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United States Department of the Interior

BUREAU OF RECLAMATION
Pacific Northwest Region
Lower Columbia Area Office
825 NE Multnomah Street, Suite 1110
Portland, Oregon 97232-2135

IN REPLY REFER TO:

PN-3906
LND-8.00

Subject: Release of the Resource Management Plan (RMP) and Master Plan for Prineville Reservoir,
Crooked River Project, Prineville, Oregon

Dear Interested Party:

Enclosed you will find the Resource Management Plan (RMP) and Master Plan for Prineville Reservoir. As you may be aware, a planning process has been on-going for the last 2½ years involving Federal, state, local government, Tribes, and interested members of the public, to develop alternatives for managing the land and recreation resources around Prineville Reservoir. This document presents the conclusion of this effort. The RMP will serve as a guide for managing the natural and cultural resources, recreation facilities, and public access for the next 10 plus years. The RMP was prepared in cooperation with the Oregon Parks and Recreation Department who is a managing partner at the site. The RMP will also serve as a State Park Master Plan that will provide a desired future condition for recreation facilities for the next 25 years.

The RMP will include measures to protect and enhance natural resources while accommodating recreation use in mostly developed or defined areas. Major action items include relocating the Power House Cove boat ramp and providing additional parking; constructing a new campground near the existing State Park campground on the north side of the reservoir; and providing site definition and recreation amenities at Roberts Bay pending resolution of a road access issue.

The RMP also calls for improved enforcement of illegal off-road vehicle use, continued cooperation with Crook County for on-site law enforcement, and additional control of livestock grazing in riparian areas and recreation sites. The RMP also calls for a Habitat and Wildlife Management Plan designed to include plans for habitat improvement, integrated pest management, eagle management, fencing, and fisheries management. Further public comment opportunities will be provided for these site-specific plans.

The RMP can also be viewed on Reclamation's website at www.usbr.gov/pn. The document is also available at public libraries in Prineville, Bend, Prineville State Park, and at Reclamation's Bend, Portland, and Boise Offices. For questions about the RMP, or to request additional copies of the document, please contact: Mr. Leo Busch, Bureau of Reclamation, Bend Field Office, 1375 S.E. Wilson Avenue, Suite 200, Bend, OR, phone 541-389-6541 or e-mail at: lbusch@pn.usbr.gov.

Sincerely,

Ronald J. Eggers
Area Manager

Enclosure

PRINEVILLE RESERVOIR Resource Management Plan



U.S. Department of the Interior
Bureau of Reclamation

Approved:

Area Manager
Lower Columbia Area Office
Portland, Oregon

July 31, 2003
Date

Regional Director
Pacific Northwest Region
Boise, Idaho

July 31, 2003
Date

This Resource Management Plan was prepared by EDAW and JPA under contract for the Department of the Interior, Bureau of Reclamation, Pacific Northwest Region.



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Regional Location Map

- Town
- Urban Area
- Open Water
- Stream
- Highway



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Source: USFS, BLM, ED&W 2003

Prineville Reservoir RMP

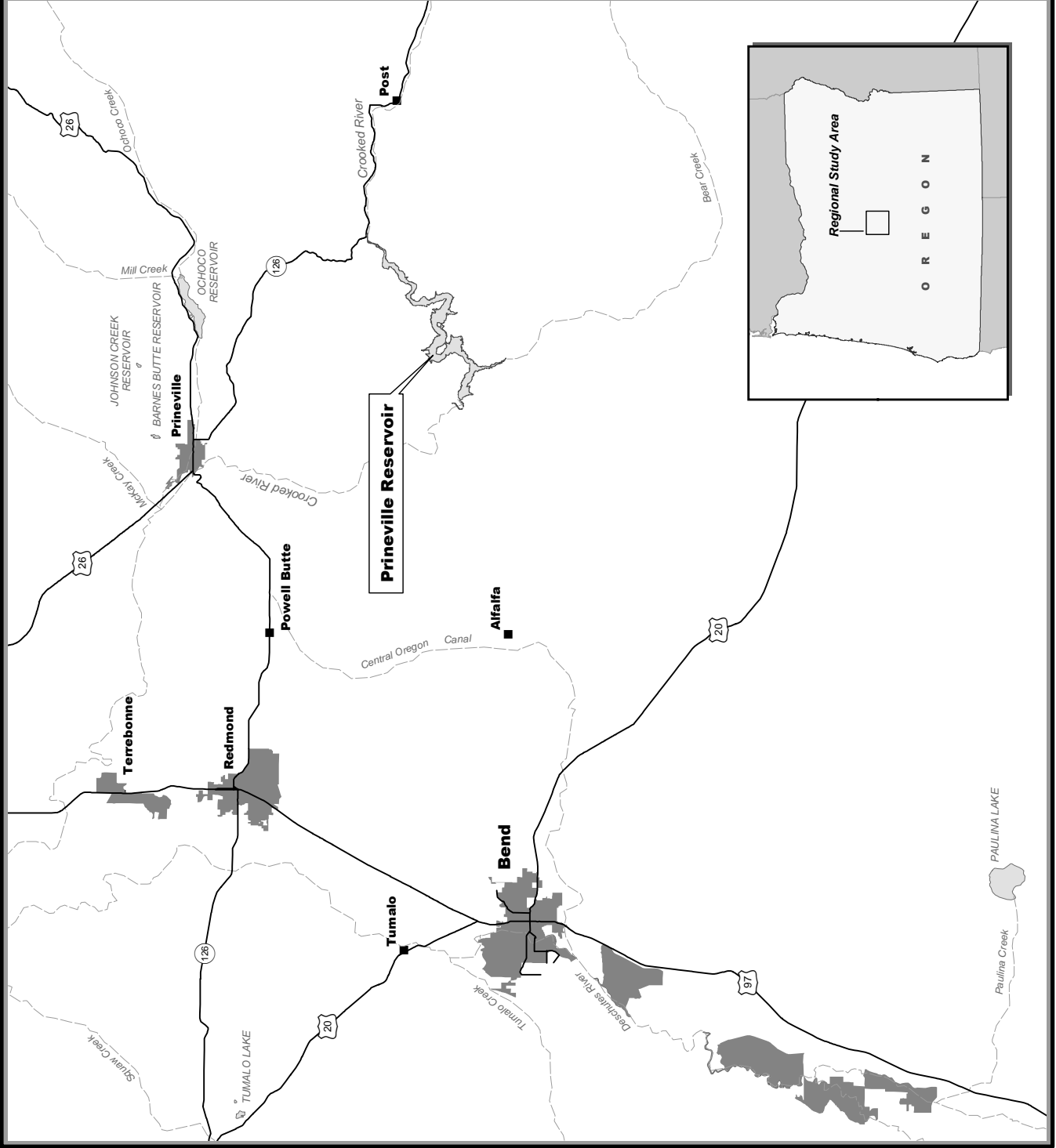




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Acronyms and Abbreviations

af	acre-feet
AHWG	Ad Hoc Work Group
ARPA	Archaeological Resources Protection Act
AUM	animal unit month
BIA	Bureau of Indian Affairs
BLM	U.S. Bureau of Land Management
BMP	Best Management Practices
CFR	Code of Federal Regulations
cfs	cubic feet per second
CRMP	Cultural Resources Management Plan
CWA	Clean Water Act
DOI	Department of the Interior
EA	Environmental Assessment
EFH	Essential Fish Habitat
EO	Executive Order
ESA	Endangered Species Act
FLPMA	Federal Land Policy Management Act
FR	Federal Register
FWCA	Fish and Wildlife Coordination Act
FWS	U.S. Fish and Wildlife Service
GIS	Geographic information system
HIP	Habitat Improvement Plan
IPM	Integrated Pest Management
ITA	Indian Trust Asset
KOP	Key Observation Point
kV	kilovolt
MOU	Memorandum of Understanding
MP	Master Plan
mph	miles per hour
MSA	Magnuson-Stevens Act
NAGPRA	Native American Graves Protection and Repatriation Act
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NOAA Fisheries	National Oceanic and Atmospheric Administration Fisheries (formerly NMFS)
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NTU	Nephelometric turbidity unit
ODA	Oregon Department of Agriculture
ODFW	Oregon Department of Fish and Wildlife
ODEQ	Oregon Department of Environmental Quality
ODOT	Oregon Department of Transportation
OID	Ochoco Irrigation District

Acronyms and Abbreviations

ONHP	Oregon Natural Heritage Program
OPRD	Oregon Parks and Recreation Department
ORV	off-road vehicle
OSMB	Oregon State Marine Board
OSU	Oregon State University
PAM	Planning Aid Memorandum
PN	Pacific Northwest
ppm	parts per million
PRRS	Prineville Reservoir Reallocation Study
PWC	personal watercraft
RBS	River Basin Survey
Reclamation	U.S. Bureau of Reclamation
RM	River Mile
RMP	Resource Management Plan
SCORP	Statewide Comprehensive Outdoor Recreation Plan
SHPO	State Historic Preservation Officer
SoC	Species of Concern
SR	State Route
SWA	State Wildlife Area
TCP	traditional cultural property
TMDL	Total Maximum Daily Limit/Load
TNC	The Nature Conservancy
USC	United States Code
USFS	U.S. Forest Service
USGS	U.S. Geological Survey
WMU	Wildlife Management Unit

Chapter 1
Introduction





Chapter 1

Introduction

1.1 RMP Program and Policy

The Pacific Northwest Region of the Bureau of Reclamation (Reclamation) is conducting a multi-year program to prepare a Resource Management Plan (RMP) for each of its major facilities. This program is guided by Federal legislation and policies to ensure that Federal lands are managed to serve a wide range of public purposes. RMP preparation is specifically authorized in Title 28 of Public Law 102-575. It is also an outcome of *Assessment '87*, a Reclamation study that examined the future direction of its programs. This study established a broad framework for moving forward into the 21st century, with increased emphasis on the improved management of projects and the protection of the environment. Each RMP is intended to provide the management framework needed to balance the development, use, and protection of Reclamation lands and their associated natural, cultural, and recreational resources. It is Reclamation's blueprint for future resource management decisions to guide Reclamation, managing partners, and agency cooperators, as well as inform the public about the resource management policies and actions to be implemented over the life of the RMP.

Reclamation's resource management policy is to provide a broad level of stewardship to ensure and encourage resource protection, conservation, and multiple use, as appropriate. Management practices and principles established in this RMP, in accordance with existing Federal

laws, regulations, and policies, provide for the protection of fish, wildlife, and other natural resources; cultural resources; public health and safety; and applicable uses of Reclamation lands and water areas, public access, and outdoor recreation.

1.2 Purpose and Scope of the Plan

The Prineville RMP is being prepared in cooperation with Reclamation's non-Federal managing partner at Prineville Reservoir – the Oregon Parks and Recreation Department (OPRD), the State agency responsible for managing recreation facilities on Reclamation lands at Prineville Reservoir. This entails combining Reclamation's RMP planning process with OPRD's development of a State Park Master Plan (MP). The State Park Master Plan projects needs for the next 25 years, allowing for a phased approach to recreation development. This combined Resource Management Plan and Master Plan is collectively referred to as the RMP in this document.

The Prineville RMP is a 10-year plan to provide management direction for lands and waters under Reclamation jurisdiction in the vicinity of Prineville Reservoir in Crook County, Oregon about 20 miles upstream from Prineville, Oregon. Collectively, the entire area is referred to as the "RMP Study Area" in this document.

The first RMP prepared for Prineville Reservoir was completed and approved in September 1992. The purpose of this 2003 RMP update is to address current and anticipated future issues to permit the orderly and coordinated development and management of lands and facilities and the water surface under Reclamation jurisdiction in the RMP Study Area. The updated plan will be used as the basis for directing activities on Reclamation lands and the reservoir in a way that maximizes overall public and resource benefits, and that provides guidance for managing the area during the next 10 years.

Through implementation of the RMP, Reclamation aims to balance competing and conflicting demands for differing uses and to maximize compatibility with surrounding land uses, while affording an appropriate level of resource protection and enhancement.

Over the course of implementing the RMP, it will be reviewed, reevaluated, and revised (if necessary) in cooperation with all involved agencies and Tribes to reflect changing conditions and management objectives. If a proposed modification to the RMP would significantly affect area resources or public use, opportunities for public involvement will be provided. The RMP will be fully reviewed and updated, as needed, at the end of its 10-year life.

In addition to this introductory chapter, the RMP contains the five main chapters, summarized below.

Chapter 2 summarizes the relevant natural, visual, cultural, and socioeconomic resources around the reservoir. The resource inventory describes existing conditions and lays the framework for identifying suitable resources for a variety of land and water uses, as well as sensitive resources that require special protection, enhancement, or restoration.

Chapter 3 summarizes existing land use and management. The range of existing land uses is described and existing land use designations

and agreements identified. These include: Project facilities and general operations (i.e., Bowman Dam and Prineville Reservoir); agreements, easements and permits; encroachments; public facilities, utilities and services; recreational uses; and access and transportation.

Chapter 4 provides a detailed description of the RMP planning process, including the public involvement program and input received through newsbrief response forms, meetings/workshops, hearings, and agency consultation. This chapter also describes Reclamation's efforts regarding its trust responsibilities to the affected Tribes. All of this information helped identify the range of issues and concerns, establish goals and objectives, identify the range of alternative plans for study, and modify the Preferred Alternative, which became the RMP.

Chapter 5 is the core of the RMP and provides a detailed description of the Goals, Objectives, and Management Actions associated with the plan. The Goals, Objectives, and Management Actions are organized according to the following seven themes: (1) natural resources; (2) cultural resources; (3) Indian sacred sites; (4) Indian Trust Assets; (5) paleontological resources; (6) recreation and access; and (7) land management and implementation.

Chapter 6 presents the implementation program associated with the management actions set forth in Chapter 5. This includes a description of program phasing, related actions, priorities, and responsible entities, as well as the process involved with amending and updating the plan.

1.3 Relationship to OPRD Master Plan

OPRD has been working with Reclamation to develop this combined RMP/MP for the management of Prineville Reservoir recreation lands. OPRD is required by State law to prepare and implement Master Plans for State Parks. While the RMP planning period is for the next 10 years, the OPRD Master Plan period

is for the next 25 years. This allows for an efficient approach to developing recreation sites in a phased manner with a desired future condition clearly identified. OPRD also provides recreation management, protection, administration, and maintenance on lands referred to as the State Wildlife Area (SWA), which are currently under a wildlife management agreement with the Oregon Department of Fish and Wildlife (ODFW). OPRD’s lease agreement with Reclamation expires in 2037 and will be renewed if desired by both parties and if terms and conditions are mutually agreeable.

1.4 Location and Description of the RMP Study Area

As shown in Figure 1.4-1, the RMP Study Area consists of Reclamation-owned lands and adja-

cent lands surrounding Prineville Reservoir. Prineville Reservoir is the major storage reservoir facility of the Crooked River Project and has a total storage capacity of 150,216 acre-feet (af) and a water surface area of 3,030 acres at normal full pool elevation. Lands under Reclamation jurisdiction include Prineville Reservoir (3,030 acres) and adjacent lands (5,470 acres).

Reclamation lands generally consist of a strip of land around the reservoir (including 43 miles of shoreline), lands under the reservoir, and Big Bend Campground located below the dam. Most lands surrounding the Reclamation lands are managed by the U.S. Bureau of Land Management (BLM). A small portion of surrounding land is privately owned. OPRD is the non-Federal recreation managing partner on all

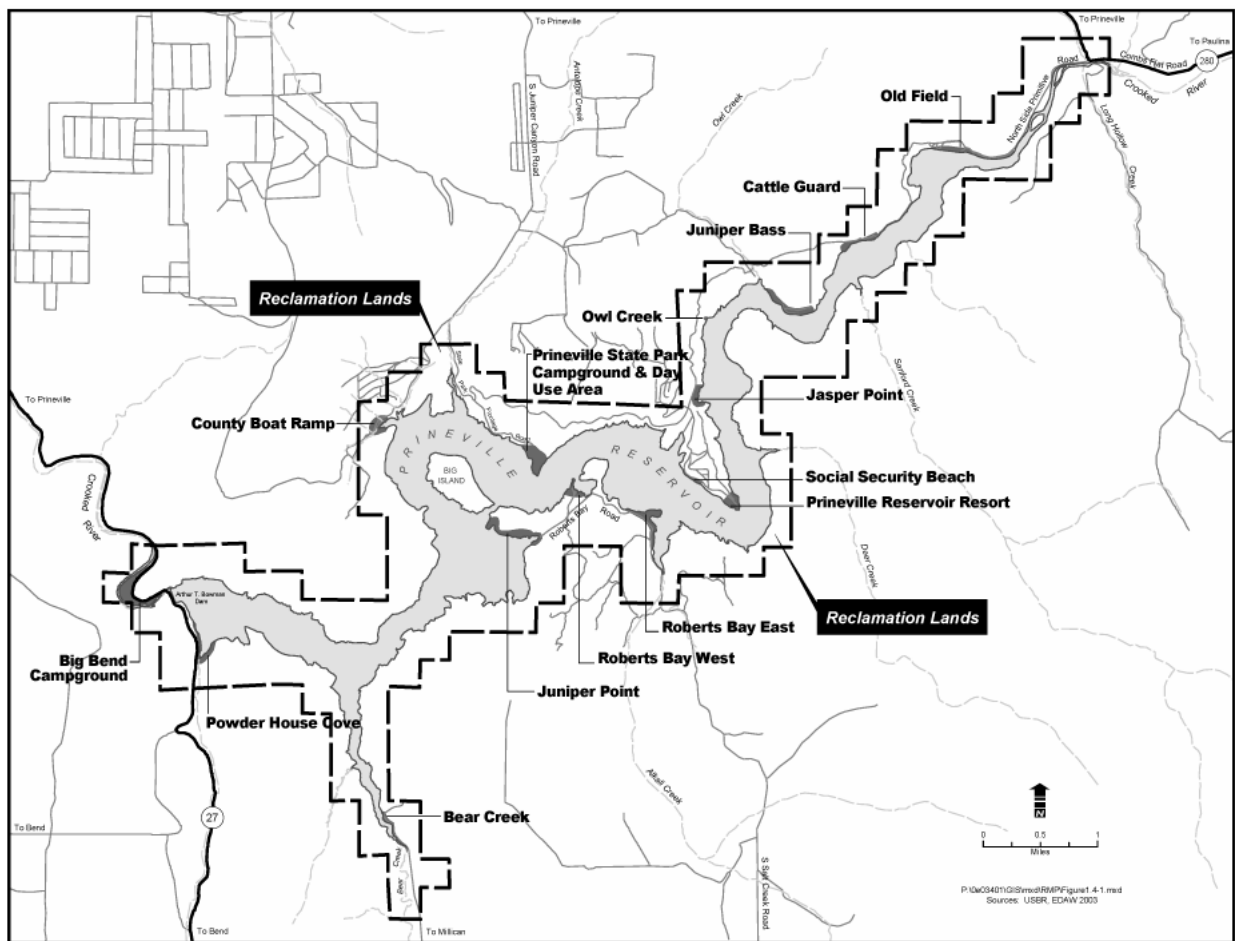


Figure 1.4-1. RMP Study Area.



Photo 1-1. A view of Prineville Reservoir, Roberts Bay, and other lands to the southeast.

lands under Reclamation jurisdiction surrounding the reservoir, with the exception of the Prineville Reservoir Resort, which is operated by a private party. In addition, ODFW manages the upper reservoir area for wildlife as the Prineville SWA. The BLM, through an inter-agency agreement with Reclamation, manages grazing, timber, and mineral rights on Reclamation lands.

The reservoir and adjacent lands have become increasingly important recreation sites since completion of the 1992 RMP. The City of Prineville is the primary gateway to the reservoir, but access from the City of Bend has been greatly improved from the recent (2001) County upgrade of the Alfalfa/Market Road. An increasing population in Central Oregon and the Willamette Valley is largely responsible for the increased recreation use of Prineville Reservoir.

State Highway 27 (or State Route [SR] 27) provides paved access to the reservoir from both Prineville and Bend. The reservoir can also be accessed from Prineville on S. Juniper Canyon Road, and from Prineville or Paulina on the Combs Flat Road (State Highway 280). Access to the south side of the reservoir is extremely limited as most of the south shoreline is roadless and accessible only by boat, or by the unimproved Salt Creek Road.

1.5 Project Summary

The Congressional Act of August 6, 1956 (Chapter 980, 70 Stat. 1058) authorized construction by the Secretary of the Interior of the Crooked River Federal Reclamation Project for the purpose of furnishing water for irrigation, flood control, and fish and wildlife management. Bowman Dam was constructed between 1958 and 1961 as part of the Crooked River Project. Under this Congressional authorization, the Secretary of the Interior was authorized to construct minimum basic public recreational facilities and to arrange for the operation and maintenance of these facilities by an appropriate agency or organization.

Prineville Reservoir has an active storage capacity of 148,633 af. Of this amount, 80,360 af remains uncontracted. Except for flood control operations and fish and wildlife releases, all inflow is stored in Prineville Reservoir and released as required for irrigation purposes. The Ochoco Irrigation District manager coordinates reservoir releases to meet the water supply needs of the irrigation district and individual water users. During the non-irrigation season, there is a mandated minimum flow of 10 cubic feet per second (cfs) downstream of Bowman Dam to meet fish and wildlife needs. In recognition of the Crooked River's regionally outstanding natural and recreational resources under the Federal Wild and Scenic Rivers Act, Reclamation has administratively increased the minimum reservoir release to 75 cfs to further protect and improve the river's attributes. These changes in reservoir operations were initiated in February 1990 and will continue until modified by the Prineville Reservoir Reallocation Study (PRRS) recommendations. See Section 3.1, Project Facilities and General Operations for a more in-depth description of Prineville Reservoir's project history.

1.6 Overview of Public Involvement, Agency, and Tribal Coordination

Reclamation conducted an extensive public involvement program as part of the RMP planning process to ensure representation and participation by all those interested in the future of Prineville Reservoir. To achieve full representation, the program was designed to reach a user population that was dispersed over a broad geographical area, representing diverse points of view, and enthusiastic in participating in the RMP planning process.

The public involvement program consisted of four primary elements: (1) six newsbriefs mailed to agencies, Tribes, elected officials, organizations, media, and individuals; (2) three sets of public meetings/workshops; (3) seven meetings with a group formed as part of the RMP planning process to represent key stakeholders (including agencies, Tribes, and interest groups in the area); and (4) a public web site providing access to newsbriefs, draft materials, and meeting announcements. These elements, as well as additional agency and Tribal consultation efforts, are discussed in further detail in Chapter 4.



Photo 1-2. A view of Bowman Dam and Big Bend Campground in the foreground and Prineville Reservoir eastward.

Chapter 2

Existing Conditions





Chapter 2

Existing Conditions

2.1 Natural Resources

2.1.1 Climate

Prineville Reservoir is located in the arid shrub-steppe region of central Oregon. The rainshadow of the Cascade Mountains exerts a strong influence on the climate of central Oregon, which is characterized by hot, dry summers and cold, moist winters. Precipitation in this semi-arid climate is about 12 inches of rain per year, most of which occurs during the winter. About 90% of precipitation occurs between November and February. Snow accumulation during the winter is not significant. Summer thunderstorms are generally infrequent but can be locally intense in the general vicinity.

While summer temperatures may exceed 100°F, winter temperatures frequently dip below 0°F. For the 33-year period ending in 1990, the maximum temperature was 105°F and the minimum -34°F. Average temperatures in July and January are 60°F and 32°F, respectively (Oregon Climatology Center 2001). The relatively short growing season of 50 to 90 days is characterized by frosts in early autumn and late spring. Chinook (warm, downslope) winds may occur during anytime of the year but are most noticeable during the winter and early spring with the contrasting cold air temperatures.

2.1.2 Topography

The reservoir is located in a shallow valley that is generally bordered by steep hillsides and rock outcrops (Photo 2-1). The general topography is rugged and has resulted from the erosion of soft beds into steep gullies leaving the more resistant beds along the ridges (Figure 2.1-1). While these steep slopes and rock outcrops limit access to the shoreline, scattered lower gradient slopes provide access to the reservoir. Because of the topography there is only one access road to the south side of the reservoir, which leads to Roberts Bay. Level areas adjacent to escarpments along the river are found on the south side of the reservoir in the SWA, which are accessible only by boat (Photo 2-2). Most of the north shore of



Photo 2-1. Main body of Prineville Reservoir surrounded by hills, bluffs, and plateaus.



Photo 2-2. Basalt escarpment on the south side of the reservoir in the SWA.

the reservoir is dominated by moderate to steep slopes with some flat benches, stream corridors, and terraces. Thus, recreation tends to concentrate on areas of low to moderate slopes. Immediately downstream of the dam, the river flows through a canyon with rock walls over 150 feet high (Photo 2-3). The elevation of the study area ranges from 3,235 feet at the spillway to over 4,000 feet on adjacent ridges.

2.1.3 Geology

Prineville Reservoir is located in the western edge of the Blue Mountains Physiographic Province of eastern Oregon, which consists of several ranges of mountains separated by faulted valleys and synclinal basins. This portion of the Blue Mountains Physiographic Province is dominated by the Columbia River basalt, a thick formation that was extruded in many sheets during the Miocene epoch. Late Miocene and Pliocene formations of bedded tufts and silts are also present.

Geologic formations that consist of fine-grained volcanic tuff and dense andesite lava flows are present in the study area. The John Day formation dominates the north side of the reservoir, with combinations of the John Day and Clarno formations on the south side of the reservoir. Columbia River basalt flows lie on the John Day and Clarno formations. Most of the

bedrock in the study area consists of fine-grained, light-colored tuff that easily weathers into a sticky clay that covers much of Prineville Reservoir lands.

The floor of the reservoir consists of a layer of fine sands and silt over a base of gravel and cobble. Alluvial outwash deposits are present at the terminus of drainages that enter into the reservoir. Landslide debris and talus slopes are scattered around the reservoir. There are no known large, active landslides associated with Prineville Reservoir. Historic slides are located in the Bear Creek vicinity where potential slide conditions persist. These slides likely occurred during the Pleistocene era when the climate was wetter and loosened the facing between the upper basalt layer and the underlying soft volcanic tuff (Reclamation 1992). A small, shallow, active landslide occurs on the north side of the reservoir about 4 miles upstream of the dam. The slide is about 200 feet long, 20 feet high, and 3-6 feet thick.

2.1.4 Hydrology

The Crooked River basin above Bowman Dam drains about 2,700 square miles. Annual runoff from the basin is about 270,000 af, but this is variable and has ranged from a high of 687,834 af in 1984 to a low of 38,853 af in 1961.



Photo 2-3. The Crooked River and Big Bend Campground downstream of Bowman Dam.

Figure 2.1-1

Back of Figure 2.1-1

Peak inflow has been recorded at 267,500 cfs. The highest recorded flow in the Crooked River was 8,410 cfs in March 1952. Flows are typically 200 to 250 cfs during the summer irrigation season and 30 to 75 cfs during the winter storage season (ODFW 1996).

Two primary tributaries flow into Prineville Reservoir—Bear Creek and Sanford Creek. Bear Creek is located on the south side of the reservoir and on the western end. Bear Creek originates above Antelope Flat Reservoir on the south side of the Maury Mountains. Bear Creek and its many tributaries drain about 260 square miles, or about 10% of the basin upstream of Prineville Reservoir. Eroded cutbanks are evident along much of the stream, which is characterized by high summer temperatures, low flows, and high turbidity. The ratio of sediment load to water volume is high for Bear Creek, which flows through highly erodible soils. Sanford Creek originates in the northwest corner of the Maury Mountains, and its basin consists of about 20 square miles. Most of Sanford Creek flows through sagebrush and juniper stands (ODFW 1996). Secondary tributaries to Prineville Reservoir include Alkali Creek, Deer Creek, Long Hollow Creek, Eagle Creek, and Antelope Creek.

Under the Congressional authorization for the Crooked River Project, Reclamation is required to release a minimum flow of 10 cfs from Bowman Dam. In February 1990, Reclamation administratively increased the minimum flow to 75 cfs in recognition of the regionally outstanding natural and recreational resources provided by the downstream reach of the Crooked River under the Federal Wild and Scenic River Act. The 75 cfs flow is dependent on water availability, but Reclamation's goal is to release at least 30 cfs even in low water years.

Groundwater is readily available along the reservoir margin, but on ridges and plateaus above the reservoir water wells must be drilled to between 200 and 800 feet to encounter the

aquifer. A 400-foot deep well that was drilled in 1975 for the Jasper Point Recreation site yields 20 to 30 gallons per minute (Reclamation 1992).

2.1.5 Water Quality

Water quality is generally good and is suitable for all beneficial uses in Prineville Reservoir and in the Crooked River below Bowman Dam. The water quality of Prineville Reservoir and Crooked River downstream of Bowman Dam is suitable for the beneficial uses as defined by the State of Oregon's Department of Environmental Quality (ODEQ website 2001). Data collected by Reclamation, summarized in Table 2.1-1, indicate that the water quality standards and beneficial uses identified by ODEQ for the Deschutes River basin (which includes the Crooked River subbasin) are being met in most instances. The statewide standard for dissolved oxygen for warm water is 5.5 parts per million (ppm) (30-day mean minimum) and 126 units/ml for fecal coliform. Other specific standards for the Crooked River basin have not been developed.

Prineville Reservoir surface water temperatures during July and August often exceed the temperature standard for cold water aquatic life (17.8°C). Profile data collected at Prineville Reservoir during July and August of 1985 and 1995 indicate that there are temperatures less than 17.8°C in the bottom 50% of the reservoir. Dissolved oxygen levels in the reservoir decrease somewhat during July and August, but not to a level that would be indicative of eutrophication conditions.

Nutrients (nitrogen and phosphorus) were detected in sufficient quantities to support plant growth in the reservoir. Nutrient concentrations indicate a potential for algal blooms and eutrophic conditions. Because reservoir inflow and discharge into the Crooked River are turbid during most times of the year, it is suspected that the turbid conditions reduce light penetration to the extent that photosynthetic activity and plant

Table 2.1-1: Water quality (1973, 1978, 1979, 1984, 1991, and 1995) for Prineville Reservoir and Crooked River below Bowman Dam (mg/L except where noted).

Measured Parameter	Location								
	Prineville Reservoir ¹					Crooked River			
	July ² (1984, 1995)	Aug (1984)	Sept (1979)	Oct (1979)	Nov (1978)	July ² (1984, 1995)	Aug ² (1984, 1991)	Sept (1973)	Nov (1978)
Temperature (°C)	23.2	20.9	17.8	17.2	6.4	10.7	11.7	---	5.6
Dissolved Oxygen	8.1	7.0	9.0	8.5	9.4	11.6	10.5	12.1	13.0
pH (Standard Units)	8.30	8.70	8.10	7.80	8.10	8.00	7.95	7.68	7.90
Total Phosphorus	0.031	0.018	0.022	0.055	0.050	0.076	0.091	0.12	0.057
Ortho Phosphorus	0.010	0.005	0.004	0.005	0.032	0.062	0.063	0.08	0.041
Nitrate + Nitrite as Nitrogen	<0.10	<0.10	0.06	0.04	0.10	<0.10	0.15	---	0.10
Fecal Coliform (Counts/100mL)	<2	<2	---	---	<2	4	<2	---	---
Turbidity (NTU)	2.0	3.0	2.0	1.0	3.0	12.5	12.5	9.0	4.0
Transparency Secchi (meters)	2.2	4.0	---	---	1.8	---	---	---	---
Chlorophyll A	0.002	---	---	---	---	---	---	---	---

Source: Reclamation (undated).

¹ Surface data used for reservoir.

² Average data presented for months with multiple years of data.

growth are limited. This is supported by the low concentrations of chlorophyll A and dissolved oxygen depletion in the lower levels of the reservoir during the summer months (ODFW 1996).

According to Section 303(d) of the Federal Clean Water Act (CWA), ODEQ lists water bodies where one or more water quality standards are not being met. This 303(d) list includes the mainstem Crooked River from its mouth to Baldwin Dam (about 8 miles upstream of Prineville Reservoir) due to flow modification and pH. The section of the Crooked River from Baldwin Dam to Prineville Reservoir is listed because of problems with total dissolved gas levels. The Lower Crooked River subbasin (which includes Prineville Reservoir) is listed as a Priority 2 watershed by ODEQ for development of Total Maximum Daily Load (TMDL) for water quality parameters, with Level 1 being the highest priority and Level 4 the lowest priority. The criteria for a Priority 2 water body applicable to the Lower Crooked River are candidate fish species and water contact recreation. Wild and Scenic River status is considered a second tier criterion when prioritizing water bodies. There is

no current TMDL process for the Crooked River, but it is scheduled for 2004 to 2010 (ODEQ website 2002).

Turbidity is caused by suspended particles that block the passage of light. Turbidity is considered a negative visual effect due to its cloudy appearance. For recreational waters, appearance and clarity are often used by the general public to judge water quality. Soils, vegetation, geologic formations, reservoir fluctuation, and resource management practices influence the sediment loads and turbidity levels in Prineville Reservoir.

Prineville Reservoir is moderately nutrient rich in phosphorous and nitrogen, which can favor algal blooms. The turbidity of the reservoir limits sunlight penetration, however, which limits photosynthetic activity and reduces the likelihood of algal blooms. Orthophosphate phosphorous was measured at 0.047 mg/l in May 1982, and 0.025 mg/l in July 1982. These levels would usually indicate a eutrophic system, but corresponding chlorophyll A levels are low (an indicator of phytoplankton production), indicating an ultraoligotrophic, or unproductive, system.

High turbidity is the primary water quality problem in Prineville Reservoir and in the Crooked River below Bowman Dam. High turbidity in the reservoir is primarily a result of erosion that occurs along the mainstem Crooked River, Camp Creek, Eagle Creek, and Bear Creek, and from shoreline erosion along the reservoir edge from wind and boat-generated waves. The reservoir shoreline and adjacent and upstream watersheds are dominated by highly erodible soils, including montmorillonite clays. Upstream land use practices (including logging, road building, and heavy livestock grazing) have contributed to erosion in the watershed (Oregon State University [OSU] 1976). In addition, erosion from uncontrolled recreational use has contributed to sedimentation of the reservoir and related high levels of turbidity. When washed into the reservoir, the fine montmorillonite clay particles can stay in suspension for several years, increasing turbidity and blocking sunlight penetration in the water column (ODFW 1996).

The temperature cycle of Prineville Reservoir is representative of reservoirs in Oregon. During the spring, the reservoir has a relatively uniform vertical temperature profile. Warming of surface waters, combined with wave action, cause convective currents and a mixing of surface waters. The upper region of the reservoir is generally uniformly warm, turbulent, and well mixed. The lower region is cold and relatively undisturbed. The thermocline is the point where these two layers meet during the summer and early fall. As surface waters cool through the fall, the reservoir turns over, returning to a uniform temperature profile. The thermocline descends in response to drawdown.

2.1.6 Soils

Soils in the vicinity are derived from ancient lake-deposited sediments, with profiles consisting of a clay loam surface horizon over a clay-textured subsoil. These soils are notoriously slick and sticky when wet. Erosion-prone soils occur

on more than 90% of the reservoir shoreline (BLM 1980) and, combined with the steep slopes surrounding the reservoir, pose an erosion potential if disturbed by excess human activity.

The dry climate of the Prineville area has led to the formation of poorly developed, loamy/stony sandy loam, erosion-prone soils. The ten soil types that occur in the vicinity of the Prineville Reservoir are shown in Table 2.1-2 and Figure 2.1-2.

Erodible soils are present along more than 90% of the reservoir shoreline (Reclamation 2002). The Stukel-Lorella soil association occurs over most of the study area. Stukel soils are shallow and well-drained with a slow permeability, rapid runoff, and a high erosion potential. The surface layer is a grayish brown loam about 7 inches deep. The Lorella series is a shallow, well-drained soil with a slow permeability, rapid runoff, and a moderate erosion potential. The soil is typified by grayish brown, very stony loam about 3 inches deep, with stones about 3 to 15 feet apart on the surface.

The soils of the Prineville Reservoir watershed area have formed from three basic kinds of parent material: (1) material from weathered bedrock and local movement on slopes; (2) pumice from geologically recent volcanic activity; and (3) alluvium deposited on floodplains, alluvial fans, and low benches. Bedrock in the vicinity is dominated by volcanic flows, tuffs, breccias, and tuffaceous sedimentary rock. Tuff is a rock consisting of cemented and hardened volcanic ash.

Potential soil erosion from lands surrounding Prineville Reservoir is a long-standing concern of land managers (BLM 1975; BLM 1980; OSU 1976) because of the predominance of erosion-prone soils in the watershed and continuing soil loss. Recent data indicate that the reservoir loses about 123 af in capacity per year from

Table 2.1-2: Soil types adjacent to Prineville Reservoir.

U.S. Soil Conservation Service Map Unit*	Soil Type	Slope	Depth to Bedrock	Erosion Hazard	Soil Characteristics
172E	Stukel-Lorella	3-30%	10-20 in	Moderate to high	Shallow, well-drained; moderate permeability; loam/stony sandy loam
151-172E	Stukel-Simas	3-30%	10-20 in	High	Shallow (Stukel) Deep (Simas) Well-drained; moderate to slow permeability; loam/sandy loam
46-48D	Choptie-Madeline	1-30%	10-20 in	Moderate	Shallow, well-drained, moderate to slow permeability; loam/stony sandy loam
133F	Redcliff-Rock Outcrop Complex	30-65%	20-40 in	High	Deep, well-drained; moderate permeability; stony/cobbly loam
118E	Redcliff Rock Outcrop Complex	5-30%	20-40 in	Moderate	Deep, well-drained; slow permeability; loam/clay/clay loam
151F	Simas Loan	30-70%	> 60 in	High	Deep, well-drained; moderate permeability; stony loam/very gravelly loam/gravelly clay loam
152F	Searless Stony Loam	30-65%	20-40 in	Moderate	Deep, well-drained; moderate permeability; stony loam/very gravelly loam/gravelly clay loam
175E	Willowdale	0-2%	> 74 in	Slight	Deep, well-drained; moderate permeability; loam; calcareous below 18 in.
151E	Simas Sandy Loam	5-30%	> 60 in	High	Deep, well-drained; slow permeability; sandy loam/clay/clay loam
33F	Fren Sandy Loam	30-60%	> 65 in	Moderate	Deep, well-drained; moderate permeability, sandy loam/gravelly loam/gravelly clay loam

Source: Reclamation 1992
* Original Soil Map Units

sedimentation from the contributing 2,700 square mile drainage area (Reclamation 1999).

Cryptobiotic crusts are soil crusts formed by living organisms and their byproducts, creating a crust of soil particles bound together by organic materials. Crusts are predominantly composed of cyanobacteria, green and brown algae, mosses, and lichens. These crusts affect processes that occur at the land surface or soil-air interface and include soil stability, nitrogen fixation, nutrient contributions to plants, infiltration, seedling germination, and plant growth (BLM et al. 2001). Soil crusts were once widespread in eastern Oregon deserts but have been disturbed by human use, off-road vehicles (ORV), and livestock. Much of Reclamation’s lands around Prineville Reservoir have a long history of disturbance from a variety of factors and no longer include a high

occurrence of soil crusts. Vegetation surveys indicate that areas in the downstream half of the reservoir where access is difficult have a high occurrence of soil crusts on Reclamation lands at Prineville Reservoir. It should be noted, however, that the occurrence of soil crusts was estimated from aerial photo interpretation and vegetation mapping with limited field verification.

2.1.7 Vegetation

2.1.7.1 Cover Types

Vegetation communities in the study area were characterized by W&H Pacific (2000) (Figure 2.1-3).

Figure 2.1-2

Soil Types at Prineville Reservoir

Back of Figure 2.1-2

Figure 2.1-3

Back of Figure 2.1-3

The following major vegetation cover types are found near Prineville Reservoir: (1) woodland communities, (2) shrub communities, (3) herbaceous communities, (4) rock outcrop and talus, (5) developed areas, and (6) wetland communities. The following sections describe the individual plant communities within each of the major groups.

Woodland Communities

Juniper woodland communities occupy 4,674 acres, or 79 percent of Reclamation's land (Table 2.1-3). Most of the forested vegetation cover types near Prineville Reservoir are dominated by western juniper (*Juniperus occidentalis*). Western juniper is the only native tree species near the reservoir, except for an occasional ponderosa pine (*Pinus ponderosa*) in sheltered areas. All of the juniper woodland areas are composed primarily of juniper/big sagebrush (*Artemisia tridentata*)/bluebunch wheatgrass (*Pseudoregeria spicata* ssp. *spicata*) but are further divided into communities based on soils, current conditions, and species composition (W&H Pacific 2000).

In addition to big sagebrush, other shrub species associated with juniper woodlands include gray and green rabbitbrush (*Chrysothamnus nauseosus* and *C. viscidiflorus*) and bitterbrush (*Purshia tridentata*). The two rabbitbrush species are most common in disturbed areas, while bitterbrush is limited to areas near the County boat ramp.

The juniper-dominated woodlands have varying herbaceous layers depending on the past level of grazing (Photo 2-4). Stands not heavily grazed are dominated by native bunchgrasses such as bluebunch wheatgrass, Sandberg's bluegrass (*Poa sandbergii*), Thurber's needlegrass (*Stipa thurberiana*), and bottlebrush squirreltail (*Sitanion hystrix*). On north slopes, Idaho fescue (*Festuca idahoensis*) is numerous. More well-drained soils support needle-and-thread grass (*Hesperostipa comata* ssp. *comata*) and Indian ricegrass (*Oryzopsis hymenoides*). Forbs include



Photo 2-4. Juniper woodlands surround Old Field (previously farmed/grazed land) in the upper portion of the reservoir.

Douglas phlox (*Phlox douglasii*), gray groundsel (*Senecio canus*), and locoweed (*Astragalus* spp.). Undisturbed areas support well-developed cryptobiotic crusts. The coverage of non-native cheatgrass increases as the severity of grazing and/or recreational disturbance increases.

Within the study area, juniper reaches a density of 100 trees per acre (Reclamation 2002). Prior to European settlement, juniper was much less prevalent; however, suppression of the natural wildfires has resulted in substantial expansion in juniper coverage. The causes and effects of juniper expansion are variable (Bedell et al. 1993; Belsky 1996). The dense juniper coverage can result in high bare soil coverage and poor sagebrush and grass cover (Reclamation 2002). If not managed, western juniper is expected to substantially increase within the watershed.

Since the 1980s, BLM has conducted juniper removal on lands adjacent to Reclamation lands at Prineville Reservoir; however, no such management has occurred on the Reclamation lands. In some cases, juniper removal has been shown to increase herbaceous plant production and decrease bare soil coverage, but this does not always result in an improvement in range condition (Vaitkus and Eddleman 1987).

Table 2.1-3: Acreage of cover types in the Prineville Reservoir study area.

Cover Type	Acres	Percent
Western Juniper Woodlands		
Western juniper/big sagebrush/bluebunch wheatgrass woodland with dense understory	353.4	6.0
Western juniper/big sagebrush/bluebunch wheatgrass woodland with moderate to light understory	2,192.6	37.1
Western juniper/big sagebrush/bluebunch wheatgrass woodland with rock outcrops	61.0	1.0
Western juniper/big sagebrush/bluebunch wheatgrass woodland with stony red clay soils	182.9	3.1
Western juniper/big sagebrush/Thurber's needlegrass-bottlebrush squirreltail woodland with sandier substrate	176.5	3.0
Western juniper/big sagebrush/Thurber's needlegrass-bottlebrush squirreltail woodland with sandier substrate	86.7	1.5
Western juniper/big sagebrush/cheatgrass woodland	367.6	6.2
Western juniper/bluebunch wheatgrass savanna, with dense bunchgrass understory	306.9	5.2
Western juniper/bluebunch wheatgrass savanna, with light bunchgrass understory	778.9	13.2
Western juniper/bluebunch wheatgrass savanna, with light bunchgrass understory on red clay substrate	167.8	2.8
Western Juniper Woodland Total	4,674.3	79.2
Shrub-steppe Communities		
Big sagebrush/bluebunch wheatgrass shrub-steppe	93.0	1.6
Big sagebrush/bluebunch wheatgrass shrub-steppe, with red substrate	18.9	0.3
Big sagebrush/Thurber's needlegrass shrub-steppe	4.1	0.1
Big sagebrush/cheatgrass shrub-steppe, on stony silt-loam substrate	346.5	5.9
Big sagebrush/cheatgrass shrub-steppe, on red clay substrate	19.8	0.3
Shrub-steppe Communities Total	482.4	8.2
Grass-Forb Communities		
Native grass communities	4.3	0.1
Non-native grass/forb communities	87.6	1.5
Grass/Forb Communities Total	91.8	1.6
Rimrock and canyon shrubland, with sagebrush Total	240.8	4.1
Wetland and Riparian Communities		
Shoreline Palustrine Emergent Communities		
Matted muhly-Arctic rush-slenderbeak sedge-Douglas sedge	18.2	0.3
Creeping spike rush-matted muhly-Arctic rush-slenderbeak sedge-Douglas sedge	23.7	0.4
Quackgrass-saltgrass-meadow foxtail alkaline wet meadow	26.2	0.4
Shallow Water/Shoreline Palustrine/Shrub Community		
Water smartweed-Creeping spikerush-American water plantain/Pacific willow-coyote willow/matted muhly-Arctic rush	95.7	1.6
Riparian Shrub/Emergent Marsh Community		
Pacific willow/creeping spikerush/matted muhly	6.1	0.1
Sandbar Shrub Community		
Pacific willow-coyote willow/creeping spikerush-Arctic rush	42.3	0.7
Other Riparian Communities		
Creek riparian willow community	11.1	0.2
Riverine gravel bar community	6.0	0.1
Wetland and Riparian Communities Total	229.3	3.9
Developed/Disturbed Cover Types		
Developed forested areas	73.8	1.3
Developed non-forested areas	19.7	0.3
Proximate disturbed areas	92.7	1.6
Developed/Disturbed Cover Total	186.2	3.2
Grand Total	5,904.8	100.0

Source: W&H Pacific (2000).

Note: The total acreage does not match Reclamation's estimate of the total acreage of their land at Prineville Reservoir (5,460 ac). The vegetation analysis was complete at a less than full pool level and includes habitats such as riverine gravel bar acreage.

Shrub Communities

Shrub communities are dominated by big sagebrush and either bluebunch wheatgrass, Thurber's needlegrass, or cheatgrass (*Bromus tectorum*). Together, the shrub communities occupy 482 acres, or 8% of the lands near the reservoir (Table 2.1-3). Other herbaceous plant species found in the shrub communities include Sandberg's bluegrass, bottlebrush squirreltail, needle-and-thread grass (*Stipa* spp.), Idaho fescue, yarrow (*Achillea millefolium*), buckwheat (*Eriogonum* spp.), and locoweed.

Herbaceous Communities

Upland communities that lack shrubs and juniper are limited to 92 acres, or less than 2%, mostly in sandy openings. These sites are dominated by Thurber's needlegrass and/or bottlebrush squirreltail. As disturbance level increases, the coverage of cheatgrass, Canadian thistle (*Cirsium arvense*), and spotted knapweed (*Centaurea maculosa*) increases. About half of the upland herbaceous communities are dominated by non-native species.

Rock Outcrop and Talus

Rimrock and canyon shrubland dominated by big sagebrush, mountain mahogany (*Cercocarpus* spp.), serviceberry (*Amelanchier alnifolia*), bitterbrush (*Purshia tridentata*), currant (*Ribes* spp.), and rose (*Rosa* spp.) occupy 241 acres (Table 2.1-3). Talus slopes occur below Bowman Dam.

Developed Areas

Developed areas include: (1) developed non-forested areas with buildings, parking lots, landscaped plantings, irrigated grass, paved and unpaved roads and parking pull-offs, and housing developments; (2) developed forest areas associated with developed campgrounds and primitive campsites; and (3) proximate disturbed areas that include the highly disturbed areas

adjacent to roads, campsites, boat ramp facilities, and areas impacted by ORV use (W&H Pacific 2000). Combined, these areas cover 186 acres (Table 2.1-3). Although non-native plant species dominate most of the herbaceous vegetation, remnant patches of native vegetation also persist in some areas.

Wetland Communities

Five groups of wetland communities were mapped in the study area: (1) shoreline palustrine emergent communities, (2) shallow water/shoreline palustrine emergent/shrub community, (3) riparian shrub/emergent marsh community, (4) sandbar shrub community, and (5) riparian channels and gravel bars (W&H Pacific 2000). Together, these communities occupy 229 acres, or 4% of the study area (Table 2.1-3). The following sections discuss each of these communities.

Shoreline Palustrine Emergent Communities

The shoreline palustrine emergent communities occur below the normal high water line. Shorelines and inlets with gradual slopes support narrow zones of matted muhly (*Muhlenbergia richardsonis*)/arctic rush (*Juncus balticus* var. *balticus*)/slenderbeak sedge (*Carex athrostachya*)/Douglas sedge (*C. douglasii*) emergent marsh. Other areas of the shoreline, particularly near Roberts Bay, Antelope Creek inlet, Jasper Point boat ramp, Powder House Cove, and Juniper Point inlet, support communities dominated by creeping spikerush (*Leaheries macrostachya*)/matted muhly/arctic rush/slenderbeak sedge/Douglas sedge. These two communities cover 18 and 24 acres, respectively (Table 2.1-3).

A Natural Resources Conservation Service (NRCS) Wetland Conservation Determination conducted in 1999 documented approximately 60 acres of wetland along the reservoir (NRCS 1999). The largest contiguous wetlands are located in the cutoff oxbow near Old Field and

along the lower portion of Bear Creek. The drawdown area at Roberts Bay is currently being managed for wetland restoration by prohibiting vehicular traffic off of designated roads. A reconnaissance of the area indicated a mixture of wetland and upland vegetation and a general lack of hydric soils. However, approximately 10% of the area likely meets the technical wetland criteria (pers. comm., A. Moore, 2000). These wetlands would be difficult to specifically identify as they are scattered in a mosaic pattern among upland areas. The lowermost portions of the drawdown zone are dominated by the non-native foxtail pricklegrass (*Crypsis alopecuroides* [*Heleochloa alopecuroides*]). There was evidence of past vehicular traffic creating extensive rutting in the drawdown area.

Shallow Water/Shoreline Palustrine Emergent/Shrub Community

The one community of this type was a water smartweed (*Polygonum amphibium*)/creeping spikerush/American water plantain (*Macaerocarpus californica*) /Pacific willow (*Salix exigua*)/coyote willow (*Salix exigua*)/matted muhly/arctic rush. This community is located at the eastern portion of the reservoir near Old Field and occupies 96 acres (Table 2.1-3). Some of this community has been removed by recreational activity (angling and camping) along the river.

Riparian Shrub/Emergent Marsh Community

Areas near the mouth of Owl Creek, Juniper Bass campsite, and upstream on the north shore of the river support plant communities dominated by Pacific willow (*Salix lasiandra*)/creeping spikerush/matted muhly. Approximately 6 acres of this community were mapped in the study area (Table 2.1-3). In some of these areas, the willows extend into the water.

Sandbar Shrub Community

The Pacific willow/coyote willow/creeping spikerush/arctic rush shrub community occurs in 42 acres on several sandbars in the riverine section upstream of the reservoir (W&H Pacific 2000). Although willow dominates these areas, recently disturbed areas have many weeds.

Riparian vegetation represents a minor proportion of the overall study area acreage but is critical for biological biomass and species diversity (Reclamation 2002). Riparian habitats are characterized by willow, wheatgrass, alder (*Alnus rhomifolia*), dogwood (*Cornus stolonifera*), and scattered cottonwood (*Populus trichocarpa*) (Reclamation 2002). Riparian vegetation provides shade for water temperature control, hiding cover for fish, and bank stability through root systems. Riparian plants are especially important in holding soils and reducing bank erosion. Several of the streams in the study area are greatly affected by grazing and ORV activity. For example, the Bear Creek channel is incised 2 to 6 feet.

Other Riparian Communities

Creek riparian channels and gravel bars represent 11 and 6 acres, respectively (Table 2.1-3). The former community (which is dominated by willow, needle-leaf spikerush [*Eleocharis acicularis*], and creeping spikerush) occurs along Eagle, Sanford, Deer, Black Canyon, and Antelope Creeks (W&H Pacific 2000). The latter community is limited to areas along the northwest side of Big Bend Recreation Site downstream of Bowman Dam.

2.1.7.2 Vegetation Management

Vegetation management issues at Prineville Reservoir include: (1) control of noxious weeds, (2) revegetation of disturbed areas, and (3) juniper management. The following sections discuss these issues.

Noxious Weeds

Department of Interior (DOI) directives 609 DM 1 (June 26, 1995), Secretarial Order No. 3190 (June 22, 1995), and Reclamation Manual Directive ENV 01-01 require development and approval of programs for the control of undesirable plants on DOI lands. Reclamation has developed a Draft Integrated Pest Management (IPM) Plan for controlling noxious weeds and unwanted non-native plant species (Reclamation 2002). This plan calls for noxious weed control primarily by application of chemical herbicides (pers. comm., B. Pieratt, April 11, 2001). In 1998, Reclamation began contracting with the U.S. Forest Service (USFS) and Crook County to conduct noxious weed management programs. These activities had significant impacts on the perennial pepperweed (*Lepidium latifolium*), spotted knapweed, Russian knapweed (*Centaurea repens*), and whitetop (*Cardaria draba*) populations.

Six noxious weed species recognized as “A” listed by the Oregon Department of Agriculture (ODA) have been documented at Prineville Reservoir (Table 2.1-4). Species that are “A” listed are weeds of known economic importance which occur in the state in small enough infestations to make eradication/containment possible; or are not known to occur, but the presence in neighboring states make future occurrence in Oregon seem imminent (ODA 2001). Intensive control is the recommended action for infestations. Russian knapweed (*Centaurea repens*) is by far the most common of these species. In addition to those species listed in Table 2.1-4, cheatgrass—a very widespread non-native annual grass that dominates disturbed areas and that is almost impossible to control—also occurs on Reclamation land.

Disturbed Areas

The condition of the native vegetation varies greatly in the study area. Damage to native vegetation is often severe in locations where

Table 2.1-4: Noxious weeds documented at Prineville Reservoir.¹

Species	Acres
Perennial pepperweed	20
Russian knapweed	200
Whitetop	20
Canada thistle	75
Puncture vine (<i>Tribulus terrestris</i>)	2
Spotted knapweed	2

Source: Draft Integrated Pest Management Plan for Prineville Reservoir – Crooked River Project – Oregon 2/19/2002.

¹ Species on the Draft Crook County Noxious Weed Control “A” list.

recreationists drive and camp along the shoreline (BLM 1980a).

There are several BLM grazing allotments that include Reclamation land. Evidence of grazing was noted near Roberts Bay during a 2000 site visit (compacted and grazed vegetation, cow tracks and scat in wetland).

ORV use on the lands surrounding Prineville Reservoir is a recreational activity that has occurred for more than 20 years. Extensive ORV traffic off of designated roadways has resulted in substantial damage to upland, riparian, and wetland vegetation communities. The relatively open terrain results in many unauthorized “jeep” trails. These trails increase erosion and do not easily revegetate. BLM generally considers areas with slopes >30% to be unacceptable for ORV use (BLM 1980b). OPRD, Reclamation, and BLM have been active in closing the unauthorized trails and attempting revegetation in selected areas near the reservoir on Reclamation and BLM administered lands.

Juniper Management

Historically, the uplands near the reservoir were dominated by big sagebrush, Idaho fescue, and bluebunch wheatgrass and supported only widely scattered juniper trees. However, during the last 50 years, a pattern of fire suppression and livestock grazing has resulted in a substantial

expansion of juniper woodland. A number of publications suggest that juniper encroachment has altered microclimates, water cycles, nutrient cycles, and plant and animal species (Bedell et al. 1993). The effect of juniper on soil, water, and grass and forbs is complex, however. Juniper control has been conducted on private and public land under the premise that it is an invading weed that dries up springs and streams, increases erosion, and reduces biodiversity and forage for wildlife and livestock (Bedell et al. 1993). Scientific evidence to support these claims is lacking (Belsky 1996). BLM documents (BLM 1993) indicate that juniper control would improve capture and storage of water, streamflow, forage and cover for big game, and fish habitat among other natural resources. An OSU Extension publication notes that “If not managed, western juniper would come to dominate a majority of eastern Oregon range sites” (Bedell et al 1993). But this assertion is contradicted by a USFS, BLM, and U.S. Fish and Wildlife Service (FWS) survey indicating that only 5% of eastern Oregon currently is or would potentially be affected by juniper encroachment (ODFW 1993).

There is a lack of data regarding the effects of juniper removal, no longitudinal studies measuring changes in ecosystem properties during succession of grasslands to woodlands, and only a few studies on the effects of juniper removal, often with conflicting results (Belsky 1996). While ranchers and range managers often claim that junipers dry up springs and streams, there is little substantial evidence to support this (Belsky 1996). These popular assumptions ignore the complexities of ecosystem interactions. An example is that in arid climates, most snow/rain water recharges the soil column and leaves little available for downslope movement into drainages (Hibbert 1983; West 1984). Thus, removing juniper often has no effect on stream recharge.

In addition, studies in eastern Oregon note that while herbaceous production can double after juniper removal, much of this increase comes

from annual forbs such as fireweed (*Epilobium angustifolium*). This study concluded “...an increase in herbage production after tree removal does not necessarily result in an improvement in range condition” (Vaitkus and Eddleman 1987). Purported effects of juniper on water infiltration and erosion are fewer than the effects caused by livestock, which reduce cover and disturb soil with hooves (Wilcox 1994). And because much of the intermountain west has been significantly affected by grazing impacts, interactions of grazing and juniper encroachment are difficult to separate. Evans (1988) concludes that excessive rates of runoff and sediment in pinyon pine (*Pinus edulis*)-juniper woodlands were due to grazing and other human-related activities. Therefore, the effects of juniper control are not clear, often varied, and difficult to separate from grazing impacts. This does not mean that juniper control has no place in vegetation management, but that it should be done judiciously, with clear goals and objectives, and be based on a thorough scientific understanding of the complexities of site-specific conditions.

Currently, there are very few areas that do not have at least some juniper at Prineville Reservoir. The draft Prineville Reservoir IPM Plan (Reclamation 2002) indicates that there are 400 acres of land in the SWA with an 80% increase in juniper, but the time period of this increase is not identified. The IPM Plan says this increase “...is currently threatening the viability of the diverse grassland ecosystem.” No data are cited for this assertion. BLM has been conducting manual juniper thinning on BLM land near Reclamation land, and BLM states that juniper thinning activities have been effective in stopping erosion and increasing sagebrush and perennial herbaceous vegetation cover (pers. comm., J. Swanson, BLM, 2002).

2.1.8 Fish and Wildlife

2.1.8.1 Fish

A number of fish species have historically occurred in the Lower Crooked River, including spring chinook (*Oncorhynchus tshawytscha*), summer steelhead (*O. mykiss*), redband trout (*O. mykiss*), cutthroat trout (*O. clarkii*), and mountain whitefish (*Prosopium williamsoni*). Nongame species included northern pikeminnow (*Ptychocheilus oregonensis*), chiselmouth (*Acrocheilus alutaceus*), longnose (*Rhinichthys cataractae*) and speckled dace (*R. falcatus*), redband shiner (*Richardsonius balteatus*), largescale (*Catostomus macrocheilus*) and bridgeli sucker (*C. columbianus*), and a variety of sculpin (*Cottus* spp.). Introduced hatchery rainbow trout (*O. mykiss*), smallmouth bass (*Micropterus dolomieri*), largemouth bass (*M. salmoides*), brown bullhead (*Ictalurus meles*), and black crappie (*Pomoxis nigromaculatus*) are gamefish present in the reservoir. The Crooked River and Prineville Reservoir are managed by ODFW under the 1996 Crooked River Basin Plan (ODFW 1996).

Essential Fish Habitat (EFH) provisions of the Magnuson-Stevens Act (MSA), the Federal law that governs U.S. marine fish management, require heightened consideration of fish habitat in resource management decisions. EFH is defined in Section 3 of the MSA as “those waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity.” EFH applies to anadromous and marine fish. The National Oceanic and Atmospheric Administration Fisheries (NOAA Fisheries, formerly the National Marine Fisheries Service [NMFS]) interprets EFH to include aquatic areas and their associated physical, chemical, and biological properties used by fish that are necessary to support a sustainable fishery and the contribution of the managed species to a healthy ecosystem. The MSA and its implementing regulations at 50 CFR 600.92(j) require that before a Federal agency may authorize, fund, or

carry out any action that may adversely affect EFH, it must consult with NOAA Fisheries and, if requested, the appropriate Regional Fishery Management Council. The purpose of consultation is to develop a conservation recommendation that addresses all reasonably foreseeable adverse effects to EFH. While no anadromous species reach Bowman Dam because of downstream barriers, the Crooked River could be considered potential EFH for anadromous species.

Reservoir

Hatchery rainbow trout are stocked in the reservoir in early to mid-May and are the primary game fish in the reservoir. These hatchery rainbow trout sometimes emigrate from the reservoir into the Crooked River below the dam. High emigration rates appear to correspond with severe drawdown of the reservoir or when the reservoir is high enough that water flows over the spillway (ODFW 1996). Rainbow trout may also migrate upriver during the spring and fall. It is unlikely that these fish are able to reproduce because of the poor habitat conditions in the river.

Several incidences of disease outbreaks have been reported in trout populations in the reservoir. During September 1984, 91% of rainbow trout and 96% of cutthroat trout from the upper reservoir were infected with *Lernea*, a parasitic copepod. About 68% of rainbow trout and 57% of cutthroat trout from the lower reservoir were infected. Strawberry disease, a rickettsial or bacterial disease that causes red sores, has been observed over the past 10 years (ODFW 1996).

Largemouth and smallmouth bass were stocked in the reservoir in 1960 and 1961 soon after completion of the project. Natural reproduction has sustained the population since these initial stockings. Largemouth bass are generally found in the upper half of the reservoir, while smallmouth bass are common throughout the reservoir. Largemouth bass prefer shallow

mudflats, creek mouths, natural coves with stumps, and other underwater structure (ODFW 1996). Winter survival of juvenile largemouth bass is highly dependent on conditions during the summer and early fall. Because weather conditions are variable there is a corresponding variation in juvenile bass survival and later cohort survival and spawning.

Abundance of largemouth and smallmouth bass is relatively low compared to other Oregon water bodies (ODFW 1996); the slow growth and general poor condition of largemouth and smallmouth bass in the reservoir indicate an insufficient prey base. FWS has expressed a concern that bass production is likely limited by reservoir drawdowns in the early spring (pers. comm., Rasmussen, 2002).

An abundant brown bullhead population occurs in the reservoir, with an average size of 8 to 10 inches and some examples up to 18 inches. While this species occurs throughout the reservoir, most of the population occurs in the shallow upper end of the reservoir and in the Bear Creek Arm. The population of brown bullhead appears to be overpopulated and stunted (ODFW 1996).

Black crappies were illegally introduced into the Prineville Reservoir in the late 1980s, and surveys indicate that they are successfully breeding. Black crappies grow slowly in the reservoir and rarely exceed 8 inches. Over 7,000 black crappies were harvested from the reservoir during 1994. Table 2.1-5 indicates the harvest of gamefish in Prineville Reservoir from April through October 1994.

Nongame species dominate the fish population in Prineville Reservoir. Gillnet sampling indicates

Table 2.1-5: Estimated harvest of game fish at Prineville Reservoir from April through October 1994.

	Brown Bullhead	Largemouth Bass	Smallmouth Bass	Rainbow Trout	Black Crappie
April	1,038	0	0	3,881	0
May	4,713	20	159	4,701	278
June	6,250	26	53	2,295	868
July	7,371	109	267	1,790	3,553
August	8,258	0	812	1,942	1,248
September	4,475	87	394	2,414	1,221
October	17	0	3	627	16
Total	32,122	242	1,688	17,650	7,184

Source: ODFW 1996.

that 90-95% of the population is nongame species. The numbers of nongame species are likely to exert a major influence on food resources and the viability of game species. Suckers and chiselmouth are the most abundant species, comprising over 70% of samples from 1962 through 1980 (ODFW 1996).

Zooplankton densities are relatively low in the reservoir due to the poor phytoplankton production. Zooplankton, which feed upon phytoplankton, are the major food item for juvenile fish, rainbow trout during the spring, and black crappie. Low levels of zooplankton in the reservoir suggest that there is intense competition for limited food by rainbow trout, black crappie, and juvenile bass. As the black crappie population increases, competition for food would likely increase (ODFW 1996). In 2001, ODFW noted a spring die-off of a wide size range of crappie that they attributed to Chronic Wasting Disease or starvation.

ODFW and Reclamation have cooperated on some projects to improve bass habitat in the reservoir, including the placement of about 225 juniper trees in the cove at Sanford Creek and along the shore upstream of the cove. Follow-up electroshock surveys indicated that crappie and bass used the site.

In recent years (1999-2002), ODFW and the Oregon Bass and Panfish Club have cooperated to capture and transport black crappie from Prineville Reservoir to Haystack Reservoir over the Memorial Day weekend. The result has been an average of about 4,000 5- to 8-inch crappie removed from Prineville Reservoir. ODFW monitors fish populations using gill nets in Prineville Reservoir about every 3 to 4 years, mostly to evaluate the trout stocking program. Electrofishing is used to sample the warmwater fishery more sporadically (pers. comm., B. Hodgson, 2002).

Downstream Crooked River

The cold water discharge from Bowman Dam has created a tailrace fishery through the Chimney Rock section (to river mile [RM] 57). Summer water temperatures in this section average 47°F to 50°F with a maximum 54°F while winter temperatures average 37°F to 40°F with a minimum of 32°F. Water released from the dam rarely exceeds 54°F (ODFW 1996). Cold water releases maintain good trout populations for a 12-mile reach below the dam to about the Crooked River Feed Canal diversion. Irrigation withdraws and increased water temperatures provide substantially less productive trout habitat from the Crooked River Feed Canal diversion (RM 57) to Highway 97 (RM 18). Because of high turbidity in the reservoir, the Crooked River below the dam is turbid until about RM 18 at Highway 97 where spring inflow contributes clearer water. High volume spill events can cause nitrogen supersaturation downstream of Bowman Dam. In April 1989, 85% of rainbow trout sampled between Bowman Dam to Prineville exhibited gas bubble disease. Nitrogen supersaturation below the dam was as high as 109%; one month later, saturation levels were still 108% at 0.5, 3, and 5 miles below Bowman Dam. ODFW testing and analysis in 1993 concluded that supersaturation was only a problem at flows above 3,000 cfs that extended for long periods. ODFW considers supersaturation below the dam to be an

infrequent, localized, and short-term problem (pers. comm., B. Hodgson, 2001).

The Crooked River Chimney Rock section supports a mix of native redband trout, hatchery rainbow trout, and mountain whitefish. Hatchery fish have not been stocked below the dam since 1975, but they emigrate from the reservoir through an unscreened outlet. Small amounts of smallmouth and largemouth bass, brown bullhead, and nongame fish also occur in the river below the dam. Current angling regulations from Bowman Dam to Lake Billy Chinook are a 5 trout per day limit, 6-inch minimum with no more than one fish over 20 inches, with bait and barbed hooks allowed during the regular trout season from late April to the end of October. Since 1988, the lower Crooked River has been open to fishing in winter from November 1 to late April for catch-and-release only with barbless flies and no lures or bait.

Rainbow trout abundance has seen healthy increases since 1989. Abundance was estimated at 826 trout per mile in 1989, 2,289 trout per mile in 1993, 8,228 trout per mile in 1994, and 6,098 trout per mile in 1995. The increase may be a response to increased winter flows from 10 cfs in 1989 to flows from 30 to 75 cfs from 1989 to 1995 (ODFW 1996).

2.1.8.2 Wildlife

When Prineville Reservoir was established, wildlife habitat quality was considered poor due to overgrazing of the region (Reclamation 1992). Gamebird populations were at low to moderate levels and were comprised of a few migrating duck species, California and mountain quail (*Callipepla californica* and *Oreortyx pictus*), and a remnant population of Great Basin Canada geese (*Branta canadensis*). Duck and geese use Prineville Reservoir as a wintering site. Nongame birds included songbirds, shorebirds, and raptors, many of which still occur along the reservoir. Mule deer (*Odocoileus hemionus*)

populations were also small but increased slightly around the reservoir during winter months.

After the reservoir was built, Reclamation entered into an agreement in 1962 with ODFW for management of the upper reservoir area. ODFW manages this area as the Prineville Reservoir SWA. When the reservoir is full, the SWA spans 2,230 acres of terrestrial land and 930 acres of aquatic habitats.

The SWA is managed primarily for waterfowl, upland game, and big game populations (Reclamation 1992). Land management in this area has focused on increasing habitat for these game species. A few species introductions have been carried out under these management goals. Chukar (*Alectoris chukar*) and ring-necked pheasant (*Phasianus colchicus*) have been introduced with limited success due to marginal habitat quantity and quality (Reclamation 1992). Nesting and foraging habitat improvements for game species have been successful, as indicated by population increases for many game species (pers. comm., Ferry, 2001).

Birds

Waterfowl have benefited from the establishment of Prineville Reservoir through an increase in available aquatic habitat (Reclamation 1992). Ducks and geese use the reservoir and SWA for nesting, brooding, and feeding. The upper end of the SWA has become an important nesting area for local waterfowl (pers. comm., Ferry, 2000). Canada goose nesting platforms have been maintained by the ODFW and have led to an increase in nesting populations (Reclamation 1992). Juniper Bass, located along the northern shoreline, has become an important grazing area for geese (pers. comm., Ferry, 2001). Canada goose brood counts performed by ODFW estimated that 69 young were reared on Prineville Reservoir during the 2000 season. Crook County waterfowl surveys estimated over 5,700 birds in the county during the winter of 2001 (pers.

comm., Ferry, 2001). Other waterfowl species observed or likely to occur include western grebe (*Aechmophorus occidentalis*), mallard (*Anas platyrhynchos*), northern pintail (*Anas acuta*), American wigeon (*Anas americana*), northern shoveler (*Anas clypeata*), blue-winged teal (*Anas discors*), green-winged teal (*Anas crecca*), cinnamon teal (*Anas cyanoptera*), canvasback (*Aythya valisineria*), redhead (*Aythya americana*), ring-necked duck (*Aythya collaris*), greater scaup (*Aythya marila*), lesser scaup (*Aythya affinis*), common goldeneye (*Bucephala clangula*), bufflehead (*Bucephala albeola*), common merganser (*Mergus merganser*), hooded merganser (*Lophodytes cucullatus*), ruddy duck (*Oxyura jamaicensis*), and American coot (*Fulica americana*).

Shorebirds and wading birds are known to use the RMP study area, especially during migration periods. Due to concerns over declining shorebirds and available habitat, especially during migration, the FWS has recently developed an Intermountain West Regional Shorebird Management Plan (Oring et al. 2001). As throughout the Intermountain West, shorebird migration sites in eastern Oregon are becoming increasingly concentrated and important as habitat is lost or degraded. High quality, freshwater sites are identified in the plan as important and as a declining habitat type utilized by migrating shorebirds in this region (Oring et al. 2001). Shorebirds and wading birds known or likely to use the RMP study area include great blue heron (*Ardea herodias*), greater sandhill crane (*Grus canadensis tabida*), long-billed curlew (*Numenius americanus*), and killdeer (*Charadrius vociferus*).

Gamebird species are a priority for management in the SWA. Chukar, mourning dove (*Zenaida macroura*), ring-necked pheasant, grouse (order *Galliformes*), and quail (order *Galliformes*) are among the species present in the RMP study area.

California quail, known locally as valley quail, have been observed in the RMP study area (pers.

comm., Soules, 2000). This species uses a variety of habitats including open sagebrush areas (Csuti et al. 1997). It is rarely found farther than 1,200 feet from a water source (Csuti et al. 1997). ODFW reports that California quail are common at the eastern end of Prineville Reservoir, especially in high quality riparian habitats (pers. comm., Ferry, 2001). Current populations of this species appear to be stable compared to 1990 population levels (pers. comm., Ferry, 2001).

Osprey (*Pandion haliaetus*) utilize the reservoir for foraging during the spring and summer (Reclamation 1992). This species is a fish eater and forages in the reservoir and Crooked River. ODFW expects that this species could be nesting in the area but have not confirmed any nest sites. Suitable nesting habitat may occur along the free-flowing sections of the Crooked River, where large trees are located in riparian areas and fish populations are higher.

Golden eagles (*Aquila chrysaetos*) and prairie falcons (*Falco mexicanus*) have been observed nesting around the reservoir (pers. comm., Ferry, 2000) (Figure 2.1-4). Golden eagles use open habitats for foraging and use cliff ledges for nesting (Csuti et al. 1997). Prey species are mostly small mammals, though eagles are also known to eat larger game animals, birds, and reptiles (Csuti et al. 1997). Golden eagles are granted special protection under the Bald and Golden Eagle Protection Act of 1940 (16 U.S.C. 668-668d, 54 Stat. 250), under which they are protected from persecution and disturbances.

Many other types of birds utilize the RMP study area. The most likely common species are listed in Table 2.1-6.

Rare songbirds, such as tricolored blackbirds (*Agelaius tricolor*), willow flycatchers (*Empidonax trailii*), and loggerhead shrikes (*Lanius ludovicianus*), as well as woodpeckers (Family: *Picidae*), such as the Lewis's woodpecker (*Melanerpes lewis*), use the habitats of the RMP study area. Ravens also nest in the

RMP study area (pers. comm., Ferry, 2001). The remaining rare songbirds are discussed under the rare and sensitive species section below.

Table 2.1-6: Common bird species in the RMP study area.

Common Name	Scientific Name
Belted kingfisher	<i>Ceryle alcyon</i>
Downy woodpecker	<i>Picoides pubescens</i>
Hairy woodpecker	<i>P. villosus</i>
Northern flicker	<i>Colaptes auratus</i>
Northern shrike	<i>Lanius excubitor</i>
Steller's jay	<i>Cyanocitta stelleri</i>
Western scrub-jay	<i>Aphelocoma californica</i>
Black-billed magpie	<i>Pica hudsonia</i>
Tree swallow	<i>Tachycineta bicolor</i>
Bank swallow	<i>Riparia riparia</i>
American crow	<i>Corvus brachyrhynchos</i>
Common raven	<i>C. corax</i>
Horned lark	<i>Eremophila alpestris</i>
Red-breasted nuthatch	<i>Sitta canadensis</i>
Canyon wren	<i>Catherpes mexicanus</i>
Mountain bluebird	<i>Sialia sialis</i>
American robin	<i>Turdus migratorius</i>
European starling	<i>Sturnus vulgaris</i>
Song sparrow	<i>Melospiza melodia</i>
White-crowned sparrow	<i>Zonotrichia leucophrys</i>
Dark-eyed junco	<i>Junco hyemalis</i>
Red-winged blackbird	<i>Agelaius phoeniceus</i>
Western meadowlark	<i>Sturnella neglecta</i>
Brewer's blackbird	<i>Euphagus cyanocephalus</i>
House finch	<i>Carpodacus mexicanus</i>
American goldfinch	<i>Carduelis tristis</i>
House sparrow	<i>Passer domesticus</i>

Migratory Birds

On January 10, 2001, President Bill Clinton signed an Executive Order mandating that all Federal agencies cooperate with the FWS to increase awareness and protection of the nation's migratory bird resources. Each agency is supposed to have developed a Memorandum of Understanding (MOU) with the FWS stating how it intends to cooperate. Reclamation has recently finalized an MOU with the FWS, which includes provisions for analyzing Reclamation's effect to migratory birds. Most birds in North America are considered migratory under the Federal Migratory Bird Treaty Act. The general bird species of the Prineville RMP study area are described in the above narrative.

Amphibians and Reptiles

Many amphibians and reptiles use the RMP study area, but the presence of these species has not been well documented. Species suspected to occur in the vicinity include the northern sagebrush lizard (*Sceloporus graciosus*) and western toad (*Bufo boreas*), which are discussed in the rare and sensitive species section, and the Oregon spotted frog (*Rana pretiosa*), which is treated in the Threatened and Endangered species section due to its Federal and State status. Common amphibians and reptiles found in the area include gopher snake (*Pituophis catenifer*), common garter snake (*Thamnophis sirtalis*), rattlesnake (*Crotalis viridis*), and fence lizard (*Sceloporus occidentalis*).

Mammals

The RMP study area may provide habitat for a number of bat species: Townsend's big-eared bat (*Corynorhinus townsendi*), small-footed myotis (*Myotis cilolabrum*), long-eared myotis (*Myotis evotis*), yuma myotis (*Myotis yumanensis*), palid bat (*Antrozous pallidus pallidus*), and silver-haired bat (*Lasionycteris noctivagans*) (FWS 2000a). These species are discussed under rare and sensitive species in Section 2.1.8.3.

Deer population management is a priority for the SWA, especially during winter when deer concentrate in the area. Mule deer are mainly confined to open woodlands and isolated mountain ranges on the east side of the Cascades (Csuti et al. 1997). In the winter, mule deer descend to lower valleys, which are often occupied by human development. In the SWA, winter management includes closing the western end of the North Side Primitive Road from November 15 through April 15, and the eastern end from December 15 through March 15. This staggered road closure was established to allow for recreational access to the eastern end for a longer period and is not optimal for deer

management, as this area gets heavy ORV use (pers. comm., Ferry, 2002).

Year-round management for deer incorporates maintaining fencing around the entire SWA, which aids in regulating hunting and grazing impacts, and habitat management, such as vegetation restoration and noxious weed control. Neighboring BLM land is managed for deer through juniper thinning, which increases winter forage (pers. comm., Ferry, 2000). The SWA is designated as critical deer winter range by the ODFW, with seasonal use increasing significantly depending on winter severity. Winter mule deer numbers for the SWA have increased from between 50 to 75 animals in the 1960s to between 300 and 500 animals in 1990 (Reclamation 1992). While deer population estimates are not currently estimated for the RMP study area directly, they are kept for the Maury and Ochoco Wildlife Management Units (WMUs), which lie to either side of the SWA. Both WMUs combined held over 24,000 deer in year 2000 (pers. comm., Ferry, 2000).

Within the RMP study area, the Bear Creek and Roberts Bay areas are important deer wintering sites that are outside of the SWA (pers. comm., Ferry, 2000). According to SWA biologists, population numbers for deer in the SWA are currently below their general expectations (pers. comm., Ferry, 2000). Deer numbers have increased, but seasonal use patterns remain similar to when the 1992 RMP was developed (pers. comm., Ferry, 2001). Development of the surrounding area has reduced forage and shelter for resident and migratory deer using the RMP study area (pers. comm., Ferry 2001). Livestock grazing has reduced the value of some mule deer winter habitat on lands outside the SWA (pers. comm., Rasmussen, 2002).

Elk (*Cervus elaphus*) are not a formal ODFW managed species at Prineville Reservoir, but their winter use of the RMP study area has been increasing (pers. comm., Ferry, 2000). It is

Figure 2.1-4

Wildlife and Plant Critical Habitat Features

Back of Figure

estimated that 100 to 300 elk use the SWA and adjacent lands, a steady increase since 1990 (pers. comm., Ferry, 2001). ODFW estimates that 6,500 elk use the Ochoco and Maury WMUs outside of the SWA. Prineville SWA herd numbers vary, with regular movement along and between the north and south sides of the reservoir (pers. comm., Ferry, 2001). Cross-reservoir movement does occur, primarily during late fall and winter when the reservoir waters are low (pers. comm., Ferry, 2001). Use of lands around the reservoir decreases during the spring and summer months, especially on the north side of the reservoir. Winter habitat use by elk is of primary concern because this is when they concentrate for foraging (Csuti et al. 1997). In addition, there is concern over habitat loss from development and recreation use in the area (pers. comm., Ferry, 2001). In cooperation with the BLM and in reaction to increased use of the SWA by elk, ODFW is in the process of designating the eastern portion of the SWA on both sides of the reservoir as an elk travel corridor and winter range.

Pronghorn antelope (*Antilocapra americana*) have been observed within the RMP study area by ODFW staff (pers. comm., Ferry, 2000). This species uses open to woodland habitats and tends to range within 5 miles of water (Csuti et al. 1997; Ingles 1965). Pronghorn forage includes sagebrush and a variety of grasses (Ingles 1965).

Cougar (*Felis concolor*) have been observed within the area by ODFW staff and others. Cougar reports in the area have increased over the last decade. Over the past 3 years, ODFW has had an increasing number of sighting reports by landowners along the south side of the reservoir, as well as along the north shore between the dam and the State Park Campground (pers. comm., Ferry, 2001). ODFW estimates that between two and eight cougars reside in the RMP study area, depending on season and reproductive status (pers. comm., Ferry, 2001). The cougar population likely fluctuates with deer and elk

populations, with the largest number using the area in the winter when prey populations peak.

Nongame furbearers observed at Prineville Reservoir include bobcat (*Lynx rufus*), beaver (*Castor canadensis*), mink (*Mustela vison*), and coyote (*Canis latrans*) (Reclamation 1992; pers. comm., Ferry, 2001). These species are more commonly observed in the SWA in recent years than in the 1960s (Reclamation 1992). Additional nongame mammals observed in the RMP study area include badger (*Taxidea taxus*), muskrat (*Ondatra zibethica*), raccoon (*Procyon lotor*), porcupine (*Erethizon dorsatum*), striped and spotted skunk (*Mephitis mephitis* and *Spilogale gracilis*, respectively), weasel (*Mustela* sp.), and river otter (*Lutra canadensis*) (Reclamation 1992; pers. comm., Ferry, 2001). Pygmy rabbit (*Sylvilagus idahoensis*) and Canada lynx (*Lynx canadensis*) are, due to their Federal sensitive status rankings, described under threatened and endangered species.

2.1.8.3 Rare and Sensitive Species

There are a number of sensitive and rare species that potentially occur in the study area (see Table 2.1-7). Rare and sensitive species include those listed as Federal Species of Concern that also have Oregon State status or that have an Oregon Natural Heritage Program (ONHP) rank of 3 or 4. Species with Federal Status (i.e., Threatened, Endangered, or Sensitive), are discussed separately in Section 2.1.8.4.

Birds

Mountain bluebird is a species of open forests and woodlands. They are found in coniferous juniper woodlands, as well as along meadow edges, clearcuts, and recently burned areas in higher elevations (Csuti et al. 1997). This cavity-nesting species eats mostly insects and covers territories between 5 to 15 acres around nest sites (Csuti et al. 1997). Though there is a mix of estimates for this species across different regions and habitats, they are thought to be increasing in Oregon

Table 2.1-7: Rare and sensitive species occurring or potentially occurring in the Prineville Reservoir vicinity.

Species	FWS ¹	ODFW ²	ONHP ³
Birds (10)			
Mountain bluebird (<i>Sialia mexicana</i>)	--	SV	4
Mountain quail (<i>Oreotyx pictus</i>)	SoC	SU	4
Greater sandhill crane (<i>Grus canadensis tabida</i>)		SV	4
Western burrowing owl (<i>Athene cunicularia hypugea</i>)	SoC	SC	3
Ferruginous hawk (<i>Buteo regalis</i>)	SoC	SC	3
Swainson's hawk (<i>Buteo swainsoni</i>)	--	SV	4
Willow flycatcher (<i>Empidonax traillii adastus</i>)	SoC	SV	4
Long-billed curlew (<i>Numenius americanus</i>)	SoC	SV	4
Lewis's woodpecker (<i>Melanerpes lewis</i>)	SoC	SC	3
Loggerhead shrike (<i>Lanius boreas</i>)	--	SV	4
Amphibians and Reptiles (2)			
Western toad (<i>Bufo boreas</i>)	--	SV	3
Northern sagebrush lizard (<i>Sceloporus glaciosis glaciosus</i>)	SoC	--	4
Mammals (6)			
Townsend's big-eared bat (<i>Corynorhinus townsendii</i>)	SoC	--	3
Small-footed myotis (<i>Myotis ciliolabrum</i>)	SoC	--	3
Long-eared myotis (<i>Myotis evotis</i>)	SoC	SU	4
Yuma Myotis (<i>Myotis yumanensis</i>)	SoC	--	4
Pallid Bat (<i>Antrozous pallidus pallidus</i>)	--	SV	3
Silver-haired Bat (<i>Lasionycteris noctivagans</i>)	SoC	SU	4

Source: FWS 2000a; ODFW 2000; ONHP 2001.

Footnotes:

¹ FWS Classification: SoC= Federal species of concern.

² ODFW Status: E= endangered; T= threatened; SC= Sensitive Critical- species for which listing as threatened or endangered is not imminent and can be avoided through protective measures; SP/R= Sensitive Peripheral/Rare- species that are on the edge of their range or that are naturally rare; SU= Sensitive Undetermined- species for which status is unclear; SV= Sensitive Vulnerable- species not believed to be threatened or endangered and listing as such can be avoided by continued or expanded protective measures.

³ ONHP Status: 1= taxa that are threatened with extinction or presumed to be extinct throughout their entire range; 2= taxa that are threatened with extirpation or presumed to be extirpated in the state of Oregon; 3= List 3- taxa for which more information is needed before status can be determined, but which may be threatened or endangered in Oregon or throughout their range; 4= List 4- taxa which are of conservation concern but are not currently threatened or endangered.

(Sauer et al. 2001). This species has been observed in the Bear Creek drainage and in the SWA (pers. comm., Jennifer Seavey, Wildlife Biologist, EDAW Inc. October 17, 2000).

Mountain quail are generally found in open woodlands at high elevations (Csuti et al. 1997). This species has shown a decline in Oregon, especially in the eastern mountains (Csuti et al. 1997). Mountain quail are known to be present in the RMP study area, though the population status of this rare species at Prineville Reservoir is not well known (pers. comm., Ferry, 2001). This species has been sighted along Sanford Creek on the south side of Prineville Reservoir (pers. comm., Ferry, 2001); Owl Creek has been identified as potential habitat for this species

(pers. comm., Ferry, 2001). It is possible that the elevation range of mountain quail extends low enough to utilize the shoreline of the reservoir (pers. comm., Ferry, 2001). ODFW estimates that mountain quail are likely found in low number on both sides of the reservoir (pers. comm., Ferry, 2001).

Sandhill cranes are thought to have declined by over 3 percent from 1966 to 1999 in Oregon (Sauer et al. 2001). This species breeds in wet meadows and drier grasslands throughout central and southeastern Oregon (Csuti et al. 1997; Gough et al. 1998). However, the species does not breed in agricultural lands in Oregon (FWS 2000b). Nesting territories in Oregon range from 3 to 168 acres (Csuti et al. 1997). Although

adequate habitat may exist, this species is not known to breed in the Prineville area.

The range for the western burrowing owl (*Athene cunicularia hypugea*) encompasses the RMP study area (Csuti et al. 1997). Burrowing owls are dependent on burrowing mammals, such as ground squirrels, for their nest sites. Many populations of these burrowing mammals are known to be declining (Partners in Flight, in press). Habitat preferences include areas of open grasslands and shrub-steppe habitat (Dechant et al. 1999a). Studies in north-central Oregon show that, while this species utilizes observation perches in habitats where vegetation is over 5 cm tall, it did not use habitats dominated by rabbitbrush or bunchgrass (Green and Anthony 1989 as cited in Dechant et al. 1999a). This species has been documented on the Crooked River National Grasslands, northwest of the town of Prineville (Marshall et al. 1996). There are no ONHP records for this species within the RMP study area.

Ferruginous hawks (*Buteo regalis*) potentially occur within the RMP study area, as their range overlaps with Prineville Reservoir (Csuti et al. 1997). However, there are no ONHP records for this species in the area. This species is known to be sensitive to prey abundance declines and nest site disturbances (Dechant et al. 1999b). The shrub-steppe and open juniper woodlands surrounding the reservoir offer suitable habitat for this species (Csuti et al. 1997). Generally, quality habitat consists of minimally grazed prairie or sagebrush shrublands with nesting shrubs and trees at least 1 meter high (Gilmer and Stewart 1983; Partners in Flight in press). Sagebrush has been highlighted by the Partners in Flight Landbird Conservation Plan as target habitat for the ferruginous hawk (Partners in Flight, in press).

According to the ONHP database, Swainson's hawks (*Buteo swainsoni*) may utilize the RMP study area. The occurrence of this species in the

area has been confirmed by ODFW (pers. comm., Ferry, 2001). This species is closely associated with riparian systems in arid regions (Schlorff and Bloom 1984). Habitat management for this species includes providing open grasslands with tree patches for nesting and perching that are near cultivated areas (Dechant et al. 2001a). Prey species include insects and small mammals (Dechant et al. 2001a).

Long-billed curlew may potentially occur in the RMP study area, but Prineville Reservoir is on the edge of the range of this species (Dechant et al. 2001b). They breed in open grasslands and meadows, often with interspersed shrubs (Csuti et al. 1997). This species forages on insects and vegetation in grasslands and agricultural areas (Csuti et al. 1997).

Willow flycatchers are fairly abundant in willows at the edge of wetlands and riparian areas (Csuti et al. 1997). Habitat requirements of this species in eastern Oregon are dense shrubby riparian areas interspersed with open areas (Partners in Flight, in press). This habitat exists at the upper end of the SWA, where Pacific willow dominates the riparian area (W&H Pacific 2000).

Lewis's woodpeckers are commonly found in oak and ponderosa pine woodlands (Csuti et al. 1997; Galen 1989). The RMP study area does not contain oak or pine woodlands, and published distribution maps show that this species does not occur in the Prineville area (W&H Pacific 2000; Csuti et al. 1997). However, this species is thought to breed in scattered locations in central Oregon (Marshall et al. 1996) and is occasionally observed around Prineville Reservoir (pers. comm., Ferry 2001). Therefore, it is uncertain if this species is breeding in the area or just foraging. This woodpecker species is very erratic and moves as forage opportunities change (Paige 1999a). Prey species consist of flying insects, fruits, and seeds (Paige 1999a).

Loggerhead shrikes are found throughout the lateral sagebrush community, as large sagebrush is among its preferred nesting habitat (Poole 1992); it also nests in juniper habitat (Bartgis 1992). Both these habitats are available in the Prineville Reservoir area (W&H Pacific 2000). This shrike is present year round in the RMP study area (pers. comm., Ferry 2001). Loggerhead shrike prey species can include insects, reptiles, amphibians, and small birds (Dechant et al. 1998).

Amphibians and Reptiles

The western toad is a State-listed vulnerable species and a conservation concern species listed with the ONHP. The habitat requirements are broad for this species and include deserts, chaparral, grasslands, and woodlands (Csuti et al. 1997). This species has been disappearing in many areas for reasons not yet determined (Csuti et al. 1997). This species was observed in 1995 along Sanford Creek, a tributary to Prineville Reservoir (ONHP 2001). This was a breeding observation with one adult and one egg mass observed (ONHP 2001).

One reptile species of concern, the northern sagebrush lizard (*Sceloporus graciosus graciosus*), potentially occurs in the Prineville Reservoir area. This lizard is common in sagebrush habitat and juniper woodlands, such as those that surround the reservoir (Csuti et al. 1997). Therefore, although the presence of this species at Prineville Reservoir is currently unknown, they probably occur due to the presence of available habitat. This species is sensitive to the presence of western fence lizards and are not found where fence lizards have established populations (Storm and Leonard 1995). Sagebrush lizards are very wary, thus difficult to observe, so it is possible that this species occurs in areas around Prineville Reservoir where fence lizards are absent.

Mammals

The Townsend's big-eared bat, small-footed myotis, long-eared myotis, yuma myotis, pallid bat, and silver-haired bat are all species of concern that may be found in the RMP study area. Based on published distribution accounts, the long-eared myotis, small-footed myotis, and pallid bat are the three most likely bats to occur near Prineville Reservoir (Csuti et al. 1997). All of the above listed bats were observed near the Pelton Round Butte Hydroelectric Project northwest of Prineville (Perkins 1998). In addition, there are bat populations at Chimney Rock along the Crooked River below Prineville Reservoir (pers. comm., Soules, 2000). Based on the regional observances of these species, it is likely that they occur around Prineville Reservoir.

2.1.8.4 Threatened, Endangered, and Sensitive (TES) Species

There are several species of flora and fauna with Federal status designations occurring or potentially occurring within the region surrounding Prineville Reservoir (Table 2.1-8; Figure 2.1-4). Special status species included in this review are Federally endangered, threatened, candidate species, and those species with an ONHP ranking of 1 or 2. Species presence data from State and Federal sources, such as FWS, Reclamation, ODFW, ONHP, and OPRD, have been reviewed. In total, 12 TES species (eight wildlife, one fish, and three plant species) are known or likely to occur within the Prineville Reservoir area. Federal protection is afforded to those species listed or proposed as threatened or endangered by FWS under the Endangered Species Act (ESA) of 1973 (16 U.S.C. 1531-1544, 87 Stat. 884). ESA-related correspondence is included in Appendix A.

Wildlife

Of the eight wildlife species, two are Federally listed as Threatened or Endangered (the bald eagle [*Haliaeetus leucocephalus*] and Canada

Table 2.1-8: Threatened, endangered, and sensitive species that are known to or potentially occur in the Prineville Reservoir vicinity.

Species	FWS ¹	ODFW ²	ONHP ³
Amphibians (1)			
Oregon spotted frog (<i>Rana luteiventris</i>) ⁴	C	SC	3
Birds (4)			
Bald eagle (<i>Haliaeetus leucocephalus</i>)	T	T	1
Tricolored blackbird (<i>Agelaius tricolor</i>)	SoC	SP/R	2
Greater sage grouse (<i>Centrocercus urophasianus</i>)	SoC	--	2
Peregrine falcon (<i>Falco peregrinus anatum</i>)	--	E	1
Mammals (3)			
Canada lynx (<i>Felis lynx Canadensis</i>)	T	--	2
Pygmy rabbit (<i>Brachylagus idahoensis</i>)	SoC	SV	2
Spotted bat (<i>Euderma maculatum</i>)	SoC	--	2
Fish (1)			
Interior redband trout (<i>Oncorhynchus mykiss</i>)	SoC	SV	2
Plants (3)			
Estes' artemisia (<i>Artemisia ludoviciana</i> ssp. <i>estesii</i>)	SoC	--	1
Peck's Long-bearded mariposa-lily (<i>Calochortus longebarbatus</i> var. <i>peckii</i>)	SoC	--	1
Columbia Cress (<i>Rorippa columbiae</i>)	SoC	--	1

Source: FWS 2000a; ODFW 2000; ONHP 2001.

Footnotes:

- ¹ FWS Classification: E= Listed as Endangered; T= Listed as Threatened; P= Proposed for Federal listing; C= Candidate for Federal listing; SoC= Federal species of concern.
- ² ODFW Status: E= endangered; T= threatened; SC= Sensitive Critical- species for which listing as threatened or endangered is not imminent and can be avoided through protective measures; SP/R= Sensitive Peripheral/Rare- species that are on the edge of their range or that are naturally rare; SU= Sensitive Undetermined- species for which status is unclear; SV= State vulnerable- species for which listing as threatened or endangered is not believed to be imminent and can be avoided through continued or expanded use of adequate protection measures and monitoring.
- ³ ONHP Status: 1= List 1- taxa threatened with extinction or presumed extinct throughout their range; 3= species for which information is needed before status can be determined but which may be threatened or endangered in Oregon or throughout their range; 4= List 2- taxa threatened with extirpation or presumed extinct from the state of Oregon.
- ⁴ FWS lists the Oregon spotted frog as potentially occurring within Prineville Reservoir. The Oregon spotted frog, a Federal candidate species, was split into two species in 1996: the Oregon spotted frog (*R. pretiosa*) and the Columbia spotted frog (*R. luteiventris*) (Green et al. 1996). It is the Oregon spotted frog that could potentially occur near Prineville Reservoir (Csuti et al. 1997).

lynx); one species is a Federal Candidate species (Oregon spotted frog [*Rana luteiventris*]); one is State endangered; and the remaining species are Species of Concern (Table 2.1-8). Federal status, ONHP rank, and Oregon State status are presented in Table 2.1-8. ONHP ranks of 1 or 2 indicate that a species is threatened with extinction either throughout its entire range (rank 1) or within the state of Oregon only (rank 2). Candidate and Species of Concern with 1 and 2 ONHP rankings are included in this section due to the possibility of Federal listing of these species in the near future. Information on these species is presented below.

The lynx, a Federally Threatened species, is not likely to reside in the area due to a lack of appropriate boreal forest habitat. However, it may utilize the RMP study area as corridor habitat for travel between more appropriate habitats (pers. comm., Ferry, 2000). Habitat for this species in the Pacific Northwest is generally restricted to higher elevations of the Cascade Range (Koehler and Aubry 1994). Lynx require a mixture of forest types: early successional forest for foraging and late successional forest for dwelling. The FWS has concluded that a self-sustaining resident population does not exist in Oregon but that individual animals are present (63

Federal Register [FR] 36994-37013, July 8, 1998). Though recently rediscovered in the Northern Cascades of Oregon, the lynx is naturally a rare species in Oregon as this region is the southern extent of its distribution (Csuti et al. 1997; Roach 1999).

The ONHP database includes one observation of the Oregon spotted frog (1977) in Bear Creek, which is located at the southern tip of Prineville Reservoir (ONHP 2001). It is possible that this species does occur on other portions of Reclamation land at Prineville Reservoir, however. This species requires cool, permanent, quiet water, such as a spring, pond, lake, or slow stream with abundant associated vegetation and a bottom layer of decaying vegetation (Corkran and Thoms 1996; Leonard et al. 1993; Csuti et al. 1997). Spotted frogs do not occupy ponds with bullfrogs (*Rana catesbeiana*) or predatory fish, such as bass (*Micropterus* spp.) (Corkran and Thoms 1996). The presence of bass in Prineville Reservoir, especially near the mouths of tributaries (Reclamation 1992), would preclude the occurrence of spotted frogs in the reservoir itself; however, the frogs could exist farther up tributary creeks.

The bald eagle, a Federally threatened species, is the most easily observable TES wildlife species near Prineville Reservoir. The RMP study area supports resident, migrant, and wintering bald eagles. The bald eagle has met recovery goals in many areas and is currently proposed for delisting (64 Federal Register 36453-36464, July 6, 1999). ODFW conducts a mid-winter count of bald eagles at Prineville Reservoir, and OSU and OPRD staff cooperate to monitor an eagle nest on BLM property above Prineville Reservoir (discussed below) (pers. comm., Isaacs, 2002).

The bald eagle utilizes a variety of habitats over its life history stages, from fresh and saltwater shorelines to mature coniferous forest. Breeding habitat is predominately composed of mature coniferous forest, with an uneven vertical

structure and old-growth characteristics (Rodrick and Milner 1996). These breeding areas are located near large bodies of water, used for foraging, and have low human disturbance levels (Rodrick and Milner 1996). Like many raptor species, bald eagles utilize the same nest site over many years (Ehrlich et al. 1988). A pair of resident eagles has been documented to maintain a nesting territory to the south-southwest of Juniper Point, on BLM property adjacent to Reclamation-owned lands (ONHP 2001). This nest site is known to be a successful breeding site (ONHP 2001). The presence of this one breeding territory at Prineville Reservoir fulfills the Pacific states' recovery goal of one territory for this area.

Annual territory monitoring is identified as the current management need to ensure the persistence and success of this nest site (FWS 1986). A second bald eagle nest was located in 2002 on BLM property adjacent to the SWA. ODFW, BLM, and Reclamation are coordinating efforts to determine the status of the nest (i.e., is it an active nest?) and will develop a specific management plan as needed.

Winter roost sites represent another component of eagle habitat needs. During winter months, eagles concentrate in areas of high prey availability and low disturbance (Keister and Anthony 1983; Rodrick and Milner 1996). Winter nighttime roosts are composed of mature stands of trees, close to foraging sites (Keister and Anthony 1983). In the Prineville area, research has shown a strong preference for conifers that are isolated from human activities (Isaacs et al. 1993). Daytime roost sites are located along foraging areas in emergent trees and snags (Rodrick and Milner 1996). A large wintering population of bald eagles is located at the eastern edge of Prineville Reservoir (Isaacs et al. 1993). This wintering group, which extends from the eastern edge of Prineville Reservoir up the Crooked River to the Rager Ranger Station (a total of approximately 95 miles), has been estimated to be as large as 115 birds, a record

number of eagles utilizing eastern Oregon habitats (Isaacs et al. 1993).

Nesting and wintering eagle populations forage on a variety of prey items. Regional research has shown that eagles in eastern Oregon rely on mammals, birds, reptiles, and especially on fish species for forage (McShane et al. 1998). Local research has shown that the main prey items for the Crooked River wintering population are large mammal (deer and livestock) carcasses and ground squirrels (*Spermophilus* spp.) (Isaacs et al. 1993).

Twelve species designated as species of concern or candidate species by FWS or species with an ONHP rank of 1 or 2 may occur in the RMP study area. Three species also have Oregon State status. Brief descriptions of potential habitat and occurrence of species of concern are presented below by taxonomic group.

The tricolored blackbird, a migrant in central and northern Oregon, has a patchy and unpredictable distribution in the state (Csuti et al. 1997). This species uses wetland areas for breeding and foraging (Csuti et al. 1997). It is a highly colonial species, and populations can grow into the thousands in some locations. The RMP study area is located at the northern extent of the range for this species, though breeding groups have been observed as far north as Portland, Oregon (USGS 2000; Csuti et al. 1997). Habitat for this species may exist at the northern end of the reservoir in the tall grassy/sedge areas in the wetland and riparian habitats (W&H Pacific 2000).

Sage grouse (*Centrocercus urophasianus*) utilize sagebrush habitat, where big sagebrush covers 15 to 50% of the ground (Csuti et al. 1997). In addition to these densely vegetated areas, open habitat is used for leking behavior, which occurs in the early spring when male birds concentrate for breeding displays (Csuti et al. 1997). This habitat type is available around the reservoir

(W&H Pacific 2000). This grouse species is known to occur in the upper Bear Creek basin, within 3 miles of the southern extent of the reservoir (pers. comm., Ferry, 2001). Local ODFW biologists believe that there are no lek sites in the RMP study area due to the high density of juniper woodlands (pers. comm., Ferry, 2000). Habitat loss and modification are blamed for the decline of sage grouse (Paige 1999b).

The peregrine falcon (*Falco peregrinus anatum*) was removed from the Federal list of endangered species in August 1999 (as published in the Federal Register, 64 FR 46541-46558) but remains listed as endangered in Oregon State. This is one of the world's most wide-ranging bird species, and thus would be expected to overlap with the RMP study area. Habitat limitations are most likely suitable nesting sites, which are commonly cliff sites within areas of open and abundant hunting opportunities (Csuti et al. 1997). Prey species are primarily small birds captured on the wing. Illegal collection of eggs and young for falconry trade is one of their greatest threats (Csuti et al. 1997). Peregrine falcons likely travel through the area but are not known to breed near Prineville Reservoir.

The pygmy rabbit is a mammalian Federal species of concern with an ONHP rank of 2 that potentially occurs at the RMP study site. There are no occurrence data for this species in the RMP study area, but the range and habitat requirements for the pygmy rabbit do overlap with the RMP study area (Csuti et al. 1997). Pygmy rabbits potentially exist in the area but have yet to be documented. Habitat for this species is generally dense areas of sagebrush in areas of deep, loose soils that are easily moved for burrows (Johnson and Cassidy 1997). Sagebrush is also a main staple of the diet of this species (Johnson and Cassidy 1997). The spotted bat (*Euderma maculatum*) is listed as a species of concern and has an ONHP ranking of 2 and is likely found in the vicinity of Prineville Reservoir.

Fish

Native redband trout occur in many headwater tributaries of the Crooked River, primarily on USFS land. Many of these headwater streams are intermittent or ephemeral and provide extremely limited or seasonal habitat for redband trout. Downstream, on private lands and in the mainstem Crooked River, flows decline significantly due to irrigation withdrawal and water temperature increases. Populations of redband trout are depressed compared to historical abundance because the Crooked River and its tributaries have poor riparian and instream conditions. Native redband trout are found in headwater tributaries of Bear Creek and were reported below the confluence of Little Bear Creek in 1978, and in Sanford Creek in 1977 at RM 8.0 (ODFW 1996). The Chimney Rock section of the Crooked River below Bowman Dam also provides habitat for redband trout. Prineville Reservoir does not provide habitat for native redband trout (ODFW 1996).

Plants

Based on information provided by the FWS and ONHP as well as surveys conducted by OPRD, three plant species considered Species of Concern with an ONHP rank potentially occur within the RMP study area. Estes' artemisia (*Artemisia ludoviciana* ssp. *estesii*) is typically found in sandy, gravelly, and moist riparian areas in central and south-central Oregon (W&H Pacific 2000; Massey undated). This plant requires open to partially shaded areas and is believed to do poorly in areas of dense shading or steep slopes (W&H Pacific 2000). This species was collected in 1949 along Bear Creek, which feeds into the reservoir on the southwestern shore (ONHP 2001). Four additional populations of this plant have been documented in the reservoir area (W&H Pacific 2000). These populations were noted at Jasper Point boat ramp, Big Bend recreation site, Juniper Bass campsite, and on a gravel bar along the Crooked River, upstream of



Photo 2-5. Prineville Reservoir and surrounding landscape.

the reservoir. All four populations are located near the normal full pool shoreline.

Peck's long-bearded mariposa-lily (*Calochortus longebarbatus* var. *peckii*) is a species of seasonally wet meadows in regions of ponderosa pine forests (Massey undated). Soil types of preferred areas include cobble to stony clay loam soils, which are high in organic matter (Massey undated). This species is often associated with *Artemisia* species (W&H Pacific 2000). This species has not been documented in the RMP study area, but associated habitat may occur in the RMP study area (W&H Pacific 2000).

Columbia cress (*Rorippa columbiae*) is typically found in the wet soils of vernal pools, stream and lake margins, irrigation ditches, meadows, and in intermittent riparian areas (W&H Pacific 2000; Massey undated). This species has not been documented in the RMP study area, but associated habitat may occur in the drawdown zones of the reservoir (W&H Pacific 2000). This species is thought to have evolved with systems that experienced occasional flooding and scouring (TNC 1999).

2.2 Visual Resources

This section addresses visual resources within the RMP study area and in the general vicinity of Prineville Reservoir.

2.2.1 Summary of Visual Resource Conditions

The study area is located in the high rimrock dessert of central Oregon, a region dominated by open grasslands, juniper stands, basalt outcrops, and brown and reddish soils. The landscape surrounding the reservoir is dominated by steeply sloping hills with occasional peaks and buttes in the distance (Photo 2-5). Prineville Reservoir itself is a long, meandering water body formed by an earthen dam at its west end approximately 245 feet high on the Crooked River. The reservoir is approximately 14.6 miles long and between approximately 50 and 4,700 feet wide. In addition to their primary purpose of providing irrigation water, Bowman Dam and Prineville Reservoir are designed for flood control; thus, the surface of reservoir fluctuates seasonally as much as 97 vertical feet. At the higher operational range, the reservoir has 43 miles of shoreline that reduces to 6.4 miles at low pool.

The downstream portion of the reservoir lies within the Crooked River Canyon and is bounded on either shore by steeply sloping canyon walls (Photo 2-6). Near the dam, the canyon walls tower 800 feet above the reservoir at full pool, resulting in dramatic scenery. An 8-mile reach of the lower Crooked River between Bowman Dam and mile marker 12 of State Highway 27 (Chimney Rock segment) was designated by Congress in October 1988 as a National Wild and Scenic River and was classified as a recreational river area. Outstandingly remarkable values included scenic, recreation, and fishery values. This 8-mile reach was also designated as a component of the National Back Country Byway System in 1989 (BLM 1992). The Lower Crooked River Backcountry Byway covers 43 miles of paved and gravel roads from the City of Prineville south to the convergence with State Highway 20.

BLM administers most of the land adjacent to the Chimney Rock section and completed a



Photo 2-6. Crooked River below Bowman Dam.



Photo 2-7. Prineville Reservoir takes on a riverine character at its upper end.

Management Plan and Environmental Assessment for the Wild and Scenic portion of the river in 1992 (BLM 1992). BLM also designated this reach as an Area of Critical Environmental Concern (BLM 1988), and it is a State Scenic Highway.

At the upstream end, the reservoir itself is more riverine in character, flowing through the center of a wide, gently sloping valley (Photo 2-7). Notable natural visual features include vertical basalt outcroppings, a rocky island, and several side canyons.

The study area north of the reservoir is within the John Day formation, while combinations of the John Day and Clarno formations are south of the reservoir. These formations consist of gently



Photo 2-8. Rugged tooth-like basalt ridgeline as seen from Antelope Creek Area.



Photo 2-9. A view of the State Park shoreline near the Antelope Creek area.

warped beds of fine-grained volcanic tuff and dense lava flows (Reclamation 1992). These features manifest as sloping bands of striated outcrops and escarpments of vertically fractured, columnar basalt. The most visually dramatic rock formations line the steep walls of the Crooked River canyon near the Big Bend Campground. Another visually prominent feature is a ridge of tooth-like outcrops (Photo 2-8) protruding from a ridge visible on both sides of the reservoir from Antelope Creek.

The shores of Prineville Reservoir are vegetated with a variety of plant types typical of central Oregon. These include woodlands, savanna, and shrub-steppe areas. Dominant plant species include western juniper and big sagebrush,

interspersed with an understory of bluebunch wheatgrass, cheatgrass, and needlegrass-bottlebrush squirreltail. Plant cover is relatively uniform, except where disturbed by juniper management activities, rock outcroppings, talus slopes, roads, and recreational infrastructure. With the exception of old rectangular clearcuts on adjacent BLM land resulting from juniper management, the vegetation appears fairly natural.

Due to the lack of road access, viewing opportunities of Prineville Reservoir from public roads are limited. The only segment of State Highway with a view of the water is a short section of SR 27 between Bowman Dam and Powder House Cove. Portions along Juniper Canyon Road provide panoramic views of the reservoir between Antelope Creek and the Prineville Reservoir Resort (Photo 2-9), but the North Side Primitive Road is out of view of the water between Jasper Point and Cattle Guard; however, there are dramatic views of ridgetop rock formations to the north from this road. Other than the road to Roberts Bay and the recreation sites it accesses, there are no public views of the reservoir from the south shore. Views of the water from private property on the north side of the reservoir are generally limited to Bottero Park, Jasper Knolls, and Lakeview Cove Estates. On the south side of the reservoir, a few private residences have good views of the reservoir. Generally, the best viewing opportunities are from the surface of the reservoir itself.

The vast majority of the area surrounding the reservoir has a natural character that appears unaltered by human activity. In general, the only development visible from the reservoir includes the access points, recreation facilities, Bowman Dam, and a few private homes. With the exception of Prineville State Park and the Prineville Reservoir Resort, the recreation sites have a relatively undeveloped appearance characterized by gravel or unimproved road and

parking surfaces, portable toilets, and other minimal facilities. During the summer, these are most visually discernable from their surroundings due to the large numbers of recreation vehicles (RVs) parked between the juniper trees. By contrast, both the Prineville State Park and Prineville Reservoir Resort have large areas of irrigated and mowed lawn, paved roads and parking, and permanent buildings. In addition, the Resort also operates a small marina and store that are particularly visible from the reservoir due to the Resort's prominent location at the tip of Jasper Peninsula. The only notable concentrations of private development easily visible from the reservoir are Bottero Park and Jasper Knolls, both near the middle of the reservoir. Bottero Park is a small cluster of cottages and trailer pads on a small rise north of the Prineville Reservoir Resort. Due to the topography of the site, this subdivision is visible from most recreation sites on both shores of the reservoir (Photo 2-10). The dominant small scale of these homes is visually consistent with the nearby resort and appropriate to its rural, park-like surroundings. Jasper Knolls is sited on the plateau overlooking the reservoir, but it is so far from the reservoir that it does not intrude visually to a noticeable degree (Photo 2-11).



Photo 2-10. Bottero Park subdivision as seen from Roberts Bay.



Photo 2-11. Jasper Knolls subdivision as seen from Roberts Bay.

When the reservoir is drawn down during the late summer through spring, the high water mark on the shoreline surrounding the reservoir is clearly evident. This zone of former inundation varies in height from the water's surface, up to a maximum of 3,235 feet above sea level, according to the degree of drawdown. At low pool (3,114 feet above sea level), the former reservoir bottom is exposed, revealing mudflats in shallow areas, such as in the SWA (Photo 2-12) and Roberts Bay (Photo 2-13), and steep cobble benches in the lower reservoir such as Powder House Cove (Photo 2-14). In some locations, tree stumps become exposed at low pool.



Photo 2-12. Mudflats are revealed at the upper end of the reservoir during low water periods.



Photo 2-13. Old tree stumps are revealed at Roberts Bay during low water periods.



Photo 2-14. Boat ramp as seen during a low water period.

2.2.2 Changes in the Visual Environment Since the 1992 RMP

Because limited information is available on the visual resources at Prineville Reservoir at the time of the 1992 RMP, it is difficult to accurately assess subsequent changes. Changes to visual resources resulting from management practices and physical developments built since 1992 include the following.

2.2.2.1 Juniper Management

Many of the large, visually prominent juniper clearcuts in the vicinity of the Prineville Reservoir pre-date the 1992 RMP. This is because the BLM’s juniper management practices changed in response to the BLM’s 1989 Brothers/La Pine Resources Management Plan

that elevated concerns over visual impacts to a required consideration by range managers. Specifically, Prineville Reservoir was included in the plan as an “area having high or sensitive visual quality.” Several recreation sites and the reservoir’s surface were classified as “key observation points” (KOPs) for monitoring of future changes to visual resources. BLM has implemented a number of practices to accomplish this objective, such as leaving more larger-diameter trees, making irregular cut boundaries, and leaving strips and patches of remaining forest. The overall intended result is a more naturalistic vegetation cover pattern and less viewer objection (pers. comm., Swanson, 2002).

2.2.2.2 Jasper Point

Jasper Point was used as a dispersed recreation site prior to the 1992 RMP. At the time of the 1992 RMP, rutting, gullying, and vehicular tracks were prominent landscape features. In response to heavy recreation demand combined with ongoing resource management problems, this site was subsequently developed as a medium density “fee-use” campground for a limited number of RVs and tents (Reclamation 1992). As a result of this action, the Jasper Point site has a far more orderly appearance, with the regrowth of some ground vegetation, clearly defined campsites, and new boat ramp, restroom, and other recreation facilities. The gullies, ruts, and vehicular tracks are no longer visually prominent.

2.2.2.3 ORV Trails

The 1992 RMP described notable scenic problems resulting from unauthorized ORV use: “heavy dispersed recreation and off-road vehicle trail use in undeveloped areas has resulted in visual scars that will be very difficult for nature to repair. Often the most scenic and accessible lands within the reservoir area are the most heavily disturbed. In many locations, the vegetation has been heavily damaged or destroyed and the soils loosened or compacted to the point that wind and water erosion is common. Some of the most

severe damage and abuse occur on the steepest slopes leading down to the reservoir. Off-road vehicle trails are a visible landscape feature due to the open nature of the juniper canopy and the preponderance of steeply sloped hillsides” (Reclamation 1992).

While unauthorized ORV use has continued at Prineville since the 1992 RMP, Reclamation and its partners (OPRD and ODFW) have had some success in reducing its extent and its impacts. As a result of more effective management and law enforcement practices, the most severe damage has moved from more accessible areas to less accessible areas, such as near the North Side Primitive Road and other dispersed recreation areas.

2.3 Noise

Noise can be defined as the intensity, duration, and character of sounds from any and all sources.

In general, the rural character of Prineville Reservoir and the surrounding area is reflected by low ambient noise levels. Noise sources present are primarily from motorized recreational activities on the reservoir, visitors at the various recreation areas, and vehicular noise on nearby roadways. The noise levels associated with these sources vary significantly depending on location, season, and time of day.

Sensitive noise receptors in proximity to the park include residential dwellings directly adjacent to the park boundary. Of all the noise sources within the RMP study area, motorized recreational activities on the reservoir during the summer months and vehicular traffic on the interior road are the most prevalent. Noise from personal watercraft (PWC) and motorized boats is reflected off the water and, depending on wind and weather conditions, can be heard at locations far from their source. At the present time, however, none of the noise sources within the RMP study area are known to be significantly disruptive to visitors or wildlife. The North Side

Primitive Road is closed during the winter in part to eliminate the disturbance to wildlife from recreation traffic.

2.4 Cultural Resources

Cultural resources include prehistoric sites, historic sites, and traditional cultural properties as discussed below.

2.4.1 Prehistoric and Historic Resources

To date, approximately 2,945 acres of land around Prineville Reservoir have been inventoried for archeological resources, and 126 archeological sites and one human burial have been recorded. The following discussions summarize cultural resource investigations and results through July 2002.

Archeological investigations first occurred in 1948, when the Smithsonian Institution’s River Basin Survey (RBS) completed a reconnaissance survey of the reservoir basin prior to construction of the dam (Osborne 1948). The RBS team recorded nine archeological sites (35-CR-1 through CR-9) and the burial (35-CR-10). They noted, but did not record, two rock slab enclosures. They excavated the burial, which was later sent to the Smithsonian Institution. From surface evidence, the RBS team determined that the archeological sites were not historically important, and no data recovery occurred. No further cultural resource investigations occurred at the reservoir until the 1990s.

In 1992, Reclamation completed the Prineville Reservoir RMP. The RMP incorporated commitments to initiate systematic archeological investigations at the reservoir. The commitments focused on archeological site identification and preparation of a Cultural Resource Management Plan (CRMP). Consultation with the State Historic Preservation Officer (SHPO) was to occur to determine National Register of Historic

Places eligibility, where this could be accomplished using survey information. Reclamation anticipated that the surveys would be completed in 1993 and the CRMP would be written in 1994. Surveys did begin in 1993. However, a far greater number of sites were found than anticipated. The greater level of effort necessary to document these sites caused all available funding to be expended to survey and record sites in only a portion of the study area. Work resumed in 1998, when funding again became available. Since 1992, investigations have focused on conducting archeological surveys and test excavations in the areas with the highest probability for cultural resources and the greatest potential for impact from reservoir operations or land use.

The principal investigations completed since 1992 are as follows. In 1993 and 1999, Reclamation's contractors completed intensive archeological surveys of lands on the north shore upstream of the County boat ramp, much of the south shore upstream of Juniper Point, and at the Big Bend recreational use area below the dam. The surveyors relocated four of the nine sites recorded by the RBS team, and recorded 116 new archeological sites. The 1993 surveys are reported in Morgan et al. (1999) and the 1999 surveys in Oetting (2000). In 1998 and 2002, the Powder House Cove area was surveyed, encompassing locations that might be recommended under this RMP update. The surveys are reported in Regan and Crisson (1998) and via pers. comm. (A. Oetting, 2002).

No sites were found at Big Bend recreational area. One site was recorded upstream of Powder House Cove (pers. comm., A. Oetting, 2002). Sites were recorded throughout all other surveyed areas, even in locations where somewhat rougher terrain might have been expected to discourage frequent human use. Sites are present in or near all designated recreation areas around the reservoir except Owl Creek. They are present along much of the shoreline areas in the SWA,

which are the focus of much of the dispersed boat-in or land-based camping and day use. Some are within the reservoir operational zone. The North Side Primitive Road passes through sites, as do other unauthorized roads and trails.

Of the 126 recorded archeological sites, nine are 20th century trash dumps; one is the foundation from a ranch/farmstead; one is a masonry structure that may have been the powder house used when constructing Bowman Dam; and two are rock overhangs with associated prehistoric archeological deposits. The remaining 113 sites are prehistoric archeological sites variously recorded as lithic scatters or artifact scatters. Diagnostic artifacts observed at the sites indicate they span the last 4,000 years. The prehistoric sites primarily consist of debitage from stone tool manufacture. Some sites also contain natural cobbles that exhibit wear from use as grinding implements. Two of those sites have boulders with ground surfaces indicating they were used as grinding platforms, and several have fragments of stones that appear to have been used as grinding platforms. Most formed tools found were projectile points or point fragments, scrapers, graters, or bifacial fragments.

As of 2002, most lands with a high or moderate probability for site occurrence have been surveyed. Most of the unsurveyed lands are extremely steep, rocky areas with low site potential. Additional survey is needed in some areas, particularly portions of the south shore below Juniper Point and up Bear Creek. The two rock enclosures noted by the RBS also need to be relocated.

In 1998, Reclamation began archeological test excavations at recorded sites in areas most subject to impacts. Test excavations were completed at 20 of the recorded sites in the vicinity of the Roberts Bay recreation use area (Oetting 1999). The test excavations indicate that three of those sites contain subsurface deposits that appear to make them eligible for the National Register

under criterion d. Sites eligible under criterion d have the potential to contribute new information that will expand our understanding of past lifeways. The remaining 17 sites tested at Roberts Bay appear to fail to meet National Register criteria.

In 2001, preliminary test probing was completed at 44 of the recorded archeological sites on the north shore (Oetting 2001). The 44 probed sites are near the County boat ramp, within the State Park, near Jasper Point Campground, along the North Side Primitive Road, and between the North Side Primitive Road and the shoreline. The latter area encompassed recorded archeological sites in or near the primitive-designated recreation areas in the SWA. The probing indicated that 29 of the 44 sites seem to lack any subsurface materials and are unlikely to meet minimum National Register criteria. Fifteen of the probed sites required additional test excavation to determine their historic significance. All of these 15 sites are in locations that are commonly used for dispersed camping or day use. Some are where recreational development is proposed or where primitive-designated use is authorized. In 2002, more extensive test excavations were completed at four of those 15 sites. Two of the tested sites are at proposed recreation use sites within the State Park, and the other two are in the vicinity of the Old Field and Cattle Guard primitive-designated recreation areas. The additional test excavations confirmed that these four sites contain subsurface deposits, and at least three of the four appear eligible to the Register (pers. comm., A. Oetting, 2002). Consultation with the Oregon SHPO and with interested Indian tribes is needed before the final determination can be made about the historic significance of any of the sites discussed above.

Further investigations have been completed at the nine trash dump sites to assess their historic significance. The contractor has recommended that none of the nine dump sites be considered eligible to the National Register (Minor and Oetting 2002). No test excavations have yet

occurred at the other archeological sites recorded at the reservoir to enable determination of their eligibility to the Register.

2.4.2 Traditional Cultural Properties

In 2001, Reclamation initiated tribal consultations to learn if traditional cultural properties (TCPs) or culturally important resources might be present at the reservoir. Prineville Reservoir is situated within the ceded lands of The Confederated Tribes of the Warm Springs Reservation of Oregon (Warm Springs Tribes). In January 2001, Reclamation management and staff met with staff from the Warm Springs Tribes' Natural Resources Department. They indicated that the Warm Springs Tribes' Cultural Committee would contact Reclamation if they felt it necessary to be involved in the RMP update. In July 2001, a member of the Cultural Committee contacted Reclamation and indicated that archeological sites, TCPs, and traditional subsistence plants were present near Prineville Reservoir, and they were concerned about their protection. In August 2001, Reclamation staff met at the reservoir with members of the Cultural Committee. The meeting focused on familiarizing Cultural Committee members with the RMP update process and goals, and with general discussions of land management issues and tribal concerns about resource management. The Cultural Committee indicated they would collect existing information about TCPs and provide it for Reclamation's use in preservation planning. They also requested that Reclamation complete an ethnographic study for the area. In March 2002, Reclamation contacted the Cultural Committee and learned they had talked with knowledgeable people in the tribe and identified several areas at the reservoir that have important plants and cultural sites. In April, it was agreed that the Cultural Committee would visit the reservoir to collect field data. At this time, Reclamation had not yet received further information about the location or characteristics of TCPs or culturally important resources.

Consultations with the Warm Springs Tribes about these resources will continue during the RMP implementation.

In 2001 Reclamation also notified the Burns Paiute Tribe and the Klamath Tribes of the RMP update and offered to meet to discuss cultural resource issues or concerns. No response was received from either of those tribes.

2.5 Indian Sacred Sites

Indian sacred sites are defined in Executive Order 13007 as “any specific, discrete, narrowly delineated location on Federal land that is identified by an Indian tribe, or Indian individual determined to be an appropriately authoritative representative of an Indian religion, as sacred by virtue of its established religious significance to, or ceremonial use by, an Indian religion; provided that the tribe or appropriately authoritative representative of an Indian religion has informed the agency of the existence of such a site.” Federal agencies are required, to the extent practicable, to accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners and seek to avoid adversely affecting the physical integrity of such sites.

No Indian sacred sites are known to exist within Reclamation’s jurisdiction at Prineville Reservoir. Reclamation has contacted the Warm Springs Tribes, the Burns Paiute Tribe, and the Klamath Tribes and notified them about the RMP update. Reclamation requested that the tribes inform Reclamation if Indian sacred sites are present. No response has been received from the Burns Paiute Tribe or the Klamath Tribes. The Warm Springs Tribes have indicated that culturally important resources are present but have not indicated that sacred sites are present.

2.6 Indian Trust Assets

Reclamation has an established policy (October 3, 1993) to protect Indian Trust Assets (ITAs) from adverse impacts of its program and activities and

to enable the Secretary of the Interior (Secretary) to fulfill responsibilities to Indian tribes. ITAs are legal interests in property held in trust by the United States for Indian tribes or individuals. The United States, with the Secretary as the trustee, holds many assets in trust for Indian tribes or Indian individuals. Examples of ITAs include lands, minerals, hunting and fishing rights, and water rights. While most ITAs are on-reservation, they may also be found off-reservation.

The United States has an Indian trust responsibility to protect and maintain rights reserved by or granted to Indian tribes or by Indian individuals by treaties, statutes, and executive orders. These are sometimes further interpreted through court decisions and regulations.

2.6.1 Confederated Tribes of the Warm Springs Reservation

The Confederated Tribes of the Warm Springs Reservation (Warm Springs Tribes) include the Wasco, Warm Springs, and Northern Paiute Tribes. The Warm Springs Reservation was created by the Treaty with the Tribes of Middle Oregon in June 25, 1855 (Treaty of 1855) and covers an area of 640,000 acres in the Deschutes River basin within Central Oregon. The Warm Springs Tribal territory originally comprised more than 10 million acres. This territory was ceded to the United States in return for retaining and preserving the Warm Spring Tribes rights to self-govern, fish, hunt, graze livestock, and gather foods within those lands. The Warm Springs Tribes reserved ITAs are hunting, fishing, and gathering rights on ceded lands.

Prineville Reservoir and the area of Reclamation’s proposed action is located within the Warm Springs Tribes ceded area. ITAs of potential concern to the Warm Springs Tribes include the rights to fish, hunt, graze livestock, and gather food. The resources that provide for

these rights to be exercised include fish, wildlife, and vegetation. The Warm Springs Tribes especially value the need to augment flows and restore historical fishing opportunities in the Deschutes River basin, particularly anadromous fish resources. Huckleberry (*Vaccinium membranaceum*) and other traditionally harvested vegetation and roots are also very important food resources for the Warm Springs Tribes.

A description of important Native American Indian Trust Assets in the Deschutes River Basin has been further documented by the Warm Springs Tribes in *Restoring Oregon's Deschutes River - Developing Partnerships and Economic Incentives to Improve Water Quality and Instream Flows* (Moore et al. 1995). The Warm Springs Tribes have identified that their paramount goal is to enhance Deschutes River tribal fisheries by increasing instream flows. The Warm Springs Tribes portfolio of trust assets and treaty rights – on- and off-reservation water resources – “all.....depend on a continuing supply of high-quality water” in the Deschutes River Basin (Moore et al. 1995).

Reclamation sent a letter, dated September 24, 2001 to the U.S. Bureau of Indian Affairs (BIA) requesting formal information on any ITAs held in trust by the United States in the proposed Federal action area. BIA's formal response is contained in Appendix A.

2.6.2 Klamath Tribes

The Klamath Tribes Natural Resource Department was contacted by letter on August 22, 2001 to determine if the tribes assert traditional hunting, fishing, and grazing rights in the study area. No response was received.

2.6.3 Burns Paiute

The Burns Paiute Tribe holds no off-reservation Treaty rights, and therefore no ITAs, in the study area. The Burns Paiute Tribe has been consulted

by letter dated August 22, 2001 to determine if Indian sacred sites are present and are impacted by the Proposed Action. No response was received.

2.7 Paleontological Resources

Eastern Oregon is rich in vertebrate, invertebrate, and botanical paleontological materials. The John Day Basin is recognized to have some of America's more important Oligocene, Miocene, and Pliocene epoch deposits. These deposits have been the focus of scientific research since the late 1800s. The John Day Fossils Beds National Monument, located about 50 miles northeast of Prineville Reservoir, was created to foster continuing research and to interpret the fossil materials and paleo-environment of the area for the public.

Most area paleontological deposits are associated with specific geological formations. Oligocene deposits dating from 50 to 19 million years ago are found in the Clarno and John Day Formations. Fossil deposits have been documented in these geological formations extending through and south of the Prineville Reservoir area. Geological maps indicate outcrops of both the Clarno and John Day Formations on lands in the central section of Prineville Reservoir. One finding of botanical fossil materials has been reported from Reclamation lands, but only the approximate area of the find is known.

No inventories of paleontological deposits have been completed at the reservoir. However, as part of archeological surveys in 1993 and 1999, archeological crews were required to record any fossil materials or localities noted during their work. No such materials were found. However, no archeological survey has yet occurred in areas where Clarno or John Day Formations are exposed on the ground surface.

2.8 Socioeconomics

Prineville Reservoir is located in Crook County, Oregon. Crook County’s economy and demographics are profiled below.

2.8.1 Economy and Employment

Manufacturing and trade (primarily wood products and tires) and agriculture (farming and ranching) are the principal employment sources for most families in Crook County. The area’s best-known and largest employer is Les Schwab Tires, headquartered in Prineville. As shown in Table 2.8-1, all other large manufacturing sector employers produce wood products.

Table 2.8-1: Five largest employers, public and private, as of September 2000.

Employer—Product/Service	Number of Employees
Les Schwab Tire Co—Tires	833
Clear Pine Moldings, Inc.—Millwork, Wood Products	549
American Pine Products—Pine Moldings	425
Ochoco Lumber Company—Lumber Products	212
Pioneer Cust Stock—Millwork	120

Source: Oregon Economic and Community Development Department website; accessed 4/10/01

The principal irrigated crops are small grains, alfalfa, potatoes, and peppermint. Agricultural use of non-irrigated lands includes dryland wheat and livestock grazing. Approximately 48% of the County’s land area is farm land (Prineville-Crook County Chamber of Commerce 2001).

Local economic health has been gradually rebounding after years of decline in the timber industry, with manufacturing and the service sectors playing an increasingly important role in the local economy. Leading economic indicators in Crook County are summarized in Table 2.8-2.

2.8.2 Population and Demographics

Crook County is a sparsely populated rural county of 2,991 square miles, with an average population density of 6 persons per square mile

(Oregon Economic and Community Development Department website). Population growth (See Table 2.8-3) has increased slightly faster in the City of Prineville than Crook County as a whole, in part because Prineville’s housing market is relatively affordable in comparison to other areas in the region. Crook County’s population growth is expected to slow slightly in the future, with long-term growth at between 15 and 18% per decade until 2040, as shown in Table 2.8-4.

The City of Prineville has become increasingly attractive to retirees interested in central Oregon’s climate and amenities, as well as to commuters employed in nearby Bend and Redmond (pers. comm., Moore, 2001). Overall, the central Oregon area around the City of Bend is the fastest growing area in the state. It continues to attract small, high-tech companies, the resort industry, and retirees (McMahon 2001). Among cities in Oregon with a population of greater than 10,000 in 1990, Bend was the fastest-growing area, increasing by 160% during the decade and reaching 53,000 in 2000. Ranked by the amount of population change during the decade, Bend ranked third (with 33,000) behind Portland and

Table 2.8-2: Crook County economic indicators.

Economic Indicators	2000
Population	19,182
Labor Force	8,010
Total Employment	7,340
Unemployment	640
Unemployment Rate	8.4
Non-Farm Payroll Employment	6,350
Total Covered Employment	6,336
Total Covered Payroll (\$ thousands)	167,955
Average Annual Payroll Per Employee	26,508
Number of Business Units	391
Total Personal Income (\$ millions)	20,225
Annual Per Capita Personal Income	16,899
Assessed Value of Property (\$ millions)	1,038
Residential Construction	
Building Permits	205
Value (\$ thousands)	24,926
Travel Expenditures (\$ millions)	23,400
Travel-Related Employment	500

Sources: Center for Population Research & Census website; U.S. Census Bureau website; Bureau of Economic Analysis website; Oregon Tourism Commission website; Oregon Department of Revenue website; Oregon Economic and Community Development Department website.

Hillsboro. Deschutes County, where Bend is located, has also experienced extremely rapid population growth. In the period between 1990 and 2000, Deschutes County had the highest percent change in population (53.9%) in the entire state (Center for Population Research & Census website).

Racial diversity is relatively limited in Crook County (see Table 2.8-5). Approximately 93% of the population is white. Latinos are the only minority group comprising more than 5% of the population. Other than Latinos, which more than doubled in population since the last census, Crook County appears to be relatively stable in terms of racial demographics.

Table 2.8-3: Local and regional population growth.

	1970	1980	1990	1998	1999	2000	Change 1990-2000
City of Prineville	4,101	5,276	5,355	6,920	7,255	7,356	37.4%
Crook County	9,985	13,091	14,111	16,650	16,800	19,182	35.9%

Sources: U.S. Census Bureau website; Center for Population Research and Census website; Oregon Economic and Community Development Department website; Office of Economic Analysis website.

Table 2.8-4: Long-term Crook County population and non-agricultural employment forecast.

Crook County	2000	2010	2020	2030	2040	Change 2000-2040
Population	17,168	20,215	23,678	27,567	31,752	84.9%
Employment	6,834	8,160	9,266	10,634	12,264	79.5%

Source: Office of Economic Analysis website.

Table 2.8-5: 2000 Crook County population by race.

Race	1990		2000	
	Population	Percentage	Population	Percentage
White	13,637	97	17,830	92.9
African American	11	0.08	8	0.04
Indian/Alaska Native	221	1.6	250	1.3
Asian	47	0.3	82	0.4
Hawaiian/Pacific Islander	N/A	N/A	6	0.03
Other	195	1.4	731	3.81
Two or More Races	N/A	N/A	275	1.39
Latino	338	2.4	1,082	5.6

Source: 1990, 2000 Census

Note: The percentage totals are greater than 100% because Latinos (an ethnicity) are also counted as African American or White (races) depending on how they identify themselves.

Chapter 3
Existing Land Use and Management





Chapter 3

Existing Land Use and Management

3.1 Project Facilities and General Operations

Prineville Reservoir is the major storage reservoir facility of the Crooked River Project and has a total storage capacity of 150,216 af and a water surface area of 3,030 acres at normal full pool elevation. The dam facilities are operated by the Ochoco Irrigation District (OID) under the general supervision of the Area Manager of Reclamation's Lower Columbia Area Office in Portland, Oregon. Reclamation's Bend Field Office provides the day-to-day contact/coordination with OID on operational and maintenance issues associated with the project.

Except for flood control operations and fish and wildlife releases, all inflow is stored in the reservoir and released as required for irrigation purposes. The OID manager coordinates reservoir releases to meet the water supply needs of the irrigation district and individual water users. A Congressionally mandated minimum flow of 10 cfs downstream of Bowman Dam is required when releases are not being made for irrigation or flood control, for the benefit of fish and wildlife (Photo 3-1). In recognition of the Crooked River's regionally outstanding natural and recreational resources under the Federal Wild and Scenic Rivers Act, Reclamation has administratively increased the minimum reservoir release to 75 cfs to further protect and improve the river's attributes. The 75 cfs target streamflow is met provided sufficient water

supplies are available and contractual obligations are met. This 75 cfs is passed after the irrigation season, which usually extends from April 16 through October 15. These changes in reservoir operations were initiated in February 1990 and will continue unless modified by the PRRS recommendations.

Table 3.1-1 lists some specifications of Prineville Reservoir. The Crooked River Project generally experiences two peaks in irrigation use, one in late May and the other in mid-July. Irrigation releases from Prineville Reservoir vary with storage capacity, rainfall, temperature, and crop needs. Flood control storage governs filling the reservoir and requires that 60,000 af of vacant space be available each year from November 15 to February 15. The minimum requirement of vacant space is reduced to 10,000 af on March 15, with full pool reached on about March 31. The



Photo 3-1. Bowman Dam spillway.

Table 3.1-1: Project specifications.

Normal Maximum Water Surface	
Elevation	3,234.8 ft
Storage	150,216 af
Surface Area	3,030 ac
Shoreline	43 miles
Inactive (Minimum) Pool	
Elevation	3,114 ft
Storage	260 af
Surface Area	124 ac
Allocation of Capacity	
Total Storage	150,216 af (100%)
Active Storage	148,633 af (99%)
Dead Pool & Inactive Storage	1,583 af (1%)
Total Contracted Space	68,273 af (45%)
Total Uncontracted Space	80,360 af (53%)
Joint Use Storage (Flood Control)	60,021 af
Bowman Dam	
Structural Height	245 ft
Crest Elevation	3,264 ft
Crest Length	800 ft
Spillway Crest Elevation	3,234.8 ft
Spillway Capacity at Elevation 3257.9 ft	8,120 cfs

Source: Reclamation 1999

goal of the flood control operation is to limit outflow from the reservoir to below 3,000 cfs. Release from Prineville Reservoir, as measured at the gaging station approximately 0.4 mile downstream from the dam, is reduced to 1,000 cfs whenever runoff would result in excessive or damaging overbank flows downstream from the mouth of Ochoco Creek. At all other times, a release of 3,000 cfs is not exceeded if flood control storage is available.

A Reclamation study on the sedimentation rate of the reservoir (Reclamation 1999) indicates that the difference in volume between the original (1960) survey and the 1998 measured reservoir capacity for Prineville Reservoir was 4,586 af below spillway crest elevation at 3,234.8 feet. The estimated average annual rate of lost capacity from sedimentation was 122.3 af/year.

Congress authorized the Crooked River Project in 1956 to provide irrigation, flood control, basic minimum health and safety facilities, and fish and wildlife enhancement, requiring a minimum 10 cfs release from the dam when releases for irrigation or flood control are not occurring. Prineville Reservoir has an active storage

capacity of 148,633 af; of this amount, 80,360 af remains uncontracted.

Reclamation received requests in the 1970s for formal reassignment of uncontracted space for reservoir recreation, fish, wildlife, and domestic, municipal, and industrial water supplies. Reclamation also received requests for additional irrigation contracts. Reclamation placed a moratorium on the sale of the uncontracted storage space to conduct comprehensive analyses of alternative uses of uncontracted space. Irrigation is the only use of uncontracted storage that is within the intent of the original Act; other uses require Congressional reauthorization.

Public meetings and Reclamation studies resulted in a 1980 Special Report recommending a reallocation plan to include irrigation, fish, reservoir recreation, and domestic, municipal, and industrial uses. Irrigators' concerns about their share of safety of dam costs at Bowman Dam rekindled the PRRS in the late 1980s. Reclamation attempted to negotiate a consensus solution among interested parties based on the information in the 1980 report, but it was unsuccessful in obtaining consensus on a reallocation plan. Because hearings on reauthorization proved contentious, Reclamation did not pursue reauthorization, and the moratorium remains in effect.

Additional contract requests in the mid-1990s prompted Reclamation to pursue the most recent investigation in 1997. Cooperating agencies were convened and scoping meetings were conducted. Potential uses of uncontracted space identified included irrigation, reservoir recreation, instream flows, and domestic, municipal, and industrial uses. Reclamation has suspended further study because of funding constraints. When funding

becomes available, Reclamation intends to pursue analyses and resolution of the issue.

3.2 Land Status and Management

The 1992 RMP addressed Reclamation lands at Prineville Reservoir in terms of the following management categories, which have been retained in development of alternatives for the updated RMP: Recreation, Prineville Reservoir Resort, and State Wildlife Area (SWA). Reclamation retains primary jurisdiction for all project lands and is responsible to ensure that Reclamation, the managing partners, and the lease holder(s), abide by Federal land management and resource protection law.

3.2.1 Recreation and Prineville Reservoir Resort

After the completion of Bowman Dam, Reclamation issued two 50-year license agreements for administration and management of Reclamation lands. The first agreement gave Crook County the responsibility to manage recreation outside the SWA. In December 1985, Crook County terminated their license agreement with Reclamation. In 1987, Reclamation entered into a 20-year agreement with OPRD to manage recreation at Prineville State Park. In 1995, this agreement was amended to include all land and water at Prineville Reservoir with a 50-year lease to expire in 2037. Developed recreation facilities are located at Prineville State Park and at Jasper Point, located on the north shore of the reservoir.

Reclamation currently has a concession agreement with a private party to operate the 190-acre Prineville Reservoir Resort. The resort includes facilities for camping with water and electrical hookups, a 7-unit hotel, a convenience store and café, moorage, and a boat launch. This agreement expires in 2005 and will be renewed if desired by both parties and if the terms and conditions are mutually acceptable.

3.2.2 State Wildlife Area (SWA)

An important responsibility for Reclamation as a managing agency is to protect wildlife and enhance habitat where necessary. At Prineville Reservoir, this is an important function because the reservoir and adjacent Reclamation lands provide habitat for many wildlife species, particularly in, but not limited to, the SWA.

In 1962, ODFW entered into a license with Reclamation to manage the upper end of the reservoir as the SWA. ODFW manages this 3,160-acre (2,230 acres of land and 930 acres of water) area for wildlife habitat protection and enhancement purposes. Outside of the SWA, Reclamation (in cooperation with ODFW) manages habitat on Reclamation lands. ODFW regulates hunting and fishing according to Oregon regulations. Recreation is permitted in the SWA and is managed by OPRD. To protect wildlife resources, the south shore of the SWA from Roberts Bay to Long Hollow Creek is a boat-in day use area only. In addition, the Primitive North Side Road that extends through the SWA is closed between Jasper Point and Old Field from November 15 through April 15, and between Old Field and the Paulina Highway from December 15 through March 15 (Reclamation 1992). ODFW identified the following objectives for wildlife management at Prineville Reservoir as part of the 1992 RMP:

- Protect and enhance mule deer winter range
- Protect and enhance riparian vegetation for wildlife and bass fishery
- Improve waterfowl nesting habitat
- Protect winter feeding grounds for bald eagles
- Improve the availability and quality of wetland habitat
- Protect and enhance habitat for nongame wildlife

- Promote and create opportunities for wildlife viewing/enjoyment
- Promote a wildlife ethic/stewardship for the SWA

A Wildlife Management Plan for the SWA lands was identified as an action item in the 1992 RMP. The plan was to have been a collaborative effort among ODFW, Reclamation, BLM, and adjacent landowners but was never completed.

3.2.3 Easements and Leases

Reclamation property at Prineville Reservoir is encumbered by right-of-way and utility easements, and grazing leases, as discussed below.

3.2.3.1 Rights-of-Way

Over the years, Reclamation has issued a number of access easements to adjoining property owners. Most of these authorize pre-existing accesses to individual property owners and subdivisions. The most significant access allowance occurred October 23, 1958 in anticipation of the dam's construction. To accommodate construction of Bowman Dam and Prineville Reservoir, Reclamation deeded an 82.74-acre strip of land to the State of Oregon Highway Commission for the relocation of Oregon State Highways No. 14 and No. 380 (Contract No. 14-06-100-1616). Reclamation also provided a perpetual road easement across the top of the dam. Reclamation had previously acquired State highway rights-of-way and compensated the State of Oregon for interference with existing County roads by Contract No. 14-06-100-1509 dated June 20, 1958. Prior to these agreements, SR 27 followed the Crooked River valley east until veering south up the Bear Creek canyon. Several other roads intersected with this highway within the area of the present reservoir including Alfalfa Road and a road that continued up the Crooked River valley, connecting with the North Side Primitive Road. The Juniper Canyon Road originally connected the City of Prineville with the Village of Roberts,

but the section between County Boat Ramp and Roberts Bay was inundated with the creation of the reservoir.

Use of existing roads across Reclamation land to access several private cabins on the south side of Prineville Reservoir has been authorized by similar documents. Standard language common to all these documents limited the government's responsibility for road maintenance and prohibited construction of fences or gates to restrict access by easement holders. One relatively recent easement has been authorized to provide access to the Lakeview Cove Estates (June 23, 1999) subdivision over Reclamation land to South Juniper Canyon Road.

3.2.3.2 Telephone Easement

Reclamation provided for relocation of telephone facilities per Contract No. 14-06-100-1783 dated September 25, 1959. This agreement between Reclamation and the Bear Creek Telephone Company provided for Reclamation to relocate a portion of the telephone line from the County boat ramp to Roberts Bay. The old line followed the County Road through the Crooked River valley. The new route follows the north shore of the reservoir before crossing the water in a buried cable and re-emerging near Roberts Bay West.

3.2.3.3 Power Line Easement

A contract between Reclamation and the Central Electric Cooperative (Contract No. 14-06-100-2105) dated March 13, 1961, provided for relocation of a power line. Reclamation provided Central Electric Cooperative a cash settlement for the construction, relocation, adjustment, and abandonment of the power line in areas inundated by the Prineville Reservoir itself and other parts of the study area closer to the City of Prineville. This work included removal of an existing 14.4 kilovolt (kV) power line located within the Crooked River valley and construction of a new section of 14.4 kV/24.9 kV line to serve two customers north of the County boat ramp.

3.3 General Land Use Patterns

Reclamation acquired a total of approximately 8,700 acres of the Crooked River valley to construct the Arthur R. Bowman Dam in 1961, creating Prineville Reservoir. This property was withdrawn from BLM holdings or purchased primarily from Joseph Bottero, a local landowner. Reclamation's holdings include 8,489 acres of land and water surface within the reservoir area, 280 acres within the Reclamation Zone located in the vicinity of Bowman Dam, and 340 acres of flowage easement lands along the Crooked River immediately above the reservoir. At full pool, the reservoir surface of 3,030 acres provides 43 miles of shoreline at Prineville Reservoir.

As shown on Figure 3.3-1, the upper end of the reservoir consisting of 3,160 acres of land and water has been designated an SWA, managed by ODFW primarily to provide for big game winter habitat as well as habitat for a variety of other wildlife. Recreation uses dominate the lower end of the reservoir, which is the site of two State Park facilities, a leased privately run resort, and several other scattered recreation sites. OPRD manages recreation resources at Prineville Reservoir (including the SWA) on behalf of Reclamation.

3.3.1 Lower Reservoir

On March 16, 1961, shortly after the completion of Bowman Dam, Reclamation transferred recreation management responsibility to Crook County for most of the land surrounding the lower reservoir. Shortly thereafter, Crook County subleased 365 acres to the State of Oregon for what is now Prineville State Park. Under this license agreement (Contract 14-06-100-2124, dated June 27, 1961) between Crook County and the State of Oregon, the County agreed to license to the State a portion of the western portion of the land surrounding Prineville Reservoir for the purpose of developing and maintaining a park. The agreement also required Crook County to

construct a road to access the State Park. A follow-up license agreement dated June 27, 1961 between Crook County and the State of Oregon extended the above agreement for a 50-year term to expire March 16, 2011. This license required Crook County to construct a road from Combs Flat Road south to the State Park (North Side Primitive Road).

Crook County entered into a second license agreement on April 17, 1964 to further the development of recreational facilities at Prineville Reservoir. This 20-year agreement (with a 20-year renewal option) was with a private concessionaire to develop and operate the 190-acre Prineville Reservoir Resort. This license required resort facilities to be open daily for a minimum of 6 months per year. Minimum standards and structures permitted under the license included six 200 square foot cabins with running water and indoor sanitary facilities; a 1,200 square foot store; a commercial dock large enough for 20 boats; car and boat trailer parking; boat rental for at least twelve 14-foot boats; well and water filtration and storage; and a 20-unit trailer park with expansion for 20 additional trailers (specific recreation facilities are discussed in further detail in Section 3.5, Recreation). The resort was acquired by a second owner, who entered into a 20-year concession agreement with Reclamation on October 21, 1986. The resort concession was assigned a third time to the current owners on September 8, 1992. This concession agreement was amended by Reclamation most recently on May 27, 1994 and will expire on December 31, 2005. Due to a number of physical site constraints, only a relatively small portion of the 190-acre resort area has been developed for recreation (pers. comm., Hawes, 2001).

In December 1985, Crook County terminated its license agreement with Reclamation. OPRD, which was previously a tenant of Crook County, renewed its lease directly with Reclamation for a 20-year term beginning May 5, 1987. This

agreement recognized the State's ownership of existing recreation facilities built by the State. It also required the State to "make and enforce rules and regulations to protect plants, fish, and wildlife; to preserve the scenic, scientific, aesthetic, historic, and archeological resources of the area; and for the preservation of law and order in the interest of public safety" within the boundaries of the State Park.

OPRD's role was defined by the 1992 RMP to an on-site managing partner in conjunction with ODFW. Management of recreation at Prineville resulted in numerous facility improvements which are listed in Section 3.5 (Recreation) of this document.

On May 25, 1995, OPRD's lease at Prineville Reservoir was extended from the original 20-year term to a 50-year term starting from the date of the original agreement on May 5, 1987 and expiring on May 5, 2037. This lease also increased the area of OPRD management to include a large section of the Reservoir's north shore, extending from the County boat ramp to north of Jasper Point.

The current lease has been amended twice since 1995. The first amendment (Amendment No. 1, dated February 4, 1999), rectified a minor property boundary conflict between the Prineville State Park and the Prineville Reservoir Resort near Jasper Point. This amendment adjusted the boundary to include the parking lot for the Jasper Point boat ramp entirely within the State Park's area.

The second amendment (Amendment No. 2, dated May 4, 1999) provided for the continuing management, protection, and administration of all Reclamation land and water resources at Prineville Reservoir, except for those areas leased to the Prineville Reservoir Resort. Specific responsibilities include recreation management, protection, administration, and maintenance on lands under a wildlife management agreement with ODFW including managing garbage

collection, sanitation, law enforcement, repairs, and similar services. This amendment provided up to 50% reimbursement funding from Reclamation to assist OPRD with operation and maintenance costs. (Specific service responsibilities are addressed in Section 3.4, Public Services and Utilities.)

Reclamation reserved administrative jurisdiction over a 280-acre portion of the reservoir in the vicinity of Bowman Dam referred to as "the Reclamation Zone." This area includes the dam itself, as well as the area immediately upstream and downstream of the dam.

3.3.2 Upper Reservoir

On March 14, 1962, Reclamation transferred management of the upper reservoir area to the Oregon Game Commission (now ODFW) to administer for fish and wildlife management. This 3,160-acre area referenced on the license agreement as "the State Zone" became the Prineville Reservoir SWA. This 50-year agreement required the State to "make and enforce rules and regulations for the use of the area to protect the health and safety of persons using the area, to protect plants, fish and wildlife; to preserve the scenic, scientific, aesthetic, historic, and archeological resources of the area; and for the preservation of law and order in the interest of public safety" within the boundaries of the State zone. Within this zone, the State also had authority to issue grazing permits where consistent with wildlife management needs and with Reclamation approval.

On March 4, 1976, the license agreement between ODFW and Reclamation was amended to adjust the boundary between the State and County zones to accommodate the development of a County park.

Figure 3.3-1. Existing Land Use

Back of Figure 3.3-1

ODFW continues to manage wildlife resources in the SWA. Recreational use is permitted in this area, but ODFW’s primary management objective for the SWA is wildlife habitat protection and enhancement, primarily for waterfowl, upland game, and big game populations.

Land management in this area has focused on increasing habitat for these game species.

3.3.3 Grazing

Reclamation has authorized BLM to manage grazing on Reclamation lands where compatible with Reclamation’s current or planned use of any land area, and where not required for fish and wildlife management purposes or related uses. ODFW has the option of issuing grazing permits with approval from Reclamation when consistent with SWA management goals and objectives.

On Reclamation withdrawn or acquired land, permits issued by BLM shall be issued for BLM’s normal permit or lease period, which has been 10 years, but shall include special stipulations as determined necessary for Reclamation to protect the land or facilities for Reclamation project purposes. When Reclamation determines that within 2 years its needs and uses will no longer be compatible with grazing, Reclamation will so notify BLM, enabling it to notify the lessees and permittees and terminate the portions of the leases and/or permits on Reclamation lands in accordance with section 402 of the Federal Land Policy Management Act (FLPMA). Under emergency conditions, leases and permits may be terminated with shorter notice.

There are six permits issued for portions of 10 allotments that extend onto Reclamation lands around Prineville Reservoir (see Table 3.3-1 and Figure 3.3-2). Grazing is restricted from the

Table 3.3-1: BLM grazing allotments that overlap Reclamation lands at Prineville Reservoir.

Allotment	Total AUMs ¹	Term
Sanford Creek	370	3/01/1994 to 02/28/2008
Eagle Rock	155	3/01/1994 to 02/28/2008
Deer Creek	170	2/24/1997 to 12/31/2002
Salt Creek	1364	05/01/1997 to 12/31/2006
Dunham North	184	11/15/1999 to 02/28/2009
Davis	348	03/01/1995 to 02/28/2005
Carey ²	43	03/01/1998 to 02/28/2008

Source: BLM, Prineville District.

¹ AUM is Animal Unit Month.

² The Carey Allotment is not shown in Figure 3.3-2; the geographic information system (GIS) data were not available. This allotment is located between the Eagle Rock and Davis Allotments.

Note: The meadows (BLM grazing unit) in these allotments can be grazed year-round, but BLM manages them according to site-specific conditions. BLM restricts grazing from early spring through late fall on those meadows that overlap Reclamation land to avoid conflicts with recreation use.

vicinity of the northern end of the reservoir by fencing to protect the SWA, though there are several openings. On the south shore, the Taylor Butte and a portion of the Salt Creek and Dunham North allotments extend to the reservoir, allowing livestock direct access to the reservoir. On the north side, the upper portion of the Davis allotment extends along the shore of Prineville Reservoir from the dam to the County boat ramp (per. comm., Swanson, 2001).

During the 1992 RMP process, grazing management was identified as an issue needing immediate attention. Public comment emphasized that without careful livestock control and management, grazing at Prineville Reservoir is incompatible with wildlife habitat, recreation, and other resource values (Reclamation 1992).

The following actions regarding grazing management were identified under the 1992 RMP:

- Grazing will be eliminated from all developed/designated recreation areas by fencing.
- Grazing use within the northeast and southeast portions of the SWA not

administered by BLM will continue to be determined annually by ODFW and Reclamation.

- Grazing on Reclamation administered lands will be evaluated during development of the Prineville Reservoir Habitat and Wildlife Management Plan. Any changes in grazing use will be made in close coordination among Reclamation, BLM, ODFW, and affected parties. Emphasis will be placed in keeping livestock use away from reservoir shoreline, wetland, and riparian areas. Methods to accomplish this, including the development of watering locations in upland areas, will be considered.
- Reclamation will actively participate in the revision of BLM allotment management plans affecting Reclamation lands at Prineville Reservoir. Reclamation's guidelines for these efforts will be to preserve, protect, and enhance the natural resource values at Prineville Reservoir.

These actions have been met with limited success. The SWA was fenced to eliminate trespass livestock, but an SWA Wildlife Management Plan was not prepared. Public scoping for this RMP update again identified grazing as an issue of concern.

3.3.4 Adjacent Land Uses

Most lands surrounding Reclamation's land at Prineville Reservoir are managed by BLM for multiple uses, including grazing (Figure 3.3-3). Privately held lands to the north and west of the reservoir are zoned Rural Residential by Crook County, which allows housing development at densities up to 1 dwelling unit per 5 acres (pers. comm., Moore, 2001). On the south side, the County has zoned most of the land Park Reserve, which permits agriculture, park uses, and residential development (1 dwelling unit) on parcels 20 acres and larger. Land on the northeast

end of the reservoir is zoned Exclusive Farm Use, which limits land use to agriculture, agricultural businesses, and homes at densities limited to 1 dwelling unit per 80 acres (pers. comm., Moore, 2001).

Existing development within the Prineville Reservoir drainage is located in three older subdivisions (Bottero Park, Jasper Knolls, and Lakeview Cove Estates), as well as four large plats on the south side of the reservoir and a few scattered houses. Bottero Park and Jasper Knolls have electrical and telephone service, and an overhead electric line was installed to Lakeview Cove Estates in 2000 with sufficient power capacity for approximately 31 lots (pers. comm., McDevitt, 2001). In general, all of these developments rely on wells and septic systems for water supply and sewage treatment. Factors limiting development include limited road access, strict County septic approval requirements, and lack of utility service (pers. comm., Moore, 2001).

Bottero Park is a privately owned inholding of 11 acres. This private subdivision, which was platted in 1963 by the former land owner of portions of the Prineville Reservoir site, is centrally located on a peninsula on the reservoir. Over the years, most of the 15 homes on 51 lots have gradually been converted from trailer platforms and modest vacation cabins to more substantial homes, a number of which are occupied year round (Crook County 1980).

Jasper Knolls is a 44-acre subdivision of 86 lots that overlooks the reservoir near Jasper Point. This subdivision was platted in 1964 and contains a mix of approximately 49 summer and year-round residences. In addition, three additional homesites are located behind Jasper Knolls subdivision, of which only one is developed (pers. comm., McDevitt, 2001). Access to Jasper Knolls is provided via an easement over Reclamation land to South Juniper Canyon Road.

Figure 3.3-2

BLM Grazing Allotments Adjacent to Prineville
Reservoir

Back of Figure 3.3-2.

Figure 3.3.3

Land Ownership

Back of Figure 3.3.3

Lakeview Cove Estates, a 105-lot subdivision, is located on nearly 55 acres on a hillside above the County boat ramp area overlooking the reservoir. This plat was filed with Crook County in 1966, but little development activity occurred due to lack of road access (pers. comm., Seely, 2001). On June 23, 1999, the property owners acquired an access easement across Reclamation land for a road to connect these homesites to the County boat ramp access road. This access also includes overhead electric line installed by Central Electric Cooperative in 2000 for approximately 31 lots (pers. comm., McDevitt, 2001), which would facilitate limited future residential development if water and other services could be obtained.

According to the County Road Map, the next closest existing subdivision is Idle Way Acres, a 134-lot subdivision about 1 mile north of Reclamation's property easily accessed by Juniper Canyon Road (Crook County Road Department 1998). Other individual homes are scattered around the area, several of which are located on the south side of the reservoir. The closest of these are three houses located on the slope above Roberts Bay.

3.4 Public Services and Utilities

This section discusses relevant public services and utilities at Prineville Reservoir and in the surrounding area.

3.4.1 Emergency Fire Suppression Services

Under the terms of its lease with Reclamation (as amended May 4, 1999), OPRD is the lead on-site agency in all emergency and fire suppression activities on Reclamation lands administered by OPRD, within the limits and responsibilities outlined in the Prineville State Park Emergency Action Plan. In practice, BLM is the first responder for wildland fires on lands owned and managed by Reclamation at Prineville Reservoir. Prineville Reservoir and the public lands in its immediate vicinity are considered by BLM to be

an area of high value to receive high priority for fire management and suppression (Reclamation 1992). OPRD maintains a small pumper truck to fight structural fires at Prineville State Park (pers. comm., Crawford, 2000). Wildland fire protection in rural areas is coordinated with BLM and the USFS.

Responsibility for fires on Prineville State Park lands, lands leased by the Prineville Reservoir Resort, or those on private property comes under the jurisdiction of the Crook County Rural Fire District #1. This District was created by a merger between the Prineville Fire Department and Crook County Rural Fire Department's Zone 2 on July 1, 2001. Following this merger, the boundaries of the Fire District were extended from Reclamation's property line to the Prineville Reservoir Resort, including Prineville State Park, Bottero Park, and Jasper Knolls. Crook County Rural Fire District #1 provides fire protection, ambulance service, and emergency medical technicians to an area covering approximately 54 square miles. Crook County Rural Fire District #1 provides fire protection service to the community from a main station located at 500 N Belknap Street in downtown Prineville. This station is equipped with four type 1 fire trucks, two tenders, three brush trucks, and three medical units. The department has six paid and 65 volunteer firefighters. The Crook County Rural Fire District #1 plans to build a new fire substation on land it acquired in Juniper Canyon. When completed in 2002 or 2003, this new satellite station would be equipped with a Class A fire truck, a brush truck, a tender (3,000-gallon tank truck), and a medical unit. This location, which is considerably closer to the north side of the Prineville Reservoir than the current fire station, is expected to cut response time to the north side of the reservoir by approximately 50% (pers. comm., Schnorr, 2001).

3.4.2 Emergency Medical Services

Prineville Reservoir is located within the Crook County Rural Fire District #1's Ambulance Service Area. The Crook County Rural Fire District #1 operates three ambulances. Emergency medical response time is approximately 10 to 15 minutes to Prineville State Park and other destinations on the reservoir's north side. Destinations on the south side, such as Powder House Cove, are estimated to require 30 to 45 minutes to reach by ambulance and potentially longer for Roberts Bay. On average, camping and water-skiing accidents result in approximately one or two visits to the reservoir by the ambulance per month during the summer season (pers. comm., Schnorr, 2001). The nearest hospital is Pioneer Memorial Hospital, a non-profit, 35-bed, acute care medical facility providing full medical services to the Prineville-Crook County area (Oregon Economic and Community Development Department website). Emergency air transport is available from LifeFlight in Bend, Oregon.

3.4.3 Law Enforcement

The Crook County Sheriff's Office is the lead law enforcement agency at Prineville Reservoir, with patrol services provided on shore under contract with Reclamation. The Crook County Sheriff's Marine Patrol enforces boating regulations under contract to the Oregon State Marine Board. OPRD and Oregon State Police also provide limited enforcement services (pers. comm., Hensley, 2001).

Reclamation has contracted with the Crook County Sheriff's Department on an annual basis since 1986 to provide supplemental surveillance and law enforcement services at the reservoir. The current law enforcement contract provides for the Sheriff's Office to perform year-round response to specific complaints, along with limited preventive patrol. Law enforcement is stepped up at Prineville Reservoir from Memorial

Day through Labor Day of each year with the addition of two seasonal deputies who are each assigned to a 40-hour patrol week at Prineville Reservoir. Patrol time is determined for each seasonal contract. Sheriff's deputies patrol on flexible schedules to meet the requirements of seasonal demands.

The primary emphasis of these vehicle and foot patrols is to enforce County Ordinance No. 101, which amended County Ordinance No. 34 on April 12, 1975. Both local laws were initiated in response to complaints about ORVs, vandalism, the use of firearms, domestic disturbances, alcohol-related incidents, and other violations at Prineville Reservoir. These regulations specifically address vehicles, vehicle use, and parking; noise and quiet hours; weapons and hunting; fires; pets; protection of wood and other plant life; buildings, signs, and recreation area equipment; waste disposal; cleaning fish and dishes; and camping (the full text of County Ordinance No. 101 is included as Appendix B). The Crook County Sheriff also enforces Oregon State laws.

In addition, the County's marine deputies patrol the reservoir by boat from April to September, with greatest intensity between Memorial Day and Labor Day. Two boats patrol the reservoir, especially on weekends and holidays. Watercraft safety is a major concern of the marine patrols who enforce speed and other regulations on behalf of the Oregon State Marine Board. Currently, the only areas of the reservoir posted for 5 mile per hour (mph) boating are Powder House Cove, the straits between the big island and Juniper Point, Roberts Bay, and the portion of the reservoir north of Owl Creek. Boat speed is also restricted to 5 mph within 200 feet from the shore and in front of the State Park, where 3 mph is the preferred speed limit. Boat speed is limited to 10 mph within 100 feet of another vessel (pers. comm., Hensley, 2001).

OPRD has citation authority to enforce the Oregon Administrative Rules within Reclamation's property. In addition to hunting and fishing enforcement by the Crook County Sheriff's Office, the Oregon State Police Department's game officers enforce hunting and fishing regulations on and around the reservoir, as well as in the back country (pers. comm., Hensley, 2001). Oregon State Police also provide random patrols throughout the year to assist in unauthorized ORV use enforcement and trespass issues.

During the summer season, Prineville Reservoir is a major law enforcement focus by Crook County. Specific "hot spots" include less-regulated sites such as Roberts Bay and areas accessed by the North Side Primitive Road. The Powder House Cove area has also become an area of increased law enforcement due to unsafe parking on Highway 27, watercraft crowding near the makeshift boat ramp, and other conflicts resulting from increased use by visitors from the Bend area (pers. comm., Hensley, 2001).

3.4.4 Water Supply

Prineville State Park draws groundwater from three wells for domestic and irrigation uses. One well serves as the primary water source with the remaining two providing backup. Groundwater is pumped to a 20,000 gallon concrete storage tank that supplies restrooms, spigots, and campsite hookups with gravity-fed potable water. This tank is scheduled to be replaced in 2003 with a 100,000 gallon steel storage tank. Capacity of this system is estimated at 23,500 gallons per day.

Park facilities at Jasper Point are served by a separate well (pers. comm., Skavlan, 2001). Jasper Point also depends on groundwater for domestic purposes and fire protection. This campsite is supplied by one well and a 20,000 gallon water tank that supplies all campsites with water through gravity-fed lines, capable of processing 500 gallons per day (pers. comm., Crawford, 2001). This system was upgraded in

2001 with the addition of a pressure regulating pump.

Prineville Reservoir Resort operates three wells in rotation that pump water to a 9,000 gallon storage cistern. Stored water is fed by gravity to water users, including the motel, two private homes, the store/café, and spigots at the campsites and marina. Resort owners installed a new well in 2000 and replaced a pump motor the following year. This system does not provide adequate water flow during the peak season in dry years. At these times, the resort re-fills the cistern with fresh water trucked in from Prineville. Water conservation measures in the works or planned include low-flow showerheads and card showers to prevent unauthorized use. Bottero Park and Jasper Knolls also depend on well-supplied groundwater (pers. comm., Hawes, 2001).

3.4.5 Wastewater Treatment

Sewage generated by campground restrooms and campground hookups at Prineville State Park is treated by septic tank and leaching field systems.

Sewage treatment at Jasper Point is limited to a vault toilet. ORPD installed a dump station for RV use in June 2002. Recreation sites such as Owl Creek, Cattle Guard, Old Field, Roberts Bay, and Big Bend—as well as the County boat ramp and Powder House Cove—have portable or vault toilets maintained by a private vendor under contract to ORPD (pers. comm., Skavlan, 2001). The Prineville Reservoir Resort has separate septic systems to treat wastewater generated by two private houses, the store/café, motel, and two restrooms. Wastes discharged at the RV dump station are stored in a large holding tank emptied by a commercial hauler one to two times each season (pers. comm., Hawes, 2001). A floating restroom was put in place in Juniper Bay for seasonal use by boaters during the 2001 and 2002 recreation season (August-October 2001 and April-October 15, 2002).

3.4.6 Solid Waste

ORPD maintenance crews at Prineville State Park collect trash from receptacles throughout the park and Jasper Point on an as-needed basis. During peak activity periods, this can be up to several times per day. The trash truck is emptied on a weekly basis, or more frequently if necessary, at the local landfill near Prineville. Trash receptacles at recreation sites such as Owl Creek, Cattle Guard, Old Field, Roberts Bay, and Big Bend—as well as the County boat ramp, Powder House Cove, and Bear Creek—are emptied by private vendor under contract to ORPD (pers. comm., Skavlan, 2001).

3.4.7 Gas

There is no natural gas service available in the vicinity of Prineville Reservoir. Both bottled propane and gasoline are stored and sold at the Prineville Reservoir Resort.

3.4.8 Electrical

Central Electric Cooperative provides 30 amp service to most campsites at Prineville State Park and Jasper Point. Campsites at Prineville Reservoir Resort have 20 amp service. Electrical service is also provided to facilities at Bowman Dam. Electricity is measured by seven meters in the State Park and three meters in Jasper Point. Bottero Park and Prineville Reservoir Resort have a combined total of 29 electric meters (pers. comm., McDevitt, 2001).

3.4.9 Telecommunications

Prineville State Park and Jasper Point each has one payphone, with service provided by Qwest. Administration facilities at Prineville State Park are served by nine lines. Mobile telephone service is limited at Prineville State Park for some service providers, especially digital phones. Most cellular phone customers report better coverage at

Jasper Point (pers. comm., Skavlan, 2001). Two Qwest pay phones are located at the Prineville Reservoir Resort, which also maintains two business lines and two personal lines (pers. comm., Hawes, 2001). A repeater tower has been proposed to assist emergency, law enforcement, and operations communications. A tentative site for this tower is the south shore of the reservoir between Powder House Cove and the Bear Creek Arm.

3.5 Recreation

Recreation activities in the study area include both land- and water-based activities. Most of the recreational users of this area are from either the Central Oregon counties of Crook, Jefferson, and Deschutes, or the Portland metropolitan area counties of Multnomah, Washington, and Clackamas. The number of visitors approaching from south of Prineville Reservoir has increased markedly due to the improvements and paving of the Alfalfa Market Highway, which provides a connection to Bend, Oregon (pers. comm., Crawford, 2002).

Prineville Reservoir is located in Region 7 of the Oregon Statewide Comprehensive Outdoor Recreation Plan (SCORP). Region 7 includes Jefferson, Wheeler, Crook, and Deschutes Counties. Within or nearby Region 7 there are five reservoirs offering similar recreation opportunities to those found at Prineville Reservoir. These include: Haystack Reservoir, Ochoco Reservoir, Crane Prairie Reservoir, Wickiup Reservoir, and Lake Billy Chinook. There are four State Parks within 50 miles of Prineville Reservoir, including The Cove Palisades, Tumalo, Smith Rock, and La Pine State Parks. In addition, there are nearly 50 campgrounds provided by other land managers, such as USFS and BLM, within 50 miles of Prineville Reservoir. Given the demand for recreation and continuing population growth in central Oregon, all of these facilities will need to play a role in satisfying future recreation needs.

3.5.1 Recreation Activities and Use Levels

Recreation use at Prineville Reservoir includes many land- and water-based activities typical of the lakes and reservoirs in Central Oregon. Prineville Reservoir is a popular water body that is experiencing increasing levels of use (Photo 3-2). According to studies by the Oregon State Marine Board (OSMB), Prineville Reservoir is ranked 17th in Oregon in boater activity days, with 41,170 in 1998 (OSMB 1999). This represents nearly an 8% increase over the number of activity days in 1995 (OSMB 1996). Camping activity at Prineville Reservoir has also steadily increased (Photo 3-3). Table 3.5-1 shows the number of campsites sold as well as traffic counts at campgrounds for the period between 1993 and 2000. There were a total of 5,794 campsites sold in 1993 compared to 7,161 in 2000. While the 2000 figure does not reflect normal use due to extreme low water conditions, there was still a 19% increase in the number of campsites sold during this period. Overall visitation at the reservoir was estimated to be 422,788 in 1999, and has been steadily increasing for several years. Table 3.5-2 provides visitation figures for the period between September 1999 through August 2000. Table 3.5-3 provides visitation figures for several of the recreation facilities for the period between May 2000 and August 2000. These figures do not provide total visitation for Prineville Reservoir; however, the table provides the percent of total use each of these sites represents of all developed recreation sites.



Photo 3-2. Pleasure boating on Prineville Reservoir.



Photo 3-3. Campers relaxing at Prineville State Park.

3.5.2 Recreation Facilities

Developed recreation facilities are provided at numerous locations around Prineville Reservoir by OPRD and a private concessionaire. Both developed and undeveloped dispersed sites provide areas for visitors to engage in various recreation activities. The type and location of recreation facilities provided at Prineville Reservoir are listed in Table 3.5-4 and shown on Figure 3.5-1.

Table 3.5-1: Prineville Reservoir visitation, 1993-2000.

	1993	1994	1995	1996	1997	1998	1999	2000
Campground Sites Sold	5,794	5,550	6,731	6,716	7,174	7,842	8,599	7,161
Traffic Count	124,815	119,942	122,775	121,196	122,620	129,275	144,629	91,891

Source: OPRD 2002.

Note: OPRD uses a multiplier statewide of 4 occupants per vehicle and 3.3 persons per campsite. No multiplier has been used on above actual count numbers.

Table 3.5-2: Prineville Reservoir visitation, September 1999 to August 2000.

	Prineville State Park	Jasper Point	Powder House Cove	Roberts Bay	County Boat Ramp	Prineville Reservoir	SE Prineville Lake Access RD E	SE Prineville Lake Access RD W	Totals
SEP	31,326	na	na	na	na	na	na	na	31,326
OCT	10,012	na	na	na	na	na	na	na	10,012
NOV	3,444	na	na	na	na	na	na	na	3,444
DEC	2,332	na	na	na	na	na	na	na	2,332
JAN	2,101	na	na	na	na	na	na	na	2,101
FEB	1,753	na	2,072	624	604	na	na	na	5,053
MAR	3,654	2,492	4,292	1,392	na	na	na	na	11,830
APR	5,982	5,098	5,296	1,820	1,456	na	na	na	19,652
MAY	13,181	10,066	13,408	2,452	3,012	na	1,964	1,264	45,347
JUN	21,270	17,656	10,624	3,628	3,656	na	4,146	3,244	64,224
JUL	29,442	24,660	15,576	5,972	6,028	na	10,178	8,220	100,076
AUG	26,987	16,648	na	9,516	8,204	na	16,272	14,764	92,391
TOTAL	151,484	76,620	51,268	25,404	22,960	35,000	32,560	27,492	422,788

Source: OPRD 2002.
na = Not Available.

Table 3.5-3: Prineville Reservoir visitation, May 2000 to August 2000.

	Prineville State Park	Jasper Point	Powder House Cove	Prineville Reservoir	Roberts Bay	County Boat Ramp
MAY	13,181	10,066	13,408	8,750*	2,452	3,012
JUN	21,270	17,656	10,624	8,750*	3,628	3,656
JUL	29,442	24,660	15,576	8,750*	5,972	6,028
AUG	26,987	16,648	13,203*	8,750*	9,516	8,204
TOTAL	90,880	69,030	52,811	35,000	21,568	20,900
Percent of Total Use of All Developed Rec. Sites	31%	24%	18%	12%	7%	7%

Source: OPRD 2002.
*Estimated from total use numbers.

Note: Number total will not equal 100 due to rounding. Does not include boat-in sites.



Photo 3-4. State Park boat ramp.

Prineville State Park is the main public park development at Prineville Reservoir and is also the most popular use area on the reservoir. It is located on the northern shoreline of the reservoir at the end of the Juniper Canyon Road that leads to the City of Prineville. This site contains two distinct areas, the campground and a large day use area with a boat ramp and moorage (Photos 3-4 and 3-5). The campground contains 70 campsites with varying levels of amenities, including one accessible site. “Accessibility” is defined as providing participation in programs and use of

Figure 3.5-1

Back of Figure

facilities to persons with a disability. “Disability” is defined with respect to an individual as a physical or mental impairment that substantially limits one or more of the major life activities of such individual; a record of such an impairment; or being regarded as having such an impairment (Americans with Disabilities Act of 1990). Twenty-two of the sites have full hookups (water, sewer, and electricity), 23 sites have electricity and water, and 25 sites are designed for tent campers and have water faucets nearby. Most of the sites are shaded and have ample grassy areas. The campground also has a modern restroom facility with flush toilets and hot showers. In addition to these facilities, the campground also has 5 cabins available for visitor use (Photo 3-6). Three of these are larger deluxe cabins that sleep 6 and have kitchen and restroom facilities. The remaining two cabins are one-room rustic cabins that sleep 4 and do not have kitchen or restroom facilities. All of the cabins and campsites are able to be reserved in advance through Reservations



Photo 3-5. Boat moorage at the State Park.

Northwest, who administers reservations for OPRD. There is also a boat moorage facility with 32 spaces for use by visitors staying in the park. The cabins and a portion of the campsites are open year-round. A 1.75-mile shoreline trail leads from the campground to Jasper Point. An amphitheater is also located nearby that is used for educational programs.

Table 3.5-4: Facility locations at Prineville Reservoir.

	Boat Ramp	Picnic Area	Cabins	Developed Camping	Dispersed Camping	Swimming Area	Trails	Fishing Access
Prineville State Park	x	x	x	x		x	x	x
County Boat Ramp	x							
Big Bend				x				x
Powder House Cove	x							
Roberts Bay West	x	x			x			
Roberts Bay East		x			x			
Prineville Reservoir Resort	x		x	x				x
Jasper Point	x			x				
Owl Creek		x			x			
Juniper Bass					x			
Old Field					x			x
Cattle Guard					x			
Bear Creek					x			x
Antelope Creek								x
Combs Flat					x			x

Source: Provided by EDAW.



Photo 3-6. State Park cabin.

The day use area and boat launch are located directly adjacent to the campground on the shoreline of Prineville Reservoir. The day use area facilities include picnic tables, BBQs, playground, picnic shelter/kitchen, large shaded grassy areas, a beach with a designated swimming area, concession stand, restrooms, showers, fish cleaning station, volleyball net, and a large parking area (shared with the boat launch). Facilities at the boat launch include 2 ramp lanes, a boarding float, and a parking area (shared with the day use area). In total, the site has 45 single vehicle parking spaces and 60 boat trailer parking spaces. The boat launch is the deepest on the reservoir, and it is the only ramp that can be used as pool levels are lowered in the off-season. Recent renovations included the creation of additional boat trailer parking spaces. Both the boat launch and the day use area are popular with campers and other visitors to the reservoir.

Prineville Reservoir Resort is located on the northern shoreline of the reservoir at the tip of a

peninsula. The resort is run as a concession through an agreement with Reclamation and is the only privately managed recreation facility on the reservoir. The resort consists of a campground, motel, and boat launch, all of which are popular and heavily utilized during the peak use season. The campground consists of 69 campsites, all of which have hookups for water and electricity, many of which are directly on the water. In addition, the campground also features restrooms/showers, a volleyball court, horseshoe pits, an RV dump station, and a rustic cabin available for nightly rental. The boat launch is adjacent to the campground and features boat ramp lanes, boat moorage, a gas dock, and boat rentals (Photo 3-7). Other facilities at the resort include a 7-unit motel, fish cleaning station, convenience store, and small restaurant. Enhancements or improvements for recreation facilities at Prineville Resort will be considered, subject to an economic feasibility study. Recreation enhancements or improvements would not be developed and/or funded by Reclamation, but would be negotiated as part of a lease renewal at any new business opportunity at the existing location of the resort. Social Security Beach is a reservoir shoreline area just south of the Bottero Subdivision that is a popular spot for elderly people to drive in the drawdown zone to gain access for fishing.

Jasper Point Campground is a relatively new facility developed by OPRD and is located on the



Photo 3-7. Resort boat moorage.

northern shoreline of the reservoir. As recently as 1995, this was the most heavily used dispersed camping area on the reservoir and frequently would contain as many as 200 campsites. The current site consists of a small developed campground and a new boat launch facility. The 30-site campground is designed to be more primitive and rustic than the main State Park campground, thus offering a range of settings for visitors to the area (Photo 3-8). Water and electricity are provided at each site. Other facilities include two vault toilets and parking for 10 boat trailers. A boat launch adjacent to the campground features a 2-lane concrete boat ramp, a paved parking area with spaces for 22 vehicles and 40 vehicles with trailers, a vault toilet, and a dump station.



Photo 3-8. Jasper Point campsite.

There are four designated dispersed recreation sites along the North Side Primitive Road within the SWA: Owl Creek (Photo 3-9), Juniper Bass, Cattle Guard, and Old Field (Photo 3-10). The North Side Primitive Road runs from Jasper Point to the Paulina Highway and is mostly rough gravel, although it can be used by most passenger vehicles.



Photo 3-9. Owl Creek recreation site.

Owl Creek is managed as a walk-in/boat-in use area and has parking for about 10 vehicles. Features at this site include 3 picnic tables, 2 portable toilets, and about 10 dispersed campsites, several of which appear to be heavily used. Most of these sites are spread throughout an area of junipers along the shoreline of the reservoir. Road access to this site is closed from November 15 to April 15.



Photo 3-10. Old Field recreation site.

Juniper Bass is a designated dispersed use area located along a spur road about ½ mile south of the North Side Primitive Road. The ability for vehicles to access the shoreline at this site has created a long narrow area of about 10 scattered dispersed campsites. Day use appears to be more common at this site than overnight use, as the site

is barren and lacks shade. At low pool levels, vehicle access along the shoreline extends far to the east and west of the site. Road access to this site is closed from November 15 to April 15.



Photo 3-11. Roberts Bay East recreation area.

Cattle Guard is a moderate-sized designated dispersed site just south of the North Side Primitive Road along the shoreline of the reservoir. Features at this site include one primary site with a picnic table and five smaller use areas nearby, each with a user-constructed fire ring. The main site is located on a small bluff overlooking the reservoir. Road access to this site is closed from November 15 to April 15.

Old Field is a large designated dispersed area consisting of three separate areas, all of which are heavily used by visitors. This site is the farthest east of the sites on the North Side Primitive Road and is nearest to the Paulina Highway. The three primary areas at this site include a forested area just west of the main entrance (6 dispersed sites and 1 portable toilet), a large barren area just east of the main entrance (1 dispersed site), and a long, wide area along the shoreline with a network of dirt roads that is primarily a fishing access point (5 dispersed sites). During peak season weekends, each of these areas contains many more camps than indicated. Road access to this site is closed from December 15 to March 15.

Roberts Bay East is the most heavily used recreation area on the south shore and is the most popular dispersed recreation area on the reservoir (Photo 3-11). Features of this site include 12 picnic tables, 4 vault toilets—as well as additional portable toilets during the peak use season—and as many as 50 distinct dispersed

campsites with user-constructed fire rings. Trash cans are also provided during the peak use season. Twenty of the dispersed sites are on a small peninsula and have gravel parking spurs and some shade. The remaining sites are scattered throughout the main use area along the western shoreline of Roberts Bay which is interspersed with some juniper trees that provide limited shade. However, much of the use of this site occurs directly on the shoreline and in the areas below the full pool level that are exposed as the summer progresses. Although the area lacks a formal boat launch, the gentle slope of the shoreline and lack of rocks or trees allows visitors to launch from many portions of the site.

Roberts Bay West is a small designated dispersed site at the western end of the Roberts Bay area. Features of this site include an informal gravel/rock boat ramp, three picnic tables, and approximately ten dispersed campsites. Portable toilets are also provided at this site during the peak season and are highly visible from the water, resulting in heavy use from boaters in the area. The primary focus of users to this site is the boat launch, which is comparable to the facility at Powder House Cove in terms of the condition of the “ramp” (i.e., as it is long and straight). One picnic table and as many as eight dispersed campsites are located near the wetland area between this site and Roberts Bay East.

Juniper Point is a designated dispersed site located on a small bay on the southern shoreline of the reservoir. This designated dispersed site is more primitive and lightly used than the adjacent areas of Roberts Bay. Current access to the site is via the Salt Creek Road followed by a rough and unimproved gravel road also known as the Roberts Bay Road. There are an estimated 20 dispersed campsites at Juniper Point, most of which do not receive much use except on peak season weekends. There are three picnic tables at this site, and portable toilets and trash cans are provided during the peak use season.

Powder House Cove is a physically small day use area with high use at the western end of the local reservoir just south of Bowman Dam, near the old powder house used to store explosives during dam construction. Situated along Highway 27 that runs directly into Bend, this area is becoming increasingly popular among visitors from the south as it is the closest boat launch on Prineville Reservoir for most residents of Deschutes County and other points south, and the highway was recently paved. Features of this site include a one-lane boat launch, two gravel parking areas, and two vault toilets. Portable toilets and trash cans are installed at the site during the peak use season. The existing boat launch is best characterized as primitive as it has a gravel surface only on the uppermost portions before becoming mostly dirt on the lower portions. Given the popularity of this site, overflow parking commonly occurs on the shoulder of Highway 27, creating a traffic hazard. Boats also launch from numerous locations along the shoreline in the cove (Photo 3-12).



Photo 3-12. Powder House Cove boat ramp.

Big Bend is a large Reclamation-owned site just below Bowman Dam along the banks of the Crooked River. Big Bend is cooperatively managed for Reclamation by BLM through agreement with OPRD. For many years, this site has been managed to allow for dispersed day use and camping and has typically represented an optional use area for visitors to the reservoir when



Photo 3-13. Camping at Big Bend campground.

conditions become too crowded at Powder House Cove. This area is also popular among anglers who use this site as an easy access point to the tailrace of the dam as well as other areas downstream. As many as 40 distinct dispersed sites have been identified at this site in recent years, many of which were located in sensitive riparian areas along the river. Site improvements completed in 2001 were undertaken to formalize use at this site. Fifteen distinct campsites have been designated, all of which are located above the riparian zone of the river (Photo 3-13). Vehicle access to the shoreline and upstream areas below the dam has been blocked to reduce impacts and ensure visitor and dam safety. A self-service fee station, two toilets, and other tent camping and day use picnic areas have been added to the site.

The County boat ramp is one of five developed boat ramps on the reservoir, located on the northern shoreline a few miles west of the State Park. Due to its proximity to the city of Prineville, this is a popular boat launch for visitors arriving from the north. There are few facilities at this site, including a one-lane asphalt ramp, a gravel parking area, and portable toilets (Photo 3-14).

Aside from the designated dispersed sites around the reservoir, there are many other areas that visitors use for day use or overnight camping that are accessible by vehicle. Many of these areas can also be accessed by boat. One of these sites

is Bear Creek, on the southern shore of the reservoir east of Powder House Cove. This area has approximately 5 dispersed campsites and is also a walk-in access point for anglers. It is only popular in the early season as this shallow arm of the reservoir dries up quickly as pool levels fall. Another popular dispersed area is Antelope Creek. This area is near the spot where the road to Jasper Point branches off from the main road. A small gravel parking area (7 vehicles) is located just off the main road. A large beach area in the western portion of the Prineville Reservoir Resort area, commonly known as Social Security Beach, is a popular day use area for visitors where vehicles have been gaining access to a 0.25-mile stretch of shoreline (Photo 3-15).

Another popular dispersed area is near the intersection of North Side Primitive Road and Paulina Highway. This relatively flat area is in a location where the reservoir becomes braided and more riverine. The flat, open terrain sees more extensive ORV use than other areas around the reservoir and is also a popular area for camping and shoreline fishing.

In addition to the sites mentioned above, as many as 40 boat-in dispersed sites have been identified along the shoreline of the reservoir. Most of these sites are located at the western end of the reservoir and have user-constructed fire rings. Many sites have small beach areas, which make these the most popular sites.



Photo 3-14. County Boat Ramp.



Photo 3-15. Social Security Beach with Bottero Park in the background.

Overall, Prineville Reservoir is popular among many types of boaters who visit the area and had more boater activity days in 1998 than all but two reservoirs in Crook, Jefferson, and Deschutes counties. Estimates of this use indicate that 43% of these activity days were anglers, 33% water-skiers, 20% general boat use (cruising), and 4% PWC riding. Although not included in this estimate, there is some sailboat use of the reservoir as well as a limited amount of non-motorized boating use such as canoeing and kayaking. Due to the popularity of the boat launch at Powder House Cove, much of the boating use occurs in the western sections of the reservoir. Eastern sections of the reservoir have a boat speed limit of 5 mph, making angling popular in these areas. The Marine Patrol enforces the speed limit and other boating regulations during patrols in the peak season.

3.6 Transportation and Access

This section addresses vehicular access to destinations at the Prineville Reservoir from local and regional population centers. Information on local airports and bus service is also included.

3.6.1 Road Access

Primary road access from the City of Prineville to the Prineville Reservoir area, including Prineville State Park, Prineville Reservoir Resort, Jasper Point, and the County boat ramp, is provided via Juniper Canyon Road. State Route 27 provides access from the City of Prineville to Bowman Dam and Powder House Cove with connections to other destinations on the reservoir's south side. The north end of the reservoir is accessed from the City of Prineville by a 15-mile section of the Combs Flat Road (Paulina Highway, State Route 380). From the City of Bend, most visitors travel to the south side via Alfalfa Road, which connects with State Route 27.

Juniper Canyon Road is the primary road leading to the most heavily used recreation sites on the reservoir's north shore. The 17-mile-long, 2-lane asphalt and oil mat-surfaced road is well maintained by Crook County and was resurfaced most recently in 1998. The asphalt paved portions of the road are 24 feet wide with 2-foot gravel shoulders on either side. Most of this road has a posted speed limit of 55 mph, which is reduced closer to the reservoir due to numerous curves in this part of the road. Peak traffic volumes on the Juniper Canyon Road approach 4,000 trips per day (pers. comm., Thompson, 2001). State Route 27 (also known as the Crooked River Highway) parallels the river below the dam through the winding, scenic Crooked River Canyon. This road is also a well-maintained 2-lane asphalt road but is a little longer, and speeds are slower as a result of the numerous curves (Photo 3-16).

Between Jasper Point and the upper end of the reservoir within the Prineville Reservoir SWA, access to primitive shoreline campsites at Owl Creek, Juniper Bass, Cattle Guard, and Old Field is provided via the 6.3-mile-long North Side Primitive Road (Photo 3-17). The Combs Flat Road (Paulina Highway) intersects the primitive road at the northeast end of the reservoir. The



Photo 3-16. South Juniper Canyon Road looking toward Jasper Knolls.



Photo 3-17. North Side Primitive Road near Old Field.

primitive road is unsurfaced and seldom wide enough for two vehicles to pass. Numerous curves, substandard gradients, and limited drainage and maintenance render the road virtually unsuitable for safe or sustained public travel, particularly following precipitation when the road is wet and slippery. The western two-thirds of the road is located on steep slopes with many curves. The eastern one-third is located on more gently sloping topography with fewer curves and abrupt changes in elevation. The road currently does not meet the minimum standards for rural roads. Traffic control, road directional, and information signs are lacking in most areas. The North Side Primitive Road is open on a seasonal basis only—generally from April 15 to November 15 from Jasper Point to Old Field, and March 15 to December 15 from Old Field to Combs Flat Road to accommodate wintering deer and other wildlife.

Road access to the reservoir's south shore is extremely limited. Road access to destinations on the reservoir's south side (including Roberts Bay, Bear Creek, Powder House Cove, Bowman Dam, and the lower Crooked River) is via the Crooked River Highway, State Route 27, which originates in the City of Prineville and links U.S. Route 26 with U.S. Route 20 to the south. Between Prineville and Powder House Cove south of Bowman Dam, State Route 27 is a 2-lane asphalt-surfaced road.



Photo 3-18. Road between Roberts Bay and Juniper Point.

Farther south toward U.S. Route 20, Route 27 becomes a wide and well-maintained graveled road. Traffic volumes on SR 27 range from 1,100 average daily trips south of the City of Prineville to 90 near the junction with Alfalfa Road (ODOT website 2001).

The most direct route from Bend follows SW Willard Road, which connects to SW Reservoir Road and SE Reservoir Road before intersecting with State Route 27. Collectively, this route, which was paved with an oil-mat surface from 1988 to 1998, is known as Alfalfa Road. This smooth road surface has substantially reduced driving time from Bend to only 30 to 45 minutes, making Prineville Reservoir an increasingly popular destination for visitors from the Bend area.

State Route 27 leads directly to the Powder House Cove recreation site, with access to the Bear Creek Arm of Prineville Reservoir requiring travel on a single lane primitive road (SE

Lakeview Road) adjacent to Bear Creek. Access to the Roberts Bay area requires traveling on a 2-lane graveled County road called S. Salt Creek Road to the old stage stop know as Roberts. The section from Roberts to the Reclamation boundary, known as the Roberts Bay Road, is seldom maintained and in poor condition (Photo 3-18). If legal access can be determined or acquired, Reclamation, in cooperation with OPRD, will take responsibility for maintaining the road to Roberts Bay commensurate with the level of facility development. See Appendix F for communications with Crook County regarding the Roberts Bay Road. County and State road data are summarized in Table 3.6-1.

Executive Orders 11644 and 11989 (February 1972 and May 1977, respectively) established policies and procedures to ensure that the use of ORVs on public lands will be controlled and directed to protect resources, promote user safety, minimize user conflict, and ensure that any

Table 3.6-1: County and State roads in vicinity of Prineville Reservoir.

Road Name	#	Classification	Surface	Condition
S Juniper Canyon	214	Major Collector	Asphalt/oil mat	Good
SW Willard	351	Minor Rural	Oil-mat	Good
SW Reservoir	332	Minor Rural	Oil-mat	Good
SE Reservoir	332A	Minor Rural	Oil-mat	Good
SE Lakeview	355	Minor	Gravel	Fair
S Salt Creek	134	Minor	Gravel	Good
Crooked River Hwy	SR 27	Highway	Paved	Good
Combs Flat Road	SR 380	Highway	Paved	Good

Source: Crook County Road Department 1998

permitted uses will not result in significant adverse environmental impact or cause irreversible damage to existing resources. Pursuant to these Orders, policy and criteria relating to the use of ORVs on Reclamation lands were established on August 23, 1974 (see 43 CFR Part 420). Specifically, all Reclamation lands are closed to motorized travel except for areas, roads, or trails specifically open for such use (Photo 3-19).

At Prineville Reservoir, this policy is enforced by the Crook County Sheriff’s Department and is based on Crook County Ordinance No. 34 as Amended by Ordinance 101 and Federal Regulation 43 CFR, Part 420 restricting licensed vehicle use to designated roads only (as identified and mapped in the original legislation).



Photo 3-19. Dispersed camping near Cattle Guard, and illegal use of vehicle adjacent to the reservoir.

Chapter 4

The RMP Planning Process





Chapter 4

The RMP Planning Process

4.1 Overview

This chapter summarizes the principal factors that most influenced development of the Prineville Reservoir RMP (as illustrated in Figure 4.1-1). These factors were identified through the following two fundamental processes:

1. Review and analysis of regional and study area resource inventory data, and current land use and management prac-

tics; and Federal laws and Reclamation policies and authorities (See Appendix C).

2. A public involvement program and agency and Tribal consultation, focused on feedback and input from public meetings/workshops, hearings, newsbriefs, Ad Hoc Work Group (AHWG) meetings, and other meetings and communications.

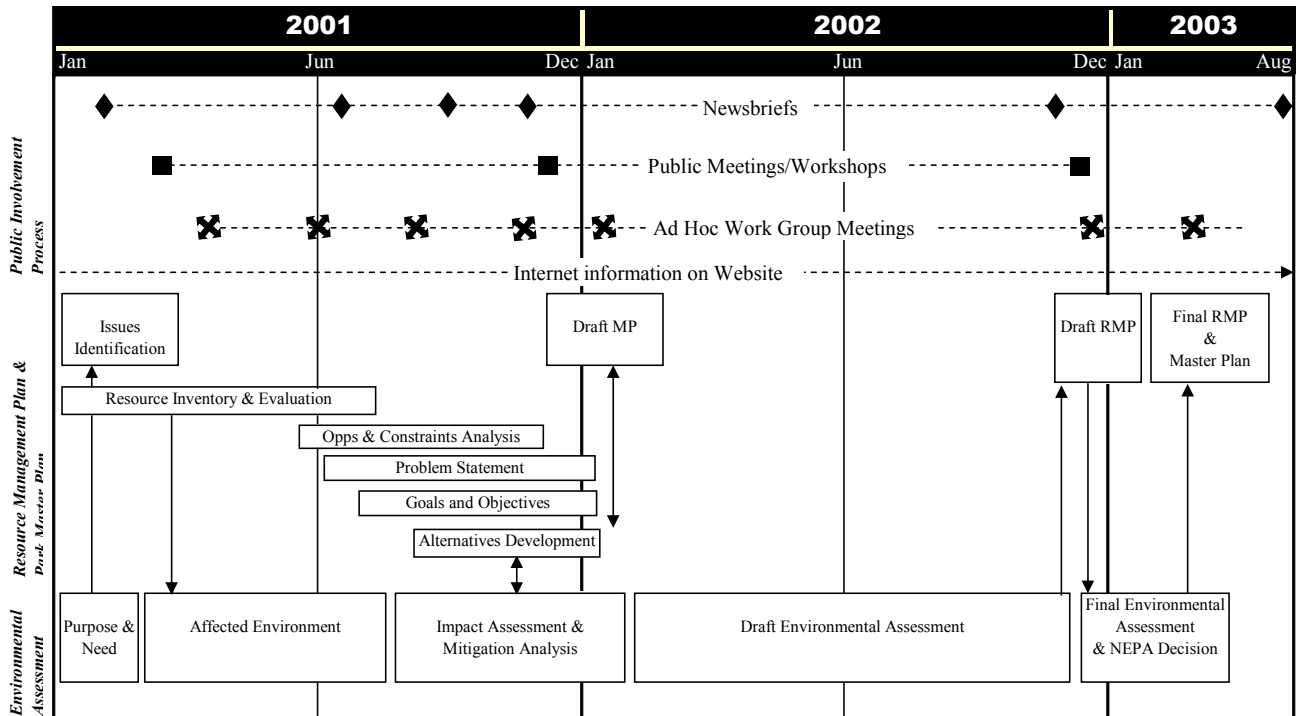


Figure 4.1-1: RMP Planning Process and Work Plan.

A detailed Problem Statement defining the major opportunities, constraints, and planning issues was developed based on input from the processes listed above (see Appendix D).

The most commonly mentioned issues by those providing input during development of the RMP were camping at Roberts Bay, juniper management, impacts of recreation use, and impacts from grazing. Although not mentioned as frequently, general issues related to vehicle access and emergency services as well as specific comments related to recreation facility design and management were also raised by the public during this process. Table 4.1-1 lists the primary issues of concern raised in the first set of public meetings and through written comment in response to the first newsbriefs, AHWG meetings, and agency and Tribal meetings. These issues are described in detail in the Problem Statement contained in Appendix D. While not all issues of concern are listed in Table 4.1-1, the Problem Statement provides a comprehensive review and understanding of all of the issues, needs, and opportunities (including all relevant perspectives) that are addressed by the RMP.

The Problem Statement was also used to guide the development of the RMP Goals and Objectives, which are the foundation upon which alternative Management Actions were developed (described in detail in Chapter 5). The range of alternatives was reviewed by the public and the Ad Hoc Work Group. The alternatives were also identified and analyzed in the Draft Environmental Assessment (EA) for the Prineville Reservoir RMP to investigate potential environmental effects (Reclamation 2002).

Letters of comment on the Draft EA were received from 1 Tribe; 3 Federal agencies; 2 state agencies; 2 local agencies; and 24 from the general public. In addition, 192 form letters from an interest group were received. The

Table 4.1-1: Primary issues of concern identified during the initial phases, based on public input.

- Quantity and quality of recreation use to provide at Prineville Reservoir to meet increasing demand.
- Conflicts between recreation use and wildlife habitat.
- Conflicts among recreation users, especially motorized versus non-motorized.
- Grazing management.
- Juniper management.
- Protection and conservation of important or sensitive resources, such as wildlife, fisheries, wetlands, riparian vegetation, and cultural resources.
- Vegetation management and weed control.
- Coordination with ODFW regarding management of the Prineville SWA.
- Protection of winter range for deer and elk management.
- Avoidance of recreation conflicts with wintering deer.
- Additional or expanded boat ramps, docks, and associated facilities.
- Improved access to reservoir/recreation sites.
- Trespass and requests for private land access.
- Impacts of motorized vehicles, such as off-road vehicles (ORVs).
- Hunting and fishing opportunities.
- Water quality and erosion control.
- Cultural resource protection.
- Scenic viewshed quality.
- Health and sanitation.
- Law enforcement.

Source: Provided by EDAW, 2003.

Preferred Alternative was selected and modified using these consultation and assessment processes.

4.2 Public Involvement Program

Reclamation initiated a public involvement program in February 2001 and continued it throughout the planning process to support development of the RMP (see Figure 4.1-1). The program included: (1) six newsbriefs; (2)

three sets of public meetings/workshops; (3) seven meetings with the AHWG representing key agencies, Tribes, and stakeholders in the study area; and (4) a project website providing information to the public and a forum in which to comment on the process. Each of these program components is described in further detail below.

4.2.1 Newsbriefs

The first newsbrief was mailed in February 2001 to over 355 individuals and organizations. It explained the RMP planning process, announced the project schedule, introduced the team members, and provided a form for submitting issues and initial comments on the management and facilities in the study area. This information was used to help form the Goals and Objectives for the RMP.

In July 2001, the results of the mail-in form and the issues raised at the first public meeting were summarized in a second newsbrief. These issues were listed in a table and categorized by issue type (recreation, access, natural resources, and/or management). Approximately 50 responses were received.

The third newsbrief was mailed in September 2001 and focused on the process of defining the issues that Reclamation and OPRD were addressing on the RMP process.

The fourth newsbrief was mailed in November 2001 and announced the second public meeting, summarized the draft Goals and Objectives of the RMP, and summarized the alternatives being considered.

In November 2002, a fifth newsbrief was mailed that provided an overview of the Draft EA Alternatives, information on where to find the Draft EA document, and how to provide input on the document.

The sixth and final newsbrief was published in August 2003 to announce the Final EA and the RMP. It also summarized comments received on the Draft EA and provided an overview of the RMP, including implementation.

4.2.2 Public Meetings

The first set of public meetings was held on March 14, 2001 in Prineville and March 15, 2001 in Portland. The purpose of these meetings was to conduct public scoping of the issues at Prineville Reservoir. Approximately 30 people attended the Prineville meeting and 5 attended the Portland meeting. Reclamation provided information about the RMP planning process, then the participants broke into small work groups to discuss important issues and opportunities the RMP should address.

The second public meeting was held November 28, 2001, in Prineville. Approximately 35 people attended the meeting. The meeting followed a similar format, beginning with presentation of the alternatives and RMP draft goals and objectives, and following on with small group discussions.

The third and final public meeting was held on November, 21 2002 in Prineville. This meeting included an informational workshop to review the RMP alternatives and the process and findings of the EA.

4.2.3 Ad Hoc Work Group

The Ad Hoc Work Group met in April, June, August, and November 2001; February and December 2002; and March 2003. As part of the June 2001 meeting, the group spent a day touring the Prineville Reservoir study area and becoming more familiar with the issues (Photo 4-1). The 18 members brought a wide variety of viewpoints, and, although some were able to participate more than others, the group was of considerable assistance in the alternatives development process. The Preferred Alterna-



Photo 4-1. While on a site tour, the AHWG stops to discuss resource issues.

tive was arrived at through Ad Hoc Work Group discussions, public comments from the second set of public meetings, and the recommendations of agency scientists and planners. The entities represented in the Ad Hoc Work Group are listed in Table 4.2-1.

At the first meeting, the group was introduced to the planning process and asked to identify their issues of concern. This information was recorded and used to help draft the Problem Statement and form the draft Goals and Objectives for the RMP.

At the second meeting, an overview of the resource inventory was presented, including potential opportunities and constraints (Photo 4-2). The Team also presented and took initial comments on the draft Problem Statement and

preliminary Goals and Objectives. In conjunction with the second meeting, the AHWG also took part in a tour of Prineville Reservoir.

The primary intent of the third meeting was to gather AHWG comments on the Draft Problem Statement. In addition to Problem Statement discussions, the secondary purpose of this meeting was to briefly summarize opportunity and constraints mapping prepared for the project, as well as list the draft Goals developed for the plan.

The intent of the fourth meeting was to report on the Problem Statement revisions, receive further comments on grazing issues, and gather comments on both the draft Goals and Objectives and the draft set of Alternatives.

At the fifth meeting, the Planning Team presented the final Problem Statement and another version of the draft Goals and Objectives for final comment by the AHWG. A second purpose of this meeting was to present and receive feedback on a preliminary set of alternatives, including a no action (i.e., status quo) alternative and two action alternatives. An additional purpose of the fifth meeting was to review the revised set of alternatives, focusing on the Preferred Alternative, the primary goal being to finalize the Preferred Alternative based on input received from the AHWG.

Table 4.2-1: Ad Hoc Work Group Membership.

Bureau of Land Management	Ochoco Irrigation District
Central Oregon Bass Club	Oregon State Marine Board
Confederated Tribes of the Warm Springs	Oregon Department of Fish and Wildlife
Crook County Planning Department	Oregon Department of Parks and Recreation
Crook County Sheriff's Department	Prineville Reservoir Resort
Crooked River Watershed Council	Prineville-Crook County Chamber of Commerce
Deschutes County	South Shore Land Owners
Grazing Interests	South Shore Recreationists
North Shore Land Owners	U.S. Fish and Wildlife Service

The main purpose of the sixth meeting was to receive the AHWG's comments on the Draft EA and discuss any potential modifications to the Preferred Alternative. In addition, a review of the overall planning process was provided including an overview of the various study phases.

The primary purposes of the seventh and final meeting were to present and receive feedback on the RMP management actions and Implementation Program.

4.2.4 World Wide Web

A Prineville Reservoir RMP web site was set up on Reclamation's Pacific Northwest (PN) Region's homepage and updated as a way to provide relevant information to the public. Newsbriefs, contact names/addresses, draft materials, the Draft EA, and meeting announcements were posted on this website. The site also provided a forum for individuals to provide comments on the RMP planning process.

4.3 Tribal Consultation

4.3.1 Overview of Government-to-Government Consultation with Tribes

Reclamation met with staff members of the Confederated Tribes of the Warm Springs to discuss the preparation of the RMP and to identify ITAs, TCPs, and Indian sacred sites. A representative from the Warm Springs Tribes participated in the Ad Hoc Work Group, which facilitated close coordination with the Government and helped ensure that Tribal interests were integrated with the RMP.

Several meetings were held and correspondence was exchanged between Reclamation and the Warm Springs Tribes. The dates for the meetings and correspondence are provided in Appendix A-2.



Photo 4-2. The Planning Team gives a presentation to the AHWG.

4.3.2 National Historic Preservation Act Requirements

The National Historic Preservation Act of 1966 (NHPA) (as amended through 1992) requires agencies to consult with Indian Tribes if a proposed Federal action may affect properties to which the Tribes attach religious or cultural significance. The implementing regulations of the NHPA, 36 CFR 800, address procedures for consultation in more detail.

4.3.3 Indian Trust Assets

Indian Trust Assets are legal interests in property held in trust by the United States for Indian Tribes or individuals. The Secretary of the Interior, acting as the trustee, holds many assets in trust for Indian Tribes or Indian individuals. Examples of trust assets include lands, minerals, hunting and fishing rights, and water rights. While most ITAs are on-reservation, they may also be found off-reservation.

The United States has an Indian trust responsibility to protect and maintain rights reserved by or granted to Indian Tribes or Indian individuals by treaties, statutes, and executive orders. These are sometimes further interpreted through court decisions and regulations.

4.3.4 Sacred Sites

Sacred sites are defined in Executive Order 13007 as “any specific, discrete, narrowly delineated location on Federal land that is identified by an Indian Tribe, or Indian individual determined to be an appropriately authoritative representative of an Indian religion, as sacred by virtue of its established religious significance to, or ceremonial use by, an Indian religion....”

Reclamation coordinated with the Warm Springs Tribe to identify their interests, including ITAs and sacred sites. Results of the consultation are discussed in detail in Section 2.5 and 2.6, Sacred Sites and Indian Trust Assets, respectively (see Appendix A-2 for a summary coordination of all Tribal consultation activities).

4.3.5 Other Laws and Regulations

The relationship between Federal agencies and sovereign Tribes is defined by several laws and regulations addressing the requirement of Federal agencies to notify or consult with Native American groups or otherwise consider their interests when planning and implementing Federal undertakings. Among these are the following (also see Appendix C, Legal Mandates):

- National Environmental Policy Act (NEPA)
- American Indian Religious Freedom Act
- Archaeological Resources Protection Act
- Native American Graves Protection and Repatriation Act
- Executive Order 12875, Enhancing the Intergovernmental Partnership
- Executive Order 12898, Federal Actions to Address Environmental Justice in Minor-

ity Populations and Low-Income Populations

- Presidential Memorandum: Government-to-Government Relations with Native American Tribal Governments
- Executive Order 13007, Indian Sacred Sites
- Executive Order 13175 of November 6, 2000, Consultation and Coordination with Indian Tribal Governments (EO 13175 revokes EO 13084 issued My 14, 1998).

4.4 Agency Coordination

Reclamation consulted with several Federal and local agencies throughout the RMP process to gather valuable input and to meet regulatory requirements. This coordination was integrated with the public involvement process.

Coordination on fish and wildlife issues to meet the requirements of the Fish and Wildlife Coordination Act (FWCA) was accomplished by consulting with the FWS. Information about this consultation is provided in Appendix A-1, FWS Planning Aid Memorandum (PAM).

The evaluation of endangered species contained in the EA served as Reclamation’s biological evaluation of potential effects to listed and proposed for listing species including bald eagles and lynx, and one candidate species, the Oregon spotted frog as required under the ESA. Reclamation has determined that the Preferred Alternative will not affect any of these species.

Reclamation has collected new and existing cultural resources information from the Prineville Reservoir area. That information will facilitate subsequent compliance with the NHPA and its implementing regulations (36 CFR 800). Pursuant to the 36 CFR 800 regulations, Reclamation will coordinate with the

Oregon SHPO for specific RMP actions that have the potential to cause effects on historic properties; and with the Confederated Tribes of the Warm Springs, the Klamath Tribe, and the Burns-Paiute Tribe for specific RMP actions that may affect historic properties to which these tribes attach cultural or religious significance. Consultation with the tribes over sacred sites and ITA aspects of the RMP will occur when specific RMP management actions might affect those values.

Chapter 5
Resource Management





Chapter 5

Resource Management

5.1 Introduction

This chapter describes Reclamation's and OPRD's decisions regarding strategies that will guide use and management of Reclamation's lands over the next 10 years (for the RMP) and for the next 25 years (for the Master Plan). Some background on Reclamation's approach, authorities, or policies is provided for each of the primary categories; these are followed by specific Goals, Objectives, and Management Actions. Specific guidelines and procedures are provided for management as needed.

All new construction is required to be 100% accessible to persons with disabilities, wherever possible, in accordance with current Federal accessibility standards. These standards include (but are not limited to) parking lots and spaces, access routes, camping sites, restrooms, concessions, entrance booths, trails, interpretive displays, and all signage.

5.2 Goals, Objectives, and Management Actions

Management Actions are specific tasks intended to guide Reclamation management and staff, as well as managing partners, in the activities required to properly manage Reclamation lands. They were derived from the Goals and Objectives developed over the course of preparing the RMP and associated EA. Guidelines and standards provide additional direction and clarification for selected Management Actions, where needed. Figure 5.2-1 shows all of

the Management Actions that are specific to a geographic location.

Management Actions are intended to be implemented over the next 10 to 25 years and are included here because they are considered the most appropriate actions for managing these lands. Inclusion of these actions does not ensure that funding, staff, or equipment will be available to implement these actions, nor does it obligate Reclamation to implement individual actions it chooses not to pursue at any time in the future. Following are the five primary categories and associated subcategories described in this chapter:

- Natural Resources (Section 5.2.1) includes wildlife and vegetation management, fishery resources, erosion and water quality, and scenic resources;
- Cultural Resources (Section 5.2.2);
- Sacred Sites (Section 5.2.3);
- Indian Trust Assets (Section 5.2.4);
- Paleontology (Section 5.2.5);
- Recreation and Access (Section 5.2.6) includes boating and other water-based uses, and shoreline and other land-based uses; and

- Land Management and Implementation (Section 5.2.7) separately describes each of these topics.

5.2.1 Natural Resources (NAT)

Reclamation's approach to managing natural resources is to preserve and enhance native wildlife populations and their habitat in accordance with an approved land use or resource management plan; and encourage its land-management partners to follow suit. ODFW is Reclamation's non-Federal managing partner for fish and wildlife at Prineville Reservoir, with specific management responsibility over the SWA.

The principles in Public Law 89-72, Federal Water Projects Recreation Act of 1965, as amended by Title 28 of Public Law 102-575 will continue to be adhered to for fish and wildlife-related activities and management considerations. Basically, Title 28 states that if a non-Federal public entity has agreed to manage fish and wildlife resources on Reclamation lands, Reclamation may share those costs for up to 75% of the total cost.

In accordance with the Endangered Species Act (ESA) of 1973 (P.L. 93-205), Federal and Reclamation policies provide for the protection of plant and animal species that are currently in danger of extinction (endangered) or those that may become so in the foreseeable future. Section 7 of the ESA requires Federal agencies to conduct informal and formal consultations with the FWS on all proposed actions that may affect any Federally listed or candidate threatened or endangered species. This consultation process is designed to ensure that Federal activities will not jeopardize the continued existence of threatened or endangered species, or on designated areas (critical habitats) that are important in conserving these species. The FWS' Planning Aid Memorandum, provided as Appendix A-1, is the result of Reclamation's consultation with the FWS. It lists seven specific recommendations to protect and improve fish and

wildlife resources in the Prineville Reservoir area. Table 5.2-1 presents the PAM recommendations along with the corresponding RMP management actions, where applicable. The FWS was also a member of the Ad Hoc Work Group (as summarized in Chapter 4, Section 4.2.3).

Federal policy and Reclamation's approach also supports the protection and "no net loss" of wetlands. In carrying out land management responsibilities, Federal agencies are required to minimize the destruction, loss, or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands. Executive Order 11990 (Protection of Wetlands) states that agencies shall: "Avoid to the extent possible the long- and short-term adverse impacts associated with the destruction or modification of wetlands and avoid direct or indirect support of new construction in wetlands wherever there is a practicable alternative."

Noxious weeds reduce the quantity and quality of forage and wildlife habitat, contaminate food stocks, and restrict waterways. Reclamation will strive to reduce, and eliminate if possible, noxious weeds on all of its lands and assist adjacent landowners (wherever possible) in their efforts at eradicating noxious weeds. It is Reclamation's approach to prepare and implement Integrated Pest Management Plans for lands under its jurisdiction. Reclamation also works with local agencies under the guidance of the IPM Plan.

Reclamation's approach to managing soil resources and water quality focuses on reducing soil erosion from various sources or the improper use of hazardous materials. All development and/or Management Actions will consider and respond to this approach.

5.2.1.1 Wildlife and Vegetation Management

GOAL NAT 1: Protect, conserve, restore, and enhance wildlife habitat and natural resources on Reclamation lands.

Figure 5.2-1

Resource Management Plan Map

Back of Figure 5.2-1

Table 5.2-1. FWS Planning Aid Memorandum recommendations and corresponding RMP Management Actions.

PAM Recommendation	Applicable Management Action(s)
A comprehensive bald eagle management plan should be developed for Prineville Reservoir. The plan would be jointly developed by Reclamation, BLM, ODFW, FWS. The plan would include recommendations concerning levels or types of recreational activities that should be controlled in certain areas of the reservoir.	NAT 1.1.3 NAT 1.2.1
Boat ramp construction should be performed during reservoir drawdown, probably between July 1 and March 1. The timing and design of boat ramp construction plans should be coordinated with ODFW.	REC 2.3.2
ODFW should be identified as one of the parties involved in developing grazing plans for all Reclamation lands outside of the SWA.	NAT1.6.2(5)
Wildlife habitat improvement measures should be implemented at several upland sites around Prineville Reservoir on Reclamation lands. These habitat enhancement efforts would be planned and accomplished through coordinated efforts by Reclamation, ODFW, and FWS.	NAT 1.2.1 NAT 1.2.2 NAT1.3.1 NAT 1.4.1 NAT1.5.1
Fences should be constructed to protect and enhance riparian habitat around the non-recreational portions of Antelope Creek, Roberts Bay, and Smallmouth Bay. Details of this effort should be coordinated with ODFW.	NAT 1.7.1 NAT 1.7.2 NAT 1.7.4
Reclamation, in cooperation with other agencies, should evaluate measures to protect wildlife and habitat around private lands located within Reclamation and BLM lands. Possible measures could include conservation easements and acquisitions.	Reclamation has only a small area of developed private land within the RMP study area boundary. Areas outside of the boundary are outside of Reclamation's authority.
A temporary minimum flow of 75 cfs should be released from Bowman Dam during water storage periods. Upon completion of the Prineville Reservoir Reallocation Study, this minimum flow would be adjusted as necessary.	Water operations are outside of the scope of this RMP and the associated EA.

Objective NAT 1.1: Avoid or minimize adverse impacts of RMP actions on Federal and State designated species of special concern, including Federally listed, endangered, or threatened species.

Management Actions

NAT 1.1.1: Use all existing and future new information to evaluate ongoing and future actions and land management so that changes can be made to sustain and foster rare, sensitive, and protected species and their habitat. Coordinate with ODFW, BLM, and USFWS in any action that could adversely affect these species.

NAT 1.1.2: Participate in the annual monitoring of bald eagle nests and winter roost areas, golden eagle nests, prairie falcon nests, and *Artemisia ludoviciana* sites to collect data for improved management. Assess monitoring data and develop protection measures if needed.

NAT 1.1.3: Develop and include an Eagle Management Plan as a component to the Habitat and Wildlife Management Plan. Include a review of the potential new eagle nest in the SWA and a review of the annual monitoring results, with particular attention on potential recreation-related impacts.

NAT 1.1.4: Comply with the Federal ESA and NEPA regarding all RMP actions, including inspection of construction sites prior to any ground-disturbing activity. Rare and sensitive species clearances described below will be conducted after project authorization, but prior to the start of construction:

1. If areas where native plant communities are located must be used for access roads or staging areas, site clearances at the appropriate time of year for the species involved will be conducted by qualified biologists to ensure that sensitive species are not impacted. Established search protocols will be followed where these exist.
2. Construction activities that could impact sensitive fish will be undertaken during non-spawning periods.

NAT 1.1.5: During the 10-year period covered by this RMP, species not currently protected under the ESA may be listed. If any such species occur on Reclamation lands, Reclamation will work with the appropriate agencies to close or enforce time-of-year access restrictions in areas harboring Federal and State designated species of special concern (including Federally designated rare, endangered, or threatened species).

Objective NAT 1.2: Minimize adverse impacts to wildlife and vegetation values in all actions considered to accommodate public demand at recreation sites or on the surface and shoreline of Prineville Reservoir; and utilize management practices that protect and enhance resource values of and for native species (plants and animals) in all decisions related to habitat management and land use.

Management Actions

NAT 1.2.1: In cooperation with OPRD, ODFW, FWS, and BLM, develop and implement a comprehensive Habitat and Wild-

life Management Plan for the entire RMP study area. The Management Plan will be a comprehensive effort and include the Eagle Management Plan, Integrated Pest Management Plan, Fencing Plan, Fisheries Plan, and juniper management strategies. The Management Plan will also identify distinct Habitat Improvement Plan (HIP) areas, set priorities, and establish monitoring/evaluation timeframes.

NAT 1.2.2: Prepare and implement geographically oriented HIPs for distinct areas at Prineville Reservoir as an outcome of the Habitat and Wildlife Management Plan. The HIPs shall:

1. Identify specific wildlife habitat improvement measures and management strategies to protect, improve, and enhance the diversity and abundance of wildlife populations and habitats within Reclamation lands. Emphasis will be placed in keeping livestock away from reservoir shoreline, wetland, and riparian areas; and recreational activities away from sensitive areas.
2. Monitor and evaluate HIP strategies for success and continued adequacy; if necessary, modify or develop new strategies to respond to changing conditions and/or inadequate results.

NAT 1.2.3: New development and any renovations made to existing facilities shall complement the surrounding landscape and adhere to the following design and construction criteria, guidelines, and standards:

1. Developed facilities will complement and be subservient with the surrounding landscape wherever possible.
2. Disturbed areas resulting from any construction will be aggressively revegetated.

3. To the maximum extent practicable, all existing trees, shrubs, and other naturally occurring vegetation will be preserved and protected from construction operations and equipment, except where clearing operations are required for permanent structures, approved construction roads, or excavation operations.
4. To the maximum extent practicable, all maintenance yards, field offices, and staging areas will be arranged to preserve trees, shrubs, and other vegetation.
5. Clearing will be restricted to that area needed for construction. In critical habitat areas including, but not limited to, wetlands and riparian areas, clearing may be restricted to only a few feet beyond areas required for construction.
6. Stream corridors, wetlands, riparian areas, steep slopes, or other critical environmental areas will not be used for equipment or materials storage or stockpiling; construction staging or maintenance; field offices; hazardous material or fuel storage, handling, or transfer; or temporary access roads, in order to reduce environmental damage.
7. Excavated or graded materials will not be stockpiled or deposited on or within 100 feet of any steep slopes (defined by industry standards), wetlands, riparian areas, or stream banks (including seasonally active ephemeral streams without woody or herbaceous vegetation growing in the channel bottom), or on native vegetation.
8. To the maximum extent possible, staging areas, access roads, and other site disturbances will be located in disturbed areas, not in native or naturally occurring vegetation.
9. The width of all new permanent access roads will be kept to the absolute minimum needed for safety, avoiding wetland and riparian areas where possible. Turnouts and staging areas will not be placed in wetlands.
10. Construction areas, including storage yards, will limit the amount of waste material and trash accumulations at all times.
11. All unused materials and trash will be removed from construction and storage sites during the final phase of work. All removed material will be placed in approved sanitary landfills or storage sites, and work areas will be left to conform to the natural landscape.
12. Upon completion of construction, grade any land disturbed outside the limits of reservoir pools, permanent roads, and other permanent facilities to provide proper drainage and blend with the natural contour of the land. Following grading, revegetate using plants native to the area, suitable for the site conditions and beneficial to wildlife.
13. Where applicable, consult with the following agencies to determine the recommended plant species composition, seeding rates, and planting dates: ODFW, OPRD, NRCS, and BLM.
14. Grasses, forbs, shrubs, and trees appropriate for site conditions and surrounding vegetation will be included on a plant list developed during site design. Species chosen for a site will be matched for site drainage, climate, shading, and resistance to erosion, soil type, slope, aspect, and vegetation management goals. Wetland and riparian species will be used in revegetating disturbed wetlands. Upland revegetation shall match the plant list to the site's soil type, topographic position, elevation,

and surrounding communities. Reclamation will consider using plant materials that are traditionally important to the Warm Springs Tribes, when such plants will accomplish the restoration or revegetation objectives and are reasonably comparable in cost.

15. In-water construction for boat ramps would be limited to between July 1 and March 1 for the protection of aquatic resources. Reclamation will consult with OFDW and FWS regarding construction timing of boat ramps.
16. Contractors will be required to reduce dust from construction operations and prevent it from damaging dwellings or causing a nuisance to people. Methods such as wetting exposed soil or roads where dust is generated by passing vehicles will be employed.
17. Contractors will be required to comply with all applicable Federal, State, and local laws and regulations concerning prevention and control of noise and air pollution. Contractors are expected to use reasonably available methods and devices to control, prevent, and reduce atmospheric emissions or discharges of atmospheric contaminants and noise.

Objective NAT 1.3: Manage all SWA-designated lands and adjacent shoreline areas to protect habitat for waterfowl, other migratory birds, and big game.

Management Actions

NAT 1.3.1: Include all SWA-designated lands as part the Habitat and Wildlife Management Plan by preparing a HIP(s) with specific actions applicable to the SWA (e.g., restoring and enhancing areas damaged by illegal ORV use).

Objective NAT 1.4: Protect, enhance, and/or restore wetland and riparian habitats in accor-

dance with existing Federal regulations and consistent with this RMP.

Management Actions

NAT 1.4.1: Include strategies in all HIPs that emphasize the importance of wetland and riparian habitats through the implementation of development and restoration projects, as appropriate.

Objective NAT 1.5: Work with partner agencies (ODFW, USFS, Crook County, BLM, ODA [Invasive Species Council]) to study and effectively control aquatic and terrestrial noxious and invasive weed problems on Reclamation lands and water.

Management Actions

NAT 1.5.1: As required by DOI directives 609 DM 1 (June 26, 1995), Secretarial Order No. 3190 (June 22, 1995), and Reclamation Manual Directive ENV 01-01, complete and implement an Integrated Pest Management Plan for the Prineville RMP study area in coordination with partner agencies. Include the IPM in the Habitat and Wildlife Management Plan.

Objective NAT 1.6: Manage grazing on Reclamation lands as appropriate to meet management objectives.

Management Actions

NAT 1.6.1: Continue agreement with BLM to manage grazing on Reclamation lands around Prineville Reservoir.

NAT 1.6.2: Cooperate on the following actions:

1. Review permits and allotment management plans.
2. Identify areas with sensitive resources and assess grazing impacts (i.e., wetlands, riparian areas, cryptobiotic soil

areas, cultural resource sites, and threatened and endangered species).

3. Identify necessary solutions (i.e., fencing, permit changes, timing of use, allotment management plan revisions).
4. Continue to allow grazing as a habitat management tool in the SWA.
5. Consult with ODFW when developing grazing plans on all Reclamation lands (including those outside of the SWA).

Objective NAT 1.7: Install range improvements and boundary fencing in priority areas around the reservoir in coordination with ODFW and BLM.

Management Actions

NAT 1.7.1: Construct boundary fences where there are conflicts with adjacent land use and recreation or resource protection needs (e.g., Roberts Bay, Antelope Creek, Smallmouth Bay, County Boat Ramp, and Bear Creek).

NAT 1.7.2: Install fencing based on a prioritized plan that addresses resource and conflict management needs.

NAT 1.7.3: Add fence crossings (step-over access), as appropriate.

NAT 1.7.4: Improve fencing to conform to recommended wildlife passage design.

NAT 1.7.5: Install and maintain boundary markers where fencing is not essential.

Objective NAT 1.8: Determine the extent of cryptobiotic soil on Reclamation land, assess the effects from recreation use and livestock grazing, and implement appropriate protection measures.

Management Actions

NAT 1.8.1: Field verify and update soils maps as appropriate to better define areas containing cryptobiotic soils.

NAT 1.8.2: Determine appropriate management measures to control or eliminate impacts as necessary.

NAT 1.8.3: Monitor results to gauge success and modify as necessary.

5.2.1.2 Fisheries Resources

GOAL NAT 2: *Protect and enhance the quality of the fishery at Prineville Reservoir.*

Objective NAT 2.1: Cooperate with ODFW, BLM, and local fishing organizations in conducting ongoing studies of fishery conditions and improvement needs, particularly those related to maintenance and improvement of the warmwater fishery.

Management Actions

NAT 2.1.1: Continue cooperation with ODFW and FWS in developing and implementing a Fisheries Management Plan for Prineville Reservoir.

NAT 2.1.2: The Fisheries Management Plan shall include aquatic habitat enhancement projects and periodic monitoring of fish populations.

NAT 2.1.3: Continue to have recreation and fisheries representatives participate in Prineville Reservoir Reallocation Study.

5.2.1.3 Water Quality

GOAL NAT 3: *Protect and improve water quality in Prineville Reservoir and its tributaries.*

Objective NAT 3.1: Actively participate with the Crooked River Watershed Council, Deschutes Resources Conservancy, and ODEQ

in implementing water quality improvement actions.

Objective NAT 3.2: Provide adequate sanitation and waste management facilities at all improved recreation sites (e.g., restrooms, trash containers, RV and boat dump stations, fish cleaning stations, as appropriate) to protect water quality.

Management Actions

NAT 3.2.1: Continue to provide sanitation services at areas of heavy use.

NAT 3.2.2: Reclamation and OPRD to set a prioritized list for providing new sanitation facilities based on Objectives and Management Actions outlined in this RMP.

NAT 3.2.3: Provide information signs and update the park brochure regarding garbage pack-in/pack-out policy for dispersed use areas and location of recreation areas containing restroom facilities, including floating restrooms.

Objective NAT 3.3: Protect, enhance, restore, and develop wetland and riparian habitats as a key means of improving the quality of water entering the reservoir.

Management Actions

NAT 3.3.1: Include strategies in all HIPs that will improve the water quality in Prineville Reservoir, as appropriate.

Objective NAT 3.4: Manage the use of chemical fertilizers, herbicides, and pesticides on Reclamation lands in a manner that does not adversely affect water quality, wildlife, or people.

Management Actions

NAT 3.4.1: Require that all leaseholders maintain and submit annual records of all chemical applications on Reclamation lands

associated with management of recreation facilities and sites.

Objective NAT 3.5: Minimize the potential for pollutants to enter Prineville Reservoir and its tributaries from activities affecting Reclamation lands.

Management Actions

NAT 3.5.1: Adhere to the following design and construction criteria, guidelines, and standards as they pertain to pollution prevention when undertaking construction, operations, and maintenance on Reclamation lands:

1. Comply with all Federal and State laws related to control and abatement of water pollution. All waste material and sewage from construction activities or project-related features will be disposed of according to Federal and State pollution control regulations.
2. Construction contractors may be required to obtain a National Pollutant Discharge Elimination System (NPDES) permit as established under Public Law 92B500 and amended by the Clean Water Act (Public Law 95B217).
3. Construction specifications shall require construction methods that will prevent entrance or accidental spillage of pollutants into flowing or dry watercourses and underground water sources. Potential pollutants and wastes include refuse, garbage, cement, concrete, sewage effluent, industrial waste, oil and other petroleum products, aggregate processing tailings, mineral salts, drilling mud, and thermal pollution.
4. Eroded materials shall be prevented from entering streams or watercourses during dewatering activities associated with structure foundations or earthwork

operations adjacent to, or encroaching on, streams or watercourses.

5. Any construction wastewater discharged into surface waters will be essentially free of settling material. Water pumped from behind cofferdams and wastewater from aggregate processing, concrete batching, or other construction operations shall not enter streams or watercourses without water quality treatment. Turbidity control methods may include settling ponds; gravel-filter entrapment dikes; approved flocculating processes not harmful to fish or other aquatic life; recirculation systems for washing aggregates; or other approved methods.
6. Any riprap shall be free of contaminants and not contribute significantly to the turbidity of the reservoir.
7. Appropriate controls to reduce stormwater pollutant loads in post-construction site runoff shall be followed. The appropriate facilities shall be properly designed, installed, and maintained to provide water quality treatment for runoff originating from all recreational facilities.
8. All parking lots and marinas should be designed to promote efficient vehicle and boat traffic to prevent congestion and pollution.
9. Waste facilities should be connected, whenever possible, to sanitary sewer systems instead of septic tanks to avoid water quality problems from failed tanks.

5.2.1.4 Soil Erosion

GOAL NAT 4: Control soil erosion in priority areas where erosion causes concern for water quality, natural and cultural resources, safety, and damage to capital improvements.

Objective NAT 4.1: Restrict recreational and other uses in shoreline areas where such uses can significantly increase erosion and cannot be mitigated.

Management Actions

NAT 4.1.1: Restrict vehicle access to and use of the reservoir shoreline, except for defined/signed area at Social Security Beach and within 500 feet of a developed boat launch ramp or area specifically designated for boat launching and/or angling access.

Objective NAT 4.2: Protect and/or restore shoreline, upland, and tributary riparian vegetation to control erosion.

Management Actions

NAT 4.2.1: Determine priority areas and implement procedures for blocking unauthorized roads and routes such as those off of the North Side Primitive Road in the SWA.

Objective NAT 4.3: Implement an effective erosion control program in all construction, operations, and maintenance programs on Reclamation lands while considering program effects on other resources (natural, scenic, cultural).

Management Actions

NAT 4.3.1: Adhere to the following design and construction criteria, guidelines, and standards when undertaking construction, operations, and maintenance on Reclamation lands:

1. The design and construction of facilities will employ applicable recognized Best Management Practices (BMPs) to prevent possible soil erosion and subsequent water quality impacts.
2. The planting of grasses, forbs, trees, or shrubs beneficial to wildlife, or the placement of riprap, sand bags, sod, erosion mats, bale dikes, mulch, or excel-

sior blankets will be used to prevent and minimize erosion and siltation during construction and during the period needed to reestablish permanent vegetative cover on disturbed sites.

3. Final erosion control and site restoration measures will be initiated as soon as a particular area is no longer needed for construction, stockpiling, or access. Clearing schedules will be arranged to minimize exposure of soils.
4. Cuts and fills for relocated and new roads will be sloped to facilitate revegetation.
5. Soil or rock stockpiles, excavated materials, or excess soil materials will not be placed near sensitive habitats, including water channels, wetlands, riparian areas, and on native or naturally occurring vegetation, where they may erode into these habitats or be washed away by high water or storm runoff. Waste piles will be revegetated using suitable native species after they are shaped to provide a natural appearance.

Objective NAT 4.4: Cooperate with applicable agencies and affected private landowners to get BMPs instituted on surrounding lands where off site activities may affect Reclamation lands and Prineville Reservoir.

Management Actions

NAT 4.4.1: Coordinate with the Crooked River Watershed Council and BLM to identify erosion and/or water quality problems that affect or are affected by Reclamation lands within the RMP study area.

NAT 4.4.2: Work with the Crooked River Watershed Council, BLM, and adjacent landowners to resolve any erosion and/or water quality problems resulting from activities or conditions occurring on or near

Reclamation lands and affecting lands within the RMP study area.

5.2.1.5 Scenic Resources

GOAL NAT 5: *Protect the scenic quality and open space values of Reclamation lands at Prineville Reservoir.*

Objective NAT 5.1: Ensure that siting and design of all new facilities on Reclamation lands maximize compatibility and integration with the open, rural environment of the reservoir and surrounding area.

Management Actions

NAT 5.1.1: Implement OPRD typical design standards for any new structures and retrofit existing OPRD structures to meet OPRD design guidelines when remodels are completed.

NAT 5.1.2: Use applicable components of the BLM’s Visual Resource Management System to assess proposed projects (i.e., visual contrast rating system). In particular, maintain the existing visual quality of the area regarding juniper management activities, with public notice provided for implementation of management on areas greater than one acre.

NAT 5.1.3: Bury new utility lines where feasible and work with adjoining jurisdictions to recommend underground utility lines.

NAT 5.1.4: Route any new roads to minimize cut/fill and visual intrusion on the landscape.

NAT 5.1.5: Adhere to the standards and guidelines outlined in Management Action NAT 1.2.3.

Objective NAT 5.2: Require compliance with design guidelines for erosion control structures and any other permitted improvements on Reclamation shore lands.

Management Actions

NAT 5.2.1: Adhere to the standards and guidelines outlined in Management Action NAT 4.3.1.

Objective NAT 5.3: Consider scenic values of off-site activities and coordinate with others to minimize impacts where feasible on surrounding lands.

Management Actions

NAT 5.3.1: Participate with County Planning & Zoning in adjoining land use approval processes where possible.

NAT 5.3.2: Improve coordination with BLM on management of adjacent BLM land in relation to scenic values, specifically related to juniper management on adjacent BLM lands within the Prineville Reservoir viewshed.

Objective NAT 5.4: Consider scenic values and involve interested parties when implementing vegetation management activities on Reclamation lands.

Management Actions

NAT 5.4.1: Coordinate with BLM in the approval process for issuing road permits and minimizing visual impacts on projects affecting Reclamation lands.

NAT 5.4.2: Adhere to the applicable standards and guidelines outlined in Management Action NAT 4.3.1.

NAT 5.4.3: Management Actions NAT 5.1.1 – 5.1.4 apply to this Objective.

5.2.2 Cultural Resources (CUL)

Cultural resources are historic properties that reflect our Nation's heritage. Historic properties include prehistoric and historic archeological sites, buildings, traditional cultural properties (TCPs), and historically significant places

that are eligible for inclusion in the National Register of Historic Places (National Register). TCPs are National Register-eligible properties that have special heritage value to contemporary communities (usually Indian communities) because of association with cultural practices or beliefs that are important in maintaining the cultural identity of that community.

Federal law requires Federal agencies to identify, evaluate, and appropriately manage cultural resources that are affected by their actions or are located on lands they administer. A list of these laws is provided in Appendix C. Agencies are required to assess resource significance, evaluate impacts on significant sites, and select resource management actions in consultation with the State Historic Preservation Office (SHPO), the Advisory Council on Historic Preservation (the Advisory Council), and other affected or interested parties. Indian tribes must be consulted where cultural resources of concern to a tribe could be present, or where human burials affiliated with a tribe could be affected by agency actions. Reclamation implements these laws using processes defined in regulations (particularly 36 CFR 800 for the National Historic Preservation Act (NHPA) and 45 CFR 10 for the Native American Graves Protection and Repatriation Act (NAGPRA)). Reclamation Manual LND 02-01 (Cultural Resource Management) directs the agency to implement cultural resources management actions in a positive manner that fulfills the spirit, as well as the letter, of the law.

The requirements of Federal law and Reclamation cultural resource management policy also apply to other parties who manage or use Reclamation lands under a permit, lease, use agreement, or other legal instrument. Those parties are responsible for notifying Reclamation of proposed actions on those lands; implementing actions to identify and evaluate resources that could be affected by their use or action; and implementing actions to protect resources or mitigating unavoidable effects resulting from their use or actions. Reclamation is responsible for defining the necessary identifi-

cation, evaluation, and management or mitigation actions, and for ensuring that managing partners, lessees, and permittees observe these terms and conditions and act as responsible stewards of the resources on those lands.

Reclamation's policy is to avoid or minimize adverse effects to National Register-eligible historic properties whenever possible. If adverse effects are unavoidable, Reclamation typically mitigates the adverse effects through a site documentation or data recovery method that has been developed in consultation with the SHPO and other interested parties. For impacted TCPs, Reclamation would work with affected Indian tribes to identify means to minimize impacts, and seek to mitigate damaging impacts when mitigation is possible.

Reclamation began to implement archeological investigations under the 1992 RMP. These investigations documented the presence of many historic properties on reservoir lands. The following Goals and Objectives outline actions that Reclamation has determined are necessary to meet the agency's cultural resource management responsibilities under the law. Reclamation will continue with the highest priority actions during the next 10 years. Priority actions are anticipated to continue to focus upon lands in and near developed recreation sites and within the shoreline areas that are most attractive to dispersed recreational users and are subject to erosion. Reclamation will continue to use consultative processes defined in 36 CFR 800 to determine site eligibility, impacts from new actions or existing uses, and appropriate treatment.

GOAL CUL 1: Protect and preserve cultural resources (including prehistoric, historic, and traditional cultural properties).

Objective CUL 1.1: Avoid or minimize impacts to significant cultural resource sites from new undertakings, in accordance with Section 106 of the NHPA and other applicable Federal laws.

Management Actions

CUL 1.1.1: Prior to new development, during the planning phase, Reclamation will complete, or direct land management partners to complete, any necessary investigations to determine if archeological sites or TCPs are present, and complete any necessary site evaluation actions.

CUL 1.1.2: Unless justified, Reclamation will build no new features and implement no new ground-disturbing actions within the boundaries of a Register-eligible site. If a decision is made to proceed with a damaging action, the facilities will be designed to avoid or minimize resource damage.

CUL 1.1.3: All new or renewed leases or management agreements will contain explicit stipulations regarding avoidance of National Register-eligible or unevaluated cultural resource sites.

CUL 1.1.4: If the Warm Springs Tribes or other affected tribes identify culturally important resources within new development areas, Reclamation will seek to avoid adverse effects to those resource locations when avoidance still allows accomplishment of broader agency responsibilities, is cost effective, and lies within agency authority.

CUL 1.1.5: A Reclamation archeologist will determine when cultural resource investigations are necessary and the nature of those investigations. The Reclamation archeologist will be informed of all proposed ground-disturbing actions early in the planning phase, or when a management partner or other entity first approaches Reclamation with a proposed action.

CUL 1.1.6: In the event of discovery of human remains of Indian origin at Prineville Reservoir, ground-disturbing action in the vicinity shall immediately halt, Reclamation shall be informed, and actions shall be taken

to protect the remains. Tribal notification and consultations shall be completed using processes defined in 45 CFR 10.

CUL 1.1.7: Informational material would be prepared to inform land users of their responsibilities under NAGPRA if they find exposed human remains.

Objective CUL 1.2: In accordance with Section 110 of NHPA, accomplish proactive management of cultural resources, including identification, evaluation, and protection of National Register eligible resource sites.

Management Actions

CUL 1.2.1: Prepare a Cultural Resource Management Plan (CRMP) or Plans, if needed, to define long-term resource management goals and processes. It may be a single reservoir-wide plan, or a number of plans by locality or for specific resource sites.

CUL 1.2.2: Continue to complete archeological surveys, tribal consultations to identify TCPs, and site evaluation actions in high priority areas. High priority areas are those with high site probability and most subject to erosion or damaging land use activity. Potential actions are listed below, roughly organized by priority, although those priorities will flex to adjust to actual conditions and funding levels.

CUL 1.2.3: Assess impacts from ongoing uses. If damage is identified, then define and implement actions to halt the damage.

CUL 1.2.4: Implement resource protection or mitigation actions at the most important National Register eligible sites or TCPs that are being impacted by land use.

CUL 1.2.5: Integrate cultural resource management requirements and goals into other management plans completed under the RMP, including the Habitat and Wildlife

Management Plan and the Integrated Pest Management Plan.

CUL 1.2.6: When implementing habitat restoration activities, use plants that have traditional importance to the Warm Springs Tribes or other area tribes, when those plants will accomplish the restoration goal and are reasonably comparable in cost.

Objective CUL 1.3: Increase awareness of cultural resource protection requirements among the public resource management partners (OPRD, Crook County, ODFW, etc.) and lease holders.

Management Actions

CUL 1.3.1: Inform the public of Archaeological Resource Protection Act (ARPA) regulations at key locations, such as the boat ramps, the State Park, and other developed recreation areas.

CUL 1.3.2: Prepare informational material to be provided to management partners, concessionaires, and lease holders that informs them of their responsibilities under NHPA and the process to coordinate with Reclamation to obtain Section 106 clearances. These materials would be attached to all land use agreements or permits issued by Reclamation or their management partners.

Objective CUL 1.4: Provide opportunities for public education about cultural resources, including the importance of and legal requirements for protecting these resources.

Management Actions

CUL 1.4.1: Prepare interpretive materials to inform visitors about area prehistory and history, and about resource value. These might include signs at developed recreation areas at the reservoir; brochures; contributions to “fire side” programs sponsored by OPRD; or contributions to larger area programs implemented by BLM.

5.2.3 Indian Sacred Sites (ISS)

GOAL ISS 1: *Protect Indian Sacred Sites*

Objective ISS 1.1: Seek to avoid damage to Indian sacred sites, when protection is consistent with accomplishing Reclamation’s missions and larger public responsibilities, and within agency authority.

Management Actions

ISS 1.1.1: When new actions will occur in areas that have the potential to impact Indian sacred sites, Reclamation will consult with the Warm Springs Tribes and other appropriate Indian tribes to determine if Indian sacred sites might be present.

ISS 1.1.2: The goal to protect Indian sacred sites will be integrated into the planning process for new development actions at the reservoir.

ISS 1.1.3: Reclamation will complete the ongoing consultations to determine if Indian sacred sites are present on reservoir lands. If there are impacts from existing land use, seek to implement protective actions when consistent with limitations defined in the goal statement.

Objective ISS 1.2: Provide access by traditional religious practitioners to Indian sacred sites, when consistent with agency mission and when it does not conflict with other land management commitments.

Management Actions

ISS 1.2.1: When fencing has been installed for other land management purposes, appropriate access across or through the fence will be provided for the use of the traditional practitioner.

ISS 1.2.2: A special use permit from Reclamation will be required for any consumptive or ground disturbing activities.

5.2.4 Indian Trust Assets (ITA)

GOAL ITA 1: *Protect Indian Trust Assets as specified in applicable Federal mandates.*

Objective ITA 1.1: Seek to avoid any action that would adversely impact Tribal hunting, fishing, livestock grazing, or gathering rights, as defined in Tribal treaties or court decisions.

Management Actions

ITA 1.1.1: Reclamation will meet as needed or upon the request of the Tribes to discuss Tribal issues as they relate to the RMP and Indian Trust Assets.

ITA 1.1.2: Through Reclamation’s NEPA process, review Federal actions to determine if there are impacts to Indian Trust Assets.

5.2.5 Paleontology (PAL)

GOAL PAL 1: *Protect significant paleontological sites.*

Objective PAL 1.1: Seek to avoid damage to significant paleontological sites when implementing new actions.

Management Actions

PAL 1.1.1: Paleontological surveys will continue to be incorporated into archeological surveys.

PAL 1.1.2: If scientifically valuable fossil materials are present, Reclamation will seek to avoid damaging the fossils, or would recover the fossils prior to new disturbance.

Objective PAL 1.2: Seek to manage significant paleontological sites on Reclamation lands, and interpret for the public.

Management Actions

PAL 1.2.1: If scientifically valuable paleontological sites are being impacted, then either implement measures to protect

either implement measures to protect the most valuable sites from further damage, or complete data recovery measures.

PAL 1.2.2: If scientifically valuable fossil sites are found to be present at the reservoir, incorporate their interpretation into public information materials and programs.

5.2.6 Recreation and Access (REC)

Reclamation's approach to providing and maintaining public recreational opportunities, facilities, and interpretive programs is to work with non-Federal managing partners in accordance with an approved RMP. The RMP is intended to protect the health and safety of the users, protect land and water resources from environmental degradation, and protect cultural resources from damage. Recreation facilities under Reclamation jurisdiction will be operated and maintained in a safe and healthful manner and be universally accessible.

Where Reclamation lands are directly managed by others for recreation purposes, Reclamation shall exercise oversight responsibility to ensure that those management entities fulfill all aspects of the approved RMP. All contractual agreements with these management entities must comply with Federal laws and regulations concerning natural and cultural resource protection.

As described in Chapter 1, Section 1.3, OPRD is Reclamation's non-Federal managing partner and is responsible for managing all aspects of recreation at Prineville Reservoir. The one exception to this is the Prineville Reservoir Resort, which is leased to a concessionaire who has recreation management responsibility over this area. Similar to Reclamation's policy of developing RMPs, OPRD is mandated by State law to prepare up to 25-year Master Plans for all state parks throughout Oregon. This RMP is intended to serve as OPRD's Prineville Reservoir Master Plan. In this capacity, the Goals, Objectives, and Management Actions pertaining to recreation and access are somewhat

unique in that they are integral to this 10-year RMP, but also the OPRD 25-year Master Plan.

The principles in Public Law 89-72, Federal Water Projects Recreation Act of 1965, as amended by Title 28 of Public Law 102-575, will continue to be adhered to for recreation-related development and management considerations. Basically, Title 28 states that if a non-Federal public entity has agreed to manage recreation on Reclamation lands, Reclamation may share development costs for up to 50% of the total cost. At Prineville, recreation-related costs will continue to be cost-shared with OPRD dependent upon the availability of funding and must be within the authority of the applicable agency.

Visitor information is an important management responsibility that is not readily apparent but instrumental in providing a quality recreation experience and contributing to an informed visitor. An informed public will help protect and enhance the unique recreational and environmental attributes of the area. It is Reclamation's approach to assist with the development of interpretive programs to educate the public on resources and to provide information to visitors to improve their experience in the area, as well as to increase their awareness of natural and cultural resource values and public health and safety protection.

Table 5.2-2 provides a summary description of all recreation and access-related improvements and new facilities by site as proposed in this RMP. These items are also described under the applicable Objectives and Management Actions and shown on Figures 5.2-2 through 5.2-4. These figures illustrate the current concept plans for the State Park, Powder House Cove, and Roberts Bay. The original concept plans for Owl Creek, Cattleguard, and Old Field are intended for use in this RMP and are included as Appendix G. It is important to note that clearances for cultural resources (CUL 1.1.4) and threatened and endangered species (NAT 1.1.4) would be undertaken prior to any of the improvements or new facilities proposed in this

RMP. Furthermore, all major recreation facilities would be sited above the reservoir full pool line (elevation 3,238 feet), and BMPs would be implemented (NAT 1.2.3) to minimize landscape degradation. Finally, all site/facility design will utilize sustainable design standards, fire-wise design standards (access, water availability, building durability), signage will be consistent with OPRD/Reclamation sign standards, and low directional lighting will be used where lighting is necessary.

Executive Orders 11644 and 11989 (February 1972 and May 1977, respectively) established policies and procedures to ensure that the use of ORVs on public lands will be controlled and directed to protect resources, promote user safety, minimize user conflict, and ensure that any permitted uses will not result in significant adverse environmental impact or cause irreversible damage to existing resources. Pursuant to these Orders, policy and criteria relating to the use of ORVs on Reclamation lands were established on August 23, 1974 (see 43 CFR Part 420). Specifically, all Reclamation lands are closed to motorized travel except for areas, roads, or trails specifically open for such use.

At Prineville Reservoir, this policy is enforced by the Crook County Sheriff's Department and is based on Crook County Ordinance No. 34 as Amended by Ordinance 101 and Federal Regulation 43 CFR, Part 420 restricting licensed vehicle use to designated roads only (as identified and mapped in the original legislation).

GOAL REC 1: Provide adequate sites and facilities to support the demand for land-based recreational uses while affording the public a quality recreational experience and consistent with natural and cultural resource objectives.

Objective REC 1.1: Provide quality camping opportunities by improving and/or expanding existing sites and developing new sites.

Management Actions

REC 1.1.1: Define the perimeter of the Owl Creek camping area through appropriate signage, fencing, barriers, and/or other applicable methods; provide up to 15 primitive walk-in/boat-in campsites, and other appropriate facilities (see Table 5.2-2). Provide a self-registration system for campsites.

REC 1.1.2: Define the perimeter of the Juniper Bass camping area through appropriate signage, fencing, barriers, and/or other applicable methods; provide up to 15 primitive drive-in/boat-in campsites and other appropriate facilities (see Table 5.2-2). Provide a self-registration system for campsites.

REC 1.1.3: Define the perimeter of the Cattle Guard camping area through appropriate signage, fencing, barriers, and/or other applicable methods; provide up to 8 primitive drive-in/boat-in campsites, and other appropriate facilities (see Table 5.2-2). Provide a self-registration system for campsites.

REC 1.1.4: Define the perimeter of the Old Field camping area through appropriate signage, fencing, barriers, and/or other applicable methods; provide up to 25 primitive drive-in/boat-in campsites, and other appropriate facilities (see Table 5.2-2). Provide a self-registration system for campsites.

REC 1.1.5: Develop the State Park North Expansion Area by providing up to 80 campsites in two loops, a maximum of 10 deluxe (kitchen/bath) cabins in one cluster, and up to two 20-camp unit group camp areas, and other appropriate facilities (see Table 5.2-2).

REC 1.1.6: Add up to three additional cabins at the State Park campground, and other appropriate facilities (see Table 5.2-2).

Table 5.2-2: Proposed recreation and access related activities at Prineville Reservoir.

Topic/Recreation Area	Proposed Activities
Applicable to the Entire Area	
Access	<ul style="list-style-type: none"> • Improve enforcement of “Off-Highway Vehicle Regulations” for all areas not designated as roads or open areas including reservoir drawdown zone and unplanned roads. • Place warning signs on both ends of North Side Primitive Road to indicate “rough road ahead – large vehicles not recommended”. • Provide a visitor brochure that identifies roads open to vehicle use and trails and their designated uses (e.g., hiking, horseback riding, and/or mountain biking). • Develop a reservoir-wide sign program (e.g., such as a green dot system) to inform public of vehicle use restrictions. • Allow no new private access roads across the SWA. • Limit new private access roads across Reclamation land to maintain existing character of area and visual quality. • Close road between Jasper Point and Combs Flat Road consistent with ODFW and BLM closure dates. Dates would be from Nov. 15 through April 15 to increase protection for wildlife and for consistency with managing agencies. Dates may vary with changing conditions. • If legal access can be determined or acquired, Reclamation in cooperation with OPRD will take responsibility for maintaining the road to Roberts Bay commensurate with the level of facility development. If legal access cannot be determined or obtained, and Reclamation cannot responsibly manage these lands, then it may be necessary to close this recreation area. • Install “Park Full” indicator sign at one of the intersections prior to accessing the Roberts Bay Road.
Sanitation	<ul style="list-style-type: none"> • Continue to provide sanitation at areas of heavy use and provide additional boat-in and/or floating sanitation facilities. • Provide information signs and update park brochure regarding garbage pack-in/pack-out policy for dispersed use areas
State Wildlife Area (SWA)	
Owl Creek	<ul style="list-style-type: none"> • Construct up to 15 primitive-designated walk-in or boat-in sites. • Construct non-motorized trail (hiking, biking, equestrian) connections to North Side Primitive Road and BLM property • Camper registration required • Define perimeter of camping area and up to 15 primitive sites
Juniper Bass	<ul style="list-style-type: none"> • Construct up to 15 primitive-designated sites. • Camper registration required • Define perimeter of camping area and up to 15 primitive sites • Coordinate with BLM to review the potential for trail connections to adjacent BLM land.
Cattle Guard	<ul style="list-style-type: none"> • Construct up to 8 primitive-designated sites. • Camper registration required • Define perimeter of camping area and up to 8 primitive sites • Coordinate with BLM to review the potential for trail connections to adjacent BLM land

Table 5.2-2: Proposed recreation and access related activities at Prineville Reservoir.

Topic/Recreation Area	Proposed Activities
Old Field	<ul style="list-style-type: none"> • Construct up to 25 primitive-designated sites. • Camper registration required • Define perimeter of camping area and up to 25 primitive sites • Coordinate with BLM to review the potential for trail connections to adjacent BLM land
Combs Flat (proposed - near Combs Flat Rd. at eastern end of the SWA)	<ul style="list-style-type: none"> • Day use only. • Non-motorized trailhead and trail (hiking, biking, equestrian) connections to North Side Primitive Road and adjacent BLM property • Define perimeter.
Jasper Point Boat Ramp and Campground	<ul style="list-style-type: none"> • Construct small maintenance yard area.
North Shore (outside of SWA)	
State Park North Expansion Area (area just north and upslope of State Park) [see Figure 5.2-2, State Park Conceptual Plan]	<ul style="list-style-type: none"> • Full hook-up campground (80 sites max.). • Cabin cluster (10 max.). • Group camp (20 sites max.). • Trails- hiking and biking. • Dump station..
State Park [see Figure 5.2-2, State Park Conceptual Plan]	<ul style="list-style-type: none"> • Expand existing maintenance yard. • Relocate registration booth. • Improve trail to Jasper Point. • Expand overnight moorage (20 max.). • Infrastructure improvements. • Provide employee housing (2 houses for 4 seasonals). • Concession store for rentals (bikes, kayaks). • Construct an accessible fishing pier. • Add 3 cabins. • Construct a new park office.
Antelope Creek Day Use Area (currently undeveloped proposed new site located west of existing State Park and east of Antelope Creek) [see Figure 5.2-2, State Park Conceptual Plan]	<ul style="list-style-type: none"> • Developed day use area with swimming and picnicking. • Group day use area with shelter. • Non-motorized trailhead and trail connections. • Parking (50 maximum). • Construct an accessible fishing pier • Provide overflow parking
County Boat Ramp	<ul style="list-style-type: none"> • Improve existing boat ramp. • Improve parking/traffic. • Retain as day use only area. • Work with BLM to explore option of Reclamation/ OPRD/BLM parking area for boat ramp parking and/or non-motorized trailhead.

Table 5.2-2: Proposed recreation and access related activities at Prineville Reservoir.

Topic/Recreation Area	Proposed Activities
Prineville Resort [Note: Subject to results of an economic feasibility study]	<ul style="list-style-type: none"> • Build new low water boat ramp east of existing boat ramp. • Provide additional cabins (10 max.). • Provide additional developed campsites. • Provide additional moorage • Develop group campsites • Construct one designated day use area (swimming, fishing, picnicking at Social Security Beach) • Develop loop trail and trailhead • Improve maintenance facilities • Continue to provide vehicle access to Social Security Beach for elderly, people with disabilities, and their companions.
Dispersed Boat-in Use	<ul style="list-style-type: none"> • Provide some basic amenities (e.g., picnic tables, boat tie-ups, portable toilet, fire rings) at a few select dispersed locations to concentrate use. Selective sites would be monitored for cultural and natural resources degradation and closed if necessary.
South Shore (outside of SWA)	
Dispersed Boat-in Use	<ul style="list-style-type: none"> • Provide some basic amenities (e.g., picnic tables, boat tie-ups, portable toilet, fire rings) at a few select dispersed locations to concentrate use. Selective sites would be monitored for cultural and natural resources degradation and closed if necessary.
Powder House Cove [Note: See Figure 5.2-3, Powder House Cove, Conceptual Plan].	Phase 1: <ul style="list-style-type: none"> • Build new entrance and boat ramp access road. • Construct new boat ramp east of existing ramp. • Provide additional truck and trailer parking (75 max.). • Close old boat ramp. • Construct day use area with separate parking area (20 max.) and trailhead. • Construct non-motorized trail - interpretive loop trail to old Powder House and Taylor Butte. • New vault toilet(s). • Manage for day use only. • Work with appropriate agencies to eliminate parking on Hwy 27. Phase 2: <ul style="list-style-type: none"> • Add additional parking for trucks and trailers (45 max).
Bear Creek	<ul style="list-style-type: none"> • Maintain existing condition and use patterns. • Construct a turn-around at the end of the road.
Juniper Point	<ul style="list-style-type: none"> • Up to 20 Primitive-designated campsites • Gravel roads. • Provide adequate toilet facilities.

Table 5.2-2: Proposed recreation and access related activities at Prineville Reservoir.

Topic/Recreation Area	Proposed Activities
Roberts Bay East [Note: See Figure 5.2-4, Roberts Bay Conceptual Plan].	**Phased development as follows: Phase I: <ul style="list-style-type: none"> • Create designated use areas for the entire site including designated camping areas. • Develop group camps as part of designated use areas. • Institute camp host(s). • Develop a day use area for picnicking and swimming with parking for up to 50 vehicles. • Develop trails. • Begin Roberts Bay Road improvements, pending determining or acquiring legal access, and begin road realignment within the Roberts Bay recreation site area. Phase II <ul style="list-style-type: none"> • Designated campsites (50 max.) with water, electricity, and toilet buildings with showers. • Primitive group camps (5 with 10 sites each) with only centralized water and toilets. • Two group camps with group picnic shelter with water and power. • Cabin cluster (15 max.). • RV dump station. • Trails and trail connections. • Host sites. • Accessible fishing pier. • Camp talk area. • Registration building. • Walk-in tent camp area with 20 sites. • Overflow parking lot.
Roberts Bay West [Note: See Figure 5.2-4, Roberts Bay Conceptual Plan].	<ul style="list-style-type: none"> • Boat ramp and parking area, non-motorized trailhead and trail to island, maintenance yard, employee housing, entrance gate, and host sites.

NOTES:

- ¹ All new facilities will be designated in accordance with current standards for accessibility for persons with disabilities.
- ² All facility construction is dependent upon Reclamation's ability to determine or acquire legal access to Roberts Bay. If legal access can be determined or acquired, Reclamation in cooperation with OPRD will take responsibility for maintaining the road to Roberts Bay commensurate with the level of facility development. If legal access cannot be determined or obtained, and Reclamation cannot responsibly manage these lands, then it may be necessary to close this recreation area.
- ³ Several recreation area improvements are described for each of the alternatives, including campgrounds, boat launches, trails, and signage. Reclamation does not intend to build all of these facilities independently. Rather, Reclamation would allow these developments to occur if a managing partner is involved, cost share conditions are met, and Reclamation funds are available. For the purpose of comparing the alternatives, it is assumed that all of the facilities would be built. Other actions, such as increased noxious weed control, do not require managing partners or cost-share agreements and would be implemented as described in the alternatives. Recreation developments would be conducted in cooperation with OPRD.

Figure 5.2-2. State Park Conceptual Plan

Back of Figure 5.2-2

Figure 5.2-3. Powder House Cove Conceptual Plan

Back of Figure 5.2-3

Figure 5.2-4. Roberts Bay Conceptual Plan

Back of Figure 5.2-4.

REC 1.1.7: Expand and renovate facilities at the Prineville Resort providing for additional developed campsites and up to 10 additional cabins, and other appropriate facilities (also see Table 5.2-2 and Management Action REC 1.4.2).

REC 1.1.8: Implement Phase 1 camping development at Roberts Bay East by reorganizing the area and providing for the following (see Table 5.2-2 and Figure 5.2-4):

1. Create designated use areas for the entire site including designated camping areas.
2. Develop group camps as part of designated use areas.
3. Institute camp host(s).

REC 1.1.9: Implement Phase 2 camping development at Roberts Bay East by providing for the following (also see Table 5.2-2 and Figure 5.2-4):

1. Create designated campsites (50 max.) with water, electricity, and toilet buildings with showers.
2. Develop primitive group camps (5 with 10 sites each) with only centralized water and toilets.
3. Create two group camps with group picnic shelter with water and power.
4. Develop a cabin cluster (15 max.).
5. Provide for an RV dump station.
6. Trails and trail connections.
7. Provide for additional host sites.
8. Create a camp talk area.
9. Build a camper registration building

10. Create a walk-in tent camp area with 20 sites.

REC 1.1.10: Define the perimeter of the Juniper Point camping area through appropriate signage, fencing, barriers, and/or other applicable methods; provide up to 20 primitive drive-in/boat-in campsites and other appropriate facilities (see Table 5.2-2).

REC 1.1.11: Continue operating and maintaining Big Bend Campground, as is, through agreements with OPRD and BLM.

Objective REC 1.2: Designate recreation sites and institute seasonal use periods that are consistent with resource objectives for the reservoir area.

Objective REC 1.3: Coordinate with managing partner to provide additional day use sites and facilities to meet increasing demand and buffer day use activity areas from campgrounds.

Management Actions

REC 1.3.1: Manage the reservoir’s southern shoreline from Roberts Bay to Long Hollow Creek as a boat-in day use area only. Camping in the SWA would be allowed only on the north shore of the reservoir and only in designated camping areas (see Management Actions REC 1.1.1 – 1.1.4).

REC 1.3.2: Designate Combs Flat as a day use only area and define the perimeter of the area through the use of signage, fencing, barriers, and/or other applicable methods. Provide for the following support facilities:

1. Defined gravel parking area.
2. Picnic sites.
3. Trailhead and interpretive signage.

REC 1.3.3: Develop the Antelope Creek Day Use Area (a new site located west of

the State Park and east of Antelope Creek). Provide for the following facilities (see Table 5.2-2 and Figure 5.2-4):

1. Developed day use area with swimming and picnicking.
2. Group day use area with shelter.
3. Non-motorized trailhead and trail connections.
4. Parking (50 maximum).
5. Construct an accessible fishing pier.
6. Provide overflow parking.

REC 1.3.4: Allow for the placement of some basic amenities (e.g., picnic tables, boat tie-ups, portable toilets, fire pits) at select dispersed locations throughout the reservoir to concentrate use and alleviate sanitation problems. Identify select areas on an updated park brochure and boat ramp signage.

REC 1.3.5: Allow for the reconfiguration and improvement of day use facilities at County Boat Ramp, including:

1. Improve existing boat ramp.
2. Improve parking/traffic.
3. Retain as day use only area.
4. Work with BLM to explore option of Reclamation/ OPRD/BLM parking area for boat ramp parking and/or non-motorized trailhead.

REC 1.3.6: Allow for the reconfiguration and improvement of day use facilities at Powder House Cove in the following two phases of work (see Figure 5.2-3, Powder House Cove Conceptual Plan):

Phase 1:

1. Build new entrance and boat ramp access road.

2. Construct new boat ramp east of existing ramp.
3. Provide additional truck and trailer parking (75 max.).
4. Close old boat ramp.
5. Construct day use area with separate parking area (20 max.) and trailhead.
6. Construct non-motorized trail - interpretive loop trail to old Powder House and Taylor Butte.
7. New vault toilet(s).
8. Manage for day use only.
9. Work with appropriate agencies to eliminate parking on Hwy 27.

Phase 2:

1. Add additional parking for trucks and trailers (45 max).

REC 1.3.7: Continue to allow dispersed day and overnight use in the Bear Creek area. Also, allow for the following improvements:

1. Maintain existing condition and use patterns.
2. Construct a turn-around at the end of the road.

Objective REC 1.4: Contribute to an environment that supports viable commercial recreation services, where appropriate.

Management Actions

REC 1.4.1: Allow OPRD to provide a concession facility at the State Park offering boat and bicycle rentals.

REC 1.4.2: The following facilities would be proposed at the Prineville Reservoir Resort subject to an economic feasibility study when the concession agreement is renewed, in the event of a new Request For Proposal for commercial services at Prineville Reservoir Resort, or if proposed at any time by the current concessionaire:

1. Build new boat ramp.
2. Provide additional cabins (10 maximum).
3. Provide additional developed campsites.
4. Provide additional boat moorage.
5. Develop group campsites.
6. Construction of a designated day use area (swimming, fishing, picnicking at Social Security Beach); vehicle access to the reservoir shoreline at this area would be permitted in a limited area for the elderly.
7. Development of a loop trail and trail-head, and improvements to existing maintenance facilities.
8. Improve maintenance facilities.

Note: Reclamation would not be authorized to commit any Federal funds to the improvements outlined above. Reclamation would review and approve project designs for new recreation facilities. An economic analysis would be completed prior to contract renewal per Reclamation policy. Implementation schedules would be negotiated at time of contract renewals. Reclamation would review and approve project designs for new recreation facilities.

GOAL REC 2: Provide adequate shoreline and water-based facilities to support the demand for boating and other water-based uses consistent with natural and cultural resource objectives.

Objective REC 2.1: Allow for the continued use and development of “at your own risk” swimming areas at appropriate locations around the reservoir.

Management Actions

REC 2.1.1: Designate, sign, and delineate through buoys “Swim At Your Own Risk” areas at Antelope Creek Day Use Area, Prineville Resort (i.e., Social Security Beach), and Roberts Bay East Campground.

Objective REC 2.2: Work with managing partners (OPRD and ODFW) to enhance shoreline fishing opportunities and associated parking.

Management Actions

REC 2.2.1: Allow for the development of accessible fishing piers at the State Park, Antelope Creek Day Use Area, and Roberts Bay East Campground (see Table 5.2-2).

REC 2.2.2: Provide basic amenities (e.g., picnic tables, boat tie-ups, portable toilet, fire rings) at a few select dispersed locations to concentrate use. Selective sites would be monitored for cultural and natural resources degradation and closed, if necessary.

Objective REC 2.3: Improve boat launch ramps at Prineville Reservoir consistent with natural and cultural resource protection and conservation objectives.

Management Actions

REC 2.3.1: Continue enforcement of existing no wake zones in SWA, at Roberts Bay East, Powder House Cove and Big Island strait:

1. Allow for the construction of a new low-water ramp at Prineville Reservoir Resort east of the existing boat ramp.
2. Resurface the existing ramp at County Boat Ramp.
3. Close the old ramp and construct a new 3-lane boat ramp at Powder House Cove (see Figure 5.2-3, Powder House Cove Conceptual Plan).

4. Construct a new boat ramp at Roberts Bay West (see Figure 5.2-4, Roberts Bay Conceptual Plan).

East, Powder House Cove, and Big Island strait.

Management Actions

REC 2.3.2: Boat ramp construction shall be performed during reservoir drawdown (likely between July 1 and March 1). The timing and design of boat ramp construction plans shall be coordinated with Reclamation, OPRD, and ODFW.

Objective REC 2.4: Work with managing partner (OPRD) to reduce peak period congestion at Powder House Cove boat launch.

Management Actions

REC 2.4.1: Reconfigure and renovate the Powder House Cove area as described in Table 5.2-2 and shown on Figure 5.2-3.

GOAL REC 3: Manage the Prineville water surface to accommodate a variety of uses in a safe manner while minimizing conflicts among users.

Objective REC 3.1: Implement actions with OPRD and the Oregon State Marine Board that reduce conflicts between motorized and non-motorized water craft, as needed.

Management Actions

REC 3.1.1: Pursue a no-wake zone adjacent to Antelope Creek Day Use Area, Roberts Bay West, and Social Security Beach.

Objective REC 3.2: Work with OPRD, Crook County, and the Oregon State Marine Board to achieve needed enforcement of rules and regulations, and protection of public health and safety.

Management Actions

REC 3.2.1: Continue enforcement of existing no-wake zones in SWA, at Roberts Bay

GOAL REC 4: Provide appropriate vehicular and non-motorized access to recreation sites at Prineville Reservoir consistent with natural and cultural resource objectives.

Objective REC 4.1: Provide expanded opportunities for hiking, bicycling, equestrian trails, and trailheads at Prineville Reservoir.

Management Actions

REC 4.1.1: Allow for the development of trails and trailheads at the following locations (also see Table 5.2-2):

1. Owl Creek - Construct non-motorized trail (hiking, biking, equestrian) connections to North Side Primitive Road and BLM public lands.
2. Combs Flat - Construct non-motorized trailhead and trail (hiking, biking, equestrian) connections to North Side Primitive Road and adjacent BLM public lands.
3. State Park North Expansion Area – Trails- hiking and biking (also see Figure 5.2-2, State Park Conceptual Plan).
4. State Park – Improve trail to Jasper Point (also see Figure 5.2-2, State Park Conceptual Plan).
5. Antelope Creek Day Use Area – Develop internal trails and non-motorized trail connections to State Park North Expansion Area (also see Figure 5.2-2, State Park Conceptual Plan).
6. County Boat Ramp – Work with BLM to explore option of Reclamation/OPRD/BLM parking area for boat ramp parking and/or non-motorized trailhead.

7. Prineville Reservoir Resort – Develop non-motorized trailhead and internal loop trail.
8. Powder House Cove – Develop non-motorized trailhead and trail connection to Powder House and nearby BLM public lands.
9. Roberts Bay East – Develop non-motorized trails and trail connections (also see Figure 5.2-4, Roberts Bay Conceptual Plan).
10. Roberts Bay West – Develop non-motorized trailhead and trail to island (also see Figure 5.2-4, Roberts Bay Conceptual Plan).

Objective REC 4.2: Cooperate with ODFW as needed in providing hunting opportunities consistent with SWA mission and management actions.

Management Actions

REC 4.2.1: Continue to provide access for hunting in areas allowed as per ODFW rules, regulations, and seasons of use.

Objective REC 4.3: Enforce existing ORV regulations including County Ordinance No. 34 as Amended by Ordinance 101 and Federal Regulation 43 CFR, Part 420 restricting vehicle use to designated roads only (as identified and mapped in the original legislation).

Management Actions

REC 4.3.1: Continue to fund Crook County Sheriff’s Department to enforce regulations based on Crook County Ordinance No. 34, and increase funding commensurate with additional development and use at Prineville Reservoir and as appropriations allow.

REC 4.3.2: Work with Crook County Sheriff’s Department to improve enforcement of ORV regulations (Crook County

Ordinance No. 34) for all areas not designated as roads or open areas, including the reservoir drawdown zone and informal roads.

Objective REC 4.4: Coordinate with OPRD, Crook County, BLM, ODOT, and ODFW to manage access and roads at Prineville Reservoir.

Management Actions

REC 4.4.1: Institute a reservoir-wide sign program to inform the public of roads and trails open to various uses.

REC 4.4.2: To facilitate boat launching and angling opportunities affected by reservoir drawdown, ORV travel below the high water line will be permitted within 500 feet of a developed boat launch ramp or area specifically designated for boat launching and/or angling access.

REC 4.4.3: Limit new private access roads across Reclamation land to maintain the area’s existing character and visual quality. No new private access roads shall be allowed across the SWA.

REC 4.4.4: Close the road between Jasper Point and Combs Flat Road consistent with ODFW and BLM closure dates to increase protection for wildlife and for consistency with managing agencies. These closure dates are from Nov. 15 through April 15; however, dates may vary with changing conditions.

REC 4.4.5: Place warning signs on both ends of the North Side Primitive Road to indicate rough road conditions ahead – large vehicles not recommended.

GOAL REC 5: *Ensure that appropriate facilities, programs, and signage, and/or an equivalent experience are provided and accessible to persons with disabilities.*

Objective REC 5.1: Incorporate Federal accessibility standards in the design and construction of new and renovated facilities, trails, and signage.

Management Actions

REC 5.1.1: Continue to implement the recommendations described in the September 2000 Accessibility Evaluation of Prineville Reservoir Facilities (see Appendix E, Accessibility Evaluation).

5.2.7 Land Management and Implementation (LMI)

Reclamation's general land use approach is to: (1) manage the lands in a manner consistent with Federal laws and regulations, and the principles of good stewardship to accomplish Project purposes and serve the public interest; (2) seek opportunities for coordinated and cooperative land use planning with other Federal, State, and local agencies; and (3) develop RMPs that best support the public interest, preserve and enhance environmental quality, and are compatible with project purposes and needs. As part of this approach, Reclamation strives to maintain a current inventory of all land holdings and uses.

Law enforcement services on Reclamation lands are provided through contract and agreements with local partners. Enforcement efforts are required to address illegal ORV use; trespass and encroachment; willful damage or destruction of facilities, lands, or resources; and dumping on Reclamation lands.

Trespass and unauthorized use, when allowed to continue, deprive the public of their rightful use and enjoyment of the public lands. Willful damage or destruction of facilities, lands, or resources could endanger the public, prevent provision of project services, and destroy valuable natural and cultural resources, as well as cost money to repair. Prohibited acts on Federal land include: (1) construction, placing, or maintaining any kind of road, trail, structure,

fence, enclosure, communication equipment, pump, well, or other improvement without a permit; (2) extracting materials or other resources without a permit; (3) damage or destruction of facilities or structures, including abandoned buildings; and (4) excavation, collection, or removal of archeological or historical artifacts. Reclamation's general approach is to facilitate and ensure the proper use of land resources consistent with the requirements of law and BMPs. The primary management emphasis is to provide the public as a whole non-exclusive use of Federal lands while still protecting the environmental values and natural and cultural resources.

Reclamation's approach is to clear, and keep clear, all lands from trespasses and unauthorized uses. In resolving trespass or unauthorized use issues, priority will be given to those trespasses which are not in the best public interest, or are not compatible with the primary uses of the land, or which have caused or are causing damage to significant environmental values or natural or cultural resources.

Unauthorized uses and trespasses are best resolved before they become well established. When a violation does occur, Reclamation's first priority is to negotiate a solution to resolve the violation. In the event such negotiations fail, Reclamation will take actions necessary to protect the public interest and project lands, including legal action through the courts.

GOAL LMI 1: Ensure continued coordination and cooperation with involved agencies and the public as needed to implement the RMP.

Objective LMI 1.1: Work with surrounding landowners, Crook County, and BLM to address access and other needs associated with adjacent private property.

Management Actions

LMI 1.1.1: Continue to monitor Reclamation boundaries, particularly those areas where known problems currently exist.

LMI 1.1.2: Conduct boundary surveys and monumentation where needed according to the existing priority list.

LMI 1.1.3: Management Actions NAT 1.7.1 – 1.7.4, and REC 4.4.4 apply to this objective.

Objective LMI 1.2: Work with surrounding landowners and adjacent jurisdictions to minimize impacts from RMP implementation on private lands and impacts from private lands on Reclamation lands.

Management Actions

LMI 1.2.1: Adhere to the standards and guidelines outlined in Management Action NAT 4.3.1.

LMI 1.2.2: Management Actions NAT 4.4.1, 4.4.2, 5.1.1 – 5.1.4, 5.3.1, 5.3.2, and 5.4.1 apply to this objective.

Objective LMI 1.3: Work with applicable agencies in the implementation of a Coordinated Emergency Fire Plan for the Prineville Reservoir area, including consistent fire closure dates, coordinated response, access for emergency purposes, placement and use of radio repeater towers, and fire information/signage.

Management Actions

LMI 1.3.1: Continue agreement with BLM for wildland fire suppression.

LMI 1.3.2: OPRD to develop agreement with County Fire District for structural fire protection.

LMI 1.3.3: Cooperate with Crook and Deschutes counties on a Wildland Fire Prevention Program.

LMI 1.3.4: Post fire prevention and closure information at recreation sites.

LMI 1.3.5: Cooperate with other interested agencies and parties to improve emergency communications.

Objective LMI 1.4: Provide for the appropriate level of maintenance and management at Prineville Reservoir.

Management Actions

LMI 1.4.1: Continue management agreement with OPRD for State management of recreation resources at Prineville Reservoir.

LMI 1.4.2: Continue management agreement with ODFW for State management of the SWA at Prineville Reservoir.

LMI 1.4.3: Continue agreement with Crook County Sheriff’s Department for County law enforcement responsibilities at Prineville Reservoir (also see REC 4.3.1, 4.3.2, and LMI 2.2.2).

LMI 1.4.4: Continue operating and maintaining Big Bend Campground through agreements with OPRD and BLM (also see REC 1.1.11).

LMI 1.4.5: Continue to provide for a concession agreement offering recreational opportunities at Prineville Reservoir Resort (also see REC 1.4.2).

Objective LMI 1.5: Coordinate with BLM and Crook County to address access to adjacent private lands from Reclamation lands, explore opportunities for trail linkages and other forms of recreation, viewshed impacts, and general land management considerations on lands outside of Reclamation’s ownership.

Management Actions

LMI 1.5.1: Management Actions NAT 1.6.1, 4.4.1, 4.4.2, 5.1.2, 5.3.2, 5.4.1, and

REC 1.3.5, 1.3.6, 4.1.1, 4.3.1, 4.3.2 apply to this objective.

GOAL LMI 2: *Ensure protection of the public, and public resource values and facilities*

Objective LMI 2.1: Require that Reclamation's directives and standards as per the Federal Wildland Fire Management Policy are followed in all fire prevention and suppression activities on Reclamation lands.

Management Actions

LMI 2.1.1: Management Actions LMI 1.3.1 – 1.3.5 apply to this objective.

Objective LMI 2.2: Work with the OPRD, County Sheriff's Department, and the State Marine Board to ensure an adequate level of law enforcement on Reclamation lands and Prineville Reservoir.

Management Actions

LMI 2.2.1: Management Actions REC 3.2.1, 4.3.1, and 4.3.2 apply to this objective.

LMI 2.2.2: Cooperate with Crook County to establish additional County ordinances to improve enforcement capability on Reclamation lands, as needed.

GOAL LMI 3: *Provide informational, educational, and interpretive materials to increase public awareness of recreational opportunities, use restrictions, safety concerns, and natural and cultural resource values.*

Objective LMI 3.1: Using Reclamation's and OPRD's sign manuals as appropriate, develop clear, consistent signage to guide public access to and use of Reclamation lands and facilities.

Management Actions

LMI 3.1.1: Inventory existing signs and determine a prioritized list of additional sign needs.

LMI 3.1.2: Purchase, construct, and install signs as funding allows.

Objective LMI 3.2: Provide informative and concise public information materials on a continuing basis (including adequate funding for reproduction of these materials) at: recreation sites, interpretive sites, visitors center(s), and through local merchants, chambers of commerce, government offices, and other means (such as the worldwide web).

Management Actions

LMI 3.2.1: Coordinate with partner agencies on signage and public information materials, such as the Prineville Reservoir visitor brochure (also see NAT 3.2.3, and REC 1.3.4 and 4.4.2).

GOAL LMI 4: *Achieve timely implementation of RMP programs and projects.*

Objective LMI 4.1: Establish and maintain a clear phasing schedule and list of priorities for RMP implementation; update on an annual basis.

Management Actions

LMI 4.1.1: Track and annually update progress on the management actions in the RMP implementation schedule.

Objective LMI 4.2: Seek Reclamation and joint funding to implement the RMP according to the priority list and phasing schedule.

Management Actions

LMI 4.2.1: Pursue implementation through a variety of sources including, but not limited to:

1. Title 28 cost share program for recreation enhancements, which allows a 50% Federal contribution to match a 50% non-Federal managing partner contribution.
2. Title 28 cost share program for fish and wildlife enhancement, improvement, and restoration projects, which allows a 75% Federal contribution to match a 25% non-Federal managing partner contribution.
3. Oregon State Marine Board Grants.
4. Land and Water Conservation Fund Grants.
5. Other Federal, State, and local cost share and grant programs.

Objective LMI 4.3: Keep stakeholders, surrounding landowners, and the public informed regarding the status of implementing the RMP.

Management Actions

LMI 4.3.1: Provide news releases to the local media for major projects and accomplishments. Seek public involvement for actions requiring subsequent NEPA analysis. Provide public notices for juniper management activities larger than 1 acre in size on Reclamation lands. Post or provide implementation information for major actions at the State Park.

Chapter 6
Implementation Program





Chapter 6

Implementation Program

6.1 Introduction

The success of this RMP will ultimately be measured by the degree to which it is implemented. This chapter provides a framework necessary to follow through with the Goals and Objectives and implement the Management Actions presented in Chapter 5. This chapter consists primarily of a table that summarizes prioritization, sequencing, responsibility for implementation, and key funding for each Management Action. The purpose of this table is to assist resource managers, staff, and managing partners in implementing each of the many specific actions required to achieve the RMP's Goals and Objectives. This table also provides a convenient mechanism to track implementation progress on a regular (annual) basis over the 10- and 25-year life of the RMP, and State Master Plan, respectively.

6.2 Implementation Components

It should be noted that implementation in general for the Prineville Reservoir RMP is dependant on Federal and State funding and in many cases is also dependant on cost share requirements. The timing indicated in Table 6.2-1 is an approximation only and will depend on the availability of Federal and non-Federal cost share funds. Implementation of the Prineville Reservoir RMP is organized into a series of specific Management Actions for each of the issues associated with the various resource topics. The table presents a structure that addresses the key components of implementation. Each

component is listed in a separate column in this table and explained below.

6.2.1 Management Actions

Management Actions are specific action items intended to implement each Objective, consistent with Goals listed in Chapter 5. Primary Management Actions are listed in the table. A full description of each Management Action is presented in Chapter 5.

6.2.2 Timing and Sequencing

All Management Actions listed in the following table are intended to be implemented during the life of this plan (up to 25 years for recreation-related actions). The timing column identifies the specific timeframe (e.g., year 1, years 2 – 5, years 5 – 10, etc.) and/or sequence (e.g., as needed, ongoing, annual, etc.) that applies to each action.

6.2.3 Agencies Responsible for Implementation

A single agency with lead responsibility for implementation of each Management Action is listed (underlined) in Column 5. Agencies playing support roles are also listed in this column (not underlined). In addition to Reclamation, responsible agencies or entities may include: OPRD, ODFW, BLM, Oregon State Ma-

rine Board (OSMB), Crook County, the Tribes, the FWS, and the concession lease holder.

for public involvement, and agency and Tribal coordination.

6.2.4 Funding Source

Column 6 lists anticipated sources of funding for each Management Action. For example, potential funding and authority for recreation planning, enhancement, and development is from Reclamation's Title 28 cost-sharing program with its partnering agencies. The Oregon State Marine Board Grant Program may be a potential source for boating improvements.

6.2.5 Reference to Relevant Goals

Column 5 lists relevant Goals by referencing specific numbers.

6.3 Amending and Updating the RMP

6.3.1 Amending Information in the RMP

The RMP will be reviewed and amended on an as-need basis to reflect changing conditions, new information, and budgetary realities. Much of this is expected to occur in response to activities related to monitoring actions (e.g., noxious weeds, habitat improvement plans, etc.) and facilities development when it occurs (e.g., day use area development, campground improvements, trails development, etc.). Any major changes or amendments to the RMP would require additional public involvement and NEPA analysis. Any major changes or amendments to the RMP would require additional public involvement and NEPA analysis.

6.3.2 Updating the RMP

This RMP and MP have an intended life of 10 years and 25 years, respectively. Therefore, a thorough review will be needed to the RMP around 2013. Plan updates or plan amendments can be done whenever conditions warrant and require NEPA analysis and ample opportunity

Table 6.2-1: Implementation schedule for major actions.

Action	Timing	Responsible Agency	Funding Source	Goal
Wildlife, Vegetation, and Habitat Management				
Reclamation, in cooperation with others, will develop a cooperative Habitat and Wildlife Management Plan . This plan will include the following sub-plans:	Years 1-3 High priority	* <u>Reclamation</u> , ODFW, BLM, OPRD	Various	NAT 1, NAT 2, NAT 3, NAT 4, NAT 5, LMI 1
<ul style="list-style-type: none"> • Habitat Improvement Plan(s) for distinct areas at Prineville Reservoir. Include plans for SWA-designated lands, actions to restore areas damaged by illegal ORV use particularly in the SWA, specific restoration projects for wetland and riparian areas, strategies to improve water quality, and habitat improvement measures. Integrate cultural resource management goals. Monitor and document results as specified in the plan. 	Years 1-3	<u>Reclamation</u> , ODFW, OPRD, BLM, FWS	Reclamation with some cost share	NAT 1, NAT 2, NAT 3, NAT 4, LMI 1, LMI 2
<ul style="list-style-type: none"> • Integrated Pest Management Plan to be completed and implemented. Integrate cultural resource management goals. Monitor and document results as specified in the plan. 	Years 1-3	<u>Reclamation</u> , ODFW, Crook County, BLM, Oregon Dept. of Agriculture	Reclamation	NAT 1
<ul style="list-style-type: none"> • Eagle Management Plan for bald and golden eagles. Monitor and document bald eagle nests/roost sites, golden eagle nests, and prairie falcon nests as identified in the plan. 	Years 1-3	<u>Reclamation</u> , BLM, ODFW, FWS	Various	NAT 1
<ul style="list-style-type: none"> • Fencing Plan prioritized where there are conflicts with adjacent land use and recreation or resource protection needs. Install and maintain boundary markers where fencing is not essential. Improve fencing for wildlife passage. Identify locations for fence crossings (step-over access) as appropriate. Integrate cultural resource management goals. 	Years 1-3 and ongoing	<u>Reclamation</u> , OPRD, ODFW, BLM	Reclamation or cost share	NAT 1, LMI 2
<ul style="list-style-type: none"> • Fisheries Management Plan in cooperation with other agencies. Include aquatic habitat enhancement projects. Monitor and document results as identified in the plan. 	Years 1-3	<u>ODFW</u> , Reclamation, FWS	Various	NAT 2

Table 6.2-1: Implementation schedule for major actions.

Action	Timing	Responsible Agency	Funding Source	Goal
Monitor <i>Artemisia ludoviciana</i> sites. Protect as needed.	Ongoing	<u>Reclamation</u> , ODFW, OPRD	<u>Reclamation</u> , ODFW, OPRD	NAT 1, NAT 3, LMI 1
Continue agreement with BLM to manage grazing. Need to: (1) review permits and allotment management plans; (2) assess impacts to sensitive resources; (3) identify necessary solutions; and (4) continue to allow grazing as a habitat management tool in the SWA.	Ongoing	<u>BLM</u> , <u>Reclamation</u> , <u>ODFW</u>	Various	NAT 1, NAT 3, LMI 1, LMI 2
Water Quality				
Field verify and update soils maps. Identify cryptobiotic soils and management measures to control impacts. Monitor results.	Years 1-3	<u>Reclamation</u> , OPRD, ODFW	Reclamation or cost share	NAT 1
Continue to provide sanitation services at areas of heavy use.	Ongoing	<u>OPRD</u> , <u>Reclamation</u> , and <u>Leaseholder</u>	<u>OPRD</u> , <u>Reclamation</u> and <u>Leaseholder</u>	NAT 1, NAT 3, NAT 5, REC 1, LMI 2
Prioritize new sanitation facilities based on objectives and management actions outlined in RMP.	Initiate year 1, ongoing	<u>OPRD</u> , <u>Reclamation</u> , <u>Leaseholder</u>	Cost share or Leaseholder	NAT 1, NAT 3, NAT 5, REC 1, LMI 2, LMI 4
Provide information signs and update the park brochure with information on garbage disposal and sanitation facility locations.	Years 1-5	<u>OPRD</u> & <u>Reclamation</u> cost share, or <u>Leaseholder</u>	<u>OPRD</u> and <u>Reclamation</u> or <u>Leaseholder</u>	LMI 2, LMI 3
Require leaseholders to maintain and submit annual records of chemical applications on Reclamation lands. Monitor and document annually.	Ongoing	<u>Reclamation</u> , <u>Leaseholder</u>	<u>Leaseholder</u>	NAT 1, NAT 3
Erosion and Sedimentation				
Restrict vehicle access from shoreline, except for open areas at Social Security Beach and within 500 feet of a developed boat launch ramp or area specifically designated for boat launching and/or angling access. Prioritize blocking of unauthorized roads such as those along the North Side Primitive Road.	Ongoing	<u>Reclamation</u> , <u>OPRD</u> , <u>Crook County</u> , <u>Leaseholder</u>	<u>OPRD</u> and <u>Reclamation</u> cost share or <u>Leaseholder</u>	NAT 1, NAT 3, NAT 4, NAT 5, REC 4, LMI 2
Enforce vehicle restrictions.	Ongoing	<u>Crook County</u> , <u>OPRD</u>	<u>Reclamation</u>	As above
Coordinate to identify and resolve erosion and/or water quality problems that affect or are affected by activities on Reclamation lands.	Ongoing	<u>Reclamation</u> , <u>Crooked River Watershed Council</u> , <u>BLM</u> , & <u>landowners</u>	<u>Reclamation</u> and others	NAT 3, NAT 4

Table 6.2-1: Implementation schedule for major actions.

Action	Timing	Responsible Agency	Funding Source	Goal
Scenic Resources				
Notify public of juniper management treatments on areas greater than 1 acre in size.	Prior to juniper treatments	Reclamation, ODFW, OPRD	**n/a	LMI 1
Improve coordination on management of adjacent BLM land in relation to scenic values, specifically related to juniper management.	Ongoing	Reclamation, BLM	n/a	LMI 1, NAT 5
Coordinate with BLM on the approval process for issuing road permits and minimizing visual impacts on projects affecting Reclamation lands.	Prior to issuing permits	Reclamation, BLM	n/a	LMI 1, NAT 5
Cultural Resources				
Prior to development, complete site-specific investigations for archeological sites or TCPs.	Prior to development	Reclamation, OPRD, and others	Reclamation, Reclamation & OPRD or ODFW cost share, or applicant funding	CUL 1
If human remains are discovered, halt any ground-disturbing actions; begin consultation process.	As needed	Reclamation and others	Reclamation	CUL 1
Prepare a Cultural Resource Management Plan, as needed. In high priority areas, continue to conduct surveys, tribal consultation, and site evaluation, and implement resource protection or mitigation actions as needed. Assess impacts from ongoing uses; if damage is identified, define and implement actions to halt the damage.	Ongoing	Reclamation	Reclamation	CUL 1
Provide regulatory information (e.g., NAGPRA, ARPA) to managing partners, concessionaires, lease holders, and land users.	Begin year 1	Reclamation	Reclamation and OPRD	CUL 1
Indian Trust Assets				
Meet as needed to discuss tribal issues at they relate to the RMP and Indian Trust Assets.	As needed	Reclamation	Reclamation	ITA 1
Through the NEPA process, review Federal actions to determine if there are impacts to ITAs.	As needed	Reclamation	Reclamation	ITA 1
Indian Sacred Sites				
Continue ongoing consultation with the tribes to determine if Indian sacred sites are present on reservoir lands.	As needed	Reclamation	Reclamation	ISS 1

Table 6.2-1: Implementation schedule for major actions.

Action	Timing	Responsible Agency	Funding Source	Goal
Prior to major development, consult with the Warm Springs Tribes to determine presence of Indian sacred sites.	Prior to development	Reclamation	Reclamation	ISS 1
Paleontological Resources				
If valuable paleontological sites are being impacted, either implement measures to protect the sites from further damage, or complete data recovery measures.	As needed	Reclamation	Reclamation	PAL 1
Land-Based Sites and Facilities				
Define the perimeter of Owl Creek camping area; provide up to 15 primitive walk-in/boat-in campsites and other facilities. Implement camper self-registration system.	Years 2-5	<u>OPRD</u> , Reclamation, ODFW	OPRD & Reclamation cost share	NAT 1, NAT 3, NAT 4, NAT 5, REC 4
Define the perimeter of the Juniper Bass camping area; provide up to 15 primitive drive-in/boat-in campsites and other facilities. Implement camper self-registration system.	Years 2-5	<u>OPRD</u> , Reclamation, ODFW	OPRD & Reclamation cost share	As above
Define the perimeter of the Cattle Guard camping area, Provide up to 8 primitive drive-in/boat-in campsites and other facilities. Implement camper self-registration system.	Years 2-5	<u>OPRD</u> , Reclamation, ODFW	OPRD & Reclamation cost share	As above
Define the perimeter of the Old Field camping area; provide up to 25 primitive drive-in/boat-in campsites and other appropriate facilities. Implement camper self-registration system.	Years 2-5	<u>OPRD</u> , Reclamation, ODFW	OPRD & Reclamation cost share	As above
Improve Combs Flat as a day use only area. Define the perimeter, provide support facilities.	Years 2-5	<u>OPRD</u> , Reclamation, ODFW	OPRD & Reclamation cost share	As above
Develop the State Park North Expansion Area (maximum of 80 campsites, 10 deluxe cabins, and 20 unit group campsites).	Years 5-10	<u>OPRD</u> , Reclamation	Cost share	REC 1, REC 5
Add up to three additional cabins at the State Park campground and other appropriate facilities.	Years 2-5	<u>OPRD</u> , Reclamation	Cost share	REC 1, REC 5
Prepare economic feasibility study for Prineville Reservoir Resort.	Year 1	Reclamation	Reclamation	REC 1, REC 2, REC 5, LMI 2
Implement improvements at the Prineville Resort as described in the RMP and in accordance with the results of the feasibility study, and when new concession agreement is negotiated.	Years 3 - 10	<u>Leaseholder</u> , Reclamation	Leaseholder	As above

Table 6.2-1: Implementation schedule for major actions.

Action	Timing	Responsible Agency	Funding Source	Goal
Develop Roberts Bay East – Phase 1.	Years 1-5 Dependent on road access	<u>OPRD</u> , Reclamation	Cost share	NAT 1, NAT 3, NAT 4, REC 1, REC 4
Develop Roberts Bay East – Phase 2.	Years 8-10+ Dependent on road access	<u>OPRD</u> , Reclamation	Cost share	NAT 1 REC 1, REC 2 REC 4, REC 5, LMI 2
Develop Roberts Bay West.	Years 8-10+ Dependent on road access	<u>OPRD</u> , Reclamation	Cost share	REC 1, REC 2, REC 4, REC 5, LMI 2
Define the perimeter of the Juniper Point camping area; provide up to 20 primitive campsites and other appropriate facilities.	Years 1-5 Dependent on road access	<u>OPRD</u> , Reclamation	Cost share	NAT 1, NAT 4, REC 1, REC 4
Develop the Antelope Creek day use area. (new site located west of State Park and east of Antelope Creek).	Years 5-10	<u>OPRD</u> , Reclamation	Cost share	REC 1, REC 2
Improve County boat ramp.	Years 5-10	<u>OPRD</u> , Reclamation	Cost share	REC 1, REC 2
Improve Powder House Cove – Phase 1.	Years 1-5	<u>OPRD</u> , Reclamation	Cost share	REC 1, REC 2
Improve Powder House Cove – Phase 2.	Years 5-10	<u>OPRD</u> , Reclamation	Cost share	REC 1, REC 2
Provide basic amenities at select boat-in campsites (picnic tables, fire rings, tie ups, and some toilets).	Years 2-5	<u>OPRD</u> , Reclamation	Cost share	NAT 1, NAT 3, REC 2
Provide turnaround and parking area at Bear Creek.	Years 2-5	<u>OPRD</u> , Reclamation	Cost share	NAT 4, REC 4
Provide a concession facility at the State Park offering recreational equipment rentals (e.g., boat & bicycle)	Years 2-5	<u>OPRD</u> , Reclamation	Cost share	REC 1, REC 2
Shoreline and Water-Based Facilities				
Designate, sign, and delineate “Swim At your Own Risk” areas at Antelope Creek Day Use Area, and Roberts Bay East Campground.	When developed	OPRD	OPRD and Reclamation	REC 2
Designate, sign, and delineate “Swim At your Own Risk” areas at Prineville Reservoir Resort.	As negotiated	Leaseholder	Leaseholder	REC 2
Develop accessible fishing piers at the State Park, Antelope Creek Day Use Area, and Roberts Bay East Campground.	Years 5-10 and when developed	<u>OPRD</u> , Reclamation	OPRD, Reclamation	REC 2

Table 6.2-1: Implementation schedule for major actions.

Action	Timing	Responsible Agency	Funding Source	Goal
Water Surface Management				
Enforce existing no wake zones and/or speed limit regulations.	On going	<u>Crook County</u> , OSMB, OPRD	Reclamation, OPRD, OSMB	REC 3
Pursue new regulations for no wake zones and or speed limits adjacent to Antelope Creek Day Use Area, Roberts Bay West, and Social Security Beach.	Year 5-10	<u>OSMB</u> , Reclamation, Crook County, OPRD	Various	REC 3
Vehicular and Non-Motorized Access				
Develop non-motorized trails and trailheads as described in applicable sections of Chapter 5.	Ongoing	<u>OPRD</u> , Reclamation, BLM, ODFW	Cost share	REC 1, REC 4
Continue funding law enforcement assistance from Crook County Sheriff's Department. Increase funding commensurate with additional development and use as allowed by appropriations.	Ongoing	<u>Reclamation</u> , Crook County Sheriff's Department	Reclamation	LMI 2
Work with County Sheriff's Department to improve enforcement of ORV regulations for all areas not designated as roads or open areas.	Ongoing	<u>Reclamation</u> , Crook County Sheriff's Department, OPRD	Reclamation	NAT 1, NAT 4, LMI 2
Implement a reservoir-wide sign program to inform the public of roads and areas open for use, and also areas closed to motor vehicles. May include a "green dot" or similar system, and public information materials, signs, and brochures.	Ongoing	<u>Reclamation</u> , OPRD, ODFW, Crook County, BLM	Reclamation and OPRD	NAT 1, NAT 4, LMI 2
Continue to allow ORV travel below the high water line within 500 feet of a boat launch ramp or area specifically designated for boat launching and/or angling access (such as Social Security Beach).	Ongoing	<u>Reclamation</u> , OPRD, Crook County, Leaseholder	n/a	REC 4, REC 5
Limit new private access roads across Reclamation land. Allow no new private access roads across the SWA.	Ongoing	<u>Reclamation</u> , OPRD, Crook County, BLM	n/a	NAT 5, LMI 2
Manage closures of the North Side Primitive Road between Jasper Point and the Combs Flat Road consistent with ODFW and BLM closure dates for protection of wildlife.	Year 1	<u>Reclamation</u> , ODFW, OPRD, BLM, Crook County,	n/a	NAT 1, LMI 1, LMI 2
Place warning sign on both ends of the North Side Primitive Road to indicate, "Rough Road – Large Vehicles Not Recommended."	Year 1-2	<u>Reclamation</u> , OPRD	Reclamation and OPRD	REC 4
Continue to implement recommendations described in the September 2000 Accessibility Evaluation of Prineville Reservoir Facilities.	Ongoing	<u>Reclamation</u> , OPRD, or Leaseholder	Reclamation, OPRD, or Leaseholder	REC 5

Table 6.2-1: Implementation schedule for major actions.

Action	Timing	Responsible Agency	Funding Source	Goal
Coordination and Cooperation				
Continue management agreements with OPRD, ODFW, and Crook County.	Ongoing	<u>Reclamation</u> , OPRD, ODFW, Crook County	n/a	LMI 1
OPRD to continue management agreement with BLM for management of Big Bend Campground.	Ongoing	<u>OPRD</u> , BLM	n/a	REC 1, LMI 1
Continue agreement with BLM for grazing management on Reclamation lands.	Ongoing	<u>Reclamation</u> , BLM	n/a	NAT 1, LMI 1
Continue agreement with BLM for wildland fire suppression.	Ongoing	BLM, Reclamation	n/a	NAT 1, LMI 1
Continue concession agreement for recreational opportunities at Prineville Reservoir Resort.	Ongoing	<u>Reclamation</u> , Leaseholder	n/a	REC 1, REC 2, LMI 1
Complete boundary surveys and installation of monuments where needed by existing prioritized list.	Ongoing	Reclamation, BLM	Reclamation	NAT 1, LMI 2
Monitor Reclamation boundaries and known problem areas.	Ongoing	Reclamation, OPRD, ODFW, BLM	Various	NAT 1, LMI 2
Cooperate with Crook and Deschutes counties on a Wildland Fire Prevention Program.	Years 1-3	Reclamation, Crook County, Deschutes County, BLM	Various	NAT 1, LMI 1, LMI 2
OPRD to develop an agreement with local Crook County Fire District for structural fire protection.	Years 1-3	<u>OPRD</u> , Crook County, Reclamation	OPRD	NAT 1, LMI 1, LMI 2
Post fire prevention and fire closure information at recreation sites.	Initiate year 1	OPRD, Reclamation	OPRD and Reclamation	LMI 2, LMI 3
Cooperate with other agencies and parties to improve emergency communications ability.	Ongoing	All	All	LMI 1, LMI 2
Protection of Public, Resource Values, and Facilities				
Cooperate with Crook County to establish additional ordinances to improve enforcement capability on Reclamation lands.	Ongoing	<u>Reclamation</u> , Crook County, OPRD	n/a	LMI 1, LMI 2
Informational, Educational, & Interpretive Opportunities				
Conduct an inventory of existing signs and determine a prioritized list of additional needs. Acquire and install as funding allows.	Ongoing	OPRD, ODFW, Reclamation	OPRD, ODFW, Reclamation	LMI 2
Update the Prineville Reservoir brochure. Include information on vehicle use restrictions, sanitation facilities, cultural resources, fire prevention, interpretive information, regulations, and boat-in campsites.	Initiate year 1	<u>OPRD</u> , Reclamation, ODFW	various	LMI 3

Table 6.2-1: Implementation schedule for major actions.

Action	Timing	Responsible Agency	Funding Source	Goal
Implementation				
Track and annually update the RMP schedule and priority list of activities.	Initiate year 1	<u>Reclamation</u> , OPRD, ODFW	Reclamation	LMI 4
Provide news releases to the local media for major activities and construction projects.	Ongoing	<u>Reclamation</u> , OPRD, ODFW	n/a	LMI 1, LMI 3

* Underline denotes primary responsibility.

**n/a = not applicable or insignificant

Goals:

NAT 1: Protect, conserve, restore, and enhance wildlife habitat and natural resources on Reclamation lands.

NAT 2: Protect and enhance the quality of the fishery at Prineville Reservoir.

NAT 3: Protect and improve water quality in Prineville Reservoir and its tributaries.

NAT 4: Control soil erosion in priority areas where erosion causes concern for water quality, natural and cultural resources, safety, and damage to capital improvements.

NAT 5: Protect the scenic quality and open space values of Reclamation lands at Prineville Reservoir.

CUL 1: Protect and preserve cultural resources (including prehistoric, historic, and traditional cultural properties).

ISS 1: Protect Indian Sacred Sites

ITA 1: Protect Indian Trust Assets as specified in applicable Federal mandates.

PAL 1: Protect significant paleontological sites.

REC 1: Provide adequate sites and facilities to support the demand for land-based recreational uses while affording the public a quality recreational experience and consistent with natural and cultural resource objectives.

REC 2: Provide adequate shoreline and water-based facilities to support the demand for boating and other water-based uses consistent with natural and cultural resource objectives.

REC 3: Manage the Prineville water surface to accommodate a variety of uses in a safe manner while minimizing conflicts among users.

REC 4: Provide appropriate vehicular and non-motorized access to recreation sites at Prineville Reservoir consistent with natural and cultural resource objectives.

REC 5: Ensure that appropriate facilities, programs, and signage, and/or an equivalent experience are provided and accessible to persons with disabilities.

LMI 1: Ensure continued coordination and cooperation with involved agencies and the public as needed to implement the RMP.

LMI 2: Ensure protection of the public, and public resource values and facilities

LMI 3: Provide informational, educational, and interpretive materials to increase public awareness of recreational opportunities, use restrictions, safety concerns, and natural and cultural resource values.

LMI 4: Achieve timely implementation of RMP programs and projects.

Chapter 7
Glossary of Terms





Chapter 7

Glossary of Terms

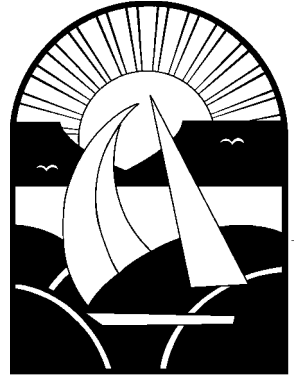
Accessibility	Providing participation in programs and use of facilities to persons with a disability.
Acre-foot	Volume of water (43,560 cubic feet) that would cover 1 acre land, 1 foot deep.
Action Alternative	A change in the current management approach.
Affected environment	Existing biological, physical, social, and economic conditions of an area subject to change, both directly and indirectly, as the result of a proposed human action. Also, the chapter in an environmental document describing current environmental conditions.
Algal bloom	Rapid and flourishing growth of algae.
Alternatives	Courses of action that may meet the objectives of a proposal at varying levels of accomplishment, including the most likely future conditions without the management plan or action.
Amphibian	Vertebrate animal that has a life stage in water and a life stage on land (for example, salamanders, frogs, and toads).
Animal Unit	One mature cow of approximately 1,000 pounds, either dry or with calf up to 6 months of age, or their equivalent (one horse, five domestic sheep).
Aquatic	Living or growing in or on the water.
Archeology	Related to the study of human cultures through the recovery and analysis of their material relics.
Archeological site	A discrete location that provides physical evidence of past human use.
Animal Unit Month (AUM)	The amount of feed or forage required by one animal unit grazing on a pasture for one month.
Best Management Practices	Activities that are added to typical operation, construction, or maintenance efforts that help to protect environmental resources by avoiding or minimizing impacts of an action.

Community	A group of one or more interacting populations of plants and animals in a common spatial arrangement at a particular point in time.
Concentration	The density or amount of a substance in a solution (water quality).
Cryptobiotic Soils	Soil crusts formed by living organisms and their byproducts, creating a crust of soil particles bound together by organic materials.
Cubic foot per second (cfs)	As a rate of streamflow, a cubic foot of water passing a reference section in 1 second of time. A measure of a moving volume of water.
Cultural resource	Cultural resources are historic and traditional properties that reflect our heritage.
Disability	With respect to an individual as a physical or mental impairment that substantially limits one or more of the major life activities of such individual; a record of such an impairment; or being regarded as having such an impairment.
Drawdown	Lowering of a reservoir's water level; process of releasing reservoir storage.
Endangered species	A species or subspecies whose survival is in danger of extinction throughout all or a significant portion of its range.
Erosion	Refers to soil and the wearing away of the land surface by water, wind, ice, or other physical processes.
Exotic species	A non-native species that is introduced into an area.
Eutrophication	The process or condition in a body of water in which the increase of mineral and organic nutrients has reduced the dissolved oxygen, producing an environment that favors plant over animal life.
Facilities	Manmade structures.
Fish and Wildlife Service Species of Concern	Species identified by the FWS for which further biological research and field study are needed to resolve these species' conservation status.
Grazing Allotments	Area designated for the use of a certain number and kind of livestock for a prescribed period of time.
Habitat	Area where a plant or animal finds suitable living conditions.
Habitat Improvement Plan (HIP)	A plan for a defined area that identifies specific wildlife habitat improvement measures and management strategies to protect, improve, and enhance the diversity and abundance of wildlife populations and habitats within Reclamation lands.

Indian Sacred Sites	Defined in Executive Order 13007 as “any specific, discrete, narrowly delineated location on Federal land that is identified by an Indian tribe, or Indian individual determined to be an appropriately authoritative representative of an Indian religion, as sacred by virtue of its established religious significance to, or ceremonial use by, an Indian religion; provided that the tribe or appropriately authoritative representative of an Indian religion has informed the agency of the existence of such a site.”
Indian Trust Assets	Legal interests in property held in trust by the United States for Indian Tribes or individuals, such as lands, minerals, hunting and fishing rights, and water rights.
Intermittent streams	Streams that contain running water longer than ephemeral streams but not all year.
Juvenile	Young animal that has not reached reproductive age.
Mitigation measures	Action taken to avoid, reduce the severity of, or eliminate an adverse impact. Mitigation can include one or more of the following: (1) avoiding impacts; (2) minimizing impacts by limiting the degree or magnitude of an action; (3) rectifying impacts by restoration, rehabilitation, or repair of the affected environment; (4) reducing or eliminating impacts over time; and (5) compensating for the impact by replacing or providing substitute resources or environments to offset the loss.
National Register of Historic Places	A Federally maintained register of districts, sites, buildings, structures, and properties that meet the criteria of significance defined in 36 CFR 63.
No Action Alternative	The outcome expected from a continuation of current management practices.
Perennial	Plants that have a life cycle that lasts for more than 2 years.
Precipitation	Rain, sleet, and snow.
Public involvement	The systematic provision for affected publics to be informed about and participate in Reclamation decision making. It centers around effective, open exchange and communication among the partners, agencies, organizations, and all the various affected publics.
Raptor	Any predatory bird, such as a falcon, eagle, hawk, or owl, that has feet with sharp talons or claws and a hooked beak.
Reptile	Cold-blooded vertebrate of the class Reptilia, comprised of turtles, snakes, lizards, and crocodiles.
Resident	A wildlife species commonly found in an area during a particular season: summer, winter, or year round.

Resource topics	The components of the natural and human environment that could be affected by the alternatives, such as water quality, wildlife, socioeconomic, and cultural resources.
Resource management plan	A 10-year plan developed by Reclamation to manage their lands and resources in the study area.
Riparian	Of, on, or pertaining to the bank of a river, pond, or lake.
Runoff	That part of precipitation that contributes to streamflow, groundwater, lakes, or reservoir storage.
Sediment	Unconsolidated solid material that comes from weathering of rock and is carried by, suspended in, or deposited by water or wind.
Songbird	Small to medium-sized birds that perch and vocalize or "sing," primarily during the breeding season.
Spawning	Laying eggs directly in water, especially in reference to fish.
Species	In taxonomy, a subdivision of a genus that (1) has a high degree of similarity, (2) is capable of interbreeding only within the species, and (3) shows persistent differences from members of allied species.
Threatened species	Any species that has the potential of becoming endangered in the near future and is listed as a threatened species under the Endangered Species Act.
Traditional cultural property	A site or resource that is eligible for inclusion in the National Register of Historic Places because of its association with cultural practices or beliefs of a living community.
Total Maximum Daily Load	The total amount of pollutants that can be discharged to a water body, per day, and not exceed water quality standards.
Wetland habitat	Wildlife habitat associated with water less than 6 feet deep, with or without emergent and aquatic vegetation in wetlands.
Wetlands	Lands transitional between aquatic and terrestrial systems where the water table is usually at or near the land surface or the land is covered by shallow water. Often called marshes or wet meadows.

Chapter 8
Bibliography





Chapter 8

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