at non-towered airports varied greatly during this period. For Prineville, the estimates of base year activity may have been considerably higher than actual data. Alternatively, the base year data may have been reasonably reliable and the forecasts simply did not anticipate the extended downturn in activity that would eventually be documented through the initial acoustical activity counts. In either event, the 1979 forecasts have become obsolete and do not provide a reasonable basis for developing future projections of activity at Prineville Airport.

1994 Prineville Airport Layout Plan

The 1994 Airport Layout Plan provided forecasts of based aircraft and operations through the year 2014. These forecasts appear to have tracked reasonably well until the last few years when a surge in based aircraft and operations occurred.

Based aircraft were forecast to increase from 37 (1994) to 57 by 2014, which represented an annual average increase of 2.2 percent. The current (2002) number of 74 based aircraft is nearly double the forecast for 2000 and now exceeds the 2014 forecast. The actual average annual growth in based aircraft at Prineville Airport between 1994 and 2002 was 9.1 percent.

The introduction of the acoustical activity counter program at Prineville in 1986 provided an opportunity to compare statistically generated estimates of activity with anecdotal estimates for the first time. The 1994 forecasts used base year (1993) operations estimates that were comparable to the acoustical counts. Aircraft operations were projected to increase from an estimated 4,600 (1993) to 9,100 by 2014, which represented an annual average increase of 3.3 percent.

The 2000-2001 activity counts exceeded the year 2000 forecast by approximately 29 percent and the 2014 forecast is comparable to the 2000-2001 RENS activity count. The average annual growth in aircraft operations between 1993 and 2001 was 10.2 percent, although it appears that most of the growth corresponded to the sharp increase in hangar construction that occurred at the airport between 1998 and 2001.

The recent surge in based aircraft has contributed to an increase in activity that has outpaced the 1994 forecasts. Based on the recent shifts in activity, the 1994 ALP forecasts no longer provide a reliable basis for estimating future activity.

State Aviation System Planning

The most recent Oregon Aviation System Plan[7] (OASP) forecasts of based aircraft were developed using 1994 base year numbers, with projections made to 2014. The 2000 Oregon Aviation Plan[8] (OAP) extrapolated these forecasts to 2018, but did not include any changes in forecast assumptions. From a 1994 base year estimate of 30 based aircraft, the OASP projected the number of based aircraft to increase to 38 by 2014; this projection was subsequently extended to 40 based aircraft by 2018. The OASP forecasts (1994-2018) represent an increase in based aircraft of 33 percent, which translates into an annual average growth rate of 1.2 percent. Aircraft operations were projected to increase from 4,500 (1994) to 5,927 in 2018, which translates into an annual average growth rate of 1.15 percent.

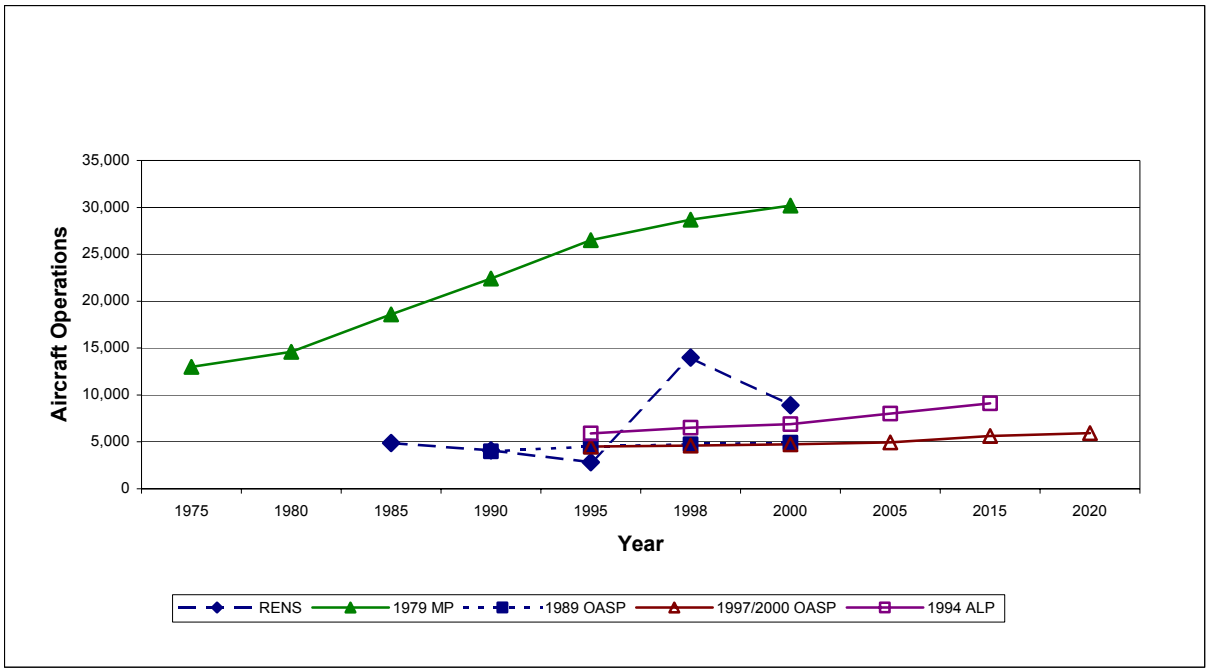
The OASP forecasts are useful as a general reference to establish baseline long-term growth rates. However, since they have not been substantively revised in eight years, they are not considered recent enough for use in developing updated projections.

FAA Terminal Area Forecasts (TAF)

The TAF for Prineville reflects no increase in based aircraft and a very modest increase in aircraft operations through 2015. From a 2000 base year total of 4,780 operations, the TAF projects operations to increase to 5,164 in 2015. The increase of about 8 percent translates into an annual average growth rate of 0.52 percent over the fifteen-year period. A review of the TAF indicates that the base year numbers for based aircraft and operations do not coincide with recent estimates of activity. As a result, the long-term forecasts produce activity levels that are below current levels and will need to be updated to provide relevant long-term projections.

[7] Oregon Continuous Aviation System Plan, Volume I Inventory and Forecasts (1997, AirTech).
[8] Oregon Aviation Plan, © 2000 Dye Management Group.

FIGURE 2-6: PRINEVILLE AIRPORT HISTORIC FORECASTS



National Trends

After an extended period of decline, the U.S. general aviation industry experienced a period of sustained growth between 1994 and 2000. During this period, the general aviation fleet increased by 25 percent overall, or about 3.2 percent per year. The fastest growing segments of the fleet over the last seven years have been business jets, helicopters and experimental aircraft, which increased between 7.5 and 9 percent per year. The general aviation industry experienced a downturn in 2001, which began with an economic slowdown and then accelerated following the events associated with September 11th. Most segments of general aviation activity declined in 2001 including aircraft operations at towered airports, which dropped by nearly 6 percent from 2000 levels. Similar declines were experienced at non-towered airports. In 2002, general aviation began to show some signs of improvement, but overall, activity did not return to 2000 levels. It is uncertain whether the slow industry response was due to lingering concerns about security or the result of an extended economic downturn after several years of strong economic growth.

Although single-engine piston aircraft (not including experimental) account for nearly 70 percent of the GA fleet, the rate of growth in business jets, turboprops, piston and turbine helicopters, and experimental aircraft has been two to four-times greater than single-engine aircraft over the last six years. The number of business jets in the GA Fleet has increased by more than 80 percent

since 1994. Strong increases in the number of corporate aircraft operators, fractional ownership of business aircraft, and aircraft charters appear to represent a business response to current commercial air service options. At the opposite end of the general aviation industry, the number of experimental aircraft in the U.S. GA Fleet increased by nearly 70 percent between 1994 and 2001. These two segments of activity are among the strongest parts of the current general aviation industry and are significant users of Prineville Airport.

The FAA recently updated its long-term aviation forecasts to reflect the recent downturns experienced in the industry. A summary of the FAA's growth assumptions used in developing their long-range aviation forecast (2001-2013) is provided in **Table 2-20.** [9] The FAA's long-term forecasts project a very conservative increase the number of aircraft in the U.S. general aviation fleet between 2002 and 2013. The FAA's forecasts for hours flown, tower operations and instrument operations also reflect modest annual average growth rates ranging from about 1.5 to 2.0 percent over the next ten years. Certain segments of activity, such as hours flown for turbine aircraft, (particularly business jets) are expected to increase at rates between 2 and 4 percent per year.

The FAA 2001-2015 TAF projects that total airport operations within the Northwest Mountain Region will increase 17.5 percent by 2015, which is an annual average increase of approximately 1.08 percent.

[9] FAA Long Term Aviation Forecasts, updated 2002.

TABLE 2-20
FAA LONG RANGE FORECAST ASSUMPTIONS

Activity Component	Forecast Annual Average Growth Rate (2001-2013)
Active GA Aircraft Fleet	+0.3% per year
Turbine Aircraft (FW & Rotor)	+1.8% per year
Business Jet	+3.5% per year
Piston (FW & Rotor)	+0.2% per year [1]
Hours Flown (all aircraft)	-2.2% in 2002; +0.4% in 2003; then +1.5% through 2013
Hours Flown (turbine aircraft, including rotor)	+2.2 percent
Hours Flown (piston aircraft, including rotor)	+0.7 percent
Hours Flown (business jet)	+4.1 percent
Tower Operations	-2.6% in 2002; +7.1% in 2003; then +1.7% through 2013
Instrument Operations at FAA and Contract Towers	-4.2% in 2002; +4.6% in 2003; then +2.0% through 2013
Active General Aviation Pilots	+0.8%
Student Pilots [2]	-4.5% in 2002; -1.2% in 2003; then +1.0% through 2013

1. FAA forecasts piston fleet to increase by an annual average rate of 0.4% after 2004, following anticipated declining numbers in the 2002-2004 time period.
2. AOPA has contradicted FAA's student pilot numbers citing a 13 percent undercount of student pilot certificates in 2000 and 2001. AOPA claims that this error significantly reduces forecast levels of activity.

Updated Forecasts

The review of available forecasts and historical data provided some information that was useful in developing updated aviation forecasts for Prineville Airport:

- *The number of based aircraft at Prineville Airport has increased by 100 percent since the last airport layout plan was updated in 1994. This equals an average annual rate of 9.1 percent.*
- *The number of based aircraft at other airports in Prineville's service area increased by 40 percent during this same period, which equals an average annual rate of 4.9 percent.*
- *Between 1990 and 2000, the population of Crook County increased at an average annual rate of 3.1 percent.*

- *The long-term population forecast for Crook County projects an increase of about 1.6 percent per year, through 2040. Long-term forecasts for Deschutes and Jefferson County population reflect similar growth rates.*

- *Recently-updated master plan forecasts for the Bend and Redmond Airports project based aircraft to increase at about 2.5 to 2.6 percent per year over the next twenty years. The forecasts of general aviation operations at these airports reflect similar growth rates.*

- *Prineville Airport has averaged approximately 163 operations per based aircraft over the last sixteen years.*

As noted earlier, the previous forecasts of aviation activity for Prineville Airport were determined not to be sufficiently current for use in this planning document. A review of historic data, previous forecasts and other related information has provided the basis for developing new projections.

The availability of detailed historical aviation activity data at Prineville Airport is generally limited to estimates of based aircraft and aircraft operations. A side-by-side review of these two activity segments provides an indication of an airport's operational characteristics. The ratio of an airport's total operations to the number of based aircraft provides a broad indication of activity trends. In the absence of more reliable indicators, the use of a basic activity ratio is recommended to forecast growth in aircraft operations. The following projections were developed for Prineville Airport. The updated forecasts are summarized in **Table 2-21** and depicted in **Figures 2-7 and 2-8** at the end of the chapter.

Updated OASP Forecasts

The 1997/2000 OASP forecasts have been updated to reflect the current base year (2001) activity levels at Prineville Airport. The average growth rates developed in the OASP forecasts were applied to the base year data to provide updated projections. The projected average annual growth is 1.08 percent for based aircraft and 1.15 percent for aircraft operations.

Local Market Forecast

Based on the review of forecast activity at other airports in Prineville's service area, a projection was developed for Prineville that reflects a comparable growth rate to that of other nearby airports. This "market-based" projection provides a reasonable comparison with the airports Prineville will be competing against for market share. It is reasonable to assume that these airports could expect relatively similar growth in general aviation activity based on their respective development potential. An average annual growth rate of 2.5 percent was used to

project based aircraft through the twenty-year planning period, which is similar to the rate anticipated at Bend and Redmond. The average annual increase in aircraft operations is 3.4 percent. The slightly higher rate of growth in operations is based on the assumption that the average aircraft utilization at Prineville will gradually increase from its current 120 operations per based aircraft to 145, which is closer to the airport's long-term historic average.

10-Year Historical Population Trend

Aviation activity at Prineville Airport has generally outpaced population growth in recent years. Although the relationship between these elements is not clearly defined, it is reasonable to assume that the historical trend may continue into the future. Long-term forecasts of Crook County population reflect a moderate increase (1.6 percent annual average growth) over the next twenty to forty years. As the growth in population moderates, some slowing in airport activity may also be expected, but overall, airport activity would be expected to increase at a slightly higher rate than county population.

Based on the review of recent population and aviation activity data, a projection was developed that reflects the stronger growth trend experienced in the local area over the ten years. The county's ten-year population growth averaged 3.1 percent per year between 1990 and 2000.

The annual average growth rate of 3.1 percent was used to project based aircraft through the twenty-year planning period to provide a more aggressive projection. Aircraft operations are projected to increase at an average annual rate of 4.5 percent. The higher rate of growth in operations is based on the assumption that the average aircraft utilization at Prineville will gradually increase from its current 120 operations per based aircraft to 160, which is equal to the airport's long-term historic average.

FAA TAF

The FAA TAF is presented as it is currently published without revision. The TAF provides a relatively flat projection for based aircraft and operations. The forecast of based aircraft is unchanged and aircraft operations are projected to increase at an annual rate of 0.52 percent.

TABLE 2-21
UPDATED AVIATION FORECASTS
PRINEVILLE AIRPORT

	Base Year 2001	2005	2010	2015	2022
Based Aircraft					
Actual	74				
Forecast					
Adjusted OASP		78	82	87	95
Regional Market *(Preferred)*		**82**	**92**	**105**	**124**
10-Historic Population		84	97	113	140
FAA TAF		44	44	44	44
Aircraft Operations					
Actual	8,892				
Forecast					
Adjusted OASP		9,308	9,856	10,436	11,305
Regional Market *(Preferred)*		**10,250**	**11,960**	**14,175**	**17,980**
10-Historic Population		11,900	14,550	18,080	22,400
FAA TAF		4,845	5,004	5,164	5,197

Forecast Summary

The updated projections of aviation activity provide a range of forecasts that reflects recent historical activity and future expectations for the local community and central Oregon overall. The "Local Market Forecast" provides a reasonable mid-range projection, between the modest TAF and OASP forecasts and the more aggressive "10-Year Historical Population Trend" projection. The mid-range projection is recommended as the preferred forecast for the Prineville Airport Layout Plan.

TABLE 2-22
FORECAST SUMMARY
PREFERRED FORECAST

	Existing 2001	2005	2010	2015	2022
Based Aircraft					
Single Engine	52	56	61	69	82
Multi Engine Piston	0	1	1	2	2
Turboprop (SE & ME)	4	4	5	5	6
Business Jet	2	3	3	4	4
Rotor	5	5	6	7	8
Other	11	13	16	18	22
Total	**74**	**82**	**92**	**105**	**124**
Average Operations per Based Aircraft	*120*	*125*	*130*	*135*	*145*
Aircraft Operations					
Local (20%)	1,792	2,050	2,392	2,835	3,596
Itinerant (80%)	7,100	8,200	9,568	11,340	14,384
Total	8,892	10,250	11,960	14,175	17,980
Design Aircraft Operations (Business Jet)	1,117	1,200	1,300	1,400	1,450

FIGURE 2-7: PRINEVILLE AIRPORT
UPDATED BASED AIRCRAFT FORECASTS

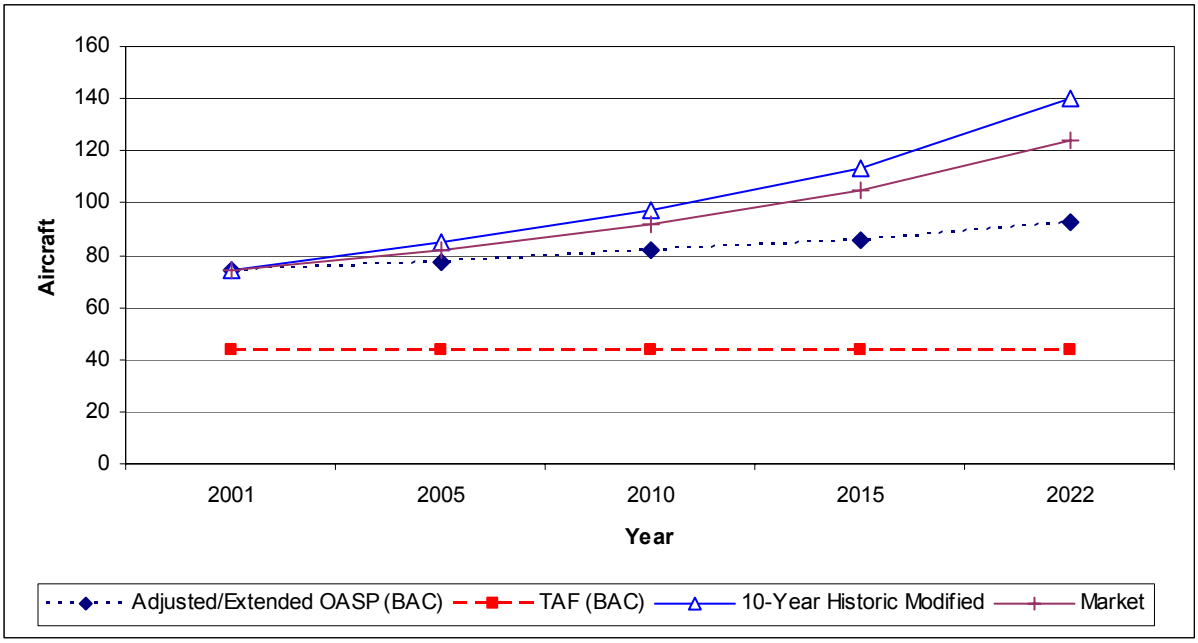
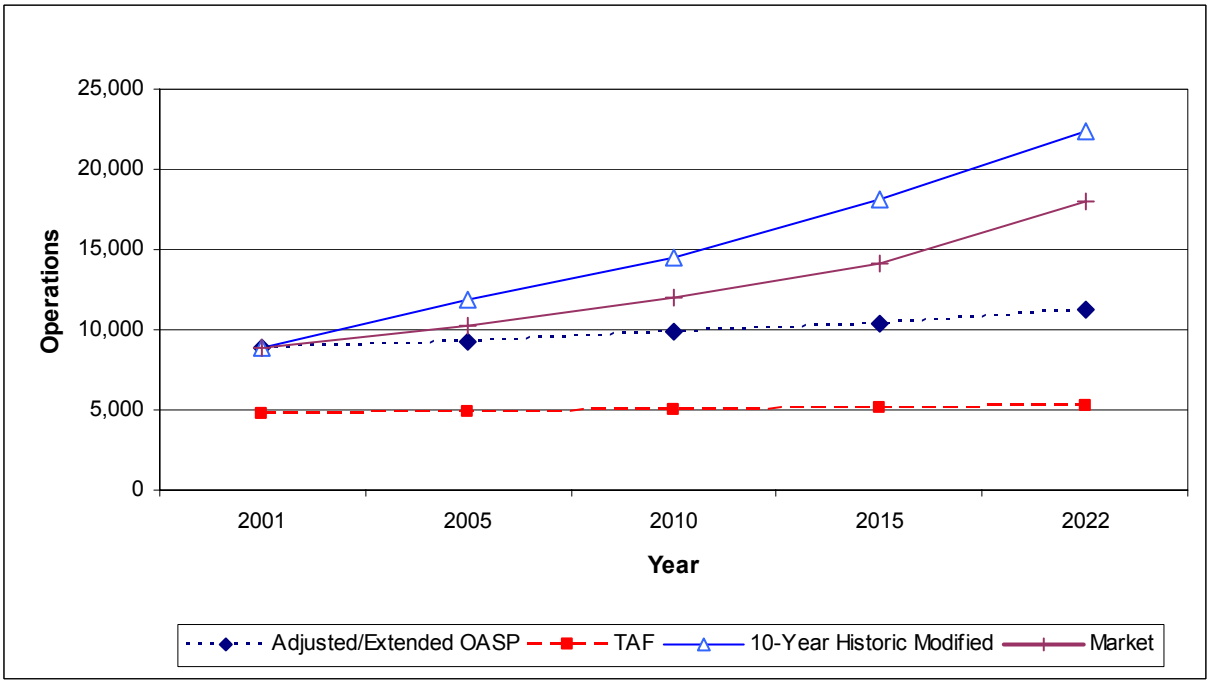


FIGURE 2-8: PRINEVILLE AIRPORT
UPDATED OPERATIONS FORECAST



Fleet Mix and Design Aircraft

Prineville Airport currently accommodates a diverse group of aircraft types including piston and turbine fixed wing, helicopter and experimental aircraft. Single-engine aircraft (not including experimental) currently account for approximately 70 percent of the based aircraft fleet, with remainder made up of fire-related fixed wing and helicopters, and experimental aircraft. The based aircraft fleet mix at Prineville is not expected to change significantly over the next twenty years, although some minor shifts may occur as the overall general aviation and business aviation aircraft fleet evolves.

Two Cessna Citation II type (C550 and C550 Bravo) business jets operated by Les Schwab are currently based at the airport. These aircraft represent the most demanding aircraft type (small/medium business jets) using the airport on a regular basis. By FAA definition, the "design aircraft" must have a minimum of 500 itinerant annual operations. According to local flight personnel, the two Schwab business jets combine for approximately 400 to 600 annual operations at Prineville. These aircraft are in Airplane Design Group II and Aircraft Approach Category B. Company flight personnel also indicated that a third, larger Citation (probably a Citation Ultra XL) may be added to the fleet within the next two to three years as the company continues to extend its travel needs beyond the Pacific Northwest.

The Citation is representative of the most demanding aircraft operating at the airport with at least 500 itinerant annual operations. A variety of itinerant twin-engine turboprops and business jets also use the airport on a regular basis. When combined with the activity generated by the two locally based Schwab aircraft, it is evident that the B-II airport reference code (ARC) is appropriate for Runway 10/28. The secondary runway is 40 feet wide and is not regularly used by business class aircraft. Based on its existing use, dimensions and pavement strength, ARC B-I (small aircraft exclusively) is appropriate for Runway 15/33. Airport design criteria will be discussed in more detail in the facility requirements evaluation.

CHAPTER THREE
AIRPORT FACILITY REQUIREMENTS

INTRODUCTION

This chapter uses the results of the inventory, forecast, and capacity analyses contained in **Chapter Two**, as well as established planning criteria, to determine the airside and landside facility requirements through the current twenty-year planning period. Airside facilities include runways, taxiways, navigational aids and lighting systems. Landside facilities include hangars, fixed base operator (FBO) facilities, aircraft parking apron, agricultural aircraft facilities, aircraft fueling, automobile parking, utilities and surface access.

The facility requirements evaluation is used to identify the adequacy or inadequacy of existing airport facilities and identify what new facilities may be needed during the planning period, based on forecast demand. Options for providing these facilities will be evaluated in **Chapter Four** to determine the most cost effective and efficient means for implementation.

OVERVIEW

The 1994 Prineville Airport Layout Plan (Morrison Maierle) recommended a variety of facility improvements at Prineville Airport, including:

- Extend, Widen and Overlay Runway 10/28 (5,720 x 75 feet)
- New Administration Building
- Hangar Access Taxiways (south of tiedown apron)
- Fuel Tank Upgrades
- Diagonal Taxiway & Ag. Spray Taxiway
- Parallel Taxiway - Runway 10/28
- Reconstruct Runway 15/33 (4,000 x 60 feet) and Access Taxiway to Runway 33
- Extend Runway 15/33 576 feet (to 4,576 feet)
- Extend Runway 15/33 an additional 2,024 feet (to 6,504 feet)
- Hangar Access Taxiways (north of tiedown apron)
- Overlay Taxiway from FBO to Runway 28
- Tiedown Apron Expansion and Helipad
- Extend Runway 10/28 and Parallel Taxiway 2,410 feet (to 8,130 feet)

Actual facility improvements made since the last airport layout plan have included:

- Conventional Hangars and T-Hangars Constructed (private funds)
- Hangar Taxilanes
- 1.5" Overlay on Runway 15/33
- New BLM Helipads
- Interagency Fire Dispatch Center
- AG/Spray Taxiway and Loading Pad (North of Rwy 10/28)
- RNAV (GPS) Instrument Approaches
- Fuel Tank upgrades to meet Oregon DEQ standards

The previously recommended facility improvements which have not been implemented will be revalidated, modified or eliminated based on the updated facility needs assessment and FAA guidelines.

AIRSPACE

The airspace surfaces defined for Runway 10/28 are based on standards for other than utility runways (designed for aircraft weighing more than 12,500 pounds) with non-precision instrument approaches. The airspace surfaces defined for Runway 15/33 are based on utility runways (aircraft weighing less than 12,500 pounds) with visual approaches.

Two prominent areas of terrain penetration are located within the airport's airspace surfaces. Grass Butte and Myers Butte penetrate the airport's horizontal surface and conical surface (approximately 370 feet above the airport) to the north and northwest. The approach surfaces for all four runways appear to be free of terrain penetrations. Notable airspace features identified in the facility inventory (IFR airways, etc.) do not present a hazard to the airspace immediately surrounding the airport.

INSTRUMENT APPROACH CAPABILITIES

The airport can accommodate day and night operations in visual flight rules (VFR) and instrument flight rules (IFR) conditions. Both runways are lighted, although only Runway 28 is equipped with a visual approach slope indicator (VASI) to assist pilots during approach and landing. None of the runways are equipped with runway end identifier lights (REIL), which provide increased recognition of runway ends during night or poor visibility conditions. These facility needs will be addressed later in the chapter.

As noted in the facility inventory, the airport has three published non-precision instrument approach procedures (IAP), including two GPS (RNAV) approaches. The existing instrument approach capabilities meet the Oregon Aviation Plan minimum performance standards for Community General Aviation airports and are adequate to accommodate projected demand during the current planning period.

The approaches require use of the Roberts Field altimeter setting. Because certified on-field 24-hour weather data is not available at Prineville, the approach is not authorized for commercial aircraft (air taxi, charter, medevac, etc.) operating under FAR Part 135. The addition of an automated weather observation system (AWOS) would allow the airport to accommodate FAR Part 135 operations during IFR conditions.

Ongoing advances in satellite navigation (SATNAV) system technology may eventually allow a vertical descent guidance component to be added to non-precision instrument approaches while maintaining existing missed approach points and minimum descent altitudes. Current airspace planning criteria should be able to accommodate this type of innovation.

AIRPORT DESIGN STANDARDS

The selection of the appropriate design standards for the development of airfield facilities is based primarily upon the characteristics of the aircraft that are expected to use the airport. The most critical characteristics are the approach speed and wingspan of the design aircraft anticipated for the airport. The design aircraft is defined as the most demanding aircraft type operating at the airport (or runway) with a minimum of 500 annual itinerant operations (takeoffs and landings). Planning for future aircraft use is important because design standards are used to determine separation distances between facilities that could be very costly to relocate at a later date.

Federal Aviation Administration (FAA) **Advisory Circular (AC) 150/5300-13, Airport Design**, serves as the primary reference in planning airfield facilities. **FAR Part 77, Objects Affecting Navigable Airspace**, defines airport imaginary surfaces which are established to protect the airspace immediately surrounding a runway. The airspace and ground areas surrounding a runway should be free of obstructions (i.e., structures, parked aircraft, trees, etc.) to the greatest extent possible.

FAA **Advisory Circular 150/5300-13** groups aircraft into five categories based upon their approach speed. Categories A and B include small propeller aircraft, many small or medium business jet aircraft, and some larger aircraft with approach speeds of less than 121 knots. Categories C, D, and E consist of the remaining business jets as well as larger jet and propeller

aircraft generally associated with commercial and military use; these aircraft have approach speeds of 121 knots or more. The advisory circular also establishes six aircraft design groups, based on the physical size (wingspan) of the aircraft. The categories range from Airplane Design Group (ADG) I, for aircraft with wingspans of less than 49 feet, to ADG VI for the largest commercial and military aircraft. ADG I is further divided into two subcategories: runways serving "small airplanes exclusively" and runways serving aircraft weighing more than 12,500 pounds. Aircraft with a maximum gross takeoff weight of less than 12,500 pounds are classified as "small aircraft" by the Federal Aviation Administration. A summary of typical aircraft and their respective design categories is presented in **Table 3-1.**

As noted in the previous chapter, most aircraft currently operating at Prineville Airport are in Airplane Design Group I and II and Approach Categories A or B. The airport has historically accommodated general aviation and business aviation aircraft, government-related fixed wing and rotor aircraft used in fire response, and recreational aircraft.

The Les Schwab Citation II (C550) and Bravo (C550B) based at the airport are both included in Aircraft Approach Category B and Airplane Design Group II (B-II); both aircraft weigh more than 12,500 pounds. According to company flight personnel, a third Citation (Excel) may be added to the existing fleet within the next two or three years to provide additional operational flexibility and range. The Citation Excel (C560XL) is also included in B-II, but has a maximum gross takeoff weight of 20,000 pounds.

TABLE 3-1
TYPICAL AIRCRAFT & DESIGN CATEGORIES

Aircraft	Design Group	Approach Category	Maximum Gross Takeoff Wt. (Lbs)
Grumman American Tiger	A	I	2,400
Cessna 182T Skylane	A	I	3,110
Lancair Columbia 300	A	I	3,400
Cirrus Design SR22	A	I	3,400
Beechcraft Bonanza A36	A	I	3,650
Piper Seneca V (PA-34)	A	I	4,750
Beechcraft Baron 55	A	I	5,300
Socata TBM 700	A	I	6,614
Ayres 400 Turbo Thrush	A	I	9,300
Beechcraft Baron 58	B	I	5,500
Cessna 421	B	I	7,450
Cessna Citation CJ1	B	I	10,600
Pilatus PC-12	A	II	9,920
Air Tractor 502B	A	II	9,700
Piper Malibu Mirage (PA-46)	A	II	4,340
Ayres 660 Turbo Thrush	A	II	12,500
Cessna Grand Caravan	A	II	8,785
Beech King Air B200	B	II	12,500
Cessna Citation II	B	II	13,300
Cessna Citation Bravo	B	II	14,800
Cessna Citation Excel	B	II	20,000
Learjet 45	C	I	20,500
Cessna Citation X	C	II	36,100
Bombardier Challenger 300	C	II	37,500
Gulfstream III	C	II	65,300

Source: FAA Advisory Circular (AC) 150/5300-13

As noted in the previous chapter, current business jet traffic at Prineville Airport is estimated at approximately 1,100 annual operations. The combination of locally-based and transient aircraft activity generate sufficient operations for the small/medium business jet (B-II) to be used as the design aircraft for Runway 10/28. Since the majority of the airport's business jet activity is expected to be generated by aircraft weighing more than 12,500 pounds, the use standards consistent with "large aircraft" and "other than utility" runways, as defined in FAR Part 77, is appropriate for Runway 10/28. Based on the existing airfield configuration and projected airport activity, **the use of design standards based on Aircraft Approach Category B and Airplane Design Group II is recommended for Runway 10/28 (*Airport Reference Code - ARC B-II*).**

As a secondary runway, Runway 15/33 is used primarily by light single engine and multi-engine aircraft included in ADG I. Based on this use and the availability of Runway 10/28 to accommodate larger aircraft, **it is recommended that design standards based on Approach Category B and Airplane Design Group I (for small aircraft exclusively) be used for Runway 15/33 (*Airport Reference Code - ARC B-I, small*).**

Airfield design standards for ADG I (small) and ADG II are summarized in **Table 3-2**. ADG I standards (all aircraft) are also included for comparison.

A summary of Prineville Airport's current compliance with recommended design standards is presented in **Table 3-3**. As indicated in the table, Runway 10/28 meets most ADG II design standards, although the existing width is non-standard. The width of Runway 15/33 does not meet the minimum standards for ADG I (small aircraft) runways. Lengthening Runway 10/28 will be addressed as development priorities for the airport are established.

TABLE 3-2
AIRPORT DESIGN STANDARDS SUMMARY
(DIMENSIONS IN FEET)

Standard	ADG I[1] (small aircraft exclusively)	ADG I[1] A&B Aircraft	ADG II[2] A&B Aircraft
Runway Length	3,630/4,530[3]	3,630/4,530[3]	5,720/8,130[4]
Runway Width	60	60	75
Runway Shoulder Width	10	10	10
Runway Safety Area Width	120	120	150
Runway Safety Area Length (Beyond Runway End)	240	240	300
Obstacle-Free Zone	250	250	400
Object Free Area Width	250	400	500
Object Free Area Length (Beyond Runway End)	240	240	300
Primary Surface Width	250	250	500
Primary Surface Length (Beyond Runway End)	200	200	200
Runway Protection Zone Length	1,000	1,000	1,000
Runway Protection Zone Inner Width	250	250	500
Runway Protection Zone Outer Width	450	450	700
Runway Centerline to:			
Parallel Taxiway Centerline	150	225	240
Aircraft Parking Area	125	200	250
Building Restriction Line	251[5]	269.5[5]	376[5]
Taxiway Width	25	25	35
Taxiway Shoulder Width	10	10	10
Taxiway Safety Area Width	49	49	79
Taxiway Object Free Area Width	89	89	131
Taxiway Centerline to Fixed/Movable Object	44.5	44.5	65.5

Notes:

1. Utility runways (Per FAR Part 77); all other dimensions reflect visual runways with not lower than 3/4-statute mile approach visibility minimums (per AC 150/5300-13, Change 7). RPZ dimensions bases on visual and not lower than 1-mile approach visibility minimums.
2. Other than Utility runways (Per FAR Part 77); all other dimensions reflect non-precision runways with not lower than 3/4-statute mile approach visibility minimums (per AC 150/5300-13, Change 7). RPZ dimensions bases on visual and not lower than 1-mile approach visibility minimums.
3. Runway length required to accommodate 95 and 100 percent of General Aviation Fleet 12,500 pounds or less. 85 degrees F, 10-foot change in runway centerline elevation.
4. Runway length required to accommodate 75 percent large airplane fleet (60,000 pounds or less) at 60 and 90 percent useful load. 85 degrees F, 10-foot change in runway centerline elevation.
5. Distance to protect ADG I(small)/I/II parallel taxiway object free area and accommodate an 18-foot structure (at the BRL) without penetrating the 7:1 Transitional Surface.

TABLE 3-3
PRINEVILLE AIRPORT
COMPLIANCE WITH FAA DESIGN STANDARDS

Item	Runway 10/28 *Airplane Design Group II*[1] *A & B Aircraft*	Runway 15/33 *Airplane Design Group I*[1] *(Small Aircraft Exclusively)*
Runway Safety Area	Yes	Yes
Runway Object Free Area	Yes	Yes
Runway Obstacle Free Zone	Yes	Yes
Taxiway Safety Area	Yes	Yes
Taxiway Object Free Area	Yes	Yes
Building Restriction Line	Yes[2]	Yes
Aircraft Parking Line	Yes	Yes
Runway Protection Zones	No[3]	No[3]
Runway-Parallel Taxiway Separation	N/A[4]	N/A[4]
Runway Width	No[5]	No[5]
Runway Length	No[6]	Yes
Taxiway Width	Yes	Yes
Runway Visibility Zone	Yes[7]	Yes[7]

Notes:

1. Runway design standards for approach category A&B visual runways and runways with not lower than ¾-statute mile approach visibility minimums.
2. The existing BRL dimension (1994 ALP) is not adequate and will be relocated. The relocated BRL will comply with FAA clearance standards.
3. Highway 126 and internal airport access roads cross the Runway 28 and 33 protection zones.
4. The runway is not currently served with a parallel taxiway; all future parallel taxiways can be constructed to meet FAA design standards.
5. Standard runway widths: 75' (ADG II) and 60' (ADG I).
6. Per FAA Runway Length Model: Existing runway length less than FAA-recommended length for large aircraft weighing less than 60,000#.
7. Airport Commission indicates that previously identified terrain and/or trees located within RVZ have been removed.

Airport Design Standards Note:

The following airport design standards are recommended for Prineville Airport:

Runway 10/28: Airport Design Standards based Airport Reference Code (ARC) B-II; visual runways and runways with not lower than ¾ statute mile approach visibility minimums. Runway protection zones (RPZ) based on the approach visibility standard "visual and not lower than 1-mile"for aircraft approach categories A and B. FAR Part 77 airspace planning criteria based on "other than utility runways" with non-precision instrument approaches.

Runway 15/33: Airport Design Standards are based Airport Reference Code (ARC) B-I (small aircraft exclusively); visual runways and runways with not lower than ¾ statute mile approach visibility minimums. Runway protection zones (RPZ) based on the approach visibility standard "visual and not lower than 1-mile"for small aircraft exclusively. FAR Part 77 airspace planning criteria based on "utility runways" with visual approaches.

All references to the "standards" are based on these assumptions, unless otherwise noted. (Per FAA Advisory Circular 150/5300-13, change 7; FAR Part 77.

Runway Safety Area (RSA)

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

By FAA design standard, the RSA *"shall be:*

(1) cleared and graded and have no potentially hazardous ruts, humps, depressions, or other surface variations;

(2) drained by grading or storm sewers to prevent water accumulation;

(3) capable, under dry conditions, of supporting snow removal equipment, aircraft rescue and firefighting equipment, and the occasional passage of aircraft without causing structural damage to the aircraft; and

(4) free of objects, except for objects that need to be located in the runway safety area because of their function. Objects higher than 3 inches above grade should be constructed on low impact

resistant supports (frangible mounted structures) of the lowest practical height with the frangible point no higher than 3 inches. Other objects such as manholes, should be constructed at grade. In no case should their height exceed 3 inches."

The recommended transverse grade for the lateral RSA ranges between 1½ and 5 percent from runway shoulder edges. The recommended longitudinal grade for the first 200 feet of extended RSA beyond the runway end is 0 to 3 percent. The remainder of the RSA must remain below the runway approach surface slope. The maximum negative grade is 5 percent. Limits on longitudinal grade changes are plus or minus 2 percent per 100 feet within the RSA.

The airport sponsor should regularly clear the RSA of brush or other debris and periodically grade and compact the RSA to maintain FAA standards.

Runway 10/28

The RSA along the sides and beyond the ends of Runway 10/28 has been cleared and graded to meet FAA dimensional standards. The RSA appears to be free of physical obstructions and within grade standards.

A taxiway serving the agricultural aircraft loading pad located near the end of Runway 28 (on the north side) extends directly from the threshold of Runway 28 for approximately 100 feet on along the extended runway centerline, before turning northeast toward the pad. Approximately 200 feet of the taxiway is located within the extended RSA. No hold lines were identified on the taxiway. Aircraft waiting to depart on the runway or conducting preflight checks should remain outside the runway safety area (and obstacle free zone) until they enter the active runway for takeoff. Aircraft hold lines should be added on the taxiway to provide pilot guidance for maintaining required runway clearances.

Runway edge lights and threshold lights located within the RSA should be mounted on frangible supports. Any future lighting (such as REILS) located within the RSA will also need to meet the FAA frangibility standard.

Runway 15/33

The RSA along the sides and beyond the ends of Runway 15/33 appears to be free of physical obstructions and within FAA grade and dimensional standards.

The main access taxiway connecting to the end of Runway 33 has aircraft hold lines located outside the RSA. The T-hangar access taxiway located on the south side of the runway should also have aircraft hold lines to keep holding aircraft outside the RSA. Runway edge lights and threshold lights located within the RSA should be mounted on frangible supports.

Runway Object Free Area (OFA)

Runway object free areas (OFA) are two dimensional surfaces intended to be clear of ground objects that protrude above the runway safety area edge elevation. Obstructions within the OFA may interfere with aircraft flight in the immediate vicinity of the runway. The FAA defines the OFA clearing standard:

"The OFA clearing standard requires clearing the OFA of above ground objects protruding above the runway safety area edge elevation. Except where precluded by other clearing standards, it is acceptable to place objects that need to be located in the OFA for air navigation or aircraft ground maneuvering purposes and to taxi and hold aircraft in the OFA. Objects non-essential for air navigation or aircraft ground maneuvering purposes are not to be placed in the OFA. This includes parked airplanes and agricultural operations."

The airport sponsor should periodically inspect the OFA and remove any objects that protrude into the OFA.

Runway 10/28

The Runway 10/28 OFA meets the ADG II dimensional standards and appears to be free of physical obstructions. Areas of terrain penetration were identified on the previous ALP between the runways and north of Runway 10/28. Unfortunately, the ALP does not provide sufficient detail to determine whether any penetration to the OFA exists. However, the Airport Commission has indicated that the obstructions previously noted have been eliminated.

Runway 15/33

The Runway 15/33 OFA meets the ADG I (small) dimensional standards and appears to be free of physical obstructions.

Obstacle Free Zone (OFZ)

The OFZ is a plane of clear airspace extending upward to a height of 150 feet above runway elevation, which coincides with the FAR Part 77 horizontal surface elevation. The FAA defines the following clearing standard for the OFZ:

"The OFZ clearing standard precludes taxiing and parked airplanes and object penetrations, except for frangible visual NAVAIDs that need to located in the OFZ because of their function."

The OFZ may include the Runway OFZ, the Inner-approach OFZ (for runways with approach lighting systems), and the Inner-transitional OFZ (for runways with lower than ¾-statute mile

approach visibility minimums. For Prineville Airport, only the Runway OFZ is required based on runway configuration and instrument approach capabilities. The FAA defines the Runway OFZ as:

"The runway OFZ is a defined volume of airspace centered above the runway centerline. The runway OFZ is the airspace above a surface whose elevation at any point is the same as the elevation of the nearest point on the runway centerline. The runway OFZ extends 200 feet beyond each end of the runway."

The FAA-recommended OFZ widths for Prineville's runways are as follows:

Runway 10/28 (runways serving large airplanes): 400 feet

There are no penetrations to the Runway 10/28 OFZ, other than the runway lights, VASI, and directional signage, which have locations fixed by function. All items located within the OFZ must meet the FAA frangibility standard. The previous recommendations for adding aircraft hold lines on the AG taxiway and surveying nearby terrain to verify potential penetrations, also apply to clearing the OFZ.

The aircraft holding area/turnaround located on the south side of the Runway 10 threshold is located entirely within the OFZ. Based on its current configuration, the area should only be used for aircraft turnaround since it does not provide adequate clearance for holding outside the OFZ. If used for aircraft holding, the area should be expanded to keep aircraft outside the OFZ while other aircraft are operating on the runway.

Runway 15/33 (runways serving small airplanes exclusively; approach speeds of 50 knots or more): 250 feet.

There are no penetrations to the Runway 15/33 OFZ, other than the runway lights, which have locations fixed by function.

Taxiway Safety Area

Prineville Airport has one main access taxiway connecting the ends of Runway 28 and Runway 33. This taxiway is used by all aircraft operating at the airport, therefore ADG II design standards are recommended. The taxiway safety area appears to be free of obstructions and meets the ADG II safety area dimensional standard. The aircraft parking apron and hangars located along the east side of the taxiway are outside the taxiway safety area.

The AG access taxiway, located near the end of Runway 28, and the T-hangar access taxiway, located near the end of Runway 33 appear to be free of obstructions and meet the dimensional standards (ADG I for the hangar taxiway and ADG II for the AG taxiway).

The taxiway safety areas should be regularly cleared of brush or other debris and periodically graded and compacted to maintain FAA standards.

Taxiway Object Free Area

The recommended OFA dimensions for the main access taxiway are based on ADG II design standards. All buildings and parked aircraft located along the east side of the taxiway have a minimum setback (building restriction line and/or aircraft parking line) of 65.5 feet, which corresponds to the outer edge of the taxiway OFA. Aircraft hold lines should be located on all taxilanes or taxiways that connect to the main access taxiway to protect the taxiway OFA (minimum of 65.5 feet from taxiway centerline).

The AG access taxiway and T-hangar access taxiway appear meet their respective OFA dimensional standards and are free of obstructions.

Building Restriction Line (BRL)

The 1994 Airport Layout Plan (ALP) depicts 250-foot building restriction lines (BRL) on both sides of Runway 10/28. This distance is not sufficient to prevent building penetrations to the runway transitional surface, nor does it provide adequate separation to accommodate a future ADG II parallel taxiway. The nearest buildings to Runway 10/28 are located approximately 450 to 530 feet from runway centerline (caretaker residence and one conventional hangar). The minimum setback required to accommodate an 18-foot high structure (typical low profile T-hangar) would be 376 feet from runway centerline. This distance is also compatible with an ADG II parallel taxiway and its clear areas. Structures with higher roof elevations will require additional setback distances to remain clear of the runway transitional surface.

The 1994 ALP also depicts 250-foot BRLs on both sides of Runway 15/33. This setback distance is adequate to accommodate smaller (low profile) hangars along a runway without a parallel taxiway. If an ADG I parallel taxiway is added, the BRL would need to be shifted (on the taxiway side of the runway only) to a minimum of 269.5 feet, to accommodate the parallel taxiway OFA. Structures with higher roof elevations will require additional setback distances in order to remain below the runway transitional surface. A 250-foot BRL provides clearance for a 17.8-foot high structure (above runway elevation) located on the BRLs. The nearest buildings to

Runway 15/33 are located approximately 260 feet north (conventional hangar) and 300 feet south (T-hangar) from runway centerline.

A BRL is also identified along both sides of the main access taxiway, 65.5 feet from taxiway centerline. This setback is intended to protect the taxiway object free area. The northern/western edge of the hangar development rows in this area reflects the 65.5-foot BRL. No buildings violate the BRL located along either side of the taxiway.

As part of the development process, the airport sponsor should require that each new building proposal demonstrate compatibility with FAR Part 77 imaginary surfaces, including submittal and approval of FAA Form 7460-1 – Notice of Proposed Construction or Alteration, before ground leases are executed.

Runway Protection Zones (RPZ)

The FAA provides the following definition for runway protection zones (RPZ):

"The RPZ's function is to enhance the protection of people and property on the ground. This is achieved through airport owner control over RPZs. Such control includes clearing RPZ areas (and maintaining them clear) of incompatible objects and activities. Control is preferably exercised through the acquisition of property interest in the RPZ. The RPZ is trapezoidal in shape and centered about the extended runway centerline. The RPZ begins 200 feet beyond the end of the area useable for takeoff or landing."

RPZs with buildings, roadways, or other items do not fully comply with FAA standards. A review of recent aerial photography for Prineville Airport identified a portion of Highway 126 within the RPZ for Runways 28 and 33. It is recognized that realigning major surface routes located within the RPZs may not be highly feasible. However, where possible, the County/City should discourage development within the RPZs (particularly structures) that is inconsistent with FAA standards.

Runway 10/28

The RPZ dimensions recommended for Runways 10 and 28 are based on Aircraft Approach Categories A & B with approach visibility minimums "visual and not lower than 1-mile." Both RPZs are located within airport property, with the exception of a public right-of-way for State Highway 126 located within the Runway 28 RPZ.

The 1994 ALP depicts "ultimate" RPZs for Runway 10/28 with dimensions consistent with Aircraft Approach Categories C & D. However, this recommendation was not consistent with the selected design aircraft, which was included in Approach Category B. The above-noted RPZ

criteria for Runway 10/28 is consistent with the Airport Reference Code B-II recommended for the runway and the runway's instrument approach capabilities.

Runway 15/33

The RPZ dimensions recommended for Runways 15 and 33 are based on "small aircraft exclusively" with approach visibility minimums "visual and not lower than 1-mile." Both RPZs are located within airport property, with the exception of a public right-of-way for State Highway 126 located within the Runway 33 RPZ.

Aircraft Parking Line (APL)

All existing aircraft parking areas at the airport are located adjacent to the main access taxiway. The 1994 Airport Layout Plan does not depict aircraft parking lines (APL), although the parking aprons located along the access taxiway appear to provide adequate separation. An APL should be defined along both sides of the main access taxiway to protect the ADG II taxiway object free area. This is the same setback recommended for the BRL – 65.5 feet from taxiway centerline.

Future aircraft parking areas that may be developed in the vicinity of the runways should be compatible with runway/taxiway design and airspace clearances. The tails of parked aircraft should not penetrate the runway transitional surfaces. Tail heights of 10 feet or less are typical of most light aircraft, although business aircraft often have tail heights ranging from 10 to 25 feet. The recommended APL will identify the minimum recommended separations for light aircraft; parking areas for larger aircraft should be located to provide adequate tail height clearances.

Runway 10/28

The standard APL for B-II runways is 250 feet from runway centerline, although the distance would need to be increased to at least 320 feet to provide the minimum (10-foot) tail-height clearance for the other than utility/non-precision runway transitional surface. This increased setback would also be compatible with a standard B-II parallel taxiway separation of 240 feet.

Runway 15/33

The standard APL for B-I (small) runways is 125 feet from runway centerline, although the distance would need to be increased to at least 194.5 feet to provide the minimum (10-foot) tail-height clearance for the utility/visual runway transitional surface. This increased setback would also be compatible with a standard B-I (small) parallel taxiway separation of 150 feet.

Runway-Parallel Taxiway Separation

Neither runway at Prineville Airport is currently served by a parallel taxiway. Future development of parallel taxiways should at a minimum, reflect the appropriate design group standard runway separations (Runway 10/28: 240 feet) (Runway 15/33: 150 feet). In some cases, increased taxiway separations may be justified if a future upgrade in design standards is anticipated or if the airport wants to preserve long-term expansion options by providing greater separation of airside/landside developments.

Runway Visibility Zone

The FAA requires a clear line of sight between the ends of intersecting runways defined as:

"The runway visibility zone is an area formed by imaginary lines connecting the two runways' visibility points. Terrain needs to be graded and permanent objects need to be designed or sited so that there will be an unobstructed line of sight from any point five feet above one runway centerline to any point five feet above an intersecting centerline, within the runway visibility zone."

Although the 1994 ALP identified several areas of terrain/vegetation penetrations near the runways, a RVZ was not depicted on the drawing. As noted earlier, the Airport Commission has indicated that brush and areas of high terrain have been removed in this area. It may be necessary to conduct an obstruction survey within the RVZ to verify the absence of obstructions.

FAR PART 77 SURFACES

Airspace planning for U.S. airports is defined by Federal Air Regulations (FAR) Part 77 – Objects Affecting Navigable Airspace. FAR Part 77 defines imaginary surfaces (airspace) to be protected surrounding airports. **Figure 3-1** on the following page illustrates plan and isometric views of the Part 77 surfaces.

Airspace planning reflects the classification and instrument approach capabilities of each runway. As noted earlier, Runway 10/28 routinely accommodates aircraft weighing more 12,500 pounds and has three straight-in non-precision instrument approaches. Runway 15/33 accommodates predominantly light aircraft (weighing less than 12,500 pounds) and has visual approaches only.

Based on the existing and planned runway configuration and utilization, other than utility - non-precision airspace surfaces are recommended for Runway 10/28. The current instrument approach visibility minimums of 1 mile cannot be reduced without the addition of an approach lighting system. A reduction in approach visibility minimums to ¾ mile or lower would also

require a widening of the runway primary surface to 1,000 feet, which would significantly reduce the airport's developable land area along the runway. For Runway 15/33, utility - visual airspace surfaces are recommended. **Table 3-4** summarizes the standard airspace dimensions recommended for Prineville Airport.

TABLE 3-4
FAR PART 77 AIRSPACE SURFACES

Item	**Runway 10/28** *Other than Utility* *(Non-Precision)*	**Runway 15/33** *Utility* *(Visual)*
Width of Primary Surface	500 feet	250 feet
Radius of Horizontal Surface	10,000 feet	5,000 feet
Approach Surface Width at End	3,500 feet	1,250 feet
Approach Surface Length	10,000 feet	5,000 feet
Approach Slope	34:1	20:1

FIGURE 3-1

Approach Surfaces

Runway approach surfaces extend outward and upward from each end of the primary surface, along the extended runway centerline. As noted earlier, the dimensions and slope of approach surfaces are determined by the type of aircraft intended to use the runway and most demanding approach existing or planned for the runway.

Runway 10/28

The existing approach surface for Runway 10 has a small area of terrain penetration (less than 20 feet) along its northern edge, approximately 7,500 feet from the end of the runway. The Runway 28 approach surface appears to be free of obstructions. Highway 126 passes under the Runway 28 approach surface, approximately 1,071 feet from the runway end at its nearest point. A comparison of the road elevation plus a standard 15-foot vehicle height (public roadway) with the height of the approach surface at that point (+25.7 feet above runway end elevation) indicates that vehicles traveling along the highway do not penetrate the 34:1 approach surface. Huston Lake Road crosses the Runway 10 approach surface, although vehicles traveling on the roadway do not appear to penetrate the 34:1 approach surface.

It appears that any future extension (such as previously planned) of Runway 10/28 to the west will also have minor terrain penetration to the approach surfaces.

Runway 15/33

The approach surfaces for Runways 15 and 33 appear to be free of obstructions. Highway 126 passes under the Runway 33 approach surface, approximately 850 feet from the runway end at its nearest point. A comparison of the road elevation plus a standard 15-foot vehicle height with the height of the approach surface at that point (+32.5 feet above runway end elevation) indicates that vehicles traveling along the highway do not penetrate the 20:1 approach surface. Huston Lake Road crosses the Runway 15 approach surface, although vehicles traveling on the roadway do not appear to penetrate the 20:1 approach surface.

Primary Surface

The primary surface is a rectangular plane of airspace, which rests on the runway (at centerline elevation) and extends 200 feet beyond the runway end. The primary surface should be free of

any penetrations, except items with locations fixed by function (i.e., VASI, runway or taxiway edge lights, etc.). The primary surface end connects to the inner portion of the runway approach surface.

Runway 10/28

The primary surface for Runway 10/28 appears to be relatively level and free of obstructions. The previous ALP identified areas of terrain penetration along the runway however, as noted earlier, the Airport Commission has indicated that brush and areas of high terrain have been removed in this area.

Runway 15/33

The primary surface for Runway 10/28 appears to be relatively level and free of obstructions.

Transitional Surface

The transitional surface is located at the outer edge of the primary surface, represented by a plane of airspace that rises perpendicularly at a slope of 7 to 1, until reaching an elevation 150 feet above runway elevation. This surface should be free of obstructions (i.e., parked aircraft, structures, trees, etc.).

Runway 10/28

The transitional surface for Runway 10/28 appears to be free of obstructions. Existing structures located in the east-side hangar development area have adequate separation from the runway to avoid penetrations. However, as noted earlier, revised building restriction lines are needed along the runway to adequately protect the transitional surface.

Runway 15/33

The transitional surface for Runway 10/28 appears to be free of obstructions. The nearest structure is located approximately 260 feet from runway centerline with a height of approximately 16 to 18 feet. The elevation of the transitional surface at this point is approximately 19.3 feet above the runway elevation.

Horizontal Surface

The horizontal surface is a flat plane of airspace located 150 feet above runway elevation with its boundaries defined by the radii that extend from each runway end. The outer points of the radii for each runway are connected to form an oval, which is defined as the horizontal surface.

Two areas of terrain penetration are located within the horizontal surface (elevation 3,401' msl) for Prineville Airport. Grass Butte (3,622' msl) and Myers Butte (3,602' msl) are located to the north and northwest of the airfield and penetrate the surface by up to 221 feet. A 100-foot radio (lighted) tower is located on the top of Meyers Butte, which also penetrates the horizontal surface. The water storage tank located on the east slope of Grass Butte (approximately 5,700 feet southwest of Runway 10/28 centerline) appears to be outside the area of terrain penetration.

Conical Surface

The conical surface is an outer band of airspace, which abuts the horizontal surface. The conical surface begins at the elevation of the horizontal surface and extends outward 4,000 feet at a slope of 20:1. The top elevation of the conical surface is 200 feet above the horizontal surface and 350 feet above airport elevation.

It appears that a small area of terrain penetrates the inner edge of the conical surface on the southwest slope of Grass Butte at an elevation between 3,400 and 3,450 feet msl.

AIRSIDE REQUIREMENTS

Airside facilities are those directly related to the arrival and departure and movement of aircraft:

- Runways
- Taxiways
- Airfield Instrumentation and Lighting

Runways

The adequacy of the existing runway system at Prineville Airport was analyzed from a number of perspectives including runway orientation, airfield capacity, runway length, and pavement strength.

Runway Orientation

The orientation of runways for takeoff and landing operations is primarily a function of wind velocity and direction, combined with the ability of aircraft to operate under adverse wind conditions. When landing and taking off, aircraft are able to maneuver on a runway as long as the wind component perpendicular to the aircraft's direction of travel (defined as crosswind) is not excessive. For runway planning and design, a crosswind component is considered excessive at 12 miles per hour for smaller aircraft (gross takeoff weight 12,500 pounds or less) and 15 miles per hour for larger aircraft. FAA planning standards indicate that an airport should be

planned with the capability to operate under allowable wind conditions at least 95 percent of the time.

A wind study was conducted at Prineville Airport in 2001 to evaluate the crosswind coverage of the main runway (10/28). Based on the data recorded over a twelve-month period, wind coverage on Runway 10/28 was estimated at more than 97 percent at 15 miles per hour. This wind coverage exceeds the FAA standard of 95 percent, which is used to determine the need (and funding) for crosswind runways. Based on the favorable wind coverage of Runway 10/28, the FAA has indicated that Runway 15/33 will not be eligible for FAA funding participation. The airport sponsor has opted to maintain Runway 15/33 as a secondary runway without the use of federal funds. According to local pilots, Runway 15/33 is better aligned to the occasional strong crosswinds that occur at the airport. The use of Runway 15/33 is effectively limited to small aircraft due to its length (4,000 feet), width (40 feet) and pavement strength (5,000 pounds single wheel).

Runway Length

Runway length requirements are based primarily upon airport elevation, mean maximum daily temperature of the hottest month, runway gradient, and the critical aircraft type expected to use the runway. At Prineville Airport, the availability of two runways allows specific design standards to be applied to each runway. A summary of FAA-recommended runway lengths for a variety of aircraft types and load configurations are described in **Table 3-5**.

Runway 10/28 accommodates large aircraft (above 12,500 pounds) operations on a regular basis. As a result, the evaluation of runway length requirements should be based on the FAA's model for "large airplanes of 60,000 pounds or less." However, since the airport accommodates predominately small and medium business jets, most of which weigh 20,000 pounds or less, it is reasonable to evaluate Runway 10/28 based on the lowest increment within this category (75 percent of these large airplanes at 60 percent useful load). The typical small or medium business jet, such as the Cessna Citation II or Bravo, operated by Les Schwab, will generally be able to perform at or near its maximum allowable weight within the corresponding "75/60" percent numbers generated in the FAA model. The runway length requirements for typical small/medium business jets are also summarized in **Table 3-5**.

The 8,130-foot runway length identified in the FAA model for 90 percent useful load for 75 percent of large airplanes reflects with the requirements of larger business jet or cargo aircraft. This runway length is not consistent with Prineville's projected activity for the current twenty-year planning period and therefore is not recommended. However, based on the availability of

airport land beyond the end of Runway 10, it would be reasonable to maintain a runway reserve to protect the long-term option of extending the runway beyond currently-defined needs.

Based on local conditions and the methodology outlined in **AC 150/5325-4A**, a runway length of 5,720 feet is required to accommodate 75 percent of large airplanes (60,000 pounds or less maximum gross takeoff weight) at 60 percent useful load. This distance was recommended as a future length for Runway 10/28 in the 1994 Airport Layout Plan. At 5,000 feet, Runway 10/28 can accommodate 100 percent of the small airplane fleet under the same conditions.

By comparison, the runway at Bend Municipal Airport, which is also designed to accommodate small/medium business jet aircraft, is currently 5,000 feet long and has a planned extension to 5,500 feet.

As a secondary runway, Runway 15/33 should be able to accommodate a reasonable portion of the small airplane fleet under most conditions. At 4,000 feet, Runway 15/33 is capable of accommodating approximately 85 percent of the general aviation fleet in the conditions described below. This capability is reasonable based on the physical limitations of the runway and the availability of Runway 10/28 to accommodate aircraft requiring additional runway capabilities.

As noted earlier, local pilots indicate that Runway 15/33 is often used during strong crosswind conditions. Landings in strong crosswind conditions are normally the most challenging for pilots and often have additional urgency due to deteriorating weather, low fuel, etc. The runway length requirements for landing are generally less than required for takeoff. During these extreme conditions, arriving aircraft unable to operate either within the available length of Runway 15/33 or within the crosswind coverage of Runway 10/28 would likely divert to Roberts Field in Redmond, eleven miles to the southwest.

The existing width of Runway 10/28 is 60 feet, which does not meet the ADG II standard of 75 feet. The width of Runway 15/33 is 40 feet, which does not meet the Airplane Design Group (ADG) I standard of 60 feet. The runway widths should be increased to meet the appropriate FAA design standard as part of their next major rehabilitation project.

TABLE 3-5
FAA-RECOMMENDED RUNWAY LENGTHS
(From FAA Computer Model)

Runway Length Parameters for Prineville Airport	
• *Airport Elevation: 3,251 feet MSL*	
• *Maximum Difference in Runway Centerline Elevation: 10 Feet*	
• *Existing Runway Length: 5,000 feet (10/28) and 4,000 feet (15/33)*	
Small Airplanes with less than 10 seats	
75 percent of these airplanes	*3,630 feet*
95 percent of these airplanes	*4,530 feet*
100 percent of these airplanes	*4,960 feet*
Small airplanes with 10 or more seats	*4,970 feet*
Large Airplanes of 60,000 pounds or less	
75 percent of these airplanes at 60 percent useful load	*5,720 feet*
75 percent of these airplanes at 90 percent useful load	*8,130 feet*
Airplanes of more than 60,000 pounds	*6,150 feet*
Selected Aircraft Types:	
Cessna Citation II (6-9 passengers / 2 crew 14,100# MGW)	6,430 feet[1]
Cessna Citation Bravo (7-11 passengers / 2 crew 14,800# MGW)	5,220 feet[1]
Cessna Citation Excel (7-8 passengers / 2 crew 20,000# MGW)	5,360 feet[1]
Cessna Citation Sovereign (9-12 passengers / 2 crew 30,000# MGW)	5,197 feet[2]

1. FAR Part 25 Balanced Field Length at maximum certificated takeoff weight (accelerated/stop distance). Cessna Citation runway length requirements based on 15 degrees flaps, 86 degrees F, MGTW, distance to 35 feet above the runway. 2. Cessna Citation Sovereign runway requirements based on MGTW at 85 degrees F, 4,000 feet msl (other conditions same as noted in 1.) Citation operating data provided by manufacturer (Cessna Citation Flight Planning Guides).

Airfield Pavement

According to the data contained in the 2000 pavement condition report, Prineville Airport's airfield pavements ranged from "failed" to "excellent." [10] **Table 3-6** summarizes the five-year maintenance program recommended for Prineville Airport and additional pavement maintenance items anticipated during the current twenty year planning period. The rate of deterioration of airfield pavements increases significantly as they age. A regular maintenance program of vegetation control, crackfilling, and sealcoating is recommended to extend the useful life of all airfield pavements.

TABLE 3-6
SUMMARY OF RECOMMENDED
AIRFIELD PAVEMENT MAINTENANCE

Pavement Section	5-Year Recommended Maintenance	Other Recommended Maintenance During 20-Year Planning Period[1]
Runway 10/28	Slurry Seal (2001)	Overlay (2008) Slurry Seal (2013) Slurry Seal (2018)
Runway 15/33	Fog Seal (2005)	Slurry Seal (2010) Slurry Seal (2015) Overlay (2018)
Main Access Taxiway	Overlay (2002)	Slurry Seal (2008) Slurry Seal (2013) Slurry Seal (2018)
Terminal Apron	Reconstruct: South section and small section adjacent to fuel area. Slurry Seal: Center section (fronting FBO and north) and small section adjacent to fuel area. (2004)	Slurry Seal (2009) Slurry Seal (2014) Slurry Seal (2019) Overlay Center /Fuel Area (2010) Slurry Seal (2015)
Central Apron	Slurry Seal: Center section (2004) Fog Seal: North and south ends (2005)	Slurry Seal (2009) Overlay (2015)
Interior Apron	Reconstruct (2003)	Slurry Seal (2008) Slurry Seal (2013) Slurry Seal (2018)

1. The dates identified for long-term pavement maintenance assume that all 5-year maintenance that has not been accomplished as recommended in Year 1 or 2 (2001 or 2002), will be completed in 2002 or 2003.

[10] Pavement Consultants Inc. (8/21/2000).

Runway 10/28

In the 2000 PCI report, the eastern 3,100-foot section of the runway was rated "good" and the western 1,900-foot section was rated "very good." The report indicates that without the recommended maintenance, the western section of the runway will fail by 2010 and the eastern section will deteriorate from "very good" to "good." The PCI report recommends a slurry seal for the entire runway in Year 1 (2001). This project should be completed at the earliest possible time in order to extend the life of the pavement.

Based on the age and condition of the pavement, additional slurry seals and eventually, a full asphalt overlay will be needed during the twenty year planning period. The existing 30,000 pound (single wheel) pavement strength is adequate to accommodate regular operations with most medium or larger business aviation aircraft.

The existing pavement markings (basic) on Runway 10/28 should be replaced with non-precision runway markings based on the existing instrument approach capabilities.

Runway 15/33

In the 2000 report, the runway was rated "excellent" based on the overlay project completed in 2000. The report indicates that without the recommended maintenance, the condition of the runway will decline to "very good/good" by 2010. The PCI report recommends a fog seal for the entire runway in Year 5 (2005).

Periodic slurry seals will be required during the planning period to maintain surface condition. An asphalt overlay may be required during the twenty year planning period, depending on the level of use and the weight of the aircraft using the runway. The pavement strength for the runway is 5,000 pounds (single wheel). Regular operations of heavier aircraft will accelerate the need for pavement rehabilitation. The recommended pavement design strength for Runway 15/33 is 12,500 pounds (single wheel), which is standard for runways serving small aircraft. The runway markings will require periodic repainting during the current planning period.

Main Access Taxiway

In the 2000 report, the main access taxiway was rated "fair." The report indicates that without the recommended maintenance, the condition of the runway will decline to "poor" by 2010. The PCI report recommends a 2-inch asphalt overlay in Year 2 (2002). The taxiway markings will require periodic repainting during the current planning period.

Aircraft Aprons

In the 2000 PCI report, four sections of the terminal apron were rated from "excellent" to "failed." The report indicates that without the recommended maintenance, the southern section of the apron will fail by 2010. The other sections will deteriorate to "good" or "fair" without routine maintenance. The parking area located adjacent to Runway 33 (west side of the access taxiway) was rated "failed" in 2000. Each of these aircraft aprons have maintenance projects recommended in the five year pavement maintenance program (see Table 3-6). The pavements requiring reconstruction have a recommended 2-inch asphaltic concrete (AC) surface with 6-inch crushed aggregate base.

Airfield Capacity

As an uncontrolled field, Prineville Airport cannot accommodate simultaneous aircraft operations on both runways. For planning purposes, airfield capacity calculations are based on a single runway configuration. The capacity of a single runway without a parallel taxiway typically ranges between 40 to 60 operations per hour during visual flight rules (VFR) conditions.

The current runway/taxiway configuration requires considerable taxi distances and back taxiing on the runway. Providing additional taxiway access to a runway can reduce the amount of time an aircraft must occupy the runway, which increases capacity. However, based on activity forecasts, the runway is expected to operate below capacity during the twenty-year planning period. At Prineville, the need for taxiway improvements will be based on safety rather than capacity enhancement.

Airfield capacity during instrument flight rules (IFR) conditions at Prineville is reduced by the limited ability to accommodate simultaneous instrument approaches and departures to area airports. The IFR capacity for all of the airports in the region is significantly reduced by existing terminal area radar coverage that does not extend low enough to follow aircraft during their initial departure or final approach stages. When an aircraft is below radar coverage during an instrument approach or departure from Prineville, Redmond, Bend, or Sunriver, no other instrument procedures can be executed at any of these airports. Aircraft are required to hold either on the ground or in the air, until the aircraft clears the airspace. An enhancement of existing terminal radar coverage is planned and this is expected to improve Prineville's IFR capacity.

Taxiways

Taxiways are constructed primarily to facilitate aircraft movements to and from the runway system. Some taxiways are necessary simply to provide access between apron and runways, while other taxiways become necessary as activity increases and safer and more efficient use of the airfield is needed.

Major taxiways at Prineville are limited to the main access taxiway that connects the Runway 28 and 33 ends with the landside facilities located at the east end of the airfield. Runway 15/33 is routinely used for taxiing by aircraft to reach the Runway 10 end for departure; aircraft also use the runway to return to the terminal area after landing and rollout on Runway 28. Runway 15/33 intersects Runway 10/28 approximately 1,900 feet east of the runway end (Rwy 10), which requires a lengthy back-taxi for full runway takeoffs. Most aircraft landing on Runway 28 are able to exit the runway at the 15/33 intersection (3,100 feet down the runway) although, a 130-degree angle left turn requires that most aircraft slow to nearly a complete stop to negotiate the turn. An aircraft turnaround/pullout is located on the south side of the Runway 10 threshold. A turnaround loop/taxiway is also located at the north end of Runway 15/33. It appears that if a north-side parallel taxiway is added to Runway 10/28, the north end of Runway 15/33 will need to be reconfigured (extended or shortened) to avoid conflicts with the new taxiway.

The airport's main access taxiway is 35 feet wide by 2,921 feet long. The taxiway meets the width standard (35 feet) for B-II aircraft. New access taxiways should also be designed to meet the ADG II 35-foot width standard, although hangar taxiways and taxilanes may be sized for specific aircraft types.

The development of a partial length parallel taxiway on the south side of Runway 10/28 was recommended on the 1994 ALP. The future parallel taxiway was planned to connect to a future 2,255-foot cross taxiway that would provide access to east landside areas. The configuration of future taxiways will be re-examined in the alternatives analysis, although development of a parallel taxiway on Runway 10/28 is recommended to improve operational safety and efficiency.

Airfield Instrumentation, Lighting and Marking

Runway 10/28

Runway 10/28 has medium-intensity runway edge lighting (MIRL), the standard for general aviation runways. The MIRL system is in good operational condition, although it has been noted that the light standards are relatively short, which can result in the edge lights being buried during

heavy snows. Replacement of the light standards or the entire MIRL system is recommended as part of a future runway widening to 75 feet.

Runway 28 is equipped with a visual approach slope indicator (VASI) that is reportedly in good operational condition. Local pilots have requested that a visual guidance indicator (VGI) be added to Runway 10 to improve safety for landing. The Precision Approach Path Indicator (PAPI) is currently the primary visual guidance system used at general aviation airports. The VASI on Runway 28 may require replacement during the current planning period. The airport should consider replacing the existing VASI with a PAPI in conjunction with the Runway 10 PAPI installation.

Runway 10/28 is not equipped with runway end identifier lights (REIL). REILs consist of two sequenced strobes that provide rapid and positive identification of the approach end of the runway. REILs improve utilization of the runway during nighttime and poor visibility condition and are recommended for instrument runways without approach lights. REILs should be located at both runway ends to improve runway environment visibility during approach procedures.

Runway 10/28 has basic runway markings (runway numbers, centerline stripe). An upgrade to non-precision instrument runway markings is recommended based on the existing approach capabilities of the runway.

Runway 15/33

Runway 15/33 is equipped with low intensity runway edge lighting (LIRL). The lighting is considered adequate for existing use.

The runway is not equipped with visual guidance indicators, such as VASI or PAPI. Although lighting improvements to Runway 15/33 will not be eligible for FAA funding, the addition of a VGI on the runway should be considered. It may be possible for the airport to relocate the Runway 28 VASI to one end of Runway 15/33 when it is replaced with a PAPI. The airport may also be able to acquire a surplus VASI from another airport or the Oregon Department of Aviation for use on Runway 15/33.

Runway 15/33 has basic runway markings (runway numbers, centerline stripe), which is standard for visual runways.

Taxiways

The existing taxiway system does not have lighting or edge reflectors. Based on the relatively low level of nighttime operations at Prineville, edge reflectors would be adequate for current

operations. Medium-intensity taxiway lighting (MITL) may be added to major taxiways in the future.

The aircraft apron and hangar areas have limited flood lighting. Flood lighting is recommended for all new operations areas to provide adequate safety and security.

On-Field Weather Data

The airport does not have an automated weather observation system (AWOS) or a certified human observer located on the field. Without certified on-field weather observation, aircraft operated under FAR Part 135 cannot operate in IFR conditions at Prineville. While local airport users have not identified adding certified on-field weather as a high priority, the airport may want to consider adding an automated weather observation system to enable effective 24-hour all-weather capabilities for the airport. Currently, aircraft are required to use the Roberts Field altimeter setting for instrument approaches at Prineville.

LANDSIDE FACILITIES

The purpose of this section is to determine the space requirements during the planning period for landside facilities. The following types of facilities are associated with landside aviation operations areas at Prineville

- *Hangars*
- *Aircraft Parking and Tiedown Apron*
- *Fixed Base Operator (FBO) Facilities*
- *Government-Related Aviation Facilities*

Hangars

In fall 2002, the airport had eleven conventional hangars, three T-hangars and one conventional/T-hangar, totaling approximately 103,000 square feet. It is estimated that approximately 90 percent of the airport's based aircraft are stored in hangars. This high level of hangar utilization is expected to continue during the planning period. The recent increase in hangar construction activity documented earlier reflects a high level of occupancy of available space. For planning purposes, it is assumed that all existing hangar space is committed and future demand will be met through new construction.

A planning standard of 1,500 square feet per based aircraft stored in hangars is used to project gross space requirements. As indicated in the aviation activity forecasts, the number of based

aircraft at Prineville is projected to increase by 50 during the twenty-year planning period. Based on a 90% hangar utilization level, long-term demand for new hangar space hangars is estimated to be approximately 67,500 square feet. The projected hangar needs for Prineville are presented in **Table 3-7.** Individual aircraft owners needs vary and demand can be influenced by a wide range of factors beyond the control of an airport. For this reason, it is recommended that an additional hangar development reserve be identified to accommodate any unanticipated demand. Reserves should be established to accommodate a combination of conventional hangars and T-hangars.

Aircraft Parking and Tiedown Apron

Aircraft parking apron should be provided for locally based aircraft that are not stored in hangars and for transient aircraft visiting the airport. Currently, most locally based and itinerant aircraft are parked in the FBO apron area near the end of Runway 33. The larger central apron is available for aircraft parking but is currently used primarily to support small air tanker operations.

The existing aircraft aprons have approximately 30 designated light aircraft tiedown spaces, although other aircraft uses (such as fire related air tankers or helicopter parking) reduce available parking for light aircraft. During recent airport visits, seven to twelve aircraft have typically been observed parked on the aprons. The estimated 10 percent of locally based aircraft parked on the apron would account for seven aircraft; the remaining observed aircraft are likely transient. Based on this utilization, the long-term forecast of 124 based aircraft will require 12 local tiedown positions. Locally based aircraft tiedowns are planned at 300 square yards per position.

FAA **Advisory Circular 150/5300-13** suggests a methodology by which itinerant parking requirements can be determined from knowledge of busy-day operations. At Prineville Airport, the demand for itinerant parking spaces was estimated based on 30 percent of busy day itinerant operations (30% of busy day itinerant operations divided by two, to identify peak parking demand). The FAA planning criterion of 360 square yards per itinerant aircraft was applied to the number itinerant spaces to determine future itinerant ramp requirements. By the end of the twenty-year planning period, itinerant parking requirements are estimated to be 15 light aircraft tiedowns.

In addition to light aircraft parking positions, the airport accommodates itinerant business aircraft including turboprops and business jets. Initially, two parking (drive through) spaces capable of accommodating a typical business aircraft, would be adequate to meet anticipated demand.

Additional positions may be required during the planning period if demand increases. The aircraft parking area requirements are summarized in **Table 3-7.**

As with aircraft hangars, reserve areas should be identified to accommodate unanticipated demands for aircraft parking, which may exceed current projections. A development reserve area equal to 100 percent of the 20-year parking demand will provide a conservative planning guideline to accommodate unanticipated demand, changes in existing apron configurations, and demand beyond the current planning period. The location and configuration of the development reserves will be addressed in the alternatives analysis.

Agricultural Aircraft Facilities

The existing agricultural aircraft facilities at the airport can accommodate one or two aircraft. The area is located near the end of Runway 28 and is used for aircraft loading and storage of equipment, water and mixing tanks, and chemical/pesticides drums. The size and location of the facilities appears to be adequate for current and projected needs. However, the area surrounding the AG pad should be reserved to accommodate future related expansion needs. As future airport expansion is expected to occur on the north side of Runway 10/28, it is possible that the existing AG area may need to be relocated in order to accommodate the long-term development needs of the airport.

For both existing and planned facilities, all agricultural ground operations and equipment associated with the operations should be consolidated in a designated area. In the event that secondary containment is required for existing agricultural aircraft activity, the existing apron could be upgraded. The design of secondary containment areas can vary greatly depending on size and intended use. In general, these facilities are designed to capture rinse or spilled application on an impervious hard surface. The pad is typically sloped toward drains, which are piped to collection tanks. The collected liquid is recycled or disposed off-site. The sizing of the pad, collection and storage capacity, and other features depend designed use and agency regulations.

TABLE 3-7
APRON AND HANGAR
FACILITY REQUIREMENTS SUMMARY

Item	Base Year (2001)	2005	2010	2015	2022
Based Aircraft (Forecast)	**74**	**82**	**92**	**105**	**124**
Aircraft Parking Apron *(Existing Facilities)*					
Light Aircraft Tiedowns	30				
AG Aircraft Parking Spaces	1				
Business Aircraft Spaces	0[1]				
Total Apron Area	26,800 sy				
Projected Needs *(Demand)* [2]					
Itinerant Aircraft Parking (@ 360 SY each)		9 spaces / 3,240 sy	10 spaces / 3,600 sy	12 spaces / 4,320 sy	15 spaces / 5,400 sy
Locally-Based Tiedowns (@ 300 SY each)		8 spaces / 2,400 sy	9 spaces / 2,700 sy	11 spaces / 3,300 sy	12 spaces / 3,600 sy
Business Aircraft Parking Demand (@ 625 SY each)		2 spaces / 1,250 sy	2 spaces / 1,250 sy	3 spaces / 1,875 sy	3 spaces / 1,875 sy
AG Aircraft Parking Spaces (@ 700 SY each)		1 space / 700 sy	1 space / 700 sy	2 spaces / 1,400 sy	2 spaces / 1,400 sy
Single Engine Air Tankers (@ 700 SY each)		3 spaces / 2,100 sy	3 spaces / 2,100 sy	4 spaces / 2,800 sy	4 spaces / 2,800 sy
Total Apron Needs		**23 spaces 9,690 SY**	**25 spaces 10,350 SY**	**32 spaces 13,695 SY**	**36 spaces 15,075 SY**
Aircraft Hangars *(Existing Facilities)*					
Existing Hangar Spaces	65 spaces / 103,000 sf (estimated)				
Projected Needs *(Demand)* [3]					
(New) Hangar Space Demand (@ 1,500 SF per space) *(Cumulative 20-year projected demand: 45 spaces / 67,500 SF)*		**+7 spaces / 10,500 sf**	**+9 spaces / 13,500 sf**	**+12 spaces / 18,000 sf**	**+17 spaces / 25,500 sf**

1. No designated parking for business aircraft, although areas of unused apron are generally available.
2. Aircraft parking demand levels identified for each forecast year represent forecast gross demand, which may be accommodated through a combination of existing and future parking areas.
3. Hangar demand levels identified for each forecast year represent the net increase above current hangar capacity.

Government Fire-Related Aviation Facilities

Prineville Airport accommodates the Interagency Fire Dispatch Center adjacent to the terminal area in addition to flight operations with both fixed wing and rotor aircraft. The fire-related facilities are scattered around the airport and include operations buildings, helicopter parking pads and loading areas for single-engine air tankers. Existing government related facilities appear to be adequate for current mission requirements, although additional space may be required as agency needs change. Currently, all fire-related aircraft are accommodated on one of the four helicopter parking pads located on the airport or on the large center apron. These facilities appear to have adequate capacity to accommodate anticipated activity.

The Airport Commission has indicated that some interest exists for consolidating fire-related operations to a single area on the airport. This will be evaluated in the alternatives analysis.

FBO Facilities

The current FBO building is used for a variety of purposes. A replacement building was recommended in the 1994 Airport Layout Plan Report. Options may include replacement of the building or full/partial renovation. The current location of the FBO building should also be evaluated as part of the evaluation of terminal area needs.

A new FBO building should have space for office, classroom, restrooms, and pilot & passenger waiting areas. FBO facility requirements are driven primarily by market conditions and the particular needs of the FBO and its customers. Because future FBO facility needs are difficult to quantify, the best planning approach is to identify development reserves that could accommodate new or expanded FBO facilities. General areas for expanded operations, maintenance hangar, vehicle parking, and apron should also be reserved. A 3,000 to 5,000 square foot building should be adequate to meet the airport's basic FBO needs, although the economics involved for the FBO and the airport will largely determine the type of facilities that are developed.

The airport should be capable of accommodating an additional FBO, should that interest develop. Although it appears unlikely that Prineville will be able to support more than one FBO during the current planning period, the airport needs to provide equal access to prospective tenants, without discrimination.

Surface Access Requirements

Surface access to the airport appears to be adequate for the planning period. Some changes in the configuration of the access road to the east aprons may be needed to accommodate previously

recommended hangar development in the area. Additional access would also be required to serve any new development located on the north side of Runway 10/28. This will be addressed in the airport development alternatives evaluation.

Vehicle parking adjacent to the aircraft parking areas appears to be adequate based on current needs, although terminal area vehicle parking reserves should be provided to allow for an expansion or reconfiguration of the FBO facilities or a general increase in vehicle parking demand. Additional parking areas should be provided as part of future hangar projects. The requirements for providing designated vehicle parking areas adjacent to hangars vary greatly at small airports. A planning standard of 0.5 to 1.0 vehicle parking spaces per based aircraft will accommodate the most common parking demand levels. For larger hangars, a formula based on the square footage of the building is often used to determine vehicle parking requirements. This is a common approach for establishing off-street parking in most communities.

SUPPORT FACILITIES

Aviation Fuel Storage

Aviation gasoline (avgas) and jet fuel are both available at Prineville Airport. As noted in the inventory chapter, the airport currently has two 12,400 gallon tanks with leak detection systems. A review of fuel records for Prineville for 1999, 2000 and 2001 indicates that fuel sales have been relatively steady at about 175,000 gallons per year. Based on air traffic operations, this would equate to average fuel sales of approximately 19 gallons sold per aircraft operation.

During this period, Les Schwab aircraft have accounted for about 70 percent of total fuel volume and 85 percent of jet fuel volume sold at the airport. Jet fuel currently accounts for about 80 percent of the total fuel sold at Prineville Airport. Based on current capacity and demand, the jet fuel inventory turns over an average of 12 times per year at Prineville Airport. By comparison, the turnover of AVGAS inventory at Prineville currently averages about 4 times per year.

The frequency of restocking for both jet fuel and AVGAS would be expected to increase as aircraft activity increases. The airport should establish adequate space to accommodate larger capacity fuel tanks in the event that demand warrants expansion. Another issue related to fuel storage and distribution is the potential development of aircraft facilities on the north side of Runway 10/28. Airports with split operations often require additional fuel storage or distribution equipment. However, based on the relatively low volume of fuel demand at the airport (beyond Les Schwab), the cost of providing additional fueling facilities may be difficult to justify. Another option may be to provide mobile fueling through the use of fuel trucks. In any event, a

fuel storage reserve should be identified in the terminal area(s) represented in the preferred development alternative.

Airport Utilities

The existing utilities on the airport appear to be adequate for current and projected needs within existing developed areas of the airport. Potential expansion of facilities on the north side of Runway 10/28 would require extensions of the water, sewer, electrical, and telephone lines that serve currently serve the east terminal area.

An increase in fire-related activity at airport may increase demand for water, although the existing service should be able to provide adequate supply for the level of demand associated with these operations. Overhead electrical and telephone lines should be buried whenever possible; new electrical connections to hangars or other airfield developments should also be placed underground. New airfield electrical requirements include providing power to the PAPIs and REILs on the runway.

Security

The airport has limited wire fencing on portions of its boundary and chain link fencing around some hangars. There are no major security concerns at the airport, although providing chain-link fencing and gates along the entire landside frontage should be considered. Upgrading fencing around the airport property line or to surround active areas of the airfield may be helpful in reducing animal incursions.

The airport plans to develop hangars in the area located east of the current airport access road. The general scheme involves developing a new access road east of the current location while placing gates at each end of the current road. Since aircraft access would be provided through this area (across the existing access road) the gates should remain closed and locked. Upgraded security fencing will also be required in this area in conjunction with the new gates.

Additional flood lighting should be provided around the aircraft parking apron, fueling area, and hangar areas to maintain adequate security.

FACILITY REQUIREMENTS SUMMARY

The projected twenty-year facility needs for Prineville Airport are summarized in **Table 3-8**. As noted in the table, the primary facility requirements include runway and taxiway improvements for Runway 10/28 and the addition of new hangar space on the airport. Maintaining and

replacing existing pavements represents a significant facility need. Upgrades in airfield lighting (PAPI, REIL) are important based on the existing level of night operations, particularly by the locally based corporate aircraft returning to the airport at the end of the day. The development capacity of the existing east landside facilities is limited, but does have potential for redevelopment to improve the efficiency of current layouts. This will be addressed in the alternatives evaluation. The Airport Commission has indicated that development of new facilities on the north side of Runway 10/28 is already being pursued.

The forecasts of aviation activity contained in Chapter Two anticipate modest growth in activity that will result in modest airside facility demands beyond existing capabilities. The existing airfield facilities have the ability to accommodate a significant increase in activity, with targeted facility improvements. For the most part, the need for new or expanded facilities, such as aircraft hangars, will be market driven, although there will be significant costs associated with site preparation, utility extensions, road extensions, and taxiway construction.

TABLE 3-8
FACILITY REQUIREMENTS SUMMARY

Item	Short Term	Long Term
Runway 10/28	Pavement Maintenance[1] Upgrade Markings to Non-precision Inst. Widen Runway to 75 Feet Reconfigure/Expand Rwy 10 Holding Area (Outside OFZ)	Runway Overlay Pavement Maintenance 720-foot Runway Extension (north)
Runway 15/33	Pavement Maintenance[1]	Pavement Maintenance Widen Runway to 60 Feet Extend North End in Conjunction with Rwy 10/28 Parallel Taxiway. Runway Overlay
Taxiways	Runway 10/28 Parallel Taxiway (new) Overlay Access Taxiway Pavement Maintenance Add AC Hold Lines on All Taxiways	Pavement Maintenance Taxiways to New Hangar Areas Runway 15/33 Parallel Taxiway Reserve Cross Taxiway Reserve
Aircraft Aprons	Reconstruct Terminal Apron Pavement Maintenance on other Aprons	Pavement Maintenance Overlay Center Apron Apron Development Reserves
Agricultural Aircraft Facilities	None	Secondary Containment Pad with Collection
Hangars	Reserves for T-hangar and Conventional Hangar Development	Same
Navigational Aids and Lighting	PAPI (Rwy 10 & 28) REIL (Rwy 10 & 28) Taxiway Edge Reflectors Flood Lighting (a/c parking & hangar areas)	VASI/PAPI (Rwy 15 & 33) Additional Flood Lighting As Required
Fuel Storage	None	Fuel Storage Reserve
FBO/GA Terminal	New FBO/Terminal Building	Reserve for 2nd FBO
Utilities	Extend Electrical to New Facilities	Same
Roadways	Extend Roads to New Facilities	Same
Security	Terminal Area Fencing; Flood Lighting	Same

1. Vegetation control, crackfill, sealcoat

CHAPTER FOUR
AIRPORT DEVELOPMENT ALTERNATIVES & AIRPORT LAYOUT PLANS

INTRODUCTION

The evaluation of development options at Prineville Airport began with preparation of two preliminary concepts each offering distinctly different strategies capable of accommodating forecast facility demand. These preliminary concepts were presented to the Airport Commission and public for review and comment. The input provided by the Commission and airport users led to the development of a refined concept. The refined concept included some of the preferred components of the preliminary concepts and served as the basis for finalizing a preferred alternative to be depicted on the airport layout plan drawing.

As noted in the forecasts, demand for landside facilities (hangars, aircraft parking, associated facilities, etc.) within the current 20-year planning period is expected to be moderate. However, based on uncertainty associated with predicting future activity trends, it is recommended that facility development areas and reserves be identified to provide long-term development potential. In addition to protecting the viability of the airport, providing development reserves will accommodate unexpected surges in demand that may occur in the future.

Overview and detail sheets for each of the preliminary concepts and the refined concept were prepared, and are presented as **Figure 4-1** through **Figure 4-6** later in this chapter. The set of airport layout plan drawings is presented with narrative descriptions in the second section of this chapter. These reduced size drawings are for general reference only. Full-size scaled drawings are provided separately for formal review and comment.

DEVELOPMENT CONCEPT "A"

Concept "A" involves the redevelopment of the existing east-side facilities located between the ends of Runways 28 and 33, Highway 126 and the main access taxiway. A primary element of this concept is the consolidation of existing government-related fire response activities to a single area. Currently, fire related aircraft and operations facilities are scattered throughout the east

side of airport. Consolidating all government-related activities to a single area would provide new efficiencies to the users and would significantly improve land utilization on the airport. Concept "A" is depicted in **Figures 4-1 and 4-2**.

This concept attempts to maximize the efficiency of existing developed areas (east landside area) to address facility needs before proceeding with the development of other parts of the airport. This approach requires a combination of new development and redevelopment to improve existing space utilization and maximize landside capacity. The basic planning principle involved in this option is to improve the configuration and operational efficiencies of different airport functions by eliminating the patchwork pattern of development that has occurred in favor of efficient, consolidated development. Prineville Airport has the unique opportunity to consider this type of approach because of its substantial land base.

Because the elements of redevelopment do not typically occur simultaneously, this concept allows for incremental development of hangars and reuse of aircraft parking areas, etc., in the east landside area until more substantial redevelopment occurs. However, since the government fire response facilities are scattered throughout the east end of the airport, their consolidation and relocation will need to occur before the full redevelopment potential of the east area can be realized.

In addition to improving overall land utilization, a primary advantage of this concept is the ability to maximize existing investments in facilities and infrastructure. By consolidating new development activity into areas that are readily developable (existing road access, utilities, etc.), this option allows the airport to defer the major infrastructure improvements that will be required when expanding into undeveloped areas. The primary potential disadvantage of this concept is the potential to impact existing users, which can range from minor inconvenience to relocation. However, the prospect of developing new more efficient facilities often provides users with expansion opportunities that may not exist with current facilities. This approach also requires considerably more effort by the airport sponsor to coordinate the reconfiguration of existing developments, renegotiate existing leases, etc., when compared to developing bare ground.

A previously planned realignment of the main airport access road (depicted) has been integrated into this concept and is essential to allow development of aviation related-facilities east of the existing access road, which currently cannot be accessed by aircraft without taxiing across the roadway. With the planned roadway changes, this area can accommodate considerably more development of aircraft hangars, parking apron, FBO facilities, fuel storage, etc. An airport-related commercial/industrial area is identified along the east side of the area. Because this lease area does not have direct airside access it is well suited to accommodate airport-related aviation and non-aviation uses.

The southeast corner of the terminal area is identified as a GA redevelopment area, which provides space for new hangars, aircraft maintenance, etc. The existing government-related fire operations and support facilities (interagency operations building, equipment storage yard, helipads, etc.) would be relocated to the north side of Runway 10/28 to a large consolidated government operations area. The existing fixed based operator (FBO)/GA terminal building would be replaced by a new building (relocated) to the large aircraft apron. In this option, the large aircraft apron would be reconfigured to provide parking for itinerant corporate aircraft and smaller aircraft, aircraft fueling, etc. The single engine air tanker (SEAT) loading and operations area currently located at the north end of the large apron would be relocated to the consolidated government operations area on the north side of Runway 10/28. The area located along the back (eastern) edge of the apron is reserved for larger conventional hangars.

Concept "A" also includes a 720-foot runway extension (as recommended in the facility requirements assessment) and the interior access taxiway depicted on the 1994 airport layout plan. The consolidated government aviation/operations area is located near the east end of Runway 10/28. This area is envisioned as a large lease (20+ acres) which would be developed by the agencies based on their operational needs. The site provides convenient airside and landside access and is large enough to accommodate a combination of aviation facilities (hangars, aircraft parking, retardant loading areas, water storage, fuel storage, etc.) and operations facilities (offices, crew quarters, maintenance facilities, equipment storage, etc.). The initial development of the eastern-most area north of Runway 10/28 minimizes the distance required for utility extensions. This also allows future airport development to occur in a westerly direction incrementally as demand occurs. A new north airport access road is shown extending from an existing service point on Highway 126.

DEVELOPMENT CONCEPT "B"

Concept "B" accommodates all future landside facility needs on the north side of Runway 10/28. This option provides the airport with a "clean sheet of paper" that provides a clear development path without the constraints of redeveloping existing areas. Concept "A" is depicted in **Figures 4-3 and 4-4**.

The consolidated government aviation/operations area described in Concept "A" is also included in Concept "B." However, in this option, the government area is located near the mid-point of Runway 10/28 and areas of potential property acquisition are identified along the northern edge of the airport. A large area (50+ acres) is identified for general aviation development and development reserves. The GA area extends from the eastern end of the designated government area to Highway 126. A full-length parallel taxiway is located on the north side of Runway

10/28 to serve new developments. A new north airport access road is shown extending from an existing service point on Highway 126.

The primary advantage of this option involves the simplicity of developing currently undeveloped areas, particularly the ability to construct facilities without significant space or configuration constraints. The primary disadvantages of this option involve the cost of extending utilities and access roadways beyond currently developed areas and the effects of spreading out development on the airfield. Spreading facilities out over a large area also requires additional airfield improvements such as access taxiways, which can increase the airport's initial capital costs and the life cycle costs for airfield pavements. Locating general aviation facilities, such as FBO or fueling on both sides of a main runway creates operational challenges for airport management, service businesses, and users. For smaller airports that are unable to support multiple FBOs or multiple fixed-point fueling facilities, the use of mobile fuel trucks can eliminate the need for lengthy aircraft taxiing between aircraft storage areas and fuel.

REFINED CONCEPT

Based on the review of the preliminary alternative concepts, the Prineville Airport Commission identified several items from each concept to be incorporated into a preferred alternative. The general consensus among the Airport Commission was that the remaining available space on the east side of the airport should be developed first, with additional facilities then developed on the north side of Runway 10/28. The Commission supported the concept of redeveloping east side facilities where feasible, although there was no strong interest expressed in immediately pursuing the relocation of government fire-related facilities to the north side of Runway 10/28. As a result, the "refined concept" retained the general theme of Concept "A" but also identifies large development areas for general aviation and government aviation facilities on the north side of Runway 10/28. The "refined concept" is depicted in **Figures 4-5 and 4-6**.

The east landside area is depicted with a combination of new hangars and taxilanes on currently unused land and longer-term hangar construction (reserves) in the potential redevelopment areas, including the fire-related facilities (dispatch center, helicopter parking areas, etc.). The northern section of the east landside area is planned to accommodate two T-hangar buildings in the areas nearest the main access taxiway, with additional space for multiple conventional hangars on the east side of the existing access road (to be relocated). The area surrounding the larger central apron is planned for apron expansion, an FBO/GA terminal reserve, and space for larger conventional hangars (business related use). The previously-defined configuration of long narrow lease lots may need to be altered based future tenant needs. A third T-hangar site is identified near the southeast corner of the large apron with additional taxilane access provided to both sides of the building. Conventional hangars can be accommodated in a variety of locations

on either side of the existing access road, while T-hangar locations are in short supply. The shortage of readily developable space for T-hangars in the east landside area makes it particularly important to reserve these areas.

The southeast corner of the airport (including the terminal area) provides longer term redevelopment sites for hangars if the government-related facilities are relocated. Additional taxiway/taxilane access is depicted from the main access taxiway. This concept depicts the existing FBO area being redeveloped as aircraft parking. Additional taxiway access is extended into the adjacent newly developed hangar area. This reconfiguration will be deferred indefinitely if the existing FBO building site is retained.

Several large development areas and development reserves are designated on the north side of Runway 10/28 for general aviation, agricultural, military and government aviation use. The government fire-related lease area is located between the end of Runway 28 and Highway 126. Based on direction from the Airport Commission, the government aviation lease area has been expanded from the original Concept "A" and now extends to the north edge of the airport with a new access road routed along the northern edge of airport property. The general aviation development area abuts the government area and extends to the west along Runway 10/28 until reaching an existing triangular shaped leased area (approximate area depicted – to be refined on ALP). A military lease area has also been added on the north side of Runway 10/28 (west of Runway 15/33). This area is intended to accommodate a combination of aviation and related uses with road access provided via Huston Lake Road. The leased area located near the center of Runway 10/28 eliminates the option of extending vehicle access from east to west on the north side of the runway (without acquiring additional property).

An alternative AG lease area is located near the west end of Runway 10/28. In the event that the existing AG facilities located near the east end of Runway 10/28 need to be relocated to accommodate other development, this alternative site is reserved for that purpose. The facilities consist of an unpaved access road, a loading/containment pad, and a taxiway connection to the parallel taxiway/runway. A lease area would be defined adjacent to the pad for the AG operators to store vehicles, equipment and chemicals/pesticides. All future AG aircraft facility development on the airport should be consolidated in a single area with a common-use pad(s) that meet all state and federal regulatory requirements for spill containment. Additional pads can be added in the event that demand levels increase (multiple aerial applicator aircraft operating simultaneously). As with the military area described above, vehicle access to this area will be limited to Huston Lake Road.

The refined concept includes a north-side parallel taxiway on Runway 10/28; a south-side parallel taxiway on Runway 15/33; and an interior access taxiway that would extend from the new terminal area to near the midpoint of the primary runway.

The refined concept also includes two ODOT highway clearance zones, with 400-foot radii, centered on the existing airport roadway intersections with Highway 126. According to City of Prineville Planner Dick Brown, plans exist to construct a major highway interchange in the vicinity of the east end of the airport, perhaps at one these two points. In order to protect the potential geometry associated with a highway interchange, no airport-related developments have been planned (aside from roadways, which may require redesign) within these 400-foot clearance areas.

In providing a balanced approach to addressing the region's transportation planning needs, it is equally important to protect potential highway interchange areas from incompatible interim developments and to protect the airport from any future highway developments that could create obstructions to its airspace. No highway reconfiguration should be permitted that creates obstructions to any of the airport's protected airspace surfaces, particularly the approach surfaces to Runways 28 and 33, which cross directly over Highway 126.

FIGURE 4-1: DEVELOPMENT CONCEPT "A"

FIGURE 4-2: DEVELOPMENT CONCEPT "A" (DETAIL)

FIGURE 4-3: DEVELOPMENT CONCEPT "B"

FIGURE 4-4: DEVELOPMENT CONCEPT "B" (DETAIL)

FIGURE 4-5: REFINED CONCEPT

FIGURE 4-6: REFINED CONCEPT (DETAIL)

ALTERNATIVES SUMMARY

The refined concept described above provided an outline of the preferred alternative for Prineville Airport. Through several subsequent rounds of review, the Airport Commission provided additional comments that resulted in the evolution of the preferred alternative. This input was incorporated into the airport layout plan drawing. The preliminary and refined concept figures contained in this chapter illustrate the progressive process of alternatives evaluation and do not necessarily reflect the final preferred configuration of facilities depicted on the airport layout plan that resulted from the overall review process. The draft set of airport layout plan drawings is presented at the end of this chapter.

In general, the subsequent refinements to the refined concept were minor, although several local decisions were made that clarified some of the optional components. The Airport Commission decided to replace the FBO building with a larger structure in its current location. Additional development reserves for FBO and related facilities are identified adjacent to the central apron and on the north side of Runway 10/28. The Airport Commission recently approved a lease for three conventional hangars in the northern section of the east hangar area in an area previously identified for an 8/10 unit T-hangar. Through its review, the Commission also decided not to depict a future T-hangar extending into the existing BLM helicopter parking area (recommended for future relocation) located adjacent to the caretaker residence. As a result of these decisions, only one space is now designated for T-hangar development in the east landside area (adjacent to the southeast corner of the central apron).

Additional refinements to the configuration of the north general aviation area is depicted on the airport layout plan drawing. The facilities include apron and hangar areas and a future north-side parallel taxiway. Planned vehicle access to this area has been modified to make use of existing unimproved roadways wherever possible.

AIRPORT LAYOUT PLAN DRAWINGS

The options that were considered for the long-term development of Prineville Airport were described in the Alternatives section of this chapter. This evaluation resulted in the selection of a refined concept, which was further worked into a preferred alternative. The preferred alternative has been incorporated into the airport layout plan drawings, which are summarized in this section. The set of airport plans, which is referred to in aggregate as the "Airport Layout Plan" (ALP) has been prepared in accordance with FAA guidelines. The drawings illustrate existing conditions, recommended changes in airfield facilities, existing and recommended property ownership, land use, and obstruction removal. The ALP set is presented at the end of this chapter:

- *Drawing 1 – Cover Sheet*
- *Drawing 2 – Data Sheet and East Terminal Area*
- *Drawing 3 - Airport Layout Plan*
- *Drawing 4 – FAR Part 77 Airspace Plan*
- *Drawing 5 – Runway 10/28 Approach Surface Plan & Profile*
- *Drawing 6 – Runway 15/33 Approach Surface Plan & Profile*
- *Drawing 7 – Airport Land Use Plan with 2005 Noise Contours*

Cover Sheet

The cover sheet includes an airport location map, an airport vicinity map, an index for the drawing set, and related project information.

Data Sheet/East Terminal Area Plan

The data sheet provides existing and future data blocks for the overall airport and for each runway. In addition, a declared distances table, legend of symbols and line types, and building/facility table (with corresponding numbers depicted on the airport layout plan drawing and terminal area insert) are provided.

Since the project scope did not provide for a separate terminal area plan, an insert detailing the east terminal area was added to this sheet. This insert depicts the recommended improvements within the east terminal area that are presented on the ALP, but at larger scale. The terminal area improvements include a realignment of the airport access road, future hangar development, and development of aviation-related facilities in areas without aircraft access. Long-term redevelopment within the east terminal area is depicted in areas currently occupied by government fire-related operations and support facilities. The plan recommends the development

of a government aviation lease area on the airport to consolidate the facilities that are currently scattered on the east side of the airport.

Airport Layout Plan

The Airport Layout Plan (ALP) presents the existing and ultimate airport layout and depicts the improvements that are recommended to enable the airport to meet forecast aviation demand. The improvements depicted on the ALP reflect all major airfield developments recommended in the twenty-year planning period. Decisions made by the airport sponsor regarding the actual scheduling of projects will be based on specific demand and the availability of funding. Long-term development reserves are also identified on the ALP to accommodate potential demand that could exceed current expectations or could occur beyond the current twenty-year planning period. The major improvements depicted on the ALP are summarized below:

- The ALP depicts Runway 10/28 with a future length of 5,720 feet. The width of the runway is recommended to be increased from 60 to 75 feet to comply with Airplane Design Group II (ADG II) standards.

- A full-length parallel taxiway is recommended on the north side of Runway 10/28 with an ADG II runway separation.

- The ALP depicts Runway 15/33 with a future length of 4,300 feet. The width of the runway is recommended to be increased from 40 to 60 feet to comply with Airplane Design Group I (for runways serving small aircraft exclusively) (ADG I – small) standards. The runway extension is recommended to eliminate the conflict that will be created at the Runway 15 threshold when the Runway 10/28 north parallel taxiway is constructed. It will be necessary to shift the runway end clear of the taxiway to safely accommodate runway and taxiway operations.

- A full-length parallel taxiway reserve is identified on the west side of Runway 15/33 with an ADG I runway separation. Although ADG I (small) design standards are currently recommended for Runway 15/33, the taxiway reserve is established at the full ADG I separation distance (225 feet) from runway centerline. This recommendation is based on the airport's desire to protect long-term aviation development potential in the area west of Runway 15/33.

- An infield access taxiway is recommended to connect the east terminal area to the primary runway to reduce taxiing distances and back-taxiing on the runway.

- A site for an automated weather observation system (AWOS) is identified north of the future infield taxiway between the two runways.

- Precision approach path indicators (PAPI), runway end identifier lights (REIL), and lighted wind cones are recommended at both ends of Runway 10/28.

- The existing airport access road will be realigned to accommodate a combination of aviation and aviation-related developments between Highway 126 and existing east landside development. The existing access road will be gated at the north and south ends of the development area to provided limited vehicle access. The area will be developed to accommodate aircraft hangars on both sides of the existing access road and hangar taxilanes will be extended to serve hangars located on the east side of the existing road.

- Several areas on the airport are identified for future redevelopment based on the option of locating consolidated government fire operations facilities on the north side of Runway 10/28. If the north side development is pursued, the existing fire-related facilities would be redeveloped to accommodate general aviation facilities (hangars, aircraft parking, etc.).

- The area surrounding the existing general aviation terminal/FBO building is reserved to accommodate a larger replacement GA Terminal/FBO building.

- Upgraded fencing with limited access points is recommended within the existing east side development area.

- A future overflow aircraft parking area is identified on the north side of the main access taxiway, opposite the aircraft fueling area.

- A location for an emergency services building is identified near the southeast corner of the airport. This facility is envisioned to provide emergency response services on the airport and to adjacent areas through direct access to Highway 126.

- A development concept for the north side of Runway 10/28 was created to accommodate long-term demand for hangar, aircraft parking, FBO and related services. Substantial development reserve areas are identified to address demand beyond the current twenty-year planning horizon. Vehicle access to the general aviation would be extended from an existing access road near the northeast corner of the airport. This access would also serve the area identified for potential government aviation lease.

- A government/military lease area is identified near the northwest end of Runway 10/28 to accommodate potential demand for aviation-related military facilities at the airport.

Vehicle access to this area is limited to Huston Lake Road. At this time, an existing lease located on the north side of Runway 10/28, near the midpoint of the runway eliminates the ability to extend vehicle access from the east.

Projects such as maintenance or reconstruction of airfield pavements, which are not depicted on the ALP, are described in the Capital Improvements Program, in **Chapter Five**.

Airspace Plan

The FAR Part 77 Airspace Plan for Prineville Airport was developed based on Federal Aviation Regulations (FAR) **Part 77, Objects Affecting Navigable Airspace**. The Airspace Plan provides the plan view of the airspace surfaces, profile views of the runway approach surfaces, and a detailed plan view of the runway approach surfaces. This information is intended to define and protect the airspace surfaces from encroachment due to incompatible land uses, which could adversely affect safe airport operations. By comparing the elevations of the airspace surfaces with the surrounding terrain, an evaluation of potential obstructions to navigable airspace was conducted. Additional plan and profile detail for each runway is provided on separate drawings (see Drawings 5 and 6).

The airspace surfaces depicted for Prineville Airport reflect the ALP-recommended (ultimate) runway lengths of 5,720 feet for Runway 10/28 and 4,300 feet for Runway 15/33. Runway 10/28 is designed for use by aircraft weighing more than 12,500 pounds, which places it in the "other than utility" category under FAR Part 77. Runway 10/28 has existing day/night straight-in non-precision instrument approach capabilities, which further defines the airspace surfaces as non-precision instrument. Runway 15/33 accommodates small aircraft in visual conditions and is classified as a "utility" runway.

The approaches to the runways are generally free of obstructions, except for one small area of terrain penetration identified along the northern edge of the Runway 10 approach surface. The height of terrain penetration is estimated to be approximately 20 feet. This area of terrain (Meyers Butte) also penetrates the adjacent horizontal surface by approximately 205 feet at its highest point. A radio tower, with an estimated height of 100 feet above ground level also penetrates the horizontal surface, although the tower is marked by a red obstruction light.

A larger area of terrain penetration within the horizontal and conical surfaces is located southwest of the airport (Grass Butte). This terrain penetrates the horizontal surface by approximately 221 feet at its highest point. A water storage tank located on the eastern slope of Grass Butte is also believed to penetrate the horizontal surface. Precise elevation data for the above-ground tank was not available, but it is estimated to penetrate the horizontal surface by

approximately 39 feet. Other notable items (roads, cell tower, etc.) identified on the plan are provided for reference only and do obstruct airspace surfaces. Obstruction lighting is recommended for any items that penetrate airspace surfaces that cannot be removed or lowered.

Runway 10/28 Approach Surface Plan & Profile

The approach surface plan and profile drawing provides additional detail for the runway approaches and the runway protection zones. The existing and future 34:1 non-precision instrument approaches to Runway 10/28 are depicted. The future 720-foot extension at the Runway 10 end is also depicted. As noted earlier, a small area of terrain penetration is located within the Runway 10 approach surface; the larger area of terrain penetration and the nearby tower are located beyond the approach surface in horizontal surface.

Runway 15/33 Approach Surface Plan & Profile

The approach surface plan and profile drawing provides additional detail for the runway approaches and the runway protection zones. The existing and future 20:1 visual approaches to Runway 15/33 are depicted. The future 400-foot extension at the Runway 15 end is also depicted. There are no obstructions located within the approaches to Runway 15/33.

Airport Land Use Plan with 2005 Noise Contours

The Airport Land Use Plan for Prineville Airport depicts existing zoning in the immediate vicinity of the airport. The area outside the Prineville city limits is predominately zoned agricultural or industrial although areas of residential zoning are also located north of the airport. A combination of airport zoning exists on the airport and approach overlay zoning exists within portions of the runway approach surfaces. Large areas of city manufacturing zoning are located along the airport's eastern border. The developed areas within Prineville's city limits are located further east of the airport and include residential, manufacturing, commercial and public reserve zoning.

Noise exposure contours based on the 2005 forecasts of aircraft activity are depicted on the Land Use Plan. The noise contours were created using the FAA's Integrated Noise Model (INM). Data from activity forecasts and aircraft fleet mix are combined with common flight tracks and runway use to create a general indication of airport-generated noise exposure. The 2005 55 DNL noise contour extends beyond the ends of Runway 10/28 over largely undeveloped lands beyond Huston Lake Road and Highway 126 (portions located off airport property). The 55 DNL noise

contour extends only a few hundred feet beyond the end of Runway 33 and is contained entirely within airport property. Noise exposure at the north end of Runway 15/33 is largely overshadowed by Runway 10/28 activity, although a slight bump out in the 55, 60, 65 and 70 DNL contours is visible near the end of Runway 15. The 60, 65 and 70 DNL noise contours for both runways are contained entirely within airport property. The size and shape of the contours is consistent with the airport's business jet runway utilization on the primary runway and lower volumes of small aircraft traffic on the secondary runway. An additional source of noise generation is identified at the USFS helicopter parking area located near the southeast corner of the airport. The 60 and 65 DNL noise contours do not extend significant beyond the parking pad and the 55 DNL contour merges with the contour extending from the south end of Runway 15/33.

Based on the modest forecasts of air traffic, noise exposure levels during the twenty-year planning period may be expected to increase slightly above current levels, although the sparsely developed land uses in the vicinity of the airport suggest that noise compatibility will not be a significant issue. However, since perceived noise impacts are not generally limited to areas with significant levels of noise, care should be taken by local land use authorities to avoid creating potential long-term land use incompatibilities in the vicinity of the airport by permitting development of incompatible land uses such as residential subdivisions. A detailed description of airport noise and land use compatibility is presented in **Chapter Six**.

Drawing 1 - Cover

Drawing 2 – Data Blocks and Terminal Area

Drawing 3 - Airport Layout Plan

Drawing 4 - Airport Airspace Plan

Drawing 5 – Runway 10/28 Approach and Profile

Drawing 6- Runway 15/33 Approach and Profile

Drawing 7 - Airport Land Use Plan

CHAPTER FIVE
FINANCIAL MANAGEMENT AND DEVELOPMENT PROGRAM

The analyses conducted in the previous chapters have evaluated airport development need based on forecast activity and the associated facility requirements. One of the most important elements of the master planning process is the application of basic economic, financial and management rationale so that the feasibility of the implementation can be assured. The amount of local and outside funding (state, federal, etc.) that will be available during the current twenty year planning cannot be guaranteed. In cases when the overall capital needs of an airport exceed available funding, projects will be deferred until funding can be obtained. In this situation, it is particularly important to establish and maintain priorities so that completion of the most essential improvements is assured.

Historically, the primary source of funding for major capital projects at the airport has been federal aviation trust fund monies with local matching funds provided by the City/County. Hangar construction, which is not eligible for FAA funding, has typically been funded privately at Prineville. Utility improvements at the airport are also not eligible for FAA funding and have been locally funded. As noted earlier, the only major airfield facility at Prineville Airport not currently eligible for FAA funding is Runway 15/33.

The maintenance of airfield pavements ranges from very minor items such as crack filling to fog seals or patching. Minor pavement maintenance items such as crackfilling are not included in the capital improvement program, but will need to be undertaken by the airport sponsor on an annual or semi-annual basis. The Pavement Management Program (PMP) managed by the Oregon Department of Aviation (ODA) provides funding assistance for airfield pavement maintenance on established multi-year cycles. This program is intended to preserve and maintain existing airfield pavements in order to maximize their useful lives and the economic value of the pavement. As noted earlier, several short-term pavement maintenance projects are identified for Prineville Airport in the current PMP, which will require local matching funds.

AIRPORT DEVELOPMENT SCHEDULE AND COST ESTIMATES

The analyses presented in Chapter Four described the airport's overall development needs for the next twenty years. Estimates of project costs were developed for each project based on 2003 dollars. A 30 percent contingency overhead for engineering, administration, and unforeseen circumstances has been included in the estimated component and total costs. In future years, as the plan is carried out, these cost estimates can continue to assist management by adjusting the 2003-based figures for subsequent inflation. This may be accomplished by converting the interim change in the United States Consumer Price Index (USCPI) into a multiplier ratio through the following formula:

$$\frac{X}{I} = Y$$

Where:

X = USCPI in any given future year

Y = Change Ratio

I = Current Index (USCPI)

USCPI
181.1
(1982-1984 = 100)
January 2003

Multiplying the change ratio (Y) times any 2003-based cost figures presented in this study will yield the adjusted dollar amounts appropriate in any future year evaluation.

The following sections outline the recommended development program and detailed funding distribution assumptions. The scheduling has been prepared according to the facility requirements determined earlier. The projected staging of development projects is based upon anticipated needs and investment priorities. Actual activity levels may vary from projected levels; therefore, the staging of development in this section should be viewed as a general guide. When activity does vary from projected levels, implementation of development projects should occur when demand warrants, rather than according to the estimated staging presented in this chapter. In addition to major development projects, the airport will require regular facility maintenance.

A summary of development costs during the twenty-year capital improvement plan is presented in **Table 5-1**. The twenty-year CIP is divided between short-term and long-term projects. The distribution of project types within the CIP is summarized in **Table 5-2**. The tables provide a listing of the major capital projects included in the twenty-year CIP, including each project's eligibility for FAA funding. The FAA will not participate in vehicle parking, hangar development, building renovations, utilities, or projects associated with non-aviation developments.

The short-term phase of the capital improvement program includes the highest priority projects recommended during the first five years. Long-term projects are expected to occur beyond the next five years, although changes in demand or other conditions could accelerate or slow demand for some improvements. As with most airports, pavement related improvements represent the largest portion of CIP needs at Prineville during the current planning period:

• *Preserve/Resurface Existing Airfield Pavement*	*23%*
• *New or Reconstructed Airfield Pavement*	*51%*
• *NAVAIDS, Lighting, Marking*	*7%*
• *Other Items (Fencing, Access Roads, etc.)*	*19%*
Total	*100%*

Short Term Projects

Short-term projects at Prineville include reconstruction or overlay on several existing apron and taxiway pavements located on the east side of the airport. Other short-term projects identified for the east terminal area include a realignment of the main airport access road and construction of hangar taxilanes into the lease area that is currently divided by the existing access road. Additional fencing and flood lighting is also recommended in the east terminal area. A fog seal is recommended for Runway 15/33 to extend the life of the existing surface.

Several facility improvements are recommended to improve the airport's poor weather operating capabilities. These include precision approach path indicators (PAPI) and runway end identifier lights (REILS) for both ends of Runway 10/28 and installation of an automated weather observation system (AWOS). Providing certified on-site weather observation will allow instrument operations for aircraft operated under FAR Part 135 and will improve safety for all existing users. The addition of lighted wind cones at both ends of Runway 10/28 is also recommended.

The construction of the north side parallel taxiway is included in the short-term development program to serve aircraft at existing facilities located at the east end of the airport and new landside facilities on the north side of Runway 10/28 that will be developed during the planning period. The parallel taxiway will have aircraft holding areas at the east and west ends of the runway; the existing pull-out located on the south side of Runway 10 does not meet FAA aircraft holding area clearance standards but may be used to facilitate aircraft taxiing and turnaround. The threshold of Runway 15 will need to be temporarily relocated to accommodate the parallel taxiway; a project to extend Runway 15/33 beyond the parallel taxiway is included in the long-term program.

Long Term Projects

The majority (77%) of long-term projects at Prineville involve pavement preservation, resurfacing, reconstruction or new construction. This includes periodic slurry seals for all airfield pavements on a five year cycle. Asphalt overlays will be required for most major pavements within the twenty-year planning period.

A project to widen and overlay Runway 10/28 is identified as a high priority in the long-term program. Installation of new runway lighting is also recommended at the time the runway is reconstructed, unless the existing lights have sufficient useful life remaining. Other new construction includes hangar taxilanes and apron areas in the north and east GA areas.

Several projects are identified for north GA area improvements (apron, taxilanes, access road, fencing, etc.). A project to develop a new common-use agricultural aircraft loading pad is included in the event that the existing AG facilities need to be relocated to accommodate other development.

Replacement of the existing general aviation terminal /fixed base operator building is identified in the long-term program. As currently planned, the new building will be constructed in the same location as the existing building. However, the ALP identifies development reserves for FBO facilities in both the north and east GA areas; the preferred location at the time of the project may depend on the development pattern that occurs in the early part of the planning period.

A 720-foot runway & parallel taxiway extension is identified as a long-term project for Runway 10/28. An infield access taxiway is also recommended to connect the east terminal area to the primary runway.

Several fencing projects are included in the long-term development program. Both interior fencing (with gates) and perimeter fencing is recommended for the airport.

The extension of Runway 15/33 is identified as a long-term project to address the conflict that will be created when the north parallel taxiway is constructed for Runway 10/28. The taxiway will cross almost directly over the Runway 15 threshold. Initially, it is anticipated that the threshold will be relocated, which would shorten the useable runway by 300 to 400 feet. A project to widen and overlay Runway 15/33 is also included in the long-term program. As noted earlier, improvements to Runway 15/33 are not expected to be eligible for FAA funding.

TABLE 5-1
20-YEAR CAPITAL IMPROVEMENT PROGRAM
2003 TO 2022

Project	Qty.	Unit	Unit $	Total Cost*	FAA Eligible	Local
Short Term Projects (Years 1 - 5)						
Access Taxiway Overlay (2,931x35')	11,715	SY	$ 12.00	$140,580	$126,522	$14,058
East Terminal Area Access Road Realignment	2,200	LF	$ 50.00	$135,200	$121,680	$13,520
Reconstruct Terminal Apron (South Section)	4,594	SY	$ 30.00	$137,820	$124,038	$13,782
North Lease Area Access Taxiway (500 x 25')	1,389	SY	$ 30.00	$41,670	$0	$41,670
Terminal Apron (Center Section) Slurry Seal (2004)	6,126	SY	$ 3.60	$22,054	$19,848	$2,205
Terminal Apron (North Section/Fuel Area) Partial Reconstruct & Slurry Seal (2004)	1,894	SY	$ 12.80	$24,243	$21,819	$2,424
Center Apron Slurry Seal (2005)	13,882	SY	$ 3.60	$49,975	$44,978	$4,998
Rwy 15/33 Fog Seal (2005)	19,490	SY	$ 0.45	$8,771	$0	$8,771
Precision App. Path Indicators (PAPI) Rwy 10 & 28	2	ea	$ 35,000	$70,000	$63,000	$7,000
REIL - Rwy 10 & 28	2	ea	$ 25,000	$50,000	$45,000	$5,000
Lighted Wind Socks (Both Ends of Rwy 10/28)	2	ea	$ 7,500	$15,000	$13,500	$1,500
Construct East Hangar Taxilanes (200x20;120x20;700 x 20') w/ edge reflectors	2,267	SY	$ 30.00	$71,010	$63,909	$7,101
Environmental Assessment (Parallel Taxiway)	1	LS	$ 50,000	$50,000	$45,000	$5,000
Rwy 10/28 - Construct North Parallel Taxiway w/ 3 Exits, E&W Holding Areas (5,000 x 35')	23,250	SY	$ 30.00	$697,500	$627,750	$69,750
Rwy 10/28 Parallel Txy Edge Reflectors	5,000	LF	$ 3.00	$40,200	$36,180	$4,020
Automated Weather Observation System (AWOS)	1	ea	$ 150,000	$150,000	$135,000	$15,000
Flood Lighting - Terminal Apron	4	ea	$ 6,000	$24,000	$21,600	$2,400
Fencing (terminal area; east side) w/ 4 vehicle gates	3,000	LF	$ 15.00	$85,000	$76,500	$8,500
Total Short Term Projects				**$1,813,023**	**$1,586,324**	**$226,699**

TABLE 5-1 (CONTINUED)
20-YEAR CAPITAL IMPROVEMENT PROGRAM
2003 TO 2022

Project	Qty.	Unit	Unit $	Total Cost*	FAA Eligible	Local
Long Term Projects (Years 6 - 20)						
Rwy 10/28 Overlay and Widen to 75' (5,000x75)	41,666	SY	$ 15.50	$645,823	$581,241	$64,582
Rwy 10/28 MIRL (replacement system)	5,000	LF	$ 40.00	$200,000	$180,000	$20,000
North GA Apron (Phase I)	8,300	SY	$ 30.00	$249,000	$224,100	$24,900
Flood Lighting - North Apron	4	ea	$ 6,000	$24,000	$21,600	$2,400
North GA Hangar Taxilanes (Phase I) (1,350x20')	2,667	SY	$ 30.00	$83,310	$74,979	$8,331
North GA Access Road Upgrade/Extension	4,500	LF	$ 28.00	$126,000	$113,400	$12,600
Fencing (north GA operations area) w/ 2 vehicle gates	1,500	LF	$ 15.00	$42,500	$38,250	$4,250
Fencing Airport Perimeter	30,000	LF	$ 15.00	$450,000	$405,000	$45,000
New FBO Bldg./GA Terminal	3,000	SF	$ 100.00	$300,000	$0	$300,000
Rwy 10/28 Parallel Txy Slurry Seal (2010)	23,250	SY	$ 3.60	$83,700	$75,330	$8,370
Terminal Apron (Center Section) Overlay	6,126	SY	$ 12.00	$73,512	$66,161	$7,351
Terminal Apron (North Section/Fuel Area) Overlay	1,234	SY	$ 12.00	$14,808	$13,327	$1,481
Terminal Apron Slurry Seal (South Section) (2009)	4,594	SY	$ 3.60	$16,538	$14,885	$1,654
East Hangar Taxilanes Slurry Seal (2010)	3,823	SY	$ 3.60	$13,763	$12,387	$1,376
Rwy 15/33 Slurry Seal (2010)	19,490	SY	$ 3.60	$70,164	$0	$70,164
Center Apron Slurry Seal (2010)	13,882	SY	$ 3.60	$49,975	$44,978	$4,998
North GA Apron Slurry Seal (2010)	8,300	SY	$ 3.60	$29,880	$26,892	$2,988
North GA Hangar Taxilanes (Phase II) (800x20')	1,780	SY	$ 30.00	$55,800	$50,220	$5,580
Access Taxiway Slurry Seal (2010)	11,715	SY	$ 3.60	$42,174	$37,957	$4,217
GA Parking Area (Terminal Area Overflow)	3,333	SY	$ 30.00	$102,150	$91,935	$10,215
Center Apron Overlay	13,882	SY	$ 12.00	$166,584	$149,926	$16,658
Center Apron Expansion (East Hangar Frontage)	6,000	SY	$ 30.00	$180,000	$162,000	$18,000
Flood Lighting - Central Apron	4	ea	$ 6,000	$24,000	$21,600	$2,400
Construct East T-Hangar Taxilanes (700 x 20')	1,556	SY	$ 30.00	$51,680	$46,512	$5,168
New Infield Access Taxiway (2,855 x 35')	11,926	SY	$ 30.00	$359,940	$323,946	$35,994
Infield Taxiway Edge Reflectors	3,200	LF	$ 3.00	$9,600	$8,640	$960
South GA Hangar Taxilanes (Phase I) (1,100x20')	3,000	SY	$ 30.00	$92,160	$82,944	$9,216
Fencing (interior north hangar area) w/ 1 gate	2,400	LF	$ 15.00	$46,000	$41,400	$4,600
Common Use Agricultural Facility (1 Loading Pad w/ containment) PCC Pad w/ AC Apron; Access Txy	1,100	SY	$ 50.00	$55,000	$49,500	$5,500
Ag Area Access Road (unpaved)	3,000	LF	$ 15.00	$45,000	$40,500	$4,500
Rwy 15/33 Overlay and Widen to 60' (4,000x60')	26,667	SY	$ 18.00	$480,006	$0	$480,006
Rwy 15/33 North Extension (300 x 60') w/ LIRL	2,000	SY	$ 30.00	$69,000	$0	$69,000

TABLE 5-1 (CONTINUED)
20-YEAR CAPITAL IMPROVEMENT PROGRAM
2003 TO 2022

Project	Qty.	Unit	Unit $	Total Cost*	FAA Eligible	Local
Rwy 10/28 Slurry Seal (2013)	41,666	SY	$ 3.60	$149,998	$134,998	$15,000
Terminal Apron Slurry Seal (South Section) (2014)	4,594	SY	$ 3.60	$16,538	$14,885	$1,654
Terminal Apron (Center Section) Slurry Seal (2015)	4,594	SY	$ 3.60	$16,538	$14,885	$1,654
Terminal Apron Slurry Seal (North Section) (2015)	1,234	SY	$ 3.60	$4,442	$3,998	$444
Rwy 15/33 Slurry Seal (2015)	19,490	SY	$ 3.60	$70,164	$0	$70,164
Rwy 10/28 Parallel Txy Slurry Seal (2015)	23,250	SY	$ 3.60	$83,700	$75,330	$8,370
East Hangar Taxilanes Slurry Seal (2015)	3,823	SY	$ 3.60	$13,763	$12,387	$1,376
Access Taxiway Slurry Seal (2015)	11,715	SY	$ 3.60	$42,174	$37,957	$4,217
Infield Taxiway Slurry Seal (2015)	11,926	SY	$ 3.60	$42,934	$38,640	$4,293
North GA Apron Slurry Seal (2016)	8,300	SY	$ 3.60	$29,880	$26,892	$2,988
Rwy 10/28 Slurry Seal (2018)	41,666	SY	$ 3.60	$149,998	$134,998	$15,000
North GA Apron (Phase II)	8,300	SY	$ 30.00	$251,160	$226,044	$25,116
Terminal Apron Slurry Seal (South Section) (2019)	4,594	SY	$ 3.60	$16,538	$14,885	$1,654
Infield Taxiway Slurry Seal (2020)	11,926	SY	$ 3.60	$42,934	$38,640	$4,293
Terminal Apron Slurry Seal (North Section) (2020)	1,234	SY	$ 3.60	$4,442	$3,998	$444
East Hangar Taxilanes Slurry Seal (2020)	3,823	SY	$ 3.60	$13,763	$12,387	$1,376
Rwy 10/28 Parallel Txy Slurry Seal (2020)	26,850	SY	$ 3.60	$96,660	$86,994	$9,666
Terminal Apron (Center Section) Slurry Seal (2020)	4,594	SY	$ 3.60	$16,538	$14,885	$1,654
Center Apron Slurry Seal (2020)	19,882	SY	$ 3.60	$71,575	$64,418	$7,158
North GA Apron Slurry Seal (2022)	16,600	SY	$ 3.60	$59,760	$53,784	$5,976
Rwy 15/33 Slurry Seal (2021)	19,490	SY	$ 3.60	$70,164	$0	$70,164
Environmental Assessment (Rwy/P.Txy. Extension)	1	LS	$ 75,000	$75,000	$67,500	$7,500
Rwy 10/28 West Extension (720x75') with MIRL	6,000	SY	$ 30.00	$205,200	$184,680	$20,520
Rwy 10/28 Parallel Txy Extension (720x35') w/ Reflectors	3,600	SY	$ 30.00	$110,160	$99,144	$11,016
Total Long Term Projects				**$5,906,091**	**$4,361,934**	**$1,544,157**
TOTAL SHORT & LONG TERM PROJECTS				**$7,719,114**	**$5,948,258**	**$1,770,856**

* Project costs include 30% engineering and contingency.

TABLE 5-2
CIP PROJECTS BY CATEGORY

Project	Qty.	Unit	Unit $	Total Cost*	FAA Eligible	Local
Short Term Projects						
Preserve/Resurface Existing Pavement						
Access Taxiway Overlay (2,931x35')	11,715	SY	$ 12.00	$140,580	$126,522	$14,058
Terminal Apron (Center Section) Slurry Seal (2004)	6,126	SY	$ 3.60	$22,054	$19,848	$2,205
Center Apron Slurry Seal (2005)	13,882	SY	$ 3.60	$49,975	$44,978	$4,998
Rwy 15/33 Fog Seal (2005)	19,490	SY	$ 0.45	$8,771	$0	$8,771
Subtotal				*$221,379*	*$191,348*	*$30,031*
New or Reconstructed Pavement						
Reconstruct Terminal Apron (South Section)	4,594	SY	$ 30.00	$137,820	$124,038	$13,782
North Lease Area Access Taxiway (500 x 25')	1,389	SY	$ 30.00	$41,670	$0	$41,670
Terminal Apron (North Section/Fuel Area) Partial Reconstruct & Slurry Seal (2004)	1,894	SY	$ 12.80	$24,243	$21,819	$2,424
Construct East Hangar Taxilanes (200x20;120x20;700 x 20') w/ edge reflectors	2,267	SY	$ 30.00	$71,010	$63,909	$7,101
Rwy 10/28 - Construct North Parallel Taxiway w/ 3 Exits, E&W Holding Areas (5,000 x 35')	23,250	SY	$ 30.00	$697,500	$627,750	$69,750
Subtotal				*$972,243*	*$837,516*	*$134,727*
NAVAIDS, Lighting, Marking						
Precision App. Path Indicators (PAPI) Rwy 10 & 28	2	Ea	$ 35,000	$70,000	$63,000	$7,000
REIL - Rwy 10 & 28	2	Ea	$ 25,000	$50,000	$45,000	$5,000
Lighted Wind Socks (Both Ends of Rwy 10/28)	2	Ea	$ 7,500	$15,000	$13,500	$1,500
Rwy 10/28 Parallel Txy Edge Reflectors	5,000	LF	$ 3.00	$40,200	$36,180	$4,020
Automated Weather Observation System (AWOS)	1	Ea	$150,000	$150,000	$135,000	$15,000
Subtotal				*$325,200*	*$292,680*	*$32,520*
OTHER ITEMS						
East Terminal Area Access Road Realignment/Paving	2,200	LF	$ 50.00	$135,200	$121,680	$13,520
Environmental Assessment (Parallel Taxiway)	1	LS	$ 50,000	$50,000	$45,000	$5,000
Flood Lighting - Terminal Apron	4	ea	$ 6,000	$24,000	$21,600	$2,400
Fencing (terminal area; east side) w/ 4 vehicle gates	3,000	LF	$ 15.00	$85,000	$76,500	$8,500
Subtotal				*$294,200*	*$264,780*	*$29,420*
Total Short Term Projects				**$1,813,023**	**$1,586,324**	**$226,699**

TABLE 5-2 (CONTINUED)
CIP PROJECTS BY CATEGORY

Project	Qty.	Unit	Unit $	Total Cost*	FAA Eligible	Local
Long Term Projects						
Preserve/Resurface Existing Pavement						
Rwy 10/28 Parallel Txy Slurry Seal (2010)	23,250	SY	$ 3.60	$83,700	$75,330	$8,370
Terminal Apron (Center Section) Overlay	6,126	SY	$ 12.00	$73,512	$66,161	$7,351
Terminal Apron (North Section/Fuel Area) Overlay	1,234	SY	$ 12.00	$14,808	$13,327	$1,481
Terminal Apron Slurry Seal (South Section) (2009)	4,594	SY	$ 3.60	$16,538	$14,885	$1,654
East Hangar Taxilanes Slurry Seal (2010)	3,823	SY	$ 3.60	$13,763	$12,387	$1,376
Rwy 15/33 Slurry Seal (2010)	19,490	SY	$ 3.60	$70,164	$0	$70,164
Center Apron Slurry Seal (2010)	13,882	SY	$ 3.60	$49,975	$44,978	$4,998
North GA Apron Slurry Seal (2010)	8,300	SY	$ 3.60	$29,880	$26,892	$2,988
Access Taxiway Slurry Seal (2010)	11,715	SY	$ 3.60	$42,174	$37,957	$4,217
Center Apron Overlay	13,882	SY	$ 12.00	$166,584	$149,926	$16,658
Rwy 10/28 Slurry Seal (2013)	41,666	SY	$ 3.60	$149,998	$134,998	$15,000
Terminal Apron Slurry Seal (South Section) (2014)	4,594	SY	$ 3.60	$16,538	$14,885	$1,654
Terminal Apron (Center Section) Slurry Seal (2015)	4,594	SY	$ 3.60	$16,538	$14,885	$1,654
Terminal Apron Slurry Seal (North Section) (2015)	1,234	SY	$ 3.60	$4,442	$3,998	$444
Rwy 15/33 Slurry Seal (2015)	19,490	SY	$ 3.60	$70,164	$0	$70,164
Rwy 10/28 Parallel Txy Slurry Seal (2015)	23,250	SY	$ 3.60	$83,700	$75,330	$8,370
East Hangar Taxilanes Slurry Seal (2015)	3,823	SY	$ 3.60	$13,763	$12,387	$1,376
Access Taxiway Slurry Seal (2015)	11,715	SY	$ 3.60	$42,174	$37,957	$4,217
Infield Taxiway Slurry Seal (2015)	11,926	SY	$ 3.60	$42,934	$38,640	$4,293
North GA Apron Slurry Seal (2016)	8,300	SY	$ 3.60	$29,880	$26,892	$2,988
Rwy 10/28 Slurry Seal (2018)	41,666	SY	$ 3.60	$149,998	$134,998	$15,000
Terminal Apron Slurry Seal (South Section) (2019)	4,594	SY	$ 3.60	$16,538	$14,885	$1,654
Infield Taxiway Slurry Seal (2020)	11,926	SY	$ 3.60	$42,934	$38,640	$4,293
Terminal Apron Slurry Seal (North Section) (2020)	1,234	SY	$ 3.60	$4,442	$3,998	$444
East Hangar Taxilanes Slurry Seal (2020)	3,823	SY	$ 3.60	$13,763	$12,387	$1,376
Rwy 10/28 Parallel Txy Slurry Seal (2020)	26,850	SY	$ 3.60	$96,660	$86,994	$9,666
Terminal Apron (Center Section) Slurry Seal (2020)	4,594	SY	$ 3.60	$16,538	$14,885	$1,654
Center Apron Slurry Seal (2020)	19,882	SY	$ 3.60	$71,575	$64,418	$7,158
North GA Apron Slurry Seal (2022)	16,600	SY	$ 3.60	$59,760	$53,784	$5,976
Rwy 15/33 Slurry Seal (2021)	19,490	SY	$ 3.60	$70,164	$0	$70,164
Subtotal				*$1,573,602*	*$1,226,799*	*$346,803*
New or Reconstructed Pavement						
Rwy 10/28 Overlay and Widen to 75' (5,000x75)	41,666	SY	$ 15.50	$645,823	$581,241	$64,582
North GA Apron (Phase I)	8,300	SY	$ 30.00	$249,000	$224,100	$24,900

TABLE 5-2 (CONTINUED)
CIP PROJECTS BY CATEGORY

Project	Qty.	Unit	Unit $	Total Cost*	FAA Eligible	Local
North GA Hangar Taxilanes (Phase I) (1,350x20')	2,667	SY	$ 30.00	$83,310	$74,979	$8,331
North GA Hangar Taxilanes (Phase II) (800x20')	1,780	SY	$ 30.00	$55,800	$50,220	$5,580
GA Parking Area (Terminal Area Overflow)	3,333	SY	$ 30.00	$102,150	$91,935	$10,215
Center Apron Expansion (East Hangar Frontage)	6,000	SY	$ 30.00	$180,000	$162,000	$18,000
Construct East T-Hangar Taxilanes (700 x 20')	1,556	SY	$ 30.00	$51,680	$46,512	$5,168
New Infield Access Taxiway (2,855 x 35')	11,926	SY	$ 30.00	$359,940	$323,946	$35,994
South GA Hangar Taxilanes (Phase I) (1,100x20')	3,000	SY	$ 30.00	$92,160	$82,944	$9,216
Common Use Agricultural Facility (1 Loading Pad w/ containment) PCC Pad w/ AC Apron; Access Txy	1,100	SY	$ 50.00	$55,000	$49,500	$5,500
Rwy 15/33 Overlay and Widen to 60' (4,000x60')	26,667	SY	$ 18.00	$480,006	$0	$480,006
Rwy 15/33 North Extension (300 x 60') w/ LIRL	2,000	SY	$ 30.00	$69,000	$0	$69,000
North GA Apron (Phase II)	8,300	SY	$ 30.00	$251,160	$226,044	$25,116
Rwy 10/28 West Extension (720x75') with MIRL	6,000	SY	$ 30.00	$205,200	$184,680	$20,520
Rwy 10/28 Parallel Txy Extension (720x35') w/ Reflectors	3,600	SY	$ 30.00	$110,160	$99,144	$11,016
Subtotal				*$2,990,389*	*$2,197,245*	*$793,144*
NAVAIDS, Lighting, Marking						
Rwy 10/28 MIRL (replacement system)	5,000	LF	$ 40.00	$200,000	$180,000	$20,000
Infield Taxiway Edge Reflectors	3,200	LF	$ 3.00	$9,600	$8,640	$960
Subtotal				*$209,600*	*$188,640*	*$20,960*
OTHER ITEMS						
Flood Lighting - North Apron	4	ea	$ 6,000	$24,000	$21,600	$2,400
North GA Access Rd. Upgrade/Extension (unpaved)	4,500	LF	$ 28.00	$126,000	$113,400	$12,600
Fencing (north GA ops area) w/ 2 vehicle gates	1,500	LF	$ 15.00	$42,500	$38,250	$4,250
Fencing Airport Perimeter	30,000	LF	$ 15.00	$450,000	$405,000	$45,000
New FBO Bldg./GA Terminal	3,000	SF	$ 100.00	$300,000	$0	$300,000
Flood Lighting - Central Apron	4	ea	$ 6,000	$24,000	$21,600	$2,400
Fencing (interior north hangar area) w/ 1 gate	2,400	LF	$ 15.00	$46,000	$41,400	$4,600
Ag Area Access Road (unpaved)	3,000	LF	$ 15.00	$45,000	$40,500	$4,500
Environmental Assessment (Rwy/P.Txy. Extension)	1	LS	$ 75,000	$75,000	$67,500	$7,500
Subtotal				*$1,132,500*	*$749,250*	*$383,250*
Total Long Term Projects				**$5,906,091**	**$4,361,934**	**$1,544,157**
TOTAL SHORT & LONG TERM PROJECTS				**$7,719,114**	**$5,948,258**	**$1,770,856**

* Project costs include 30% engineering and contingency.

FINANCING OF DEVELOPMENT PROGRAM

Federal Grants

A primary source of potential funding identified in this plan is the Federal Airport Improvement Program (AIP). As proposed, approximately 90 percent of the airport's 20-year CIP will be eligible for federal funding. Funds from this program are derived from the Aviation Trust Fund, which is the depository for all federal aviation taxes collected on such items as airline tickets, aviation fuel, lubricants, tires, aircraft registrations, and other aviation-related fees. These funds are distributed under appropriations set by Congress to all airports in the United States that have certified eligibility. The funds are distributed through grants administered by the Federal Aviation Administration (FAA).

Under current guidelines, the airport sponsor receives 90 percent participation on eligible projects. According to FAA guidelines, Prineville Airport is eligible under the Airport Improvement Program (AIP) to receive discretionary grants and general aviation entitlement grants. Under the current authorization, airports like Prineville receive up to $150,000 per year in the GA entitlement grants. The future availability of the GA non-primary entitlement funding is dependent on congressional reauthorization and may change during the planning period. However, based on current legislation, these grants have become a very significant source of FAA funding for general aviation airports. Airports may combine up to three years of GA entitlement funding for projects. Discretionary grants are also available to fund larger projects that require additional funding.

The constraints of AIP funding availability will dictate in large part, the actual schedule for completing airport improvement projects through the planning period. As a result, some projects included in the twenty-year CIP may be deferred beyond the twenty-year time frame.

State Funding

The Oregon Department of Aviation (ODA) manages a pavement maintenance funding program to enable regularly-scheduled investment in airfield pavements. The program funds pavement maintenance and associated improvements (crack filling, repair, sealcoats, etc.), which have not traditionally been eligible for FAA funding. The PMP may also be expanded to include pavement overlays, which could potentially be used for Runway 15/33, where FAA funding is

not available. ODA also provides limited funding assistance through its Financial Assistance to Municipalities (FAM) grant program.

Financing the Local Share of Capital Improvements

As currently defined, the locally-funded portion of the CIP is approximately 23 percent. For smaller airports, one of the most challenging aspects of financial planning is generating enough revenue to match available state or federal grants for large projects. As noted earlier, FAA AIP grants usually represent the single largest source of funding for major capital projects. However, the local match level for AIP grants is set at 10 percent.

As currently defined, the local share for projects included in the twenty year planning period is estimated to be more than $1.7 million, of which more than $1.0 million is required for projects not eligible for FAA funding such as Runway 15/33 improvements and replacement of the FBO building. It is important to note that more than half of the local share of 20-year CIP is directed to projects that are not eligible for FAA funding. For example, the cost of maintaining and upgrading Runway 15/33 over the next twenty years is projected to be more than $760,000, none of which is eligible for FAA funding. If local funding becomes scarce, the prioritization of these projects may need to be revaluated by the Airport Commission.

Another significant cost for Prineville Airport will be the extension of utilities to serve newly developed facilities on the north side of Runway 10/28. As noted earlier, utilities are not eligible for FAA funding and have not been included in the CIP since it is not known whether extending all services will be feasible based on the potential demand and cost recovery potential.

New hangar construction at Prineville Airport is expected to be privately funded by tenants.

CHAPTER SIX
ENVIRONMENTAL CHECKLIST

INTRODUCTION

The purpose of the Environmental Checklist to identify physical, social and environmental conditions of record, which may affect the ability to undertake future improvements at Prineville Airport. In comparison with an Environmental Assessment, the project scope for this review is limited and focuses on gathering and summarizing information of record from the applicable local, state and federal sources pertaining to existing conditions at the subject site and its environs. The scope of this review did not involve extensive interpretation of the information, in-depth analyses, or the more comprehensive follow-up correspondence and inquiries with affected agencies and persons, as is normally associated with an Environmental Assessment (EA).

All research activities, including correspondence, data collection and documentation, proceeded under the provisions of FAA Order 5050.4A, The Airport Environmental Handbook, which is intended to implement the requirements of Sections 1505.1 and 1507.3 of the National Environmental Policy Act (NEPA). This report briefly addresses, either in narrative or in the attached checklist format, each potential impact category identified by Order 5050.4A as to be investigated under the EIS or EA process. If however, a particular potential environmental impact category does appear to apply to the study site, the checklist is noted accordingly and little or no discussion will appear in the narrative section of the report.

The airport is located at the southwestern edge of and entirely within the Prineville Urban Growth Boundary and City limits. The subject site is bordered on its northerly, westerly and southerly sides by Crook County lands in open space and range use. These lands are subject to Crook County Exclusive Farm Use (EFU3) and Heavy Industrial (HM) Zoning. City of Prineville Manufacturing Zoning (M-2; M-3) occurs across the northeasterly, easterly; and southeasterly exposures of the airport's periphery. Various industrial land uses dominate these areas. The airport proper is subject to a myriad of aviation-related zoning districts, including Airport Operations (A-O), Airport Business – Industrial (A-M), Airport Commercial (A-C), and Airport Development (A-D). Zoning on the airport and in the vicinity of the airport is depicted

on the Land Use Plan (drawing 7 of the ALP set) and a close-in view of on-airport zoning is depicted in **Figure 6-2** at the end of this chapter.

Oregon Revised Statutes (ORS) Chapter 836.600 through 836.630 addresses the appropriate zoning and protection of Oregon's airports and their surroundings. Under the statute, height restrictive zoning and, to some extent, use-restrictive zoning, are indicated as necessary components affecting land uses in the immediate vicinity of a public airport. An Airport Overlay Zone, which protects necessary airspaces and limits incompatible uses in proximity to an airport, is the primary means of ensuring the compatibility of surrounding land uses with operations of a general aviation airport. The City's Airport Approach Overlay (AA) Zone is described in the Prineville Zoning Ordinance, and is depicted on the zone map provided by City Planning Staff as extending off the northwesterly end of the runway for the extent of the Prineville UGB and City limits. It extends off the southeasterly end for an undetermined lineal length. Crook County also has Airport Overlay zoning in effect.

The above conditions do not constitute compliance with ORS Ch. 836.600 *et. seq*. In addition to ensuring quality and cohesive mapping of the areas affected by the required Prineville Airport Approach Overlay Zone, in both the City and Crook County jurisdictions, the existing respective zoning and transportation plan languages of the City of Prineville and Crook County, as applicable, must also be reviewed and amended to ensure compliance with ORS Chapter 836.600-630.

Among the provisions of this statute are the following (Please note: This is not intended to be a comprehensive summation of this legislation. Additional requirements may apply to this site under the cited statutes):

OAR 660-13-160(1) Requires jurisdictions to update Plan, land use regulations at Periodic Review to conform with provisions of this statute, or at next update of Transportation System Plan, per OAR 660-12-0015(4) and OAR 660-12-0045(2)(c)&(d). If more than one local government is affected by the Airport Safety Overlay (see below), a Coordinated Work Program for all jurisdictions is required, concurrent with timing of Periodic Review (or TSP update) for the jurisdiction having the most land area devoted to the airport use(s). The respective Prineville and Crook County Comprehensive / Transportation Plans, Zoning Ordinances, and mapping should be amended no later than the affected jurisdictions' next Periodic Review work cycles, to ensure compliance with these provisions.

(8) Adopt map delineating Safety Zones, compatibility zones, and existing noise impact boundaries identified by OAR 340-35. See also OAR 660-13-0070(1) and Exhibits 1 & 2 to Division 13. The limited mapping provided the consultant is not adequate to meet these

requirements, as discussed above. This Airport Layout Plan Update Report will provide the information and graphics necessary to incorporate into the City of Prineville and Crook County zoning data and mapping files, and to establish compliance consistent with these provisions.

OAR 660-13-0070(2): Review future development in Airport Safety Overlay for compliance with maximum height limitations. The Airport Approach Overlay Zone language reviewed by the consultant includes some use and height limitations in airspace surfaces as defined by the FAA; however, these ordinances around the state are generally outdated, in the consultant's experience, and the definitions of the surfaces have likely been amended since their adoption. In addition, the Safety and Compatibility zones and noise impact boundaries required by ORS 836 and OAR 660-13 are not included as a part of the current documents and graphics, and must be applied to the existing overlay zone ordinances. In addition, the associated mapping must be produced and adopted by the City and County.

In addition to Airport Hazard Overlay requirements described above, OAR 660-13-0040(1)-(3) also require that jurisdictions adopt a map of existing and planned airport improvements.

Additionally, consistent with the Airport Land Use Compatibility Guidelines for small general aviation airports, from the State of Oregon Department of Transportation's Aeronautics Section, a 1,300 foot wide "Airport Development Area" is typically recommended to be established, centered on the runway centerline, for a length of 5,400 feet. This Airport Development Area should be "*...under the airport's control to prevent incompatible land use development*." (Page 56 of State Guidelines). Compliance with the "Airport Development Area" guideline would appear to require the acquisition of additional acreage near, at a minimum, the northwesterly end of the runway.

The consultant advises that a general review be performed, of all City and County Ordinance and Comprehensive Plan language, and mapping pertaining to the subject airport, to compare those with the requirements of ORS Chapter 836.600-630 for airport compatibility, and to identify any amendments to the City's and County's codes, Plans and or maps necessary in order to demonstrate compliance. Also, it is recommended that this Airport Layout Plan be adopted as part of the Transportation Elements of the City of Prineville's and Crook County's respective Comprehensive Plans.

Protection from encroachment of incompatible development ranks among the highest priorities to ensure long-term land use compatibility for the airport. The recommendations contained in this report, and the subsequent adoption of amendments under ORS 836, are intended to protect the long-term viability of the airport site.

NOISE EVALUATION – INTRODUCTION

Noise is sometimes defined as unwanted sound. However, sound is measurable, whereas noise is subjective. The relationship between measurable sound and human irritation is the key to understanding aircraft noise impact. A rating scale has been devised to relate sound to the sensitivity of the human ear. The A-weighted decibel scale (dBA) is measured on a "log" scale, by which is meant that for each increase in sound energy level by a factor of 10, there is a designated increase of 1 dBA. This system of measurement is used because the human ear functions over such an enormous range of sound energy impacts. At a psychological level, there is a rule of thumb that the human ear often "hears" an increase of 10 decibels as equivalent to a "doubling" of sound.

The challenge to evaluating noise impact lies in determining what amount and what kind of sound constitutes noise. The vast majority of people exposed to aircraft noise are not in danger of direct physical harm. However, much research on the effects of noise has led to several generally accepted conclusions:

- The effects of sound are cumulative, therefore, the duration of exposure must be included in any evaluation of noise.
- Noise can interfere with outdoor activities and other communication.
- Noise can disturb sleep, TV/radio listening, and relaxation.
- When community noise levels have reached sufficient intensity, community wide objection to the noise will likely occur.

Research has also found that individual responses to noise are difficult to predict[11]. Some people are annoyed by perceptible noise events, while others show little concern over the most disruptive events. However, it is possible to predict the responses of large groups of people – i.e. communities. Consequently, community response, not individual response, has emerged as the prime index of aircraft noise measurement.

On the basis of the findings described above, a methodology has been devised to relate measurable sound from a variety of sources to community response. It has been termed "Day-Night Average Sound Level" (DNL) and has been adopted by the U. S. Environmental Protection Agency (EPA), the Department of Housing and Urban Development (HUD), and the Federal Aviation Administration (FAA) for use in evaluating noise impacts. In a general sense, it is the

[11] Beranek, Leo, *Noise and Vibration Control*, McGraw-Hill, 1971, pages ix-x.

yearly average of aircraft-created noise for a specific location (i.e., runway), but includes a calculation penalty for each night flight.

The basic unit in the computation of DNL is the sound exposure level (SEL). An SEL is computed by mathematically summing the dBA level for each second during which a noise event occurs. For example, the noise level of an aircraft might be recorded as it approaches, passes overhead, and then departs. The recorded noise level of each second of the noise event is then added logarithmically to compute the SEL. To provide a penalty for nighttime flights (considered to be between 10 PM and 7 AM), 10 dBA is added to each nighttime dBA measurement, second by second. Due to the mathematics of logarithms, this calculation penalty is equivalent to 10 day flights for each night flight[12].

A DNL level is approximately equal to the average dBA level during a 24-hour period with a weighing for nighttime noise events. The main advantage of DNL is that it provides a common measure for a variety of different noise environments. The same DNL level can describe an area with very few high noise events as well as an area with many low level events.

Noise Modeling and Contour Criteria

DNL levels are typically depicted as contours. Contours are an interpolation of noise levels drawn to connect all points of a constant level, which are derived from information processed by the FAA-approved computer noise model. They appear similar to topographical contours and are superimposed on a map of the airport and its surrounding area. It is this map of noise levels drawn about an airport, which is used to predict community response to the noise from aircraft using that airport. DNL mapping is best used for comparative purposes, rather than for providing absolute values. That is, valid comparisons can be made between scenarios as long as consistent assumptions and basic data are used for all calculations. It should be noted that a line drawn on a map by a computer does not imply that a particular noise condition exists on one side of the line and not on the other. These calculations can only be used for comparing average noise impacts, not precisely defining them relative to a specific location at a specific time.

[12] Where Leq ("Equivalent Sound Level") is the same measure as DNL without the night penalty incorporated, this can be shown through the mathematical relationship of:

$$Leq_d = 10 \log \left(\frac{N_d \times 10^{(SEL/10)}}{86{,}400} \right) \qquad Leq_n = 10 \log \left(\frac{N_n \times 10^{((SEL+10)/10)}}{86{,}400} \right)$$

If SEL equals the same measured sound exposure level for each computation, and if $N_d = 10$ daytime flights, and $N_n = 1$ night-time flight, then use of a calculator shows that for any SEL value inserted, $Leq_d = Leq_n$.

The noise contours depicted in **Figure 6-1** are plotted in 5 DNL increments starting at 55 DNL based on the 2005 forecast activity levels. The 2005 55 DNL noise contour extends beyond the ends of Runway 10/28 over largely undeveloped lands beyond Huston Lake Road and Highway 126 (portions located off airport property). The 55 DNL noise contour extends only a few hundred feet beyond the end of Runway 33 and is contained entirely within airport property. Noise exposure at the north end of Runway 15/33 is largely overshadowed by Runway 10/28 activity, although a slight bump out in the 55, 60, 65 and 70 DNL contours is visible near the end of Runway 15. The 60, 65 and 70 DNL noise contours for both runways are contained entirely within airport property. The size and shape of the contours is consistent with the airport's business jet runway utilization on the primary runway and lower volumes of small aircraft traffic on the secondary runway. An additional source of noise generation is identified at the USFS helicopter parking area located near the southeast corner of the airport. The 60 and 65 DNL noise contours do not extend significant beyond the parking pad and the 55 DNL contour merges with the contour extending from the south end of Runway 15/33.

Based on the modest forecasts of air traffic, noise exposure levels during the twenty-year planning period may be expected to increase slightly above current levels, although the sparsely developed land uses in the vicinity of the airport suggest that noise compatibility will not be a significant issue. However, since perceived noise impacts are not generally limited to areas with significant levels of noise, care should be taken by local land use authorities to avoid creating potential long-term land use incompatibilities in the vicinity of the airport by permitting development of incompatible land uses such as residential subdivisions.

FIGURE 6-1: AIRPORT NOISE CONTOURS

Noise and Land-Use Compatibility Criteria

Federal regulatory agencies of government have adopted standards and suggested guidelines relating DNL to compatible land uses. Most of the noise and land-use compatibility guidelines strongly support the concept that significant annoyance from aircraft noise levels does not occur outside a 65 DNL noise contour. Federal agencies supporting this concept include the Environmental Protection Agency, Department of Housing and Urban Development, and the Federal Aviation Administration.

Part 150, Airport Noise Compatibility Planning, of the Federal Aviation Regulations, provides guidance for land-use compatibility around airports. **Table 6-1** presents these guidelines. Compatibility or non-compatibility of land use is determined by comparing the noise contours with existing and potential land uses. All types of land uses are compatible in areas below 65 DNL. Generally, residential and some public uses are not compatible within the 65-70 DNL, and above. As noted in **Table 6-1**, some degree of noise level reduction (NLR) from outdoor to indoor environments may be required for specific land uses located within higher-level noise contours. Land uses such as commercial, manufacturing, some recreational uses, and agriculture are compatible within 65-70 DNL contours.

TABLE 6-1
LAND-USE COMPATIBILITY WITH DNL

Land Use	Yearly Day-Night Average Sound Level (DNL) In Decibels					
	Below 65	65-70	70-75	75-80	80-85	Over 85
Residential						
Residential, other than mobile homes & transient lodgings	Y	N(1)	N(1)	N	N	N
Mobile Home Parks	Y	N	N	N	N	N
Transient Lodgings	Y	N(1)	N(1)	N(1)	N	N
Public Use						
Schools	Y	N(1)	N(1)	N	N	N
Hospitals and Nursing Homes	Y	25	30	N	N	N
Churches, Auditoriums, and Concert Halls	Y	25	30	N	N	N
Governmental Services	Y	Y	25	30	N	N
Transportation	Y	Y	Y(2)	Y(3)	Y(4)	Y(4)
Parking	Y	Y	Y(2)	Y(3)	Y(4)	N
Commercial Use						
Offices, Business and Professional	Y	Y	25	30	N	N
Wholesale and Retail—Building Materials, Hardware and Farm Equipment	Y	Y	Y(2)	Y(3)	Y(4)	N
Retail Trade--General	Y	Y	25	30	N	N
Utilities	Y	Y	Y(2)	Y(3)	Y(4)	N
Communication	Y	Y	25	30	N	N
Manufacturing and Production						
Manufacturing General	Y	Y	Y(2)	Y(3)	Y(4)	N
Photographic and Optical	Y	Y	25	30	N	N
Agriculture (except livestock) and Forestry	Y	Y(6)	Y(7)	Y(8)	Y(8)	Y(8)
Livestock Farming and Breeding	Y	Y(6)	Y(7)	N	N	N
Mining and Fishing, Resource Production and Extraction	Y	Y	Y	Y	Y	Y
Recreational						
Outdoor Sports Arenas, Spectator Sports	Y	Y(5)	Y(5)	N	N	N
Outdoor Music Shells, Amphitheaters	Y	N	N	N	N	N
Nature Exhibits and Zoos	Y	Y	N	N	N	N
Amusements, Parks, Resorts and Camps	Y	Y	Y	N	N	N
Golf Courses, Riding Stables and Water Recreation	Y	Y	25	30	N	N

Y (Yes)	Land-use and related structures compatible without restrictions.
N (No)	Land-use and related structures are not compatible and should be prohibited.
NLR	Noise Level Reduction (outdoor to indoor) to be achieved through incorporation of noise attenuation into design and construction of the structure.
25, 30 or 35	Land uses and structures generally compatible; measures to achieve NLR or 25, 30, or 35 dB must be incorporated into design and construction of the structure.

NOTES:

1. Where the community determines that residential uses must be allowed, measures to achieve outdoor to indoor Noise Levels Reduction (NLR) of at least 25dB and 30dB should be incorporated into building codes and be considered in individual approvals. Normal residential construction can be expected to provide a NLR of 20 dB; thus, the reduction requirements are often stated as 5, 10, or 15 dB over standard construction and normally assume mechanical ventilation and closed windows year-round. However, the use of NLR criteria will not eliminate outdoor noise problems.
2. Measures to achieve NLR of 25 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas, or where the normal noise level is low.
3. Measures to achieve NLR of 30 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas, or where the normal noise level is low.
4. Measures to achieve NLR of 35 dB must be incorporated into the design and construction of portions of these buildings where the public is received office areas, noise sensitive areas, or where the normal noise level is low.
5. Land-use compatible, provided special sound reinforcement systems are installed.
6. Residential buildings require an NLR of 25.
7. Residential buildings require an NLR of 30.
8. Residential buildings not permitted.

SOURCE: Federal Aviation Regulations, Part 150, Airport Noise Compatibility Planning, dated January 18, 1985.

OTHER ENVIRONMENTAL CONSIDERATIONS

According to the Prineville City Planner, Crook County operates a solid waste landfill disposal site approximately ¾ mile northwest of the subject property. The City Planner indicates that this issue has been reviewed by the Federal Aviation Administration. There is also a municipal sanitary sewage treatment facility located just over a mile to the northeast of the airport. The Prineville Transportation System Plan, at Chapter 9, Policy A.19, discourages the establishment of water impoundments accessible to waterfowl within ten thousand feet (10,000') of the ends of the runway. This is generally consistent with FAA Order 5200.5 FAA, Guidance Concerning Sanitary Landfills On or Near Airports, which considers such uses as incompatible within approximately 10,000 feet of a runway used by turbojet aircraft. These individual facilities should be monitored to ensure that birds, which may be attracted by the two sites, do not create a significant conflict with future operations at Prineville Airport.

It is anticipated that no existing residences would be displaced under the preferred alternative. According to the Prineville Transportation System Plan, this airport is utilized by "most of the large, local business, commercial and heavy industrial firms as well as the United States Forest Service." In addition, the Airport Commission indicates that the airport experiences extensive helicopter operations, primarily during the fire season, as the facility is utilized by the Bureau of Land Management and is also available to the Oregon State Department of Forestry and US Forest Service. In addition to the crucial role served by this facility in aiding fire fighting and rescue operations, a viable airport facility serving a community generally provides increased

opportunities for diversifying the local economy; responding to transportation needs of the area's commerce; and enhancing non-commercial travel options for local citizens with access to aircraft.

Any improvement project at this facility would be expected to have positive social and socio-economic impacts. Implementation of the preferred alternative will result in the creation of jobs, and improvements to the safety and longevity of the airport facility. Improved vehicular access to the airport is another likely result of any improvement project at this site.

Air quality is not expected to be adversely impacted. A representative of the Oregon Department of Environmental Quality stated that the area is "in attainment for" (meaning 'in compliance with') applicable air quality standards. No significant increase over existing levels of air and/or surface traffic is anticipated under the Preferred Alternative.

Water quality impacts are always a concern with any construction project, and especially when considering uses and sites where potentially hazardous materials, such as aviation fuel, fire retardants, and/or agricultural chemicals are involved. Aerial applicators of agricultural chemicals are reported as being seasonally based at Prineville Airport. Aviation fuel sales are available on site, and two underground storage tanks of 12,400 gallons each exist. The tanks are equipped with leak detection systems, according to the Airport Commission.

The Oregon Department of Environmental Quality routinely recommends for airport projects that, at a minimum, investigations be performed to document agricultural spraying practices, aviation fuel storage facilities, and other potential sources for adverse water quality impacts associated with past, present and potential future activities at the site. Agricultural chemical operators and airport sponsors must ensure that wash down, collection, treatment and storage areas and devices comply with Oregon Administrative Rule 340-109 and all applicable environmental standards. This includes, but is not limited to, obtaining and complying with a National Discharge Elimination System (NPDES) Permit, as required, for all airport construction projects and ongoing operations.

During construction, adherence to the applicable local, state, and federal regulations and standards, and compliance with the guidelines of FAA Advisory Circular 150/5370-10, would help to further protect against adverse water quality impacts. In telephone communication with the consultant, DEQ's Eastern Oregon Region Water Quality Division representative, Mr. Dick Nichols, expressed in telephone communication with the consultant that his office has no specific concerns, beyond the standard DEQ comments discussed above, regarding existing water quality conditions in this location relative to the potential project.

The Oregon State Historic Preservation Office, SHPO, has indicated in the attached correspondence that, as of April 15, 2001, considerable documentation is required to be provided by any party inquiring about the existence of any significant cultural resources. The new procedure requires such information as architectural classification, window and roof types of all structures within the study area, if they may be considered as a resource; dates of any alterations; and "Significance Statements" for all types of resources. SHPO has provided specific forms, "Section 106 (of the National Historic Preservation Act) Documentation Forms" and "Section 106 Level of Effect Forms", for use in making such a request. This level of investigation surpasses the scope of this ALP Update Report. It is therefore unknown at this time whether cultural resources are recorded in the immediate area proposed for development or in the airport's vicinity.

If any historic or cultural resources are discovered during construction, the sponsor will be responsible for immediately notifying SHPO and the other appropriate authorities. Any such resource(s) discovered would be required to be protected from adverse impacts or damages resultant from activities associated with the improvements to the Prineville Airport.

Under the Department of Transportation Act, Section 4(f), (49 USC, Subtitle I, Section 303), projects which would require use of lands having historic significance on a national, state or local level, or projects which require the use of any publicly owned park; recreation area; or wildlife or waterfowl refuge of national, state, or local significance must be prior demonstrated to be the only "*feasible and prudent alternative*" and must "*include all possible planning to minimize harm resulting from the use*." The State Parks and Recreation Department is reported to own some adjacent property which may be desirable for acquisition in the future for airport operations and aviation-related development and uses. If the property has been prior identified by the local government for transportation uses, the burden under Section 4(f) would be reduced or removed.

Representatives from the Oregon Department of Fish and Wildlife declined to comment on the potential improvement project. A search of the database of the Oregon Natural Heritage Program, Nature Conservancy, revealed one noteworthy specie of flora as occurring in the project vicinity. The Columbia cress, or *Rorippa columbia,* is listed as a "Critical" specie by the State of Oregon. This plant was apparently last observed in 1894.

The U.S. Fish and Wildlife Service (USFWS) lists one species of bird which is listed as Threatened, and which may be found in the vicinity of the Prineville Airport. The Bald Eagle, *Haliaeetus leucocephalus*, is listed as a Threatened Specie. In addition, the Columbia spotted frog, or *Rana luteiventris*, is a Candidate specie for some type of Federal protection, and eight (8) species of mammals, ranging from the Pygmy rabbit (*Brachylagus idahoaensis*), and six other bats are indicated by the USFWS as "Species of Concern" which may inhabit the study area or its

environs. In addition to the above, the Western burrowing owl, *Athene cunicularia hypugea*; the Ferruginous hawk, *Buteo regalis*; the Willow Flycatcher, *Empidonax trailli adastus*; Yellow-breasted chat, *Icteria virens*; Lewis' woodpecker*, Melanerpes lewis*; and the Mountain quail, *Oreortyx pictus*, are birds which are considered by the federal government to be Species of Concern which may exist in the project's vicinity.

The USFWS also lists the Northern sagebrush lizard, *Sceloporus graciosus graciosus*, and one fish, the Interior redband trout, or *Oncorhynchus mykiss gibbsi*, and two plants, the Disappearing monkeyflower (*Mimulus evanescens*) and Little mousetail (*Myosurus minimus ssp. apus*), as additional Species of Concern which may be impacted by the project. It is unlikely that the trout species will be impacted by the proposal due to the subject site's physical separation from the nearest water body.

The USFWS states in the attached correspondence that a Biological Assessment is required for *"construction projects (or other undertakings having similar physical impacts) which are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (NEPA) (42 U.S.C. 4332 (2) (c)). For projects other than major construction activities,"* the USFWS' correspondence continues, *"the Service suggests that a biological evaluation similar to the Biological Assessment be prepared to determine whether they may affect listed and proposed species."*

According to a review of the US Fish and Wildlife Service's National Wetlands Inventory (NWI), no inventoried wetland resources appear to be present within or in proximity to areas planned for airport related development. A local wetland inventory was completed for the City of Prineville and the City Planner indicated no wetlands would be affected by the project. No further analysis under this category is necessary.

According to the local planners, no flood plain areas are known to be located on or near the airport. Information provided by the by the USDA's Natural Resources Conservation Service describes the soils on the site as subject to erosion and stony content, both of which limit these soil units' potential for agricultural productivity. Because no federal lands are proposed to be committed or otherwise involved in the Preferred Alternative, the Farmland Protection Policy Act (FPPA) does not apply to this proposal, and no further analysis under this impact category is necessary to demonstrate compliance with NEPA.

Silt fences, runoff diversion tactics, and storm water detention are commonly implemented in similar construction projects, and should be utilized for any project on the airport in order to minimize adverse impacts of development related activities. FAA Advisory Circular 150/5370-10 provides additional measures that are advised to be implemented to minimize adverse impacts

of airport construction activities. Please see the above-related discussion regarding water quality impacts.

A summary of the environmental issues related to Prineville Airport is provided in **Table 6-2**.

TABLE 6-2
PRINEVILLE AIRPORT
ENVIRONMENTAL CHECKLIST

Potential Impact Category	Existing Conditions / Comments	Further Action Anticipated?
Noise	Small portions of the 2005 55 DNL noise contour extends beyond airport property over lands currently zoned agricultural or manufacturing. Development of residential or other incompatible land uses in the vicinity of the airport should be strongly discouraged to avoid future airport-related noise conflicts.	NO
Compatible Land Use	Obstructions should be removed from critical airspaces. Local governments must adopt and Map Airport Overlay Zoning, planned improvements, and ensure consistency of zoning provisions with State law. Future uses in the vicinity must have the burden of demonstrating compatibility with aviation and compliance with ORS Ch. 836.600-630.	YES
Social / Socio-Economic	Expected to be positive, as is typical with airport projects, including but not limited to the enhancement of safety features and economic opportunities on-site, and improvement to the region's fire safety systems base.	YES
Air Quality	Area is in attainment for air quality; no change in current conditions is anticipated.	NO
Water Quality	DEQ requires that the location of disposal for domestic wastewater (sewage) be divulged, and surface storm water runoff be contained and treated prior to discharge to any natural drainage system, water body. NPDES Permit; silt fences, maintaining the maximum physical separation between construction and sensitive waterways, and adherence to FAA Advisory Circular 150/5370-10 are required. See Construction Impacts, below. Maintain sound fuel storage and dispensing practices and continue to demonstrate full compliance with DEQ requirements.	POSSIBLE
Special Land Uses,	No parks, recreation areas, or refuge areas per this section affected. If any Government-	POSSIBLE

TABLE 6-2
PRINEVILLE AIRPORT
ENVIRONMENTAL CHECKLIST

Potential Impact Category	Existing Conditions / Comments	Further Action Anticipated?
4(f)	owned land desired for aviation uses, further analysis advised.	
Historic, Architectural, Archaeological, and Cultural Resources	Records no longer provided by SHPO. Please see above discussion. Avoid impacting known or suspected resources, notify SHPO immediately if new resources located during construction.	POSSIBLE
Biotic Communities	One species of fauna was discussed in the narrative above as possibly occurring in the project vicinity. No impact anticipated under this category.	NO
Endangered and Threatened Species	One Threatened Species, one Candidate specie, and several Species of Concern identified as occurring in vicinity. Biological Evaluation or Assessment recommended by USFWS prior to construction or similar undertakings. Please see narrative.	YES
Wetlands	According to National Wetlands Inventory Maps produced by the USFWS, no wetland resources affected by the project.	NO
Floodplain	None according to local planner.	NO
Shoreline Management	Not Applicable to this facility.	NO
Coastal Barriers	Also Not Applicable.	NO
Wild and Scenic Rivers	The Crooked River is indicated as a Wild and Scenic River, but would not be impacted under the Preferred Alternative.	NO
Farmland	Public airport improvement projects on private lands are exempt from Farmland Protection Policy Act (FPPA).	NO

TABLE 6-2
PRINEVILLE AIRPORT
ENVIRONMENTAL CHECKLIST

Potential Impact Category	Existing Conditions / Comments	Further Action Anticipated?
Energy Supply and Natural Resources	No adverse impacts anticipated.	NO
Light Emissions and Glare	No analysis of existing light emissions which might pose potential hazards to aviation performed. No such hazards reported by local planners or operators, upon inquiry.	POSSIBLE
Solid Waste Impacts	As discussed in narrative above, ground and surface water systems must be protected from contamination during the handling of waste materials. Development under the Preferred Alternative would not considerably increase production of waste at the facility, except during construction phase.	NO
Construction Impacts	Temporary impacts typically accrue during construction phase. Adherence to the provisions of FAA Advisory Circular 150/5370-10 should preclude foreseeable adverse impacts.	NO

FIGURE 6-2: AIRPORT ZONING