U.S. Department of the Interior
Bureau of Land Management

Lakeview Resource Area
Lakeview District Office
1301 South G Street
Lakeview, Oregon 97630

January 2003

Lakeview Proposed Resource Management Plan and Final Environmental Impact Statement

Volume 1 [of 4] — *Main Text*

As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering the wisest use of our land and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our national parks and historic places, and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to assure that their development is in the best interest of all our people. The Department also has a major responsibility for American Indian reservation communities and for people who live in Island Territories under U.S. Administration.

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U.S. Department of the Interior
Bureau of Land Management

Lakeview Proposed Resource Management Plan and Final Environmental Impact Statement

Prepared by

Lakeview Resource Area Office
Lakeview District
August 2002

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United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Lakeview District Office
1301 South G Street
Lakeview, Oregon 97630

In Reply Refer To:

1610 (015)

Dear Interested Party:

In accordance with the Federal Land Policy and Management Act (FLPMA) and the National Environmental Policy Act (NEPA), the Bureau of Land Management (BLM) has prepared the attached Lakeview Proposed Resource Management Plan (RMP) and Final Environmental Impact Statement (EIS) for your review. The Proposed RMP/Final EIS integrates all resource management activities in the Lakeview Resource Area into a single, unified land use plan that will replace all or portions of three existing land use plans and three plan amendments. The proposed plan considers a range of five management alternatives, with Alternative D identified as the Preferred Alternative.

The Draft RMP/EIS was made available for a 90-day public comment in period November 2001. Comments were accepted and considered for up to 60 days after the closing of the comment period. About 320 comment letters were received. The letters and associated responses are included in Volume IV of the Proposed RMP/Final EIS. Changes made in response to comments are shown as underlined text. Additional hard copies of the Proposed RMP/Final EIS may be obtained at the address above. Electronic copies of the document and all of the associated digital data used in this planning effort may also be obtained on CD-ROM at the address above or via the internet at www.or.blm.gov/Lakeview/Planning.

Alternative D as described in the attached Proposed RMP/Final EIS, is the BLM's proposed decision and contains both proposed **land use planning decisions** and more specific proposed project level or **implementation decisions**. Proposed land use planning decisions include:

1) Goals, objectives, standards, and guidelines that define desired outcomes or future conditions;
2) Land use allocations:
   one proposed withdrawal,
   numerous special management area designations (wild horse herd management areas (HMAs), areas of critical environmental concern (ACECs), research natural areas (RNAs), and suitable wild and scenic rivers (WSRs));
3) Visual resource management (VRM) classifications;
4) Land tenure;
5) Allowable uses and restrictions:
   specific off-highway vehicle (OHV) area and road closures,
   mining restrictions,
   areas allotted to and excluded from livestock grazing,
   areas open or closed to firewood cutting and other vegetative product collection, and
   areas closed to commercial timber harvest or having no allowable sale quantity;

You now have the opportunity to protest the proposed land use planning decisions contained in the Proposed RMP/Final EIS. The BLM Planning Regulations, 43 CFR 1610.5-2, state that any person who participated in the planning process and has an interest which may be adversely affected may protest the proposed land use planning decision(s). A protest may raise only those issues that were submitted for the

record during the planning process. Protests must be filed within 30 days of the date the Environmental Protection Agency publishes its notice of availability of the Final EIS in the *Federal Register*. The specific protest period closure date will be announced through one or more of the following: local news media, postcards, or the BLM web site (at the internet address above). To be considered timely, your protest must be postmarked no later than the last day of the protest period. Though not a requirement, we suggest that you send your protest by certified mail, return receipt requested. Written protests must be submitted to the following address:

Director
Bureau of Land Management
Attention: Ms. Brenda Williams, Protests Coordinator
WO-210/LS-1075
Department of the Interior
Washington DC, 20240

To expedite delivery in the Washington, DC area, you may wish to send your protest via one of the express air delivery services to:

Director
Bureau of Land Management
Attention: Ms. Brenda Williams, Protests Coordinator
WO-210
1620 L Street NW, Suite 1075
Washington DC, 20036

You may wish to send a copy (in addition to the original sent via regular mail or express delivery) of the protest by FAX or e-mail to Ms. Brenda Williams at:

FAX: 202-452-5112 or e-mail: bhudgens@wo.blm.gov

You are also encouraged (but not required) to forward a copy of your protest to the Lakeview District Manager at the address listed on the front page of this letter. This may allow us to resolve the protest through clarification of intent or alternative dispute resolution methods. To be considered complete, your protest must contain the following information at a minimum:

1) Name, mailing address, telephone number and the affected interest of the person filing the protest.
2) A statement of the issue(s) being protested.
3) A statement of the part(s) of the proposed plan being protested. To the extent possible, reference specific pages, paragraphs, and sections of the document.
4) A copy of all your documents addressing the issue or issues which were discussed with the BLM for the record.
5) A concise statement explaining why the proposed decision is believed to be incorrect. This is a critical part of your protest. Document all relevant facts, as much as possible. A protest that merely expresses disagreement with the State Director's proposed decision, without providing any supporting data, will not be considered a valid protest.

Proposed **implementation level decisions** contained in this document are **not** protestable under the BLM planning regulations. Rather, a separate appeal process will be offered at the time the Approved RMP and Record of Decision (ROD) is signed and made available to the public. Examples of implementation level decisions include:

1) Allotment-specific permitted use levels;
2) Allotment-specific livestock grazing systems;
3) Specific range improvement projects;
4) Specific vegetation and weed treatment projects;
5) Specific fuel loading and hazard reduction projects;
6) Specific recreational facility development;
7) Setting appropriate management levels (AMLs) for wild horse HMAs;
8) Some specific ACEC management direction.

We appreciate your help in this planning effort and look forward to your continued interest and participation as the plan is implemented. For additional information or clarification regarding this

document or the planning protest process, please contact Paul Whitman at (541) 947-6110 or email at pwhitman@or.blm.gov.

Comments and protests on the Proposed RMP/Final EIS, including names and street addresses, will be available for public review at the Lakeview Resource Area office during regular business hours 7:45 a.m. to 4:30 p.m., Monday through Friday, except holidays. Individual respondents may request confidentiality. If you wish to withhold your name or street address from public review or from disclosure under the Freedom of Information Act, you must state this prominently at the beginning of your written comment/protest. Such requests will be honored to the extent allowed by law. All submissions from organizations and businesses, and from individuals identifying themselves as representatives or officials of organizations or businesses, will be available for public inspection in their entirety.

Sincerely,

William C. Aney, Acting Manager
Lakeview Resource Area

Enclosure (as stated)

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Abbreviations and Acronyms

Reader note: *Refer to the list below for abbreviations or acronyms that may be used in this document.*

ACEC ~ area of critical environmental concern
APHIS ~ Agricultural Plant and Animal Health Inspection Service
AUM ~ animal unit month
BIA ~ Bureau of Indian Affairs
BLM ~ Bureau of Land Management
BMP ~ best management practice
BOR ~ Bureau of Reclamation
CAA ~ "Clean Air Act"
CFR ~ "Code of Federal Regulations"
CWA ~ "Clean Water Act"
DLCD ~ Department of Land Conservation and Development
DOD ~ Department of Defense
DOE ~ Department of Energy
DOI ~ Department of the Interior
EIS ~ environmental impact statement
EPA ~ Environmental Protection Agency
FAA ~ Federal Aviation Administration
FERC ~ Federal Energy Regulatory Commission
FLPMA ~ "Federal Land Policy and Management Act"
HAZMAT ~ hazardous materials
ICBEMP ~ Interior Columbia Basin Ecosystem Management Project
IMP (wilderness) ~ "Interim Management Policy for Lands Under Wilderness Review" 1995
ISA ~ instant study area
LCDC ~ Land Conservation and Development Commission
LRA ~ Lakeview Resource Area
NCA ~ national conservation area
NEPA ~ "National Environmental Policy Act"
NRHP ~ National Register of Historic Places
NOAA ~ National Oceanographic and Atmospheric Administration
NPS ~ National Park Service
ODA ~ Oregon Department of Agriculture
ODEQ ~ Oregon Department of Environmental Quality
ODF ~ Oregon Department of Forestry
ODFW ~ Oregon Department of Fish and Wildlife
ODOT ~ Oregon Department of Transportation
OHV ~ off-highway vehicle
ONHP ~ Oregon Natural Heritage Program
PRIA ~ "Public Rangelands Improvement Act"
RMP ~ resource management plan
RNA ~ research natural area
SMA ~ special management area
TNC ~ The Nature Conservancy
USDA ~ U.S. Department of Agriculture
USDI ~ U.S. Department of the Interior
USFS ~ U.S. Forest Service
USFWS ~ U.S. Fish and Wildlife Service
USGS ~ U.S. Geological Survey
VRM ~ visual resource management
WSA ~ wilderness study area
WSR ~ wild and scenic river

Lakeview Proposed Resource Management Plan/Final Environmental Impact Statement

1. Responsible Agency: United States Department of the Interior, Bureau of Land Management.

2. Draft ( ) Final (X)

3. Administrative Action (X) Legislative Action ( )

4. Abstract: The Lakeview Proposed Resource Management Plan (RMP)/Final Environmental Impact Statement (FEIS) has identified five alternatives for managing 3.2 million acres of public land in southcentral Oregon. Information provided by BLM personnel, other agencies and organizations, and the public have helped to develop the five alternatives described and analyzed in this plan. Alternative A is the continuation of present management. Alternative B emphasizes commodity production or extraction. Alternative C emphasizes resource values and the functioning of natural systems. Alternative D, the agency preferred alternative, provides a balance with a high level of natural resource protection and improvement in ecological conditions while allowing some commodity production. Alternative E would minimize human intervention in the ecosystem and eliminate commodity production.

Major issues include designation and management of special management areas (areas of critical environmental concern [ACEC's], research natural areas [RNA's], and wild and scenic rivers), management of riparian and wetland areas, management of upland habitats, management of recreation, and support for local Tribes and communities. The document incorporates those scientific findings from the Interior Columbia Basin Ecosystem Management Project that are applicable to the planning area.

5. Date comments must be received: The close of the 30-day protest period will occur 30 days from the date the U.S. Environmental Protection Agency publishes its notice of availability of the Proposed RMP/Final EIS in the *Federal Register* and will also be announced locally using one or more of the following methods: news releases, legal notices, individual mailings, and the Lakeview District planning webpage at www.or.blm.gov/Lakeview/Planning/planninglist.htm.

6. For further information contact:

Paul Whitman
Bureau of Land Management
Lakeview District Office
1301 South G Street
Lakeview, OR 97630

Email: pwhitman@or.blm.gov
Telephone: (541) 947-6110

Summary and Readers' Guide

Introduction

The Lakeview Proposed Resource Management Plan (RMP)/Final Environmental Impact Statement (EIS) addresses options for future management of approximately 3.2 million aces of Federal surface and Federal mineral estate in southeast Oregon. This land surface and mineral estate located in Lake and western Harney Counties is managed by the Bureau of Land Management (BLM), Lakeview Resource Area (LRA). The RMP/EIS addresses five major issues and analyzes several alternatives to resolve these issues. These alternatives consist of combinations of resource allocations to address identified issues and future management of the planning area.

The Draft RMP/EIS was made available for a 90-day public comment period. Significant changes made in response to comments appear as underlined text throughout this document. After a 30-day public protest period, and resolution of any protests, the record of decision (ROD) will be issued along with the approved plan.

The approved Lakeview RMP/ROD will replace the existing management framework plans which currently guide management in the LRA. Valid decisions and guidance contained in these old plans are brought forward and will be incorporated into the approved plan. In addition, advances in resource management science, changes in laws and BLM policy, and public views will also be considered. Uses of public land, decisions, and directions will be identified for management of resources, including vegetation, special status species, water resources and watershed, fish, wildlife and wildlife habitat, livestock grazing, wild horses, special management areas (SMA's), cultural and paleontological resources, human uses and values, fire, recreation, off-highway vehicles (OHV's), energy and minerals, lands and realty, and roads and transportation.

The following is a brief overview of the document to assist in your review and to help you better understand the planning process.

Volume 1 (Main Text)

Chapter 1

Chapter 1 identifies the purpose and need for the plan, defines the planning area, and explains public participation in this planning process. This chapter identifies the planning criteria used as guidelines to influence all aspects of the process. These guidelines are based on law, regulation, and policy.

The five <u>main planning</u> issues <u>or areas of concern</u> identified though the planning process are discussed in this section <u>and include:</u>

1) What areas, if any should be designated and managed as SMA's?

2) How can upland ecosystems be managed and restored to achieve desired future conditions?

3) How can riparian areas and wetlands be managed to protect and restore their natural functions?

4) How should recreation be managed to meet public demand while protecting natural values and health and safety of the public?

<u>5) How should public lands be managed to meet the needs of local communities and Native American Tribes?</u>

<u>In addition, Chapter 1 also explains the relationship of this planning document to other pertinent Federal, state, county, and Tribal plans.</u>

Chapter 2

Chapter 2 provides an overview of the planning area and describes the existing condition for each resource. It describes both the living and nonliving components that may be affected by the proposed actions. Statistics such as acres, numbers, resource conditions, designations, etc., are presented in a number of tables. Applicable findings from the ICBEMP's scientific assessment are also presented where appropriate.

Chapter 3

Chapter 3 presents various management goals and five alternative strategies for achieving these goals (desired

range of conditions). The approved Lakeview RMP/ ROD is expected to provide management guidance for up to 20 years. However, certain goals (such as changes in vegetation across the landscape) may take much longer and may not be achieved during the life of this plan.

A general overview of the alternatives and a description of the theme of each alternative is provided. The five alternatives have different intensities of resource uses and management direction and include:

- Alternative A — No action or no change in current management;
- Alternative B — Commodity production emphasis;
- Alternative C — Resource restoration and protection emphasis;
- Alternative D — Balance between commodity production and resource protection; and
- Alternative E — Exclude commodity production and emphasize natural processes.

Each alternative is a complete land use plan that provides a framework for the multiple use management of the full spectrum of resources present in the planning area. The resource management goals address the desired future conditions of the various resources; are based on law, regulation, and policy; and project the direction management would follow. The management goals are constant across all alternatives. Each alternative (except Alternative E) would meet the management goal(s) of the various resources; however, the means for meeting each goal, the rate at which they would be met, and the impacts to other resources differ among the alternatives.

The alternatives were designed to provide general management guidance. Specific projects implementing the plan will be detailed in future ecosystem analysis at the watershed-scale processes, activity plans, or site-specific proposals. These will address more precisely how a particular area or resource is to be managed and ensures compliance with the approved RMP's management direction. Additional "National Environmental Policy Act" (NEPA) analysis and documentation would be conducted, as needed. This may consist of preparing future administrative determinations of NEPA adequacy, categorical exclusions, environmental assessments, or environmental impact statements.

Chapter 4

Chapter 4 analyzes the potential impacts of the five proposed management alternatives (Chapter 3) on existing resource conditions (Chapter 2). There are several general assumptions listed at the beginning of the chapter that apply to all alternatives. Also, there are assumptions listed at the beginning of some specific resource programs intended to guide the reader through the thought process.

The impacts of resource management actions are analyzed by management goals through each of the alternatives, followed by an overall comparison summary of resource impacts across all the alternatives. This summary of impacts includes a statement as to whether or not the proposed alternative would achieve the stated management goal. At the end of the analysis of each resource program is a discussion of indirect, secondary, and cumulative impacts.

Chapter 5

Chapter 5 summarizes key events in the consultation and coordination process prior to and during preparation of the RMP/EIS. It also lists those agencies, organizations, and individuals who were contacted or provided input. Also listed are the specialists who prepared this plan.

Chapter 6

Chapter 6 contains the glossary and references cited in the document to assist the reader in the review process.

Volumes 2, 3, and 4

Volume 2 consists of Appendices containing supporting information too detailed or voluminous to include in the main text. Volume 3 contains the maps pertinent to the final plan. Volume 4 contains all of the public comment letters received on the Draft RMP/EIS, as well as the BLM's responses to substantive comments.

Chapter 1 — Introduction

Purpose and Need

Resource management in the Lakeview Resource Area (LRA) is currently directed by three management framework plans that were completed in the early 1980s. Because of new issues and concerns, and changes in management policies, regulations, and demands on resources, these plans no longer provide the adequate and comprehensive planning direction needed for resource management. The Lakeview Resource Management Plan/Environmental Impact Statement (Lakeview RMP/EIS) will provide the Lakeview District of the Bureau of Land Management (BLM) with a comprehensive framework for managing BLM-administered land (or public land) within the LRA (Map I-1). Completion of the RMP/EIS will meet the mandate of the "Federal Land Policy and Management Act" (FLPMA) of 1976 that public land be managed for multiple use and sustained yield under an approved resource management plan.

A primary goal of this RMP is to develop management practices that ensure long-term sustainability of a healthy and productive landscape. A RMP is a set of comprehensive, long-range decisions concerning the use and management of resources administered by the BLM. In general, the RMP does two things: (1) it provides an overview of goals, objectives, and needs associated with public lands management, and (2) it resolves multiple use conflicts or issues.

Planning Area

The planning area includes all of the LRA except for approximately 31,500 acres administered by the Burns District and addressed in the Three Rivers RMP (USDI-BLM 1992). In addition, the planning area includes approximately 2,172 acres in the Surprise Field Office in California that the LRA has responsibility for managing through a cooperative agreement. Map I-1 shows the relationship between the district boundary and the RMP planning area. For the purposes of this document, the terms LRA, RMP area, and planning area are synonymous. The LRA covers over 3.2 million acres (Table 1-1) of BLM-administered land, most of which is in Lake County and some in Harney County. BLM-administered land, or public land, is generally well-blocked.

The planning area is bordered on the east by the Burns BLM District; on the south by the Modoc National Forest, Sheldon National Antelope Refuge, and BLM Surprise Field Office in Nevada and California; on the west by the Fremont and Deschutes National Forests; and on the north by the Prineville BLM District. Most of the public land is contiguous. Some scattered parcels occur in the north end of Lake County around Christmas Valley and in the south end of the county near Lakeview.

Existing Management Plans

The current management direction for the LRA is in three existing management framework plans: the "Warner Lakes," "Lost River," and "High Desert Management Framework Plans" (USDI-BLM 1983a, 1983b, 1983c), as amended (USDI-BLM 1989b, 1996d); and the "Lakeview Grazing Management Final Environmental Impact Statement and Record of Decision" (USDI-BLM 1982a, 1982b). Any management action proposed within the resource area must conform to the direction in these documents. Actions that do not conform require a plan amendment or must be dropped from consideration. To date, three plan amendments have been completed. The "Warner Lakes Management Framework Plan" was amended in 1989 to officially designate the Warner Wetlands area as an area of critical environmental concern (ACEC) and to prescribe special management direction. The "High Desert Management Framework Plan" was amended in 1996 to officially designate the Lake Abert area as an ACEC and to prescribe special management for the area. The "Warner Lakes Management Framework Plan" was amended in December 1998 to adopt a proposal for exchange of land jurisdiction between the BLM, LRA, and the U.S. Fish and Wildlife Service (USFWS) Hart Mountain National Wildlife Refuge. The two agencies initiated joint planning in 1997 to transfer 12,880 acres of BLM-managed lands to the refuge, and to transfer 7,870 acres of lands managed by the Hart Mountain National Wildlife Refuge to the LRA. However, before the final plan amendment was completed, congressional legislation authorizing the transfer was signed in late 1998. Those decisions from the management framework plans, as amended, that are still valid have been incorporated into the Lakeview RMP/EIS, which will supercede all previous planning documents.

Table 1-1.—*Land ownership/administration by county within the Lakeview Resource Area*

Ownership/administration	Lake County	Harney County	Washoe County (Nevada)	Total
Bureau of Land Management				
Public domain	2,333,304	744,907	2,172	3,080,383
Acquired lands	81,032	0	0	81,032
Subtotal	2,414,336	744,907	2,172	3,161,415
U.S. Forest Service	264	0	0	264
U.S. Fish and Wildlife Service	625	0	0	625
Department of Defense	2,623	0	0	2,623
Oregon State lands	111,187	15,974	0	127,161
Private	817,204	38,148	93	855,445
Other [1]	78,504	0	0	78,504
Grand totals	3,424,743	799,029	2,265	4,226,037

[1] Constitutes meander-surveyed lake beds, local government, and acres of unknown ownership.

Planning Process

The RMP is a land use plan as prescribed by FLPMA. The RMP establishes in a written document:

- Land areas for limited, restricted, or exclusive resource uses or for transfer from BLM administration;
- Allowable resource uses and related levels of production or use to be maintained;
- Resource condition goals and objectives to be reached;
- Program constraints and general management practices;
- Identification of specific activity plans required;
- Support actions required to achieve the above;
- General implementation schedule or sequences; and
- Intervals and standards for monitoring the plan to determine its effectiveness.

The underlying goal of the RMP is to provide efficient on-the-ground management of public lands and associated resources over a period of time, usually up to 20 years. The procedure for preparing a RMP involves nine interrelated actions as shown in Table 1-2.

Public Involvement in the Planning Process

Public involvement is an integral part of BLM's resource management planning process. Thus far, public involvement activities have included a mass mailing of a scoping brochure, holding public meetings, meeting with local government and Tribal government officials, conducting a subbasin review (see Appendix A1), and mailing the "Summary of the Analysis of the Management Situation" (BLM 2000).

The LRA began its public involvement in June 1999 with the mailing of a brochure that briefly described the RMP/EIS process, outlined the planning schedule, and requested comments on the first major planning step—identification of issues. The brochure was sent to approximately 500 individuals, organizations, agencies, and offices. BLM invited the public to identify issues or concerns they believed should be addressed in the RMP process. A notice of intent to prepare the RMP was published in the *Federal Register* at the same time. This notice also announced the dates and locations of two public meetings that would be held. A news release with the same information was published in the "Lake County Examiner" and in the

Table 1-2.—*Steps in the BLM planning process*

Planning step	Definition/Purpose	Status
1) Identification of issues	■Orients the planning process to the significant resource management problems and land use conflicts in the area covered by the plan.	Completed July 1999
2) Development of planning criteria	■The standards or rules developed by the manager and interdisciplinary team to focus the planning process on the issues and management concerns.	Ongoing
3) Inventory and data collection	■Baseline information is collected on an ongoing basis in support of resource management. Information about all ecosystem components, including human uses, is necessary to prepare a plan that meets requirements and is legally defensible.	Ongoing
4) Analysis of the management situation	■The study and assessment of public land resources data for the area covered by the plan; completes the information base for formulating reasonable alternatives.	Completed May 2000
5) Formulation of alternatives	■The development, analysis, and documentation of a reasonable range of multiple use management options that resolves conflicts and issues and provides a basis for future management.	Completed January 2001
6) Estimation of the effects of the alternatives	■The consequences of the resource management alternatives are analyzed and documented.	Completed June 2001
7) Selection of preferred alternative	■Based on a comparison of the estimated effects and tradeoffs associated the alternatives, a preferred alternative is identified in the Draft RMP/EIS.	Completed June 2001
8) Public review and comment on Draft RMP/EIS	■After selection of preferred alternative the Draft RMP/EIS is distributed for 90-day public review and comment.	Fall 2001
9) Selection of the resource management plan	■Selecting the proposed plan and preparing the Proposed RMP/Final EIS based on evaluation of public comments of the Draft RMP/EIS.	Winter 2002
10) Public protest period on published Proposed RMP/Final EIS.	■Publication of the Proposed RMP/Final EIS initiates a 30-day public protest period. Following resolution of any protests, the plan is approved and a record of decision issued.	Fall 2002
11) Monitoring and evaluation	■Indicates the effectiveness of plan decisions and related management prescriptions. May go on for the life of the plan. Results are used to determine if the plan needs amending or revising.	Spring 2003

"Klamath Falls Herald and News." BLM representatives attended meetings with the Lake County Commissioners and the Harney County Court to inform them of the RMP and to encourage them to make comments, request information, and generally be involved in the process. The same information was distributed to the governing bodies of the Klamath Tribes, Burns Paiute Tribe, and the Fort Bidwell Tribe. Other meetings with the Tribes have also taken place at key steps in the planning process.

From August 1999 through February 2000, BLM conducted a subbasin review which involved other Federal land-managing agencies, state agencies, and local and Tribal governments. This review resulted in the identification of a number of findings and management concerns to be addressed in the RMP/EIS.

Members of the public, local and Tribal governments, other Federal agencies and state agencies were mailed copies of the "Summary of the Analysis of the Management Situation" and were asked to comment, particularly on the planning criteria and proposed RMP/EIS alternatives. Approximately 60 comment letters were received.

Planning Issues

As a result of internal and external scoping, the following five comprehensive issues were identified to be addressed in the RMP/EIS:

Issue 1. ***What areas, if any, should be designated and managed as special management areas (SMA's), including ACEC designations, wild and scenic rivers (WSR's), or other?***

FLPMA and BLM policy (BLM 1987, 1988) require the BLM to give priority to designation and protection of ACEC's during the land use planning process. Since completion of the management framework plans in the 1980s, a number of areas have been proposed for ACEC designation. Two areas, Lake Abert and Warner Lakes, were designated through management framework plan amendments.

Approximately 20 nominated areas were reviewed by the resource area staff. Twelve of these areas were found to meet the criteria as potential ACEC's. Several of these are also potential research natural areas (RNA's). In addition, three streams were evaluated and found to be eligible for designation as WSR's.

Questions to be answered in resolving Issue 1:

- Which areas should be designated as ACEC's, RNA's, WSR's, or other designations?
- Which designations are most appropriate for which areas?
- How should designated areas be managed?
- What resources will be protected as a result of designation and management?
- What values or uses, particularly economic, will be enhanced or foregone as a result of designation?
- How would designation and management of areas affect other resources and their management?
- How should the Lost Forest/Sand Dunes/Fossil Lake existing ACEC be managed?
- Should boundaries or management of existing SMA's be changed, and if so, how?

Issue 2. How can upland ecosystems be managed and restored to achieve desired range of conditions?

The vegetation on upland range provides the foundation for many uses of resources on public land. Structurally diverse plant communities provide habitat for wildlife as well as forage for domestic animals. A healthy cover of perennial vegetation stabilizes the soil, increases infiltration of precipitation, slows surface runoff, prevents erosion, provides clean water to adjacent streams, minimizes weed invasion, and enhances the visual quality of the public land. Resource uses can affect the natural function and condition of upland communities.

The expansion of juniper woodlands into other plant communities, riparian areas, and quaking aspen groves and an increase in the density of historic woodlands may be detrimental to other plants and watershed functions.

Historically, wildland fire played an important role in ecosystem processes in the resource area. Existing plans do not address the possible use of wildland fire as a management tool.

Questions to be answered in resolving Issue 2:

- What is the current condition of the various ecosystems and plant communities in the planning area, and how can their conditions be improved or maintained?
- How should the public lands in the planning area be managed to improve and maintain water quantity and quality and to promote hydrologic recovery?
- How should the public lands be managed to maintain the existence, promote recovery, and prevent listing of threatened and endangered species?
- How should vegetation be allocated to provide forage for grazing animals including livestock, wild horses, and wildlife; as well as to provide wildlife habitat and watershed protection?

- Where are noxious weeds located in the planning area, and how can lands be managed to prevent the introduction and establishment of noxious weeds and undesirable plants?

- What is the fire history in the planning area, and what is the appropriate role of fire in the management of vegetation resources on the public lands?

- Which best management practices (BMP's) should be implemented to improve and protect watersheds?

Issue 3. How can riparian areas and wetlands be managed to protect, maintain, and restore their natural functions?

The vegetation in riparian areas and wetlands provides the foundation for many uses of resources on public land. Structurally diverse plant communities provide habitat for wildlife as well as forage for livestock. In addition, healthy riparian areas and wetlands stabilize the soil, act as a sponge releasing water throughout the year, prevent erosion, and improve water quality for adjacent streams. Some resource uses affect the natural function and condition of riparian areas and wetlands. These uses include livestock grazing, recreation, forest and woodland management, mineral exploration and mining, road construction and maintenance, and off-highway vehicle (OHV) use.

Questions to be answered in resolving Issue 3:

- How should riparian vegetation communities be managed to improve or maintain proper functioning condition?

- What kind of resource uses can be allowed in riparian areas without degrading riparian conditions?

- How should riparian systems be managed to improve or maintain habitat quality for fish, wildlife, plants, and invertebrates?

- How should riparian and wetland areas be managed to incorporate State of Oregon water quality standards and approved management plans addressing water quality concerns?

- How should management actions in upland ecosystems be developed or designed to be compatible with the needs of riparian communities?

- Which BMP's should be implemented to reduce erosion into streams?

Issue 4. How should recreation be managed to meet public demand while protecting natural values and health and safety of the public?

Recreation use in the resource area is increasing, especially in north Lake County. There is a demand for both developed and undeveloped recreation opportunities. OHV use needs to be managed, including determining appropriate designations for areas in the LRA regarding OHV use. There is an increasing demand for access to the LRA by "outdoor therapy" groups. This increasing use has resulted in conflicts with local residents. Hunting, camping, fishing, rock hounding, sightseeing, and pleasure driving are the most common recreation activities in the LRA.

Questions to be answered in resolving Issue 4:

- What types and levels of recreation should the planning area provide?

- What role should BLM serve in promoting or providing opportunities for tourism?

- How should outdoor therapy groups be managed to meet the needs of these groups while ensuring safety of the public and adjacent property owners?

- Should other recreation sites be developed to provide for public use?

- Can high use recreation areas such as the Sand Dunes be managed to allow continued recreation use while protecting resources? If so, how?

- How should the special/extensive recreation management areas be managed?

- Is there a need for any additional roads to provide access to areas currently inaccessible to BLM, commercial interests, or the public?

- Which areas should be designated open, limited, or closed to OHV use?

- Which roads, if any, should be closed or limited in their use?

- What roads, if any, are appropriate for special designations such as back country byways or back country discovery routes?

Issue 5. How should public lands be managed to meet the needs of local communities and Native American Tribes?

The communities in the resource area are generally small and isolated. As such, they have a great reliance on the public lands, including those in the national forest, to provide economic benefits to local communities, including jobs. In addition, a number of Native American groups consider the resource area part of their ancestral homelands and want to continue to have access to the land for ceremonial and religious purposes and to hunt wildlife and gather plants for various traditional uses.

Questions to be answered in resolving Issue 5:

- What is an appropriate role for BLM in providing support to local communities?
- How should the public lands be managed to provide economic support to local communities?
- How should the public lands be managed to meet the needs of Tribal self-sufficiency and traditions?
- How can conflicts between agency actions and Tribal needs and expectations be minimized or avoided?

Issues Eliminated from Detailed Study

During the scoping process and the initial phases of plan development, a number of alternatives and issues were identified, and after discussion and review, were eliminated from further consideration.

Grasshopper Control

Periodic outbreaks of grasshoppers occur in the planning area and can be a significant problem. The last outbreak which was treated in the planning area occurred in 1993. BLM has a memorandum of understanding (which may be reviewed annually as needed) with the U.S. Department of Agriculture Animal and Plant Health Inspection Service (USDA-APHIS) for the control of grasshoppers on public lands in the district. The "Rangeland Grasshopper Cooperative Management Program EIS for the Western States" was completed by USDA-APHIS in 1987 and is currently being updated. An environmental assessment of the local effects of the USDA-APHIS control was completed for the Lakeview District (Lake and Klamath Counties) in 1995 and tiers to the programmatic EIS. Grasshopper control in the planning area was not considered to be a planning issue.

Determination that Lands are Chiefly Valuable for Grazing

One issue that has been raised in the recent past relates to making a determination of which lands within the resource area are ". . . chiefly valuable for livestock grazing." Section 1 of the "Taylor Grazing Act" states that ". . . the Secretary of the Interior is authorized, in his discretion, by order to establish grazing districts or additions thereto and/or to modify the boundaries thereof, of vacant, unappropriated, and unreserved lands from any part of the public domain of the United States . . . which in his opinion are chiefly valuable for grazing and raising forage crops." It is the BLM's position that the Secretary of Interior already made this determination when grazing districts were established.

Interior Columbia Basin Ecosystem Management Project Scientific Assessment Findings

The Interior Columbia Basin Ecosystem Management Project (ICBEMP) science integration team identified a number of findings from the scientific assessment (USDA-FS and USDI-BLM 1996) relevant to issue identification across the Interior Columbia Basin. The Lakeview subbasin review team reviewed these findings and determined that most of them applied to the subbasin review area. These are discussed further in Appendix A of this document. Those findings determined not to be applicable to BLM-administered land in the Lakeview planning area (Appendix A2) have been dropped from further analysis.

Implementation and Effectiveness Monitoring

In a written response to the "Summary of the Analysis of the Management Situation," the Wildlife Management Institute suggested that another issue be addressed in the plan: "How will the extent of RMP implementation and its effectiveness in resolving identified issues be determined?" This issue was eliminated from analysis as a new planning issue since an overall monitoring plan was developed and is included as Appendix R.

The monitoring plan will be issued as part of the proposed resource management plan and record of decision. After the record of decision is issued, an

implementation plan will be developed based on budget priorities to guide implementation of the RMP. On-the-ground monitoring of resource management actions and RMP tracking will determine the extent and effectiveness of implementation. This information will be summarized in the annual planning update. In addition, a formal RMP evaluation will be conducted on a periodic basis (usually every 5 years) to determine the extent and effectiveness of plan implementation.

Planning Criteria

Planning criteria are the standards or rules used for data collection and alternative formulation that guide final plan selection. Planning criteria are developed from appropriate laws and regulations, BLM manual sections, and policy directives, as well as from concerns expressed by the public and other agencies. They provide a basis for judging the responsiveness of the planning decisions and the planning process to law, guidance, the results of public participation, and consultation with other agencies.

Planning criteria influence all aspects of the planning process, including inventory and data collection, development of issues to be addressed, formulation of alternatives, estimation of effects, and selection of the preferred alternative.

Planning criteria help to:

- Streamline the plan's preparation and focus;
- Establish standards, analytical techniques, and measures to be used in the process;
- Guide development of the RMP;
- Guide and direct issue resolution; and
- Identify factors and data to consider in making decisions.

Principles of ecosystem management, as well as a continuing commitment to multiple use and sustained yield, will guide land use decisions in the planning area. The commitment to multiple use will not mean that all land will be open for all uses. Some uses may be excluded on some land to protect specific resource values or uses.

Appendix B contains a detailed description of the planning criteria and legal authorities used in the development of this RMP/EIS.

Relationship to Federal, State, Local, and Tribal Government Plans

Federal Plans

A number of land use plans or programatic "National Environmental Policy Act" (NEPA) analyses have been developed by the BLM and other Federal agencies which govern how management is carried out within the planning area. The LRA is responsible for determining if the proposed resource management plan is in conformance with these plans. Where appropriate, the management direction and previous management decisions set forth by these documents are used to tier analyses performed in this plan or are incorporated by reference, and therefore, are not repeated in detail within this document (nor are pertinent decisions already established by these documents being revisited here). These plans/documents are summarized in Appendix B.

State Plans

The consistency of the Lakeview Proposed RMP/Final EIS with various State of Oregon plans is shown in Table B-1, Appendix B. The Governor's office has been given an opportunity to review the Lakeview Proposed RMP/Final EIS and comment on its consistency with their goals, policies, and plans.

Lake County Plan

Lake County has an existing land use plan developed in response to the State of Oregon's requirements. The plan consists of a number of reports, ordinances, and subsequent amendments governing land use practices and policies within the county (Lake County 1979, 1983, 1989a, 1989b, 1989c, 1992). In 1992, the county passed an "Emergency Ordinance and Interim Public Land Management Plan" (Lake County 1992) to supplement the existing land use plan. This ordinance does not support the designation of any additional wilderness areas or RNA's within the county, but does not specifically address ACEC's. The Lake County Commissioners and other interested members of the public who commented on the Draft RMP/EIS (see Volume 4) feel the designation of new ACEC/RNA's and the addition of lands to existing WSA's is in direct conflict with this ordinance.

The Lake County Commissioners were briefed on the development of the RMP/EIS on many occasions (see

Chapter 5) and are being provided with an opportunity to review the Lakeview Proposed RMP/Final EIS and comment further on its consistency with their approved plans and policies.

Harney County Plan

Harney County has an existing land use plan developed in response to the State of Oregon's planning requirements. The Harney County Court (Commissioners) were briefed on the development of the RMP/EIS (see Chapter 5) and were provided an opportunity to review the Draft RMP/EIS, but made no written comments. They are being provided with an opportunity to further review the Lakeview Proposed RMP/Final EIS and comment on its consistency with their approved plans and policies.

Tribal Government Plans

Five recognized Tribal governments have an interest in lands within the LRA: the Klamath Tribes, the Confederated Tribes of the Warm Springs Reservation, the Burns Paiute Tribe, the Fort McDermitt Tribe, and the Fort Bidwell Tribe. The LRA area manager and RMP team leader have met with Tribal leaders of the Klamath Tribes, Burns Paiute, and Fort Bidwell Tribes to discuss the Lakeview RMP/EIS and to identify Tribal goals, needs, or plans which may conflict with or support any of the alternatives (see Chapter 5). The Klamath and Burns Paiute Tribes provided written comments on the Draft RMP/EIS (see Volume 4) and are being provided with an opportunity to further review the Proposed RMP/Final EIS. Additional meetings or consultation efforts will occur as the plan is implemented.

Chapter 2 — Affected Environment

Planning Area Profile

The resource management plan planning area (RMP area or planning area) includes all of the Lakeview Resource Area (LRA) except for approximately 31,000 acres of the resource area managed by the Burns District. The planning area also takes in 2,172 acres of the Surprise Resource Area of the Susanville District in Nevada for which the LRA has management responsibility (Map I-1).

This chapter describes the current condition, amount, location, use, and demands etc., of each of the resources in the planning area that could be affected by the actions described in Chapter 3.

History of the Resource Area

Indigenous people have lived in what is now the LRA for thousands of years. Native American Tribes and individual members continue to use these lands today for traditional cultural practices, such as plant gathering and hunting. Europeans first entered this area in 1826, when Peter Skene Ogden of the Hudson Bay Company crossed the area while exploring the Great Basin. John C. Fremont, representing the United States Government, explored the area in 1843. Fremont's explorations were published and widely read in the United States, creating an interest in the West (Fremont 1956). However, because of the dry conditions, rugged environment, and lack of farmable land, much of the Great Basin was ignored. It served only as a transportation route for early settlers heading to California and Oregon. The Oregon Central Military Road, which was used to transport supplies from Eugene, Oregon, to Fort Boise, Idaho, was created in 1867. While little used, it began to open up to development what would later become Lake County.

In 1866, the military established the first Camp Warner on what is today Hart Mountain. The camp was later moved to a location west of Warner Valley in order to provide settlers and travelers protection from the Northern Paiute Indians. Oregon became a state in 1859, when several transportation routes were bringing large numbers of settlers into the State. In 1867, the first settlers entered the Goose Lake Basin and soon began settling throughout the region. New Pine Creek, Oregon, the oldest town in Lake County, was established in 1869. Lake County was established by State legislature in 1874. At that time, it included what is presently Klamath and Lake Counties. The site that was to become Lakeview had its first residence built in 1872 and was selected as county seat in 1876.

The decades of 1870 and 1880 saw the settlement of much of the region and the establishment of towns throughout the area. The main focus of settlement and economic development was ranching and livestock. Logging became a major focus in later years. Towns and villages such as Paisley, Summer Lake, Silver Lake, Fort Rock, Adel, and Plush served as trade, supply, and civic centers for the ranches and homesteads that developed. Lands occupied were primarily within the rich valley basins and river bottoms of the area. The rest of the land was used primarily for open range grazing and harvesting trees for lumber. To a limited degree, mining also helped focus attention on the area.

In the early 1900s, there was an occupation boom in the Fort Rock and Christmas Valley area. Between 1902 and 1912, nearly all the available land within these areas was homesteaded. For a few years, these settlers were able to work and make a living with dry land farming techniques. However, when rainfall diminished, the farms failed and were abandoned. Where there had once been 18 post office locations, only two survive today at Fort Rock and Christmas Valley. The communities of Lakeview, Paisley, Silver Lake, Fort Rock, Summer Lake, Christmas Valley, Adel, and Plush remain the centers of civic life in the region, with Lakeview being the largest community in the county. Other locations, especially in northern Lake County, have disappeared from the map.

Physical Characteristics

The LRA lies in the northwest portion of the Great Basin. Traditionally, this area has been placed within the Basin and Range Physiographic Province, which is bordered to the north by the High Lava Plains Physiographic Province. Consequently, the planning area displays the characteristics of both provinces. Anderson et al. (1998) divides the planning area into three divisions: High Desert, Klamath, and Mazama Provinces. This division is based on physiography, geology, and soils. Over 75 percent of the planning area is classified as High Desert Province. The rest of the area is classified Klamath Province (18 percent) and Mazama Province (7 percent).

Physiography

The geology of this part of the Great Basin is characterized by uncompacted stream- and lake-deposited sediments and a variety of volcanic and sedimentary rocks. Some scientists estimate that these sediments and rocks range in age from early Oligocene (38 million years ago) to Holocene (recent). They have been displaced and broken-up by Miocene- to Pleistocene-age (15 million to 11,000 years ago) faults. This has resulted in the north- to northwest-trending mountains and valleys characteristic of this area. These ridges and valleys are divided crossways by a dominant northwest-southeast trending fault system, and a northeast-southwest trending fault system. All watersheds in the planning area are internally drained, which is characteristic of the Great Basin. However, in the geologic past, Goose Lake spilled into the Pit River, which eventually reaches the Pacific Ocean.

Many of these undrained basins contain saline playa lakes and large accumulations of alkali. The relatively young volcanic eruptions of the High Lava Plains Province is responsible for some of the outstanding volcanic features found in the RMP area. Lava flows, volcanoes, cinder cones, lava tubes, and explosion features occur throughout the RMP area, with the youngest of these in the Christmas Valley/Fort Rock area.

The entire resource area is placed by some scientists within the limits of Mesozoic (240 to 66 million years ago) and Paleozoic (570 to 240 million years ago) marine sedimentary basins. Significant accumulations of hydrocarbon-bearing marine sediment may lie beneath the younger volcanic and volcanic-derived sedimentary rocks in some areas.

The elevation in the RMP area ranges from 4,103 feet at Summer Lake to 8,456 feet at Crane Mountain.

Climate

The planning area has a semiarid climate with long, cool, moist winters and short, warm, dry summers. The average annual precipitation is between 8–18 inches, depending on elevation, with the majority of moisture coming in the winter and spring. Temperatures can range from below 0 degrees Fahrenheit in the winter to more than 90 degrees Fahrenheit in the summer. Average monthly temperatures range from 28.7 degrees in January to 62.5 degrees in July. However, freezing temperatures can occur any time of the year. Climatic data from elsewhere in the northern Great Basin and southeastern Oregon indicates that 7 out of 10 years in the past have been affected by drought (BLM 1998g).

Plant Communities

Shrub Steppe

Ecological Provinces and Subbasins of Southeastern Oregon

Introduction

Four hydrologic subbasins, as defined by the U.S. Geological Survey (USGS) in the RMP area, are centered around (1) the Paulina Marsh and Silver Lake (Silver Lake Subbasin), (2) the Chewaucan Marsh drainage into Lake Abert (Lake Abert Subbasin), (3) the Warner Wetlands drainage (Warner Lakes Subbasin), and (4) the Beaty Butte country (Guano Subbasin), which drains into the Guano system. There are also small, Bureau of Land Management (BLM)-administered holdings within the Goose Lake drainage. Remnants of Pleistocene pluvial (glacial melt and rain-filled) lakebeds exist in these four major drainages. The evidence of these extensive inundations exist in exposed shoreline terraces and visible wave-action beach lines. Present-day climate is uniformly dry and cold with frosts that can come any day of the year. Climate varies widely from location to location at any given time, both seasonally and from year to year, even though the climate is generally dry with extremes of cold and hot (Anderson 1998). Pollen records demonstrate that extreme changes can occur rapidly from year to year and that resiliency of species is the norm; predictability is not the norm (Miller and Wigand 1994).

The High Desert Province

The High Desert Province is characterized by large and small closed basins surrounded by extensive terraces formed by ancient lakes. Between the closed basins are low basaltic ridges, hilly uplands, isolated buttes such as Beaty Butte, mountains such as St. Patrick and Warner, and block-faulted igneous formations such as Abert Rim and Poker Jim Ridge. The rainfall varies from 8 inches of precipitation at Plush to 10.2 inches on Hart Mountain; average annual precipitation in this province is 9.7 inches. On the northwest part of this province, the boundary between High Desert and Mazama Provinces is a belt determined by the pumice mantle and/or lava flows from Mazama, Paulina, and other volcanoes (Anderson 1998).

When Europeans came to the High Desert Province, it was occupied by the Klamath, Warm Springs, and Northern Paiute Tribes (Aikens 1986). Today, these Tribal people live in towns, on ranches, or on reservations (Klamath Tribes, Warm Springs Confederated Tribes, Burns, or Fort Bidwell). Many of them were hunter-gatherers and used the land as part of their yearly collecting cycles. Archaeological evidence at Connley Caves, pollen records from several sites in the region, tree ring analyses, and paleontological evidence from Fossil Lake, all help reconstruct past climates and vegetation changes over time in this province (Aikens 1986; Aikens and Jenkins 1994)

According to the 1936 "Forest Type Map of Oregon," at that time stands of western juniper were on upland areas scattered across the High Desert Province. In 1936, in the area north and northwest of Silver Lake, juniper stands collectively covered an estimated 18,000 acres. From the vicinity of Cougar Mountain, scattered juniper stands existed eastward nearly to Wagontire Mountain; in 1936, they collectively covered an estimated 185,000 acres. Natural stands of western juniper in this province are usually associated with rocky or very stony uplands, lava flows, and ridges where understory vegetation is insufficient to burn during wild fires. Ponderosa pine exists in a few places in this province along the western edge and northwestern part of the province and on BLM land in the northern part of Warner Mountains. These pines are located where 18 inches of rain falls annually. An ecological oddity, the Lost Forest, northeast of Christmas Lake Valley, contains ponderosa pine with some juniper growing on sandy soils. This isolated sand dune area receives only 8.7 inches of rain annually. The isolated stand of pine lies about 25 air miles east of the nearest pine forest, which is in the Mazama Province.

The huge number of closed basins that typify the High Desert Province include perpetually dry lakebeds, lakebeds that are inundated infrequently and for short periods, perpetual lakes that fluctuate in size over time, and wetlands and marshes that are reasonably perpetual. Vegetation on the bottomlands and around these lakes varies according to the frequency, depth, and duration of inundations. This RMP area is almost entirely a natural shrub-grassland steppe on uplands. Sagebrush strongly dominates among a wide variety of shrub species commonly growing in this province. At least 30 shrub species on upland sites and 15 shrub species on bottomland sites have been recorded consistently in this province. The sagebrush species and subspecies are reasonably site-specific and related to soils where they grow (Anderson 1998).

Predominate grass species in the arid shrub-grasslands include bluebunch wheatgrass, Idaho fescue, Thurber's needlegrass, bottlebrush squirreltail, and Sandberg's bluegrass. The more arid, sand dune sites may include Indian ricegrass, creeping wildrye, needle-and-thread grass, and thickspike wheatgrass. Some forb species are widespread in this province; however, a few are specifically restricted to local situations and will be discussed under the section on sensitive plant species.

The Klamath Province

The Klamath Province abuts the High Desert in the southwest corner of the subbasin review area; the division from the High Desert Province is based on changes in soils. The Province boundary in the study area begins at the Oregon/California border southwest of Adel and extends north to Honey Creek. It then extends west and northwest to Valley Falls, south of Paisley, across Picture Rock Pass, and west about 5 miles south of Silver Lake into the headwaters of Bridge Creek to the junction of the High Desert, Klamath, and Mazama Provinces. The Klamath Province is characterized by high elevation basaltic mountains, such as Warner Mountains, Dead Indian Mountain, and Winter Rim, although none of these peaks reach timberline. The average annual precipitation for this portion of the Province is 14 inches, 35 percent of which falls between April and July. The exceptions are Winter Rim, which averages 35 inches per year, and Crane Mountain, which averages 65 inches annually (Anderson 1998).

At contact with Europeans, the Klamath Province was inhabited by Modoc, Klamath, and Northern Paiute Tribes, who used the RMP area seasonally for hunting and plant gathering. These Tribal people had little impact on the Province's natural resources, although they did use fire and other means of landscape manipulation (Aikens 1993).

According to the 1936 "State of Oregon Forest Type Map," which predates extensive logging activities, about 70 percent of the Lake County part of Klamath Province was covered by trees, primarily ponderosa pine. Only about 1 percent of the Lake County part of the Province was covered in juniper stands. As in the Mazama Province, the Province was not heavily used until after World War II (Stephenson and Boydstun 1994). Since then, radical changes in this province include expanded juniper coverage and forest cutting practices.

The Mazama Province

The Mazama Province is characterized by a continuous mantle of aeolian deposits of pumice and other volcanic materials that extend from Brothers in the north to Buck Creek in the south, paralleling Highway 31 and south to the junction of the three provinces. Most of the Mazama Province lies between 4,000 and 5,000 feet and consists of hilly to mountainous topography interspersed with basins. Innumerable large and small buttes, cones, and ridges formed by volcanism dot the landscape. Fields of raw lava and pumice are common. The rainfall in this portion of the province demonstrates the "rain shadow" effect of the Cascades. The Mazama Province averages around 18 inches per year, compared to 145 inches annually in the Three Sisters area to the west (Anderson 1998).

At contact with Europeans, the Mazama Province was occupied by the Klamath, Warm Springs, and Northern Paiute Tribes. These people used the area seasonally as part of their collecting rounds and had few or no permanent living areas other than winter encampments, which were usually held in traditional locations (Aikens 1993). Research indicates that precontact people manipulated the landscape intentionally with fire much more frequently than initially expected (Gruel 1985).

According to the 1936 "State of Oregon Forest Type Map," which predates extensive logging activity in the area, about 4 percent of the Mazama Province was open and unforested (sagebrush), 10 percent was in stands of western juniper, and 20 percent was in stands of lodgepole pine (some related to fire activity). For most of the entire Province and the area represented in this study, 55 percent was covered by stands of ponderosa pine with some small areas including Douglas-fir and other minor species. In the RMP area, there are thick stands of bitterbrush as an understory and in isolated communities (Anderson 1998).

Logging in that section of the Mazama Province within the RMP area was minimal until after World War II. Because of the lack of roads and transportation for lumber, logging operations were small. One company used a railroad to the Bend area. It was not until the 1980s that logging and replanting of trees began on a large scale in this province (Tonsfeldt 1987, 1988).

Existing General Plant Communities

Introduction: The vegetation in the planning area is discussed at three levels. The top level is the entire subbasin, which includes all three provinces. The mid-level is the actual plant communities themselves. The site-specific level consists of ecological sites, which describe the potential for plant communities on specific soils.

The uplands of the High Desert Province in Oregon are almost entirely a natural shrub-grassland dominated by different species of sagebrush. Sagebrush species are very site-specific. Basin big sagebrush grows mainly on sites having moderately deep, loamy soils, such as those on droughty bottomlands and fans, while Wyoming big sagebrush is present almost everywhere throughout the uplands of the province. The habitat is similar to basin big sagebrush, but occurs on sandier or more gravelly soils. Mountain big sagebrush is dominant above 5,500 feet on gravelly or stony upland soils. Low sagebrush is strongly dominant on shallow to very shallow stony upland lithic soils, but also grows mixed among other sagebrush species on moderately deep, very gravelly mountain slopes. Silver sagebrush is found on some intermittent lakes and in areas around playas inundated part of the year. Bud sagebrush grows only on the most arid uplands in the province, which are very shallow, very stony soils and are usually alkaline in nature. The distribution of black sagebrush is rare in southeastern Oregon, but it grows in several extensive stands in the Province on the shallowest soiled scablands (Anderson 1998; Kagan and Caicco 1996).

The existing general plant communities and acres of coverage are described in Table 2-1 and in the following section.

Big sagebrush shrubland: Big sagebrush shrubland is the most common vegetative cover type in southeastern Oregon. It appears as a mosaic with shrub-steppe communities over much of the unwooded areas along mountain range foothills and expansive extents in the valley floor. There are several different mixtures of plants within the big sagebrush mosaics. These are big sagebrush (1) with perennial grasslands, (2) with annual grasslands (cheatgrass), (3) within crested wheatgrass seedings, (4) with a variety of shrubs, such as squaw apple or bitterbrush, and (5) in some limited areas on well-drained ash soils and in wetland mosaics. Other plant combinations featuring sagebrush as the dominant plant are big sagebrush (1) with spiny hopsage, (2) with black greasewood, (3) with shadscale, (4) with limited distribution of winterfat, and (5) mixed with low or silver sagebrush.

Native grasses range from rare to abundant, depending on site history and soil/water relations. Native perennial bunchgrasses include bluebunch wheatgrass,

Table 2-1.—*General vegetation classes on BLM-administered lands within the planning area*

Vegetation type	Acres	Description
Agriculture	14,262	Areas modified for crop growing.
Big sagebrush shrub/grassland	1,709,758	Most common vegetative cover in southeastern Oregon; can occur with various understory plants.
Black sagebrush/grassland	4,235	Has limited distribution in the province; usually grows in very shallow soils.
Low sagebrush shrub/grassland	397,875	Found sporadically throughout eastern Oregon, generally on areas with shallow basalt soils; usually has sparse canopy cover.
Miscellaneous shrub/grassland	70,476	Usually consists of mountain mahogany, bitterbrush, and snowberry communities with a bunchgrass understory; they are often on steep slopes or in association with western juniper.
Mixed conifer forest	1,255	A close-canopied, upper montane or mountain forest type that can be represented by several plant communities containing a number of pine and fir species and a variety of understory shrubs and herbaceous vegetation.
Modified grassland	249,140	Extensive grasslands and shrub grasslands of southeastern Oregon that were formerly composed of native bunchgrasses have been planted with crested wheatgrass, usually after a fire; in some areas, cheatgrass has invaded and become well established.
Mountain big sagebrush/grassland	8,064	Occur at higher elevations on plateaus and rocky flats with minimal soil development.
Ponderosa pine forest	14,076	Widespread forest type in eastern Oregon; usually found in the foothills margin bordering the upland conifer types on the national forests; widely spaced, overstory pines often cover western juniper or other conifers; the shrub and herb layers form a diverse and prominent ground cover component in this forest type.
Quaking aspen	2,063	Widely scattered throughout the coniferous forest and sagebrush grasslands of eastern Oregon; can be found in isolated pockets and may be mixed with western juniper, which is replacing the quaking aspen on many sites.
Riparian and wetlands	40,676	Extremely valuable far beyond their limited distribution; the variety of shrubs, grasses, and forbs present depends on the degree and duration of wetness and shade at each location.
Salt desert shrub/grassland	261,019	Occurs in alkaline playa or dry lake basins of the Great Basin Ecoregion of the resource area; especially prominent around Lake Abert, Summer Lake, Alkali Lake, and Warner Lakes Basin; consists of salt-tolerant shrubs and grasses.
Silver sagebrush shrub/grassland	27,161	Usually found in moist playas or on semi-alkaline flats and valley bottom lands.
Unvegetated	56,686	Seasonally wet or dry playas, bare rock, recent burns, and barren lava flows.
Vegetated lava flow/sand dune	73,371	Large expanses of barren lava fields and aeolian sands with occasional isolated patches of tall and low sagebrush communities occur throughout the area.
Western juniper woodland	215,052	Areas of open-canopy woodland with western juniper as primary tree species; understory vegetation usually dominated by sagebrush species, and western juniper is often an invader into sagebrush grass community as a result of fire suppression.

Sandberg's bluegrass, Idaho fescue, Great Basin wildrye, junegrass, needle-and-thread grass, Thurber's needlegrass, western needlegrass, and, in more disturbed situations, bottlebrush squirreltail. Introduced grasses are primarily annual cheatgrass and perennial crested wheatgrass.

Black sagebrush/grassland: Black sagebrush has a limited distribution in the High Desert Province and is considered a "rare type" there. This plant community often occurs on shallow scabland soils on plateaus and gentle slopes. The sites have extensive areas of exposed rock and often do not have enough vegetation to support wildland fires (see proposed Foley Lake Area of Critical Environmental Concern [ACEC]/ Research Natural Area [RNA], Special Management Areas section). Sandberg's bluegrass usually is the dominant grass that makes up most of the vegetation cover; however, other bunchgrasses also occur on these sites. Black sagebrush is the dominant, and often only, shrub present on these sites. In some areas, these black sagebrush stands can be extensive or occur in a mosaic with low or big sagebrush. Occasionally, bitterbrush is found as well. Gray rabbitbrush and Truckee green rabbitbrush also occur on these sites.

Silver sagebrush/grassland: The silver sagebrush/ grassland community is usually found in playas, which are moist, semi-alkaline flats or valley bottomlands. Some of the playas are quite extensive. Silver sagebrush occurs in playas because of its tolerance of the alkalinity and standing water. This tall shrub community is moderately- to widely-spaced. It grows in areas that have been deflated (eroded by wind) and subsequently partially filled with sediment. Although rhizomatous species such as creeping wildrye, milkvetch, and cress occasionally occur, the understory can be dominated by widely-spaced bunchgrasses, such as Nevada bluegrass, mat muhly, and alkali grass. Silver sagebrush is the dominant and characteristic shrub of this community; however, green rabbitbrush is a common associate.

Low sagebrush/grassland: Low sagebrush communities are found throughout eastern Oregon, generally on areas with shallow, clayey soils of basalt origin. Low sagebrush is the primary dominant, and often the only shrub in the stand; however, Sandberg's bluegrass is also commonly found. Other associate grasses are bluebunch wheatgrass, Idaho fescue, and bottlebrush squirreltail. Low sagebrush is usually the dominant vegetation in shallow soil and in rocky, claypan conditions that exclude the formation of other sagebrush and shrub types. In many cases, low sagebrush does not form extensive landscape-level covers but is part of the large big sagebrush and sagebrush mosaic. The sites have extensive areas of exposed rock and often do not have enough vegetation to support wildland fires. Low sagebrush can also occur within a quaking aspen mosaic. In the spring, when the snow melts and soils warm, these areas are rich in colorful diversity from the perennial and annual wildflowers that grow there.

Mountain big sagebrush/grassland: Mountain big sagebrush communities occur on plateaus, mountain toeslopes, and stony flats with minimal soil development at high elevations in the High Desert Province. This medium to medium-tall shrubland varies with widely-spaced to fairly dense shrubs that occur on deep-soiled to stony flats, ridges, and mountain slopes, and usually in cool, moist areas with some snow. In this community, Idaho fescue is the most common and diagnostic grass. Mountain big sagebrush is the dominant and only important shrub, but low sagebrush can occur in some places. Other shrubs that can occur are chokecherry, serviceberry, snowberry, bitterbrush, and buckthorn. Occasionally, mountain big sagebrush grows in snowbank areas or other moist sites within this community. Few trees occur in this community, but quaking aspen and mountain mahogany may be present. This is a forb-rich community where paintbrush, potentilla, geum, lupines, and buckwheat species are abundant.

Miscellaneous shrub/native perennial grassland: Mountain mahogany shrubland is found on the steep, rocky slopes and mountain ridges in southeastern Oregon. It usually appears as a minor component within the old growth western juniper woodland types or transitions in and out of sagebrush steppe. This cover type is commonly encountered but generally exists as units too small to be mapped. This widely-dispersed tall shrub community grows in rock talus, rock outcrops, and in the soil pockets within the rocky slopes along with big sagebrush. It can be the dominant overstory vegetation with occasional western juniper and low sagebrush or bitterbrush, several buckwheats, and some grasses (bluebunch wheatgrass, Sandberg's and Nevada bluegrasses, Idaho fescue, and western and Thurber's needlegrasses).

Bitterbrush communities are found in a medium-tall shrubland steppe with bunchgrass or cheatgrass understory. Bitterbrush can be dominant or codominant with big sagebrush. Idaho fescue is the characteristic native bunchgrass, with bluebunch wheatgrass codominant at lower elevations, while western needlegrass is dominant at higher elevations and where soils are sandier (Anderson 1998). Rabbitbrush species are common associates. Basin big sagebrush and mountain big

sagebrush grow as codominants in some areas. Juniper and ponderosa pine are occasionally found as isolated individuals in this plant community.

Snowberry communities are found on steep slopes between alpine habitats and riparian or sagebrush steppe. They are usually in areas with some soil development, north-facing, very steep slopes, and can be in a mosaic with quaking aspen groves. Thurber's needlegrass, bluebunch wheatgrass, Idaho fescue, and Sandberg's bluegrass are found as understory. Many forbs grow in the area with snowberry, as do mountain mahogany, quaking aspen, and mountain big sagebrush. Juniper can be found with these shrubs at lower elevations.

Brush/clearings: These plant communities are the result of human actions (such as physically removing brush or timber harvest) or the result of fires (wild or prescription).

Salt desert scrub/grassland—alkaline plant communities: This plant community occurs in the alkaline playa lake basins of the northern Great Basin. It is especially prominent around Lake Abert, Summer Lake, Alkali Lake, and the Warner Lakes. These are low to tall shrub communities comprised of dispersed alkali-tolerant vegetation. Salt desert scrub is a "catch-all" term that describes several different environments more common in Nevada. On the most saline, seasonally flooded sites, black greasewood is dominant, and winterfat is usually associated with droughty soils with high carbonate content on alluvial fans and toeslopes. Sites with better drainage support a variety of shrubs and several holphytes (salt tolerant plants), such as shadscale, hopsage, budsage, rabbitbrush, and grasses such as saltgrass, bottlebrush squirreltail, and Great Basin wildrye. Salt desert scrub is surrounded by big sagebrush or sagebrush steppe cover types. The most extensive areas are always associated with the large, ephemeral lakes of the region. However, there are numerous small pockets of this cover type scattered sporadically throughout southeastern Oregon (Anderson 1998; Kagan and Caicco 1996). The proposed ACEC for the Spanish Lake area is to preserve this plant community study.

Lava land/sand dunes (vegetated): There are large expanses of sparsely-vegetated lava fields with occasional isolated patches of tall shrub communities where Wyoming and basin big sagebrush predominate and low shrub communities may also occur. These include barren, recent lava flows with no vegetation, lava flows with big sagebrush inclusions, and flows which have recently been invaded by vegetation. Bluebunch wheatgrass, Sandberg's bluegrass, needlegrass, Idaho fescue, and junegrass occur in soil pockets in these flows. However, bare lava characterizes large areas of this type. While big sagebrush is the principal dominant plant, low sagebrush is also common at certain sites. The two rabbitbrushes are also associates. Other shrubs found are currants, bitterbrush, and desert-sweet. The vegetated sand dunes have a variety of grasses, especially Indian ricegrass, creeping wildrye, and Great Basin wildrye, while only a few shrubs survive on the dune systems. They are found within the salt desert shrub community list.

Unvegetated ground: These areas can be wetland playas that are seasonally wet and dry, bare rock areas, open water, recent burns, barren lava fields or sand dunes, and areas where no data is available.

Modified grassland—crested wheatgrass and cheatgrass: Extensive grasslands in southeastern Oregon that formerly were composed of native perennial bunchgrasses have today been planted with crested wheatgrass seedings and/or have been invaded by cheatgrass. Both of these species originated in Eurasia but have adapted to this climate and soil.

Cheatgrass was inadvertently introduced in America with cattle and in hay used for ballast in ships; this annual grass can outcompete native grasses by germinating in the fall. Presently, these grasslands are used primarily for spring grazing but provide little forage value. Weedy native and exotic species may also be present or even dominant. These large expanses of cheatgrass can be the result of intense fires, repeated burning of the same area, unsuccessful seedings, historic overgrazing, repeated spring use, abandoned farming, and other disturbances.

In the past, many contiguous acres were planted predominantly with crested wheatgrass after wildland fires. These communities remain a dominant crested wheatgrass community for several years; then, depending on soil type and grazing pressures, native shrubby species such as sagebrush and rabbitbrush begin to invade. Forbs commonly found in this type of community include yarrow, milkvetch, arrowleaf balsamroot, spreading phlox, salsify, and mullein. The ecological integrity of such sites is low, especially over large areas, because there are few mosaics of other plant communities, little diversity of wild animal species that use these communities, and disruption of corridors for animal movement. Cheatgrass and noxious weeds may also become established.

Riparian Vegetation—Lotic Systems

Introduction

Riparian vegetation is dependent on the stream channel type, duration of water availability, soil type and depth, climate, and management history. Sedges, rushes, and in some cases, willow and alder, dominate streams with deeper soils and longer-lasting water. Boulder-dominated streams have pockets of vegetation that may be dominated by grass and shrubs. As water availability decreases, herbaceous vegetation shifts from sedges to grasses. The grasses change from wetland obligates—plants that occur almost always in wetlands under natural conditions, to wetland facultative—plants that usually occur in wetlands but occasionally are found in nonwetlands. Lower elevation sites often have alder and dogwood along with willow as the predominant woody vegetation. Higher sites are dominated by willow. There are several species of willow in the resource area, some more dependent on moisture than others. For example, scouler willow can survive dry, upland sites, while sandbar willow requires wet conditions. The presence of these species can assist in determination of stream-site condition as it relates to site potential. Canyon-confined streams in lower reaches often have ponderosa pine as a dominant structural feature. Juniper has invaded many riparian sites and quaking aspen stands and has replaced more desirable riparian species.

Included in these plant communities are the willow floodplain riparian areas, where tall shrub communities with dense willow cover are occasionally interspersed with wetlands, sedge meadows, or moist, forb-rich grassland. This community occurs in broad valley floors as well as in narrow riparian canyons along rivers and streams. Many rivers usually have some cottonwood, willow, rose, snowberry, red-osier dogwood, and some pine and *Prunus* species. Alder is rare on the BLM portion of the RMP area. At one time, cottonwood was probably more prevalent; at present it does not occur widely in Lake County (Anderson 1998). Stinging nettle is present in most areas.

The role vegetation plays in stream condition (bank stability, sediment capture, flood-flow attenuation, and source of woody debris, etc.) depends on channel type. Channel types E3-6, C3-6 and G3-6 (Rosgen 1996) depend on vegetation to control stream function. The type of vegetation is also critical. Larger sedges have more extensive soil-holding ability than grasses like Kentucky bluegrass. Large woody debris such as tree trunks or boulders may supply the bank-forming structure on streams (other than the vegetation-dependent ones).

Structure and type of vegetation is critical to wildlife and fish habitat, even when it does not control stream morphology, condition, or function. Hardwoods, such as quaking aspen, some taller willows, and cottonwood, supply vertical structure for neotropical birds. As the trees age and decay, cavity nesters make use of them. Vegetation also supplies shade to the stream and helps to cool the water. Leaves from hardwoods supply nutrients to the riparian and aquatic system. In some areas, these leaves can be the driving force as a food source for aquatic macroinvertebrates, which in turn become a food source for fish.

Cottonwood deserves special consideration when managing riparian vegetation. Many cottonwood stands have declined in the area. Remnant stands can be found that have little or no regeneration, while some stands can be identified only by the remaining dead and down trees. Cottonwood trees need flood events so that a silt bed is developed for the seeds to establish. Normal water levels do not present the conditions needed for seedling establishment. After establishment, the seedlings must be protected from grazing for a period of time in order to survive.

Riparian vegetation communities are more diverse than the surrounding upland areas, and thus support a wider variety of wildlife species. This is especially true when considering the amount of habitat edge that exists between the riparian and upland vegetation types.

The habitat islands provided by springs are of special significance, because they often provide the only habitat diversity in uniform desert systems.

Grazing Management in Riparian Vegetation

Livestock use in most perennial riparian areas in the planning area is controlled so that grazing does not negatively affect the establishment or regrowth of vegetation. By allowing early season grazing (winter/spring) and then removing the stock, managers ensure that the vegetation has enough soil moisture to regrow, so that by the end of the growing season, adequate cover is present on the banks to protect them from flooding. If the vegetation is removed too late in the year, subsequent high flow events may erode stream banks. Late season grazing often leads to heavy browsing of willows and other hardwoods, as grazing shifts from the drying herbaceous to the remaining green, woody vegetation. As the herbaceous vegetation cures, protein levels drop and the woody material becomes relatively more nutritious. If late season

grazing is permitted, use levels on woody and herbaceous vegetation must be limited.

Wetlands Vegetation—Lentic Systems

The large number of closed basins that typify the High Desert Province include dry lakebeds, lakebeds that are inundated infrequently and for short periods, perpetual lakes that fluctuate in size over time, and wetlands and marshes that are reasonably perpetual. Vegetation on these bottomlands varies according to the frequency, depth, and duration of inundation. Probably the most significant and valuable wetlands in the High Desert Province, from a total ecosystem viewpoint, are those associated with isolated springs and streams scattered over the arid landscape. The variety of shrubs, grasses, and forbs present depends on the degree and duration of wetness and shade at each location (Williams 1998).

Hardstem bulrush-cattail marshes form open to dense, nearly monotypic (solitary) stands of bulrush where standing water is found throughout much of the growing season. Patches of cattail, burreed, and several species of *Scirpus* are the most important graminoids. *Carex* species occur in and around this habitat type, along with *Eleochari*s and *Juncus* species. In some areas, spike rush forms a monotypic community along wetland channels.

Sedge montane meadows and wetlands are scattered throughout the area with tall sedge meadows and wetlands, with dense, rhizomatous, or tufted sedges dominating the meadows. Usually these areas are low in forb production. Tufted hairgrass is the most common grass, occurring at the drier margins. The forbs often present are *Potentilla, Geum, Lupinus,* and *Lomatium* species and occasionaly blue camas and *Perideridium* species. *Salix* species dominate streams that run though these meadows.

Tufted hairgrass montane meadows and valley prairie occur on a few sites in the planning area. These tall montane meadow grasslands with dense, tufted grasses range from forb-rich to grass-sedge dominated areas. Occasionally, willows, silver sagebrush, and black greasewood can be found. Tufted hairgrass is usually the dominant species. In some areas, Nevada bluegrass or Cusick's bluegrass are entirely dominant. *Carex* and *Juncus* species are codominant in wetter margins.

Proper Functioning Condition

In 1991, in response to growing concern over the integrity of ecological processes in many riparian and wetland areas, the BLM Director approved the "Riparian-Wetland Initiative for the 1990s" (USDI-BLM 1991d), establishing national goals and objectives for managing riparian/wetland resources on BLM-administered land. The initiative's goals were to restore and maintain existing riparian/wetland areas so that 75 percent or more were in proper functioning condition by 1997 and to provide the widest variety of habitat diversity for wildlife, fish, and watershed protection. Subsequently, the BLM established a definition for proper functioning condition and a methodology for its assessment (USDI-BLM 1993a). The BLM has adopted proper functioning condition assessment as a standard for evaluating riparian areas and will use it to supplement existing stream channel and riparian evaluations and assessments.

The functioning condition of riparian and wetland areas is a result of the interaction of geology, soil, water, and vegetation (USDI-BLM 1993a). Proper functioning condition can be defined separately for lotic and lentic waters, as follows:

Lotic waters: (running water systems, such as rivers, streams, and springs (see USDI-BLM [1993a, 1998i]):

Riparian/wetland areas are functioning properly when adequate vegetation, landform, or large woody debris is present to:

- dissipate stream energy associated with high waterflows, thereby reducing erosion and improving water quality;
- filter sediment, capture bedload, and aid floodplain development;
- improve floodwater retention and groundwater recharge; develop root masses that stabilize streambanks against cutting action;
- develop diverse ponding and channel characteristics to provide the habitat, water depth, duration, and temperature necessary for fish production, waterfowl breeding, and other uses; and
- support greater biodiversity.

Lentic waters: (standing water systems, such as lakes, ponds, seeps, bogs, and meadows; see USDI-BLM [1994f, 1999e]):

Lentic riparian/wetland areas are functioning properly when adequate vegetation, landform, or debris is present to:

- dissipate energies associated with wind action, wave action, and overland flow from adjacent sites, thereby reducing erosion and improving water quality;
- filter sediment and aid floodplain development;
- improve flood water retention and groundwater recharge;
- develop root masses that stabilize islands and shoreline features against cutting action;
- restrict water percolation;
- develop diverse ponding characteristics to provide the habitat and water depth, duration, and temperature necessary for fish production, waterfowl breeding, and other uses; and,
- support greater biodiversity.

Riparian/wetland areas are classified as functional-at-risk when they are in functional condition but an existing soil, water, or vegetation attribute makes them susceptible to degradation. These areas are further distinguished based on whether or not they demonstrate an upward, static, or downward trend.

Riparian/wetland areas are classified as nonfunctional when they clearly are not providing adequate vegetation, landform, or large woody debris to dissipate stream energy associated with high flows, and thus are not reducing erosion, improving water quality, etc., as listed above. The absence of a particular physical attribute, such as a floodplain, is an indicator of nonfunctional condition. However, some elements may not be needed for a stream to function. For example, a bedrock- or boulder-controlled stream would not need vegetation in order to meet the definition of proper functioning condition. Also, since there is no way to improve floodwater retention in these two types of streams, it would not have to meet the third component—"Improve floodwater retention and groundwater recharge"—in order to be in proper functioning condition.

Riparian/wetland areas are classified as being in unknown condition when the BLM lacks sufficient information to make a determination.

Because the functioning condition of riparian/wetland areas is a result of interaction of geology, soil, water, and vegetation, the process of assessing whether or not a riparian/wetland area is functioning properly requires an interdisciplinary team, including specialists in vegetation, soils, hydrology, and wildlife biology. Because of the unique attributes of individual riparian areas, site-specific and onsite assessments are necessary.

Riparian/wetland areas will function properly long before they achieve an advanced ecological status. The range between proper functioning condition and an area's biological potential then becomes the "decision space" for social, economic, and other resource considerations. Until proper functioning condition is attained, management priorities and options focus on reaching this threshold. Areas that meet proper functioning condition are managed to ensure a continuation of this condition.

In 1996 and 1997, a team of specialists inventoried 113 miles of stream on the LRA using the "Process for Assessing Proper Functioning Condition" (USDI-BLM 1993a). The members included specialists in the fields of hydrology, fisheries, range, botany, and wildlife. Streams were divided into reaches according to their structural and vegetative characteristics, based on management and channel type. Each reach was rated as proper functioning condition, functional-at-risk, or nonfunctional. The trend of the functional-at-risk category was also rated. Ephemeral (streams that flow only in direct response to precipitation and whose channels are above the water table at all times) reaches of streams were not rated. The percentage of intermittent/ephemeral portions of reaches were rated for the intermittent reaches only. Table 2-3 summarizes the results of this survey, indicating the miles of each rating and that rating's percentage compared to the

Table 2-3.—*Summary of stream condition in the planning area*

Proper functioning condition (miles/%)	Functional-at-risk			Nonfunctional
	Trend			
	Up	Down	Not apparent	
85.48	13.3	0.5	6.65	7.35
75%	12%	0%	6%	7%

total miles rated. Table 2-4 shows functional condition of streams in the planning area. While conducting the field inspections, the team noted management change options or projects that would benefit the streams. Table 2-5 summarizes existing management, miles, and recommended changes, where made, on the functional-at-risk and nonfunctional rated reaches.

The Fremont National Forest has also used the proper functioning condition methodology on some of their streams. In the Deep Creek Watershed, which drains into the Warner Lakes Subbasin, they rated 23 segments as proper functioning condition and 17 as functional-at-risk with an upward trend. In the Chewaucan Watershed, which drains into Lake Abert, 10 segments were rated as proper functioning condition and 3 were rated as functional-at-risk with an upward trend.

Starting in 2000 and continuing in 2001, a riparian score card was being developed that assesses the current interaction of soils, vegetation, and stream channel. These cards are used to compare current conditions to potential conditions for that site. This information will be used in the future to describe desired range of conditions on each site.

Forest and Woodland

Types, Locations, and Acreage

Map V-1 from the Draft Resource Management Plan (RMP)/Environmental Impact Statement (EIS) shows the current LRA vegetation classes, based mainly on GAP 1 satellite imagery completed by the Oregon Natural Heritage Program (Kagan and Caicco 1996). Table 2-6 is derived from this map and shows acreage by forest vegetation classes.

Commercial forest lands in the LRA total 15,331 acres, and are typically low-elevation ponderosa pine located just below national forest lands. Most are relatively small and remote tracts. The two most extensive commercial stands are the isolated stands at Lost Forest (4,153 acres) and Colvin Timbers (591 acres). Since Lost Forest was designated an RNA in 1973, commercial pine forests in that area are not available for timber harvest or development treatments. The remaining 10,587 acres of commercial forest are widely scattered and have a relatively low stand volume. Management on a sustained-yield basis is not feasible. Instead, these lands have been designated as a protection area in the present plan, which allows management treatments but does not require an allowable sale quantity.

Below the commercial forest lands is the drier desert landscape. Precipitation is not sufficient to support ponderosa pine but is adequate for western juniper in many areas. Periodic natural fires, which previously prevented wide-scale juniper establishment, have been absent for over a century. This has allowed juniper to spread from less fire-prone sites to sagebrush and riparian communities. The majority of today's juniper stands are composed of such "invasive" trees. Juniper has invaded the dry fringes of pine stands, as well as sagebrush and aspen sites where it competes vigorously with other species (Wall et al. 2001; Miller and Rose 1999).

The recent expansion of western juniper in the planning area began in the late 1800s (Young and Evans 1981; Eddleman 1987; Miller and Rose 1995). Relict (old growth) juniper woodlands are primarily confined to rocky surfaces or ridges or pumic sands with sparse vegetation and infrequent fires (West 1984; Miller and Rose 1995; Miller et al. 1999a). The current expansion has occurred on more productive sagebrush sites with deep, well drained soils (Miller and Rose 1999). Juniper expansion in the west has been most frequently attributed to the introduction of livestock, reduced role of fire, and optimal climatic conditions during the late 1800s to early 1900s (Tausch et al. 1981; West 1984; Miller and Wigand 1994). Heavy livestock grazing between 1880 and 1930 removed fine fuels that historically carried fire across the landscape, as well as removed competition from other species (Miller et al. 1999b). There was also a reduction in human set fires in the 19th century (Burkhardt and Tisdale 1976; Miller et al. 1994) and wildfire suppression began between 1910 and 1930 (Agee 1993). During the late 1800s until about 1916, winters in southeastern Oregon were more mild and precipitation was greater than the current long-term average (Antevs 1938; Graumlich 1987). These conditions promoted vigorous juniper growth (Fritts and Xiangdig 1986; Holmes et al. 1986).

Juniper's heavy use of soil moisture allows it to aggressively compete with forage species used by deer, pronghorn, and domestic livestock. Watersheds can be degraded by juniper through ground cover reduction and subsequent surface erosion (Buckhouse and Gaither 1982; Gaither and Buckhouse 1983). Treatments of juniper stands have been made, not to enhance the juniper woodland, but to release or establish native grasses and shrubs and improve forage production. The juniper treatment along Buck Creek in deer winter range is an example.

Western juniper now cover about 215,052 acres, which is nearly 7 percent of the LRA (Map V-3). Large

Table 2-4.—*Functional condition of streams in the planning area (miles of streams)*

Stream Name	Proper functioning condition	Functional-at-risk			Nonfunctional	Not rated
		Up	Down	Not apparent		
Deep Creek	8.05	0.75			0.35	0.35
Parsnip	2.03	0.65				
Drake	4.35	0.55		0.85		
Drake Tributary	0.75					
Camas	1.25	2.30		0.40		
Twentymile	4.30	0.30		0.20		
Twelvemile	3.70	1.05			3.55	
Fifteenmile	5.45	1.45				
Horse	1.55	2.25				
Horse Tributary	1.00					
Honey	5.40					
Snyder	1.75					
Twelvemile	2.60					
Clover	4.40					
Colvin						4.50
Fish	7.90			1.30		
Chewaucan	4.15					
Mill	1.50			1.00	0.25	
Willow	0.60	1.15			0.90	
Moss	0.70	0.40				
Dicks	0.30					
Pine					0.30	
Loveless						0.25
Silver	1.55					
West Fork Silver	1.55	0.55				
Buck	4.00					
Bridge	1.55	0.30			0.25	
Duncan	2.60					
Bridge Creek Draw		0.25				
Crane	0.25					
Kelly	1.20					
Anna River	0.50					
Warlow	2.25					
Guano	6.10			2.90	2.25	
Sagehen	2.20	1.40				
East/West Gulch			0.50			
Total miles rated/(%)	85.48 (75)	13.35 (12)	0.50 (0)	6.65 (6)	7.85 (7)	5.10

Table 2-5.—*Management on streams not at proper functioning condition*

Existing/recommended livestock management	Stream rating (miles)			
	Functional-at-risk			
	Trend up	Trend not apparent	Nonfunctional	Total
Presently excluded from grazing	2.50	0.00	4.00	6.50
Presently managed for grazing	7.80	0.85	0.35	9.00
Recommend exclusion from grazing	0.80	0.00	0.70	1.50
Recommend management change	1.40	3.65	2.75	7.80
Monitor	0.80	2.35	0.25	3.40

Table 2-6.—*Current forest vegetation classes on BLM-administered lands in the Lakeview Resource Area* [1]

Forest vegetation class	Acres
Ponderosa pine [2]	14,076
Mixed conifer	1,255
Western juniper	215,052
Quaking aspen [3]	2,063
Total	232,446

[1] Source is GAP 1 satellite classification, July 1988, unless otherwise noted.
[2] Source is Lakeview BLM forest inventory.
[3] Since minimum resolution is 30 meters x 30 meters and minimum map unit size is only 320 acres, quaking aspen stands, which are typically smaller than this, are assumed to be underestimated here.

expanses of juniper woodlands are found in northern Lake County from the Fort Rock/Christmas Valley area to Frederick Butte and Wagontire Mountain. Other extensive areas of juniper occur in the hills west of Warner Valley and on Juniper Mountain. Most of this juniper is less than 120 years old and falls in the early to mid-seral stage.

Table 2-7 shows the yearly sales of fuelwood, boughs, and fence posts from 1986 to 1998. In general, fuelwood and bough sales have increased in the last 5 years, but, in relation to the resource, there is an opportunity to greatly increase future demand for commercial harvest on juniper woodlands. There could also be regional demand for the salvage and/or utilization of biomass from stand treatments for the generation of electrical energy.

Conditions and Trends

Forested lands in the LRA have been studied as part of the Interior Columbia Basin Ecosystem Management Project (ICBEMP). This project assessed forest conditions and trends on a region-wide basis, as well as smaller portions of the regional study area. The more localized areas were designated as ecological reporting units. Most of the conditions and trends reported in the ICBEMP's Northern Great Basin Ecological Reporting Unit also apply to the LRA.

Table 2-8 summarizes current forest and woodland conditions and trends for the entire Upper Columbia River Basin Project Area, for the Northern Great Basin Ecological Reporting Unit, and for the four subbasins that contain the LRA. Appendix Q discusses the health of forests and woodlands in the four subbasins.

Special Status Plant Species

Extinction is a natural process. Today, however, plant species are disappearing world-wide at an accelerated pace. The major cause of this phenomenon is large-scale destruction of native habitats throughout the world. Once lost, a species can never be recovered, and there is no way of knowing how useful it may have been. In 1987, the Oregon Legislature passed an endangered species act which gave the Oregon Department of Agriculture responsibility and jurisdiction over threatened and endangered plants (Oregon Administrative Rules 603-73-005). In an agreement between the BLM and Oregon Natural Heritage Program (ONHP), the Program maintains a comprehensive manual and computerized data base on Oregon's rare and threat-

Table 2-7.—*Sales of vegetative products in the Lakeview Resource Area, 1986–1998* [1]

	Fuelwood			Boughs			Fence posts		
Year	Permits	Cords	Value ($)	Permits	Tons	Value ($)	Permits	Posts	Value ($)
1986	3	18	49	3	7.0	980	3	1,200	240
1987	4	33	115	3	2.3	322	1	250	50
1988	6	20	76	3	22.0	1,320	3	350	90
1989	1	3	9						
1990	5	51	363	1	2.0	121	1	70	21
1991	6	24	96	1	14.0	1,350	1	200	60
1992	5	11	44	2	4.0	399	2	150	55
1993	5	46	334	2	3.0	260			
1994	15	59	361	3	28.0	2,799	5	324	140
1995	24	80	317	6	14.0	1,420	3	175	80
1996	9	26	408	1	1.0	100	1	43	24
1997	17	60	265	2	0.5	50	5	277	145
1998	17	57	348	1	1.0	10			

[1] Not shown above are three small sales for corral poles and two timber trespass settlements.

ened and endangered plants, animals, and ecosystems. This book is compiled using the most current information available on the distribution and abundance of plants native to Oregon. Inclusion of any given taxon on these lists is based on specific criteria: the most important factors are the total number of known, extant populations in Oregon and world-wide, and the degree to which they are potentially or actively threatened with destruction. Other criteria include the number of known populations considered to be securely protected, the size of the various populations, and the ability of the taxon to persist at a known site. Lists are amended every other year as inventory and monitoring provide new information (ONHP 1995).

The BLM, using these criteria and based on BLM Manual 6840 (USDI-BLM 1988b), has designated their own lists and guidelines into criteria for classifying plants on BLM lands: Federal threatened or endangered, proposed threatened or endangered, candidate threatened or endangered, State threatened or endangered, Bureau sensitive, and Bureau assessment. There are no officially listed Federal threatened or endangered species in Lake County or the LRA. Table 2-9 lists special status plant species in the LRA, and complete definitions can be found in the Glossary. Eight of the proposed ACEC's contain populations of Bureau sensitive plant species.

A conservation agreement with the U.S. Fish and Wildlife Service (USFWS) is in effect in the LRA for Columbia cress, and the species is monitored to prevent its extirpation. Conservation agreements are being written with the USFWS for Cusick's buckwheat, snowline cymopterus, Crosby's buckwheat, and grimy ivesia. Monitoring is being done on these and other populations of interest.

Special status plant species receive priority attention for inventories, research, monitoring, and for management decisions regardng land-disturbing activites. Federal regulations, state laws, and BLM policy mandates the following actions:

- Maintain and improve critical or essential habitat to prevent deterioration and provide recovery for federally-listed species).
- Maintain, restore, or enhance the habitat of candidate, state-listed, and other sensitive species to maintain the populations at a level which will avoid endangering the species and the need to list the species by either state or Federal governments (see Table 2-9).
- Ensure that BLM-authorized actions within the LRA do not result in the need to list special status species or jeopardize the continued existence of listed species.
- Increase BLM's knowledge about the status and distribution of special status species.

Special status plant species occur in a variety of plant

Table 2-8.—*Summary of forest and woodland conditions and trends*

Condition or trend	Interior Columbia River Basin-wide scale	Northern Great Basin Ecological Reporting Unit scale	Planning area scale
Successional trend to multi-layer forests	Historically, late-seral communities experienced periodic fires that maintained open, park-like stands of large shade-intolerant trees with low susceptibility to mortality from stress, fire, insects, or disease. Basin-wide, both timber harvest of larger trees and fire exclusions have converted many of the late-seral communities to mid-seral communities. The late-seral multi-layer forests now occur on dry slopes (PNW-GTR-385, p. 80 & 83, and PNW-GTR-405, p. 487). The communities are denser and have higher mortality, higher fuel loadings, and higher susceptibility to crown fire than historical communities (PNW-GTR-405, p. 477). In addition, on USFS lands, timber harvest patch size has been limited by law. The more scattered location of smaller patches has led to the fragmentation of forest landscapes (PNW-GTR-385, p. 76).	In contrast to basin-wide trends, the late-seral forest communities increased from 5 percent to 7 percent of the area of the Northern Great Basin Ecological Reporting Unit. This net increase was dominated by a significant increase in late-seral multi-layer forest types (PNW-GTR-405, pp. 714-718).	Conditions and trends identified at the basin and ecological reporting unit scale apply. The increase in multi-layer stands is the result of encroachment by western juniper at the edges of ponderosa pine stands and a large increase in pine and white fir understory area and density. Timber harvest has resulted in the removal of nearly all old growth pine from most private and many USFS forest stands. The increased number of understory trees has resulted in overstocking of many forest sites, with attendant insect and disease problems (mountain pine beetle and western pine beetle in ponderosa pine, fir engraver in white fir, and dwarf mistletoe in both), and the increase in ladder fuels. Local forests are now more vulnerable to large-scale, stand-replacing disturbances like epidemic-level insect attack and catastrophic wildland fire.
Increase in severity of successional disturbance regimes	Traditional forestry and exclusion of fire have changed successional disturbance regimes and vegetative composition and structure. The change in disturbance regimes is toward longer intervals between more severe disturbances (PNW-GTR-385, p. 92). In the dry forest vegetation group, lethal (stand-replacing) fires have increased substantially (GTR-PNW-385, p. 87, and GTR-PNW-405, pp. 855-873).	Same as Upper Columbia River Basin-wide scale.	As described above, forests have increased in density, resulting in overstocking on many sites. This has resulted in stressed stands more vulnerable to insect and disease attack, as well as a much higher fire hazard due to increased fuel loads and development of ladder fuels. Resiliency (positive response to disturbance events) of local forests has been reduced.

Condition or trend	Interior Columbia River Basin-wide scale	Northern Great Basin Ecological Reporting Unit scale	Planning area scale
Decrease in vegetative diversity	Fire exclusion, proliferation of exotic plants, and heavy grazing during the growing season have brought about a decrease in vegetative diversity. This has caused a decline in vegetative communities that were historically dominated by ponderosa pine, quaking aspen, and cottonwood (PNW-GTR-385, p. 83).	For the Northern Great Basin Ecological Reporting Unit, the area of the interior ponderosa pine cover type decreased 14.57 percent from its historical area (1850–1900), but this change is within its historical range of variability. The lodgepole pine type decreased 10.84 percent from its historical area, but this is also within its historical range of variability (PNW-GTR-405, p. 687).	Extensive areas of older lodgepole pine stands in the northwest portion of Lake County experienced considerable mortality from mountain pine beetle attacks in the 1970s and 1980s. Many of these stands were salvage-logged, and older lodgepole stands vulnerable to attack were also logged. These logged over stands have normally been replanted to lodgepole pine, so the overall cover type change is minor. However, these stands have shifted in age class from late- to early-seral. Noxious weeds are a growing problem, especially in the dry ponderosa pine types. Quaking aspen and cottonwood in riparian areas have significantly decreased within the last 50 years.
Rapid expansion of the western juniper cover type	The upland woodland type has substantially expanded, due largely to exclusion of fire (PNW-GTR-385, p. 82). Past heavy grazing also reduced fine fuels that previously carried fires under natural conditions.	The juniper/sagebrush cover type has increased nearly four-fold over its historical area. This is an ecologically significant change, which means this type is considerably outside its historic range of variability (PNW-GTR-405, pp. 684-685, 687, and 773-783).	The nearly fourfold increase in western juniper/sagebrush type should also apply directly to the planning area. Ecosite inventory identifies juniper sites (usually the old growth sites on rocky ridges or other fire-protected areas), and "invasive juniper" occurring on naturally "nonjuniper" sites. Ecosite inventory work has been completed for the Prineville and Burns BLM Districts, and will be completed for the LRA in 2001. The combined results of these ecosite inventories will provide current information on the area covered by this growing vegetation cover type.

Source: General Technical Report PNW-GTR-385, Nov. 1996, "Status of the Interior Basin, Summary of Scientific Findings," and General Technical Report PNW-GTR-405, June 1997, "An Assessment of Ecosystem Components in the Interior Columbia Basin and Portions of the Klamath Great Basins."

Table 2-9.—*Documented Bureau sensitive plant species in the Lakeview Resource Area*

Scientific name/BLM categories	Common name	Populations on BLM-administered land	Status [1]
BLM Bureau sensitive [2]			
Astragalus tegetariodes	Bastard kentrophyta	2	1 ONHP [3]
Chaenactis xantiana	Desert chaenactis	2	1 ONHP
Eriogonum crosbyae	Crosby's buckwheat	3	1 ONHP [3]
Eriogonum cusickii	Cusick's buckwheat	2	1 ONHP [3]
Eriogonum prociduum	Prostrate buckwheat	4	1 ONHP [3]
Galium serpenticum var. *warnerens*	Warner Mountain bedstraw	1	1 ONHP
Gratiola heterosepala	Boggs Lake hedge-hysop	1	1 ONHP
Ivesia rhypara var. *rhypara*	Grimy ivesia	1	1 ONHP
Ivesia rhypara var. *shellyi*	Shelly's ivesia	2	1 ONHP
Mimulus evanescens	Disappearing monkeyflower	1	1 ONHP
Pleuropogon oregonus	Oregon semaphore grass	1 [4]	1 ONHP
Rorippa columbiae	Columbia cress	1 (1) [4]	1 ONHP
BLM Bureau assessment [2]			
Agastache cusickii	Cusick's giant-hyssop	1	2 ONHP
Cymopterus nivalis	Snowline cymopterus	6	2 ONHP [3]
Hymenoxys cooperi var. *canescens*	Copper's goldflower	1	2 ONHP
Mimulus latidens	Broad-toothed monkeyflower	1	2 ONHP
Mimulus tricolor	Three color monkeyflower	1	2 ONHP
Plagiobothyrus salsus	Desert allocarya	(2) [4]	2 ONHP
Sesuvium verrucosum	Verrucose sea-purslane	1	2 ONHP
Symphoricarpos longiflorus	Long-flowered snowberry	5	2 ONHP
BLM Bureau tracking [2]			
Allium campanulatum	Sierra onion	4	4 ONHP
Allium bisceptrum	Patis onion	1	4 ONHP
Allium lemmonii	Lemmon's onion	3	4 ONHP [3]
Astragalus tetrapterus	Four-winged milkvetch	2	4 ONHP [3]
Caulanthus crassicaulis	Thickstemmed wild cabbage	2	4 ONHP
Downingia laeta	Great Basin downingia	4	4 ONHP
Heliotropium curassavicum	Salt heliotrope	3 (1) [4]	4 ONHP
Melica stricta	Nodding melic grass	2	4 ONHP
Pedicularis centranthera	Dwarf lousewort	4	4 ONHP [3]

[1] Status indicates placement on Oregon Natural Heritage Program lists (1998): List 1—threatened with extinction or presumed to be extinct; List 2—threatened with extirpation or presumed to be extirpated from Oregon; List 3—may be threatened or endangered in Oregon or throughout range, but more information is needed to determine status; List 4—not currently threatened or endangered but of conservation concern.
[2] None of the species shown in this table are listed as threatened or endangered by the USFWS or the State of Oregon. Among these classifications, species classified as BLM sensitive and lists, State endangered are considered most at risk. By contrast, those identified as BLM tracking species are the subject of less intense concern (see the Glossary for definitions or classifications of Bureau sensitive, Bureau assessment, and Bureau tracking).
[3] Ash or public physical habitat.
[4] Found only on private land at this date or/and extirpated from Federal; and plants to be part of RMP planning.

associations and on a variety of physical habitats, many of which have distinctive soil types. Often several special status species occur together. In conservation agreements, these areas are treated as a "plant community." Vander Schaff (*personal communication*) suggested that the various volcanic ash substrates found in southeastern Oregon have promoted a high degree of plant endemism (a large number of plant species that are found only in certain sites or areas). Numerous species and subspecies have arisen that can occupy these harsh ash sites.

Noxious Weeds and Competing Undesirable Vegetation

Introduction

In Oregon, as well as in other western states, noxious weeds are so thoroughly established and are spreading so rapidly that they have been declared a menace to public welfare (Oregon Revised Statutes 570.505). Noxious weed invasion contributes to the loss of rangeland productivity, increased soil erosion, reduced species and structural diversity, loss of wildlife habitat, and in some instances, is hazardous to human health and welfare, as emphasized in the "Federal Noxious Weed Act" (Public Law 93-629). Some weed species pose a significant threat to multiple use public land management.

Noxious weeds cannot be adequately controlled unless Federal, state, county, and private interests work together. The "Carlson-Foley Act" (Public Law 90-583), as well as state and county laws, make the Federal government responsible for control of weeds on Federal land and provide direction for their control. The LRA operates under the weed protocols set forth in the following documents: "Vegetation Treatment on BLM Lands in Thirteen Western States Final Environmental Impact Statement and Record of Decision" (USDI-BLM 1991b), "Supplement to the Northwest Area Noxious Weed Control Program Final Environmental Impact Statement and Record of Decision" (USDI-BLM 1987a), and the "Integrated Noxious Weed Control Program Environmental Assessment" (EA No. OR-013-93-03) (USDI-BLM 1994d).

However, the "Western Oregon Program Management of Competing Vegetation EIS" was appealed in 1984, which resulted in a court-ordered injunction that prohibited the use of herbicides on all BLM-administered lands in Oregon. The U.S. District Court modified the injunction in 1987 to allow BLM to use four herbicides to control noxious weeds only (see Appendix G). Since 1987, new herbicides have been developed that are more effective against certain families of weeds, and selective for the target weed species. BLM's inability to utilize these herbicides under the injunction severely limits our treatment efforts where herbicides are the most effective option. As a result, the weed infestations in these areas are rapidly expanding.

The Oregon Department of Agriculture has developed a classification system to provide guidelines for implementing and prioritizing noxious weed control programs, to assist in the distribution of limited funds, and to serve as a model for other weed classification systems (ODA 2002). This system defines three classes of noxious weed species: (1) weeds that pose a known economic threat and occur in infestations small enough to make eradication or containment possible; (2) weeds that pose an economic threat and whose regional abundance limits control techniques primarily to biological methods; and (3) weeds for which the Oregon Department of Agriculture will implement a statewide management plan.

Noxious weeds and undesirable plants are present throughout the planning area (Table 2-10). The weed control program is dynamic as a result of the influx of new weed introduction and the ongoing implementation of varied control methods. Grazing and fire management, as well as chemical, mechanical, and biological control methods are used as part of an integrated weed management program. These methods are subject to site-specific determination of appropriate techniques. The BLM monitors, on an annual basis, the changes in distribution and new introductions of noxious weeds.

Warner Basin Weed Management Area

The Warner Watershed is a 500,000-acre basin ringed by forest, rim rock, and rangeland. The bottom of the basin contains private hay meadows and the BLM-administered Warner Wetland ACEC. Included in the Warner Basin Weed Management Area are lands within the jurisdictions of the U.S. Forest Service (USFS), BLM, USFWS, Oregon Division of State Lands, and numerous private organizations and individuals. Land ownership in the watershed is approximately one-third private, one-third BLM, and one-third other public agencies.

In 1998, the Warner Basin Working Group, comprised of representatives from public and private lands, was formed to develop a management plan for the water-

Table 2-10.—*Noxious weeds present in the planning area*

Common name	Scientific name
Bull thistle	*Cirsium vulgare*
Canada thistle	*Cirsium arvense*
Dalmation toadflax	*Linaria dalmatica*
Diffuse knapweed	*Centaurea diffusa*
Dyers woad	*Isatis tinctoria*
Field bindweed	*Convolvulus arvensis*
Halogeton	*Halogeton glomeratus*
Hoary cress	*Cardaria* spp.
Mediterranean sage	*Salvia aethiopis*
Medusahead rye	*Taeniatherum caput-medusae*
Musk thistle	*Carduus nutans*
Perennial pepperweed	*Lepidium latifolium*
Poison hemlock	*Conium maculatum*
Russian knapweed	*Acroptilon repens*
Scotch thistle	*Onopordum acanthium*
Spiny cocklebur	*Xanthium spinosa*
Spotted knapweed	*Centaurea maculosa*
St. Johnswort	*Hypericum perforatum*
Yellow starthistle	*Centaurea solstitialis*
Yellow toadflax	*Linaria vulgaris*

shed that would employ integrated weed management techniques. The working group developed the following three goals:

1) Coordinate management and inventory of weeds on all land ownerships within the 500,000-acre Warner Basin Watershed.

2) Protect all land resources from the threat of noxious weed invasion in the Warner Watershed.

3) Educate resource users and the general public about noxious weed identification, ways that weeds spread, and the means to control those weeds.

The Warner Basin Working Group categorized target weed species into three groups (Table 2-11):

1) High priority species, upon which control efforts will continue or be initiated;

2) New invaders, which will move to the top of the priority list for eradication if discovered in the Warner Basin; and

3) Other species of concern, which are relatively widespread but are not perceived to be as threatening to the resource values of the Warner Basin as plants in the first two groups.

Soils and Microbiotic Crusts

Introduction

Soils in southcentral Oregon are semiarid, young, and poorly-developed. Chemical and biological soil development processes, such as rock weathering, decomposition of plant materials, accumulation of organic matter, and nutrient cycling, proceed slowly in this environment. Soil recovery processes are also slow; therefore, disruption of soil can lead to long-term changes in ecology and productivity. In many areas, natural or geologic erosion rates are too fast to develop distinct, deep soil horizons. The soils in the LRA are complex and diverse.

Complete soil data are available from the soil surveys for southern Lake and Harney Counties. Incomplete data are available for portions of northern Lake County. This information, on file at the LRA office, contains soil series descriptions, mapping unit descriptions,

Table 2-11.—*Warner Basin Working Group weed species categories*

Common name	Scientific name
High priority species	
Hoary cress	*Cardaria* spp.
Perennial pepperweed	*Lepidium latifolium*
Russian knapweed	*Acroptilon repens*
New invaders	
Dyers woad	*Isatis tinctoria*
Leafy spurge	*Euphorbia esula*
Medusahead rye	*Taeniatherum caput-medusae*
Purple loosestrife	*Lythrum salicaria*
Tamarisk	*Tamarix* spp.
Yellow starthistle	*Centaurea solstitialis*
Other species of concern	
Bull thistle	*Cirsium vulgare*
Canada thistle	*Cirsium arvense*
Common cocklebur [1]	*Xanthium strumarium*
Halogeton	*Halogeton glomeratus*
Mediterranean sage	*Salvia aethiopis*
Poison hemlock	*Conium maculatum*
Scotch thistle	*Onopordum acanthium*
Spiny cocklebur	*Xanthium spinosa*
Spotted knapweed	*Centaurea biebersteinni*
Western waterhemlock [1]	*Circuta douglasii*

[1] Denotes plants that are native and not noxious—these plants are listed by the working group as species of concern because they are poisonous to livestock.

interpretations, and detailed soils maps. Major prime farmland soil mapping units of the southern planning area are discussed in Appendix C1.

Soils in the northern Lake County portion of the resource area are currently being mapped by the BLM/ Natural Resource Conservation Service ecological site inventory crew out of Burns, Oregon. The inventory procedure is described in Appendix C2 of the Draft RMP/EIS.

Soil Erosion

In the semiarid areas of the planning area, bare soil between plants is 10 to 20 percent of the total ground cover of a native plant community; therefore, the soil erodes naturally. In addition to this background erosion rate, management actions affect the rate at which soil erodes. Any activities that remove vegetative cover increase the erosion rate. Some soils (for example, shallow soils over bedrock) are particularly vulnerable to soil erosion. If the surface layers of these soils are washed or blown away, the productivity potential is lost for a geologic time span.

Soil Management and Productivity

Current management practices, such as proper stocking rates for livestock, grazing rotation, periodic rest from grazing, improved road design, selective logging, rehabilitation of surface disturbances, restricting vehicles to existing roads and trails, rehabilitating mined areas, and control of concentrated recreational activities, have reduced erosion effects and improved soil conditions.

Management practices may affect soils' ability to maintain productivity by influencing disturbances such

as displacement, compaction, erosion, and alteration of organic matter and soil organism levels. When soil degradation occurs in semiarid, high desert regions, natural processes are slow to return site productivity. Prevention of soil degradation is more cost- and time-effective than remediation or waiting for natural processes.

Soil productivity varies widely due to characteristics such as soil depth, nutrient status, available water-holding capacity, and site characteristics, including elevation, aspect, and slope gradient. The most productive soils for forage or wood fiber production are found in valley bottoms, toeslopes, benches, and broad ridgetops. Demands for maintaining a productive ecosystem create a need for maintaining long-term soil productivity. Current soil productivity reflects site-specific natural conditions and past management practices.

Historically, erosion occurred on upland soils and in drainage channels as a result of uncontrolled land use, prolonged drought, and catastrophic storms. Many drainages were deeply incised by gully erosion more than 30 years ago. Some geologic erosion and localized erosion caused by concentrated uses still occurs.

Soil bulk density (mass per unit volume), porosity (hydraulic conductivity), organic matter content, moisture content, nutrient content, and soil temperature are affected to various degrees by surface management actions. In turn, these factors affect soil-water interactions, productivity, nutrient cycling, water holding capacity, and soil erosion rates.

Soil compaction may result from concentrated activities such as equipment operation, livestock grazing, and pedestrian traffic. Compaction can reduce water infiltration rates, resulting in less available moisture for plants and increased surface runoff and root restrictions. These factors may contribute to reduced site productivity, increased soil erosion rates, and water quality degradation.

Microbiotic Crusts

Microbiotic crusts consist of lichens, mosses, green algae, fungi, cyanobacteria, and bacteria growing in a thin layer on or just below the soil surface. Found in spaces between larger plants, these crusts play a role in controlling soil erosion, filtering water, retaining soil moisture, and improving soil fertility by fixing atmospheric nitrogen and contributing soil organic matter. In some instances, the crusts appear to improve plant seedling establishment. Microbiotic crusts are extremely sensitive to air pollution and have been used as a parameter to measure the effects of air pollution in protected areas, such as wilderness areas and national parks.

Based on research throughout the entire West, parameters for the ecology and management of biological soil crusts have been developed by the Department of Interior (Belnap 2001). Factors found involving presence, density, cover, and species diversity of crusts were:

- Elevation: relative cover increases with elevation and effective precipitation until vascular plant cover precludes their growth (Snake River Plain lower elevation than LRA).
- Soils and topography: chemistry of soils, amount and type of rocks, slope, aspect (Northern Oregon and Southcentral Washington loess).
- Disturbance: relative to intensity, type, and time of year.
- Timing of precipitation (Southwest U.S./Eastern Great Basin have summer monsoons and winter rains; Western Great Basin has winter/spring rains only).
- Vascular plant community: vertical and horizontal structure.
- Ecological gradients: some crusts are indicators, others are not.
- Microhabitats: moss can form bedding areas for lichens.

These lists demonstrate the variability of biological crusts and are indicators that need to be studied in the LRA. It also is evident that research done in one area, such as the Eastern Great Basin, may not be applicable to the Western Great Basin. However, for the entire area, the majority of microbiotic crust growth is during wet, cool periods, which would be in early spring in the LRA. Generally speaking, total crust cover is inversely related to vascular plant cover, as there is a positive relationship of crust cover to available soil surfaces. Plant communities demonstrating high diversity of microbiotic crusts are: Wyoming sagebrush, basin sagebrush, mountain big sagebrush (variable), low sagebrush, black sagebrush, and salt desert shrub in southeastern Oregon.

In the "National Range and Pasture Handbook," the Natural Resource Conservation Service identified microbiotic crusts as 1 of 17 rangeland health ecological attributes to be used as an indicator of rangeland health. Crusts are considered important to soil and site stability, watershed and hydrologic cycles, and soil and plant community integrity. Site assessments of biotic crusts involve a determination of the amount and distribution that would be expected for a healthy site. Reference sites that are used as benchmarks of late-seral vascular plant communities will be useful for determining expected biotic crust characteristics. However, this research and the work of others suggest that biotic crusts respond to their environment in a manner distinct from that of vascular plants; crust cover and composition are more sensitive to soil chemistry and disturbance, as well as atmospheric inputs of moisture and nutrients. Further research will be needed to accurately determine "expected values" for biotic crust abundance and composition at various sites.

The Northwestern Great Basin has had very little microbiotic crust monitoring or research, other than at Ponzetti's (2000) two paired sites and unpublished research at Oregon State University Northern Great Basin Experiment Station in Harney County (Svejcar, T., *personal communication*). Crusts have been collected, and some identified and curated for the BLM herbarium. The most important work is the collecting of data by the ecological site inventory crew. In the North Lake County Ecological Site Inventory soil/plant community survey, the teams have scored the range form for classes and percent of cover for lichen, mosses, and algae. Research is being encouraged for microbiotic crusts in all of this section of the Northern Great Basin to determine if principles established elsewhere in the West are applicable here. When this new information becomes available, it should be possible to establish microbiotic crust guidelines for future management decisions.

Ponzetti's research used paired plots to study biotic soil crust cover and composition, one plot livestock-grazed and one plot excluded from livestock. Parameters measured were cover of microbiotic crusts and vascular plants, soil surface pH, electrical conductivity, and calcareous index value, precipitation, elevation aspect, and temperature. In conclusion, Ponzetti found that the total crust cover to be highest on sites with lower pH, electrical conductivity, and calcareous index value. Livestock exclusion was not an important gradient in the ordination of these data, because it was overshadowed by strong soil chemistry and climate gradients. However, overall community composition of soil crust species was different between grazed and long-ungrazed sites. Grazed transects had lower cover of biotic crusts, nitrogen-fixing lichens, crust-dominated soil surface roughness, and species richness. Also, more bare ground existed in grazed transects, and total bunchgrass was higher within exclosures. Ponzetti concluded that livestock-related reductions in cover and richness of biotic soil crusts were apparent while significant impacts to vascular plants were not obvious, that microbiotic soil crusts were sensitive indicators of disturbance, and that there are strong compositional differences in shrub steppe crust communities of Oregon, which are correlated with regional soil and climate gradients.

Water Resources/Watershed Health

Introduction

Hydrologic regions, subregions, basins, and subbasins are delineated based on protocol defined by the USGS. This system delineates a hierarchy of geographical regions and their subparts, such as subregion, basin, subbasin, watershed, and subwatershed. Each hydrologic unit is referred to as a field and given a two-digit numeric identifier. The code, called a hydrologic unit code, is a unique numeric identifier. Table 2-12 shows an example of this hierarchical breakdown.

The LRA is comprised primarily of four subbasins (or fourth field hydrologic units): Summer Lake, Lake Abert, Warner Lakes, and Guano (see Map R-4 of the Draft RMP/EIS and Table 2-13). These subbasins are part of the larger Oregon Closed Basins Subregion and the Pacific Northwest Region. The topographies of these large areas direct surface and some shallow subsurface water to streams, lakes, reservoirs, or playas. These are internally drained subbasins and do not have an outflow like traditional watersheds.

There are two main types of watersheds in the LRA. One is the traditional watershed, which has considerable slope and a network of stream channels that start as ephemeral in the headwaters and gradually are fed more water down slope, transitioning to intermittent, and finally perennial. These watersheds have streams which can support a variety of aquatic species. The other type is the closed basin. These are desert areas where the precipitation infiltrates locally and mainly supports the vegetation on site. Some water does move over land and subsurface to large playas or wetlands on valley bottoms. Of the little precipitation received,

Table 2-12.—*Hierarchy of hydrologic units, Lower Crooked Creek (171200060901)*

Hierarchy term	Hydrologic unit code	Numeric identifier	Name	Size (acres)
Region	First Field	17	Pacific Northwest	165,757,150
Subregion	Second Field	12	Oregon Closed Basins	11,072,000
Riverbasin	Third Field	00	The subregion and river basin are the same, as indicated by the 00.	11,072,000
Subbasin	Fourth Field	06	Lake Abert	652,800
Watershed	Fifth Field	03	Crooked Creek	56,750
Subwatershed	Sixth Field	01	Lower Crooked Creek	26,500

Table 2-13.—*Lakeview Resource Area subbasins and watersheds*

Subbasin	Hydrologic unit code	Total acres	Number of 5th field watersheds
Summer Lake	17120005	2,624,000	20
Lake Abert	17120006	652,800	6
Warner Lakes	17120007	1,216,000	8
Guano	17120008	1,900,000	11

more is used on site then is delivered downslope.

Subbasins

The Summer Lake Subbasin is more than 2.5 million acres in size. It is bounded by forested mountains on the western edge and desert hills to the north, east, and south. There are 20 fifth-field watersheds in the subbasin. Major waterbodies include Summer Lake, Silver Lake, Thompson Reservoir, Ana Reservoir, Duncan Reservoir, ZX Reservoir, and Detention Reservoir. Alkali Lake and North Alkali Lake are low-lying areas seasonally inundated with water. Paulina Marsh is a large wetland that drains into Silver Lake. The lakes in the area are large and shallow, so the shorelines change dramatically with seasonal filling and drying cycles.

The Lake Abert Subbasin is about 650,000 acres in size. It is bounded by Abert Rim to the east, forested mountains to the west and south, and desert hills to the north. The major waterbody is Lake Abert, a large, shallow, saline lake. There are six fifth-field watersheds in the subbasin. The Chewaucan River is the largest stream flowing into the lake and has upper and lower marshes associated with it. The Lake Abert Subbasin contains internally drained basins and many seasonally flowing streams.

The Warner Lakes Subbasin is more than one million acres in size. It is bounded by Hart Mountain to the east, Abert Rim and Warner Mountains to the west, desert hills to the north, and forested mountains to the south. There are eight fifth-field watersheds in the subbasin. It has many lakes, which form an interconnected chain parallel to the Hart Mountain uplifted fault block. These are Crump, Hart, Anderson, Swamp, Flagstaff, Upper Campbell, Campbell, Turpin, Stone Corral, and Bluejoint Lakes. These lakes are associated with extensive wetlands. The major perennial streams flow from the Warner Mountains.

Guano Subbasin is almost 2 million acres in size. It is bounded by Hart Mountain on the west and desert hills on the north, east, and south. There are 11 fifth-field watersheds in the subbasin. It has many seasonal lakes and wetlands. The subbasin has perennial, intermittent, and ephemeral streams, but is dominated by streams which flow only seasonally. Guano Creek is a main intermittent stream which drains from Hart Mountain.

Hydrologic Integrity

The ICBEMP scientific assessment (USDA-FS and USDI-BLM 1996a) determined hydrologic integrity for the subbasins in the Columbia Basin: "A hydrologic system that exhibits high integrity is a network of streams, along with their groundwater ecosystems, within the broader landscape where the upland, floodplain, and riparian areas have resilient vegetation, where capture, storage, and release of water limits the effects of sedimentation and erosion, and where infiltration, percolation, and nutrient cycling provide for diverse and productive aquatic and terrestrial environments . . . hydrologic integrity was estimated based on disturbance sensitivity and recovery potential

of watersheds, plus the amount and type of past disturbance. Watersheds with high impact (disturbance) and low recovery potential have higher probabilities of containing altered hydrologic functions than other areas, and are consequently classified as low integrity. Conversely, areas with low relative effect from mining, dams, roads, cropland conversion, and grazing, and which also have high recovery potentials, are considered to have the highest probable hydologic integrity."

The Summer Lake and Abert Lake Subbasins were rated as having high forest hydrologic integrity. The Warner Lakes and Guano Subbasins were rated as having high range hydrologic integrity (USDI-BLM 1996h). Appendix A2 summarizes the ICBEMP scientific assessment applicable to the planning area.

Streams

The streams in the RMP area originate in the higher elevation hills and mountains, mostly in the adjacent Fremont National Forest (see Table 2-14 for stream characteristics by subbasin). They then flow to the lower elevation valleys, lakes, wetlands, and playas. Most surface runoff is from snowmelt or rainfall at the higher elevations, producing peak discharges in the spring. Year-to-year variability in precipitation influences streamflow both in quantity and duration. Water scarcity has led to increased water storage, water diversions, and groundwater withdrawal associated with irrigation. These projects have significantly altered natural flow regimes, which has changed habitat conditions, channel stability, and timing of sediment and organic material transport. Throughout the planning area, streamflows have been altered by management activities, such as water impoundments, water withdrawal, road construction, and grazing.

The Summer Lake Subbasin includes Ana River and the small streams which flow off Winter Rim into Summer Lake. The Ana River is a spring-fed system which is captured in a reservoir and then flows to Summer Lake. Buck, Bridge, and Silver Creeks are the main streams which flow into the Paulina Marsh and then into Silver Lake. There are many intermittent streams and ephemeral drainages where the water infiltrates into the soil or evaporates. The intermittent streams have surface flows for some of the year or flows which move underground for a portion of the stream. They are in contact with the water table and either receive water from the groundwater system to surface flow or lose surface water to the groundwater. Ephemeral drainages are channels in which surface water flows immediately after snowmelt or rainfall and are always above the water table.

Table 2-14.—*Stream flow statistics in the subbasin review area*

Subbasin/ (hydrologic unit code)	Creek name	Period of record	Station number/(location)	Drainage area (square miles)	Average annual flow (cfs)	Peak flow (cfs)	Base flow (cfs)
Summer Lake (17120005)	Buck Creek [1]	1989–1991	10391050 (NE¼SW¼ Section 18, T.28S., R.14E.)	300	11.9	85	1.5
Lake Abert (17120006)	Chewuacan River [2]	1925–1982	10384000 (SW¼NW¼ Section 26, T.33S., R.18E.)	275	146	6,490	9.4
Warner Lakes (17120007)	Twentymile Creek [2]	1911–1982	10366000 (SW¼NW¼ Section 25, T.40S., R.23E.)	194	52	3,670	0 [3]
Warner Lakes (17120007)	Deep Creek [2]	1923–1982	10371500 (SW¼NW¼ Section 15, T.39S., R.23E.)	249	134	9,420	1.7
Warner Lakes (17120007)	Honey Creek [2]	1950–1982	10378500 (SW¼SW¼ Section 20, T.36S., R.24E.)	170	34	11,000	0 [3]

[1] Information from "Compilation of Surface Water Records for Oregon, Sliver Lake, Warner Lake, and Goose Lake Basins, 1979–1991," Oregon Water Resources Department.
[2] Information from "Statistical Summaries of Streamflow Data in Oregon " Volume 1, Eastern Oregon. USGS Open Field Report 84-454, 1984.
[3] No flow at times.

In the Lake Abert Subbasin, the Chewaucan River is the main stream system. It has many headwater tributaries in the forested mountains. It flows through the Chewaucan Marsh in the valley bottom and supplies most of the water to Lake Abert. There are many intermittent and ephemeral drainages, which dry up seasonally.

The major streams in the Warner Lakes Subbasin flow from the Warner Mountains. These include Twelvemile, Twentymile, Deep, and Honey Creeks. Most of the surface water would flow into the Warner Lakes and wetlands but is diverted for irrigation. There are many intermittent and ephemeral drainages, which dry up seasonally.

In the Guano Subbasin, Guano Creek is the major stream. It is intermittent, as are most of the other streams. There are many ephemeral streams, which have surface water in the channel only after snowmelt or rainfall. There are perennial springs which flow for a short length before moving underground.

Surface Water Quality

In the State of Oregon, the Environmental Protection Agency (EPA) has delegated authority to implement the "Federal Water Pollution Control Act" of 1972 and amendments ("Clean Water Act" [CWA] of 1977) to the Oregon Department of Environmental Quality (ODEQ). Federal land management agencies are designated by the State to assist in CWA implementation on public lands. As a designated management agency, the BLM must: (1) implement and enforce natural resource management programs for the protection of water quality on Federal lands under its jurisdiction; (2) protect and maintain water quality where it meets or exceeds applicable state and Tribal water standards; (3) monitor activities to assure that they meet standards and report the results to the State of Oregon; and (4) meet periodically to recertify water quality best management practices (BMP's). BMP's are methods, measures, or practices to prevent or reduce water pollution, including but not limited to structural and nonstructural controls, operations, and maintenance procedures. BMP's are applied as needed to projects (Appendix D).

Water quality, as defined by the CWA, includes all the physical, biological, and chemical characteristics which affect existing and designated beneficial uses. The State of Oregon is required to identify which beneficial uses a waterbody currently supports or could support in the future. The primary beneficial uses of surface water are domestic water supply, salmonid and resident fish habitat, irrigation, livestock watering, wildlife and hunting, fishing, water contact recreation, and aesthetic quality. Most streams on the LRA support State-designated beneficial uses. Elevated summer temperatures are the primary water quality problem identified by the State for some streams on the LRA. While some streams have been monitored and violate the State standard for the resident fish and aquatic life water temperature numeric criteria, it is unknown if the natural temperature potential would meet the criteria. ODEQ is currently reviewing water quality standards (including temperature) for coldwater fisheries habitat in eastern Oregon. Revised standards could be available within the next 5 years.

Causes of stream degradation are removal of riparian vegetation and destabilization of streambanks. The land use most commonly associated with these problems in the planning area is grazing. Other land uses associated with degraded streams include roads, trails, water withdrawal, reservoir storage and release, altered physical characteristics of the stream, and wetlands alteration.

The State of Oregon has established beneficial uses for the surface and groundwater within the planning area and water quality standards which protect these uses. These uses are shown in Tables 2-15 and 2-16.

The current water quality standards can be found at the ODEQ web site (URL: www.deq.state.or.us). They are Oregon Administrative Rules, Department of Environmental Quality, Water Pollution, Division 41, "Statewide Water Quality Management Plan." The water quality standards are in QAR's 340-041-0001 to 0975 and specifically 340-041-0922—Beneficial Water Uses to be Protected in Goose and Summer Lake Basins, 340-041-0925—Water Quality Standards not to be Exceeded in Goose and Summer Lake Basins, 340-041-0882—Beneficial Water Uses to be Protected in Malhuer Lake Basin, and 340-041-0885—Water Quality Standards not to be Exceeded in Malhuer Lake Basin.

Water Quality Impaired Stream Reaches

The State of Oregon is required by section 303(d) of the CWA to identify waters which are water quality impaired. This list is updated biannually and the State is required to develop a total maximum daily load allocation for each pollutant of concern. Table 2-17 lists the stream reaches in the planning area that have been identified by the ODEQ as being water quality limited. Summer Lake, Lake Abert, and Guano Subbasins are scheduled for total maximum daily load

Table 2-15.—*Beneficial uses for Summer Lake, Lake Abert, and Warner Subbasins*

Beneficial Use	Freshwater lakes and reservoirs	Highly alkaline and saline lakes	Freshwater streams
Public domestic water supply	◆		◆
Private domestic water supply	◆		◆
Industrial water supply	◆	◆	◆
Irrigation	◆		◆
Livestock watering	◆		◆
Salmonid fish rearing (trout)	◆		◆
Salmonid fish spawning (trout)	◆		◆
Resident fish and aquatic life	◆	◆	◆
Wildlife and hunting	◆	◆	◆
Fishing	◆	◆	◆
Boating	◆	◆	◆
Water contact recreation	◆	◆	◆
Aesthetic quality	◆	◆	◆

Table 2-16.—*Beneficial uses for Guano Subbasin*

Beneficial use	Natural lakes	All rivers and tributaries
Public domestic water supply		◆
Private domestic water supply		◆
Industrial water supply		◆
Irrigation	◆	◆
Livestock watering	◆	◆
Salmonid fish rearing (trout)		◆
Salmonid fish spawning (trout)		◆
Resident fish and aquatic life	◆	◆
Wildlife and hunting	◆	◆
Fishing	◆	◆
Boating	◆	◆
Water contact recreation	◆	◆
Aesthetic quality	◆	◆

development by the year 2007. The Warner Lakes Subbasin is scheduled for total maximum daily load development by 2003.

USFS and BLM (1999) "Protocol for Addressing Clean Water Act Section 303(d) Listed Waters" was issued to provide the agencies with a consistent approach to addressing water quality limited water bodies on Federal lands. This guidance was developed in collaboration with the EPA, ODEQ, and the Washington Department of Ecology. The protocol uses a three-pronged approach to address water quality problems on Federal lands: a set of goals, a seven-component strategy, and a decision framework.

The BLM uses this protocol to fulfill the agency's CWA responsibilities and provide assurance that management activities in 303(d) listed waterbodies will contribute to the maintenance of good water quality or restoration of poor water quality. This assurance is provided by documenting and implementing sufficiently stringent management measures during the planning and NEPA process and by developing and implementing water quality restoration plans. The management prescriptions in a water quality restoration plan are drawn from Federal standards, guidelines, and BMP's. The prescriptions in a water quality restoration plan apply only to Federal lands. Appendix F3 describes the LRA strategy for developing water quality

Table 2-17.—*1998 State of Oregon water quality impaired stream reaches on LRA-administered lands*

Subbasin	State identification	Waterbody	Parameter of concern
Summer Lake	OR42A-SILV0-1998	Silver Creek	Temperature
Summer Lake	OR42A-SIWF0-1998	Silver Creek, West Fork	Temperature
Lake Abert	OR42B-CHEW0-1998	Chewaucan River	Temperature
Lake Abert	OR42B-CHEW27.5-1998	Chewaucan River	Temperature, biological criteria
Lake Abert	OR42B-WILL0-1998	Willow Creek	Temperature
Warner Lakes	OR42C-CAMA0-1998	Camas Creek	Temperature
Warner Lakes	OR42C-DEEP0-1998	Deep Creek	Temperature
Warner Lakes	OR42C-DRAK0-1998	Drake Creek	Temperature
Warner Lakes	OR42C-FIFT0-1998	Fifteenmile Creek	Temperature
Warner Lakes	OR42C-HONE0-1998	Honey Creek	Temperature
Warner Lakes	OR42C-PARS0-1998	Parsnip Creek	Temperature
Warner Lakes	OR42C-SNYD0-1998	Snyder Creek	Temperature
Warner Lakes	OR42C-TWEL0-1998	Twelvemile Creek	Temperature
Warner Lakes	OR42C-TWEN0-1998	Twentymile Creek	Temperature
Goose Lake	OR42D-CRAN0-1998	Crane Creek	Temperature

restoration plans.

Groundwater

Groundwater is particularly valuable in the planning area because of the limited surface water. Regional groundwater gradients and aquifer systems have not been extensively studied. Groundwater data are limited and are based on isoloated studies and well logs.

Groundwater occurs as both confined and unconfined aquifer systems. Most unconfined aquifers are located in stream valleys or associated with Pleistocene lakebeds that contain recent alluvial material, although some may exist as perched aquifers. Alluvial aquifers vary greatly in size and yield. These aquifers are important as transient storage systems to move groundwater to or from streams and the deeper confined aquifers. Some perched aquifers occur between the top of ridges and bottom of valleys and can usually be identified by the occurrence of springs above the valley bottoms.

Little is known of the real extent or depth of deep, confined bedrock aquifer systems. The EPA has not identified any sole-source aquifers in the planning area. Groundwater is used for irrigation, domestic use, and livestock use. There is some groundwater influenced by geothermal heat sources, and the springs have hot, mineralized water.

Springs and seeps occur in areas where water from aquifers reaches the surface. Some springs begin in stream channels. Others flow into small ponds or marshy areas that drain into channels. Still others flow into lakes or reservoirs. Some springs and seeps form their own channels that reach flowing streams, but most lose their surface flow to evaporation or recharge the alluvial fill.

There are a few hot springs in the planning area. These types of springs have vegetation and microbial and algal fauna that are adapted to hot, mineralized water.

Springs have been disturbed by management activities, such as livestock or wild horse grazing and watering, recreation use, and road construction. This affects the amount of water available.

Community Drinking Water

Community water systems treat and distribute water from the source, primarily underground aquifers, and deliver it to consumers. Towns, small communities, and private farm and ranch residences mainly use groundwater as their source of drinking water (see Table 2-18).

Water Rights and Uses

Demands on water resources have increased in Oregon over the past few decades. Although most early water

Table 2-18.—*Community water systems identified by the U.S. Environmental Protection Agency*

Subbasin	Community water system	Filtered	Population served
Summer Lake	Christmas Valley Domestic Water System	Yes	400
Summer Lake	Silver Lake Ranger Station (USFS)	Yes	60
Summer Lake	City of Paisley	Yes	315

rights were established for irrigation and mining, today's demand includes municipal water supplies, commercial and industrial supplies, and maintenance of adequate streamflows for fish, recreation, and water quality.

In Oregon, all water is publicly owned and falls under the management jurisdiction of the State of Oregon. Permits for water use from any source must be obtained from the Oregon Water Resources Department, with some exceptions. Laws pertaining to the use of surface water and groundwater are based on the principle of prior appropriation ("first in time, first in right") and limited to the quantity of water needed to satisfy the specified beneficial use without waste. That is, the first person to obtain a water right will be the senior holder on a particular stream and has priority over all junior claims in times of water shortage.

The State of Oregon recognizes instream water rights for the public benefit to maintain sufficient flows to protect recreation, fish, wildlife, and other river-related resources. Instream water rights are applied for by the ODEQ, the Department of Parks and Recreation, and the Department of Fish and Wildlife to the State's Water Resource Commission. The priority date for instream water rights is the date the application is submitted to the Oregon Water Resources Department.

Current BLM and Department of Interior (DOI) policy is to use the State's instream flow water right process to preserve flow-dependent values for any stream designated as a wild and scenic river (WSR). The "National Wild and Scenic Rivers Act" (Public Law 90-542) specifically reserves the minimum quantity of water necessary to maintain the values for which the river was designated. A Federal reserved water right is authorized by the Act, and the priority date for each river segment is the date of designation. A Federal reserved water right would only be exercised if the State's appropriative instream water right process is inadequate to protect the designated values of the river. Current DOI policy provides latitude to cooperate with state natural resource agencies to achieve resource protection objectives prior to exercising a reserved water right. This in no way abrogates the Federal reserved water right.

Additionally, Federal reserved water rights may be applied to important springs and waterholes pursuant to "Public Water Reserve No. 107, Executive Order of April 17, 1926," under the authority of section 10 of the "Stock-Raising Homestead Act of December 29, 1916." Public Water Reserve 107 reserves only the minimum amount of water necessary to accomplish the primary purpose of the reservation. There was no intent to reserve the entire yield of each public spring or waterhole withdrawn by the Executive order. The purposes for which these waters were reserved are limited to domestic human consumption and livestock watering on public lands. All waters from these sources in excess of the minimum amount necessary for these limited public watering purposes are available for appropriation through State water law and administrative claims procedures.

There are over 900 existing water storage impoundments, pipeline systems, groundwater wells, and irrigation diversions on public lands within the planning area that have State-approved water rights. The availability of water in much of the area is limited and may hamper additional developments that are water dependent. Future development for rangeland projects for wildlife, recreation, and livestock would require a State of Oregon water right before project implementation could occur.

The information presented in Table 2-19 is a summary developed by the EPA (URL: http://water.usgs.gov/cgi-bin/wuhuc?huc=17120005) on the 1990 USGS water use for thermoelectric power, mining, livestock (stock and animal specialties), irrigation, hydroelectric power, wastewater treatment, and reservoir evaporation. Further information can be found at the web site.

Fish and Aquatic Habitat

Introduction

Fisheries habitat includes perennial and intermittent streams, springs, lakes, and reservoirs that support fish through at least a portion of the year.

The condition of fisheries habitat is related to hydro-

Table 2-19.—*1990 water use by category and subbasin*

Category	Summer Lake	Lake Abert	Warner Lakes	Guano
Total withdrawals				
Groundwater (mgal/d) [1]	82.78	2.62	1.59	5.68
Surface water (mgal/d)	77.90	166.81	201.24	55.98
Total	160.68	169.43	202.83	61.66
Total population served by subbasin	1,320	480	360	40
Number of public supply facilities	3	0	0	0

[1] mgal/d = one million gallons per day.

logic conditions of the upland and riparian areas associated with, or contributing to, a specific stream or waterbody, and to stream channel characteristics. Riparian vegetation reduces solar radiation by providing shade and thereby moderates water temperatures, adds structure to the banks to reduce erosion, provides overhead cover for fish, and provides organic material, which is a food source for macroinvertebrates. Intact vegetated floodplains dissipate stream energy, store water for later release, and provide rearing areas for juvenile fish. Water quality (especially factors such as temperature, sediment, and dissolved oxygen) also greatly affects fisheries habitat.

Habitat quality varies by stream reach, with canyons generally being in better condition due to inaccessibility to livestock and rock armoring. In these reaches, pool quality and quantity are usually good, and channel condition is not dependent on vegetation. On less confined, deep-soil reaches, vegetation plays more of a role controlling habitat conditions that vary depending on past and present management. Generally, the condition of these sites has improved in the planning area over the last 20 years as a result of livestock management and exclusion. Some sites were degraded to the point that many years will be required for the streams to improve to a functional state. Large wood, while not meeting standards in the 1995 "Inland Native Fish Strategy" (USDA-FS 1996c), is usually not a factor in determining function of the streams. Most sites on BLM-administered land naturally do not have an adequate source of large wood.

Public land provides habitat for nine native fish species (Table 2-20), four of which are federally listed under the "Endangered Species Act."

Several nonnative fish have been introduced into the planning area. Currently, outside of some small reservoirs in the planning area, the Oregon Department of Fish and Wildlife (ODFW) liberates hatchery trout only in Ana river.

ICBEMP rated the aquatic integrity of the subbasins throughout the project area. An aquatic system that exhibits high integrity has a mosaic of well-connected, high-quality water and habitats that support a diverse assemblage of native and desired nonnative species, the full expression of potential life histories, dispersal mechanisms, and the genetic diversity necessary for long-term persistence and adaptation in a variable environment. Subbasins exhibiting the greatest level of these characteristics were rated high, and those exhibiting the least were rated low. The Guano Subbasin was rated as having moderate aquatic integrity, while the other three subbasins in the planning area, Warner Lakes, Lake Abert, and Summer Lake, were rated as having low aquatic integrity. Subbasins with low aquatic integrity may support populations of key salmonids or have other important aquatic values (that is, threatened or endangered species, narrow endemics, and introduced or hatchery-supported sport fisheries). In general, however, these watersheds are strongly fragmented by extensive habitat loss or disruption throughout the component watersheds, and most notably through disruption of the mainstem corridor. Although important and unique aquatic resources exist, they are usually localized (USDI-BLM and USDA-FS 1996h). Appendices A1 and A2 of the Draft RMP/EIS contain a summary of the ICBEMP assessment applicable to the planning area. These findings are further discussed in the Water Resources section.

Species and Habitat

Trout

There are no anadromous salmonids (such as salmon and steelhead that return from saltwater to spawn) in the planning area. Redband trout, a relative of rainbow

Table 2-20.—*Native fish of the Lakeview Resource Area*

Common name	Scientific name	Status
Warner sucker	*Catostomus warnerensis*	Federal threatened
Foskett speckled dace	*Rhinichthys osculus* ssp.	Federal threatened
Hutton tui chub	*Gila bicolor*	Federal threatened
Great Basin redband trout (several subspecies)	*Oncorhynchus mykiss* ssp.	
Tui chub (several subspecies)	*Gila bicolor*	
Modoc sucker	*Catostomus microps*	Federal threatened
Goose Lake sucker	*Catostomus occidentalis lacusanserinus*	
Pit brook lamprey	*Lampetra lethophaga*	
Speckled dace	*Rhinichthys osculus*	

trout, is the native trout. These trout occur in nearly all perennial streams (consisting of approximately 60 miles on BLM-administered land) of the Warner Lakes, Goose, Lake Abert, and Summer Lake Subbasins. These subbasins make up four of six separate desert basin populations of interior native redband trout (Behnke 1992).

Redband trout evolved in Pleistocene lakes and moved into mid- to high-elevation streams that did not have water outlets to the ocean as the climate became drier and warmer in portions of Oregon, Nevada, and Utah. Redband trout are generally more tolerant of higher temperatures than are planted rainbow trout. The introduction of hatchery-raised rainbow trout as early as 1925 may have altered many of the unique characteristics of the native redband. Brook trout have competed for limited resources with redband. However, brook trout are known to occur only on the upper reaches of streams on private and Fremont Forest lands; they have only occasionally been found in the lower Chewaucan River on BLM-administered lands in the resource area.

In September 1997, a petition to list the Great Basin redband trout as threatened was filed. This petition included the four subpopulations in the LRA. After considering all available information and analyzing public comment, the USFWS determined that listing the species was not warranted (USDI-USFWS 2000). The BLM will pursue activities to improve conditions for redband trout to help prevent the need to list the species. Amphibians and aquatic invertebrates are integral components of the fish community. One amphibian, the Columbia spotted frog, is a candidate for listing under the "Endangered Species Act."

Neither rainbow nor brook trout are native to the Great Basin. Brook trout, which evolved east of the Rocky Mountains, were introduced for sport fisheries. Hatchery rainbow may have come from coastal streams. Neither the extent of the loss of genetic purity nor the locations of the most pure strains of redband are known. Stocked rainbow trout are less able to survive the high temperatures and low oxygen levels of the local streams. Generally speaking, stocking any type of trout on BLM land has been discontinued except for the stocking done by ODFW in Sid Luce, Big Rock, Lucky, Sunstone, Sherlock, Spaulding, Duncan, Squaw Lake, Priday, Mud Lake, and MC Reservoirs. In most of these reservoirs, spawning habitat is lacking and natural reproduction does not occur.

Cutthroat trout occur in the resource area only in Guano Creek. They were introduced in 1957. The early introductions were from Lahontain stock, but subsequent introductions from other stocks have altered the Lahontain genetic pattern of these fish. Guano Creek is intermittent; that is, it flows only in response to rain or snowmelt. Therefore, the trout are found only during spring runoff and in the longer lasting pools on the Shirk Ranch. They survive in the perennial reaches of the stream on Hart Mountain Refuge and in Jacobs Reservoir.

Warner Sucker (Listed Threatened)

Warner suckers (*Catostomus warnerensis*) are endemic to the Warner Valley and were listed as a threatened species in 1985. There are 43 miles of designated critical habitat in the resource area, including 13.5 miles of designated habitat on BLM-administered lands.

Biological evaluations (see Glossary) on the effects of grazing on Warner suckers were completed in 1994 by the BLM. On those pastures with "may effect" or "likely to adversely effect" determinations from the evaluations, consultation between the BLM and USFWS, in compliance with section 7 of the "Endan-

Table 2-21.—*Allotments and pastures under consultation for effect to Warner suckers*

Allotment	Pasture/Stream
Fish Creek (0519)	Deppy (Honey and Twelvemile Creeks)
Hickey Individual (0202)	Parsnip Seeding; Camas Riparian (Parsnip and Camas Creeks)
Lane Plan I (0207)	Juniper Lake (Twentymile Creek)
Lane Plan II (0206)	Parsnip Riparian; Thompson (Parsnip and Drake Creeks)
Rahilly/Gravelly (0212)	Horse Creek (Twelvemile and Horse Creeks)
Round Mountain (0211)	North; West (Twentymile, Twelvemile, and Fifteenmile Creeks)
Sagehen (0208)	Riparian (Deep and Camas Creeks)
Vinyard (0201)	Squaw Flat; Seeding (Deep Creek)

gered Species Act," has been completed (Table 2-21). Where noncompliance with the terms and conditions of the biological opinion has occurred or changes were made to the actions proposed in the original consultation, the consultation process has been reinitiated. Biological evaluations and reinitiation of the consultation are completed as needed on all Federal actions taken by the BLM in the Warner Watershed south of Bluejoint Lake. Besides the grazing program, consultations have been completed on several fence construction projects, noxious weed control, road construction, waterhole maintenance, prescribed fire, commercial recreation permits, and a wetland management plan.

A recovery plan for the Warner sucker was approved in 1998 (USDI-USFWS 1998). It included descriptions, life histories, distribution, reason for decline, current conservation efforts, and recovery strategy of the species. Most importantly, it lists what actions must be completed to remove the species from the endangered species list. Many of the actions required to remove the species from listing, such as screening and providing passage over irrigation diversions, are needed on private lands and are beyond the scope of this plan. The BLM has worked on determining the population status of the species to establish the self-sustaining metapopulation requirements of the plan. BLM has also worked to identify existing habitats, assess their quality, and improve habitats by managing and excluding livestock.

Foskett Speckled Dace (Listed Threatened)

The Foskett speckled dace (*Rhinichthys osculus* ssp.), listed as threatened in 1985, occurs in a spring on BLM-administered land in Coleman Valley. The BLM acquired this land in an exchange with the private land owner and has maintained livestock exclusion on the spring area. Work, as outlined in the recovery plan (USDI-USFWS 1998), is planned to enhance the dace habitat and to reestablish the fish in an adjacent spring.

Hutton Tui Chub (Listed Threatened)

The Hutton tui chub (*Gila bicolor*) was listed as threatened in 1985 and inhabits a privately-owned spring along the shore of Alkali Lake. The landowner has excluded grazing from the spring and has restricted public access to the spring in an effort to protect the chub habitat. BLM management actions around the spring are not likely to impact this species but are evaluated to assure no adverse effect. This species is also covered by a recovery plan (USDI-USFWS 1998).

Other Aquatic Species

Amphibians and aquatic invertebrates are integral components of the fish community. One amphibian, the Columbia spotted frog, is a candidate for Federal listing.

Other fish of concern, because of limited habitat and range, include Sheldon tui chub (*Gila bicolor* spp.) in the Guano Basin, Summer Basin tui chub (*Gila bicolor* spp.) in the Summer Lake Basin and Oregon Lakes, and XL tui chub (*Gila bicolor* spp.) in the Chewaucan Basin.

ODFW no longer routinely stocks warmwater fish species, but largemouth bass, black crappie, white crappie, and brown bullhead have become established from previous introductions in the Warner Lakes and some smaller reservoirs. Anglers illegally introduced these species in other reservoirs in the planning area.

Cowhead tui chub (*Gila bicolor vaccaceps*): Occur in a limited range in northern California on a tributary of Twelvemile Creek. This species was proposed for listing, but the listing was postponed as a result of the development of a conservation agreement between the USFWS and the private landowners that manage the chub habitat. Because the LRA is downstream from this species' habitat, management actions by the

Lakeview BLM will have no effect on this species. Management actions proposed in adjacent areas will be evaluated to assure they will have no adverse effect to the species.

Columbia spotted frogs (*Rana lutiventris*): Are a Federal candidate species and are known to occur in two locations in the Warner Basin. It is suspected these frogs occur in other locations but none have been located. This species may be considered for Federal listing in the future.

Spring snails (*Pristinicola* sp., *Pyrgulopsis* sp. and others): Occur in several springs scattered around the LRA. They tend to be endemic to the spring in which they occur. Some species have been described (i.e., XL and Abert), but many others have yet to be identified as unique.

Management Needs

Habitat Connectivity, Strongholds, and Refugia

The watersheds that supply the majority of water to the Warner Valley are identified as refugia and strongholds for Warner suckers and redband trout. Deep, Twelvemile, Twentymile, and Honey Creek Watersheds all contain a considerable amount of BLM-managed lands and streams that provide habitat to significant fish species, including Warner suckers and redband trout. The perennial waters of the Twelvemile, Twentymile (except Horse and Fifteenmile Creeks), and Honey Creek Watersheds provide habitat for Warner suckers. All of the perennial reaches of Twelvemile and Twentymile Creeks in Oregon have been identified as critical habitat for Warner suckers. These sucker-bearing streams, along with Horse Creek, Fifteenmile Creek and the perennial streams of the Deep Creek Watershed provide habitat for redband trout.

The major factor limiting fish habitat is a lack of connectivity to the Warner Lakes. Deep and Twentymile Creeks have had substantial modifications and diversion that limit upstream movement to the upper reaches of the stream. Due to a natural falls on Deep Creek, only 2.3 miles of stream between Adel and the falls is affected by the connectivity concern. There are two major obstacles on Twentymile and three on Deep Creek. Honey Creek has the most direct connection between the stream and the Warner Lakes; however, there are several diversions that need to be modified to reestablish connectivity. All of these diversions are privately operated and all but one are on private land. The BLM has acted as a partner facilitating passage and screening programs to restore connectivity on the Warner Valley Watersheds, but the ultimate responsibility for work lies with the private owner. Culvert passage is not an issue in the planning area.

Water Quality Management Plans

Delineation of refugia and strongholds, as well as consideration of cold-water refugia will be an integral part of future water quality management plans. As total maximum daily loads are developed, they will address cold-water refugia, as required in the proposed EPA rules. The BLM will continue to be an active member of watershed councils and advisory groups to help tie the concept of connectivity, watershed management, and water quality plans together during the SB1010 process.

Future Management Needs

Watershed programs will be implemented or continued to restore watershed health. Juniper management and prescribed fire are needed in many areas to improve ground cover and watershed function. Grazing management on the Warner Valley Watersheds has been effective at improving upland and riparian conditions, but continued implementation and effectiveness monitoring is critical. Some instream work will be required to stabilize headcuts, establish flood plain function, and minimize impacts from roads.

Past Management Activities

Many past activities have affected the habitat conditions for fish in the area. Road construction has altered the ability of many streams to access their full floodplain or has constricted their floodplain and has straightened or constricted many channels, resulting in channel incision. Logging and associated road construction have removed overstory cover on many watersheds, changing peak and base flows downstream. Grazing has removed bank stabilizing vegetation and impacted banks directly. Water withdrawal since the turn of the century has affected the ability of fish to thrive in many streams. Irrigation water withdrawn from the major streams in the area reduces summer flows and raises water temperature. Channeling streams to better control the spread of water and removing of willows to create irrigated pasture and hay fields have resulted in channel incision and loss of habitat. Diversions often block upstream movement of trout from the lower reaches of streams and lakes to upper spawning areas. The inability of fish to move from Hart Lake into Honey Creek and from Crump

Table 2-22.—*Livestock management for lotic riparian protection/enhancement*

Stream	Exclusion areas		Pasture management	
	Number	Stream miles (public/private)	Number	Stream miles (public/private)
Twentymile Creek	2	5.5/0	1	2.0/0
Twelvemile Creek	1	6.5/2.0	0	0
Fifteenmile Creek	5	2.5/0.75	1	2.5/0
Horse Creek	1	0/1.0	1	2.7/0.5
Honey Creek	2	4.25/4.5	0	0
Snyder Creek	2	1.5/0.5	0	0
Twelvemile Creek	1	2.25/0.25	0	0
Deep Creek	1	6.0/0	2	3.25/4.5
Camas Creek	2	2.25/0	1	1.5/0
Drake Creek	2	1.75/0	1	3.4/0
Parsnip Creek	1	1.0/0	1	1.5/0
Chewaucan River	0	0	1	3.25/0.75
Dicks Creek	0	0	1	0.5/0
Willow Creek	3	2.0/0	1	0.5/0.75
Guano Creek	1	9.75/0	0	0
Silver Lake drainage				
Buck Creek	2	2.25/0	0	0
Bridge Creek	1	0.25/0	2	1.0/0
Silver Creek	1	0.5/0	1	1.5/0
West Fork Silver Creek	0	0	1	2.0/0
Duncan Creek	1	0.5/0	1	2.25/0

Lake into Twentymile Creek is an example of this problem.

Active riparian management in the resource area has been initiated on nearly all perennial and many intermittent streams. Table 2-22 depicts the stream and the type of management that occurs on it. Some exclosures have been successful at controlling grazing use, while in others, grazing still occurs when livestock occasionally find their way through the exclosure fences. With the initiation of consultation with USFWS under section 7 of the "Endangered Species Act," more extensive efforts in locating unauthorized grazing use and construction of additional fencing has made most of the exclosures in the Warner Basin more effective. The resource area has initiated grazing management on 14 pastures to improve riparian conditions. When grazing occurs as directed by the BLM, management on these pastures has been successful in improving habitat conditions.

Aquatic habitat surveys using the "Alaskan Aquatic Resource Information Management System" were completed in 1996 and 1997 on all of the perennial fish-bearing streams on the LRA (Table 2-23). The Fremont National Forest completed many surveys on forest lands during these years as well. While much of the data collected from these surveys has yet to be analyzed, analysis of the data used in the "Deep Creek Watershed Analysis" (USDA-FS and USDI-BLM 1998b) indicated that stream temperature was the major limiting factor on the watershed's streams, resulting in a generally poor overall rating on most stream reaches. Temperatures greater than the State standard are the result of several factors, including water withdrawal, loss of streamside vegetation, channel widening, and lower summer flows. ODEQ is currently reviewing water quality standards (including temperature) for coldwater fisheries habitat in eastern Oregon. Revised standards could be available within the next 5 years. Stream channel entrenchment has prevented water storage in floodplain soils, thereby reducing water storage that would promote longer-duration streamflow and reduced or eliminated interflow between cool/cold underground waters in the riparian area (floodplain) and surface streamflow. Even under pristine condi-

Table 2-23.— *Warner Valley stream survey summary*

Stream	Reach	Length (miles)	Pools/mile	Pools>2.6/mile	LWD/mile [1]	% Unstable banks	Rosgen type [2]	% public/ private
Twelvemile Creek	6	1.58	17.8	4.4	31.7	1.9	B3	100/0
Twelvemile Creek	5	2.10	12.8	3.3	0.5	19.7	C4	76/24
Twelvemile Creek	4	1.23	10.6	6.5	0.8	5.5	B4c	100/0
Twelvemile Creek	3	2.01	17.9	13.4	9.0	2.9	B2c	100/0
Twelvemile Creek	2	0.99	36.4	20.2	5.0	0.4	B3	55/45
Twelvemile Creek	1	0.89	12.3	4.5	0	3.4	F3	0/100
Fifteenmile Creek	4	2.49	14.1	0.0	4.0	2.5	E/C/B-15/10/65%	100/0
Fifteenmile Creek	3	1.05	31.5	0.0	49.7	28.0	C5/B4-50/50%	24/76
Fifteenmile Creek	2	2.69	54.0	1.1	26.1	5.6	B4	100/0
Fifteenmile Creek	1	0.26	38.7	7.7	23.2	0.0	A2a+	100/0
Twentymile Creek	1	0.87	41.4	4.6	4.6	6.0	A3	100/0
Horse Creek	4	0.84	33.3	4.8	2.4	23.3	C4	100/0
Horse Creek	3	0.98	32.7	9.2	1.0	0.5	C4b	100/0
Horse Creek	2	1.04	22.1	13.5	3.8	38.0	C4	0/100
Horse Creek	1	0.78	67.6	5.1	0.0	2.5	A2	23/77
Horse Tributary	1	0.96	12.5	1.0	0.0	0.0	C5	100/0
Honey Creek	4	1.15	32.1	2.6	0.0	8.6	B4c	100/0
Honey Creek	3	1.03	24.3	4.9	1.9	12.5	B3c	20/80
Honey Creek	2	1.07	32.6	3.7	0.0	0.9	B4	0/100
Honey Creek	1	4.23	35.7	3.5	0.7	0.7	B3c	79/21
Snyder Creek	2	0.27	107.0	7.4	3.7	2.3	B4	100/0
Snyder Creek	1	1.71	41.5	3.5	0.0	0.6	C5/B3-50/50%	65/35
Twelvemile, Honey Creeks	2	1.89	8.5	0.0	0.0	4.2	B3c	100/0
Twelvemile, Honey Creeks	1	0.81	37.2	1.2	1.2	1.7	A3	75/25
Deep Creek	6	0.65	20.0	1.5	1.5	27.0	B4c	100/0
Deep Creek	5	1.95	39.5	7.2	3.6	29.0	B3a	100/0
Deep Creek	4	0.65	20.0	1.5	13.0	13.0	B2c	100/0
Deep Creek	3	1.92	10.4	2.6	0.0	31.0	c2	100/0
Deep Creek	2	0.84	25.1	4.8	0.0	28.0	B3c	100/0
Deep Creek	1	1.66	33.7	11.4	0.6	34.0	B3c	100/0
Drake Creek	6	0.51	66.1	1.9	11.7	20.0	B4c	100/0
Drake Creek	5	1.09	39.4	1.8	22.0	6.0	B2	100/0
Drake Creek	4	1.35	27.4	0.7	8.1	19.0	B3c	100/0
Drake Creek	3	0.14	29.0	0.0	0.0	1.0	C4	100/0
Drake Creek	2	0.09	42.4	21.2	0.0	0.0	B2c	100/0
Drake Creek	1	0.97	37.0	7.2	8.2	2.0	B3c	100/0
Roar Springs Creek	2	0.36	27.4	0.0	5.5	0.0	C5	100/0

Stream	Reach	Length (miles)	Pools/mile	Pools>2.6/mile	LWD/mile [1]	% Unstable banks	Rosgen type [2]	% public/ private
Roar Springs Creek	1	0.28	28.6	0.0	57.2	2.0	B4	100/0
Parsnip Creek	5	0.43	58.5	4.7	18.7	9.0	B4a	100/0
Parsnip Creek	4	0.98	52.8	0.0	2.0	19.0	C4	100/0
Parsnip Creek	3	0.19	56.4	10.3	0.0	1.4	E6	100/0
Parsnip Creek	2	0.64	45.4	0.0	9.4	21.0	C5	100/0
Parsnip Creek	1	0.63	79.7	8.0	0.0	32.0	F4	100/0
Camas Creek	3	0.41	24.6	4.9	12.3	1.0	B4c	100/0
Camas Creek	2	1.71	28.0	4.7	0.0	34.0	C4	100/0
Camas Creek	1	1.53	47.8	5.2	1.3	7.0	B3	100/0

[1] Large woody debris (see Appendix F2).
[2] Channel type description (Rosgen 1996).

tions, it is unlikely State standards for temperature could be achieved on BLM stream reaches. However, most other elements (pools per mile, large wood per mile, pools per mile greater than 2.6-feet deep, unstable banks, proper functioning condition rating, and sediment rating) were good to fair with some poor ratings.

While most stream conditions provide adequate habitat for suckers and trout, there are opportunities to enhance some habitat components. Deep pools may be created and stream width-to-depth ratios may be reduced with structural controls. Other projects could be implemented that would improve cover and forage areas. Management actions, including grazing control and instream projects, could be initiated to improve temperature conditions by channel narrowing and overstory vegetation establishment.

Wildlife and Wildlife Habitat

BLM is responsible for managing of a wide array of both native and introduced wildlife habitats. In general, the ODFW is responsible for managing animal populations. However, an animal is inseparable from its habitat, and any management strategies must consider both the animal and its habitat.

Table 2-26 depicts existing wildlife forage allocations which are based on the dietary preferences of cattle and do not necessarily reflect the food resources available for wildlife consumption. The existing allocations were completed 20 years ago and do not represent the current distribution of wildlife within the resource area. Deer and pronghorn use has changed since the original allocation, and elk and bighorn sheep have expanded into new ranges. The Other Wildlife category on Table 2-26 has been modified to include raptors, small mammals, birds, and important shrub-steppe species, such as greater sage-grouse.

Numerous species of wildlife occur in the LRA. However, only priority species or taxa and their associated habitats are discussed here. These animals are recognized as being of particular interest to the public and are generally the emphasis for management. A subset of the priority taxa will be highlighted to provide background information and specific management opportunities relative to them. Special status species are discussed in the following section.

The planning area includes a number of priority habitats where the BLM focuses most management efforts. These habitats are the major plant communities or terrestrial features that are important to wildlife and include wet meadows, dry meadows, playa and lakebeds, cliffs and caves, talus slopes and lavabeds, brushfields, and forests and woodlands.

Ongoing changes to these important plant communities, many of them caused by humans, have resulted in alterations to the animal habitat within the planning area. For example, juniper encroachment is converting shrublands to woodlands, primarily because of changes in natural fire regimes. Quaking aspen stands are not regenerating themselves and are diminishing in numbers. A complete description of priority wildlife habitats found in the planning area is contained in Appendix H2.

Special Status Animal Species

Special status species are designated by Bureau 6840 policy. A listing of special status species was developed using the following criteria: Federal threatened, Federal endangered, proposed threatened, proposed endangered, and BLM special status species. Table 2-24 lists the priority species in the planning area and the reason for priority consideration, and Table 2-25 lists Bureau sensitive species known or suspected to occur in the LRA. There are three categories of special status species, (1) Bureau sensitive, (2) Bureau assessment, and (3) Bureau tracking. Bureau sensitive species are those that could easily become endangered or extinct. Bureau assessment species are those not presently eligible for official Federal or state status, but are of concern in Oregon. Bureau tracking species are those that may become a species of concern in the future. These species occur in many of the priority habitats on the resource area, including streamside riparian, seasonal wetlands, playas and lakebeds, cliffs, talus slopes, wet meadows, dry meadows, dryland shrub, juniper woodlands, and ponderosa pine forests. A complete description of special status species is contained in Appendix H.

Livestock Grazing Management

Introduction

The “Taylor Grazing Act” was passed on June 28, 1934, to protect public lands and their resources from degradation, to provide orderly use to improve and develop public rangelands, and to stabilize the livestock industry. Following various homestead acts, the “Taylor Grazing Act” established a system for allotting

Table 2-24.—*Priority animal taxa*

Common name	Scientific name	Status [1]
Amphibians and Reptiles		
Columbia spotted frog	*Rana luteiventris*	FC
Northern sagebrush lizard	*Scelophorus graciosus graciosus*	SOC
Birds		
Bald eagle	*Haliaeetus leucocephalus*	FT
Black tern	*Chlidonias niger*	SOC
Columbian sharp-tailed grouse	*Tympanuchus phasianellus columbianus*	SOC
Ferruginous hawk	*Buteo regalis*	SOC
Greater sage-grouse	*Centrocercus urophasianus phaios*	SOC
Northern pygmy owl	*Glaucidium gnoma*	HI
Northern goshawk	*Accipiter gentilis*	SOC
Olive-sided flycatcher	*Contopus cooperi borealis*	SOC
Peregrine falcon	*Falco peregrinus anatum*	SOC
Western Burrowing owl	*Athene cunicularia hypugea*	SOC
Western least bittern	*Ixobrychus exilis*	SOC
White-faced ibis	*Plegadis chihi*	SOC
Fish		
Catlow tui chub	*Gila bicolor* ssp.	SOC
Cowhead tui chub	*Gila bicolor* spp.	HI
Foskett speckled dace	*Rhinichthys osculus* ssp.	FT
Goose Lake lamprey	*Lampetra tridentata*	SOC
Goose Lake sucker	*Catostomus occidentalis lacusanserinus*	SOC
Goose Lake redband trout	*Oncorhynchus mykiss* ssp.	SOC
Hutton Springs tui chub	*Gila bicolor* ssp.	FT
Interior redband trout	*Oncorhynchus mykiss gibbsi*	SOC
Oregon Lakes tui chub	*Gila bicolor oregonensis*	SOC
Pit roach	*Lavinia symmetricus mitrulus*	SOC
Sheldon tui chub	*Gila bicolor eurysoma*	SOC
Summer Basin tui chub	*Gila bicolor* ssp.	SOC
Warner sucker	*Catastomus warnerensis*	FT
Warner Valley redband trout	*Oncorhynchus mykiss* ssp.	SOC
Invertebrates		
Abellan hydropsyche caddisfly	*Hydropsyche abella*	SOC
Montane peaclam	*Pisidium ultramontanum*	SOC

Common name	Scientific name	Status [1]
Mammals		
California bighorn sheep	*Ovis canadensis californiana*	SOC
California wolverine	*Gulo gulo luteus*	SOC
Canada lynx	*Lynx canadensis*	FT
Long-eared myotis (bat)	*Myotis evotis*	SOC
Long-legged myotis (bat)	*Myotis volans*	SOC
Mule deer	*Odocoileus hemionus*	HI
Pale western big-eared bat	*Corynorhinus townsendii pallescens*	SOC
Pronghorn	*Antilocapra americana*	HI
Pygmy rabbit	*Brachylagus idahoensis*	SOC
Rocky Mountain elk	*Cervus elaphus*	HI
Small-footed myotis (bat)	*Myotis ciliolabrum*	SOC
Yuma myotis (bat)	*Myotis yumanensis*	SOC

[1] Abbreviations: FT = Federal threatened; FC = Federal candidate; HI = high public interest, and SOC = USFWS species of concern.

grazing privileges on Federal land to livestock operators based on grazing capacity and use priority, and for the characterization of allotment boundaries. The Act also established standards for rangeland improvements and implemented grazing fees. Approximately 142 million acres of land in western states were under the jurisdiction of the Grazing Service and Federal Land Office, which evolved into the BLM in 1946. The "Federal Land Policy and Management Act" (FLPMA) was passed in 1976, and the "Public Rangelands Improvement Act" (PRIA) passed in 1978. These also provide authority for managing grazing on public lands.

Livestock Grazing

Authorization

Livestock grazing is administered on 120 allotments in the LRA. Existing allotment boundaries are illustrated on Map G-1 of the Draft RMP/EIS. Information specific to each of the 120 allotments in the planning area is provided in Appendix E1 and is summarized in Table 2-26. A total of 69 permittees are currently authorized to graze livestock in these allotments under section 3 of the "Taylor Grazing Act." Five permittees are authorized to graze livestock in parcels included under section 15 of the Act. Total active preference of all permittees in the planning area is 164,128 animal unit months (AUM's). For comparison, the total number of AUM's of grazing use for each of the last 10 years is shown in Table 2-27.

In accordance with rest rotation grazing system objectives, not all public land in grazing allotments is used every year. In order to promote healthy rangelands, specific pastures are designed to be rested from livestock use. Known problems pertaining to livestock grazing are not related to existing forage allocations, but to needed changes in management, such as season of use and livestock distribution.

When additional forage (above full permitted levels) is available on public lands, temporary nonrenewable grazing use is periodically authorized for qualified applicants when such use is consistent with meeting multiple use objectives.

In the LRA, 240,535 acres of public land have been set apart from grazing allotments specifically to either (1) improve or protect resource values, or (2) they were found to be unsuitable for livestock grazing. Table 2-28 identifies land that is not allocated to livestock production and is not included in a grazing allotment. About 155,734 acres within the LRA have available forage produced annually but are not allocated to specific livestock operators. Livestock use in some of these areas is authorized on a temporary basis to provide management flexibility for livestock operators. That flexibility has been used for fire closures, poor climatic conditions, and recovery of resource values. It has also been used to rest or defer the use of other pastures or allotments so that resource values can recover. About 84,801 acres are excluded from grazing on a permanent basis.

Table 2-25.—*Bureau sensitive species* [1]

Common name	Scientific name	Occurrence within LRA
Amphibians and Reptiles		
Northern leopard frog	*Rana pipiens*	Unknown
Oregon spotted frog	*Rana pretiosa*	Unknown
Western pond turtle	*Clemmys marmorata*	Unknown
Birds		
Black-backed woodpecker	*Picoides arcticus*	Documented, occasional
Flammulated owl	*Otus flammeolus*	Unknown
Lewis' woodpecker	*Melanerpes lewis*	Documented, occasional
Mountain plover	*Charadrius montanus*	Unknown
Purple martin	*Progne subis*	Unknown
Red-necked grebe	*Podiceps grisegna*	Suspected, occasional
Upland sandpiper	*Bartramia longicauda*	Unknown
Western snowy plover	*Charadrius alexandrinus nivosus*	Documented
White-headed woodpecker	*Picoides albolarvatus*	Documented, occasional
Yellow rail	*Coturnicops noveboracensis*	Documented
Yellow-billed cuckoo	*Coccyzus americanus*	Unknown
Invertebrates		
Casebeer prebblesnail	*Fluminicola* sp. nov.	Unknown
Great Basin ramshorn	*Vorticifex* sp. nov.	Unknown
Lake of the Woods prebblesnail	*Fluminicola* sp. nov.	Unknown
Modoc sideband	*Monadenia* sp. nov.	Unknown
Tigerlily preblesnail	*Fluminicola* sp. nov.	Unknown
Mammals		
Kit fox	*Vulpes macrotis*	Documented, rare
Pacific Fisher	*Martes pennanti pacifica*	Unknown

[1] BLM sensitive species of which very little is known about their distribution, abundance, or occurrence on the resource area. Impacts to species that are known or suspected to occur on the resource area are considered in site-specific environmental assessments.

Additional areas (encompassing 472,890 acres) within livestock grazing allotments have limited use based on prior agreements or decisions. Limiting use or excluding livestock protects resource values or facilities from livestock-related impacts. Examples of such resource values and facilities include, but are not limited to, developed water sources, riparian communities, streams, reservoirs, springs and wetlands; wilderness study areas (WSA's), special status plant or animal habitats, relevant and important values for which ACEC's are designated; research and study plots; and administrative, recreation, and archaeological sites.

Standards for Rangeland Health and Grazing Management Guidelines

The 1996 rangeland reform process modified the grazing regulations identified in 43 CFR part 4100. A new regulation was developed and is currently being implemented throughout the BLM. The regulation, 43 CFR 4180, addresses the fundamentals of rangeland health. In August 1997, the standards and guidelines that were developed in consultation with the Southeast Oregon Resource Advisory Council and Provincial Advisory Committees, Native Americans, and others, were approved by the Oregon State Director for Oregon/Washington (USDI-BLM 1997a). These

Table 2-26.—*Forage allocation and allotment summary*

Allotment number	Allotment name	MIC 1999	Public land acres	Other acres	Animal unit months (AUM's) Current deer/ pronghorn	Additional deer/ pronghorn	Additional elk	Additional bighorn sheep	Other wildlife [1]	New wildlife total	Wild horse [2]	Livestock	SNU [3]	Period of use [4]	Grazing system [5]	AMP Date	Allotment evaluation	Management objective [6]
00100	Peter Creek	M	13,800	640	25	0	30	30	5	90	0	329	0	Sp,Su,Fa	RR	1990		4
00101	East Green Mountain	M	17,241	1,440	285	0	50	60	30	425	0	980	0	Sp,Su,Fa	RR	1993		4
00102	Crack-in-the-Ground	I	15,419	400	133	0	40	20	10	203	0	298	0	Sp,Su,Fa	RR			4
00103	ZX-Christmas Lake	I	524,180	54,640	500	0	260	20	29	809	778/408	31,069	6,588	Sp,Su,Fa	DR	2001	2001	4
00200	Blue Creek Seeding	C	600	0	45	0	0	0	5	50	0	131	0	Su, Fa	Sp,Su			1,2,3,4
00201	Vinyard Individual	I	8,600	160	100	0	10	100	12	222	0	460	0	Sp,Su	RR	1969	1999	1,2,3,4
00202	Hickey Individual	M	10,906	90	163	0	30	0	17	210	0	583	0	Sp,Su,Fa	DR	1975	1993	1,2,3,4
00203	O'Keeffe FRF [7]	C	565	0	1	0	9	0	1	11	0	48	0	Sp	Sp			1,2,3,4
00204	Crump Individual	I	2,930	395	45	0	0	100	5	150	0	92	0	Sp,Su	Sp		1993	4
00205	Greaser Drift	M	9,210	0	90	0	0	30	10	130	0	356	0	Fa, Wi	Fa	1999		1,3,4
00206	Lane Plan II	I	9,910	3,330	130	0	30	0	16	176	0	450	0	Sp,Su	RR	1970	1993	1,2,3,4
00207	Lane Plan I	M	24,725	1,370	180	0	30	0	20	230	0	1,942	0	Sp,Su,Fa	RR	1971	1993	1,2,3,4
00208	Sagehen	M	3,820	2,050	40	0	30	0	20	90	0	266	0	Fa	D		1992	1,2,3,4
00209	Schadler	C	790	0	15	0	15	0	5	35	0	57	0	Su,Fa	Sp,Su			1,2,3,4
00210	Rim	M	2,376	680	10	0	0	0	5	15	0	39	0	Sp,Su	Sp,Su			4
00211	Round Mountain	M	16,330	1,640	160	0	90	0	23	273	0	1,102	0	Sp,Su	RR	1970	1990	1,2,3,4
00212	Rahilly-Gravelly	I	33,285	2,031	90	239	0	0	21	350	0	1,781	0	Sp,Su,Fa	RR	1984	1992	1,2,3,4
00213	Burro Springs	M	7,500	0	55	0	0	20	5	80	0	279	0	Sp,Wi	Sp		1992	1,3
00214	Chukar Springs	M	1,764	0	10	0	0	20	5	35	0	52	0	Sp	Sp			1,3,4
00215	Hill Camp	M	30,790	2,710	270	0	0	45	30	345	0	3,932	0	Sp,Su,Fa	RR	1975		1,2,3,4
00216	O'Keeffe Individual	I	51,785	3,010	240	0	0	0	26	266	0	4,808	0	Sp,Su,Fa	RR	1989		1,3,4
00217	Cox Individual	M	1,246	60	65	0	0	0	5	70	0	74	0	Sp,Su,Fa,Wi	RR	1972		1,3,4
00218	Sandy Seeding	M	4,850	0	25	0	0	0	5	30	0	600	0	Sp	Sp		1993	4
00219	Cahill FRF	C	470	0	15	0	0	0	5	20	0	280	0	Fa,Wi	Wi			1,3,4
00222	Fisher Lake	M	4,230	656	45	0	0	0	5	50	0	781	0	Sp,Wi	Wi	1975	1992	1,3,4
00223	Hickey FRF	C	412	0	50	0	15	0	11	76	0	64	0	Sp	Sp,Su		1992	4
00400	Coglan Hills	M	12,774	0	15	105	0	40	5	175	0	117	0	Sp	Sp,Su			4
00436	Diablo Peak	C	74,098	0	65	15	0	100	5	185	0/123	0	0	N/A	N/A			4
00437	Abert Rim	C	14,659	0	180	0	0	180	20	380	0	0	0	N/A	N/A			4
00401	Fenced Federal	C	160	520	0	10	0	0	5	15	0	16	0	Sp	Sp			4

Allotment number	Allotment name	MIC 1999	Public land acres	Other acres	Animal unit months (AUM's) Current deer/ prong-horn	Additional deer/ prong-horn	Additional elk	Additional bighorn sheep	Other wildlife	New wildlife total	Wild horse [1]	Livestock	SNU [2]	Period of use [3]	Grazing system [4]	AMP Date	Allotment evaluation	Management objective [5]
00403	Pine Creek	C	400	1,160	1	0	0	0	1	2	0	18	0	Sp,Su	Sp			4
00404	Willow Creek	M	11,805	8,845	5	190	0	0	5	200	0	472	0	Sp,Su	RR			1,3,4
00406	West Clover Flat	M	748	2,776	1	0	0	0	1	2	0	15	0	Sp,Fa	Sp,Su			1,2,4
00407	Clover Flat	M	2,521	4,851	15	20	0	0	5	40	0	200	0	Sp,Su	Sp,Su			1,2,4
00408	Schoolhouse	C	55	1,980	0	1	0	0	1	2	0	0	0		N/A			
00409	Tucker Hill	C	3,534	323	15	0	0	0	5	20	0	0	0		N/A			
00410	Tim Long Creek	C	340	1,155	0	1	0	0	1	2	0	15	0	Sp,Su	Sp			1,4
00411	Jones Canyon	C	636	0	0	1	0	0	1	2	0	13	0	Sp	Sp			4
00412	Fir Timber Butte	M	3,462	3,172	20	8	0	30	2	60	0	58	0	Sp,Su	Sp		1992	1,4
00415	Briggs Garden	C	785	899	5	0	0	0	2	7	0	42	0	Sp	Sp,Su			4
00416	White Rock	C	565	438	0	0	0	0	1	1	0	10	0	Sp,Su,Fa	Sp,Su			4
00418	Squaw Lake	M	43,269	520	80	0	0	0	16	96	35/69	834	0	Sp	RR			4
00419	St. Patricks	M	23,460	1,240	50	0	0	0	3	53	58/39	750	0	Sp	Sp			4
00420	Egli Rim	M	21,052	0	20	0	0	0	11	31	0/14	925	0	Sp,Su	RR			4
00421	Rosebud	M	10,640	2,040	3	0	0	0	3	6	0	158	0	Wi	Wi			4
00422	Paisley Flat	M	4,549	0	15	0	0	0	5	20	0	585	0	Sp,Wi	Sp		1992	4
00423	Hill Field	M	4,198	1,140	0	80	0	150	10	240	0	238	0	Sp,Su	Sp,Su			4
00424	West Lake	M	6,886	320	0	110	0	0	10	120	0	600	0	Sp,Fa	Sp		1999	4
00425	Pike Ranch	M	4,560	1,600	0	2	0	0	3	5	0	95	0	Fa	Sp,Fa			4
00426	Five Mile Butte	I	41,815	1,216	0	105	0	100	15	220	0/45	1,021	0	Sp,Wi	Sp,Su		1992	4
00427	XL	I	37,003	190	150	0	0	0	25	175	0	4,220	0	Sp,Su,Wi	DR		1992	4
00428	Sheeprock	I	144,025	4,460	100	0	0	220	17	337	929/490	4,000	0	Sp	RR	2001	2001	4
00429	Twin Lakes	M	17,050	0	15	120	0	0	15	150	0	2,272	0	Sp,Su	Sp,Fa		1992	4
00430	South Poverty	M	35,382	0	0	75	0	0	5	80	0	4,201	0	Sp,Su,Wi	RR		1992	4
00431	Narrows	M	8,486	180	20	0	0	100	20	140	0	275	0	Wi	D			4
00432	Coleman Seeding	M	5,839	0	30	0	0	0	5	35	0	920	0	Sp,Su	RR		1992	4
00433	East Jug	M	12,325	0	20	50	0	0	10	80	0	2,236	0	Sp,Su	D		1992	4
00435	Shale Rock	I	12,853	0	0	50	0	0	10	60	0	1220	0	Fa,Wi	D			4
00501	FRF Flynn	C	2,780	0	50	0	0	0	5	55	0	120	134	Sp,Su,Fa,Wi	FRF [7]			4
00502	FRF Fitzgerald	C	5,150	0	50	0	15	0	10	75	0	329	0	Sp,Su,Fa,Wi	FRF [7]			4
00503	FRF Taylor	C	6,110	0	50	0	15	0	10	75	0	295	0	Sp,Su,Fa,Wi	FRF [7]			1,2,3,4
00505	FRF Lynch	C	180	0	0	1	0	0	1	2	0	20	0	Sp,Su,Fa,Wi	FRF [7]			4
00507	FRF Laird	C	2,030	0	0	1	0	0	1	2	0	120	0	Sp,Su,Fa,Wi	FRF [7]			4

Allotment number	Allotment name	MIC 1999	Public land acres	Other acres	Animal unit months (AUM's) Current deer/ prong-horn	Additional deer/ prong-horn	Additional elk	Additional bighorn sheep	Other wildlife	New wildlife total	Wild horse [1]	Livestock	SNU [2]	Period of use [3]	Grazing system [4]	AMP Date	Allotment evaluation	Management objective [5]
00508	FRF Rock Creek Ranch	C	280	0	0	1	0	0	1	2	0	9	0	Sp,Su,Fa,Wi	FRF [7]			4
00509	Cox Butte	I	38,340	0	50	0	0	0	13	63	0	1,196	124	Sp,Su,Fa	Sp,Su		1993	3,4
00510	Orijana Rim	I	57,280	0	80	0	0	50	20	150	0	1,423	352	Sp,Su,Fa	Sp,Su			1,3,4
00511	Northeast Warner	I	139,019	1,680	6	538	0	120	6	670	0	6,151	234	Sp,Su,Fa	Sp,Su			1,3,4
00512	North Bluejoint	I	22,440	3,640	80	0	0	0	20	100	0	289	79	Sp,Su	Sp,Su			4
00514	Corn Lake	I	78,476	1,710	30	94	0	0	16	140	0	2,663	1034	Sp,Su,Fa,Wi	RR			3,4
00515	Juniper Mountain	M	91,720	760	90	240	60	40	26	456	0	3,621	796	Sp,Su,Fa	RR			1,2,3,4
00516	Rabbit Basin	M	32,211	400	0	55	0	0	5	60	0	1,846	0	Sp,Su,Fa,Wi	Sp		1993	3,4
00517	Coyote-Colvin	I	123,038	15,002	70	913	75	30	17	1105	0	5,091	0	Sp,Su,Fa,Wi	RR		2000	3,4
00518	Clover Creek	M	10,050	1,354	4	92	15	0	4	115	0	435	0	Su,Fa	RR		1994	1,2,3,4
00519	Fish Creek	I	11,805	10,446	20	0	75	0	24	119	0	575	0	Sp,Su	RR			1,2,3,4
00520	Lynch-Flynn	I	18,800	4,260	50	0	30	0	5	85	0	882	0	Sp,Su	RR			1,2,3,4
00521	Priday Reservoir	M	780	720	120	0	5	0	19	144	0	65	35	Sp	Sp,Su			1,2,3,4
00522	Abert Seeding	M	9,200	320	55	0	0	0	5	60	0	2,619	0	Sp,Su,Fa,Wi	RR	1968	1992	3,4
00523	Warner Lakes	I	38,788	5,650	40	0	0	0	10	50	0	1,138	86	Sp,Su,Fa,Wi	Wi			1,2,3,4
00524	Lane Individual	C	2,700	0	40	0	0	40	10	90	0	65	0	Sp,Su,Fa	Wi			3,4
00529	South Rabbit Hills	M	9,028	0	0	35	0	0	5	40	0	1,266	0	Sp,Wi	Sp		1993	1,2,3,4
00530	East Rabbit Hills	M	8,404	0	0	35	0	0	5	40	0	1,200	0	Sp,Wi	Sp		1993	
00531	North Rabbit Hills	M	11,712	640	0	35	0	0	5	40	0	1,317	0	Sp,Wi	Sp		1993	
00600	Beaty Butte	I	506,985	68,510	400	0	0	240	44	684	3,000/2,400	26,121	14,466		RR	1998		1,2,3,4
00700	Silver Creek-Bridge Creek	I	6,645	265	50	0	60	0	19	129	0	303	343	Sp,Su	RR		1992	1,3,4
00701	Upper Bridge Creek	M	1,460	3,270	20	0	30	0	9	59	0	108	52	Sp,Fa	Sp,Fa	1970		1,3,4
00702	Buck Creek-Bridge Creek	M	6,280	375	120	0	30	0	22	172	0	309	30	Sp,Su,Fa	RR			1,3,4
00703	Bear Creek	M	1,155	990	30	0	30	0	6	66	0	118	11	Wi	Wi			1,3,4
00704	Ward Lake	I	12,424	1,819	170	0	150	0	17	337	0	397	223	Sp	RR		1993	3,4
00705	Oatman Flat	I	28,503	6,075	730	0	150	0	28	908	0	2,082	623	Sp,Su	RR			3,4
00706	Rye Ranch	M	4,240	0	120	0	40	0	10	170	0	539	0	Sp,Su	DR			4
00707	Tuff Butte	M	9,330	2,310	320	0	180	0	20	520	0	536	0	Sp,Su	RR			4
00708	Arrow Gap	C	2,720	0	0	140	6	0	20	166	0	135	25	Sp,Su	Sp,Su			3,4
00709	Dead Indian-Duncan	M	18,790	0	620	0	150	0	27	797	0	586	112	Sp,Su	RR			3,4
00710	Murdock	I	4,468	1,668	60	0	60	0	12	132	0	545	160	Sp,Su	RR			3,4
00711	South Hayes Butte	I	1,490	0	10	0	60	0	7	77	0	88	50	Sp,Su,Fa	Sp,Fa			3,4
00712	Bridge Well	M	1,400	1,050	90	0	60	0	9	159	0	188	0	Sp	RR	1992	1990	3,4

Allotment number	Allotment name	MIC 1999	Public land acres	Other acres	Animal unit months (AUM's) Current deer/ pronghorn	Additional deer/ pronghorn	Additional elk	Additional bighorn sheep	Other wildlife	New wildlife total	Wild horse [1]	Livestock	SNU [2]	Period of use [3]	Grazing system [4]	AMP Date	Allotment evaluation	Management objective [5]
00713	Silver Creek	M	2,785	870	50	0	60	0	12	122	0	200	0	Sp	RR	1992	1990	3,4
00714	Table Rock	C	4,110	120	160	0	6	0	13	179	0	1	250		Ungrazed			3,4
00716	Silver Lake Lakebed	C	680	0	0	25	0	0	5	30	0	1	0	Wi	Wi			3,4
00900	Fremont	M	26,362	511	1,200	0	60	0	29	1289	0	1,970	0	Sp,Su,Fa	Sp,Su			3,4
00901	Wastina	M	6,366	0	300	0	40	0	11	351	0	419	0	Sp,Fa	DR			3,4
00902	Cinder Butte	M	10,776	320	600	0	40	0	34	674	0	891	0	Su,Fa,Wi	DR			3,4
00903	Beasley Lake	M	2,640	534	60	0	40	0	6	106	6	232	0	Sp,Su,Fa	Sp,Su			4
00904	Highway	M	2,420	989	80	0	40	0	11	131	0	118	0	Sp,Su,Fa,Wi	DR			4
00905	Homestead	M	12,877	9,728	500	0	40	20	8	568	0	685	0	Sp,Su,Fa,Wi	DR			3,4
00906	North Webster	M	1,071	3,416	40	0	40	10	11	101	0	112	0	Su,Fa	DR			3,4
00907	Devils Garden	M	4,406	0	100	0	600	80	16	826	0	0						3,4
00908	Cougar Mountain	M	8,282	3,405	520	0	40	40	14	634	0	616	0	Sp,Su,Fa,Wi	DR			3,4
00909	Button Springs	M	8,779	1,240	240	0	40	10	12	302	0	1,068	0	Sp,Su,Fa	DR			3,4
00910	Hogback Butte	M	4,384	4,234	170	0	40	60	12	282	0	680	0	Sp,Su,Fa	DR		1992	3,4
00911	Valley	M	6,120	769	120	0	30	0	17	167	0	613	0	Sp,Su,Fa	RR			4
00914	West Green Mountain	M	21,656	4,240	200	0	40	60	13	313	0	1,395	0	Sp,Su,Fa	DR	1984		4
00915	Squaw Butte	M	8,230	460	500	0	40	30	35	605	0	1000	0	Sp,Su,Fa	DR	1985		4
01000	Little Juniper Spring	I	116,836	780	440	0	0	30	40	510	0	5,418	0	Sp,Su,Fa	RR			1,2,3,4
01001	Alkali Winter	M	87,570	6,817	0	55	0	50	5	110	0	6,223	0	Fa,Wi	Wi		1990	3,4
01002	Bar 75 FRF	C	2,588	0	0	2	0	10	2	14	0	73	0	Sp,Su,Fa,Wi	Sp,Su			4
01072	South Butte Valley	M	3,710	0	0	2	0	0	2	4	0	900	0	Fa,Wi,Sp	Sp			4
01300	Becraft	C	120	0	3	0	0	0	2	5	0	10	0	Fa	Unk			4
01301	Crooked Creek	C	240	0	3	0	0	0	2	5	0	10	0	Sp,Su	Unk			4
01302	Thomas Creek	C	40	0	10	0	0	0	4	14	0	30	0	Su,Fa	Unk			4
01303	O'Keeffe	C	280	0	5	0	0	0	5	10	0	20	0	Sp,Su	Unk			4
01305	Schultz	C	200	0	10	0	0	0	4	14	0	29	0	Sp,Su,Fa	Unk			4
01306	Simms	M	363	0	20	0	0	0	7	27	0	55	0	Sp	Unk			4
																		4
Totals			3,027,890	285,674	12,568	3,446	3,131	2,285	1,399	22,829	4,440/3,420	164,128	25,807					

[1] Other wildlife = raptors, greater sage-grouse, small mammals/birds, etc. (includes an additional 276 AUM's allocated to other wildlife).
[2] Recommended forage allocation/present forage allocation. Adjustments from two allotments (#'s 400 and 426) outside the herd area which were incorrectly allocated forage for wild horses. Forage allocations are redistributed based on herd management area boundaries. Forage allocations are also increased to provide 12 months of forage for all horses at the top range of the appropriate management level (150 horses in the Paisley Herd Management Area, 250 horses in the Beaty Butte Herd Management Area).
[3] SNU = Suspended nonuse.
[4] Sp = Spring; Su = Summer; Fa = Fall; Wi = Winter.
[5] Grazing systems: RR = Rest rotation; D = Deferred; DR = Deferred rotation; Sp = Spring; Su = Summer; Fa = Fall; Wi = Winter; FRF = Federal range fenced; Unk = unknown.
[6] Management objectives: 1 = Improve and/or maintain riparian vegetation; 2 = Improve water quality and quantity; 3 = Maintain and/or improve wildlife habitat; 4 = Maintain and/or improve ecosite condition.
[7] FRF = Federal range fenced: where small portions of Federal land are within fenced private lands; hence, grazing systems vary and are generally unknown.

Table 2-27.—*Animal unit months (AUM's) authorized annually from 1991 to 2000* [1]

Year	Animal unit months
1991	83,751
1992	79,603
1993	96,234
1994	106,823
1995	112,372
1996	123,009
1997	127,251
1998	114,609
1999	118,946
2000	118,739
Average	108,134

[1] Grazing year March 1 to February 28.

standards and guidelines are intended to provide a clear statement of agency policy and direction for those who use public lands for livestock grazing and for those who are responsible for their management and accountable for their conditions.

The objectives of the rangeland health regulations are to ". . . promote healthy sustainable rangeland ecosystems; to accelerate restoration and improvement of public rangelands to properly functioning conditions . . . and to provide for the sustainability of the western livestock industry and communities that are dependent upon productive, healthy public rangelands." The fundamentals of rangeland health combine the basic precepts or physical function and biological health with elements of law relating to water quality and plant and animal populations and communities. Although the focus of the standards is on domestic livestock grazing on BLM-administered lands, on-the-ground decisions must consider the effects and impacts of all uses.

The standards are the basis for assessing and monitoring rangeland conditions and trend. The assessments evaluate the standards and are conducted by an interdisciplinary team with participation from permittees and other interested parties. The five standards are as follows:

Standard 1, Watershed Function—Uplands: Upland soils exhibit infiltration and permeability rates, moisture storage, and stability that are appropriate to soil, climate, and landform.

Standard 2, Watershed Function—Riparian/Wetland Areas: Riparian/wetland areas are in properly functioning physical condition appropriate to soil, climate, and landform.

Standard 3, Ecological Processes: Healthy, productive, and diverse plant and animal populations and communities appropriate to soil, climate, and landform are supported by ecological processes of nutrient cycling, energy flow, and the hydrologic cycle.

Standard 4, Water Quality: Surface water and groundwater quality, influenced by agency actions, complies with State water quality standards.

Standard 5, Native, Threatened and Endangered, and Locally Important Species: Habitats support healthy, productive, and diverse populations and communities of native plants and animals (including special status species and species of local importance) appropriate to soil, climate, and landform.

The complete "Standards for Rangeland Health and Guidelines for Livestock Grazing Management for Public Lands in Oregon and Washington" are found in Appendix E4.

Based on 43 CFR part 4180, if livestock are contributing to the nonattainment of a standard, as soon as is practical but no later than the start of the next grazing season, management must be implemented to ensure that progress is being made toward attainment of the standard(s).

The LRA commenced assessment of the standards and

Table 2-27a.—*Range improvement program implementation as of 2001*

		Fences (miles)		Springs (#)		Pipelines (miles)		Wells (#)		Reservoirs (#)		Waterholes (#)		Guz-zlers (#)	Rehab—treat/seed (acres)		Prescribed burn (brush/juniper)—treat/no seed (acres)		Monitor/treat weeds (acres)	
Allotment #	Allotment name	P [1]	C [2]	P	C	P	C	P	C	P	C	P	C	C	P	C	P	C	M	C
00100	Peter Creek	12	7	0	0	1	12	1	0	0	0	1	0	0	0	0	0	0	0.25	0
00101	East Green Mountain	0	0	0	0	2	0	0	0	0	0	0	0	1	0	0	0	0	0	0
00102	Crack-in-the-Ground	2	4.5	0	1	2	1	1	0	0	0	0	0	0	0	1	0	0	0	0
00103	ZX-Christmas Lake	63	37.5	2	1	27	1	2	1	2	1	12	7	2	42,595	9,256	0	11,978	0.5	3.2
00104	Bottomless Lake	0	0	0	0	0	12	0	0	0	0	0	0	5	0	0	0	0	0.1	0
00200	Blue Creek Seeding	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
00201	Vinyard Individual	0	6.6	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16.5
00202	Hickey Individual	0	3	0	0	0	0	0	0	1	3	0	0	0	200	1	0	0	0	5.5
00203	O'Keeffe FRF	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
00204	Crump Individual	1	5.8	1	0	1	0	0	3	0	0	0	0	0	300	0	0	0	0.1	0
00205	Greaser Drift	3	7.9	0	0	0	0	0	1	0	0	0	0	0	800	1,083	0	0	0	3.1
00206	Lane Plan II	0	0.8	0	0	0	0	0	0	1	4	0	1	0	760	0	0	0	0	17.6
00207	Lane Plan I	0	2.3	1	1	0	0	0	0	0	4	3	2	0	360	0	1,640	0	0.1	0
00208	Sagehen	0	4.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
00209	FRF Schadler	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
00210 [3]	*Rim*	0	0	0	0	0	0	0	0	0	0	0	0	0	160	0	0	0	0	0
00210	Rim	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
00214	Chukar Springs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
00211	Round Mountain	0	2.6	1	0	0	0	0	0	1	3	1	3	0	1,240	0	0	10	0.25	0.6
00212	Rahilly-Gravelly	0	5.5	0	1	0	0	0	0	1	0	0	0	0	3,040	250	0	0	0	29
00213	Burro Springs	0	1	0	0	0	0	0	0	0	1	0	0	0	520	0	0	0	0	0
00215	Hill Camp	0	2.2	0	0	0	0	0	0	1	0	1	0	0	1,240	0	0	5,123	0	0.1
00216	O'Keeffe Individual	0	3.5	0	0	4	2	0	0	1	0	1	3	2	1,800	115	0	0	0.1	380
00217	Cox Individual	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
00218	Sandy Seeding	0	0	0	0	0	0	0	0	0	0	2	1	2	0	0	0	0	0	0
00219	FRF Cahill	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
00222	Fisher Lake	0	4.3	0	0	0	0	0	0	0	0	0	0	0	360	2,020	0	0	0	0
00400	*Paisley Common* [3]	85.3	0	0	0	23.5	0	5	0	4	0	34	0	0	35,005	0	0	0	0	0
00400	Coglan Hills	0	5	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0.1
00418	Squaw Lake	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4.75
00419	St. Patricks	0	25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Allotment #	Allotment name	Fences (miles)		Springs (#)		Pipelines (miles)		Wells (#)		Reservoirs (#)		Waterholes (#)		Guz-zlers (#)	Rehab—treat/seed (acres)		Prescribed burn (brush/juniper)—treat/no seed (acres)		Monitor/treat weeds (acres)	
		P [1]	C [2]	P	C	P	C	P	C	P	C	P	C	C	P	C	P	C	M	C
00420	Egli Rim	0	15.6	0	0	0	1	0	1	0	3	0	0	0	0	230	0	0	0	60
00421	Rosebud	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
00422	Paisley Flat	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	0
00423	Hill Field	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
00424	West Lake *(00417)* [4]	0	0	1	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0
00425	Pike Ranch	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
00426	Five Mile Butte	0	18.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2,800	0	280
00427	XL	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	2,300	0	0
00428	Sheeprock	0	8.7	0	0	0	1.3	0	0	0	2	0	18	2	0	0	0	3,010	0	14
00429	Twin Lakes	0	4.5	0	0	0	2	0	1	0	0	0	3	0	0	0	0	550	0	0
00430	South Poverty *(00434)* [4]	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	40	0	0
00431	Narrows	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
00432	Coleman Seeding	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	500	0.2	0
00433	East Jug Mountain	0	17.4	0	0	0	1	0	0	0	0	0	3	2	0	0	0	0	0	0
00435	Shale Rock	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
00436	Diablo Peak	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
004037	Abert Rim	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	2,000	50
00403	Pine Creek	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	41	0	0
00404	Willow Creek	1	0	0	0	0	0	0	0	3	0	0	0	0	100	0	0	0	0	8.9
00406	West Clover Flat	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
00407	Clover Flat	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	50	0	0
00409	Tucker Hill	0	0	0	0	0	0	0	0	0	0	0	0	0	200	0	0	0	0	0
00410	Tim Long Creek	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
00411	Jones Canyon	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
00412	Fir Timber Butte *(0413)* [4]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	41	0	0	0	0
00415	Briggs Garden	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
00416	White Rock	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
00501	FRF Flynn	0	0.5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
00502	FRF Fitzgerald	0	0	0	0	0	0	0	0	0	0	0	0	0	160	0	0	0	0	0
00503	FRF Taylor	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	9.2
00505	FRF Lynch	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
00507	FRF Laird	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.6
00508	FRF Rock Creek Ranch	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

		Fences (miles)		Springs (#)		Pipelines (miles)		Wells (#)		Reservoirs (#)		Waterholes (#)		Guz-zlers (#)	Rehab—treat/seed (acres)		Prescribed burn (brush/juniper)—treat/no seed (acres)		Monitor/treat weeds (acres)	
Allotment #	Allotment name	P [1]	C [2]	P	C	P	C	P	C	P	C	P	C	C	P	C	P	C	M	C
00509	Cox Butte	15	1	0	0	0	0	0	0	1	0	5	0	0	1,240	0	0	0	0	0
00510	Orijana Rim	18	0	0	0	0	0	0	0	2	0	6	0	0	2,000	0	3,440	0	0	0
00511	Northeast Warner	13	4.5	1	0	3	0	1	0	4	6	5	3.1	4	9,040	2,240	0	0	0	0
00512	North Bluejoint	4	0	0	0	0	0	0	0	0	0	2	0	0	1,280	600	0	100	0.5	0.0
00514	Corn Lake	6	32.5	0	0	0	2	0	0	7	2	3	4	0	3,680	2,950	0	1,500	0	0
00515	Juniper Mountain	0	0	0	0	0	0	0	1	2	0	3	0	0	2,200	0	0	16	0.2	372.4
00516	*Rabbit Basin* [3]	21	0	0	0	10	0	0	0	1	0	2	0	0	8,760	0	0	0	0	0
00516	Rabbit Basin	0	15.5	0	0	0	1	0	2	0	0	0	1	0	0	19,220	0	2,000	0	14
00529	South Rabbit Hills	0	13.5	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	25.9
00530	East Rabbit Hills	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
00531	North Rabbit Hills	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
00517	Coyote-Colvin	12	28.7	2	0	8	1	0	0	9	2	5	0	2	10,550	8,005	0	8,000	1	542.5
00518	Clover Creek	0	1	1	0	0	0	0	0	0	0	1	0	0	520	0	0	0	0	0
00519	Fish Creek	11	11.6	0	0	0	0	0	0	0	0	0	0	0	1,120	0	0	0	0.45	32.8
00520	Lynch-Flynn	4	5.2	0	1	0	0	0	1	2	0	0	0	0	600	100	0	800	0.1	4.8
00521	Priday Reservoir	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0.2	5
00522	Abert Seeding	0	0	0	0	0	2	0	0	0	0	0	0	1	0	0	0	0	0	50
00523	Warner Lakes	12	15.9	0	0	0	0	0	0	0	0	0	2	0	2,880	0	0	0	1.2	1,001.1
00524	Lane Individual	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.6
00529	South Rabbit Hills	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25.9
00530	East Rabbit Hills	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
00531	North Rabbit Hills	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
00600	Beaty Butte	72.3	19.8	2	2	16	13	0	0	45	12	14	10	0	36,840	0	500	600	0.3	4.3
00700	Silver-Bridge Creek	0	2	0	0	0	1	0	0	0	0	0	0	0	200	0	0	0	0	0
00701	Upper Bridge Creek	0	2	0	1	0	0	0	0	0	0	0	0	0	282	0	0	0	0	0
00702	Buck Creek-Bridge Creek	0	5	0	0	0	0	0	0	0	0	0	0	0	225	1,000	0	495	0	0
00703	Bear Creek	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
00704	Ward Lake	1	4.5	0	0	0	0	0	0	0	1	1	4	0	790	1	0	50	0	0
00705	Oatman Flat	0	8	0	0	1	0	0	0	0	0	0	1	1	757	0	0	0	0	0
00706	Rye Ranch	0	0	0	0	1	0.1	0	2	0	0	1	0	0	0	0	0	0	0	0
00707	Tuff Butte	1.5	0	0	0	1.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
00708	Arrow Gap	0	0	0	0	0	0	0	0	0	0	0	0	0	45	0	0	0	0	0

Allotment #	Allotment name	Fences (miles)		Springs (#)		Pipelines (miles)		Wells (#)		Reservoirs (#)		Waterholes (#)		Guz-zlers (#)	Rehab—treat/seed (acres)		Prescribed burn (brush/juniper)—treat/no seed (acres)		Monitor/treat weeds (acres)	
		P [1]	C [2]	P	C	P	C	P	C	P	C	P	C	C	P	C	P	C	M	C
00709	Dead Indian-Duncan	4	3.8	1	0	0	0	0	1	1	0	0	5	0	0	0	0	0	0	3.25
00710	Murdock	6	4.8	0	0	1	0	0	0	1	0	0	0	0	550	0	0	0	0	5.5
00711	South Hayes Butte	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
00712	Bridge Well	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
00713	Silver Creek	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0.5
00714	Table Rock	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
00716	Silver Lake Lakebed	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
00900	Fremont	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0
00901	Wastina	0	0	0	0	1	0	1	0	0	0	0	0	1	0	0	0	0	0	0
00902	Cinder Butte	0	0	0	0	0	0	0	0	0	0	0	0	0	0	350	0	420	0	0
00903	Beasley Lake	0	0	0	0	0	0	1	0	0	0	1	0	0	0	640	0	0	0	0
00904	Highway	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
00905	Homestead	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
00906	North Webster	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
00907	Devils Garden	2	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
00908	Cougar Mountain	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
00909	Button Springs	2	2	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1,700	0	0
00910	Hogback Butte	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
00911	Valley	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
00914	West Green Mountain	0	0	0	0	1	0	0	0	0	0	0	0	1	0	335	300	0	0	0
00915	Squaw Butte	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
01000	Little Juniper Spring	11	6.82	0	1	0	0	0	14	0	5	0	0	0	1,000	0	6,080	0	0	0
01001	*Alkali Winter* [3]	6	0	1	5	0	0	0	0	0	5	0	0	0	1,720	0	0	0	0	0
01001	Alkali Winter	0	20.5	0	0	0	1	0	2	0	0	0	0	1	0	17,600	0	6,100	0	1
01002	FRF Bar 75 Ranch	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1
01073	South Butte Valley	0	4.5	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
Totals		389.1	326.10	15	15	106	55.40	12	27	92	55	105	75.1	28	175,119	66,035	11,960	65,294	5.75	2,928.80

[1] P = Proposed in management framework plans, "Lakeview District Grazing Management Range Program Summary and Record of Decision" (1982), "Warner Wetlands Plan Amendment and ACEC Management Plans" (1990), and "High Desert Management Framework Plan Amendment and Record of Decision for the Lake Abert Area of Critical Environmental Concern (ACEC) in Lake County, Oregon" (1996); does not include projects completed prior to 1983.
[2] C= Completed to date, based on data contained in "Rangeland Improvement Program Summary" database between 1983 and 1997.
[3] Allotment names in italics were historic "parent" allotments which have been subsequently divided into the subset of allotments which follow.
[4] Allotment numbers in parentheses were merged with the listed allotment.

Table 2-28.—*Areas unallotted or excluded from livestock grazing*

Area	Acres
Unalloted Areas	
Miscellaneous unalloted areas [1]	19,336
Diablo WSA [2]	53,648
Bottomless Lake	583
Devils Garden WSA	4,000
Warner Wetlands ACEC	22,674
Summer Lake	18,385
Lake Abert ACEC	37,108
Subtotal	155,734
Excluded Areas	
Beaty Butte BLM/USFWS Highway 140 Exclosure [2]	4,502
Buck Creek Watchable Wildlife Area	590
Fossil Lake ACEC	5,725
Table Rock Proposed ACEC	4,086
Warner Wetlands ACEC	31,355
Cahill	165
Guano Creek WSA/Cooperative Management Area/Proposed ACEC/RNA	11,796
Chuckar Spring	30
West ½ of Abert Rim WSA/Proposed ACEC	9,766
Tucker Hill Proposed ACEC[2]	3,896
Alkali Lake	570
Coyote-Colvin	63
Devils Garden WSA	39
Fish Creek	265
Fisher Lake	47
Fitzgerald	93
Greaser Drift	4,335
Hickey Individual	46
Highway 31 ROW	98
Hill Camp	153
Lane Plan I and II	700
O'Keeffe	84
Rahilly-Gravelly Proposed ACEC/RNA	287
Round Mountain	2,269
FRF Taylor	938
Vinyard Individual	1,483
Miscellaneous livestock exclusion areas [3]	5,316
Subtotal	88,697
Total ungrazed area	244,431

[1] Includes small, isolated parcels in the area of Christmas Valley and Lakeview.
[2] Where grazing is currently not allowed due to grazing agreements, a grazing decision is needed to officially exclude these areas from grazing.
[3] Areas include small, unnamed stream, spring, reservoir, riparian, and other exclosures.

Table 2-28a.—*Summary of standards for rangeland health assessments, 1998–2001*

Allotment number	Allotment name	Public acres	Rangeland Health Standards				
			1	2	3	4	5
00103	ZX Christmas Lake	524,180	Not met [1]	N/A	Not met [2]	Met	Met
00201	Vinyard	8,600	Met	Met	Met	Met	Met
00202	Hickey Individual	10,906	Met	Met	Met	Met	Met
00203	O'Keeffe	565	Met	Met	Met	Met	Met
00206	Lane Plan II	9,910	Met	Met	Met	Met	Met
00207	Lane Plan I	24,725	Met	Met	Met	Met	Met
00208	Sagehen	3,820	Met	Met	Met	Met	Met
00211	Round Mountain	16,330	Met	Not met [3]	Met	Met	Met
00212	Rahilly-Gravelly	33,285	Met	Met	Met	Met	Met
00216	O'Keeffe Individual	51,785	Met	N/A	Met	Met	Met
00428	Sheeprock	144,025	Not met [1]	N/A	Met	N/A	Met
00517	Coyote-Colvin	123,038	Met	Not met [3]	Met	Met	Met
00519	Fish Creek	11,805	Met	Met	Met	Met	Met
00600	Beaty Butte	506,985	Met	Not met [4]	Met	N/A	Met

[1] Standard not met in native pastures on 23,616 acres; grazing system modified to provide 2 years' rest after grazing; in nonnative seedings, rest is provided 1 year in a 3-year rotation.
[2] Standard not met on 41,600 acres; modifying the grazing system in the native pastures and nonnative seedings would provide for improvement.
[3] Changes in riparian grazing have resulted in significant progress toward attainment of this standard.
[4] Standard not being met; however, a jurisdictional transfer with the USFWS has removed this area from livestock grazing.

guidelines in 1998 and will continue this process for the next 8 years. Approximately 10 percent of the public land acres in the resource area would be assessed each year. The process has been completed on 14 allotments encompassing 1,469,859 acres through the end of the 2000 fiscal year (see Table 2-28a). Ten term grazing permits, which have been through the assessment process, were issued through the end of fiscal year 2001. In the assessments completed, livestock were not identified as contributing to the nonattainment of any standard, except in one situation (Beaty Butte Allotment [0600]). This was mitigated through an administrative jurisdictional transfer of a portion of the Jack Lake riparian pasture to the USFWS. Management was changed to reflect their existing land use plan (i.e., no grazing) (USDI-BLM and USDI-USFWS 1998a, 1998b; USDI-USFWS 1994a, 1994b). If a term grazing permit expires and an assessment cannot be completed due to conflicting workloads, a standard stipulation is placed in the terms and conditions of the permit, identifying that an assessment will be completed in the future and this assessment may result in a modification of the permit if it is determined that livestock grazing is contributing to the nonattainment of a standard.

Rangeland Projects

Various rangeland treatments, such as brush control and rangeland seeding, have been completed in the LRA. Structural improvements, such as fences, cattleguards, reservoirs, spring developments, wells, and pipelines, have been constructed to facilitate livestock distribution and rangeland management (see Table 2-27a). Nonnative seeding has occurred since the 1950s. The original objective of rangeland seeding with nonnative species was to increase livestock forage, reduce erosion and soil loss, and decrease potential invasion of annuals. The high cost of native seed, its availability, and difficulty of cultivation were contributing factors for use of nonnative seed. The development of various grazing systems resulted in seedings being used to rest or defer use of adjacent native vegetative communities. For the most part, seeding since the 1970s has been developed as a result of emergency fire stabilization and rehabilitation on sites that were susceptible to erosion and the invasion of noxious weeds and nonnative annual grass species (such as cheatgrass). As summarized in the vegetation section, nonnative seedings encompass approximately 249,140 acres or 7.8 percent of the resource area (Table 2-27a).

As mandated in FLPMA and PRIA, a portion of the grazing fees is invested in range improvements with the expectation that these improvements may benefit wildlife, watersheds, and livestock producers. Livestock operators, state and Federal agencies, and other interested public entities have continued to fund rangeland improvement construction.

Through use of emergency fire rehabilitation funds, additional public land resources have been protected through rehabilitation of burned areas, thereby reducing soil loss and decreasing the ability of noxious weeds and annual nonnative grasses to become established.

Allotment Categorization/Grazing Systems

Every allotment in Table 2-26 is assigned a grazing system code to indicate the type of grazing system in effect. The grazing systems referred to in Table 2-26 are described in Appendix E5. The rest rotation system is the most common, but in larger allotments there may be a combination of systems used, as the rest rotation is not the best system for all vegetation types or pastures. The system shown in Table 2-26 is the system that controls the largest acreage within an allotment.

Grazing systems were limited before the 1960s. In the mid-1960s, grazing systems were established to maintain or establish plant communities. Grazing systems have evolved to protect and maintain plant community diversity and the resource values on public land.

Three selective management categories are used to administer livestock grazing. All allotments were grouped into these categories according to management needs, resource conflicts, potential for improvement, and Bureau funding/manpower constraints.

Improve (I) category allotments: Are managed to resolve a high level of resource conflicts and concerns and receive the highest priority for funding and management actions.

Maintain (M) category allotments: Are managed to maintain current satisfactory resource conditions and will be actively managed to ensure that resource values do not decline.

Custodial (C) category allotments: Are managed custodially by the BLM to protect resource conditions and values.

There are 27 I Category allotments, 64 M Category allotments, and 29 C Category allotments in the LRA.

The "Lakeview Grazing Management Final Environmental Impact Statement" (USDI-BLM 1982a, 1982b), subsequent rangeland program summaries, and Lakeview District planning updates have all outlined proposed grazing systems for all I and M allotments. As a result of land-use planning direction, grazing systems have been developed and implemented through agreements with permittees. These grazing systems are usually documented and described in an allotment management plan. An allotment management plan is a documented program, developed as an activity plan, that directs management of livestock grazing on specified public land in order to achieve objectives relating to desired resource conditions, sustained yield, multiple use, and economics (ranch). Allotment management plans are implemented when incorporated into term grazing permits or leases and accepted by the permittees or lessee. Strategic portions of allotment management plans are the rangeland projects designed to meet resource objectives and subsequent grazing systems/schedules. LRA has implemented allotment management plans on 9 I Category allotments and 16 M Category allotments. Grazing management has been developed for the remainder of the allotments by agreement or annual authorization. Appendix E1 displays allotment specific information.

Monitoring data collection tracks progress in meeting identified management objectives. Active grazing use authorizations and management actions in each allotment are periodically evaluated, based on the monitoring data. Adjustments are made by agreement or decision in accordance with legislation, regulations, and policy so that public land resources are maintained or improved. As allotment or rangeland assessments are completed, allotments could be placed in different categories.

Range Condition

ICBEMP assessed the rangeland integrity of all the subbasins in the project area. "Measures of rangeland integrity include such elements as: (1) grazing influences on vegetation patterns and composition, (2) disruptions to the hydrologic regimes, (3) expansion of exotic species, (4) changes in fire severity and frequency, (5) increases in bare soil, and (6) expansion of woodlands into herblands and shrublands." In the planning area, Summer Lake and Lake Abert Subbasins were rated as having low range integrity and the Warner Lakes and Guano Subbasins were rated as having moderate range integrity (USDI-BLM and USDA-USFS 1996h). Appendix A2 contains a summary of the ICBEMP findings applicable to the planning area.

Ecological site inventory data describes the condition of vegetative communities based on soil characteristics and potential natural vegetative community. Currently, ecological site inventory data is not available for the entire resource area. A description of the ecological site inventory process is contained in Appendix C2.

Wild Horses

Introduction

It is commonly believed that Spanish explorers reintroduced the horse to North America in the early 1500s. After that time, descendants of these horses became widespread across the West. Between 1880 and the 1930s, the number of wild horses in eastern Oregon increased rapidly as horses brought to this area by settlers, ranchers, and the U.S. Cavalry escaped or were abandoned by their owners and joined wild horse herds. By the late 1940s, wild horse numbers were estimated at 2,500 to 3,000 in the LRA.

Local residents remember the 1950s as a period of intensified gathering throughout eastern Oregon, and as a result, horse populations were drastically reduced. By the late 1950s, fewer than 50 horses remained in the Beaty Butte area. No estimates were recorded for the Paisley area.

Public concern and outcry in the late 1960s influenced Congress to pass the "Wild Free-Roaming Horse and Burro Act" in 1971 (Public Law 92-195). The law provides for the protection, management, and control of wild horses and burros on public land. The Act defines "wild free-roaming horses and burros" as all unbranded and unclaimed horses and burros on public lands. Two herd areas have been managed in the LRA since 1971.

Federal protection and the absence of natural predators have resulted in an increase in the wild horse and burro populations. In 1973, the BLM began the Adopt-A-Horse or Burro Program. Under this program, excess wild horses and burros are removed from the range as a way to maintain healthy herds and protect the habitat. The animals are then offered for adoption to qualified adopters.

Herd Management Areas

Wild horses in the LRA are managed in two designated areas: Paisley Desert Herd Management Area and the Beaty Butte Herd Management Area (Map SMA-1 of the Draft RMP/EIS). The northern portion of the Paisley Desert Herd Management Area is unavailable to wild horses. No wild horses have been seen in this area from 1973 to present. As a result of the Paisley adjudication agreements of 1986 and 1992, the 31,859 acre area was developed for livestock grazing, including seedings and division of the area into several pastures. The present fencing prevents horses from drifting into the area. The goal of the wild horse program is to keep horses within the herd management areas and to manage horse numbers at viable levels while maintaining the natural habitat in an ecological balance. Further information may be found in the Paisley Desert and Beaty Butte wild horse management plans (USDI-BLM 1977a, 1977b).

Horses compete with livestock and wildlife for forage. In order to prevent resource damage, BLM has established a limit for the amount of forage that may be taken from a given area. The vegetative resource is managed by dividing the available forage among competing uses in a forage allocation. Forage allocations for horses in each herd management area are based on the maximum number of horses in the appropriate management level range. Herd sizes have been established based on available resources, reproductive rates, other range uses, and public input. Table 2-29 shows statistics for the two herd management areas.

Appropriate management levels, as well as the boundaries of each herd management area, were established through previous land use plans (USDI-BLM 1983a, 1983b). Appropriate management levels are established to ensure that public land resources, including wild horse habitat, are maintained in satisfactory, healthy condition, and that unacceptable impacts to

Table 2-29.—*Herd management areas and herd areas in the Lakeview Resource Area*

Herd management areas	Public acres	Appropriate management level range	Forage allocation (AUM's) [1]
Paisley Desert [2]	303,526	60–110	1,020
Beaty Butte	438,773	100–250	2,400

[1] Animal unit months, based on a the original appropriate management level for each herd management area; 85 horses in the Paisley Herd Management Area and 200 horses in the Beaty Butte Herd Management Area.
[2] The 31,859 acres of the Paisley Desert Herd Management Area is unoccupied by and unavailable to wild horses.

these resources are minimized. To date, the data gathered during herd area monitoring supports established appropriate management levels.

Herd areas are monitored each year through aerial and/or ground census. Data on the use of forage plants is collected annually. Determinations to gather the herds, the number of horses to be removed, and when they are to be removed are based on these surveys. Table 2-30 shows census numbers for each herd management area since 1971.

Herd Gathers

Horses are usually allowed to run free until a herd reaches its maximum size or monitoring data indicates a need to gather. Horses are also gathered if they stray outside the boundaries of the herd management area. The excess horses are gathered to prevent resource overuse and to keep the herd healthy. Generally, gathering is scheduled every 3 to 5 years, depending on reproductive rates, death rates, funding, public concern, and other special management considerations. Site-specific gathering details, including trap sites, are determined at the time of each gather. Temporary traps are placed adjacent to existing roads and remain in place for up to 14 days. Occasionally, temporary traps may be placed within WSA's if no other reasonable location is within 10 miles of wild horses. Traps placed in WSA's are accessed on existing roads or ways.

The Paisley Desert and Beaty Butte herds have been gathered numerous times since 1971 (Table 2-31). Horses have historically strayed outside the herd management areas. Horses from the Beaty Butte herd move between the Burns District to the east and the Lakeview District, and between the Sheldon and Hart Mountain National Wildlife Refuges. Horses from the Paisley Desert often move east and south into surrounding crested wheatgrass seedings.

Gathering is done outside the normal February through June breeding and foaling season. Usually, horses are gathered to reduce numbers to the lower end of the appropriate management level range to avoid the need for frequent, expensive gathers that may disrupt the herd. Excess horses are usually transported to the Burns Wild Horse Corral for adoption by the public, but horses may go to other adoption sites throughout the United States. Table 2-31 shows the number of horses removed from each herd management area by gathers since 1977.

Fertility Control

Fertility control research using immunocontraceptives in mares may be conducted in either herd management area. A study of fertility control on the Beaty Butte herd was done in the late 1980s by the University of Minnesota. Dominate studs in the herd management area were gelded and released back to the herd management area. In another fertility research effort, 20 horses (13 mares and 7 studs) were released back into the Beaty Butte herd in 2002. The mares were inoculated with an immunocontraceptive vaccine called PZP in an attempt to slow down reproductive rates. This contraceptive is expected to remain effective for 1 to 2 years, and the effects on population levels will be monitored (USDI-BLM 2000d).

Herd Quality and Genetics

Herds in both the Paisley Desert and Beaty Butte Herd Management Areas are in good condition; they exhibit few health problems.

Wild horses in these herds are managed first for quality and conformation and second for color. They come in all shapes and sizes. Adult horses average from 14 to 16 hands and weigh 950 to 1,300 pounds.

There is a wide variety of genetic backgrounds among the horses in both herds. The colors of the original Paisley Desert horses were predominately solid colors of bay, brown, and sorrel. Presently, nearly every color can be found among the horses in the herd. In the southeast portion of the herd area, a few bands consist of horses in varying colors of gray. Others are buckskin, palomino, or dun. Pintos were introduced into the area in 1980.

Historically, bloodlines appear to have been mainly thoroughbred with a few heavily-muscled horses, possibly of draft breeding. However, horses from outside the herd area have been introduced, and crossbreeding has occurred to the point that bloodlines are no longer pure.

The majority of the Beaty Butte horses are blacks, sorrels, browns, and roans. From appearance, bloodlines in the herd include draft horses, saddle-type riding horses, and thoroughbreds. Several bands of horses exhibit characteristics of the Spanish mustang, including small size, hooked ears, dun color, tiger-striped legs, and dorsal stripe (Table 2-32 shows characteristics of each herd).

Table 2-30.—*Paisley Desert and Beaty Butte Herd Management Area census summaries*

Paisley Desert Herd Management Area [1]			Beaty Butte Herd Management Area [2]		
Year	Total horses	Number of foals	Year	Total horses	Number of foals
1971	81	10	1971	190	44
1972	121	32	1972	271	69
1973	177	28	1973	365	25
1974	219	49	1974	482	110
1975	288	68	1975	611	117
1976	307	70	1976	762	176
1977 [3]	368		1977	879	189
1978	137	19	1978 [3]	273	44
1979	179	30	1979	305	54
1980	215	37	1980	419	91
1981 [3]	244	47	1981 [3]	441	85
1982	70	17	1982	249	49
1983	119	29	1983	291	52
1984	147	28	1984 [3]	382	56
1985	176	45	1985	167	33
1986 [3]	286		1986	233	37
1987 [5]	56		1987	250	35
1988	40 [6]	9	1988 [3]	260	42
1989	70	13	1989	150	29
1990	99	11	1990	154	25
1991	139	24	1991	250	59
1992 [3]	203		1992 [3]	312	62
1993	77		1993	77	18
1994	143	24	1994	118	20
1995 [3]	172 [1]		1995	142 [1]	
1996	103		1996	191	
1997	144		1997	283	35
1998	142 [4]		1998	393	75
1999	172		1999 [3]	474	
2000	369		2000	193	
2001	60		2001	436	

[1] Summary is for horses inside the herd management area; horse numbers are estimated based on an average of 20 percent increase per year.
[2] Most years, horses were inventoried by flying over the herd area; however, during some years, horse numbers are estimated based on an average 20 percent increase per year. Variability in inventory numbers is from horses moving in and out of the herd area into and out of Sheldon and Hart Mountain Wildlife Refuges and into and out of the Burns District.
[3] Year horses were gathered.
[4] Partial inventory.
[5] Year horses were introduced.
[6] Mortality: 12 horses strayed outside the herd management area and died from dehydration in an area with no natural water sources.

Table 2-31.—*Paisley Desert and Beaty Butte Herd Management Area gathers*

Year	Number of horses	Number of horses removed
Paisley Desert Herd Management Area		
1977	368	235
1981	244	183
1986	286	238
1992	203	105
1995	172	82
2000	411	351
Beaty Butte Herd Management Area		
1977–78	879	776
1981	419	272
1984	382	260
1988	260	186
1992	250	162
1999	472	283
2001	427	327

Table 2-32.—*Characteristics representative to each wild horse herd*

Herd	Color/type	Markings	Size	Weight
Paisley Desert	Any color, especially pinto, buckskin, dun, gruella, and grey/saddle type	N/A	14–16 hands	950–1,300 lbs
Beaty Butte	Any color, especially red or blue roan, and grey/saddle type; dun, gruella, buckskin, claybank, and variations/Spanish mustang type	Dorsal stripes	13–16 hands	750–1,300 lbs

Special Management Areas

Areas of Critical Environmental Concern

Introduction

As a part of the preplanning process for the RMP, the LRA staff considered and evaluated all lands within the resource area for possible designation as ACEC's and RNA's. FLPMA and BLM policy require the BLM to give priority to designation and protection of ACEC's during the land use planning process (USDI-BLM 1988).

ACEC's are areas within BLM-administered lands where special management is required to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources, or natural systems or processes, or to protect life and safety from natural hazards. Appendix I contains a complete description of the ACEC criteria and the designation process.

The Sand Dunes/Lost Forest/Fossil Lake ACEC/RNA and Devils Garden Lava Beds ACEC were designated in previous land use plans (USDI-BLM 1982a, 1982b, 1983a, 1983b). The Connley Hills area was found to met the relevance and importance criteria for a potential ACEC, as well as the criteria for designation as a Federal RNA. An interdisciplinary team recommended that the ". . . proposed Connley Hills RNA be managed as an interim RNA until such time as the management framework plan for the District is amended or updated." (USDI-BLM 1985). Other areas were considered for potential ACEC designation in the "Lakeview Grazing Management Final Environmental Impact Statement," but failed to meet the criteria (BLM 1982a). As a whole, the LRA was not evaluated for potential ACEC designation at the time management framework plans were completed in the early 1980s. Two plan amendments have since been completed which designated the Warner Wetland and Lake Abert ACEC's (USDI-BLM 1989b, 1989c, 1996c, 1996d). Existing ACEC's are shown on Map SMA-1 of the Draft RMP/EIS.

Background

ACEC's may be nominated by members of the public, other agencies, and BLM staff at any time. In 1992, the BLM contracted with the ONHP to conduct a survey to evaluate plant and animal community "natural heritage cells" within the resource area and to reevaluate previous ACEC nominations. After reviewing the entire LRA, nine sites were recommended for designation for both ACEC and RNA status, because they contained at least one ONHP plant community cell (Vander Schaff 1992). Those recommendations, along with other nominations from the Oregon Natural Resources Council, various Native American Tribes, BLM staff, and Dr. Richard Miller (Oregon State University), were evaluated by the LRA staff. These findings are documented in the "Areas of Critical Environmental Concern Nomination Analysis Report" (USDI-BLM 2000a). Copies of the complete report are available from the LRA office or at the office's web site at www.blm.or.gov/Lakeview/planning.

BLM policy requires that RNA's be managed as ACEC's; therefore, areas nominated as RNA's must meet the ACEC criteria. Nine new RNA's have been proposed in addition to the existing Lost Forest RNA. RNA management goals and plans are usually more restrictive than ACEC management alone, as RNA's are created for scientific research and should maintain values for the representative cells and values.

Existing Areas of Critical Environmental Concern

At present there are four existing ACEC's in the LRA (Table 2-32b).

The Lost Forest/Sand Dunes/Fossil Lake ACEC currently does not have a detailed management plan, but is managed under the wilderness interim management policy (IMP) (USDI-BLM 1995b). Devils Garden has an interim management plan and is also managed under the wilderness IMP. Lake Abert ACEC has a detailed management plan (USDI-BLM 1996d). A portion of the area is also covered by the wilderness IMP. This ACEC is proposed for expansion to include land on top of Abert Rim. Warner Wetlands is covered by a number of activity management plans (USDI-BLM 1990b, 1990c, 1990d, 1990e, 1990f, 1990g, 1990h, 1990i, 1990j). The existing ACEC's are shown on Map SMA-1 of the Draft RMP/EIS and are described in Appendix I.

Potential Areas of Critical Environmental Concern

Table 2-33 lists areas evaluated for ACEC or RNA designation as part of the planning process. The table shows the name of the proposed ACEC and the values for which it is nominated. Maps SMA-2 and -3 of the Draft RMP/EIS, and SMA-4 show the location of the nominated areas. Table I-1 (in Appendix I) shows another 11 areas which were considered, but did not meet the relevance and importance criteria. The evaluation documents that the potential ACEC's listed in Table 2-33 meet the relevance and importance criteria and require special management.

Wilderness Study Areas

Under section 603 of FLPMA, the BLM was required to complete a wilderness review of public land in Oregon. Based on an inventory and study of the public lands within the LRA in the 1980s, 12 WSA's were recommended in 1989 for possible designation as wilderness by Congress (USDI-BLM 1989a, 1991a). Until Congress acts on the wilderness recommendations or otherwise releases WSA's for other purposes, WSA's are managed in accordance with BLM's "Interim Management Policy for Lands Under Wilderness Review" (wilderness IMP) (USDI-BLM 1995b). As mandated by section 603(c) of FLPMA, these WSA's will be managed in a manner which will not impair their suitability for preservation as wilderness.

Each of the WSA's within the LRA have the minimum

Table 2-32b.— *Existing areas of critical environmental concern*

Area of critical environmental concern	Acres [1]	Values
Devils Garden Lava Beds	28,241	Lava tubes, cinder and spatter cones, botanical
Lake Abert	50,165	Aquatic ecology, cultural, visual, wildlife
Lost Forest (RNA)/Sand Dunes/Fossil Lake	35,120	Relict ponderosa pine, dunes, prehistoric
Warner Wetlands	52,033	Wildlife habitat, wetlands, prehistoric, scenic
Total	165,559	

[1] The acreage is based on boundary lines captured within geographic information system data sets. Acre estimates may be different than previously published estimates.

Table 2-33.—*Areas proposed for area of critical environmental concern designation*

Name of proposed ACEC	Resource values (relevance/importance) [1]
Connley Hills RNA	*Botanical, cultural, and ecological values:* Essential habitat of species diversity. Unique plant communities limited to this site in Oregon. Fills ONHP cells for Basin and Range Ecosystem: (4) western juniper, big sagebrush, bluebunch wheatgrass, (7) western juniper, bluebunch wheatgrass, (8) western juniper, Idaho fescue community, (11) big sagebrush, blueunch wheatgrass community. Outstanding archaeological values.
Guano Creek/Sink Lakes RNA	*Botanical and ecological values:* Low elevation vernal pool and sagebrush/sandberg bluegrass scabland. Fills ONHP cells for Basin and Range Ecosystems: (28) low sagebrush, Sandberg's bluegrass scabland (terrestrial system), (53) low elevation vernal pond (aquatic ecosystem), (15) big sagebrush, needle-and-thread community, (64) silver sagebrush/Great Basin wildrye, (82) low elevation riparian community. Two Bureau sensitive plants in area. Cultural plants present.
Hawksie-Walksie RNA (formerly Hawk Mountain I and II)	*Botanical, cultural, and ecological values:* Outstanding example of biodiversity of high desert grassland steppe. Fills ONHP cell for Basin and Range Ecosystems: (11) big sagebrush, bluebunch wheatgrass, (12) big sagebrush, Idaho fescue communities. Cultural and archaeological significance. Evidence of long-term relationship of Tribal people and landscape.
High Lakes	*Cultural, wildlife, and botanical values:* High concentration of rock art sites up to 7,000 years old. Diversity of plants and animals, especially cultural plants. Bureau sensitive plant found in area. Evidence of long-term relationship of Tribal people and landscape. May be eligible for traditional cultural property designation. Critical greater sage-grouse habitat.
Fish Creek Rim RNA	*Cultural, wildlife, and botanical values:* High density of significant sites in upland environment. Significant plant species diversity; fills ONHP cells in Basin and Range Ecosystems: (20) big sagebrush-bitterbrush, Idaho fescue, (26) low sagebrush, Idaho fescue scabland, (37) mountain mahogany, mountain big sagebrush, and where possible, bitterbrush, (41) snowbrush and bittercherry shrub complex. Two Bureau sensitive plants.
Spanish Lake RNA	*Botanical and wildlife values:* Diversity of salt desert scrub communities with limited distribution in LRA and Northern Great Basin. Meets ONHP cell for Basin and Range Ecosystems: (19) black greasewood-shadscale/bunchgrass playa margin vegetation, (73) playa with greasewood and Great Basin wildrye (aquatic ecosystem), (34) shadscale-budsage/bunchgrass salt desert shrub.
Rahilly-Gravelly RNA	*Cultural, wildlife, and botanical values:* High density and variety of significant cultural sites. Plant gathering area for Northern Paiute. May qualify as a traditional cultural property. Presence of Bureau sensitive plant species. Meets ONHP cell needs for Basin and Range Ecosystems: (6) western juniper, big sagebrush-bitterbrush community, (21) mountain brush (mountain big sagebrush-bitterbrush-squawapple, (40) bitterbrush-sagebrush, mountain snowberry/Thurber needlegrass mosaic. Critical greater sage-grouse habitat.
Foley Lake RNA	*Cultural and botanical values:* Significant cultural sites related to resource procurement, settlement patterns, and religious practices. Important species diversity and presence of Bureau sensitive plant species. Meets ONHP cells for Basin and Range Ecosystems: (30) black sagebrush, bunchgrass community complex.
Table Rock	*Cultural, botanical, and scenic values:* High density of unique site types. Presence of two Bureau sensitive plant species; also old growth western juniper. May qualify as a traditional cultural property. Visual and recreation values.
Black Hills RNA	*Botanical values:* Ecologically diverse western juniper community, age classes, with disjunct pine community. Two Bureau sensitive plants. Meets ONHP cell for Basin and Range Ecosystems: proposed ash soil plant community.

Name of proposed ACEC	Resource values (relevance/importance) [1]
Red Knoll (formerly Tucker Hill)	*Cultural, wildlife, and geological values:* High density and wide variety of sites important for research and traditional cultural values. Presence of ancient beach erosion terraces. Unique plant community containing a Bureau sensitive plant species. Critical greater sage-grouse habitat.
Abert Rim	*Cultural, wildlife, and botanical values:* Cultural and biodiverse plant communities; high in cultural plants.
Juniper Mountain RNA	*Botanical and ecological values:* Old growth western juniper and high species diversity. Meets ONHP cell description: (5) western juniper, big sagebrush, Idaho fescue.

[1] See Appendix I for detailed descriptions of ACEC values including plants and cell descriptions.

characteristics necessary to qualify for wilderness consideration. These characteristics include: (1) 5,000 acres (or more) of contiguous BLM land, (2) roadless islands of any size or roadless areas of sufficient size to make practical their preservation and use in an unimpaired condition, and (3) possess outstanding opportunities for solitude or for primitive and unconfined types of recreation. Many of the WSA's contain special features, such as unique or sensitive plant and animal species and communities, interesting geologic features, cultural or paleontological resources, or other features of scientific, educational, scenic, or historic value.

A brief description of the location, number of acres recommended and not recommended for wilderness designation, and a summary of the criteria considered in developing the suitability recommendations for each WSA is contained in Appendix J2 of the Draft RMP/EIS. Table 2-34 lists each of the WSA's and the number of acres recommended or not recommended for wilderness designation. The WSA's are shown on Map R-1 of the Draft RMP/EIS. The Basque Hills and Rincon WSA's straddle the Lakeview/Burns District boundary, and are managed by the Burns District. Complete descriptions of these WSA's can be found in the "Oregon Wilderness Environmental Impact Statement" (USDI-BLM 1989a). Acreages listed in Table 2-34 are only those located within the LRA. These acreages are based on the most up-to-date geographic information system measurements and, therefore, may differ from those listed in the "Oregon Wilderness Environmental Impact Statement."

Since 1992, when the wilderness recommendations were submitted to Congress, 3,139 acres of land adjacent to or within three WSA's (Fish Creek Rim, Abert Rim, and Guano Creek) have been acquired through land exchanges and donations. The wilderness characteristics of these lands have been evaluated in Appendix J4 of the Draft RMP/EIS.

Wild and Scenic Rivers

Introduction

BLM is an active participant in managing designated wild, scenic, and recreation rivers, and in contributing to the eligibility, classification, and suitability studies of rivers listed in the "Nationwide Rivers Inventory" and other potential rivers. Other potential rivers are those identified by congressional bills, BLM, or the public, which might meet the qualifications for wild, scenic, or recreation river designation but have not been formally considered.

To be eligible for inclusion in the national WSR system, a river must be free-flowing and have at least one outstandingly remarkable river-related value within its immediate environment (usually a 0.25-mile corridor along each side of the river).

Existing Conditions

Currently, there are no rivers within the LRA that are designated or listed in the "Nationwide Rivers Inventory." In 1982, the Chewaucan River was evaluated by the Fremont National Forest to determine if the river was eligible for inclusion into the national WSR system (USDA-FS and USDI-BLM undated). This evaluation was coordinated with BLM's Lakeview District, since 4 miles of the river runs through BLM-administered lands. The report found that the Chewaucan River did not meet the minimum eligibility criteria of having outstandingly remarkable values. Furthermore, it stated that the mixed land ownership within the river corridor would create problems in formulating a coherent management plan for the entire river corridor.

Another joint eligibility assessment between the BLM and Fremont National Forest came about from a 1989 appeal of the "Fremont National Forest Resource Management Plan." In an effort to resolve the appeal, the USFS agreed to assess the eligibility of five rivers:

Table 2-34.—*Wilderness study areas and instant study areas*

Name of area (WSA number)	Total acres within WSA [1]	Acres recommended for wilderness designation	Acres not recommended for wilderness designation [2]
Devils Garden Lava Bed (OR-1-2)	28,241	28,160	1,520
Squaw Ridge Lava Bed (OR-1-3)	28,684	21,010	7,330
Four Craters Lava Bed (OR-1-22)	12,472	9,100	3,500
Sand Dunes (OR-1-24)	16,495	0	16,440
Lost Forest ISA	9,047	0	8,000
Diablo Mountain (OR-1-58)	118,799	90,050	23,070
Orejana Canyon (OR-1-78)	24,210	14,800	9,800
Abert Rim (OR-1-101)	25,129	23,280	0
Fish Creek Rim (OR-1-117)	19,146	11,920	4,770
Guano Creek (OR-1-132)	10,591	10,350	0
Spaulding (OR-1-139)	68,589	0	69,530
Hawk Mountain (OR-1-146A)	45,604 [3]	45,604 [3]	0 [3]
Sage Hen Hills (OR-1-146B)	7,988 [3]	0	8,520
Basque Hills (OR-2-84) [4]	68,368 [3]	0 [3]	68,368 [3]
Rincon (OR-2-82) [4]	3,510 [3]	0 [3]	3,510 [3]
Total	486,873	254,274	224,358

[1] Acreage based on geographic information systems data (2001).
[2] Acres recommended and not recommended for wilderness designation are taken from the "Oregon Wilderness Final Environmental Impact Statement" (1989); these acres may not equal totals shown, since totals are based on more accurate geographic information system data (changes are not the result of any boundary changes).
[3] Acreages listed only include the portion located within the LRA. The remainder of the WSA falls within the Burns District.
[4] These WSA's are managed by the Burns District.

Deep Creek, Honey Creek, Little Honey Creek (all of which flowed through both BLM- and USFS-administered land), Dairy Creek, and the South Fork of the Sprague River (which flows through USFS-administered land). In these coordinated efforts, the only BLM-administered river stretch found to be eligible was Honey Creek (USDI-FS and USDI-BLM 1995, 1996b).

In preparation for this RMP, an evaluation of the remaining streams in the LRA was conducted during 1997 and 1998 (USDI-BLM 1999c). An interdisciplinary team evaluated all possible drainages which were known to be perennial or intermittent, along with many springs, lakes, and drainages whose character was unknown. From this list, it was determined which streams were free-flowing and if they had any outstandingly remarkable values. It was determined that two rivers were eligible for further study: Guano Creek and Twelvemile Creek. These creeks were tentatively classified concerning their degree of naturalness. Table 2-35 lists the eligible creeks and their classification.

Subsequent field checking of Guano Creek revealed that the last 1 mile of the creek above the Shirk Ranch has several major diversions and channels for irrigation use. These structures do not meet the "free-flowing" definition of the "National Wild and Scenic River Act," and therefore, the last mile of the creek was not included in the assessment. Since the Shirk Ranch is within this stretch, the outstandingly remarkable cultural value of the assessment was also dropped. Guano Creek is still eligible based on its vegetation communities.

Guano Creek Wilderness Study Area Cooperative Management Area

This area consists of about 11,020 acres of the Guano Creek WSA (about 94 percent of the total area) (Map SMA-1 of the Draft RMP/EIS) immediately south of Hart Mountain National Antelope Refuge. This area is currently managed in accordance with the "Hart Mountain National Antelope Refuge Comprehensive Management Plan" (USFWS 1994a, 1994b), the draft plan amendment/environmental assessment prepared jointly by the USFWS and BLM (1998a, 1998b), the "Oregon Public Lands Transfer and Protection Act" of

Table 2-35.—*Summary description of drainages found to be eligible for wild and scenic river designation*

River	Segment description	Total segment length (miles)
Guano Creek	Western boundary of Guano Creek WSA to BLM Road 6106A	10.6
Twelvemile Creek	California border to confluence with Twentymile Creek (includes BLM Surprise Field Office)	6.6
Honey Creek	Near confluence with Snyder Creek to one mile west of junction with County Road 3-10.	5.6
Total		22.8

1998, and the wilderness IMP (USDI-BLM 1995b). No livestock grazing is allowed. The use of prescribed burning is emphasized to restore native vegetation communities. Management emphasis is for wildlife habitat values.

Significant Caves

Introduction

The "Federal Cave Resources Protection Act" of 1988 declared that significant caves are an invaluable and irreplaceable part of the Nation's natural heritage, and directed Federal agencies to secure, protect, and preserve significant caves for the perpetual use, enjoyment, and benefit of all people. The Act also directed Federal agencies to prepare and maintain a list of significant caves and to establish criteria for the identification of significant caves on Federal lands. The resulting cave management regulations were published in the *Federal Register* (USDI-1993) in 1993. Until caves within the LRA are evaluated to determine significance, and management plans are prepared which provide specific management prescriptions, all caves are to be managed in accordance with "Oregon and Washington Interim Cave Management Policy" (USDI-BLM 1995i). This policy provides for specific protective management of all caves and cave resources until a specific management plan is prepared. Many of the known caves within the LRA are also located in WSA's, and these caves are afforded added protection under the wilderness IMP (USDI-BLM 1995b).

For a cave on public lands to be nominated, it must possess one or more of the following values: biota, cultural, geologic/mineralogic/paleontologic, hydrologic, recreational, or educational. The listing of significant caves involves two separate processes. During 1995, the initial listing process was coordinated by a national interagency effort in consultation with individuals and organizations interested in cave resources. This process had three steps: (1) nomination, (2) evaluation, and (3) listing.

Existing Conditions

There are presently seven significant caves located within the LRA. Depending on funding and staffing levels, management plans for any known significant caves would begin development in fiscal year 2003. As part of the evaluation process, interested individuals and organizations would be consulted as allowed within the parameters of the confidentiality provisions set in 43 CFR, Subpart B, Section 37.12. During the initial listing in 1995, nine caves were nominated by the Willamette Valley Grotto. Seven of these caves were found to be significant and are protected under interim management of the "Federal Cave Resources Protection Act." A subsequent listing of 62 caves was received in late 1995. Seventeen of these were eliminated from further review because they were duplicates of the first list, were on private land, or did not meet the definition of a "cave." Forty-five caves need to be evaluated before a determination on listing can be made. Depending on funding and staffing levels, the inventory and evaluation process would be completed within 5 years after the completion of the resource management plan for the LRA. After the inventory and evaluation process has been completed, a management plan for all new caves determined to be significant would be developed. This process would include public involvement. Because a separate management plan will be developed outside of this planning effort, caves will not be addressed further in this document.

Cultural and Paleontological Resources

Introduction

When the first Europeans came through this part of Oregon, four Native American Tribes were the primary occupants or visitors in what is now the planning area. The Northern Paiute occupied most of the area. The Yahuskin Band of the Northern Paiute occupied the north around Silver Lake, Christmas Valley, and

Summer Lake, while the Fort Bidwell and Harney Valley Bands lived in the eastern and southeastern portions of the area. Native people from the Warm Springs area to the north, and Klamath and Modoc from the west, would have also used portions of the resource area. It is unclear what Tribe or Tribes held the territory on a consistent basis during precontact periods. Evidence in the archaeological and ethnographic record indicates that groups moved, changed, or vacated the land. Indigenous people have lived in what is now the resource area for thousands of years. Today's borders and boundaries for historic ethnic groups are a product of Federal and state government politics rather than of Tribal selection.

The resource area's archaeological record is one of the richest in the Nation in terms of site numbers and age. Evidence, reflected in the tools and other man-made materials, exists in the LRA for some of the earliest occupation in North America. These periods of occupation or cultural periods are determined by the types of points found on spears or arrows. The Clovis Period, presently the earliest described cultural period in North America, dates from about 12,000 to 10,000 years ago. Following the Clovis Period, the Stemmed Point Period was present from about 10,000 to 7,500 years ago. Following this was the Desert Culture Period, which lasted until the period of the historic Tribes of the area and contact with Europeans.

Archaeological or cultural sites range from small lithic scatters (areas of stone tool debris) of only a few flakes to large lithic workshops at quarry locations that cover many square miles. There are village locations, small temporary campsites, hunting stations, hunting blinds, game drives, rock art, spiritual sites, burial and cremation sites, and collecting sites present within the resource area. Areas with water and resources such as food plants and stone for toolmaking can be found at the main locations of these sites. Within the site areas, places of traditional cultural use are present.

Traditional Cultural Properties, National Register Sites, and Cultural Resources

Federal agencies are responsible for the management and protection of cultural resources on lands under their administration. This management and protection must be done in coordination and consultation with those Native American Tribes directly connected with the land. Through a group of laws beginning with the "Antiquities Act" of 1906, FLPMA, the "Archaeological Resources Protection Act," the "National Environmental Policy Act" (NEPA), and the "Historic Preservation Act" (1966, as amended in 1992), the BLM is mandated to identify, protect, and manage cultural resources on BLM-administered lands. A number of procedures, including those specified in 36 CFR 800.4(a), are used to identify cultural resources within the planning unit. In most cases, the BLM avoids cultural sites and does not subject them to mitigation. If avoidance is not possible, appropriate mitigation procedures are worked out in coordination with Native Tribes, the State Historic Preservation Office, and Advisory Council on Historic Preservation. Wherever possible, site protection is provided through law enforcement patrols, site monitoring, and site stewardship programs.

Traditional Cultural Property

A traditional cultural property is a place that is eligible for inclusion in the National Register of Historic Places (NRHP) because of association with cultural practices or beliefs of a living community that (1) are rooted in that community's history, and (2) are important to maintaining the continuing cultural identity of the community. Within the LRA, several such cultural sites have been identified through consultation with Tribal governments. While these areas have been identified, they have not yet been listed in the NRHP and, as such, are considered potential traditional cultural properties. The identified potential traditional cultural properties are not considered to be all-inclusive, however. As projects in the region are proposed, new traditional cultural properties may be identified. This is because Tribal members are often unwilling to identify places which they are using unless identification is absolutely necessary to protect the area from destruction or other conflicting use. Many practices conducted at such sites require privacy. In addition, public identification of such locations creates a potential problem in that these sites may be subsequently used for non-Native practices. The majority of the identified traditional cultural properties are currently under consideration for designation as ACEC's for future management and protection.

National Register Sites

National register sites are sites (which may include traditional cultural properties) which have been determined to be eligible for inclusion on the NRHP. Eligibility is determined on criteria established by the 1966 "National Historic Preservation Act." Sites are unique, provide information important to the study of history or prehistory, and are connected to important historical events or persons.

Abert Rim National Register District and Potential

Traditional Cultural Property

The Abert Rim area contains a National Register District for cultural resources (Map SMA-1 of the Draft RMP/EIS). Nomination of the district was based on the presence of large numbers of house pits, stone house rings, lithic scatters, plant processing areas, rock art, and other cultural features. The Abert Rim area has one of the highest site densities within the Northern Great Basin, and sites cover all time periods of the archaeological record. The area is important to members of the Northern Paiute for plant gathering, protection of the archaeological sites, and continuation of cultural practices. For these reasons, the area has potential to be designated as a traditional cultural property. This area is further described in the ACEC section and is shown on Map SMA-4 as the proposed Abert Rim ACEC.

Management concerns for the Abert Rim Area are:

- Continued improvement of U.S. Highway 395 would most likely further disturb archeological sites within the right-of-way. While mitigation of the archaeological content of these sites would be performed, it is likely the sites will be destroyed.
- Degradation and inappropriate use of cultural features which are important to the Native Peoples of the area.
- The Tribes have expressed a concern for both known and unknown Native American burial sites located within the area and for plant resources in the upland portions of the rim and would like these burial sites and plants protected.

Greaser Petroglyph National Register Site

This site is a large boulder located on the eastern side of Warner Valley. Petroglyphs and some pictographs have been created on the surface of the rock. These ancient designs are estimated to date between 500 and 6,500 years old.

Management concerns for Greaser Petroglyph Site are:

- In the past, vandals have attempted to remove those portions of the boulder containing designs.
- The rock has been vandalized (there are scratches on its surface).
- The boulder is fractured and portions of it have fallen away or have been removed from the site.

Picture Rock Pass National Register Petroglyph Site

This is a series of boulders in the pass that contain rock art. In addition, other cultural sites, such as lithic scatters and campsites, are present in the area. The designs on the boulders are estimated to date from 500 to 1,500 years in age.

Management concerns for the Picture Rock Pass area are:

- The rock art at the site has been subjected to some vandalism.
- Digging, in what can only be assumed to be an attempt to look for buried artifacts, has occurred in the area of the boulder containing the rock art.
- Some New Age rock art has been placed at the site.
- Tours of the area are encouraged by local businesses.

High Lakes Potential National Register and Traditional Cultural Property Area

The High Lakes Area contains one of the largest concentrations of rock art in North America, as well as lithic scatters (stone tool debris), village locations, temporary campsites, plant collecting/processing sites, burial sites, and rock quarries of archaeological value. The oldest dated rock art site in North America is located in this region. The area shows evidence of having been a major plant gathering and occupation region for more than 10,000 years. Plants which were gathered in the area in antiquity are still present in the area for collection by Northern Paiute. The Northern Paiute Tribes of the region have expressed great interest and concern for the proper management and use of the archaeological and plant resources of the area. The existing management framework plan identifies this area for special management. The High Lakes area is shown on Map SMA-4.

Management concerns for the High Lakes Area area:

- The protection of the rock art sites in the area.
- Site vandalism.
- Sites are being used in ways which conflict with Native American values. Examples are New Age

religious practices, modification with chalk for photos, building campfires against them, destruction of the sites by others who consider them to be devil worship, and non-Native use for financial gain.

- The commercial visitation of such sites may increase their rate of deterioration. Artifact collecting is a problem, up to and including the removal of the rock art with rock saws. Sites associated with rock art are being looted by digging.

- Concern has been expressed by the Tribal groups that competing use of the plant resources could lead to a reduction in plants, making traditional uses difficult.

Rahilly-Gravelly Potential Traditional Cultural Property Area

This is an area containing cultural resource sites. The Northern Paiute gather plants that are culturally important. This area is shown on Map SMA-4. Site types in the area include rock art, stone rings, lithic scatters, and hunting stations. Obsidian quarry areas are also found in the area. The location shows evidence of having been a focal point of plant collection and occupation for more than 8,000 years. Within this same area, yampa or epos, a root plant used for food, can be found and collected in abundance most years. This plant is important in the maintenance of Native American traditions.

Management concerns for the Rahilly-Gravelly Traditional Cultural Property Area are:

- Native Tribes have expressed concern that the quality of the plants around Rahilly-Gravelly be maintained or improved.

- Sites within the area are subject to illegal artifact collection.

- The rock art in the area is subject to vandalism and theft. In some locations, attempts have been made to remove the rock art.

- There is concern that competing uses for collection of the plants could become a problem.

Tucker Hill Traditional Cultural Property Area

The plants and features in the vicinity of Tucker Hill are critical for the continuation of the Northern Paiute's cultural practices. The area also contains numerous archaeological sites.

Management concerns for the Tucker Hill Traditional Cultural Property Area are:

- There has been mining in the north end of the Tucker Hill formation. Within the proposed area, mining is incompatible with the cultural values that need to be protected.

- Artifacts have been illegally removed from the area.

Table Rock Traditional Cultural Property Area

Through consultation with Tribal leaders, BLM has identified the area around Table Rock as significant to the Klamath Tribes (Map SMA-4). The location contains numerous archaeological materials as well as features of a cultural nature, which are important to the Klamath Tribes and the Northern Paiute. Some locations on the formation have been found to contain burials, making this formation a sensitive area for local Tribes.

Management concerns for the Table Rock Traditional Cultural Property Area are:

- The Table Rock area is one of the highest formations in the Christmas Valley/Fort Rock area. It has been used for many years as a communication site. A road and power line were constructed up the side of the formation in the early 1960s to provide access and power to the site. Construction of the original buildings and towers on the top reportedly destroyed a number of features. The site continues to be used for communications.

- On several occasions in recent years, additional structures and towers have been added to the location. These are considered additional impacts upon the cultural features of the area.

- The collection of artifacts and improper use of cultural features is aided by the presence of the road to the top of the formation.

Cultural Plant Species

Through treaties with the Federal government and regulatory acts signed over the past 30 years, Indian Nations have reserved rights and recognized interests to harvest a broad range of native plant species from

the public lands (USDI-BLM 1995g; Housley and Hanes 1998). Therefore, sustainable harvest levels of the various species is a management goal. Indian governments consider availability of these species a trust responsibility of the Federal government. Inadequate quantities can lead to substantial effects on community well-being, because numerous social activities center on the harvest, preparation, and consumption of the resources. Tribal contacts have stated that they presently have a small land base and must rely on public land resources for their needs. Continued access to public land is necessary for the continuance of Tribal culture (Jerofke, L., *personal communication*). The occurrence of culturally important plant species may be measured by the health of the plant communities in which they are found (Table 2-36). The BLM will retain confidentiality of specific Tribal plant use sites by analyzing the impacts of management actions on those broader plant communities.

Cultural Plant Ethno-Habitats

Cultural plants are defined as those plants important to Tribal groups, both past and present, for subsistence, economic, and ceremonial purposes. Ethno-habitats are plant habitats defined by Tribal people as having human importance. Various historical factors since European contact have affected the availability of cultural plants for Tribal use within the planning area. The invasion of noxious weeds; the exclusion of fire; and impacts from grazing, timber harvest, and road building; among other factors; have all contributed to declines and dislocations in many of the plant species important to Tribes within the interior Columbia Basin (Hanes, R., *personal communication*). There is great concern by Tribal peoples, anthropologists, botanists, and Federal land managers to protect the habitats where cultural plants are located.

Table 2-36 shows important cultural plants found in the planning area, and Table 2-37 shows ethno-habitats. Some areas have been identified, which have large populations or large number of species of cultural plants concentrated in relatively small areas. These areas have been proposed as ACEC's.

ICBEMP concludes that Tribal plants occurring in nonforested habitats are most at risk for decreases in habitat that may influence continued harvestability (Croft, L., and Helliwell, R., *personal communication*). Plants of considerable importance occur in the nonforested low sagebrush lithic soils habitat of BLM lands. Today, such plants as biscuit root (*Lomatium* species), wild onion (*Allium* species), bitterroot (*Lewisia rediviva*), yellow bell (*Fritilleria pudica*), balsamroot (*Balsamorhiza* species), and yampa or epos (*Perideridia* species) are important to the maintenance of indigenous cultures through ceremonies and other cultural activities. These plants were once critical to the very survival of the Tribe. In the spring, while Tribal people were at the root camps located on lithic soils, the women dug roots and gathered plants, and the men hunted greater sage-grouse hens and other game (Kelly 1932).

The ethno-habitat described as "wet meadows" is another plant community in need of special management. Camas (*Camassia quamash*), tobacco root (*Valeriana edulis*), bistort (*Polygonum bistoides*), and wapato (*Sagittaria latifolia*) are cultural plants of concern that grow in wet meadows. Historic livestock overgrazing has caused stream cutting and lowering of the water table, followed by loss of the plant habitat. Wapato in the Chewaucan wetlands was a major food source for Tribal people at the time of European contact. Today, much of the Chewaucan wetlands is under private ownership, and little wapato is found in the area because of habitat loss and lack of water. The marsh has been channelized, drained, and is managed for hay production.

Paleontological Resources (Prehistory)

Paleontological resources consist of the fossil remains of plants and animals. These animals and plants may be either extinct or extant today in the resource area or elsewhere. Within the resource area, there are several areas which are known to contain plant and animal fossil remains.

Fossil Lake

Fossil Lake, in northern Lake County, is currently part of a larger RNA/ACEC area known as the Fossil Lake/ Sand Dunes/Lost Forest RNA/ACEC. This ACEC was created to protect fragile and rare fossils, manage the Sand Dunes of the area, and protect an isolated island of ponderosa pine or disjunct forest. Considerable research, starting with Smithsonian work in the late 1800s, has been conducted within the Fossil Lake portion of the ACEC. Each year for the past 12 years, the BLM has worked cooperatively with the South Dakota School of Mines to conduct paleontological research and salvage fossils in the area. A large collection of materials resulting from this work is housed cooperatively at the South Dakota School of Mines in Rapid City, South Dakota. It is maintained, curated, and made available for study. Other collections are located at the Smithsonian and University of

Table 2-36.—*Native American cultural plants of the planning area*

Common name	Scientific name	Habitat
balsamroot	*Balsamorhiza* spp.	Dry hillsides
biscuit root	*Lomatium* spp.	Lithic soils
bitterroot	*Lewisia rediviva*	Lithic soils
camas	*Camassia quamash*	Wet meadow
cattail/tule	*Typha* species/*Scirpus* spp.	Marsh wetlands
chokecherry	*Prunus* spp.	Riparian
cow parsnip	*Heracleum lanatum*	Moist meadows, woodland edges
currant/gooseberry	*Ribes* spp.	Riparian, meadow edges, talus
coyote tobacco	*Nicotiana attenuata*	Disturbed areas (after fire)
dogbane (Indian hemp)	*Apocynum cannabinum*	Wet hillsides, riparian
elderberry	*Sambucus* spp.	Riparian
huckleberry	*Vaccinium* spp.	Forested areas (pines/mixed conifers)
hyacinth	*Brodiaea hyacinthina (*syn. *Triteleia hyacinthina*)	Open grasslands to rocky open flats
juniper	*Juniperus occidentalis*	Hillsides, ridges, riparian
red-osier dogwood	*Cornus stolonifera*	Riparian
sedge	*Carex* spp.	Wet meadows, riparian
sego or mariposa lily	*Calochortus* spp.	Sagebrush community, dry, open slopes/flats
serviceberry	*Amelanchier alnifolia*	Riparian
tobacco root	*Valeriana edulis*	Wet meadows
wapato (arrowhead)	*Sagitarria* spp.	Ponds, lakeshore, wet marsh
western spring beauty	*Claytonia lanceolata*	Wet woodlands, meadows
wild onion	*Allium* spp.	Dry hillsides; plains
willow	*Salix* spp.	Riparian
wocas, water lily	*Nuphar polysepalum*	Lakes, wetlands
yampah, epos	*Perideridia* spp.	Lithic soils
yellowbell	*Fritillaria pudica*	Lithic soils

Source: Housley and Hanes (1998).

California at Los Angeles.

Fossil Lake is a small, dry lakebed in the approximate center of a large fossil-bearing deposit located in the Christmas Valley/Fort Rock Basin. The area covers nearly 10,000 acres of known fossil-bearing deposits. The full extent of the remains has not been determined. The fossil deposits are of the Holocene Epic, ranging from about 50,000 to 8,000 years before the present. The fossils overlap to some extent with cultural deposits of the 12,000-to-8,000-year before present period. There is some indication of hunting in this area during this time period. It is also possible that there was hunting of now-extinct game such as mammoth, sloth, camel, and bison. The area is extremely rich in mammal, bird, and fish fossils. It has been determined that there are several rock layers, each of which represents a different time period and each containing a different assortment of fauna. Fossil Lake is the type site (first location found) for many North American Holocene Age (recent) fossils. It is reported to be the richest site for fossils from this era outside of the La Brea Tar Pits in California.

Fossil Lake is an actively eroding basin. Because the sediments are mostly volcanic in nature and are loose and unconsolidated, they erode easily. Wind storms sweep the basin and remove large amounts of sediment and carry it away. Some of this material is deposited in the active sand dunes ot the east, which are a part of the ACEC. Because of this erosion, new fossils are exposed on the surface each year. Often these remains are still partly articulated (segmented). If they are not collected, these remains become weathered and scattered, causing them to lose much of their scientific interest.

To help protect the fossils, which are extremely fragile

Table 2-37.—*Cultural plant ecological groupings (ethno-habitats)*

1) Lithic soils [1]	*Artemisia rigida, A. arbuscula*, geophytes (lomatium, bitterroot)
2) Wet meadows [1]	Camas, bistort, sedge, tobacco root
3) Riparian areas [1]	Willow, redosier dogwood, currant, rose
4) Marsh/ponds [1]	Palustrine: sedges, rushes, tule, wapato; lacustrine: wocas
5) Sand dunes	Indian ricegrass, other grasses
6) Sagebrush	With bunchgrasses; with mountain mahogany
7) Woodlands	Juniper with bitterbrush, sagebrush, manzanita, quaking aspen, grasses, Ponderosa pine
8) Colluvium, alluvium, tallus slopes	*Ribes* spp., serviceberry
9) Desert saltbrush	*Atriplex* spp., *Sarcobatus vermiculatus*
10) Saltflats/playas	Waada, saltgrasses
11) Dry meadows	Grasses, surrounding shrubs
12) Vernal pools	Onions, camas
13) Disturbed areas (road sides, flooded areas, landslides)	Weedy species

[1] Plant communities "at risk" with decreases in area size.
Source: USDI-BLM (1995g)

when exposed on the surface, an area of 6,660 acres was closed to off-highway vehicle (OHV) use in the early 1970s. Livestock were removed from the area, and it is now fenced to prevent vehicle and livestock entry. Currently, only foot traffic is allowed within the closure area.

Management concerns for Fossil Lake are:

- The deposits are subjected each year to heavy erosion. This causes the fossils to be exposed on the surface of the ground, where they are weathered and scattered, causing a loss of their scientific value.

- The area of the deposits is not fully included in the area of vehicular and livestock closure. Large areas of significant fossils can be found within the area to the east in the sand dunes. These areas are open to use by dune buggies and other OHV's, which destroy fragile fossils (such as articulated fish fossils).

- The area is also subjected to illegal fossil collecting by collectors and commercial vendors.

Simontacchi Camel Location

This location was discovered in 1997 by the BLM and reported to the paleontological community for study. Since that time, it has been examined by the South Dakota School of Mines paleontologists. This location contains large amounts of camel and other vertebrate fauna. It is important because of the large number of camel remains present in the deposits. This location, in loose, ashy deposits, is a series of small knolls with draws between them. Fossils have been and are continuing to be exposed on the surface by both wind and water erosion. Once exposed on the surface, these fossils are subject to weathering and scattering by erosional forces.

Management concern for the Simontacchi Camel location is:

- There is a need for the continued collection of exposed remains. Currently, the South Dakota School of Mines devotes only 1 or 2 days per year to collecting and curating fossils from this location. This work is not adequate to properly find, collect, and curate the fossils eroding from the deposits. Collections could be made more frequently and for a longer period for each gathering than is currently being done.

Rattlesnake Butte Formations

The Rattlesnake Butte Formations, located within the Beaty Butte region of the LRA, were identified by the USGS. Their full extent and faunal content have not been determined. The fossil deposits are a tan/brown volcanic tuff, which is exposed in many locations throughout the region. Fossils here are of the Miocene age, estimated by some scientists to date from 5 million

to 23 million years in age. Remains include rhinoceros, elephant, horse, camel, and a wide range of other vertebrate fauna. Since the geologic deposits which contain the fossils are relatively compact and hard, erosion bringing the fossils to the surface is slow. In addition, the deposits are exposed in vertical rather than horizontal faces, making the amount of material exposed at any particular time relatively small.

Management concerns for Rattlesnake Butte Formations are:

- This location should be surveyed further to determine the full extent of the fossils within the area.
- Collections should be made of the exposed fossils and they should be properly curated for study and use by the public.

Historical Resources

Within the LRA, many locations contain remains from Lake County's history. On scattered locations, the remains of old line shacks that served as shelters for cattlemen and sheep herders can be found. These are usually one-room board and batten structures of simple construction. Most have fallen down and remain only as piles of weathered boards, nails, and broken glass. Within the Fort Rock/Christmas Valley area, nearly all of the old homesteads, towns, and businesses are gone. Other historic sites include the remains of historic roads and trails, Civilian Conservation Corps camps and project locations, abandoned mines and mine processing locations, ranch houses, corrals, cemeteries, and abandoned logging/sawmill locations.

Historical Resources in Need of Special Management

Shirk Ranch Property

The Shirk Ranch is located in the northwest portion of the Guano Valley. The complex consists of the main ranch house, a yard, a fence around the house, a well, well house, and water tower, two root cellars, an outhouse, two bunk houses, an old corral, an old barn location, an old house foundation, a burned building foundation and chimney, a blacksmith shop, a chicken coop, a cemetery, and other ranch features in the fields and ditches of the property.

The Shirk Ranch, which was built in the late 1800s, is important in regional history. It has been determined to be one of the finest extant examples of High Desert ranching in existence. It is a destination for many history buffs in the region. It is eligible for inclusion in the NRHP.

Management concerns about the Shirk Ranch Complex are:

- Because of neglect, the standing buildings and features of the Shirk Ranch are in need of immediate stabilization and repair.
- If a fire burns through the area, the buildings at the ranch would be subject to destruction because of the brush and grass surrounding them.
- Vandalism of the buildings is becoming a problem and artifacts from the property are being stolen at an increasing rate.
- Plans are being developed for the proper stabilization, use, and maintenance of the site.

Oregon Central Military Road

The Oregon Central Military Road, which crosses much of the southern portion of the district, has several areas where features of the road exist in original condition. The road was built from Eugene, Oregon, to Fort Boise, Idaho, to move troops and supplies. Of the portions of the road which are in original condition (including ruts in rocks), the Stone Bridge in the Narrows between Crump and Hart Lakes and the unbladed portion are of national significance.

Management concern about the Oregon Central Military Road is:

- Those portions of the road which are in original condition should be protected from vehicle traffic and artifact collection.

Human Uses and Values

Introduction

The LRA encompasses most of Lake County and a portion of Harney County. A small portion of Washoe County in Nevada is included in the area covered by the RMP. To effectively compile an economic profile of the planning area, Lake and Harney Counties were selected as the analysis unit.

The primary economic center of Lake County is the town of Lakeview. Lakeview is the county seat and the

location of many Federal, State, and local government offices. Most basic goods and services are available in Lakeview. The area is also strongly tied to the city of Klamath Falls, located 95 miles west of Lakeview in Klamath County. A greater diversity of firms and most specialty services are available in Klamath Falls.

The major economic center of Harney County is the Burns/Hines area. These communities are located approximately 50 miles northeast of the planning area boundary. Other regional business centers include Medford and Ashland in Josephine County, Bend in Deschutes County, Portland, and Reno.

The nearest community with commercial air service is Klamath Falls. Lakeview is served by a rail spur line that links to Alturas, California. The nearest Amtrak service is in Klamath Falls. A small, commercial van line operates between Lakeview and Klamath Falls.

Several smaller communities are located within the RMP area. Paisley is an incorporated community, while Adel, Christmas Valley, Summer Lake, Fort Rock, and Silver Lake are unincorporated communities in Lake County. These smaller communities generally have very limited services for residents and visitors: fuel, a campground, a motel or resort, a small store, a restaurant, and one or two churches.

Summary of ICBEMP Economic Findings

ICBEMP examined the Lake and Harney County areas generally and the communities of Lakeview, Paisley, Burns, and Hines specifically. The smaller, unincorporated communities of Adel, Christmas Valley, Summer Lake, Fort Rock, Silver Lake, and Blitzen were not examined. Lake County is located in the Bend/Redmond trade center. USFS lands are 19.3 percent of the land base and BLM, 48.7 percent. These public lands offer primarily roaded natural and primitive/semiprimitive recreational settings, but visitation is low. Harney County is located in the Boise trade center. USFS lands are 8 percent of the land base in Harney County, and BLM lands (including lands in the Burns District) represent 62 percent of the land base. These public lands offer primarily roaded natural and primitive/semiprimitive recreational settings, but visitation is low (USDA-FS and USDI-BLM 1997).

The ICBEMP concluded that Lake County and Harney County are areas of low economic and social resiliency (USDA-FS and USDI-BLM 1997). This determination is based on their dependence on public land timber and forage and the fact that 20 percent of the Lake County budget and 21.3 percent of the Harney County budget are derived from Federal land payments.

Lakeview, Paisley, Burns, and Hines are analyzed in "Economic and Social Conditions of Communities: Economic and Social Characteristics of Interior Columbia Basin Communities and an Estimation of Effects on Communities from the Alternatives of the Eastside and Upper Columbia River Basin Draft Environmental Impact Statements" (Reyna 1998). This document identifies Lakeview as an isolated trade center with medium timber employment specialization and high government employment specialization. Paisley is determined to have very high agricultural employment specialization, low timber employment specialization, and low government employment specialization. Burns is determined to have high timber employment specialization and medium agricultural employment specialization. Hines is determined to have very high timber employment specialization and high agricultural employment specialization (Reyna 1998).

Population, Age Distribution, and Ethnicity

Lake and Harney Counties are among Oregon's least populated counties. Except for Lakeview and the Burns/Hines area, the two counties are primarily rural in character. Table 2-38 displays the census population in 1980, 1990, and 2000 for Lake County, Lakeview, and Paisley, and for Harney County, Burns, and Hines.

Lake County has a relatively high percentage of population ages 65 or older. Estimates for 1997 were 1,211 or 16.4 percent of the population. There were an estimated 1,912 people in the under-18 age group (25.8 percent) and 4,277 in the 18–64 age group (57.8 percent). Harney County has a relatively high percentage of population ages 65 or older. Estimates for 1997 were 1,121 or 14.9 percent of the population. There were an estimated 1,881 in the under-18 age group (25.1 percent) and 4,498 in the 18–64 age group (60 percent). Age distribution for the State in 1997 was as follows: 0–17 is 25.6 percent of the population; 18–64, is 60.8 percent; and 65+ is 13.6 percent (Wineburg 1998). Information on age distribution and immigration suggests that Lake and Harney Counties are not attracting large numbers of retirees.

Lake and Harney Counties have limited ethnic diversity. Native Americans are represented at a rate greater than statewide in Lake County. They are also a measurable ethnic group in Harney County. Persons of Hispanic heritage (any race) are also well represented, but at rates less than statewide—in Lake and Harney Counties at 3.8 and 3.1 percent of the population, respectively (Frewing-Runyon 1999).

Table 2-38.—*Census population*

Locality	Census 1980	1990	2000
Oregon	2,633,156	2,842,321	3,421,399
Lake County	7,532	7,186	7,422
Lakeview	2,770	2,526	2,474
Paisley	343	350	247
Unincorporated	4,419	4,310	4,701
Harney County	8,314	7,060	7,609
Burns	3,579	2,913	3,064
Hines	1,632	1,452	1,623
Unincorporated	3,103	2,695	2,922

Source: Edmunston (1998), Edmunston (2001), and Wineburg (1998).

Native American residents may participate in unique cultural practices associated with reserved treaty rights. Activities may include fishing, hunting, and gathering plant materials for food or ceremonial purposes. No reservation lands are located in Lake County, but the Klamath Tribe has reserved rights in the area (Cannon, B., *personal communication*). The Burns Paiute Tribe has a small reservation in Harney County, located near Burns. The Tribe was established by Executive order instead of by treaty and has no reserved treaty rights (Hanes, R., *personal communication*).

Agricultural activities in the two counties are not considered highly labor-intensive and are limited primarily to production of hay, forage, and livestock.

In some areas, collection of special forest products is closely associated with Hispanic and/or Asian ethnic groups. This type of activity occurs on forested lands in Lake and Harney Counties (Cannon, B., *personal communication*). The majority of these lands are managed by the Fremont, Deschutes, Ochoco, and Malheur National Forests.

No other ethnic groups in Lake or Harney Counties are known to be associated with public land resources through unique cultural, historical, or employment practices. Table 2-40 displays ethnic distribution for the United States, Oregon, and Lake and Harney Counties, and postal ZIP code areas within Lake and Harney Counties.

Employment and Wages

Lake County

In 2000, an estimated 3,070 people were working in Lake County. This included almost 800 self-employed persons. Wage and salary workers were more common, totaling 2,290. The lumber and wood product industry was the dominant manufacturing employer, with all but 10 of the 310 manufacturing employees. Lumber and wood products employment peaked in 1994 at 600, then abruptly declined to 250 in 1998 before beginning the current upward trend.

In 2000, Federal, State, and local governments employed 930 people—the greatest number of people employed by any sector. However, since 1992, government employment has decreased by 11.4 percent (State of Oregon, Employment Department, various years). During the fiscal year 1995, employment by Federal natural resource agencies in Lake County was as follows: BLM, 59; USFS, 165 (Renya 1998).

The trade sector employed 570 people in 2000, an increase of 16.3 percent since 1990. The services sector employed 260 people in 2000, an increase of 30.0 percent since 1990. Growth in the trade and services sectors during this period has been very slow when compared to the statewide trend: trade is up 25.8 percent, and services are up 48.1 percent. Overall, Lake County has been experiencing shrinking employment. The civilian labor force has decreased 12.9 percent, and wage and salary employment is down 6.5 percent since 1990 (State of Oregon, Employment Department, various years). Unemployment has also been increasing since 1990.

Table 2-39.—*Gross farm sales in thousands ($)*

	1990	1991	1992	1993	1994	1995	1996	1997	1998
Oregon									
Grains	184,283	191,126	210,931	239,702	260,758	333,769	310,659	267,537	184,018
Hays and forage	97,983	92,156	85,833	110,251	115,493	128,372	148,737	189,826	150,972
Grass and legume seeds	216,162	210,874	191,122	201,315	222,483	239,808	316,973	343,191	342,763
Field crops	222,967	197,731	208,242	225,323	239,123	275,317	274,089	260,147	231,685
Tree fruits and nuts	140,312	157,121	175,322	141,806	146,116	167,501	164,291	235,243	193,324
Small fruits and berries	71,910	79,807	85,781	72,252	97,150	83,741	98,915	90,030	86,904
Vegetable crops	211,081	224,701	230,620	263,782	267,201	244,466	263,602	263,463	288,062
Specialty crops	604,362	607,303	765,883	90,938	892,237	940,294	869,656	939,673	930,258
Subtotal of all crops	1,749,060	1,760,819	1,953,734	1,345,369	2,240,561	2,413,268	2,446,922	2,589,110	2,407,986
Cattle and calves	415,652	413,583	400,938	410,602	376,683	340,293	252,141	342,835	389,160
Dairy products	214,422	205,196	226,898	214,577	218,897	216,589	237,009	218,073	245,454
Eggs and poultry	100,619	94,403	100,866	81,334	79,270	81,800	86,029	81,704	88,689
Miscellaneous animal products	87,394	85,443	75,678	83,923	82,428	89,119	75,218	75,284	74,937
Subtotal of all animal products	818,087	798,625	804,380	790,436	757,278	727,801	650,397	717,896	798,240
Total gross agriculture sales	2,567,147	2,559,444	2,758,114	2,135,805	2,997,839	3,141,069	3,097,319	3,307,006	3,206,226
Lake County	1990	1991	1992	1993	1994	1995	1996	1997	1998
Grains	545	374	492	430	821	795	925	259	348
Hays and forage	11,740	10,001	9,253	15,491	17,720	16,494	19,532	29,530	16,968
Grass and legume seeds	0	0	0	0	0	0	0	0	0
Field crops	261	345	348	40	40	30	10	15	396
Tree fruits and nuts	0	0	0	0	0	0	0	0	0
Small fruits and berries	0	0	0	0	0	0	0	0	0
Vegetable crops	0	0	0	0	0	0	0	0	0
Specialty crops	539	523	3,777	4,935	2,329	2,200	2,729	2,732	2,625
Subtotal of all crops	13,085	11,243	13,870	20,896	20,910	19,519	23,196	32,536	20,337
Cattle and calves	28,732	23,860	18,274	19,560	18,361	15,879	14,688	21,265	20,881
Dairy products	0	0	0	0	0	0	0	0	0
Eggs and poultry	0	0	0	0	0	0	0	0	0
Miscellaneous animal products	654	732	879	660	602	617	580	604	588
Subtotal of all animal products	29,386	24,592	19,153	20,220	18,963	16,496	15,268	21,869	21,469
Total gross agriculture sales	42,471	35,835	33,023	41,116	39,873	36,015	38,464	54,405	41,806
Harney County	1990	1991	1992	1993	1994	1995	1996	1997	1998
Grains	147	217	399	307	451	560	670	216	217
Hays and forage	3,067	3,265	3,518	4,356	5,182	5,242	6,371	9,098	10,356
Grass and legume seeds	68	66	35	46	46	46	46	46	51
Field crops	0	0	0	0	0	0	0	0	0
Tree fruits and nuts	0	0	0	0	0	0	0	0	0
Small fruits and berries	0	0	0	0	0	0	0	0	0
Vegetable crops	0	0	0	0	0	0	0	0	0
Specialty crops	331	625	399	1,075	1,957	2,275	2,664	2,209	2,209

	1990	1991	1992	1993	1994	1995	1996	1997	1998
Subtotal of all crops	3,613	4,173	4,351	5,784	7,636	8,123	9,751	11,569	12,833
Cattle and calves	28,500	27,341	26,909	24,537	22,550	19,821	19,786	26,376	23,018
Dairy products	0	0	0	0	0	0	0	83	82
Eggs and poultry	0	0	0	0	0	0	0	0	0
Miscellaneous animal products	548	541	630	731	764	813	730	876	908
Subtotal of all animal products	29,048	27,882	27,539	25,268	23,314	20,634	20,516	27,335	24,008
Total gross agriculture sales	32,661	32,055	31,890	31,034	30,950	28,757	30,267	38,904	36,841

Source: Oregon State University Extension Service, various annual reports.

Table 2-40.—*Ethnic distribution, 1990 census*

	White	Black	Native American	Asian or Pacific Islander	Other	Hispanic (any race)
United States	80.3	12.1	0.8	2.9	3.9	9.0
Oregon	92.8	1.6	1.4	2.4	1.8	4.0
Lake County	95.0	0.1	2.8	0.6	1.6	3.8
Adel	91.1	0.0	0.0	0.0	8.9	12.0
Fort Rock	100.0	0.0	0.0	0.0	0.0	0.0
Lakeview	94.4	0.3	1.6	1.1	2.6	4.1
Paisley	97.3	0.0	2.4	0.0	0.3	1.6
Plush	100.0	0.0	0.0	0.0	0.0	0.0
Silver Lake	96.3	0.0	1.1	2.2	0.4	2.7
Harney County	94.8	0.0	3.7	0.6	0.9	3.1
Burns/Hines	93.7	0.1	4.0	0.8	1.4	3.4
Crane	100.0	0.0	0.0	0.0	0.0	0.0
Drewsey	100.0	0.0	0.0	0.0	0.0	0.0
Lawen	98.4	0.0	1.6	0.0	0.0	2.8
Riley	98.7	0.0	0.0	1.3	0.0	0.0

Source: U.S. Department of Commerce (1999), and Frewing-Runyon (1999).

Harney County

In 2000, an estimated 3,600 people were working in Harney County. This included 820 self-employed persons. Wage and salary workers were more common, totaling 2,780. Major manufacturing employers, SMC and Louisiana Pacific, are located in the Burns/Hines area, outside the planning area. Manufacturing employed 490 people in Harney County (State of Oregon, Employment Department, various years).

Federal, State, and local governments employed the greatest number of people at 1,090 (State of Oregon, Employment Department, various years). During the 1995 fiscal year, employment by Federal natural resource agencies in Harney County was as follows: BLM, 60; USFS, 74 (Renya 1998).

The trade sector employed 570 people, up 16.3 percent from 1990 figures. The services sector employed 400 people in 2000, up 33.3 percent since 1990. However, growth in the trade and services sectors has been below

the statewide trends: trade is up 25.8 percent, and services are up 48.1 percent. Overall, Harney County has been experiencing growing employment. Unemployment has also been decreasing since 1996 (State of Oregon, Employment Department, various years).

Table 2-41 displays detailed employment information for Oregon and Lake and Harney Counties since 1970.

Per Capita Income and Poverty Rates

Lake County

Per capita personal income of $20,285 in 1999 was significantly below Oregon's statewide level of $26,958. Lake County also has a higher portion of income derived from transfer payments (22.5 percent) than the state as a whole (13.5 percent). Transfer payments include Social Security payments, Aid to Families with Dependent Children, unemployment compensation, disability payments, and other government payments. Typically, transfer payments are a major source of income for retirees and low-income people. The percent of income derived from dividends, interest, and rent in Lake County (25.5 percent) was similar to statewide figures (22.5 percent). This income represents returns on accumulated assets held by individuals and is often a large portion of income for the self-employed and retirees. Earned income, typically wages and salaries, was 52.0 percent of income in Lake County, significantly below the statewide 64.0 percent. Just as Federal, State, and local government is the dominant employer in Lake County, it is also the dominant provider of earned income at 45.3 percent (23.6 percent of all income). Statewide, Federal, State, and local government employment provides 17.6 percent of earned income, 11.2 percent of all income (U.S. Department of Commerce Bureau of Economic Analysis 2001).

Harney County

Per capita personal income of $21,173 was significantly below Oregon's statewide level of $26,958 in 2001. Harney County also has a higher portion of income derived from transfer payments (19.5 percent) than the state as a whole (13.5 percent). Total income derived from dividends, interest, and rent in Harney County (22.0 percent) was similar to the same kind of income statewide (22.5 percent). This income represents returns on accumulated assets held by individuals and is often a large portion of income for the self-employed and retirees. Earned income, typically wages and salaries, was 58.5 percent of income in Harney County, significantly below the statewide proportion of 64.0 percent (U.S. Department of Commerce Bureau of Economic Analysis 2001).

The poverty rate estimate for 1998 was 17.2 percent for Lake County. This compares to 12.1 percent for the State of Oregon. The poverty rate estimate for Harney County was 15.6 percent (U.S. Department of Commerce 2001). This statistic indicates that a higher proportion of people whose incomes are very low live in Lake and Harney Counties.

Revenue Sharing

BLM and USFS lands represent 69 percent of the land base in Lake County (USDI-FS and USDI-BLM 1997). Federal lands are not subject to state or local property taxes. In recognition of the state and county services that are provided (roads, emergency services, and law enforcement), Congress passed legislation in 1976 to provide Payments-in-Lieu-of-Taxes to all states and counties where public lands are located. The BLM is currently charged with making these payments on behalf of itself and other Federal agencies. Revenue is distributed using a complex formula based on acres of Federal land, population, and the total of the previous years' revenue sharing from resource-use collections (timber, range, mining, and so forth). Previous years' payments are shown in Table 2-42.

Local Economic Activity Generated by Public Land Resources

Introduction

The BLM and other Federal land management agencies often make commodities available for use by the private sector. Both the BLM and USFS make rangelands available to private ranchers for livestock grazing on a renewable permit basis. A fee is collected for each grazing head of livestock. Similarly, the BLM and USFS sell timber to private firms. In the planning area, however, the BLM manages no forested land for commercial harvest (see Table 2-43).

Agriculture and Livestock Grazing

Because of a cold, dry climate and short growing season (Sunset Publishing Corporation 1995), the agricultural industry centers on just a few products. The most common is the raising of cattle and calves for beef. In 1996, an estimated 86,690 head of cattle and calves were in Lake County, and an estimated 124,960 head of cattle and calves were in Harney County (Oregon State University 1997). Within the study area,

Table 2-41.—*Employment by sector: Statewide; Lake and Harney Counties; 1970–2000*

Sector	1970	1980	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Oregon													
Civilian labor force	864,500	1,295,000	1,491,000	1,508,000	154,200	1,596,000	1,640,000	1,652,700	1,719,700	1,727,600	1,763,700	1,761,100	1,802,900
Unemployment	61,700	107,000	82,000	90,000	116,000	116,000	89,000	80,100	101,600	100,700	98,600	100,400	87,500
Total wage and salary employment	709,200	1,044,600	1,251,900	1,250,800	1,274,200	1,308,400	1,362,900	1,418,400	1,474,600	1,526,400	1,551,800	1,575,100	1,603,300
Total manufacturing	172,300	215,100	220,300	211,700	209,000	211,700	221,300	229,300	235,800	243,600	246,100	242,200	243,000
Lumber, wood, and paper products	76,200	79,900	73,200	65,800	63,800	62,700	63,300	61,300	59,800	60,200	59,000	57,800	56,900
Other manufacturing	96,100	135,200	147,100	145,900	145,200	149,000	158,000	168,000	176,000	183,400	187,100	184,400	186,100
Total nonmanufacturing	536,900	829,500	1,031,600	1,039,000	1,065,200	1,096,700	1,141,600	1,189,100	1,238,900	1,282,800	1,305,700	1,332,800	1,360,300
Construction and mining	30,800	48,800	54,000	53,000	52,000	55,700	62,900	70,400	79,400	83,300	83,400	85,200	87,600
Transportation, communications, and utilities	48,700	60,500	64,500	65,200	65,700	66,800	68,900	71,300	73,500	74,900	76,200	77,800	79,900
Trade	162,000	255,600	313,100	314,300	318,700	328,900	344,100	357,000	365,900	377,500	383,400	388,000	394,000
Finance, insurance, and real estate	36,000	70,000	80,300	83,200	86,000	84,600	87,800	87,200	91,000	94,800	95,200	95,100	94,000
Services and miscellaneous	112,700	191,400	296,200	296,900	311,800	328,300	343,200	362,900	382,600	402,800	412,100	425,600	438,800
Government	146,700	203,200	223,500	226,400	231,000	232,600	234,700	240,200	246,600	249,500	255,300	261,300	266,000
Lake County													
Civilian labor force	2,790	3,600	3,890	3,840	3,750	3,850	3,940	3,710	3,890	3,760	3,460	3,350	3,390
Unemployment	260	390	370	310	330	370	330	320	460	440	410	340	320
Total wage and salary employment	1,840	2,430	2,310	2,340	2,410	2,460	2,520	2,470	2,440	2,330	2,160	2,170	2,290
Total manufacturing	410	450	410	410	470	550	610	510	440	390	280	300	310
Lumber and wood products	380	420	400	400	460	540	600	500	430	380	250	290	310
Other manufacturing	30	30	10	10	10	10	10	10	10	10	10	10	10
Total nonmanufacturing	1,430	1,980	1,900	1,930	1,940	1,910	1,900	1,960	2,000	1,950	1,900	1,870	1,980
Construction and mining	20	80	70	80	70	50	60	70	70	70	80	70	80
Transportation, communications, & utilities	120	70	70	70	60	60	50	50	50	50	50	50	60
Trade	330	470	490	500	500	490	550	550	550	540	520	510	570
Finance, insurance, and real estate	80	70	50	50	50	50	50	60	50	70	70	70	70
Services and miscellaneous	200	210	200	200	220	230	240	280	320	300	240	240	260
Government	680	1,080	1,010	1,030	1,050	1,030	950	960	980	920	930	930	930

Sector	1970	1980	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Harney County													
Civilian labor force	3,210	4,120	4,100	4,080	3,650	3,800	3,770	3,550	3,760	3,760	3,990	4,030	3,980
Unemployment	190	900	370	310	360	460	380	400	490	370	300	310	380
Total wage and salary employment	2,150	2,280	2,430	2,440	2,410	2,460	2,440	2,310	2,400	2,570	2,800	2,950	2,780
Total manufacturing	700	350	570	540	480	480	470	310	330	420	550	590	490
Lumber and wood products	700	340	540	520	460	460	450	290	240	210	240	260	210
Other manufacturing	0	10	30	20	20	20	20	20	90	210	310	330	280
Total nonmanufacturing	1,450	1,930	1,860	1,900	1,930	1,980	1,980	2,000	2,070	2,150	2,260	2,360	2,290
Construction and mining	50	160	80	60	50	70	70	80	90	110	120	120	80
Transportation, communications, and utilities	100	90	90	90	90	90	80	90	90	80	80	80	80
Trade	390	510	490	470	470	470	510	510	510	560	570	600	570
Finance, insurance, and real estate	60	70	70	60	50	50	50	60	60	70	60	70	60
Services and miscellaneous	230	250	300	320	330	350	330	340	350	380	410	430	400
Government	620	840	830	900	950	940	930	930	960	960	1,010	1,060	1,090

Source: Oregon Employment Department, various years.

Table 2-42.—*Payments-in-Lieu-of-Taxes ($)*

Year	Lake County	Harney County
1990	328,000	328,000
1991	308,000	308,000
1992	308,000	308,000
1993	308,000	308,000
1994	308,000	308,000
1995	295,177	295,177
1996	324,916	324,916
1997	300,180	300,180
1998	297,381	297,381
1999	307,820	307,820
2000	324,916	324,916

Source: "BLM Facts," various years.

cow-calf livestock operations, which sell calves as the primary product, are more common than cow-yearling operations, which sell yearlings as the primary product. In 1998, Lake County ranchers sold an estimated $20,881,000 worth of cattle and calves or related beef products. Sales in Harney County totaled $23,018,000 (Oregon State Extension Service 1999). Several Lake County livestock operators feed cattle in feedlots during the winter and early spring; however, these lots are not considered finishing lots, and the majority of cattle are returned to pasture in the spring (Porath, M., *personal communication*).

In conjunction with the livestock industry, growing hay and forage is the second leading agricultural product in both Lake and Harney Counties, with estimated sales of $16,968,000 and $10,356,000, respectively, in 1998 (Oregon State Extension Service 1999). The sales figure does not include hay and forage grown by ranching operations to feed their own livestock; thus the total value of hay and forage grown is much higher.

Gross farm sales in Lake County totaled $41,806,000 in 1998, about 1.3 percent of all agricultural sales in Oregon. Gross farm sales in Harney County totaled $36,841,000 in 1998, about 1.1 percent of all agricultural sales in Oregon (Oregon State Extension Service 1999). Table 2-39 displays detailed information on gross farm sales by commodity for the State of Oregon and for Lake and Harney Counties since 1990.

The BLM collects grazing fees under two sections of the "Taylor Grazing Act" of 1934. Collections from section 15 leases are distributed as follows: 50 percent to the Range Improvement Fund for appropriation the following year, and 50 percent to the State of Oregon for subsequent distribution to the county of origin.

Collections from section 3 permits are distributed as follows: 50 percent to the Range Improvement Fund for appropriation the following year, 12.5 percent to the State of Oregon for subsequent distribution to the county of origin, and 37.5 percent to the Federal Treasury.

Recreation

Lake and Harney Counties have many beautiful locations for recreation opportunities. The tourism industry is small; however, for people seeking outdoor recreation and solitude, public lands in Lake and Harney Counties have a great deal to offer. A 1997 study prepared for the Oregon Tourism Commission estimated that travel-related spending in Lake County totaled $11,600,000 in 2000. Of this, an estimated $2,300,000 was associated with travelers staying in public campgrounds. In Harney County, travel-related spending totaled $18,000,000, with $2,800,000 attributed to travelers staying in public campgrounds. Lake County represents just under 2 percent of the $6.11 billion of travel-related spending in the State of Oregon. Harney County represents 3 percent of total travel expenditures in Oregon (Dean Runyan and Associates 2002). Table 2-44 displays estimated travel expenditures by sector for the State of Oregon and Lake and Harney Counties.

Lake County: There are 40 public campgrounds in the county: 34 are operated by the USFS, 2 by the BLM, 1 by the USFWS at Hart Mountain Refuge, and 2 by the State of Oregon (Lindaman, T., *personal communication*). Seven private campgrounds and RV parks are listed in the yellow pages. Eleven motels and two bed and breakfasts are also listed (CenturyTel of Eastern Oregon, Incorporated 1998).

Table 2-43.—*Timber harvest by ownership*

Year	Forest industry	Other private	Tribal lands	State	BLM	USFS	Other public	Totals
Lake County								
1984	14,292	273	0	0	0	108,131	0	122,696
1985	52,997	0	0	0	0	138,539	0	191,536
1986	25,562	71	0	0	0	190,092	0	215,725
1987	26,281	994	0	0	0	145,906	0	173,181
1988	13,790	2,029	0	0	0	103,673	0	119,492
1989	55,195	1,806	0	0	0	127,943	2,381	187,325
1990	33,634	2,522	0	6	0	72,600	0	108,762
1991	63,723	2,263	0	0	0	82,273	332	148,591
1992	67,562	14,868	0	0	0	62,983	0	145,413
1993	31,229	14,252	0	0	0	71,185	0	116,666
1994	26,506	5,748	0	0	0	41,789	0	74,043
1995	32,191	9,389	0	0	0	46,780	0	88,360
1996	31,816	3,982	0	0	0	16,890	0	52,688
1997	27,202	4,458	0	0	0	44,078	0	75,738
1998	25,280	1,732	0	0	0	22,930	0	49,942
Harney County								
1984	337	0	0	0	794	68,234	0	69,365
1985	1,807	980	0	0	0	88,495	0	91,282
1986	497	17,345	0	0	0	85,557	0	103,399
1987	410	18,412	0	0	0	91,072	0	109,894
1988	0	100	0	40	0	74,525	0	74,665
1989	14,983	539	0	0	0	62,215	0	77,737
1990	2,253	1,699	0	0	2,413	86,531	0	92,896
1991	1,165	2,474	0	0	1,834	131,995	0	137,468
1992	515	4,041	0	0	0	59,280	0	63,836
1993	0	3,677	0	0	0	42,073	0	45,750
1994	182	4,830	0	0	0	16,785	0	21,797
1995	41	5,335	0	0	300	20,141	0	25,817
1996	840	10,259	0	0	298	11,170	0	22,567
1997	701	1,691	0	0	0	11,116	0	13,508
1998	0	1,130	0	0	78	8,938	0	10,146

Source: State of Oregon, Department of Forestry, various annual reports.

Harney County: There are eight public campgrounds in the county. None of those are located in the RMP area. Two private campgrounds and RV parks are listed in the yellow pages. Thirteen motels and three bed and breakfasts are also listed. None are located within the planning area (CenturyTel of Oregon, Incorporated 1998).

Air Resources

Introduction

Congress passed the "Clean Air Act" (CAA) in 1967 and amended the Act in 1972, 1977, and 1990. This Act gives the State the responsibility for the administration and enforcement of air quality and visibility

Table 2-44.—*Travel spending in thousands ($) and employment generated, 2000*

	Oregon		Harney County		Lake County	
Category	Spending	Jobs generated	Spending	Jobs generated	Spending	Jobs generated
Accommodation	986,000	17,300	3,200	70	2,200	40
Eating, drinking	1,286,000	37,800	3,800	150	3,000	90
Food stores	453,000	3,100	2,100	20	2,000	10
Recreation	783,000	18,700	2,000	60	1,300	30
Retail sales	955,000	5,900	3,000	20	2,700	20
Ground transportation	1,015,000	5,400	3,800	20	400	0
Air transportation	591,000	4,300	0	0	0	0
Travel arrangement		2,800		0		0
Totals	6,069,000	95,300	17,900	340	11,600	190

standards. To meet these objectives, the State of Oregon has developed and administered the 2002 "State of Oregon Clean Air Implementation Plan" (Oregon Administrative Rules 340-200-0040). The plan specifies a 22 percent reduction in emission levels statewide from the baseline period of 1982–1984 by the end of year 2001, with a review in 1990 to determine whether "reasonable progress" has been made.

The 1987 "Oregon Smoke Management Plan" (Oregon Administrative Rules 629-043-0043), companion to the 2002 "State of Oregon Clean Air Implementation Plan" (Oregon Administrative Rules 340-200-0040), classifies certain areas as designated areas and smoke sensitive areas. The plan requires that prescribed burning, primarily slash burning, be done only when atmospheric conditions prevent smoke from deteriorating the air quality of these areas. However, the LRA is not included in the "Oregon Smoke Management Plan" but follows a local plan in conjunction with the other members of the South Central Oregon Fire Management Partnership, a proactive voluntary effort to manage smoke emissions.

Existing Conditions

Lakeview and much of northern Nevada are designated PM10 (particles with a diameter of 10 microns or less) nonattainment areas due to high emissions from wood burning in the winter months. This means that within these areas, the air has had concentrations of PM10 in excess of the "National Ambient Air Quality Standard". Although Lakeview has shown attainment for the past few years, it is still an area of concern and has not been formally redesignated as an attainment area. In 1995, the ODEQ submitted a PM10 control strategy to the Environmental Quality Commission for Lakeview that included revisions to the 1987 "Oregon Smoke Management Plan" (Oregon Administrative Rules 629-043-0043). The plan includes designating a 20-mile radius special protection zone around Lakeview to help mitigate potential smoke impacts from forest slash and prescribed burning. New air quality standards will regulate the concentrations of PM2.5 (particles with a diameter of 2.5 microns or less).

The South Central Oregon Fire Management Partnership has developed a smoke management plan to help limit smoke impacts into "designated areas" or "smoke sensitive areas." It was implemented and was effective during the 1999 spring burn season. An average of approximately 100 acres per year were burned from 1980 through 1983. Approximately 3,000 acres per year were burned from 1984 through 1998, and the LRA burned 17,500 acres in 1999. Smoke emissions from prescribed burning activities differ depending on the method used (broadcast burn or pile and burn); the grass, shrub, and tree species burned; the amount of fuel; the proportion of the fuel consumed by the fire; and weather conditions.

There is one nephelometer in the Lakeview area that is operated by the Town Hall for 6 months in the winter and then goes to the Oregon Department of Forestry weather office in Salem for 6 months during the fire season. Additionally, ODEQ is currently monitoring for PM10 and PM2.5 at three locations in Lakeview yearlong. Winter monitoring for PM10 varies from 1 in 3 to 1 in 6 days. PM2.5 is monitored daily in the winter months and 1 in 6 days during the summer. There are no other monitoring stations within the resource area.

In addition to adhering to seasonal and other timing restrictions imposed by the smoke management plan, the BLM reduced emissions from burning through

other means that include performing aggressive fire mop-up, increasing interagency coordination through the South Central Oregon Fire Management Partnership, cutting off or limiting new burning based on current or anticipated smoke accumulation and dispersion, using predictive forecasting to alert the partnership of stable air conditions, which in the past have led to dispersion and intrusion problems, and the monitoring by aircraft to track emissions from prescribed burning.

Fire and Fuels Management

The LRA fire management program focuses on wildland fire and prescribed fire. The wildland fire season generally runs from mid-May through mid-September. Prescribed fires are usually planned for periods before and after the wildland fire season, depending on weather conditions. The LRA averages about 65 wildland fires per year, encompassing approximately 21,000 acres per year (Table 2-45 and Figure 2-1). About 90 percent of the fires that occur are caused by lightning; 10 percent of the fires are caused by humans.

The 1998 "Lakeview District Fire Management Plan" (USDI-BLM 1998e) provides wildland fire management direction for specific geographic areas and outlines preferred suppression actions. The plan describes suppression action constraints (i.e., avoiding use of heavy equipment during initial attack) and defines the numbers of personnel and equipment required for efficient suppression actions (Map FM-1 of the Draft RMP/EIS). The plan also recognizes the natural role of fire in the ecosystem and the risks involved with reintroducing wildland fire.

The 1996 "Fort Rock Area Fire Management Plan" (USDI-BLM 1996g) provides direction for suppressing naturally-occurring fires only within the Fort Rock area. These naturally-occurring fires are monitored on a daily basis, and a suppression matrix is followed that is based on a least-cost-plus loss formula. These fires often extinguish naturally. The typical fire size that occurs in the Fort Rock Fire Management Area is less than one acre. The plan covers 343,000 acres or 10 percent of the total LRA in the northern portion of the LRA. Approximately 30 to 45 lightning ignitions are detected in this area each year. Table 2-46 shows the number of fires by size class for the past 20 years in this area.

The LRA's prescribed fire program, started in 1981, aims to reduce fuel loadings and restore the natural landscape. From 1981 to 1983, about 100 acres were burned each year. Since 1984, prescribed burns have averaged about 3,000 acres per year, depending on favorable burning conditions. In fall 1999, one exceptionally large prescribed burn covered more than 15,000 acres. Burns are conducted in sagebrush to reduce hazardous fuel loading, restore typical vegetation conditions to the landscape, and achieve desired vegetation characteristics.

Values at Risk

There are numerous risks involved with fire management activities; these risks are associated with wildland fire exclusion (no fires), with using prescribed fire, and with wildland fire suppression. Rangeland health, wildlife habitat, and air quality are the primary values at risk; grazing is the main commodity use at risk.

Light surface fires, whether prescribed or naturally-ignited, often benefit rangeland health and wildlife habitat. By contrast, high intensity fires may have negative short- and long-term impacts to rangelands and wildlife habitat.

Fire Exclusion

In the "Integrated Scientific Assessment for Ecosystem Management in the Interior Columbia Basin" (USDI-BLM 1996h), it is noted that the subbasins of southcentral Oregon, including Guano, Warner Lakes, Abert, and Summer Lake, have been significantly altered by grazing and fire exclusion. The risks of fire exclusion (no fires), although not immediately visible, become evident as time passes. Risks include habitat conversions from grasslands or shrub steppe to woodlands, and, over time, increased fuel loading. Changes in species and fuel loading alter the historical fire regime. For example, fire exclusion might allow juniper encroachment into sagebrush-steppe ecosystems, whereas periodic fires in sagebrush-steppe ecosystems would kill small juniper trees and allow regeneration of native grasses and forbs. These grasses and forbs would carry subsequent low-intensity fires.

Periodic natural fires have been absent for over a century. This has allowed juniper to spread from less fire-prone sites into sagebrush and riparian communities. The majority of today's juniper stands within the planning area are composed of trees less than 100 years old.

Prescribed Fire

BLM prescribed fire operations are carefully planned. LRA specialists give considerable thought to all

Table 2-45.—*Number of fires by size class on the Lakeview Resource Area (in acres)*

Year	0–0.24	0.25–9.9	10–99.9	100–299.9	300–999.9	1000–4999.9	5000 +
1980	48	3	4	0	0	0	0
1981	34	4	2	1	2	1	1
1982	15	7	0	1	0	0	0
1983	18	9	3	2	0	3	3
1984	35	3	10	1	0	6	6
1985	29	9	3	1	3	2	1
1986	54	5	8	5	1	1	3
1987	67	2	7	1	3	1	0
1988	50	3	4	0	0	1	0
1989	18	6	2	0	1	0	0
1990	45	19	1	2	0	0	0
1991	66	4	0	0	0	0	0
1992	159	12	4	1	2	1	0
1993	38	7	0	0	0	0	0
1994	57	7	2	0	0	1	0
1995	37	6	1	2	1	0	0
1996	67	22	4	2	3	0	0
1997	100	7	1	0	0	0	0
1998	30	5	7	0	1	0	0
1999	17	12	2	1	0	2	0
2000	9	4	1	1	0	1	2
Average	47	7	3	1	0.8	1	0.8

Table 2-46.—*Total number of fires by size class occurring in the Fort Rock Fire Management Area, 1980–2000*

	0–0.24	0.25–9.9	10–99.9	100–299.9	300–999.9	1000–4999.9	5000 +
Number of fires	310	26	8	2	3	3	1

possible effects of the fire. Regardless of the precautions taken, there are risks associated with prescribed fire. These risks include the fire escaping predetermined boundaries, fires burning more intensely than planned, or fires having unanticipated negative effects. For example, fires that exceed the holding capabilities of the operators can escape and burn private property or damage range improvements, such as fences. Prescribed fires may allow noxious weeds to invade a burned site. There are also air quality risks; however, these risks may be mitigated by prescribed burning during weather conditions that allow for good smoke dispersal. In spite of the risks, prescribed burning offsets risks associated with future wildland fires. Recent prescribed fire history is displayed on Map FM-2.

Mechanical, Chemical, and Biological Treatment

Mechanical, chemical, and biological agents are methods that may be used to treat vegetation and reduce fuel loadings. At the current time, mechanical treatment, used mainly in the woodland or timber types for fuels management, is the only one of the three methods used. The vegetation that is treated is determined by BLM resource specialists, so the risk of unwanted treatment area is much lower than with fire (for example, mosaics are easily created). Mechanical treatments that may be commonly used in woodlands/timberlands include chainsawing, shearing, chipping, mowing, etc. Mechanical treatments that may be used in shrublands include plowing, mowing, beating, etc. Opportunities that arise from the development of mechanical equipment may be utilized.

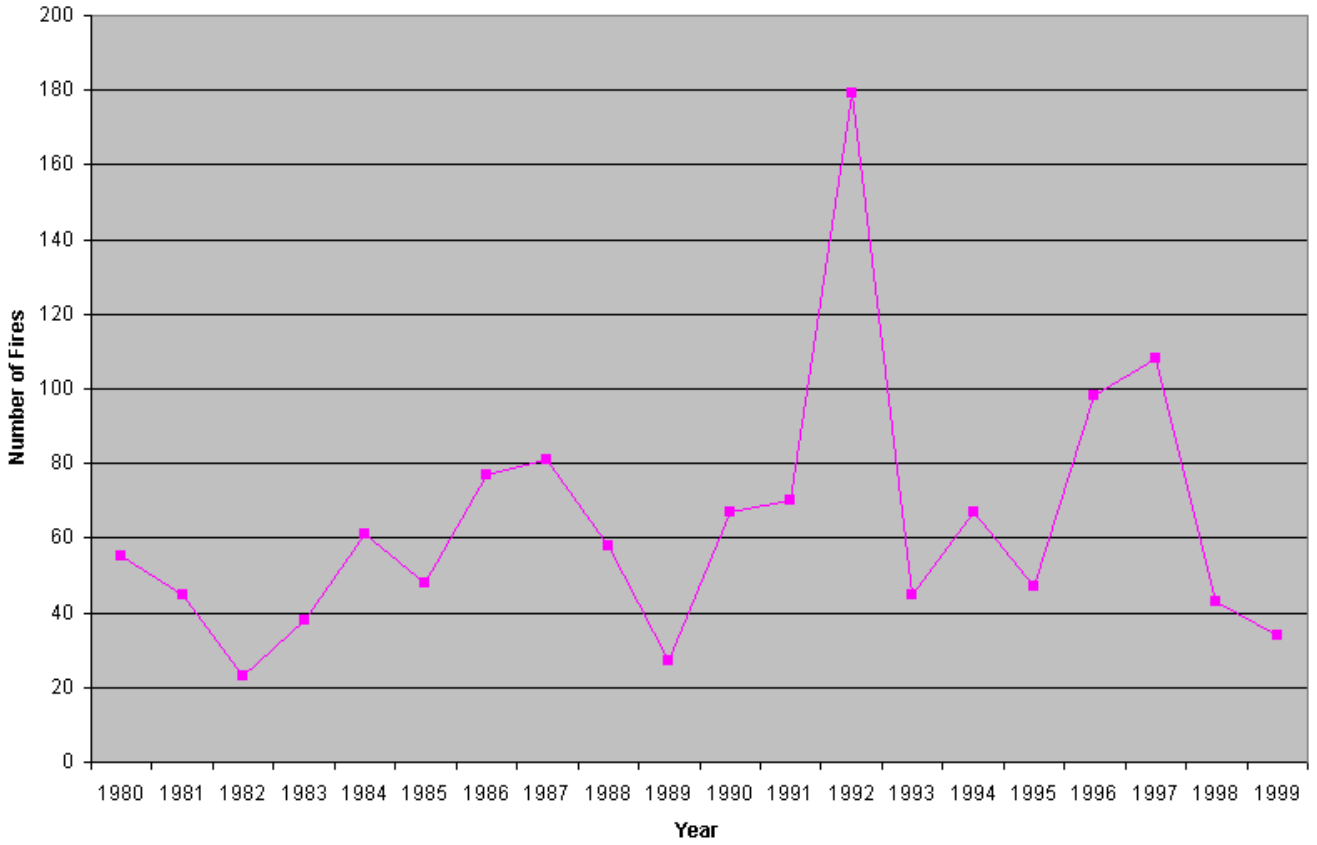

Figure 2-1.—*Total number of fires for the Lakeview Resource Area, 1980–1999*

Chemical treatment of vegetation to meet resource or fuels reduction objectives is limited to the use of four herbicides at the current time. Oregon BLM is enjoined from selecting herbicides by Federal Court Order #83-6272-E, dated January 6, 1984, and modified by Court Order #844-F2D588 in 1988. Currently, BLM is developing a programmatic EIS for the use of herbicides in the 12 western states. Herbicides also provide the opportunity to apply integrated treatment of vegetation (such as fire/herbicide/seeding or shearing/herbicide/release or seeding). Any use of herbicides would be used in special conditions to meet resource objectives. Tebuthiruon treatments to thin sagebrush stands has shown promise in New Mexico and Utah. This may have application in thinning sagebrush in important greater sage-grouse areas, with more control of the outcome than possible with prescribed fire. Tebuthiruon is not presently approved for use in Oregon.

Biological control for vegetation management would probably be limited to noxious weed control and used as an integrated approach in conjunction with mechanical or fire treatments. This is discussed further in the noxious weed section.

Wildfires

Values at risk from wildland fire depend on the intensity and size of the wildland fire. Suppressing fires in the LRA altogether allows sagebrush and juniper to dominate, which limits grass and forb production. Low-intensity wildland fires may actually improve rangeland health and wildlife habitat. High-intensity wildland fires quickly alter rangelands and wildlife habitat and can produce large amounts of smoke. Domestic livestock may be displaced for several years, and sensitive wildlife species, such as greater sage-grouse, may decline following large wildland fires. While species that favor early successional stages may benefit in the short-term from wildland fires, species that rely on older vegetation will suffer when that vegetation is burned. Severely burned landscapes are more susceptible to noxious weed invasions, furthering declines in rangeland health and wildlife forage. In addition, smoke emissions cause air quality degradation.

Fire also has an effect on recreational and visual resources. Locations where prescribed fires or wildland fires have occurred may become temporarily less

desirable for hikers, campers, or hunters. Impacts on visual resources may vary considerably, depending on the location of the fire. Land-disturbing activities employed in fire suppression may negatively impact the landscape. However, the impact of the fire lessens over time as the landscape becomes revegetated, at which time the area may become more desirable to recreationists. Recent wildland fire history is displayed on Map FM-2.

Appropriate Management Response

Appropriate management response is a set of specific actions taken in response to a wildland fire to implement protection and wildland fire use objectives. These responses can range from full initial attack suppression to monitoring. The appropriate management response for a site-specific area will be documented in the fire management plan. Included in this plan will be a matrix which considers, along with other factors, fire danger, wildland fire use areas, and firefighting resource availability. A wildland fire situation analysis will be done on all fires that exceed initial attack capabilities.

Wildland Fire Use

Wildland fire use is the management of naturally ignited wildland fires to accomplish prestated resource management objectives in predefined geographic areas outlined in the fire management plan. A matrix will be outlined in the fire management plan to determine when wildland fire use is meeting resource management objectives or when it becomes wildland fire suppression. If wildland fires have no recognized resource benefits, there is no wildland fire use, only wildland fire suppression using least cost plus loss concepts.

Impacts of Past Management Activities on Fire Hazards

Past management actions have both increased and decreased fire hazards in the LRA. Increased fire hazard is associated with fire exclusion, and decreased fire hazard is associated with prescribed fire practices and allowing the restoration of a more historical vegetative condition. Management practices, such as grazing and reseeding, also affect fire hazard by altering vegetation to make it either more or less flammable.

While implementing prescribed burns and monitoring fires in the Fort Rock area, the LRA has also been suppressing wildland fires. Without having a detailed and carefully analyzed fire management plan in place for a specific area, current policy requires that all wildland fires be suppressed. Only 10 percent of lands in the LRA are included in a plan that would allow natural fires to burn under certain conditions. These naturally-occurring fires are monitored on a daily basis and a suppression matrix is followed that is based on a least cost plus loss formula. BLM actively suppresses wildland fires as quickly and safely as possible on the other 90 percent of the acres in the LRA.

Fire exclusion and suppression alter vegetation composition and fire regimes. Suppressing fires has allowed sagebrush and juniper to dominate and has resulted in reduced grass and forb production. As juniper invade a site, they eliminate understory vegetation, thus making invaded sites highly resistant to low-intensity fire. Fires occurring in juniper-invaded shrublands may only carry during strong wind conditions, resulting in high-intensity wildland fire. Grazing practices may also reduce grasses and forbs to such an extent that low-intensity fire cannot be sustained. In such degraded rangelands, the lack of fire may further contribute to unwanted shifts in vegetation composition. Prescribed fires are used to reduce the risk of wildland fire. Prescribed burns are planned to reduce fuel loading and enhance native vegetation composition. In some cases, natural vegetative conditions can be restored using prescribed fire.

Cheatgrass is an invasive annual grass that creates a fire hazard in limited parts of the resource area. Cheatgrass thrives in disturbed environments; overgrazing or wildland fires often provide an opportunity for cheatgrass establishment. The species competes with native grasses, forbs, and shrubs, and may be successful at overcoming and outcompeting native vegetation, leaving large expanses of cheatgrass. An area that is overcome by cheatgrass has the tendency to burn more frequently than native shrublands and grasslands. Repeated burning encourages future cheatgrass production at the expense of native grasses, forbs, and shrubs.

Crested wheatgrass is an introduced perennial grass that is sometimes planted by the BLM to revegetate disturbed sites (for example, after a wildland fire). If crested wheatgrass is planted in areas formerly dominated by shrubs, the fire regime may be altered. Crested wheatgrass plantings tend to predominate on the site for long periods of time. Native plants may become codominant over time. Because of its resistance to burning, crested wheatgrass is currently used for developing greenstrips to aid in fire suppression

efforts.

In order to help reduce the risks of wildland fires, BLM regulates the activities of both industrial and nonindustrial use of the public land under its administrative umbrella. One way this is done is through the Industrial Fire Precautions Level System, which regulates permitted industrial operations on the LRA. This system dictates the types of activities (such as chainsaw use) that are acceptable at given fire danger levels. Nonindustrial uses may be managed through regulated closures and management directives for such activities as campfires and vehicles driving on public land. The directives are specific in terms of locations involved and actions prohibited. Such closures and directives are normally issued during periods of high fire danger.

Impacts of Suppression Activities on Other Resources

Building firelines during suppression operations, especially dozer lines, may increase soil erosion, compact the soil, and damage or destroy cultural resources. So that the impacts on resources can be mitigated during initial attack activities, the fire management plan limits the use of heavy equipment on the resource area. However, the noticeable changes to the landscape that result when there are no fires at all may, in fact, indicate an impact to the resources that is more negative than suppression activities. Changes in vegetation, changes in fire regimes, and changes in some wildlife populations are direct and indirect results of fire exclusion.

Fire Ecology of the Major Vegetation Types

Ponderosa pine forests are found in scattered patches throughout the LRA. Most are adjacent to the Fremont National Forest on the western edge of the resource area. The Lost Forest in the northeast section of the resource area is an area of isolated ponderosa pine forest. Studies in southeastern Oregon have shown that prior to 1900 most ponderosa stands experienced low-severity surface fires at intervals ranging from 1 to 30 years (Agee 1993). Because of its thick bark and self-pruning branches, ponderosa pine is fairly resistant to mortality from fire. Today's fire suppression techniques are very successful at quickly controlling ponderosa pine fires while they are still small. However, this suppression in ponderosa pine forests has allowed juniper encroachment and increased surface fuel loadings, which increases the potential for more intense wildland fire behavior.

Juniper woodlands are the most widely distributed forest type in the LRA. Juniper continue to expand their range by encroaching into ponderosa pine forests and shrublands. It is difficult to determine fire histories in juniper. Old growth juniper isolated from other vegetation may not burn for over 300 years. The mountain big sagebrush fire regime (where much juniper has encroached today) typically burned every 15 to 25 years (Miller and Rose 1999). Young western junipers have thin bark and are readily killed by surface fires. Juniper stands with grass and shrub understory will allow fires to carry through the juniper. As trees mature, they outcompete shrub and grass vegetation, leaving little surface vegetation. Such areas are more susceptible to erosion. Older stands become resistant to fire because low site productivity limits fuel availability. Western juniper does not sprout after fire; reestablishment is through seed, which is dispersed fairly slowly by water and animals.

Sagebrush is the most common vegetation type found throughout the LRA. The main sagebrush vegetation types are: big sagebrush (Wyoming and basin) shrub/grassland, low sagebrush shrub/grassland, silver sagebrush shrub/grassland, and mountain big sagebrush shrub/grassland. Wyoming big, basin big, low, and mountain big sagebrush are easily killed by fire and recolonize a site by seeds stored in the soil or by wind dispersal of offsite seeds. Silver sagebrush may regenerate after fire by root sprouting or by offsite seeds. Recovery times of all the sagebrush species greatly depend on the seed availability and moisture following disturbance. Sagebrush fire return intervals are difficult to determine, since fire histories cannot be accurately studied. Sagebrush are typically consumed by fire and do not leave fire scars as evidence that can be used to determine historical fire regimes. However, site productivity affects the fire behavior and frequency in these sagebrush stands. Sites with higher productivity (more grass and forb understory) will carry fire easier and more frequently (10 to 40 years) than sites with low productivity (50 to 150 years). Generally, silver and low sagebrush are found on less productive sites compared to mountain, basin, or Wyoming big sagebrush.

Emergency Fire Rehabilitation

Emergency fire rehabilitation refers to activities that may be completed following wildland fire. Common activities may include seeding with native or nonnative plants, noxious weed control, erosion control, and repairing fences that were burned or building new temporary management fences. Following a wildland fire, specialists decide whether emergency fire rehabili-

tation activities are warranted, based on vegetation condition, soils, fire size and intensity, stream condition, slope, improvements burned by wildland fire, etc. Currently, emergency fire rehabilitation activities are completed after a written and approved emergency fire rehabilitation plan.

Recreation Resources

Introduction

Three major highways and numerous county roads traverse the LRA. This transportation system provides access to a number of roads (both primitive and maintained) on BLM-administered lands. Significant routes within this transportation network include two designated national back country byways and one designated national scenic byway (Map R-1 of the Draft RMP/EIS). Given the considerable means of access, dispersed recreation opportunities exist throughout the entire planning area. Although limited in number, there are opportunities for developed recreation at several sites within the planning area. Adjacent areas of interest managed by other agencies include the Hart Mountain and Sheldon National Antelope Refuges, Steens Mountain, and the Deschutes and Fremont National Forests.

Although the majority of visitors to the LRA are from Oregon, an increasing number are from out-of-state and abroad. BLM attractions featured on recent editions of Oregon Public Broadcasting's "Oregon Field Guide" have further piqued the interest of high desert enthusiasts. There are many and varied opportunities for self-reliant recreational pursuits in the "Oregon Outback."

Current Uses and Facilities

The major recreation activities in the planning area include general sightseeing, driving for pleasure, scenery and wildlife viewing, hiking and backpacking, photography, hunting and fishing, camping, picnicking, hang gliding, rockhounding, caving, and driving OHV's. The heaviest recreation use occurs over Memorial Day and Fourth of July holiday weekends and during fall hunting seasons. There are no fee use areas in the LRA. Commercial recreational use varies year-to-year, but an average of three special recreation permits are issued each year for hunting/guiding activities, one or two are issued for natural history tours, and two to four are issued for adolescent wilderness therapy schools. Administration responsibilities for several of these special recreation permits are shared with adjacent BLM districts or the Fremont National Forest.

Most recreational use within the LRA is concentrated in two areas—northern Lake County and the Warner Wetlands ACEC/Special Recreation Management Area. The northern Lake County area can generally be described as the portion of the LRA north of Summer Lake and west of Highway 395. Recreation sites and facilities in this area that are regularly patrolled by BLM personnel include the Black Hills, Duncan Reservoir Campground, Buck Creek Watchable Wildlife Site, West Fork Silver Creek, Green Mountain Camp, Crack-in-the-Ground, Derrick Cave, Fossil Lake, Christmas Valley Sand Dunes, and the Lost Forest (Map R-1 of the Draft RMP/EIS). All of these sites are located on or near the Christmas Valley National Back Country Byway and are within or adjacent to four WSA's and a RNA. The heaviest recreational use occurs during the summer months, but the area is heavily hunted in the fall and early winter months as well.

One high-use area is the Sand Dunes, an area open to OHV and all-terrain vehicle use. During Memorial Day weekend, more than 1,000 OHV enthusiasts crowd into the area. Visitor use in northern Lake County has increased in recent years and has paralleled the increase in population which has been occurring in Bend, Oregon, approximately 80 miles away.

Since its establishment as an ACEC in 1989, recreational use and interest in the Warner Wetlands have also been on the rise. Located along the Lakeview to Steens National Back Country Byway, and adjacent to the Hart Mountain National Antelope Refuge, interpretive facilities at Hart Bar and the Warner Valley Overlook orient and educate visitors to the area. Until recently, use of these sites has been a by-product of recreational visits to Hart Mountain Refuge (estimated at 20,000). As water levels have increased at the Warner Wetlands (1999 was historically high), visitor numbers to the wetlands as a destination point have risen steadily. During these high water years, fishing, waterfowl hunting, canoeing, sea kayaking, and bird watching are popular recreation activities in the Warner Wetlands ACEC.

Other attractions and facilities in the resource area include the following:

- The Sunstone Collection Area is a 4 square-mile area open to public collection of sunstones for personal use.

- Highway Well Rest Area, located 55 miles north of Lakeview on U.S. Highway 395, is cooperatively managed by the State of Oregon and BLM. Recently reconstructed, it provides travelers with vault toilets, drinking water, picnic tables under a shade structure, and several interpretive signs.

- Abert Lake Watchable Wildlife Site is a small interpretive site located along Abert Lake on U.S. Highway 395 about 25 miles north of Lakeview.

- A short stretch of the Chewaucan River above the town of Paisley flows through intermingled public lands (BLM and USFS). This area is monitored by the Paisley District of the Fremont National Forest through an informal agreement.

- The Doherty Slide Hang Gliding Launch Site, located 60 miles east of Lakeview, adds to Lakeview's title of "Hang Gliding Capital of the West."

Fishing opportunities are available throughout the planning area in numerous lakes, reservoirs, and streams. The ODFW stocks rainbow trout in the following waters: Mud Lake, Spaulding, Lucky, Sunstone, West Sunstone, Duncan, Sherlock, Sid Luce, Big Rock, and MC Reservoirs. In the Warner Wetlands, crappie, largemouth bass, and bullhead catfish may be caught during high water years.

Hunting for big game (pronghorn, bighorn sheep, mule deer, and elk), as well as for waterfowl, upland game birds, and small game such as rabbits and coyotes, occurs throughout the planning area, mainly during fall and early winter.

BLM has developed recreational brochures for several of the more visited or sensitive areas, and these have been made available at numerous businesses and agency offices. Brochures are available for the Lakeview to Steens and Christmas Valley National Back Country Byways, the Sunstone Collection Area, the Lost Forest RNA, and the Christmas Valley Sand Dunes. Handouts for the Warner Wetlands have been developed showing the road system and a marked canoe trail. Two recreation maps showing major roads and recreational opportunities cover the entire LRA and are available for sale.

Locations of these sites are shown in Map R-1 of the Draft RMP/EIS. Estimated use figures derived from traffic counter data and field observations are shown in Table 2-47.

Recreational Fee Demonstration Program

BLM currently has authority to charge and collect fees through two separate programs related to the "Land and Water Conservation Fund Act" and other laws.

The "Omnibus Budget Reconciliation Act" of 1993 (Public Law 103-66) amended the "Land and Water Conservation Fund Act" and further expanded the BLM's authority to collect recreation use fees and deposit these fees into special accounts. Up to 15 percent of the fees collected are available for immediate use at the sites where the fees were collected, and the remainder of the fees collected may be appropriated to the area where they were collected in the following fiscal year.

The 1996 appropriations process (Public Law 104-134) again amended the "Land and Water Conservation Fund Act" by establishing criteria for the Pilot Fee Demonstration Program (Fee Demo) for four agencies, including the BLM, National Park Service, USFS, and USFWS. The focus of this pilot program was to test the collection, retention, and reinvestment of new admission and user fees. The funds collected would be spent for backlog repair and maintenance projects, interpretation, signs, habitat and facility enhancement, resource preservation, annual operations, maintenance, and law enforcement relating to public use. A key component of the Fee Demo program is that all fees collected are available for immediate use in the year that they are collected.

By the end of fiscal year 2002 (September 30, 2002), the BLM will collect all recreation-related fees under the authority of the Fee Demo program and will phase out the collection of fees under the "Land and Water Conservation Fund Act." There are currently no developed recreation sites within the LRA that require fee payment. However, collections at developed recreation sites could be considered in the future. Revenues associated with permitted uses, such as commercial special recreation permits, competitive events, organized groups, and special area uses, will be collected under the Fee Demo program authority. Fees collected would be used to improve recreation facilities and to monitor activities permitted under special recreation permits.

Special Recreation Management Areas

All BLM-administered land falls into two recreation management classes: special recreation management areas or extensive recreation management areas. A relatively small portion of the LRA is managed as

Table 2-47.—*Visitation* [1]

Name	Annual visits	Amenities and other data
Abert Lake Watchable Wildlife Site	6,000	Graveled pulloff on Highway 395 and three interpretive signs; located within Lake Abert ACEC.
Doherty Slide Hang Gliding Launch	400	Access road, graveled launch pad, register box; located on Highway 140.
Highway Well Rest Area	70,000	Two vault toilets, drinking water, trash cans, picnic shelter, interpretive signs; located on Highway 395.
Sunstone Collection Area	4,000	Vault toilet, an interpretive sign.
Buck Creek Watchable Wildlife Site	600	Access road, parking area, picnic table, interpretive signs.
Crack-in-the-Ground	7,500	Vault toilet, fenced parking area, foot trail, register box; located within the Four Craters WSA and along a national back country byway.
Derrick Cave	2,800	Register box; located on "way" within the Devils Garden WSA.
Green Mountain Camp	800	Three picnic tables on graveled sites; located along a national back country byway.
Duncan Reservoir Campground	5,000	Vault toilet, four picnic tables on graveled sites, one group site, boat launch, and register box; stocked annually by ODFW; the only developed campground in the LRA.
Lost Forest/Sand Dunes/Fossil Lake ACEC	11,000	Bulletin board, interpretive signs, register box, wood barrier fences; includes the Sand Dunes WSA, Lost Forest RNA, and Fossil Lake Vehicle Closure; located along a national back country byway.
Warner Wetlands	8,000	
Hart Bar		Two vault toilets, parking area, four interpretive signs, two viewing blinds on 1-mile mowed dike; located in the Warner Wetlands ACEC and along a national back country byway.
Warner Valley Overlook		Graveled parking area, 0.25-mile trail, four interpretive signs; located along a national back country byway and adjacent to Hart Mountain National Antelope Refuge.
Remainder of resource area	5,000	Numerous hunting and dispersed recreation opportunities.

[1] Visitation estimates are derived from traffic counters, registration boxes, correspondence with adjacent agencies, and professional judgement.

special recreation management areas. Major investments in recreation facilities and visitor assistance are appropriate in special recreation management areas when required to meet management objectives. Primary management objectives within special recreation management areas are providing recreation opportunities that would not otherwise be available to the public, reducing conflict among users, minimizing damage to resources, and reducing visitor health and safety problems. These areas are described in the following sections and are shown on Map R-1 of the Draft RMP/EIS.

Existing Special Recreation Management Areas

Warner Wetlands Special Recreation Management Area: The Warner Wetlands Special Recreation Management Area has the same size, configuration, and boundaries as the Warner Wetlands ACEC. Located approximately 50 miles northeast of Lakeview, the current recreation management of the wetlands is to provide for activities and facilities which compliment,

or are consistent with, the wildlife, vegetation, and cultural resource management objectives of the ACEC. Facilities in the special recreation management area consist of Hart Bar Interpretive Site, Warner Valley Overlook, and a 10-mile canoe trail marked in the channels between Campbell, Turpin, and Stone Corral Lakes. The "Recreation Area Management Plan" (USDI-BLM 1990i) discussed constructing additional facilities (trails, campgrounds, and overlooks), but these have not been constructed because of potential impacts to cultural resources and wildlife habitat. Since USFWS recently acquired lands within the ACEC, there are tentative plans for a joint BLM/ USFWS campground to be constructed on that property. The LRA has an informal agreement with USFWS, where USFWS is responsible for the maintenance of the Warner Valley Overlook site. The Lakeview to Steens National Back Country Byway takes the visitor past Hart Bar and Warner Valley Overlook and onto the Hart Mountain National Antelope to connect with the Steens Mountain National Back Country Byway.

The type and amount of recreational use in the Warner Wetlands away from the back country byway fluctuates with the water levels. During high water years when the lakes and channels fill, activities such as boating, fishing, waterfowl hunting, canoeing, and kayaking are possible. Currently, there are no restrictions on motorboat use. During dry years, these water-based opportunities are not available and use is more vehicle oriented. During dry years, illegal artifact collecting becomes a major problem, as does cross-country vehicle travel. The OHV designation for the special recreation management area is limited to designated roads and trails, but the recreation area management plan does not specifically designate any roads or trails open or closed. However, an informal inventory of the road system has since been conducted, and most of the roads and trails have been designated as open. During high water years, portions of almost all of these roads are under water and impassable, sometimes for several years. Use of the special recreation management area is estimated at 8,000 visitors a year, mostly associated with Hart Bar.

***Proposed* Special Recreation Management Areas**

North Lake County: This area consists of the more highly visited areas along the Christmas Valley Back Country Byway, including four WSA's (Devils Garden, Squaw Ridge, Four Craters, and Sand Dunes), the Lost Forest/Sand Dunes/Fossil Lake ACEC, and the associated geologic features in the area (Black Hills, Crack-in-the-Ground, Derrick Cave, Sand Dunes, Lost Forest, and Fossil Lake). All the LRA's seven significant caves are also within this area, along with Duncan Reservoir Campground, West Fork Silver Creek, and Buck Creek.

Recreational use in northern Lake County has steadily increased over the past 10 years. Since 1994, the LRA has hired a seasonal employee to patrol north Lake County from April through November. This position is primarily funded through an Oregon State Parks and Recreation OHV grant. Currently, there are limited facilities at the various sites, and OHV designations range from open to limited to closed. Although the Sand Dunes are within a WSA, they have remained open to crosscountry vehicle use since this use was occurring prior to the area being designated a WSA. Many OHV enthusiasts come from throughout central Oregon to recreate in these dunes because the dunes along the Oregon coast have become crowded and restrictive. OHV use violations occur regularly at the Sand Dunes because the surrounding area is either limited to designated roads and trails or closed completely.

Over the last few years, recreational use during the winter season in northern Lake County has steadily increased. The winter rains and snow and the increased visitation during the winter season have resulted in increased damage to roads. Management issues in this area include OHV use, vandalism, firewood collection in the Lost Forest, commercial uses (e.g., wilderness therapy schools), and increasing visitor pressure in general.

Extensive Recreation Management Areas

In the extensive recreation management areas, management actions to facilitate recreation opportunities are limited primarily to providing basic information and access. People visiting extensive recreation management areas are expected to rely heavily on their own equipment, knowledge, and skills while participating in recreation activities.

The Lakeview Resource Area: The majority of the lands within the LRA are managed as an extensive recreation management area. In fact, recreation activities and facilities in the extensive recreation management area currently include everything in the LRA except the Warner Wetlands Special Recreation Management Area. All of the WSA's and developed sites (except those associated with the wetlands) are included in the current extensive recreation management area, as are numerous small reservoirs and lakes which are stocked by the ODFW. Several creeks also

provide fishing opportunities for rainbow trout. Except for the few facilities in northern Lake County, most of the recreational use is dispersed and occurs primarily during the fall hunting seasons for pronghorn, deer, and elk. ODFW issued approximately 7,500 big game tags (pronghorn, bighorn sheep, mule deer, and elk) in 1999 for hunt units located in the planning area.

Recreation Opportunity Spectrum

The recreation opportunity spectrum recognizes that people want and need different recreation experiences, and that the resource base has a varying potential for providing recreation experiences. Through recreation opportunity spectrum, management can characterize demand for various types of recreation settings and opportunities, and the capability of the resource to provide such experiences. All possible combinations of recreation experiences, settings, and activity opportunities can be arranged along a spectrum, or continuum. The recreation opportunity spectrum is divided into six classes: primitive, semiprimitive nonmotorized, semiprimitive motorized, roaded natural, rural, and modern urban. Each class is defined in terms of a combination of activity, setting, and experience opportunities (see Appendix M2 and Map R-3 of the Draft RMP/EIS).

Recreation opportunity spectrum classes are established as the result of an inventory and are used as an analysis tool in the RMP process. Currently, the LRA has not been inventoried for recreation opportunity spectrum. However, recreation opportunity spectrum could be a tool to be used in developing OHV designations and setting limits for special recreation permits.

Special Recreation Permits

Special recreation permits are authorizations that allow for recreational use of the public lands and related waters. They are issued as a means to manage visitor use, protect natural and cultural resources, provide for the health and safety of visitors, and provide a mechanism to accommodate commercial recreational uses. There are four types of uses for which these permits are required: commercial, competitive, organized groups/events, and individual or group use in special areas.

The LRA authorizes approximately five to eight special recreation permits every year, including two or three permits which are shared with and administered by adjacent BLM and USFS offices. Where possible, commercial operations which cross district or forest lines are administered under one permit in order to provide "one-stop shopping" for the customer. Currently, the LRA administers one hunting/guiding permit and two wilderness therapy school permits (in conjunction with two other districts). Administration of four additional shared hunting/guiding permits is through the Prineville, Burns, and Vale BLM Districts, and the Fremont National Forest. In addition, LRA staff are aware of commercial and educational tours taking place without proper authorization.

The main workload for permits concerns the wilderness therapy schools. These schools are designed to benefit adolescents aged 13–18 who are experiencing problems such as substance abuse, depression, oppositional and defiant behavior, and emotional problems. Generally, students are supervised in a remote, nomadic camp setting while learning basic survival skills. The programs are designed to remove the student from their familiar settings and enable them to learn to accept accountability for their actions in an unfamiliar, harsh environment.

One school operates in northern Lake County and southern Deschutes County; another group operates in eastern Lake County and portions of western Harney County. The four schools, Catherine Freer, TREX, Sage Walk, and Obsidian, have been under permit since 1988, 1996, 1997, and 1998, respectively. Table 2-48 shows the number of students attending these schools since 1988.

Due to the rapid increase in students, particularly in northern Lake County where three of the groups operate, conflicts have occurred concerning public safety, road conditions, runaways, wildlife, and use of resources. Incidents in 1999 and 2000 led to BLM instituting a moratorium on these schools, which prohibits any new schools from operating in the LRA and limits the number of students participating in each school.

As visitor use in a recreation area increases, one of the actions that may be taken by the authorized officer is to determine the desired level of use or carrying capacity. If the use level in the area exceeds the carrying capacity, measures would be taken to remedy the problem. Actions could include limiting the overall number of individuals, the number of groups or parties, or the number of individuals per group.

Off-Highway Vehicle Designations

The "National Management Strategy for Motorized

Table 2-48.—*Number of students annually in each school*

Year	Catherine Freer	TREX	Sage Walk	Obsidian	Total
1989	9				9
1990	13				13
1991	18				18
1992	4				4
1993	41				41
1994	11				11
1995	24				24
1996	30				30
1997	89	63	20		172
1998	78	65	31		174
1999	135	40	50	39	264

Off-Highway Vehicle Use on Public Lands" (USDI-BLM 2001e) is a comprehensive effort for developing a proactive approach to determine and implement better on-the-ground motorized OHV management solutions designed to conserve soil, wildlife, water quality, native vegetation, air quality, heritage resources, and other resources while providing for appropriate motorized recreational opportunities. The strategy provides agency guidance and offers recommendations for future actions to improve motorized vehicle management. The implementation of this strategy will be an ongoing, adaptive process that will require the continued participation of interested public. As a guiding document, the strategy will be refined and implemented as opportunities arise and funding allows. The strategy will help ensure consistent and positive management of environmentally responsible motorized OHV use on public lands.

OHV use is frequently associated with hunting, fishing, and driving for pleasure, and also occurs for administrative purposes such as livestock management and facility management.

All public land in the planning area is designated as open, limited, or closed in regard to vehicle use. In an open area, all types of vehicle use are permitted at all times. In a limited area, vehicle use is restricted at certain times, in certain areas, to designated routes, to existing routes, or to certain vehicular uses. In a closed area, motorized vehicle use is prohibited. Appendix M1 of the Draft RMP/EIS provides further definition of OHV use terms.

The majority of the LRA (2,510,908 acres) is designated as open to vehicular travel. Through various planning amendments and emergency vehicle closures, several areas have been designated as closed or limited and are shown in Table 2-49 and Map R-2 of the Draft RMP/EIS.

Most of the motorized vehicular use occurs on existing roads and unmaintained "jeep trails." However, off-road (cross-country) vehicle use also occurs in intensive use areas, such as the Sand Dunes, and on isolated tracks dispersed through the planning area. On- and off-road vehicle use occurs within special management areas (SMA's) and critical or important wildlife habitats, cultural sites, and plant sites. Some of this use is inappropriate or damaging to these special/sensitive areas and resource values.

Visual Resources

Introduction

Visual resources are the land, water, vegetation, structures, and other features that make up the scenery of BLM-administered lands. BLM-administered lands are classified according to their relative worth from a visual resource management (VRM) point of view.

Three factors are considered in developing VRM objectives. These factors are the inherent scenic quality of the landscape, the visual sensitivity the public has for the landscape, and the visual distance (whether the landscape can be seen as foreground, middleground, background, or is seldom seen from a travel route or sensitivity area). Examples of highly scenic areas include Abert Rim, and Deep Creek, Camas Creek, and Twentymile Creek Canyons. Public lands seen from Highway 140, Highway Well Rest Area, or along a national back country byway are examples of lands highly sensitive to landscape modification.

Table 2-49.—*Off-highway vehicle designations under current management*

Designation	Area	Acres
Limited to existing roads and trails	Wilderness study areas	461,310
	Lake Abert ACEC	50,117
	Alkali Lake Dunes	6,813
	Picture Rock Pass	491
	Juniper Mountain	2,500
Limited to designated roads and trails	Warner Wetlands ACEC	53,087
	Lost Forest RNA	9,047
Closed	Black Hills	1,729
	Crane Mountain	1,057
	Fossil Lake	6,660
	Table Rock	57
	Westside Gravel Pit	81
	Cougar Mountain	44
	Buck Creek Watchable Wildlife Site	590
	South Green Mountain	14
Closed seasonally (12/1–3/31)	Cabin Lake/Silver Lake Deer Winter Range (Silver Lake and Fort Rock area)	66,460
Open	Remainder of LRA (including Sand Dunes WSA)	2,508,408

Scenic quality, sensitivity levels, and distance zones are combined to determine the VRM classes for the area. VRM classes specify management objectives and allow for differing degrees of modification in the basic elements of landscape features (form, line, color, and texture). See Appendix M3 of the Draft RMP/EIS for a detailed description of VRM classification.

Visual management classes are established through the RMP process for all BLM-administered lands. During the RMP process, the class boundaries are adjusted as necessary to reflect resource allocation decisions made in the RMP. Management objectives for each class are designed to mitigate, and in some cases avoid, the adverse effect of management activities on scenic values.

To help maintain the management objectives of a VRM class, the BLM's visual contrast rating system is used for proposed projects and activities to help analyze and mitigate visual impacts to the existing landscape. This systematic process uses the basic design elements of form, line, color, and texture to compare the proposed project/activity with the major features of the existing landscape.

Current Management Classes

Visual management classes in the LRA are compiled from several planning efforts, which took place between 1982 and 1999, as well as new BLM guidance. Unfortunately, detailed records regarding some of this inventory data have been lost and are no longer available. Map VRM-1 of the Draft RMP/EIS shows VRM classes derived from these inventories, as well as updated state and national guidance. Acreages, percentages of the land base, and representative areas in each class are listed in Table 2-50.

Geology and Minerals

Introduction

Past mineral activity in the LRA has included explora-

tion for and production of sand, gravel, rock, cinders, decorative stone, sunstones, and diatomite. Minor amounts of perlite, mercury, gold, lead, dolomitic limestone, and zinc have been produced from scattered sources. Currently, the principal mineral activities in the resource area are the production of gravel and rock for the maintenance of county roads and state highways, and the mining of sunstones, perlite, and diatomite.

It is also anticipated that the demand for mineral material, such as sand and gravel for road construction and maintenance, will increase. The demand for decorative stone is expected to increase significantly. These scattered perlite deposits in the LRA are associated with rhyolitic rocks, dacitic rocks, and metals that have been deposited at shallow depths associated with volcanism phenomenon, such as hydrothermal waters.

The "National Energy Policy" of 2001 states that the electricity demand is projected to expand rapidly over the next 20 years. As a result, this policy recommends that public lands remain open for energy and development.

There are three designated known geothermal resource areas within the planning area. Most of the planning area has potential for geothermal energy, as indicated by high heat flow. In addition to high heat flow, the Summer Lake/Paisley, south Warner Valley, and Lakeview areas contain hot springs and hot wells. Currently, geothermal energy is used only for heating homes, businesses, and greenhouses in the Lakeview area, and for mineral baths in the Lakeview and Summer Lake areas. Furthermore, with anticipated energy shortages in the Pacific Northwest and California, and the focus on global warming, the clean geothermal, solar, and wind energy resources that are present on the LRA could become more important in the future. California's electricity crisis may continue or increase, allowing interest in new markets and neighboring states for electricity. Since the LRA is located next to northern California, electricity may be generated from the geothermal, solar, and wind resources to supply the surrounding communities and California in the future.

Presently there are no exploration or plans for solar or wind development on the LRA. In 2001, interest in wind energy development was expressed but not pursued.

Appendix N1 of the Draft RMP/EIS has more complete information on historical mining and mineral activity; Table 2-51 gives a summary of the current mining activity.

Current Activity

Locatable Minerals

As of September 1999, there were 368 mining claims recorded in the resource area. A total of 295 of these claims are in the Rabbit Basin sunstone area. The remaining claims are in the Tucker Hill perlite area and Christmas Valley diatomite area. Except for sunstone exploration and minor exploration associated with the Christmas Valley diatomite operation, there is no known ongoing locatable mineral exploration. There are no known deposits of critical or strategic minerals located in the resource area. Existing locatable mineral potential is displayed on Map M-4 of the Draft RMP/EIS and Table 2-50a.

Table 2-51 displays the acres of land where mining is currently restricted or not allowed. Less than 1 percent of the LRA is segregated from mining under the mining laws. This percentage does not include withdrawals where BLM does not have surface management. Including those withdrawals, approximately 10 percent of the Federal land within the boundaries of the LRA is closed to mining. About 2,500 acres in the Rabbit Basin sunstone area are classified closed to mining claim location under the "Classification and Multiple Use Act" of 1964. Mining on approximately 466,864 acres of WSA's is restricted in that any work on mining claims located after October 21, 1976, must not impair wilderness values, as required by wilderness IMP (UDSI-BLM 1995b). Mining plans of operation are required on lands under wilderness study and on approximately 110,300 additional acres of designated ACEC's, regardless of the size of the acreage to be disturbed. Table 2-51 and Map M-3 of the Draft RMP/EIS display the withdrawals mentioned above, and other restrictions.

Currently, there are no explorations or claims for uranium existing in the LRA. Areas of low potential for uranium are displayed on Map M-4 of the Draft RMP/EIS. No commercial development of uranium has occurred in the LRA, but uranium was mined in the adjacent Fremont National Forest in the 1950s and 1960s. Concerns about safety of nuclear energy, high cost, surplus, and disposal of radioactive waste has limited the demand for uranium ore.

Even so, as demand for energy increases, nuclear energy may become popular, and the LRA may be explored for uranium deposits. Since the LRA has a low potential uranium deposit with a level of C cer-

Table 2-50.—*Visual resource management classes*

VRM class	Acres	Percentage of BLM land base	Representative BLM areas
I	493,890	16	Wilderness study areas, research natural areas, Abert Rim corridor.
II	141,429	4	Deep, Twentymile, and Twelvemile Creeks, Fish Creek Rim, Table Rock
III	29,778	9	Warner Wetlands ACEC, Highways 140 and 31 corridors, Lake Abert ACEC
IV	2,235,745	71	Seldom seen areas of low visual quality and low sensitivity.

Sources: "Lakeview Grazing Management EIS" (USDI-BLM 1982a); "High Desert Management Framework Plan Amendment" (USDI-BLM 1996d); and "Oregon Wilderness EIS" (USDI-BLM 1989a).

Table 2-50a.—*Acreage for all locatable mineral potential* [1]

Mineral and potential for occurrence	Acres
Base and precious metals	
High	3,512
Medium	186,026
Low or unknown	3,049,272
Diatomite	
High	31,377
Medium	269,522
Low or unknown	2,937,911
Dolomitic limestone	
High	784
Uranium	
Low	7,087
Unknown	3,231,723
Sunstones	
High	6,252
Perlite	
High	1,367
Medium	3,345
Low or unknown	3,234,098

[1] Includes all Federal and non-Federal mineral ownerships within the planning area boundary. Approximately 25,245 acres of high potential and 268,224 acres of moderate potential exist under Federal mineral ownership within the planning area.

tainty (the available data provide direct evidence but are quantitatively minimal to support or refute the possible existence of mineral resources) and lies mostly within the Hawk Mountain WSA, uranium development is not expected unless Congress designates the Hawk Mountain WSA as nonwilderness.

Leasable Minerals

No exploration permits or leases exist in the resource area, and no lands are withdrawn from mineral leasing. However, about 423,300 acres in WSA's are closed to mineral leasing by BLM policy (USDI-BLM 1995b), unless released by Congress. The only use of leasable-type minerals in the planning area is on private land

Table 2-51.—*Mineral statistics for the Lakeview Resource Area*

Category	Acres (unless otherwise noted)
BLM surface and mineral estate	3,043,900
Reserved mineral estate—no surface, all minerals	113,900
Reserved mineral estate—no surface, partial minerals	7,110
Reserved mineral estate—all surface, partial minerals	700
Acquired minerals—Bankhead-Jones lands [1] (estimated)	73,200
Community pits (#)	0
Free use permits (#)	16
Material site right-of-way-pits/quarries (#)	19
Material site right-of-way storage sites (#)	14
Mining claims (#)	368
43 CFR 3809 mining/exploration notices (#)	27
43 CFR 3809 mining/exploration plans (#)	2
43 CFR 3802 mining/exploration plans (#)	0
43 CFR 3715 occupancies (#)	15
Known geothermal resource areas	
Number	3
Total acres	111,500
Public land acres	50,400
Geothermal leases (# and acres)	0
43 CFR 3209 exploration notices	0
Oil and gas leases (# and acres)	0
43 CFR 3151 geophysical notices (#)	0
Other mineral leases, permits	0
Withdrawals (BLM)	
Leasable and locatable	0
Locatable only	16,200
Nonmetalliferous mining only	1,900
Withdrawals (other agency) [2]	
Leasable and locatable	0
Locatable only	272,000
Wilderness study segregations (leasable/salable)	423,300
C&MU Act segregation (locatable only)	2,500

[1] Bankhead-Jones lands are lands that went to private ownership but later reverted back to the government.
[2] The BLM does not have surface management jurisdiction on these lands, so they are not officially covered by this land use plan. However, the lands represent significant Federal acres within the planning area that are closed to mining. The BLM has mineral leasing responsibility on these lands, none of which are included in subsequent tables.

where geothermal energy is being used for bathing (Paisley and Lakeview areas) and for greenhouse, business, and home heating (Lakeview). Map M-5 of the Draft RMP/EIS and Table 2-52 shows leasable mineral potential in the planning area.

A total of about 1,373,123 acres of the public land mineral estate are open to geothermal, oil, and gas leasing, subject to standard lease stipulations. About 759,214 acres are open to leasing subject to moderately restrictive stipulations, such as seasonal, OHV, and visual resource restrictions. Approximately 612,776 acres of the mineral estate are subject to a no-surface-occupancy stipulation.

Currently, oil and gas and geothermal leasing is covered by "Oil and Gas/Geothermal Leasing Environmental Assessments" (USDI-BLM undated c, 1981c).

Presently, there are no exploration or leases for coal, coal bed methane, oil shale, or tar sands existing in the LRA. The LRA has low potential for these resources.

Table 2-52.—*Acres for all leasable mineral potential* [1]

Mineral and potential for occurrence	Acres
Geothermal resources	
High	114,073
Medium	2,327,341
Low	1,784,565
Lakebed evaporites	
High	107,871
Medium	254,994
Low	639,689
Oil and gas	
Medium	2,631,475
Low	1,594,505

[1] Includes all Federal and non-Federal mineral ownerships within the planning area boundary. Approximately 114,309 acres of high potential and 2,708,184 acres of moderate potential exist under Federal mineral ownership within the planning area.

Therefore, as required by 43 CFR 3461, the LRA is considered unacceptable for further consideration for coal, coal bed methane, oil shale, or tar sands development at this time. Leasable mineral potential is described in Appendix N-1 of the Draft RMP/EIS.

Salable Minerals

There are an estimated 50 to 100 sand and gravel, rock, and cinder pits on public land in the resource area (Map M-3 of the Draft RMP/EIS). Table 2-53 summarizes salable mineral potential acreage. Most of this material is used for construction and maintenance of roads and highways. Lake County and the State of Oregon hold 16 free-use permits, and the State also has 19 pits or quarries and 14 additional storage sites authorized under mineral material site rights-of-way (Table 2-51). Sale of mineral materials to individuals averages about 15–20 sales per year, but is increasing. Sources for decorative stone are scattered across the LRA. The best source of decorative stone is located in the Devils Garden WSA.

Designated WSA's are closed to saleable mineral disposal by BLM policy (USDI-BLM 1995b). Any WSA or portions thereof that are not designated by Congress as wilderness would be opened to mineral material disposal (unless closed by other management actions).

The restrictions on mineral material disposal are generally the same as those for leasing, and are displayed on Table 3-7. See Appendix N-1 of the Draft RMP/EIS for a discussion of salable mineral potential.

Renewable Energy Resources

The LRA has received inquiries regarding areas with the potential for wind farm development. Areas such as Christmas Valley, Coyote and Rabbit Hills, and South Warner Rim may have potential. Currently, the Oregon Office of Energy holds a wind monitoring site right-of-way on South Warner Rim. Studies by TrueWind Solutions indicate that the LRA wind power potential ranges from -1 to 6 classes, with -1 being very low potential and 6 being high potential. Although the LRA does not have any specific areas identified for development at the present time, future proposals would be considered.

The LRA may have some potential for the development of solar energy. The U.S. Department of Energy's National Renewable Energy Laboratory indicates the LRA receives moderate to moderately-high solar radiation (http://www.nrel.gov/gis/solar_maps.html). To date, the LRA has not received any inquiries regarding the development of solar energy. Any future inquiries would be considered.

Restrictions to Mineral Exploration, Development, and Production

Generally, BLM-administered land is open to mineral exploration and development under multiple use management principles. However, there are two types of closures that can restrict these activities: discretionary and nondiscretionary.

Table 2-53.—*Acreage for salable mineral potential*

Mineral and potential or occurrence	Acres
Cinders	
High	1,128
Unknown	3,237,682
Decorative Stone	
High	42,458
Medium	320
Unknown	3,196,032
Quarry Rock	
High	331
Unknown	3,238,479
Sand/Gravel	
High	1,220
Medium	852
Low or unknown	3,236,738

Discretionary closures are determined through BLM's resource management planning process. These closures usually involve lands where the resource values are considered so significant that they outweigh any economic return that can be expected from mineral development or the environmental impacts resulting from mineral operations could irreparably damage those resources. Less restrictive stipulations or conditions were considered, but were inadequate to protect resource values contained in those parcels.

Nondiscretionary closures are areas specifically closed to energy and/or mineral leasing, entry, or material disposal, by law, regulation, or Executive order. Examples include BLM and other agency withdrawals. The BLM must petition the Secretary of the Interior to withdraw public lands. Withdrawals of 5,000 acres or more require congressional notification. Nondiscretionary closures in the LRA include public water reserves (see Map M-2 of the Draft RMP/EIS).

Designations such as RNA's and ACEC's, and presence of cultural resources, sensitive species, visual resources, and deer winter range may constrain mineral exploration or development.

Table 2-51 and Map M-2 of the Draft RMP/EIS displays existing withdrawals, WSA's, recreation and public purposes, and other segregations that restrict mineral activities in the resource area. Table 2-51 shows acres of mineral estate that are open, closed, or otherwise restricted for the three classes of minerals.

Lands and Realty

Lands

Existing Conditions

Land Ownership

The LRA administers public lands in Lake and Harney Counties. The LRA encompasses approximately 2,414,336 acres in Lake County, 744,907 in Harney County, and 2,172 acres in Washoe County. About 56 percent of Lake County and about 91 percent of Harney County within the boundaries of the resource area are public land administered by the LRA (BLM files). Table 1-1 shows land ownership and administration in Lake, Harney, and Washoe Counties that exist within the boundaries of the LRA.

The LRA administers lands predominately located in high desert terrain east and west of U.S. Highway 395 (Map I-1). The majority of the public lands are public domain lands (3,080,383 acres), with approximately 81,032 acres of acquired public lands located in the Fort Rock and Warner Valley areas. The resource area

also manages an additional 121,000 acres of reserved Federal minerals (no surface ownership) (Map M-1 of the Draft RMP/EIS).

The majority of the resource area consists of solidly-blocked public lands with the larger private land blocks occurring in the valleys where the land is more fertile and water is available for agricultural production. Rural home sites also occur throughout the agricultural areas with large State land blocks intermingled throughout.

Public/Private Land Interface

Generally, the LRA does not have a public/private land interface problem. There are situations throughout the resource area where public and private lands intermingle and create property boundaries which do not conform to logical natural topographic features. This occasionally complicates and increases management costs of such activities as prescribed burns, livestock grazing, and key wildlife habitat.

The "High Desert and Warner Lakes Management Framework Plans" (USDI-BLM 1983a, 1983b) identified approximately 250 acres of public land to be made available for urban-suburban expansion and public purposes. Presently, the resource area has transferred approximately 258 acres out of Federal ownership for this purpose.

Land Use Classifications/Recreation and Public Purposes Act

The resource area has one existing land use classification for the Sunstone Collection Area (2,500 acres); no applications are pending which would require new classifications. Historically, the majority of the resource area was under a classification for multiple use. The "High Desert and Warner Lakes Management Framework Plans" specifically identified the need for four recreation and public purpose leases—three for county sanitary landfill sites and one for civil defense purposes. To date, all these classifications have been terminated because the classifications were no longer necessary or the land has been disposed.

Lands Identified for Disposal

The "High Desert, Warner Lakes, and Lost River Management Framework Plans" (USDI-BLM 1983a, 1983b, 1983c) identified approximately 52,425 acres of public land for disposal, pending site-specific environmental analysis and soil and water studies (Map L-1 of the Draft RMP/EIS). If the parcels are found suitable for disposal, a land classification would be issued that states this information (refer to Appendix O1 of the Draft RMP/EIS for the criteria governing land tenure adjustments). Presently, the LRA has disposed of approximately 8,040 acres of those lands identified. Refer to Map L-1 of the Draft RMP/EIS and Table O2-1, Appendix O2, Alternative A, for the legal descriptions of those public lands remaining available for disposal.

Typically, under the present planning system, land exchanges are evaluated for plan conformance and viability on a case-by-case basis. The "Warner Lakes Management Framework Plan" (USDI-BLM 1983a) did identify the need to complete the North Warner State (Oregon) Exchange. However, since the acreage was unknown at the time, the plan did not specifically identify the acreage involved. To date, the LRA has completed five exchanges, totaling approximately 21,300 acres.

Lands Identified for Acquisition

To date, acquisition of non-Federal lands by the LRA has been considered only in the "Warner Lakes Plan Amendment for Wetlands and Associated Uplands" (USDI-BLM 1989b, 1990b, 1990d). The plan amendment specified that private lands within the designated wetlands area would be acquired only through voluntary willing sellers or exchange proponents, as opportunities arose. Since implementation of the plan amendment, the LRA has successfully acquired approximately 10,340 acres within the Warner Wetlands.

Access (Easement) Acquisition

Currently, access to public land in the LRA has not been a significant problem, since physical access is readily available to most areas. However, there are several hundred locations throughout the LRA, representing possibly thousands of individual easements, where legal access rights could be acquired. Generally, the LRA pursues easement acquisition on a case-by-case basis as determined by necessity.

Unauthorized Occupancy and Use

Unauthorized occupancy and use is not a significant problem in the LRA. Unauthorized occupancies are typically encroachments of buildings or yards onto public land and have usually existed for many years. These situations are most often discovered in the course of surveying projects. Unauthorized agricultural uses typically involve the encroachment onto small areas of public land from agricultural operations

on adjoining private land; unauthorized right-of-way situations generally involve negligence. Resolution of such situations depend upon individual circumstances and may include issuance of temporary land use permits, leases or rights-of-way, disposal of the land either by sale or exchange, or removal of the unauthorized use.

To date, all of the 24 unauthorized use situations identified in existing land use plans have been reviewed. All but three have been resolved. Many of the unauthorized uses involved fenced Federal range. Fenced Federal range results when small portions of Federal land are within fenced private lands. These were resolved by adjusting the grazing permits of those applicable permittees. Several of these fenced Federal range situations, although technically authorized, have been identified for disposal in order to effect permanent resolution. Additional unauthorized uses are expected to be discovered periodically as the new surveys, field inspections, and public observations continue throughout the resource area. See Table 2-56 for the legal descriptions of fenced Federal range sale situations.

Temporary Authorizations

There are, at any particular time, approximately three to five temporary land use permits in effect that authorize such activities as trespass prior to resolution, access, hay storage, apiary sites, national guard or military reserve training, engineering feasibility studies, and other miscellaneous short-term activities.

Withdrawals

A withdrawal is a formal action that accomplishes one or more of the following actions:

- Transfers total or partial jurisdiction of Federal land between Federal agencies.
- Segregates (closes) Federal land to some or all of the public land laws and/or mineral laws.
- Dedicates land for a specific public purpose.

There are three major categories of formal withdrawals: (1) congressional withdrawals, (2) administrative withdrawals, and (3) "Federal Power Act" or Federal Energy Regulatory Commission (FERC) withdrawals.

1) *Congressional withdrawals:* are legislative withdrawals made by Congress in the form of public laws (acts of Congress).

2) *Administrative withdrawals:* are made by the President, Secretary of the Interior, or other authorized officers of the executive branch of the Federal government.

3) *"Federal Power Act" or FERC withdrawals:* are power project withdrawals established under the authority of the "Federal Power Act" of 1920. Such withdrawals are automatically created upon filing an application for a hydroelectric power development project with FERC.

The LRA contains 12 existing withdrawals. Table 2-57 lists the existing withdrawals along with the authority, location, acreage, purpose, segregative effect, and surface management agency (Map M-2 of the Draft RMP/EIS).

The LRA has two Power Site Reserves (numbers 265 and 429) located within the Deep Creek Watershed, along Deep Creek and/or its tributaries. In the early 1990s, two applications were filed with FERC for possible pumped storage development at Lake Abert. The applications were subsequently withdrawn. Although hydropower development potential in the LRA is considered low, it may be feasible with today's technology and under current energy market conditions. The LRA will consider future proposals for hydropower development as they arise.

Rights-of-way

There are six major right-of-way corridors presently traversing the LRA. Three of the corridors contain large (500+ kilovolt) power transmission lines, one running east-west, north of Summer Lake and south of Christmas Valley, Oregon; a second north-south corridor traverses east of Fort Rock and Silver Lake, Oregon; and a third corridor running north-south, east of Christmas Valley and west of Adel, Oregon. The remaining three corridors are occupied by State Highways 31 and 140 and U.S. Highway 395 (Map L-2 of the Draft RMP/EIS).

The existing management framework plans identify several right-of-way exclusion and avoidance areas (Map L-2 of the Draft RMP/EIS). The future upgrading of existing transmission lines is likely and may require additional right-of-way width. Existing communication sites are listed in Table 2-58. All, with some restrictions, have the potential for future expansion; the Mahogany Mountain site is currently unoccupied. Demand for additional communications capabili-

Table 2-56.—*Fenced Federal range disposal opportunities*

Parcel	Legal description	Acreage
Agriculture	T.40S., R.20E., W.M., Oregon	
	Section	
	8: NW¼NE¼.	40
Ditch	T.40S., R.20E., W.M., Oregon	
	Section	
	24: W½SW¼.	10
Thousand Springs Ranch	T.30S., R.17E., W.M., Oregon	
	Section	
	24: W½SE¼.	80
	T.30S., R. 18E., W.M., Oregon	
	Section	
	18: Lot 4;	40.75
	19: Lot 2.	40.85
Paulina Marsh	T.28S., R.14E., W.M., Oregon	
	Section	
	3: Lot 4;	40.25
	4: Lot 1.	40.26
	T.28S., R.15E., W.M., Oregon	
	Section	
	17: SW¼NE¼.	40
Oatman Flat	T.27S., R.13E., W.M., Oregon	
	Section	
	34: SW¼NE¼, NW¼SE¼.	80
Church Ranch	T.28S., R.16E., W.M., Oregon	
	Section	
	15: W½SW¼;	80
	21: NW¼NW¼.	40
Vaughn Ranch	T.28S., R.15E., W.M., Oregon	
	Section	
	11: NW¼SE¼;	40
	12: NW¼SW¼, SW¼SE¼;	80
	14: NW¼NE¼, S½NW¼;	120
	15: NE¼SE¼.	40
Main Ranch	T.27S., R.18E., W.M., Oregon	
	Section	
	13: W½SW¼.	80
	T.27S., R.19E., W.M., Oregon	
	Section	
	7: Lot 3, E½SW¼;	120.76
	29: SW¼SW¼;	40
	30: SW¼NE¼, SE¼NE¼, E½SW¼, W½SE¼, SE¼SE¼;	280
	31: NE¼;	160
	32: E½E½, W½W½, SE¼SW¼;	360
	33: W½W½, SE¼SW¼.	200

Table 2-57.—*Existing withdrawals*

Authority [1]	Location			Acres [2]	Purpose	Segregative effect [3]	Surface management agency
	Township	Range	Section				
E.O. 4/17/1926	30	23	25	40	Public Water Reserve107	A	BLM
	32	23	14	40			
	36	22	7	40			
	38	24	31	10			
	40	23	28	30			
	40	29	6	29.63			
			7	80			
	40	28	1	20			
	41	24	21	2.5			
			22	2.5			
			Subtotal	294.63			
E.O. 1/24/1914	31	27	7	80	Public Water Reserve 15	A	BLM
	38	25	29	260.32			
	23	19	10	160			
	26	18	29	39.31			
			32	4.82			
			33	96.02			
	26	19	8	120			
			17	40			
	26	20	6	60.29			
			Subtotal	860.76			
E.O. 6/13/1925	38	23	29	40	Public Water Reserve 91	A	BLM
	40	23	7	14.45			
			18	64.97			
			Subtotal	119.42			
E.O. 5/8/1930	38	23	29	80	Public Water Reserve 131	A	BLM
			32	120			
			Subtotal	200			
E.O. 2/25/1919	40	22	10	100	Public Water Reserve 61	A	BLM
			25	40			
			Subtotal	140			

Authority [1]	Location			Acres [2]	Purpose	Segregative effect [3]	Surface management agency
	Township	Range	Section				
E.O. 4/29/1912	40	22	8	40	Power Site Res. 265	C	BLM
			9	40			
			Subtotal	80			
E.O. 4/3/1914	39	22	25	80	Power Site Res. 429	C	BLM
	39	23	19	129.27			
			30	135.63			
			Subtotal	344.90			
SO 9/8/1910	28	14	21	80	Administrative site	B	USFS
			28	80			
			Subtotal	160			
PLO-5235 7/14/72	25	20	20	8,960	Research natural area	B	BLM
			21				
			22				
			23				
			24				
			25				
			26				
			27				
			28				
			29				
			30				
			31				
			32				
			33				
			34				
			35				
			36				
			Subtotal	8,960			
PLO-6745 8/28/89	26	20	19	2,622	Radar site	B	USAF
			30				
			31				
			32				
	27	20	5				
			6				
			Subtotal	2,622			

Authority [1]	Location			Acres [2]	Purpose	Segregative effect [3]	Surface management agency
	Township	Range	Section				
PLO 300 10/25/1945	30	16	13	7,127.65	Wildlife reserve	B	BLM
			24				
			25				
			36				
	30	17	17				
			18				
			19				
			21				
			28				
			29				
			30				
			31				
			32				
			33				
	31	16	1				
	31	17	4				
			5				
			6				
			7				
			8				
			9				
			Subtotal	7,127.65			
PLO 7446 5/18/00	33	18	11	80	Seed orchard	B	USFS
			Resource area total	20,989.36			

[1] Authority abbreviations: E.O. = Executive order; S.O. = Secretarial order; PLO = Public land order.
[2] Table does not include lands that have been transferred out of Federal ownership subsequent to withdrawal.
[3] Segregative effect: A = withdrawn from operation of the general land laws and closed to nonmetalliferous mining (cement quality limestone, diatomite etc.), but open to metal mining (gold, silver, and mercury etc.). B = withdrawn from operation of the general land laws and the mining laws. C = withdrawn from the general land laws.

ties is expected to result in requests to establish new sites in the future.

The "Western Regional Corridor Study" has identified one potential east-west corridor (the south corridor) which traverses the LRA south of the Hart Mountain National Antelope Refuge. This particular corridor is currently unoccupied and has been eliminated from consideration as a corridor in both the Lakeview District's, Klamath Falls RMP and the Southeastern Oregon RMP. Since the corridor is not recognized on either the east or west sides of the LRA, the south corridor will not receive further consideration in this RMP.

Roads/Transportation

Approximately 2,500 miles of roads are on the LRA road inventory. However, based on the number of roads shown on USGS maps and aerial photographs, it is estimated that another 2,500 miles of roads, trails, and ways not on the inventory also exist on the public land. These roads are used by BLM personnel for administrative access, by ranchers and other permittees, and by the general public seeking recreation opportunities.

In an effort to assist in setting priorities for future watershed and road analyses, road density classes were computed by watershed for all watersheds within the four main subbasins within the planning area. Existing road data was classified in accordance with road density classes defined by the ICBEMP. Almost all of the planning area is in the very low to medium road density class. Very low road density is 0.02 to 0.10 miles of road per square mile of land; low road density is 0.11 to 0.70 miles per square mile; and medium is 0.71 to 1.70 miles per square mile. About 2,000 acres in the northwest corner of the planning area are classified in the high road density. High density is 1.70 to 4.70 miles per square mile. This information is displayed on Map R-4 of the Draft RMP/EIS.

The resource area maintains approximately 100 miles of roads each year. Roads are maintained at various levels, depending on maintenance needs, funding, and the need for the road. The assigned maintenance level reflects the need for the road and appropriate maintenance that best fits the transportation management objectives. Roads are prioritized for maintenance needs as follows.

Level 1: This level is assigned to roads where minimum maintenance is required to protect adjacent lands and resource values. These roads are no longer needed and are closed to traffic. The objective is to remove these roads from the transportation system. Emphasis is on maintaining drainage and runoff patterns as needed to protect adjacent lands. Grading, brushing, or slide removal is not performed unless roadbed drainage is being adversely affected, causing erosion. Currently, there are no Level 1 roads on the resource area's transportation plan (USDI-BLM 2000e).

Level 2: This level is assigned to roads where the management objectives require the road to be open for limited administrative traffic. Typically, high-clearance vehicles are necessary for passage. Grading is conducted as necessary to correct drainage problems. Brushing is done to allow administrative access. Approximately 1,600 miles of Level 2 roads are on the transportation plan.

Level 3: This level is assigned to roads that need to be open seasonally or year-round for commercial, recreation, or high volume administrative access. Generally, these roads are natural- or aggregate-surfaced, but may

Table 2-58.—*Existing communication sites*

Communication site	Legal description
Mahogany Mountain	T.29S., R.14E., W.M., Oregon Section 15: SE¼.
Table Rock	T.28S., R.15E., W.M., Oregon Section 12: NW¼.
Paisley	T.34S., R.20E., W.M., Oregon Section 16: Lot 1, NE¼NW¼.
Coyote Hills	T.35S., R.22E., W.M., Oregon Section 11: NE¼.
Plush	T.38S., R.24E., W.M., Oregon Section 4: NE¼.
Fish Creek Rim	T.39S., R.24E., W.M., Oregon Section 17: NW¼.

include low-use asphalt-surfaced roads. These roads have a defined cross section with drainage structures such as dips, culverts, or ditches. These roads may be used by passenger cars traveling at a reasonable speed. Drainage structures are inspected at least annually and maintained as needed. Grading is done to provide a reasonable level of comfort and safety. Shoulder brushing is done to improve sight distance. Any obstructions affecting drainage are a high priority for removal. At the present time, approximately 550 miles of Level 3 roads are on the transportation plan.

Level 4: This level is assigned to roads that management direction requires to be open all year, unless they are closed or have limited access due to snow conditions. These roads connect major administrative facilities such as recreation sites, local road systems, or administrative sites to county, state, or Federal roads. They may be single or double lane, aggregate or asphalt surface, with a higher volume of commercial and recreational traffic than administrative (BLM or permittees) traffic. These roads are maintained annually if possible. However, because of annual road maintenance funding limitations in the District, not all Level 4 roads are maintained each year. A total of 385 miles of Level 4 roads are currently on the transportation plan.

Level 5: This level is assigned to roads that need to be open all year and are the highest traffic volume on the transportation system. These roads may be closed or have limited access due to snow conditions. The entire roadway is maintained at least annually. There are no Level 5 roads on the resource area's transportation plan.

New roads may be constructed by BLM or by a permittee in connection with a project such as mineral development or a rights-of-way. In the past 10 years, no new roads have been constructed. However, approximately 6 to 8 miles of new trails have been developed in connection with the development of wells, pipelines, and fences. These ways have not been constructed with heavy equipment but have resulted from the passage of vehicles.

Hazardous Materials

Introduction

All incidences of hazardous materials on public land are handled as outlined in the Lakeview District's contingency plan (USDI-BLM 2001f). All actions related to land or minerals are reviewed both internally and externally (if appropriate) for compliance with Federal and state regulations. Special stipulations are also developed as part of the permit or lease to safeguard human health, prevent environmental damage, and limit BLM liability.

The hazardous materials program will be managed in the same general manner in all alternatives in accordance with current laws, policies, and regulations. Consequently, the hazardous materials program will not be addressed further.

Existing Conditions

Alkali Lake Chemical Waste Disposal Area

The 10.3-acre storage site in Lake County, Oregon, is owned, operated, and monitored by the ODEQ. The Alkali Lake Chemical Waste Disposal Area was the storage site for about 25,000 55-gallon drums of distillation residue from the manufacturing of herbicide during 1967 to 1971. During studies that were done in the 1970s and 1980s, hazardous substances such as chlorophenoxyphenols, chlorinated phenols, chlorinated dibenzodioxns, and chlorinated dibenzofurans were found in the soil and groundwater near the Alkali Lake Chemical Waste Disposal Area. The contaminates have been transported offsite by wind and water.

In 1990, the BLM and ODEQ took additional steps to protect the public by fencing the area of known groundwater contamination in West Alkali Lake. This site was part of the EPA's national dioxin study in 1984, but no risk assessment was performed at that time. The BLM considered potential ACEC designation for public lands surrounding the site, but it was determined that those lands were not suitable for ACEC designation (see Appendix I of the Draft RMP/EIS).

Land surrounding the Alkali Lake Chemical Waste Disposal Area is public land that is open to multiresource activities such as cattle grazing, hunting, hiking, and recreation. As of spring 1998, a groundwater contamination plume was detected on this public land 1,500 feet west of the fenced disposal area. Besides the contamination of groundwater, another potential impact is to the Hutton tui chub, a fish species on the USFWS threatened or endangered list.

Unexploded Ordnance on Public Lands

Often public lands are used for military training grounds. Central Oregon was a major training area during World War II. Unexploded ordinance have been found on the LRA. Currently the resource area is still

used as a training route for military aircraft, and live-fire exercise were conducted. Today many unexploded ordinance are surfacing in these training areas. Many World War II items are collectibles and are dangerous to public safety. Other forms of hazards can and do occur within the training areas. These included hazardous and toxic substances and radioactivity, including unexploded ordinance from downed aircraft and other sources.

Alkali Lake aerial targets are located north of the Chemical Waste Disposal Area. These mounds are known to have been used as aerial live-fire targets. The targets were constructed of native sand pushed up into mounds 30 to 40 feet high. Aircraft would live-fire 50 and 20 millimeter rounds and practice bombs into the mounds. In most cases, practice munitions are armed and dangerous.

The U.S. Army Corps of Engineers is mandated under the Defense Environmental Restoration Program to the remediation of all formerly used defense sites. Additionally, all projects under the program must be in compliance with the "National Historic Preservation Act." All unexploded ordinance found will be disposed of in coordination with Explosive Ordnance Disposal/ Army Team at Fort Lewis, Washington.

Chapter 3 — Management Alternatives

Introduction

The development of management alternatives was guided by the legal authorities and planning criteria listed in Appendix B. A range of five management alternatives was developed to address the issues, as required by the "National Environmental Policy Act" (NEPA).

Resource Management Plan Goals

The mission of the Bureau of Land Management (BLM) is to sustain the health, diversity, and productivity of the public lands for the use and enjoyment of present and future generations. In order to accomplish that mission, BLM has developed a strategic plan ("BLM Strategic Plan 2000–2005") containing a comprehensive set of broad goal statements and a subset of mission goals. Two goal statements and a subset of mission goals dealing with public land management are shown below. (The complete "BLM Strategic Plan 2000–2005" is available at the BLM web site: www.blm.gov/nhp/info/stratplan.)

1) Serve current and future publics.

- Provide opportunities for environmentally responsible recreation.
- Provide opportunities for environmentally responsible commercial activities.
- Preserve natural and cultural heritage resources.
- Reduce threats to public health, safety, and property.
- Provide land, resource, and title information.
- Provide economic and technical assistance.

2) Restore and maintain the health of the land.

- Understand and plan for the condition and use of the public lands.
- Restore at-risk resources and maintain functioning systems.

The Lakeview Resource Management Plan (RMP)/ Environmental Impact Statement (EIS) also considers the goals developed by the Interior Columbia Basin Ecosystem Management Project (ICBEMP) (USDA-FS and USDI-BLM 2000b, 2000c). Five goals were developed for the project; they are:

1) Sustain, and where necessary, restore the health of the forest, rangeland, aquatic, and riparian ecosystems.

2) Provide a predictable, sustained flow of economic benefits within the capability of the ecosystem.

3) Provide diverse recreational and educational opportunities within the capability of the ecosystem.

4) Contribute to recovery and delisting of threatened and endangered species.

5) Manage natural resources consistent with treaty and trust responsibilities to American Indian Tribes.

Based on the BLM strategic plan, the ICBEMP goals, and the specific issues identified for the Lakeview RMP/EIS planning area, the following goals were developed for the Lakeview RMP/EIS.

1) Manage for long-term sustainability and, where necessary, restore the health of the forest, rangeland, aquatic, and riparian ecosystems in the planning area.

2) Manage sensitive species and communities to ensure long-term viability, and promote delisting of threatened or endangered species.

3) Provide recreational, educational, and research opportunities within the capability of the planning area ecosystem.

4) Provide a predictable, sustained flow of economic benefits within the capability of the planning area ecosystem.

5) Manage resources on the planning area to meet treaty and trust responsibilities to local American Indian Tribes.

Ecosystem Management

As described by ICBEMP "Summary of Scientific Findings" (USDA-FS and USDI-BLM 1996a): "Ecosystem management is scientifically-based land and resource management that integrates ecological capabilities with social values and economic relations to

produce, restore, or sustain ecosystem integrity and desired conditions, uses, products, values and services over the long term . . ." Ecosystem management ". . . concentrates on overall ecosystem health and productivity through an understanding of how different parts of the ecosystem functions with each other, rather than on achieving a set of outputs. Human activities, including social values regarding use of public lands and biophysical components, are part of the total picture.

A major part of the ICBEMP was the gathering, organizing, and understanding information at the basin or broad scale. In order to apply the findings of ICBEMP to the local level, they must be stepped down through site-specific analyses (USDA-FS and USDI-BLM 2000b).

The ICBEMP describes four levels of analysis below the broad basin-level analysis that are intended to provide the context to appropriately implement these broad-level decisions on individual national forests or BLM districts:

1) *Subregional analysis*—programmatic or broad overview EIS such as a resource management plan.

2) *Mid-scale analysis*—subbasin review.

3) *Watershed-scale analysis*—ecosystem analysis at the watershed (or other appropriate landscape unit) scale.

4) *Site-specific NEPA analysis*—project environmental assessment or EIS.

The resource area staff conducted a subbasin review between August 1, 1999 and March 1, 2000. Subbasin review, the second layer of the step-down process, is an intergovernmental process comparing mid- and fine-scale information to ICBEMP findings. It also assesses ecosystem processes and functions at the subbasin level. Appendix A1 of the Draft RMP/EIS contains a summary of the subbasin review process as well as a summary of ICBEMP findings applicable to the resource area.

The "Summary of the Analysis of the Management Situation" (UDSI-BLM 2000f) contains the subbasin review report. Findings and recommendations from the subbasin review are carried forward into the RMP/EIS in the issues and alternatives analyzed.

Ecosystem Analysis at the Watershed Scale

The watershed scale is the third layer in ecosystem analysis. Ecosystem analysis at the watershed scale may be used to evaluate existing conditions, capabilities, and limitations of specific watersheds. Information gained through analysis at this scale would be used to support development of ecologically sustainable programs and projects. Appendix F of the Draft RMP/EIS contains a description of the watershed analysis process. The RMP provides the general direction for ecosystem analysis to address, including the desired range of conditions.

During the subbasin review, the team identified several watersheds that are priorities for future restoration (see Water Resources/Watershed Health section, Common to All Alternatives subsection). The following is a description of the criteria used to prioritize watersheds and the process that would be used to change priorities, if necessary. Work would focus on higher priority areas; however, other areas may require attention to address site-specific needs.

- Legal mandates ("Clean Water Act" [CWA], "Endangered Species Act," etc.);
- Resources at risk;
- Potential for recovery;
- Resource conflicts or controversy;
- Opportunity for interagency or partnership assessments;
- Field staff knowledge of the area;
- Current ongoing management; and
- Broad-scale priorities (identified in ICBEMP as a priority subbasin or key watershed for various reasons).

Completed watershed analyses would be reviewed periodically to determine if there have been any changes in resource issues, BLM policies and regulations, or other concerns that would warrant a change in priorities.

Rangeland Health and Health of the Land Strategy

The alternatives include management direction intended to complement the "Standards for Rangeland Health and Guidelines for Livestock Grazing Management" (USDI-BLM 1997a) and "Standards for Land Health for Lands Administered by the Bureau of Land Management in the States of Oregon and Washington" (1998). These standards are discussed in Appendix E4 of the Draft RMP/EIS and Appendix B.

Desired Range of Conditions

Introduction

The desired range of conditions describes the land, resource, social, and economic conditions that are desired in the planning area as a result of plan implementation. The length of time needed to achieve the desired range of conditions would vary by alternative.

The following desired range of conditions are descriptions of what the physical and biological conditions would be moving towards during the life of the plan. However, certain conditions, goals, or objectives may take longer to achieve.

Description of Desired Range of Conditions

Rangelands

Rangeland vegetation (sagebrush steppe) includes a mosaic of multiple-aged shrubs, forbs, and native perennial grasses. Shrub overstories are present in a variety of spatial arrangements and scales across the landscape level, including disjunct islands and corridors. Shrub overstories are present in predominantly mature, late-structural status. Plant communities not meeting desired range of conditions show upward trends in condition and structural diversity. Desirable plants continue to improve in health and vigor. New infestations of noxious weeds are not common across the landscape, and existing large infestations are declining. Populations and habitat of rare plant species and their associated communities are stable or continue to improve in vigor and distribution.

Forest and Woodlands

Treated commercial (mostly pine) forests contain healthy stands of site-appropriate species. Stands are relatively open, with density within site capacity. Low-intensity fires can be accommodated without excessive loss of trees, and insect and disease occurrence is at endemic levels.

Western juniper dominance is restricted to rocky outcrops, ridges, and other historic (old growth) sites where wildland fire frequency is limited by lower site productivity and sparse fuels. Western juniper occurs in low densities in association with vigorous shrubs, grasses, and forbs (where site potential permits). Historic western juniper sites retain old growth characteristics. Quaking aspen groves occupy historic range and are in stable or improving condition.

Wild Horses

Rangeland vegetation and water sources support viable, healthy herds of wild horses through time. Individual herds have diverse age structures, good conformation, and are quality animals exhibiting the characteristics unique to each herd. Wild horse numbers are in balance with the rangelands that support them. Improvements in grass/shrubland steppe and riparian areas increase the health of the herd.

Wildlife

The amount and diversity of wildlife habitat are maintained or improved through time. Late-seral grass/shrublands exist in blocks of various sizes in well-distributed patterns across the landscape. Ongoing management of rangeland habitat components and conditions (such as vegetation cover and forage) and of key areas helps to maintain big game populations near State wildlife agency objectives. Hunting opportunities continue to be provided throughout the planning area. Improvement in the condition of grass/shrubland steppe and riparian areas benefits a variety of wildlife species by increasing the quality, quantity, and variety of habitat. Such species include upland game, raptors, and nongame species. Management has helped to create the long-term habitat changes that contribute toward restoring some sensitive species and toward recovery of listed species.

Recreation

The area provides a wide variety of recreational opportunities for a growing demand, as the population increases and urban dwellers seek to experience the open spaces commonly found on public land. Additional recreation facilities, restored and maintained recreation sites, and more intensive management are a few of the means used to meet the increased demand. Protection of the natural landscape is an important consideration when designing recreation facilities and planning for related activities. Certain areas are excluded from recreational development to preserve their natural character.

Special Management Areas

Special management areas (SMA's), such as wilderness, wild and scenic rivers (WSR's), and areas of critical environmental concern (ACEC's), preserve the integrity of special or unique values over the long term.

Soils

Large portions of the landscape have a protective soil cover of deep-rooted plants and litter which supports proper hydrologic function. In thin-soiled areas and other appropriate soils, microbiotic crusts are present which increase soil stability, contribute to nutrient cycles, and act as indicators of rangeland health. Upland soils have sufficient vegetation cover to minimize accelerated soil erosion. Physical and chemical soil properties are adequate for vegetation growth and hydrologic function appropriate to the specific soil type, landform, and climate.

Fire

Wildland and prescribed fire play an active role in defining the composition of vegetation and limit the dominance of woody species including shrubs and invasive juniper.

Riparian, Aquatic, and Watershed

Riparian areas and stream habitat conditions have improved as a result of protection and management. Watersheds are stable and provide for capture, storage, and safe release of water appropriate to soil type, climate, and landform. Most riparian/wetland areas are stable and include natural streamflow and sediment regimes related to contributing watersheds. Soil supports native riparian/wetland vegetation to allow water movement, filtration, and storage. Riparian/wetland vegetation structure and diversity are significantly progressing toward controlling erosion, stabilizing streambanks, healing incised channels, shading water areas, filtering sediment, aiding in floodplain development, dissipating energy, delaying floodwater, and increasing recharge of ground water appropriate to climate, geology, and landform. Stream channels are narrower, water depth and channel meanders are increasing, and floodplains are developing. Stream channels and floodplains are making significant progress in dissipating energy at high-water flows and transporting and depositing sediment as appropriate for geology, climate, and landform. Riparian/wetland vegetation is increasing in canopy volume (height and width) and in healthy uneven-aged stands of key woody plants, increasing in herbaceous ground cover, and shifting toward late succession. Surface disturbances inconsistent with the physical and biological processes described above have been reduced. Disturbances such as roads, dispersed recreation sites, and inappropriate livestock use are decreasing as vegetation and soils recover naturally. There is no downward trend in riparian condition and function.

Human use of natural resources is managed to enhance fisheries, improve water quality, and promote healthy riparian conditions. Water quality is managed so that most streams are providing cool, clear, and clean water. High-quality water is in greater demand from all users. Better regulation of runoff has improved the water supply from rangelands. There is increased infiltration on upland sites, increased ground water recharge, increased spring flow, reduced peak flow during floods, and increased stability of base flow during late summer and winter.

Management activities have been implemented on nearly all sites at risk to erosion to facilitate recovery of upland, riparian, aquatic, and water quality conditions. Improved aquatic habitat conditions allow populations of threatened or endangered aquatic species to stabilize and expand into appropriate, previously occupied habitat. Populations of native aquatic species are increasing.

Water quality is improved to provide stable and productive riparian and aquatic ecosystems. Water quality of perennial and fish-bearing streams is within State standards, and the remaining streams have made significant progress toward attaining those standards. Upland, riparian, and aquatic ecosystems are stable and productive to a degree that leads to acceptable water quality for identified beneficial uses. Improvement has occurred in stream channel integrity and channel processes, under which the riparian and aquatic systems developed. Hydrologic and sediment regimes (the characteristic behavior or orderly occurrence of a natural phenomenon or process) in streams, lakes, and wetlands are appropriate to the surrounding soils, climate, and landform. Instream flows are sufficient to support healthy riparian and aquatic habitats, and stream functions are stable and effective. Flooding streams discharge without significant damage to the watershed.

Riparian vegetation provides sufficient vegetation debris; provides adequate regulation of air and water temperatures during both summer and winter; and helps reduce surface erosion, bank erosion, and channel migration to levels characteristic of natural conditions. Riparian and aquatic habitats support populations of well-distributed native and desired nonnative plant, vertebrate, and invertebrate populations.

Adaptive Management

Adaptive management is a procedure in which decisions and changes in management are made as part of an ongoing process. It is a continuous process of

planning, implementing, monitoring, evaluating, and incorporating new information into strategies to meet the goals and objectives of the management described in the RMP. This process builds on current knowledge, observation, experimentation, and learning from experience. A continuous feedback loop allows for mid-course corrections in management to meet goals and objectives. It also provides a model for adjusting goals and objectives as new information develops and public desires change.

The complex interrelationships of physical, biological, and social components of the ecosystem and how they react to land management practices are often not fully understood when a land-use management plan is developed. To be successful, plans must have the flexibility to adapt and respond to new knowledge or conditions.

The following briefly describes the four parts of adaptive management:

1) *Planning/Decision*—plan development or revision is the process leading to decision-making. It starts with issue identification and goal development. The next step is to gather information necessary to develop alternatives for management direction that address the issues and goals. The final stage is to develop alternative management strategies to address issues and meet the management goals, analyze the consequences of the alternatives, and choose a preferred alternative for implementation.

2) *Implementation*—the process of putting a plan or decision into effect. Implementation includes short- and long-term actions. Although the plan covers 15 to 20 years, all management direction is assumed to be implemented within 10 years. Standards are defined addressing how to achieve management goals; and standards can include requirements to refrain from taking action in certain situations.

3) *Monitoring*—detects changes so management activities can be modified to achieve management goals. Monitoring data provide information on the condition and trend of the ecosystem. Monitoring data would be collected to determine if plan objectives are being met. This is discussed further in the following monitoring section and in Appendix R.

4) *Evaluation/Assessment*—the point where plans and monitoring data are reviewed. This phase of adaptive management is used to judge the success of existing plans in meeting goals and objectives, and makes recommendations for corrections. The understanding gained through evaluations is critical to managing sustainable, healthy, and productive ecosystems. Evaluations are a key component of the adaptive management process. An evaluation may lead to a change in management actions.

Implementation of this RMP will be monitored to allow response to changing conditions. Activity plan decisions would be evaluated to ensure consistency with the RMP management goals. As part of the evaluation process, other government agencies would be asked to review the approved RMP/record of decision (ROD) and advise the BLM of consistency with their plans, programs, and policies. Upon completion of periodic evaluations, the Lakeview District Manager would determine what, if any, changes are necessary to ensure that management actions are consistent with management goals. It is possible a plan amendment or revision may be initiated because of a need to consider monitoring findings, new data, new or revised policy, or a proposed action that may result in a change in the terms, conditions, or decisions of the approved plan.

Minor changes, refinements, or clarifications in the plan, including incorporating new data, are called plan maintenance actions. Plan maintenance actions would not expand the scope of resource uses or restrictions or change the terms, conditions, or decisions of the approved Lakeview RMP/EIS. Maintenance actions are not considered plan amendments or revisions and do not require formal public involvement and interagency coordination. However, these types of actions will be reported in periodic planning updates.

In developing the Lakeview RMP/EIS, the BLM used the best science available, including the scientific assessment from the ICBEMP (USDA-FS and USDI-BLM 1996a). The staff also collaborated with other Federal, state, local, and Tribal government agencies, and involved the public. However, the agency's knowledge would change as local environmental conditions change, as new management techniques are learned, and as advances in science and technology are better understood. As a result, it is inevitable that in the future some of the management direction in the RMP would be found to be inadequate or in need of update. To rectify such situations, implementation

of the Lakeview RMP/EIS decision would use an adaptive management approach in a continual process to modify management actions to incorporate new knowledge gained over time. New information could also cause a plan amendment or revision to be prepared.

Monitoring

The BLM planning regulations (43 CFR 1610.4-9) call for the monitoring of resource management plans on a continual basis with a formal evaluation done at periodic intervals. The Lakeview RMP/ElS would be monitored on a continual basis. Plan evaluations would occur on about 5-year intervals. Management actions arising from activity plan decisions would be evaluated to ensure consistency with RMP/ElS objectives. This is described in more detail in Appendix R.

Overview of the Alternatives

Alternatives Considered but Eliminated from Detailed Analysis

No Management Alternative

During development of the alternatives, a no management alternative was discussed. This alternative is not the same as the no action alternative. This alternative would include no grazing, no gathering of wild horses, no suppressing of wildland fires, and no managing of recreation uses. The team determined that this alternative was not acceptable because "The Wild Horse and Burro Act" requires that wild horse herds be maintained in a thriving ecological balance with their environment. If horses were not gathered, they would eventually deplete their habitat. In addition, the "Taylor Grazing Act" requires the Secretary of the Interior ". . . to provide for the orderly use, improvement, and development of the range." Some fire suppression would be necessary to protect private property and to protect human health and safety. Since the resource area would still be open to dispersed recreation use, a minimal amount of recreation management would be required to protect human health and safety.

This alternative is not considered further in the plan; however, some aspects of it, such as no livestock grazing, are incorporated into Alternative E.

Proposed High Desert Protection Act

A protection act for the High Desert has been proposed by various organizations for a number of years to protect the natural resources of the High Desert of eastern Oregon. The proposed legislation includes various actions including removing livestock grazing to protect resources.

Some components of this proposal were built into various alternatives of this document, particularly Alternatives C and E. The proposed legislation itself cannot be considered an alternative as it would require congressional approval and such approval is speculative. Should approval ever occur, it would likely require revision or amendment of the RMP and would be addressed at that time. Therefore, it is not considered further in this plan.

Designation of the Proposed Pronghorn ACEC

In 1998, the Oregon Natural Desert Association and 22 other cosponsoring organizations nominated 1.1 million acres of BLM-administered lands surrounding and connecting Hart Mountain National Antelope Refuge and Sheldon National Wildlife Refuge as an ACEC (Oregon Natural Desert Association 1998). Major management actions of the proposal included removing livestock grazing and wild horses in the area.

The proposal was evaluated by biologists and other resource specialists from Oregon Department of Fish and Wildife (ODFW), U.S. Fish and Wildlife Service (UFWS), and BLM offices of Burns and Lakeview Districts in Oregon, Winnemucca District in Nevada, and the Surprise Resource Area in California. The evaluation concluded that the entire proposed area as a whole did not meet ACEC criteria, and therefore is not considered further in this plan (USDI-BLM 1999b). However, portions of the area within the Lakeview Resource Area (LRA) were found to meet the ACEC criteria in other evaluations (USDI-BLM 2000a) and are being considered in the alternatives analyzed in detail. Refer to the Areas of Critical Environmental Concern section of Chapter 2 or Appendix I of the Draft RMP/EIS for more information. The proponent's goals and objectives for the Pronghorn ACEC would be largely met under Alternative E.

Alkali Lake ACEC

A proposal was made internally that the BLM-administered land surrounding the Alkali Lake hazardous waste site should be designated an ACEC. The area does not meet the ACEC criteria, there is no immediate danger

to human health, and it represents a man-made rather than a natural hazard; therefore, the proposal is not considered further in this plan.

Wilderness Study Area Boundary Changes

The Lake County Commissioners have suggested an alternative to look at changing two wilderness study area (WSA) boundaries along State Highway 140. This highway runs from north of Lakeview, east and south to the Nevada state line. The Oregon Department of Transportation (ODOT) is currently improving sections of the highway, and in the summer of 2000 completed a rerouting, widening, and resurfacing project on approximately 10 miles of the highway. The purpose of the project is to improve safety on the highway and allow its use by tractor-trailer trucks over 65-feet long. Similar work is planned within the next 5 years on other sections of the highway.

Two sections which are proposed for improvement in the future are on or near the boundaries of two WSA's—Fish Creek Rim and Spaulding. The highway right-of-way, not the highway itself, forms the boundary of the Spaulding WSA. In the case of the Fish Creek Rim WSA, the right-of-way for the 69 kilovolt powerline on the north side of the highway forms the boundary.

ODOT is free to work at their discretion within the designated highway right-of-way. Any work outside the right-of-way, such as realignment of the highway, would require modification of the right-of-way grant and preparation of an environmental analysis document. Since the Fish Creek Rim WSA boundary is set back to the powerline right-of-way (which varies from 100 to 1,000 feet from the highway), it is not known at this time if any realignment of the road could impact the WSA. Any potential impact can only be determined when an actual project is proposed, complete with detailed maps showing a proposed realignment. However, BLM cannot authorize any work that would impact the wilderness qualities of either of the areas, nor can BLM change the boundaries of the two WSA's to accommodate widening, straightening, or rerouting of the highway. Any changes to the existing boundaries of these or any other WSA's can only occur through congressional legislation. Therefore, it is beyond the scope of this plan to change the boundaries of any WSA's in the planning area. Hence, this alternative is not considered further in this plan.

Alternatives Analyzed in Detail

The following section is structured in such a way that the reader can track the management goals, rationale, and management actions. The following material defines and expands upon these components.

Management goal—the desired result of management efforts. The goals must resolve or move toward resolving the management issues in Chapter 1.

Rationale—reasoning behind why it is important to pursue the stated management goal.

Management actions—measures that are to be taken to achieve the management goals and resolve the management issues in Chapter 1.

Five alternatives are analyzed in detail in the Lakeview RMP/FEIS. Each alternative consists of four general elements. The first element is the overall theme, ranging from emphasis on commodity production to emphasis on natural processes and natural systems. The second consists of each of the individual resources or resource programs (e.g., Air Quality, Water Resources/ Watershed Health, Plant Communities, Livestock Grazing Management, etc.). The third consists of the individual management goals within each of the resource programs. The fourth is the collection of management actions necessary to achieve the individual management goals of each resource program. Each of the resource-specific management actions is considered in combination with all other goals and actions to arrive at a desired range of conditions. The overall themes thus determine the types of management actions that would be applied.

Most of the alternatives, with the exception of Alternative E, have been designed to meet the RMP management goals. However, they differ in how fast the management goal is met, the degree to which it is being met, the priorities within the program, the emphasis placed on different management activities, whether actions are active or passive, and what trade-offs society is willing to accept. Public input received throughout the planning process was considered in the development of alternatives.

The management goals associated with the alternatives may not be completely met over the life of the plan (up to 20 years). Funding and staffing levels would affect rates of implementation, and projected implementation rates may vary from alternative to alternative, depending on the costs.

Management Common to All Alternatives

Routine Operation and Maintenance Actions

Maintenance of existing facilities would continue; however, the level of maintenance could vary by the alternative selected and annual funding. Normally, routine operation and maintenance actions are categorically excluded from NEPA analysis (an exception would be such actions conducted within WSA's). Such activities could include, but are not limited to, routine maintenance of existing roads, ditches, culverts, water control structures, recreation facilities, reservoirs, wells, pipelines, waterholes, fences, cattleguards, fish and wildlife structures, signs, and other similar facilities. These types of actions are considered to be part of all alternatives analyzed in this document and should not require any further analysis to implement on the ground. Maintenance of existing facilities in WSA's would be addressed on a case-by-case basis (refer to the Wilderness section in this chapter for more detail).

Other Management Direction

All alternatives incorporate or comply with the management direction and protections provided by the Warner sucker biological opinion agreements, the "Recovery Plan for the Threatened and Rare Fishes of the Warner Basin and Alkali Subbasin (USDI-USFWS 1998);" the "Standards for Land Health for Lands Administered by the Bureau of Land Management in the States of Oregon and Washington" (USDI-BLM 1997b); and the "Interim Management Policy for Lands Under Wilderness Review" (wilderness IMP) (USDI-BLM 1995b). Most alternatives incorporate the "Greater Sage-Grouse and Sagebrush-Steppe Ecosystems Management Guidelines" (Sage-Grouse Planning Team 2000).

Tribal Consultation

Local Native American Tribes would be consulted during plan implementation for all actions which may affect their interests. Cultural resource surveys and sensitive species surveys would be conducted prior to any ground-disturbing activity or land disposal.

General Management Themes of the Alternatives

Following is a description of the general management theme for the five alternatives considered in detail.

Alternative A

Alternative A is the continuation of present management or no action. This alternative would continue management under the three existing management framework plans (USDI-BLM 1983a, 1983b, 1983c), the "Lakeview Grazing Management Final EIS and Record of Decision" (USDI-BLM 1982a, 1982b), and the three management framework plan amendments (USDI-BLM 1989b, 1989c, 1996c, 1996d; USDI-USFWS and USDI-BLM 1998a, 1998b) and various existing activity plans. It would also include the management direction and protections provided by the Warner sucker biological opinion/agreements, and any currently approved activity plans such as allotment management plans or habitat management plans. Resource values or sensitive habitats would receive management emphasis as at present levels. Emphasis would be on maintaining existing conditions. There would be no comprehensive plan for restoration of degraded systems. Restoration would be on a case-by-case basis and would utilize either active or passive methods.

Alternative B

Alternative B would emphasize commodity production and production of public goods and services (mining, grazing, commercial recreation, and commercial woodland products harvesting, etc.) would be emphasized. Under this alternative, constraints on commodity production for sensitive resources would be the least restrictive possible within the limits defined by law, regulation, and BLM policy, including compliance with the "Endangered Species Act," cultural resource protection laws, wetland preservation, etc. Potential impacts to sensitive resource values would be mitigated on a case-by-case basis. Emphasis would be on maintaining existing conditions. Restoration actions that would enhance commodity production would utilize primarily active methods. Other restoration actions would utilize passive methods.

Alternative C

Alternative C emphasizes the restoration of natural systems that are degraded and the maintenance of those that are functioning at a high level of condition. Commodity production would be constrained to protect natural values and ecological systems. Constraints to protect sensitive resources, such as cultural resources, would be the most restrictive. In some cases, commodity production could be excluded to protect sensitive resources. Both active and passive restoration methods would be utilized to achieve management goals.

Alternative D (Preferred Alternative)

Alternative D is the BLM's preferred alternative. This alternative emphasizes a high level of natural resource protection and improvement in ecological conditions while providing commodity production. This alternative would balance the need to protect, restore, and enhance natural values, with the need to provide for the production of food, fiber, minerals, and services on the public lands. This would be done within the limits of the ecosystem's ability to provide these on a sustainable basis and within the constraints of various laws and regulations. Constraints to protect sensitive resources would be implemented, but they would be less restrictive than under Alternative C. Restoration actions would utilize either active or passive methods to achieve management goals.

Alternative E

This alternative would exclude all permitted, discretionary uses of the public lands including livestock grazing, mineral sale or leasing, realty actions, recreation uses requiring permits, commercial rights-of-way, etc. The resource area would petition the Department of the Interior (DOI) to withdraw the entire planning area from locatable mineral entry. This alternative would allow no commodity production and would include only those management actions necessary to maintain or enhance natural values and protect life and property. Any management actions would utilize primarily passive methods. Some components of the alternative may not be possible to implement because of legal constraints, but the alternative is included for purposes of impact comparison.

Plant Communities

Shrub Steppe

Management Goal 1—*Restore, protect, and enhance the diversity and distribution of desirable vegetation communities, including perennial native and desirable introduced plant species. Provide for their continued existence and normal function in nutrient, water, and energy cycles.*

Rationale

With passage of the "Federal Land Policy and Management Act" (FLPMA) and the Public Rangeland Improvement Act (PRIA) of 1978, objectives and priorities for the management of public land vegetation resources were more clearly defined. Guidance contained in 43 CFR 4180 and "Standards for Land Health for Lands Administered by the Bureau of Land Management in the States of Oregon and Washington" (USDI-BLM 1997a, 1998) directs public land management toward the maintenance or restoration of the physical function and biological health of vegetative ecosystems. This objective would maintain and improve the condition and trend in plant communities that provide wildlife habitat, recreation, forage, scientific, scenic, ecological, and water and soil conservation benefits for consumptive and nonconsumptive uses. The long-term goal of vegetation management is to maintain or improve rangeland condition to the desired range of vegetative conditions, not specifically late or potential natural community ecological status.

Management actions authorized or implemented by BLM would influence future vegetation composition. These actions may include season, intensity, and duration of livestock grazing within diverse vegetation communities; the influence of fire and associated suppression actions; emergency fire rehabilitation and the reintroduction of grazing following fire; the use of natural and management-created firebreaks to protect early-seral communities from frequent fire intervals; rehabilitation and reclamation actions following soil-disturbing activities; management of noxious weeds; off-highway vehicle (OHV) use; wild horse management; recreational use; and mining.

Vegetation management has been based on existing inventories delineating the ecological status of vegetation communities. The basis for defining ecological status and potential is site descriptions that provide a summary of expected species composition and variability with vegetation communities, as well as anticipated responses with management. The delineation of ecological sites is based on soils and climate conditions. In most of the resource area, the ecological site inventory has been completed which will help provide information for future decisions. Vegetation communities in late-potential natural community seral stages express a mosaic of species composition and structure, consistent with site potential, and reflect a range of possible plant communities that should meet the objectives defining the desired range of conditions.

Management Direction by Alternative

<u>Alternative A</u>

Upland shrub steppe communities would be managed to improve ecological status of those pastures currently in early- or mid-seral stage that are not meeting specific

management objectives. Within those pastures in late-seral to potential natural community stage, management would be implemented to maintain them. Prescribed fire would continue to be the preferred method to control the dominance of woody species such as invasive western juniper and decadent bitterbrush, but mechanical, chemical, and biological methods could also be used. Emphasis would be placed on providing for uses which are consistent with meeting ecological objectives, including increasing forage production through the development and implementation of economically feasible grazing systems and rangeland improvements. Nonnative seedings would be managed to improve or maintain their vegetation composition to ensure continued forage production. Vegetation communities that provide deer and pronghorn winter range would be managed to supply necessary cover, forage, and browse.

Management actions would be implemented to rehabilitate and/or vegetate plant communities in early- or mid-seral stages only where such communities do not meet specific management objectives. Vegetation manipulation projects would be implemented primarily to enhance forage production, and protect soil, water, and vegetation resources. The future composition of vegetation communities would be the result of continued aggressive wildfire suppression. Following wildland fire, priority would be placed on the rehabilitation of vegetation communities to protect soil, water, and vegetation resources, and to prevent unacceptable damage. Following fire, rehabilitated areas would be closed to grazing at least two growing seasons. The decision to resume grazing would be based on monitoring data. Exceptions may be justified on a case-by-case basis.

Seedings would be implemented with appropriate mixes of adapted perennial and annual plant species. Species mixes would be determined on a site-specific basis dependent on the probability of successful establishment and risks associated with seeding failure.

Alternative B

Upland native shrub steppe communities would be managed to attain a trend toward the desired range of conditions based on site potential. Management actions would maintain the condition of those native communities where vegetation composition and structure meets desired conditions. Nonnative seedings in poor or fair condition would be managed to restore production and vigor, while those seedings in good to excellent condition would be managed to maintain their vegetation composition to ensure continued forage production. Forage production and other commodity values of native and nonnative vegetation resources would be optimized to minimize competition with herbaceous species. Upland shrub cover would be maintained at minimum to moderate levels of desired conditions in selected native vegetation communities and in nonnative seedings. The frequency, distribution, and ecological integrity of native stands of mountain shrubs would be restored and maintained.

Management actions would be implemented to rehabilitate and/or establish desirable vegetation communities in areas not meeting desired conditions due to dominance by annual, weedy, or woody species. Vegetation would be manipulated to direct the trend toward desired conditions, enhance commodity production, and protect soil, water, and vegetation resources. Emphasis would be placed on the use of prescribed fire and wildland fire use to reduce woody species dominance, optimize forage production, and direct vegetation composition toward desired conditions, but mechanical, chemical, and biological methods could also be used. Prescribed fire prescriptions would include consideration of short-term impacts to grazing management as well as long-term benefits of increased herbaceous production. Following wildland fire, priority would be placed on the rehabilitation of rangeland vegetation communities at risk of dominance by annual and woody species.

Seeding mixes would be determined on a site-specific basis dependent on the probability of successful establishment and risks associated with seeding failure. The selection of appropriate species would include the use of forage-producing species, and nonnative and native perennial species that support livestock production and other commodity values, as well as the function of upland vegetation communities. Treatment configuration of prescribed burns would emphasize commodity production as opposed to mosaics that benefit wildlife.

Areas burned by wildland fire, including those subsequently rehabilitated, would be deferred from grazing use through at least two growing seasons following fire or until monitoring data or professional judgment indicate that health and vigor of desired vegetation has recovered to levels adequate to support and protect upland function. Healthy nonnative perennial communities or communities dominated by annuals may be grazed prior to two growing seasons only if consistent with management objectives.

Alternative C

Upland native shrub steppe communities would be managed to attain trends toward a variety of desired range of conditions based on management objectives and site potential. Management actions would maintain the condition of those native communities where vegetation composition and structure meet desired conditions. Upland shrub cover would be maintained at moderate levels of potential for wildlife cover values and structural diversity in selected native vegetation communities. The frequency, distribution, and ecological integrity of native stands of mountain shrubs would be restored and maintained where site potential would support these species. Nonnative seedings, if used at all, would be evaluated in terms of wildlife connectivity, total ecological diversity, and other factors to meet desired range of conditions.

Management actions would be implemented to rehabilitate and/or vegetate plant communities that do not meet the desired range of conditions due to dominance by annual, weedy, introduced, or woody species such as invasive western juniper and decadent bitterbrush. Vegetation manipulation projects would be implemented primarily to direct trend toward the desired conditions, improve structural and species diversity, and microbiotic crusts, and protect soil, water, and vegetation resources.

Emphasis would be placed on the use of prescribed and wildland fire use to regulate woody species dominance and direct vegetation composition toward the desired conditions, but mechanical, chemical, and biological methods could also be used. Priority would be placed on the restoration of shrub steppe vegetation communities at risk due to dominance by annual and woody (invasive western juniper) species. In appropriate locations, experimental inoculation of microbiotic crusts would be attempted to reestablish desired microdiversity.

Seedings would be implemented with appropriate mixes of adapted perennial and annual native plant species. Species mixes would be determined on a site-specific basis dependent on the probability of successful establishment and risks associated with seeding failure. Preference would be toward the use of native plant species from local, wild seeds or seeds adapted to the resource area.

Areas burned by wildland fire, including those subsequently rehabilitated, would be rested from grazing a minimum for two full years or until monitoring data or professional judgment indicate that health and vigor of desired vegetation has recovered to levels adequate to support and protect upland function.

Alternative D

Upland native shrub steppe communities would be managed to attain a trend toward the desired range of conditions based on management objectives and site potential. Management actions would maintain the condition of those native communities where vegetation composition and structure meet desired conditions. Nonnative seedings in poor or fair condition would be managed to restore production and vigor, as well as to improve structure and species diversity. Nonnative seedings in good or excellent condition would be managed to maintain seeding production, improve structural and species diversity, and maintain forage production. Upland shrub cover, at moderate levels of potential, would be maintained for natural values and wildlife cover in most native vegetation communities where potential exists, and in nonnative seedings as consistent with other resource management objectives. The frequency, distribution, and ecological integrity of native stands of mountain shrubs would be restored and maintained where site potential supports these species to meet the desired conditions and other management objectives.

Prescribed and wildland fire use would be implemented to rehabilitate or vegetate plant communities that do not meet desired conditions due to dominance by annual, weedy, or woody species such as invasive western juniper and decadent bitterbrush, but mechanical, chemical, and biological methods could also be used. Vegetation manipulation projects would be implemented primarily to direct the trend toward desired conditions, improve structural and species diversity, and protect soil, water, and vegetation resources. Priority would be placed on the rehabilitation of shrub steppe vegetation communities at risk due to dominance by annual species and invasive western juniper.

Seedings would be implemented with appropriate mixes of adapted native and nonnative perennial and annual plant species; although native species would be preferred for seedings. Species mixes would be determined on a site-specific basis dependent on the probability of successful establishment and risks associated with seeding failure. Use of competitive native species would be emphasized in seedings within sites moderately and highly susceptible to degradation.

Areas burned by wildland fire, including those subsequently rehabilitated, would be rested from grazing at

least two growing seasons following fire or until monitoring data indicate that health and vigor of desired vegetation has recovered to levels adequate to support and protect upland function.

Alternative E

Natural processes would define vegetation composition across the landscape. No vegetation rehabilitation would be implemented following wildland fire.

Management Goal 2—*Protect healthy, functioning ecosystems consisting of native plant communities. Restore degraded high-potential landscapes and decadent shrublands.*

Rationale

Beginning in the 1960s, an awareness began concerning the importance of public lands for the maintenance of biological diversity. The goals, objectives, and priorities for the fish/wildlife/botanical program were established in the national BLM "Fish and Wildlife 2000: A Plan for the Future" (USDI-BLM 1987c), and adopted as policy for implementation by all field offices. The scope and design of the plan was to provide for improved management of fish, wildlife, and botanical habitats on public lands for the social and economic well-being of all Americans. Prepared in concert with its national counterpart, Oregon-Washington's plan was to carry out the goals, objectives, and priorities on the local field level. This vision incorporates cooperation with other organizations and user groups such as other Federal agencies, state agencies, conservation organizations and Challenge Cost Share/Volunteer Contribution programs.

Recent research shows that microbiotic crusts may be indicators (e.g., an early warning system) of rangeland health. Although no relationship between total vascular plant cover and crust cover has been found, there is a correlation between perennial bunchgrass cover and crust cover. Bare ground is often inversely related to crust cover, which could mean that a decline in crust cover produces an increase in bare soil, rather than an increase in vascular vegetation.

During heavy fire years in the West, desired seed species for rehabilitation or restoration are often limited or not available. A program is being explored to collect, plant, and grow native seed to produce a seed bank of locally genetic and adapted plant species that would facilitate future seed planning programs.

Management Direction by Alternative

Alternative A

Restoration projects would be completed on a case-by-case basis, usually to resolve a crisis such as wildland fire rehabilitation, to mitigate another resource program such as rehabilitation of gravel pits or livestock grazing, or resolve a single issue. No resource area-wide plan would be created for rehabilitation of degraded landscapes or decadent shrublands.

Alternative B

The prioritization for vegetation restoration would be from a forage production standpoint. Restoration would be linked to increase of forage production and mitigating the development of salable minerals (rock, gravel, cinder, etc.) and commodity-driven activities.

Alternative C

Resource area-wide planning would drive protection of healthy functioning ecosystems consisting of native plant communities. High priority would be given to restoration of degraded landscapes and decadent shrublands through projects such as prescribed burns, seeding of desirable native species, development of seed banks for rehabilitation, and planting of shrubs/trees in riparian zones. The prioritization for restoration would be from a subbasin or watershed perspective (see Water Resources/Watershed Health section). This would maintain functioning native plant communities where they currently exist; improve plant community structure in priority areas that are currently ecologically degraded, change plant community structure where shrubs dominate grassland sites, and protect and restore microbiotic crusts. Locally grown native seeds or those adapted to the planning area would be preferred for rehabilitation and restoration of degraded or burned areas.

Specific projects would be developed by range, wildlife, hydrology, and botany for restoration of degraded areas. As an example: microbiotic crust inoculation to reintroduce crust species could be applied in degraded areas where crusts existed.

A priority for restoration would be the Sheeprock area, noted by the "Lakeview Grazing Management Final Environmental Impact Statement" (USDI-BLM 1982a) to have vast areas of poor condition rangeland. The area falls within a watershed which ICBEMP identified as having declined substantially since historic times.

Restoration methods could include prescribed burning or brush control and reseeding. Checkdams and other structures could be installed to control erosion.

Alternative D

Resource area-wide planning would drive protection of healthy functioning ecosystems consisting of native plant communities. High priority would be given to restoration of degraded landscapes and decadent shrublands through projects such as prescribed burns, seeding of desirable native and nonnative species, development of native plant seed banks for rehabilitation, and planting of shrubs/trees in riparian zones. The prioritization for restoration would be from a subbasin or watershed perspective (see Water Resources/Watershed Health section). This would maintain functioning native plant communities where they currently exist, improve plant community structure in priority areas that are currently ecologically degraded, change plant community structure where shrubs dominate grassland sites, and protect and restore microbiotic crusts. Locally grown native seeds or those adapted to the planning area would be preferred for rehabilitation and restoration of degraded or burned areas.

Specific projects would be developed by range, wildlife, hydrology, and botany for restoration of degraded areas. As an example: microbiotic crust inoculation to reintroduce crust species could be applied in degraded areas where crusts existed.

A priority for restoration would be the Sheeprock area, noted by the "Lakeview Grazing Management Final Environmental Impact Statement" (USDI-BLM 1982a) to have vast areas of poor condition rangeland. The area falls within a watershed which ICBEMP identified as having declined substantially since historic times. Restoration methods could include prescribed burning or brush control and reseeding. Checkdams and other structures could be installed to control erosion.

Alternative E

No active restoration projects would be done. Restoration, including recovery following wildland fire, would depend on natural processes.

Riparian and Wetland

Management Goal—*Restore, maintain, or improve riparian vegetation, habitat diversity, and associated watershed function to achieve healthy and productive riparian areas and wetlands.*

Rationale

FLPMA requires BLM to comply with state water quality standards and manage public land in a manner that would preserve and protect certain land in its natural condition. In addition to FLPMA, numerous laws, regulations, policies, Executive orders, and memorandums of understanding and agreements direct BLM to manage its riparian/wetland areas for biological diversity, productivity, and sustainability for the benefit of the Nation and its economy. These directives are listed in Appendix B. Specifically, FLPMA and PRIA direct BLM to ". . . manage public lands according to the principles of multiple use and sustained yield . . ." and ". . . manage the public lands to prevent unnecessary degradation . . . so they become as productive as feasible." FLPMA, section 102 , also requires that public land be managed for multiple use and sustained yield in a manner that would protect the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resource, and archaeological values.

Riparian areas in good condition are essential to water quality improvement, fish habitat, and water quality yield. Riparian zones are the focal point and best overall indicator of watershed health.

Attainment of proper functioning condition would be a first step to moving habitat conditions of entire watersheds and their components (uplands, streams, riparian/wetland areas, and lakes and ponds) toward achieving terrestrial and aquatic objectives. Management practices such as grazing, mining, recreation, forest harvesting, and other forms of vegetation management would be designed for healthy sustainable and functional rangeland ecosystems as described in the "Standards for Land Health for Lands Administered by the Bureau of Land Management in the States of Oregon and Washington" (USDI-BLM 1997a, 1998j).

The next step in the attainment of desired range of conditions would be to implement managment actions that meet riparian management objectives (Appendix F2) within riparian/wetland areas and riparian conservation areas. Riparian conservation areas occupy that portion of watersheds where aquatic- and riparian-dependent resources receive primary emphasis for the maintenance, protection, and restoration of ecosystem processes and functions. Riparian management objectives are generally instream and riparian characteristics within the flood-prone area, expressed as values for stream channel conditions and provide criteria to help assess aquatic, water quality, and riparian/wetland goals and objective attainment of desired range of

conditions. The desired range of conditions of riparian/wetland areas usually fall between proper functioning condition and the biological (or site) potential (Appendix F2). Riparian management objectives for vegetation would be site specific based on riparian ecological site inventory assessment. Although attainment of proper functioning condition essentially assures that stream and riparian/wetland areas function and may be on an improving trend, it may not meet desired conditions. Management priorities in upland watershed areas and riparian conservation areas would focus prescriptions for the attainment of these desired conditions.

There are a number of BLM policies relating to riparian/wetland areas including:

- Focus management on entire watersheds using an ecosystem approach, involving all interested landowners and affected parties;
- Achieve riparian/wetland area objectives through the management of existing and future uses;
- Ensure that new plans and existing plans, when revised, recognize the importance of riparian/wetland values, and initiate management to maintain, restore, improve, or expand them;
- All sites are making significant progress towards meeting standards of rangeland health.
- Prescribe riparian/wetland management based on site-specific physical, biological, and chemical condition and potential; and
- Use interdisciplinary teams to inventory, monitor, and evaluate management of riparian/wetland areas and to revise management where objectives are not being met.

Monitoring

Monitoring for the attainment of desired range of conditions may include the following:

- Assessment of proper functioning condition (Technical References 1737-11/15; USDI-BLM 1993e, 1998i) and measurement of parameters identified in the riparian management objectives for ICBEMP (see Appendix F2). Attainment of proper functioning condition and riparian management objectives is considered a minimum step in the process of achieving desired range of conditions. Proper functioning condition and the riparian objectives in most cases do not equate to the desired range of conditions. Determination of proper functioning condition and riparian management objectives is an interdisciplinary process.
- Most of the current information on riparian/wetland areas in the planning area has been based on assessments of riparian condition and trend. Although the BLM standard is to use proper functioning condition assessments, trend assessments can quickly provide initial information about progress toward desired conditions. Trend assessments include the following: Wildlife and aquatic monitoring, water quality monitoring, Rosgen channel typing, riparian site classification and assessment of change over time towards meeting desired range of conditions, low-level aerial photography and other remote-sensing technologies.

Management Direction by Alternative

<u>Alternative A</u>

Implementation of existing riparian/wetland objectives, maintenance or improvement of existing riparian/wetland exclosures, and designation or identification of riparian pastures are described in existing plans and biological opinions. In addition, riparian/wetland areas would be managed for the attainment of proper functioning condition. Areas not in proper functioning condition would be managed to attain an upward trend in the composition and structure of key riparian/wetland vegetation and desired physical characteristics of the stream channel. Uses in riparian/wetland areas would be adjusted if current management would not allow for the maintenance or measurable progress toward the attainment of proper functioning condition. Uses within the watershed would continue to occur as long as the physical and biological condition and degree of function necessary to sustain healthy rangeland ecosystems is maintained. Acquisition of riparian areas through exchange and with willing participants would be pursued. Western juniper or other vegetation management would be allowed only in a few specific areas.

Restoration projects would be implemented in those areas where conditions are not naturally recovering or are currently functioning, but are at risk of degradation. Grazing systems and exclusion on riparian/wetland areas would be determined on a case-by-case basis to promote or maintain proper functioning condition on a minimum of 75 percent of these areas.

Current spring developments would be maintained and new developments/waterholes, as identified in the existing plans, would be constructed only if they do not negatively impact special status species. This would include new water developments in intact playas and lakebeds.

Roads could be maintained to minimize impacts to riparian zones.

Alternative B

Riparian/wetland areas would be managed for uses that emphasize commodity production, while providing for the attainment of proper functioning condition, riparian management objectives, and the desired range of conditions of riparian conservation areas.

Areas not in proper functioning condition would be managed to attain an upward trend in the composition and structure of key riparian/wetland vegetation and desired physical characteristics of the stream channel. Managed uses in riparian conservation areas would be allowed as long as there is progress toward attainment of State water quality standards, proper functioning condition, and riparian management objectives.

This alternative focuses specifically on the protection and maintenance of the area within the riparian conservation area and allows those commodity uses and activities in the remaining watershed to occur. Any use or activity within the riparian conservation area that would adversely affect water quality standards and/or riparian/wetland resources would be excluded from the riparian conservation area. Enforcement would be in the form of buffered exclusion areas or the use of temporary or permanent fencing. Management options for uses would require measurable progress toward the attainment of water quality, proper functioning condition, and riparian management objectives within riparian conservation areas at a positive annual rate. The desired range of conditions would be set at a lower level than other alternatives so long as objectives for water quality and proper functioning condition are met. Active restoration activities, such as intensive woody riparian vegetation plantings and the installation of instream structures, would be used in areas unable to attain proper functioning condition, riparian management objectives, and the desired range of conditions through changes in management alone.

Restoration projects would be implemented in those areas where conditions are not naturally recovering or are currently functioning, but are at risk of degradation. Grazing systems and exclusion on riparian/wetland areas would be implemented to promote or maintain proper functioning condition on a minimum of 75 percent of these areas.

Current spring developments would be modified to allow riparian function while still allowing for livestock water availability. Water developments would be allowed in intact playas and lakebeds only if development would not negatively impact special status species.

Roads could be maintained to minimize impacts to riparian zones.

Alternative C

Riparian/wetland areas would be managed for uses that emphasize maintenance, improvement, and/or restoration of naturally-occurring values that provide for the attainment of water quality, proper functioning condition, riparian management objectives, and desired range of conditions. Active restoration activities, such as intensive woody riparian vegetation plantings, vegetation manipulation, and installation of instream structures, would be used.

Areas not in proper functioning condition would be managed to attain an upward trend in the composition and structure of key riparian/wetland vegetation and desired physical characteristics of the stream channel. Uses within the riparian conservation area and contributing upland watersheds would be allowed as long as there is unimpeaded progress toward attainment of State water quality standards, proper functioning condition, and riparian management objectives.

Riparian conservation areas would be identified and delineated. Management options focus on uses that allow for the protection, maintenance, and restoration of riparian conservation areas and upland watersheds and the unimpeaded progress toward the attainment of water quality standards, proper functioning condition, and riparian management objectives within riparian conservation areas.

Spring sources would be protected, as needed, from trampling by livestock and wild horses. All BLM managed and maintained roads would be removed from riparian conservation areas.

No new playa lakebed development would be allowed in intact systems. Baseline data would be collected on all developed playa lakebeds to determine the feasibility of restoration or enhancement.

The acquisition of riparian areas from willing private landowners through exchange or purchase would be a priority.

Alternative D

Riparian/wetland areas would be managed for uses within the watershed that emphasize the maintenance or improvement of naturally-occurring values while providing for commodity production and the attainment of proper functioning condition, riparian management objectives, and desired range of conditions. Active restoration activities, such as intensive woody riparian vegetation plantings, vegetation manipulation, and installation of instream structures, would be used. Prior to structural work, management would be in place that would allow improvement in stream conditions.

Areas not in proper functioning condition would be managed to attain an upward trend in the composition and structure of key riparian/wetland vegetation and desired physical characteristics of the stream channel. Uses within the riparian conservation area and contributing upland watersheds would be allowed as long as there is measurable progress towards attainment of State water quality standards, proper functioning condition, and riparian management objectives. Specifically, in fenced Federal range allotments, BLM riparian sites that are not in proper functioning condition and where it is determined that livestock are contributing to the condition, livestock would be excluded. Spring developments would be modified to promote natural function where possible, but still allow livestock and wildlife access to developed water.

No new playa lakebed development would be allowed in intact systems. Baseline data would be collected on all developed playa lakebeds to determine the feasibility of restoration or enhancement.

Riparian conservation areas would be identified and delineated. Management options focus on uses and activities that allow for the protection and maintenance of riparian conservation areas and upland watersheds and the measurable progress toward the attainment of water quality, proper functioning condition, and riparian management objectives (within riparian conservation areas) at a positive annual rate. All BLM managed and maintained roads would be removed or relocated from riparian conservation areas if they are impacting the functioning of the riparian area.

The acquisition of riparian areas from willing private landowners through exchange or purchase would be a priority.

Alternative E

Commodity production would be excluded from all public lands. Noncommodity and public uses and activities would be allowed along streams, around riparian/wetland areas, and in associated watersheds, if they would promote or have no effect on water quality, proper functioning condition, and riparian management objectives.

Streams, water bodies, and riparian conservation areas not meeting minimum State water quality standards, proper functioning condition, and riparian management objectives would be managed to attain an upward trend in the composition and structure of key riparian/wetland vegetation and desired physical characteristics of the stream channel. Noncommodity uses within the riparian conservation areas and contributing upland watershed areas that adversely affect water quality and/or lead to stream channel or riparian/wetland resource degradation would be adjusted, restricted, or limited where needed.

Spring or other water developments would no longer be maintained (including playa lakebeds) except those that are critically needed for wildlife use.

Forest and Woodlands

Management Goal 1—*In commercial (pine) forest stands, maintain or restore forest health and meet wildlife habitat needs.*

Rationale

ICBEMP has documented declines in forest health of the interior pine forests (USDA-FS and USDI-BLM 1996a). Exclusion of natural fire has resulted in overstocked stands and a large increase in the western juniper and white fir components of these stands. They are less resilient and are more susceptible to disturbances such as insect attack, drought, and wildland fires. Wildlife dependent on these forests are also at risk.

BLM policy requires that forest lands be classified into management categories, and this classification has been shown in USDI-BLM (unpublished). Most commercial forest lands in the planning area have been classified into the category "Lands Where Forest Management is for the Enhancement of Other Uses." These are areas where forest management activities are made for the benefit of other resource uses or values. These lands would not provide an assigned allowable sale quantity of commercial or noncommercial timber volume, due

to the relatively low volumes per acre, scattered location of the forest lands (making efficient management impractical), and the presence of other high resource values. However, forest products could be produced as a byproduct of management activities. Commercial forest lands not classified in this category include those within ACEC's whose management plans specifically exclude planned or sustained production of forest products. Other potential areas with such restrictions are Native American gathering areas for plant products and old growth western juniper areas.

Management Direction by Alternative

Alternatives A–D

Due to the scattered locations of the commercial stands, harsh sites, and low volumes per acre, these lands are not suitable for intensive management for forest products. No allowable sale quantity would be declared. However, these forest stands can be managed in concert with surrounding lands to provide old growth wildlife habitat, hiding cover for mule deer, and watershed and scenic values. Management treatments to reduce overstocking, control competing vegetation, remove invasive western juniper or white fir, and reduce ground and understory ladder fuels, would be employed to improve forest health, increase resistance to insect and disease outbreaks, and reduce risk of catastrophic wildland fires.

Whenever adjacent lands are treated, whether private or national forest, treatment of the scattered BLM forest stands should be considered. Potential treatments include selective cuts focused on thinning, culturing around old growth trees in good condition, precommercial thinning, and prescribed fire to reduce ground fuels. Wildland fire use could be initiated once fuel loadings are reduced to more natural levels. Management of commercial forest land within ACEC's and other special areas would be guided by their specific management plans.

Alternative E

No stand treatments would be done. Suppression of wildland fire on commercial forest lands would be limited to the few areas where adjacent private property is located.

Management Goal 2—*Restore productivity and biodiversity in western juniper woodlands and quaking aspen groves.*

Rationale

Under presettlement conditions, periodic fires killed western juniper saplings. Western juniper distribution was generally limited to rocky areas with only light grasses and other low fuels to carry ground fires. These "natural" western juniper sites today are the old growth sites, containing trees hundreds of years old. Reduction and exclusion of natural fires by grazing of fine fuels and fire suppression has allowed western juniper to expand in area as well as density for the last 130 years. Western juniper is an aggressive competitor for water, and has replaced, or is in the process of replacing, native vegetation on many sites. Invasive western juniper are defined as those stands less than 130-years old. A loss of available forage for wildlife and domestic livestock, as well as increased soil erosion, has resulted. Quaking aspen stands have also been invaded by western juniper, and many are in decline from severe competition, as well as livestock browsing of sprouts.

The western juniper woodlands are considered noncommercial forest lands because the sites can only produce this noncommercial tree species. Most of these woodland stands are not naturally-occurring. In the absence of periodic natural fires, western juniper are spreading onto sites naturally occupied by other plant communities, notably mountain big sagebrush. BLM policy requires forest lands, even these unnatural stands, be classified into one of four forest management categories. The western juniper woodlands, both old growth and invasive, have been classified as "Lands Where Forest Management is for the Enhancement of Other Values." In other words, production of wood products is not the main objective of managing these western juniper woodlands. No allowable sale quantity is assigned to these lands, but removal of wood products to meet other resource objectives is allowed.

Management Common to Alternatives A–D

Inventory information for the western juniper woodlands would be compiled on an ongoing basis. The ecological site inventory, which identifies old growth western juniper sites on rocky ridges and other fire-protected areas, as well as invasive western juniper, would be completed in 2002. Additional inventory work could show western juniper stands by age class and canopy closure. These future inventories would allow much more precise management of western juniper lands to maximize the mix of other resource values presently inhibited by the western juniper cover.

When western juniper treatments are planned, Native American values or use would be evaluated. For example, traditional plant-gathering areas would need special protection. Affected Tribes would be contacted at an early stage in project planning.

Management of western juniper woodlands within research natural areas (RNA's), ACEC's, or other SMA's, would be guided by the specific management plan for each area.

When evaluating areas for western juniper treatment (including areas for commercial and public wood cutting), priority areas would be those areas where the western juniper is most adversely affecting other resources. These include quaking aspen groves, riparian areas, greater sage-grouse leks and primary habitat, deer winter range, bighorn sheep range, and younger, invasive western juniper in old growth western juniper sites. Age class of the western juniper, soil type, aspect, understory vegetation, and presence of noxious weeds would also be considered. Western juniper areas would be considered high priority for treatment where canopy cover is under 15 percent (areas that still have a grass and brush understory). These stands are more economically treatable due to the smaller size of western juniper trees and the potential for use of prescribed fire for effective control. Sales and other disposals of firewood, posts, poles, boughs, and other western juniper products, would be allowed where compatible with maintenance of other resource values. Combinations of one or more treatment methods (mechanical, chemical, biological, or prescribed fire) could be made in a treatment area. Mechanical treatments would be preferred when trying to preserve the shrub component important to wildlife.

Management Direction by Alternative

Alternative A

Western juniper woodlands are managed to meet public demand for timber and vegetative products, including firewood, posts, poles, boughs, and berries. No specific allowable cut or harvest goals are set. Some area-specific restrictions were required by the management framework plan. Recovery of biomass for generation of electrical energy is a recent development, and therefore was not addressed in the existing management framework plans. The only old growth western juniper management guideline, included in the present management framework plan, would prevent cutting of old trees for wildlife habitat purposes. However, protection of the old growth western juniper stands has been a management goal for several years. Quaking aspen groves are managed to maintain stand health and to meet wildlife habitat needs.

Alternative B

Commercial and public harvest within existing and newly-created cutting areas would be maximized. Up to 75 percent of western juniper stands would be treated by fire or mechanical cutting over the life of the plan. Recovery of biomass for energy production would be allowed on western juniper treatment areas. This would involve machine skidding of material to landings and creation of temporary roads. Old growth western juniper stands would be maintained or enhanced. All quaking aspen stands in the planning area with invasive western juniper would be treated early in the life of the plan. Invasive western juniper would be treated using prescribed fire and/or mechanical treatment on 12,000 to 25,500 acres of bighorn sheep range in the Devils Garden, East Lava Field (Squaw Ridge), Fish Creek Rim (Lynch Rim), South Warner Rim, Coleman Rim, South Abert Rim, and Hadley Butte herd ranges (see Map V-2). Treatments would reduce invasive western juniper by 30 to 70 percent within each of these areas over the life of the plan. Treatments occurring within WSA's would be consistent with the wilderness IMP (USDI-BLM1995b).

Alternative C

Commercial and public wood cutting would be allowed on up to 10 percent of woodland stands over the life of the plan. Up to 75 percent of woodlands would be treated using prescribed fire or mechanical cutting over the life of the plan. Recovery of biomass for energy production would be allowed on treatment areas. This would involve machine skidding of material to landings and creation of temporary roads. Old growth western juniper stands would be maintained or enhanced. All quaking aspen stands in the planning area with invasive western juniper would be treated early in the life of the plan. Invasive western juniper would be treated using prescribed fire and/or mechanical treatment on 12,000 to 25,500 acres of bighorn sheep range in the Devils Garden, East Lava Field (Squaw Ridge), Fish Creek Rim (Lynch Rim), South Warner Rim, Coleman Rim, South Abert Rim, and Hadley Butte herd ranges (see Map V-2). Treatments would reduce invasive western juniper by 30 to 70 percent within each of these areas over the life of the plan. Treatments occurring within WSA's would be consistent with the wilderness IMP (USDI-BLM 1995b).

Alternative D

Over the life of the plan, up to 50 percent of juniper woodlands would be treated by prescribed fire, commercial or public wood cutting, or mechanical treatment. Recovery of juniper for biomass and other products would be allowed in treatment areas where impacts to other resource values can be reduced to acceptable levels. This would involve machine skidding of material to landings and creation of temporary roads. Old growth western juniper stands would be maintained or enhanced. All quaking aspen stands in the planning area with invasive western juniper would be treated early in the life of the plan. Invasive western juniper would be treated using prescribed fire and/or mechanical treatment on 12,000 to 25,500 acres of bighorn sheep range in the Devils Garden, East Lava Field (Squaw Ridge), Fish Creek Rim (Lynch Rim), South Warner Rim, Coleman Rim, South Abert Rim, and Hadley Butte herd ranges (see Map V-2). Treatments would reduce invasive western juniper by 30 to 70 percent within each of these areas over the life of the plan. Treatments occurring within WSA's would be consistent with the wilderness IMP (USDI-BLM 1995b).

Alternative E

No commercial or public wood cutting would be allowed. Natural processes, including wildland fire, would regulate western juniper woodlands. Since no commodity production would be allowed, no material would be available for biomass recovery. Old growth stands would not receive any active management treatment. No quaking aspen stands would be treated to eliminate invasive western juniper.

Special Status Plants

Management Goal 1—*Manage public lands to maintain, restore, or enhance populations and habitats of special status plant species. Priority for the application of management actions would be: (1) Federal endangered or threatened species, (2) Federal proposed species, (3) Federal candidate species, (4) State listed species, (5) BLM sensitive species, (6) BLM assessment species, and (7) BLM tracking species.*

Rationale

Section 102.8 of FLPMA requires that public land be managed to protect the quality of ecological and environmental values, and where appropriate, to protect their natural condition.

The "Endangered Species Act" mandates management that leads to the conservation or recovery of federally listed threatened or endangered species. This Act, BLM policy, and Oregon State law also encourage management to protect special status species that are not currently listed as threatened or endangered.

Most plant species assigned to a special status category are limited in their distributions, populations, or habitats, and may be at risk over various geographic areas. It is in the public interest to prevent the need for Federal listing under the "Endangered Species Act" where evidence suggests that land uses are adversely affecting special status species not currently listed as threatened or endangered. There are both socioeconomic and biological benefits associated with conserving species to avoid Federal listing.

Maintenance, restoration, or enhancement of populations or habitat may each represent appropriate BLM management depending on the habitat needs of specific species. Restoration or enhancement may not always be the only choice regarding special status species. One potential limitation that could delay restoration or enhancement actions is that the biological mechanisms adversely affecting a species may not be understood well enough to identify needed management changes. Maintenance may be a preferred course of action where resource conditions are already considered to be a high quality.

Conservation agreements with USFWS detail monitoring, inventory, and plans to conserve the plants and their habitat; through this type of agreement, Federal listing can be postponed or negated by increasing the possibility of protection.

Management Direction by Alternative

Alternative A

Special status plant species habitats and populations would be managed so that BLM actions do not contribute to the need to list these species as federally threatened or endangered. Management for these species would emphasize maintenance rather than restoration and enhancement. Management would also be oriented toward providing habitat conditions that favor individual special status species. Conservation agreements would be written and implemented with the USFWS for selected species at highest risk.

Alternative B

All special status species habitats or populations would be managed so that BLM actions do not contribute to the need to list theses species as federally threatened or endangered. Management would be oriented toward providing habitat conditions that meet individual species requirements.

Alternative C

This alternative would include aggressive measures for special status species management. Restoration or enhancement of habitats and populations would occur in areas where it would be biologically sound and reasonable to do so. Maintenance would occur where habitat or population conditions are considered to be at or near their potential.

Conservation and recovery of special status plant species would require:

- Acquiring basic information of distribution and habitat requirements.
- Determination of kind and degree of threats.
- Monitoring and inventory data for the development of sound plans and management actions.
- Development and implementation of species or habitat management plans such as conservation agreements written and conducted with the USFWS for all of the special status plant species that have the BLM ranking of Bureau sensitive or the former Class Two ranking of the USFWS.
- Studies of the genetics and other biological parameters to determine what makes the plant species rare and the survival conditions for the plant and its habitat.

These actions would also require:

- Analyzing existing data and identifying gaps in data/information.
- Organizing inventories, monitoring, and management information through a standardized data base.
- Identifying actions and funding necessary to conserve, recover, and maintain special status plant species.
- Scheduling surveys at the appropriate time of year to locate and identify special status plants and take appropriate management actions (which might require avoidance or mitigation) prior to project implementation.
- Ensuring that management actions necessary to protect, conserve, and recover special status plants species are implemented, monitored, and tracked.
- Seeking to acquire appropriate lands having populations of species currently not protected.

Alternative D

This alternative would include aggressive measures for special status species management. Restoration or enhancement of habitats and populations would occur in areas where it would be biologically sound and reasonable to do so. Maintenance would occur where habitat or population conditions are considered to be at or near their potential.

Conservation and recovery of special status plant species would require:

- Acquiring basic information of distribution and habitat requirements.
- Determination of kind and degree of threats.
- Monitoring and inventory data for the development of sound plans and management actions.
- Development and implementation of species or habitat management plans such as conservation agreements written and conducted with the USFWS for all of the special status plant species that have the BLM ranking of Bureau sensitive or the former Class Two ranking of the USFWS.
- Studies of the genetics and other biological parameters to determine what makes the plant species rare and the survival conditions for the plant and its habitat.

These actions would also require:

- Analyzing existing data and identifying gaps in data/information.
- Organizing inventories, monitoring, and management information through a standardized data base.

- Identifying actions and funding necessary to conserve, recover, and maintain special status plant species.

- Scheduling surveys at the appropriate time of year to locate and identify special status plants and take appropriate management actions (which might require avoidance or mitigation) prior to project implementation.

- Ensuring that management actions necessary to protect, conserve, and recover special status plants species are implemented, monitored, and tracked.

- Seeking to acquire appropriate lands having populations of species currently not protected.

Alternative E

Natural processes would determine future conditions, except for management specified in recovery plans developed by the USFWS for federally listed species.

Management Goal 2—*Protect, restore, and enhance the variety of native plant species and communities in abundance and distribution that provides for their continued existence and normal functioning.*

Rationale

The Oregon Natural Heritage Advisory Council (1998) designates special ecosystems as cells which represent unique ecosystems that make a significant contribution to biodiversity. The "Natural Heritage Act" of 1979, as revised, specifies that these cells represent Oregon's natural heritage resources. As such, designation of these areas as RNA's protects one or more plant community elements and may also protect special status plants. One of the goals for an RNA is to preserve gene pools of endangered plants; within the BLM, RNA's are managed as ACEC's. Creating an ACEC for a plant community or special status plant species helps facilitate protection, restoration, and enhancement of those plant species or communities.

Management Direction by Alternative

Alternative A

The Lost Forest RNA, which meets the Oregon Natural Heritage Program (ONHP) cell needs, would be retained. This disjunct forest represents a unique ecosystem and different gene pool than the "normal" ponderosa pine forests in Oregon. Researchers continue to work in the area. This existing ACEC/RNA and its associated values would be considered when allotments in the RNA are evaluated.

Alternative B

RNA management would be the same as under Alternative A, except one new area (Connley Hills) would be designated and managed as an ACEC/RNA.

Alternative C

Twelve new ACEC's would be designated, one existing area would be expanded (Abert Rim), and four existing ACEC/RNA's, would be retained. Of these, 11 areas would contain RNA's with Oregon Natural Heritage Program cells. Nine of those 11 areas contain special status plant species. Management in these areas could require avoidance or mitigation measures that limit other land uses.

Alternative D

Twelve new ACEC's would be designated, one existing area would be expanded (Abert Rim) and four existing ACEC/RNA's would be retained. Of these, 11 areas would contain RNA's with ONHP cells. Nine of those 11 areas contain special status plant species. Management in these areas could require avoidance or mitigation measures that limit other land uses.

Alternative E

No new ACEC's would be designated and existing ones would be revoked. Natural processes would be allowed to operate with no inventories, monitoring, or designation of these special areas.

Noxious Weeds and Competing Undesirable Vegetation

Management Goal—*Control the introduction and proliferation of noxious weeds and competing undesirable plant species, and reduce the extent and density of established populations to acceptable levels.*

Rationale

FLPMA and PRIA direct BLM to ". . . manage public lands according to the principles of multiple-use and sustained yield . . ." and ". . . manage the public lands to prevent unnecessary degradation . . . so they become

as productive as feasible." The introduction and spread of noxious weeds and undesirable plants within the planning area contributes to the loss of rangeland productivity, increased soil erosion, reduced species and structural diversity, loss of wildlife habitat, and in some instances may pose a threat to human health and welfare. The "Carlson-Foley Act" (Public Law 90-583) and the "Federal Noxious Weed Act" (Public Law 93-629) direct weed control on public land. Protection of natural resource values depends on educating people about the negative impacts of weeds and what actions agencies and individuals can take to prevent weeds from becoming established.

Management Common to Alternatives A–D

Noxious weed prevention and control would continue to be a priority. Under each of these alternatives, weeds would be controlled in an integrated weed management program which includes prevention education and cultural, physical, biological, and chemical treatments. Preventative measures such as public education and livestock and wildlife management would be employed to maintain or enhance desirable vegetation cover and reduce the distribution and introduction of noxious weed seed and plant parts. Mechanical and manual control methods and burning treatments would physically remove noxious weeds and unwanted vegetation; biological controls would introduce and cultivate agents such as insects and pathogens that naturally limit the spread of noxious weeds; and chemical treatments using approved herbicides would be applied where mechanical and/or biological controls are not feasible. Integrated weed management would be implemented in cooperation with the State of Oregon, Lake County, private interests, and neighboring counties and Federal jurisdictions.

Currently there are individual weed management plans for two specific geographic areas—the "Warner Basin Weed Management Area Plan" (USDI-BLM 1999g) and the "Abert Rim Weed Management Area Plan" (USDI-BLM 1995e). A Greater Abert Weed Management Area would be proposed which would include the existing Abert Rim Weed Management Area and the rest of the Lake Abert Subbasin. The plan would be developed in consultation and cooperation with private landowners, ODFW, USFWS, U.S. Forest Service (USFS), Tribal governments, and other stakeholders in the Lake Abert Basin. The plan would be patterned after the "Warner Basin Weed Management Area Plan."

The LRA weed control program is designed to address the dynamic nature of noxious weeds such as increasing numbers of species, different plant physiology for the various species, changing conditions of infestations, and changing technologies. Selection of the appropriate control method would be based on such factors as the growth characteristics of the target species, size of the infestation, location of the infestation, accessibility of equipment, potential impacts to nontarget species, use of the area by people, effectiveness of the treatment on target species, and cost. Depending on the plant's characteristics, these methods may be used individually or in combination and may be utilized over several years. Due to the length of seed viability, annual germination of seed from previous years, and the characteristics of certain plants, treatments could occur annually for a period of 10 or more years. Because weed infestations vary annually due to new introductions, spread of existing infestations, and the results of prior year treatments, site-specific reviews of known locations would be conducted annually prior to initiating weed treatment activities.

Herbicide treatment: Herbicides that may be used are those approved in the "Vegetation Treatment on BLM Lands in Thirteen Western States EIS" (USDI-BLM 1991b), or any that are approved through an amendment or other agency approval process (see Appendix G of the Draft RMP/EIS for the current list of approved chemicals). Application would take place only in accordance with the manufacturer's label and by qualified/certified applicators. Methods of application include wiping or wicking, backpack spraying, spraying from a vehicle with a hand gun or boom, aerial spraying, or other approved methods.

Special management areas:

WSA's—Noxious weeds occurring in WSA's would be treated with methods that are in accordance with the provisions of Chapter III.C.2 of the Bureau's IMP (USDI-BLM 1995b).

ACEC's—In the Warner Wetlands ACEC, weeds would be managed according to the "Warner Basin Weed Management Area Plan" (USDI-BLM 1995g). In the Lake Abert ACEC and the proposed Abert Rim addition, weeds would be managed according to the "Abert Rim Weed Management Area Plan" (USDI-BLM 1995e).

Management Direction by Alternative

Alternative A

Continue to apply approved weed control methods including mechanical, biological, and chemical treatments as identified in "Vegetation Treatment on BLM

Lands in Thirteen Western States FEIS and ROD" (USDI-BLM 1991b), "Supplement to the Northwest Area Noxious Weed Control Program FEIS and ROD" (USDI-BLM 1987a), and the 1994 "Integrated Noxious Weed Control Program Environmental Assessment" (USDA-BLM 1994d). Emphasis is on detection of new invaders and inventory and control in proven hot spots such as roads, rights-of-way, waterholes, and recreation sites.

Alternative B

Given the increased commodity production and extraction under this alternative, the potential for the introduction of new noxious weed species and additional sites of existing noxious weed species is very high. Therefore, increased efforts in prevention education and inventory would be implemented to detect new sites and treat them before they spread. Weed control methods would be the same as those in Alternative A.

Alternative C

Under this alternative, the weed program would be aggressive. There would be a zero tolerance for noxious weeds in the resource area. Eradication attempts would occur on all existing sites. Increased efforts in inventory to detect and prevent the establishment of new invaders, and complete restoration of all weed sites to desirable plant species would be the goal. Education and outreach efforts would be increased and expanded to include areas outside of Lake County in an effort to "head-off" species that may spread into the resource area.

Alternative D

Continue to apply approved weed control methods including mechanical, biological, and chemical treatments as identified in "Vegetation Treatment on BLM Lands in Thirteen Western States FEIS and ROD" (USDI-BLM 1991b), "Supplement to the Northwest Area Noxious Weed Control Program FEIS and ROD" (USDI-BLM 1987a), and the 1994 "Integrated Noxious Weed Control Program Environmental Assessment" (USDA-BLM 1994d). Emphasis is on detection of new invaders and inventory and control in proven hot spots such as roads, rights-of-way, waterholes, and recreation sites, but with an expanded program to inventory areas that are less disturbed, remote, or previously uninventoried. Weed sites would be restored to desirable species. Control efforts would be expanded to include any new sites detected. Education and outreach efforts would be expanded to include areas outside of Lake County in an effort to "head-off" species that may spread into the resource area.

Alternative E

Under this alternative, natural processes would be the primary influence on noxious weed distribution. Only high priority noxious weed species and infested areas on BLM lands would be actively treated to protect adjacent private property.

Soils and Microbiotic Crusts

Management Goal—*Manage soil and microbiotic crusts on public lands to maintain, restore, or enhance soil erosion class and watershed improvement. Protect areas of fragile soil using best management practices (BMP's).*

Rationale

Soils are the foundation for all vegetation growth. Without healthy, productive, intact soil, management goals for vegetation, watershed, wildlife, and livestock cannot be achieved. Soils in the planning area are semi-arid, young, and poorly developed. Chemical and biological soil development processes such as rock weathering, decomposition of plant materials, accumulation of organic matter, and nutrient cycling proceed slowly in this environment. Soil recovery processes are also slow; therefore, disruption of soil can lead to long-term changes in soil ecology and productivity.

Knowledge of local ecological sites such as soil characteristics and vegetation potential (available from ecological site inventory) is essential for evaluation of impacts and management. In general, ecological sites dominated by shrubs listed in Chapter 2 will have a well-developed biological crust. The main characteristics that will modify crust cover is soil surface texture and potential herbaceous plant density. The plant communities listed in Chapter 2 as having a high potential for crust cover are the dominant communities in the LRA. However, sites where vegetation structure has been modified due to introduction of invasive weeds or crested wheatgrass will have reduced potential for biological crusts (USDA-FS and USDI-BLM 2000b).

According to research in the northern Great Basin by Ponzetti (2000), "Biotic soil crusts show promise as indicators of rangeland health, and are increasingly

being recognized as important components of arid and semi-arid communities. Rangeland health is defined as the degree to which the integrity of the soil, vegetation, water, air, and ecological processes of rangeland ecosystems are sustained. Biotic crusts improve the sustainability of rangeland ecosystems by increasing soil stability and contributing to nutrient cycles. They appear to limit germination of *Bromus tectorum*, an invasive exotic annual grass. Biotic crusts in the arid and semi-arid West do not appear to limit vascular plant cover; greater crust cover often accompanies greater plant cover, or is unrelated to plant cover. In this research, we found no relationship between total vascular plant cover and crust cover, but there was a positive correlation between crust cover and perennial bunchgrass cover. Bare ground is often inversely related to crust cover, suggesting that a decline in crust cover produces an increase in bare soil, rather than an increase in vascular vegetation. In addition, biotic crusts may serve as an early warning system, since they appear to be more sensitive to disturbance from livestock than vascular plant communities."

Management Direction by Alternative

Alternative A

Soils protection and management would occur mainly as mitigation for soil-disturbing projects on a case-by-case basis. Current grazing practices and watershed management would be continued. Road maintenance and new road construction would continue at current rates.

Alternatives B-E

BMP's to protect and manage soil and microbiotic crusts would be implemented for all ground-disturbing activities including new projects, livestock grazing, and road maintenance and construction. See Appendix D for a complete description of BMP's.

Water Resources/Watershed Health

Management Goal 1—*Protect or restore watershed function and processes which determine the appropriate rates of precipitation capture, storage, and release.*

Rationale

All the land in the resource area is part of a watershed. These discrete areas process water as it comes into the system as precipitation. Watersheds receive precipitation and then lose it to the atmosphere by evaporation, evapotranspiration, and sublimation. Watersheds move water across the land surface through the shallow subsurface zone (soil mantle) and deeper groundwater aquifers. Watershed function is controlled by climate, geology, topography, vegetation, and soil characteristics.

Vegetation and soil conditions change naturally over time in response to climate, fire, and other natural ecological processes. The rate water is captured by the watershed, the amount of storage available, and the rate and location of water release depends on the amount and type of vegetation and type and condition of soil. These parameters are affected by land management activities.

Watersheds provide the environment to which species, populations, and communities have adapted. Watersheds provide the habitat formed by natural processes which support the distribution, diversity and complexity of animal and plant species.

Rangelands are managed according to the "Standards for Land Health for Lands Administered by the Bureau of Land Management in the States of Oregon and Washington" (USDI-BLM 1997b). These standards and guidelines provide a clear statement of agency policy and direction for those who use public lands and for those who manage and are accountable for public land conditions. The objectives are ". . . to promote healthy sustainable rangeland ecosystems; to accelerate restoration and improvement of public rangelands to properly functioning conditions . . . and to provide for the sustainability of the western livestock industry and communities that are dependent upon productive, healthy public rangelands."

Healthy watersheds are the foundation of rangeland health objectives. To meet these objectives, the regulations on rangeland health identify fundamental principles providing direction in the management and use of rangeland ecosystems.

A hierarchy, or order, of ecological function and process exists within each ecosystem or watershed. Each system consists of four primary, interactive components: a physical component, a biological component, a social component, and an economic component. This perspective implies that the physical

function of an ecosystem supports the biological health, diversity, and productivity of that system. In turn, the interaction of the physical and biological components of the ecosystem provides the basic needs of society and supports economic use and potential.

The fundamentals of rangeland health (Appendix E4 of the Draft RMP/EIS) combine the basic precepts of physical function and biological health with elements of law relating to water quality, and plant and animal populations and communities. They provide direction in the development and implementation of the standards for rangeland health.

Common to All Alternatives

Watershed management would incorporate required state and Federal laws which protect the watershed health. BMP's are required by the CWA and developed during the NEPA process. Watersheds would be further protected by the evolution of watershed science and an increase of information and data for the resource area. This is incorporated into management through multi-scale analyses such as subbasin review, watershed analysis, and site-specific environmental assessment. The implementation of water quality management plans would improve the watershed condition of watersheds with water quality limited segments as defined by section 303(d) of the CWA. The criteria used to determine priority streams are presence of threatened or endangered species or habitat, water quality limited designation, an active watershed council, and willingness of other agencies to participate. High priority watersheds are:

- Deep Creek Watershed
- Honey Creek Watershed;
- Twentymile Watershed;
- Bridge Creek Subwatershed;
- Buck Creek Watershed;
- Guano Valley Watershed;
- Alkali Lake Watershed; and
- Sheeprock Basin Watershed

Management Direction by Alternative

Alternative A

Management activities and uses would continue on public land which allow healthy upland vegetation conditions. Uses and activities which address water resource-related objectives identified in existing planning documents, such as objectives relating to control of erosion and sedimentation, would be emphasized. Uses and activities would be managed to meet rangeland health standards (USDI-BLM 1997b).

Implementation of existing watershed health objectives to maintain or improve watershed condition would continue. Management activities and uses within a watershed would continue to occur as long as the physical and biological condition and degree of watershed function necessary to sustain watershed health is maintained.

On a case-by-case basis, close unnecessary roads or where resource damage is occurring. Construct and maintain roads to minimum standards. Continue existing upland grazing systems and exclosures.

Alternative B

Watersheds would be managed for uses and activities that emphasize commodity production, while providing for the attainment and maintenance of minimum watershed health criteria, proper functioning condition, and desired range of conditions. Public uses and activities would be allowed in watersheds with water quality limited stream segments as long as there is progression toward attainment of State water quality standards.

Management of watersheds with streams and water bodies not meeting minimum State water quality standards would focus on protection and maintenance of the area along the instream channels and within riparian conservation areas and allow those commodity uses and activities in the remaining watershed to occur. No activities would be allowed within the riparian conservation area that would adversely affect water quality, riparian habitat, or wetlands. Implementation would be in the form of buffered exclusion areas or the use of temporary and permanent fencing.

Management uses and activities would be the primary tool for maintenance and restoration of upland vegetation and soils condition. Close unnecessary roads or where resource damage is occurring. Construct and maintain roads to meet BMP's. Upland livestock

grazing would meet minimum standards.

Alternative C

Watersheds would be managed for uses and activities that emphasize restoration, protection, or improvement of watershed function and processes, and deemphasize commodity production. This alternative would strive to attain and maintain water quality standards, proper functioning condition, and desired range of conditions of the watersheds. Active restoration of native plant communities would be used in areas unable to attain the desired range of conditions through changes in management.

Watersheds with streams and water bodies not meeting minimum State water quality standards would be managed to attain an upward trend in the composition and structure of upland and riparian vegetation communities and desired soil conditions. Management activities and uses within the watershed that adversely affect infiltration rates, soil moisture storage, or safe release of water would be adjusted, restricted, or limited if desired vegetation and soil conditions could not be attained or maintained.

Management would focus on uses and activities which allow for the protection, maintenance, and restoration of upland watershed health and measurable progress toward the desired condition of vegetation and soils.

A priority for restoration would be the Sheeprock Allotment. This area was identified in ICBEMP as a watershed (habitat) that has declined substantially since historical times. Restoration methods could include prescribed burning or plowing and reseeding. Checkdams and other structures could be installed to control erosion.

Close and rehabilitate all roads on public lands causing resource damage. Do not increase the road density in any watershed with a low road density (less than 0.7 miles per sqaure mile). Minimize new road construction and implement BMP's. Livestock grazing would be managed to promote healthy watershed which include productive soil, native vegetation, and biological crusts. Prohibit management activities and uses, except when mandated by law, in perennial and intermittent drainages where such activities would adversely impact watershed function or processes.

Alternative D

Watersheds would be managed for uses and activities that emphasize restoration, protection, or improvement of watershed function and processes while providing for commodity production. This alternative would strive to attain and maintain water quality standards, proper functioning condition, and desired range of conditions of the watersheds. Active restoration of native plant communities would be used in areas unable to attain the desired range of conditions through changes in management.

Watersheds with streams and water bodies not meeting minimum State water quality standards would be managed to attain an upward trend in the composition and structure of upland and riparian vegetation communities and desired soil conditions. Management activities and uses within the watershed that adversely affect infiltration rates, soil moisture storage, or safe release of water would be adjusted, restricted, or limited if desired vegetation and soil conditions could not be attained or maintained.

Management uses and activities would be the primary tool for maintenance and restoration of upland vegetation and soils condition. However, enhancement and restoration projects would be implemented in those areas not recovering naturally. Management options would focus on uses and activities which allow for the protection, maintenance, and restoration of upland watershed health and measurable progress toward the desired condition of vegetation and soils.

A priority for restoration would be the Sheeprock Allotment. This area was identified in ICBEMP as a watershed (habitat) that has declined substantially since historical times. Restoration methods could include prescribed burning or plowing and reseeding. Checkdams and other structures could be installed to control erosion.

On a case-by-case basis, close and rehabilitate roads on public lands that are causing resource damage. Livestock grazing would achieve conditions of a healthy watershed which include mostly productive soils, native vegetation, and some biological crusts.

Alternative E

Commodity production would be excluded from all public lands. Watersheds would be managed for uses and activities that emphasize restoration, protection, or improvement of watershed function. Any attainment and maintenance of water quality standards, proper functioning condition, and desired range of conditions of the watersheds would be at a natural rate with no active restoration.

Maintain only those roads required by law or for health and safety. Allow no new roads except when required by law. No livestock grazing would be permitted. Remove existing exclosures.

Management Goal 2—*Ensure that surface water and groundwater influenced by Bureau of Land Management (BLM) activities comply with or are making significant progress toward achieving State of Oregon water quality standards for beneficial uses, as established by the Oregon Department of Environmental Quality (ODEQ).*

Rationale

The "Federal Water Pollution Control Act" (commonly known as the "Clean Water Act" [CWA]) of 1977, as amended, requires the restoration and maintenance of the chemical, physical, and biological integrity of the Nation's waters. BLM is responsible to meet the requirements of the Act on BLM-administered lands, but primacy in implementing the Act is retained by the State of Oregon. BLM is required to maintain water quality where it presently meets U.S. Environmental Protection Agency (EPA)-approved Oregon State water quality standards and improve water quality on public lands where it does not meet standards. State developed total maximum daily loads and State approved water quality management plans are required for watersheds containing water quality limited segments (Table 2-17 and Appendix F3), as defined by section 303(d) of the CWA. In addition to the Act, numerous laws, regulations, policies, and Executive orders direct BLM to manage water quality for the benefit of the Nation and its economy (refer to Appendix B). A discussion of the LRA strategy for developing water quality restoration plans is in Appendix F3.

Water quality is important not only for human use, but also for proper ecological function. Management practices such as grazing, mining, recreation, forest harvesting, and ecological restoration would be designed for healthy, sustainable streams and good water quality.

Common to all Alternatives

Establishment of total maximum daily loads for CWA section 303(d) listed water bodies is the responsibility of the State of Oregon with approval of by the EPA. It is also the State of Oregon's responsibility to develop a water quality management plan which details how the total maximum daily load would be implemented. It is BLM's responsibility to provide them a water quality restoration plan for the land they manage within any watershed containing a water quality limited segment. Each water quality restoration plan would identify adverse condition that BLM can improve within the watersheds which affect listed stream segments and specify management actions necessary to restore water quality and meet Oregon water quality standards.

Elements of a water quality restoration plan per USFS and BLM guidance are shown in Appendix F3. Water quality restoration plans would be developed for the watersheds with water quality limited stream segments. The State schedule would complete the Warner Valley Subbasin total maximum daily load in 2003, and the Summer Lake, Lake Abert, and Guano Subbasins in 2007. The water quality restoration plans would be done proactively and could be submitted to the State before the work is completed.

Management Direction by Alternative

Alternative A

Management activities and uses would continue on public land. Uses and activities which address water resource-related objectives identified in existing planning documents, such as objectives relating to control of erosion and sedimentation, would be emphasized. Uses and activities would be managed to meet water quality standards on streams with water quality limited segments identified by the State of Oregon.

Implementation of existing water resource objectives and maintenance or improvement of existing water quality would continue. Streams and waterbodies not meeting minimum State water quality standards or riparian proper functioning condition would be managed to attain an upward trend in the composition and structure of key riparian or wetland vegetation and desired physical characteristics of the stream channel and soils.

Uses and activities in these stream channels and riparian or wetland areas would be adjusted if current management would not allow for the maintenance or attainment of water quality standards and proper functioning condition.

Alternative B

Water resources would be managed for uses and activities that emphasize commodity production, while striving for the attainment and maintenance of minimum water quality standards, proper functioning condition, and desired range of conditions. Public uses and activities would be allowed along streams and

around other waterbodies, as long as there is progress toward attainment of State water quality standards.

For streams with water quality limited segments (impaired waters) as defined by 303 (d) of the CWA, management activities would be implemented to restore water quality to minimum levels that meet State water quality standards. For water quality limited segments, commodity production uses and activities would be permitted along streams and riparian and wetland areas only if they would allow progress toward attainment of water quality standards.

Streams and waterbodies not meeting minimum State water quality standards and/or proper functioning condition would be managed to attain an upward trend in condition of key riparian and wetland vegetation and desired physical characteristics of the stream channel and soils. This alternative focuses specifically on the protection and maintenance of the area along stream channels and within riparian conservation areas and allows those commodity uses and activities in the remaining watershed to occur. Any use or activity within the riparian conservation area that would adversely affect water quality and/or riparian or wetland resources would be excluded from the riparian conservation area. Implementation would be in the form of buffered exclusion areas or the use of temporary and permanent fencing.

Alternative C

Water resources would be managed for uses and activities that emphasize restoration, protection, or improvement of natural values and deemphasize commodity production. This alternative would strive for the attainment and maintenance of water quality standards, proper functioning condition, and desired range of conditions of the water resources. Active restoration, such as intensive woody riparian vegetation plantings and the installation of checkdams or rockbarbs, would be used in areas unable to attain proper functioning condition and the desired range of conditions through changes in management.

Public uses would be allowed along streams and around other waterbodies, as long as State water quality standards are either attained at the same or greater rate than if the use or activity were absent. For streams with water quality limited segments, uses and activities would be allowed in the watershed only if they would promote or have no effect on restoring water quality to State water quality standards. Management would be adjusted, as needed, for those uses and activities that are not leading to the attainment of State water quality standards. Management activities and uses within the watershed that adversely affect infiltration rates, soil moisture storage, or safe release of water would be adjusted, restricted, or limited if desired vegetation and soil conditions cannot be attained or maintained. Streams and waterbodies not meeting minimum State water quality standards and or proper functioning condition would be managed to attain an upward trend in condition of key riparian and wetlands vegetation and desired physical characteristics of the stream channel and soils. Uses and activities within the riparian conservation area and contributing upland watershed areas that adversely affect water quality and or lead to channel or riparian or wetland resource degradation would be adjusted, restricted, or limited if water quality and proper functioning condition cannot be attained or maintained with existing management.

Management options would focus on uses and activities which allow for the protection, maintenance, and restoration of riparian conservation areas and upland watersheds and measurable progress toward the attainment of water quality standards and proper functioning condition within streams and riparian conservation areas.

Alternative D

Water resources would be managed for uses and activities that emphasize maintenance or improvement of natural values while providing for commodity production. This alternative would strive for the attainment and maintenance of water quality standards, proper functioning condition, and desired range of conditions of the water resources. Public uses and activities would be allowed along streams and other waterbodies and associated watersheds, as long as there is measurable progress toward attainment of State water quality standards. For steams with water quality limited segments, management activities would be implemented with the intent to restore water quality to the minimum level.

Streams and waterbodies not meeting minimum State water quality standards and/or proper functioning condition would be managed to attain an upward trend in the composition and structure of key riparian and wetland vegetation and desired physical characteristics of the stream channel and soils. Uses and activities within the riparian conservation area and contributing upland watershed areas that adversely affect water quality and or lead to channel or riparian or wetland resource degradation would be adjusted, restricted, or limited if water quality and proper functioning condi-

tion cannot be attained or maintained with existing management.

Management within streams and riparian conservation areas would focus on uses and activities which allow for the protection and maintenance of riparian conservation areas and upland watersheds, and measurable progress toward the attainment of water quality standards and desired range of conditions.

Alternative E

Commodity production would be excluded from all public lands. For streams with water quality limited segments, uses and activities would be allowed in the watershed only if they would promote or have no effect on restoring water quality to required State water quality standards while protecting and enhancing natural values.

Streams and waterbodies not meeting minimum State water quality standards and/or proper functioning condition would be managed to attain an upward trend in the composition and structure of key riparian and wetland vegetation and desired physical characteristics of the stream channel and soils. Noncommodity uses and activities within the riparian conservation area and contributing uplands watershed areas that adversely affect water quality and/or lead to stream channel or riparian or wetland resource degradation would be adjusted, restricted, or limited if water quality and proper functioning condition cannot be attained or maintained with existing management.

Fish and Aquatic Habitat

Management Goal—*Restore, maintain, or improve habitat to provide for diverse and self-sustaining communities of wildlife, fishes, and other aquatic organisms.*

Rationale

FLPMA, six Executive orders, numerous legislative acts, and other regulations and policies direct the BLM to manage public land to provide habitat for fish and aquatic wildlife and to protect the quality of water resources. The following are examples:

FLPMA places fish and wildlife management on equal footing with other traditional land uses; requires that part of grazing fees be spent for "range betterment," including aquatic and terrestrial wildlife habitat enhancement, protection, and maintenance where livestock range; and requires consideration of fish and wildlife resources before approval of land exchanges.

The "Sikes Act" of 1974 is a congressional mandate for the BLM to ". . . plan, develop, maintain, and coordinate programs for the conservation and rehabilitation of wildlife, fish, and game."

In addition, Executive orders for floodplain management and protection of wetlands provide further direction for protection and management of fisheries habitat.

Through a statewide memorandum of understanding between the BLM and ODEQ, the BLM implements the CWA by meeting State water quality standards. Hydrologic basins covered by this RMP ". . . shall be managed to protect the recognized beneficial uses [which include] salmonid fish (trout) rearing, salmonid fish spawning, [and] resident fish and aquatic life."

The BLM's role in the management of fish and other aquatic resources is to provide the habitat that supports desired aquatic plants and animals. Plants, animals, and their interactions with each other and the physical environment are part of the ecological processes important for the health and function of aquatic ecosystems as well as the overall rangeland or forest ecosystem. Species manipulations, such as introductions or removals, are under the authority of ODFW.

Proper functioning condition (see Plant Communities, Riparian/Wetland Vegetation section of this chapter) alone may not meet certain desired range of conditions known to be important for wildlife. For example, quaking aspen-dependent bird species may require a minimum stand size before they can become self-sustaining as a breeding population. The grazing system necessary to reach this goal may require specific periods of rest or other measures which would exceed that necessary to attain proper functioning condition.

Management Direction by Alternative

Alternative A

Current management objectives for fish and other aquatic resources would be followed. Management emphasis would be on improving and expanding existing fisheries habitat in streams and reservoirs, especially for redband trout, Warner sucker, and other native fish, and the Columbia spotted frog. Existing riparian exclosures and pastures would be maintained

or improved. Strategies identified in previous planning documents for fish habitat restoration and improvement (e.g., grazing reductions, new reservoir construction, riparian fencing, instream structures, etc.) would be implemented. Cooperation would continue with ODFW on trout stocking in isolated reservoirs.

Alternative B

Management would emphasize habitat for fish and other aquatic organisms important to commodity uses, such as recreational fishing, but not at the risk of causing extinction of native species. This includes stocking of additional sites with trout in cooperation with ODFW.

Management would protect, maintain, or restore instream processes, habitat diversity, and riparian condition to sustain aquatic organisms important for commodity use. In addition, management would maintain a distribution of native species that would promote natural dispersal and recolonization among populations.

Although management of entire watersheds is considered important for the health and function of aquatic ecosystems, this alternative would focus specifically on the protection of riparian/wetland areas where land uses or activities could have the most direct and immediate effect on aquatic habitat. Uses or activities allowed in riparian/wetland areas must ensure progress toward (1) maintenance, protection, or restoration of instream processes and habitat diversity; (2) water quality that meets State standards for aquatic beneficial use; and (3) attainment of proper functioning condition and riparian management objectives.

Where habitat conditions are determined to be lacking and the goal cannot be reached with management, instream improvements may be initiated.

Alternative C

Management emphasis provides fish and other aquatic organism habitat that maintains the distribution of native species among subwatersheds and supports all native species needed for self-sustaining aquatic communities.

Management would protect, maintain, or restore riparian condition, instream processes, and habitat diversity so that all native aquatic species can persist in natural assemblages within their present or historic subwatersheds. Where nonnative species already occur, habitat objectives would be based on the requirements of the native species. The purpose would be to maintain a distribution of native species that would promote natural dispersal and recolonization among populations and allow species interactions that are part of ecosystem processes.

Because management throughout a watershed is vital for the health and function of aquatic ecosystems, this alternative focuses on entire watersheds where uses or activities may have direct or indirect effects on riparian/wetland areas. Uses or activities would be allowed in the watershed as long as they promote (1) maintenance, protection, or restoration of instream processes and habitat diversity; (2) water quality that meets State standards for aquatic beneficial use; and (3) attainment of proper functioning condition and riparian management objectives.

Livestock grazing and related activities would be removed from those stream segments where proper functioning condition assessment ratings are functioning-at-risk with no apparent trend, downward trend, or nonfunctioning and where grazing is determined to be a factor in the current condition. This is especially critical in the BLM riparian sites in fenced Federal range allotments. Exclusion of livestock would continue in these areas until systems are determined able to support reintroduction of grazing with proper management to improve riparian conditions.

Where habitat conditions are determined to be lacking and the goal cannot be reached with management, instream improvements may be initiated, such as installing instream structures to modify stream flow, and planting vegetation, etc.

Roads would be removed from riparian conservation areas.

Acquisition of habitat or water rights with willing owners would be pursued. Water rights would be converted to instream or habitat rights.

Cooperate with ODFW in maintaining existing and developing new recreational fishing opportunities.

Alternative D

Management emphasis would provide habitat for fish and other aquatic organisms to maintain the distribution of native species among subwatersheds while providing opportunities for commodity uses. Nonnative species would receive less emphasis and would be supported only where they do not interfere with native species. Habitat would also be provided for the native

species needed for self-sustaining aquatic communities.

Management would protect, maintain, or restore riparian condition, instream processes, and habitat diversity so that all native aquatic species can live in predominantly natural assemblages within their present or historic subwatersheds. Where nonnative species already occur, habitat objectives would be based on the requirements of the native species. The purpose is to maintain a distribution of native species that would promote natural dispersal and recolonization among populations and allow species interactions that are part of ecosystem processes.

Because management throughout a watershed is considered important for the health and function of aquatic ecosystems, this alternative focuses on entire watersheds where uses or activities may have direct or indirect effects on riparian/wetland areas. Uses or activities would be allowed in the watershed as long as they ensure progress toward (1) maintenance, protection, or restoration of instream processes and habitat diversity; (2) water quality that meets State standards for aquatic beneficial use; and (3) attainment of proper functioning condition, desired range of conditions, and riparian management objectives.

Livestock grazing and related activities would be removed from those stream segments where proper functioning condition assessment ratings are functioning-at-risk with no apparent trend, downward trend, or nonfunctioning and where grazing is determined to be a factor in the current condition. This is especially critical in the BLM riparian sites in fenced Federal range allotments. Exclusion of livestock would continue in these areas until systems are determined able to support reintroduction of grazing with proper management to improve riparian conditions.

Where habitat conditions are determined to be lacking and the goal cannot be reached with management, instream improvements may be initiated, such as installing instream structures to modify stream flow, and planting vegetation, etc.

Roads would be managed in riparian conservation areas to improve conditions. Roads would be removed and/or relocated where it is determined that they are contributing to less than desirable conditions. Road construction and maintenance would follow BMP's to minimize sediment input and channel effects.

Acquisition of habitat or water rights with willing owners would be pursued. Water rights would be converted to instream or habitat rights.

Alternative E

Commodity production would be excluded from all public lands. Aquatic habitat conditions would be determined primarily by natural processes. However, where needed, management would protect, maintain, or restore riparian condition, instream processes, and habitat diversity so that all native aquatic species can persist in natural assemblages within their present or historic subwatersheds. Streams and waterbodies not meeting minimum State water quality standards and/or proper functioning condition would be managed to attain an upward trend in the composition and structure of key riparian/wetland vegetation and desired physical characteristics of the stream channel. Noncommodity uses and activities within the riparian conservation area and contributing upland watershed areas that adversely affect water quality and/or lead to stream channel or riparian/wetland habitat degradation would be adjusted, restricted, or eliminated.

Wildlife and Wildlife Habitat

Introduction

Riparian/wetland wildlife habitat management and impacts are included in the Riparian/Wetland Vegetation sections of Chapters 3 and 4 and are not addressed under this section. To reduce redundancy in the following section, Management Goals 1 and 4, and 2 and 3, from the Draft RMP/EIS have been combined into two management goals in this final document.

Management Goal 1—*Facilitate the maintenance, restoration, and enhancement of big game (mule deer, elk, pronghorn, and bighorn sheep) populations and habitat on public land. Pursue management in accordance with Oregon Department of Fish and Wildlife (ODFW) big game species management plans in a manner consistent with the principles of multiple use management.*

Rationale

Section 102.8 of FLPMA states that it is policy of the United States to manage the public land in a manner that will protect the quality of multiple resources and will provide food and habitat for fish, wildlife, and domestic animals. PRIA directs BLM to improve rangeland conditions with due consideration given the needs of wildlife and their habitats.

BLM has a policy and responsibility to cooperate with

state agencies to accommodate species management goals to the extent they are consistent with the principles of multiple use management. The ODFW manages wildlife species populations through management objectives set up in their respective management plans and the BLM manages adequate habitat to support these numbers. Table 2-26 shows existing wildlife forage allocations which are based on the dietary preferences of cattle and do not necessarily reflect the food resources actually available to wildlife. The original wildlife allocations were set up over 20 years ago. Since that time, big game populations have expanded their range and increased in numbers.

Elk populations have greatly expanded in central Oregon as well as other portions of the State. Habitat use has shifted to areas that are not considered traditional elk habitats. Management objectives for these areas have been set by ODFW and the BLM is making an attempt to manage for these numbers. Mule deer and pronghorn populations have fluctuated due to habitat changes, winter conditions, and ODFW harvest management. Bighorn sheep have been reintroduced into the planning area. ODFW has been pursuing a statewide effort to restore bighorn sheep into suitable unoccupied habitat and enhance populations in currently occupied areas. Although the ODFW has successfully released and managed bighorn sheep on public land since the mid-1960s, current populations and distributions are still considered to be below their potential. Bighorn sheep are native to eastern Oregon and their presence contributes to the overall biological diversity and productivity of public land.

Management Direction by Alternative

Alternative A

Bighorn sheep maintenance, restoration, and enhancement would be emphasized within existing and proposed land as identified in current land use plans, wildlife habitat management plans, and ODFW's most current bighorn sheep management plan. Bighorn sheep pioneering outside of the range would only be allowed where there are no disease transmission conflicts. A 9-mile buffer, as recommended in "Mountain Sheep Ecosystem Management Strategy in the 11 Western States and Alaska" (USDI-BLM 1995h), is required between new domestic sheep and goat permitted use areas and bighorn sheep use areas, based on local conditions, as a mechanism to further avoid disease transmission.

Continue current management of mule deer, elk, and pronghorn ranges as stated in existing management plans. Variable desired conditions of big sagebrush cover would be determined on a case-by-case basis in cooperation with the ODFW to provide mosaics of sagebrush cover on portions of big game habitat.

Big game winter habitat would be protected from large-scale vegetation treatment projects or wildland fires. Improvement of big game winter habitat, as identified in the Fort Rock/Silver Lake, Paisley, North and South Warner Lakes habitat management plans, would continue (includes overlapping habitat for elk, pronghorn, mule deer, and bighorn sheep [Map W-2]). Big game habitat within the planning area is currently managed to attain desired wildlife habitat conditions over the long term. Achievement of desired wildlife habitat conditions would include a variety of methods to increase or decrease the big sagebrush overstory.

Livestock grazing use within mule deer and pronghorn winter range allotments would continue to be managed for late spring and summer use on an allotment-by-allotment basis. Forage allocations are made based on the dietary preferences of cattle and do not necessarily reflect the food resources available for wildlife consumption. The existing allocations were completed 20 years ago and no longer represent the current needs of wildlife within the planning area. Despite these changes, the existing wildlife forage allocation of 13,691 animal unit months (AUM's) would be continued. (Forage allocation changes are addressed under Alternatives B–D.)

The present public land base within big game winter ranges would be retained in Federal ownership, unless an exchange could be made that would be more beneficial to wildlife. Any proposed changes would be reviewed by ODFW.

The Cabin Lake/Silver Lake Mule Deer Winter Range Cooperative Road Closure with USFS and ODFW would continue. Vehicle use in the area would be limited to designated roads and trails from December 1 to March 31 (see Map SMA-23 of the Draft RMP/EIS). New closures could be initiated where necessary.

Alternative B

Management would be the same as for Alternative A, except restoration of bighorn sheep range and mule deer winter range would occur through reduction of western juniper encroachment on 18,000 to 30,000 acres of bighorn sheep range in the Devils Garden, East Lava Field (Squaw Ridge), Fish Creek Rim (Lynch Rim), South Warner Rim, Coleman Rim, South Abert Rim, and Hadley Butte herd ranges (see Map V-2).

This would also occur on 10,000 to 25,000 acres of mule deer winter range. These treatments would be accomplished through the use of prescribed fire or other methods. Treatments would reduce invasive western juniper by 30 to 70 percent within each treatement area. Any treatments occurring within the WSA would be consistent with BLM's wilderness IMP (USDI-BLM 1995b).

The existing wildlife forage allocations (Alternative A) were completed 20 years ago and no longer represent the current distribution of wildlife within the planning area. Mule deer and pronghorn use has changed and elk and bighorn sheep have expanded into new ranges. Approximately 22,829 AUM's of forage would be allocated to wildlife to provide for expanding elk and bighorn sheep populations and readjust AUM's in mule deer and pronghorn winter range allotments to reflect ODFW management population changes. This is an increase of 9,138 AUM's over current the allocation, and would have no affect on livestock allocations. Current and proposed wildlife forage allocations by allotment and wildlife species are shown in Table 2-26 and Appendix E1. (The Other Wildlife category on Table 2-26 reflects the forage needs of raptors, small mammals, birds, and important shrub-steppe species such as greater sage-grouse). Livestock grazing use within mule deer and pronghorn winter range allotments would not be allowed to exceed an average of 15 percent of the current year's growth of browse 2 out of 3 years.

Alternative C

Management would be the same as for Alternative A, except domestic sheep grazing would not be allowed on BLM lands within the planning area unless it can be demonstrated that domestic sheep grazing would not negatively impact existing populations of bighorn sheep or future augmentation sites proposed by ODFW. Restoration of bighorn sheep range and mule deer winter range would occur through reduction of western juniper encroachment on 18,000 to 30,000 acres of bighorn sheep range in the Devils Garden, East Lava Field (Squaw Ridge), Fish Creek Rim (Lynch Rim), South Warner Rim, Coleman Rim, South Abert Rim, and Hadley Butte herd ranges (see Map V-2) and on 10,000 to 25,000 acres of mule deer winter range. These treatments would be accomplished through the use of prescribed fire or other methods. Treatments would reduce invasive western juniper by 30 to 70 percent within each of the treatment areas. Any treatments occurring within the WSA would be consistent with BLM's wilderness IMP (USDI-BLM 1995b).

Wildlife forage allocation would be similar to Alternative B. Livestock grazing use within mule deer and pronghorn winter range allotments would not be allowed to exceed an average of 15 percent of the current year's growth of browse 2 out of 3 years.

In deer winter range (Map W-2), new rights-of-way would be avoided and OHV use throughout the resource area would be limited to existing roads and trails (Maps L-7 and R-6 of the Draft RMP/EIS). The Cabin Lake/Silver Lake Mule Deer Winter Range Cooperative Road Closure area would be expanded (Map SMA-23 of the Draft RMP/EIS). Vehicle use would be limited to designated roads and trails in this area from December 1 to March 31.

Alternative D

Bighorn sheep habitat maintenance, restoration, and enhancement would be emphasized as identified in existing land use and wildlife habitat management plans, and ODFW's current bighorn sheep management plan. Bighorn sheep expanding outside of the current range would only be allowed where there are no disease transmission conflicts. A 9-mile buffer, as recommended in "Mountain Sheep Ecosystem Management Strategy in the 11 Western States and Alaska" (USDI-BLM 1995h), is required between new domestic sheep and goat permitted use areas and bighorn sheep use areas, as a mechanism to further avoid disease transmission. Domestic sheep grazing would not be allowed on BLM lands within the planning area unless it can be demonstrated that it would not negatively impact existing populations of bighorn sheep or future augmentation sites proposed by ODFW.

Restoration of bighorn sheep range and mule deer winter range would occur through reduction of western juniper encroachment on 18,000 to 30,000 acres of bighorn sheep range in the Devils Garden, East Lava Field (Squaw Ridge), Fish Creek Rim (Lynch Rim), South Warner Rim, Coleman Rim, South Abert Rim, and Hadley Butte herd ranges (see Map V-2) and on 10,000 to 25,000 acres of mule deer winter range. These treatments would be accomplished through the use of prescribed fire or other methods. Treatments would reduce invasive western juniper by 30 to 70 percent within each of the treatment areas. Any treatments occurring within the WSA would be consistent with BLM's wilderness IMP (USDI-BLM 1995b).

Improvement of big game winter habitat, as identified in the Fort Rock/Silver Lake, Paisley, North and South Warner Lakes Habitat Management Plans would continue (includes overlapping habitat for elk, prong-

horn, mule deer, and bighorn sheep [Map W-2]). Big game habitat within the planning area would be managed to attain desired wildlife habitat conditions over the long term. Achievement of desired wildlife habitat conditions would include a variety of methods to increase or decrease the big sagebrush overstory.

Approximately 22,829 AUM's of forage would be allocated to wildlife to provide for expanding elk and bighorn sheep populations and readjust AUM's in mule deer and pronghorn antelope winter range allotments to reflect ODFW management population changes. This is an increase of 9,138 AUM's over current the allocation, and would have no affect on livestock allocations. Current and proposed wildlife forage allocations by allotment and wildlife species are shown in Table 2-26 and Appendix E1. (The Other Wildlife category on Table 2-26 reflects the forage needs of raptors, small mammals, birds, and important shrub-steppe species such as greater sage-grouse). Livestock grazing use within mule deer and pronghorn winter range allotments would not be allowed to exceed an average of 15 percent of the current year's growth of browse 2 out of 3 years.

The present public land base within big game winter ranges would be retained in Federal ownership, unless an exchange could be made that would be more beneficial to wildlife. Any proposed changes would be reviewed by the ODFW.

Alternative E

Natural processes would drive big game habitat conditions and use. Livestock grazing, including domestic sheep and goats, would not be authorized; therefore, a buffer would not be required to minimize disease transmission for bighorn sheep. No special management adjustments would be required; however, site-specific projects may need to be implemented to provide adequate forage for big game species.

Management Goal 2—*Manage upland habitats, including shrub steppe, forest, and woodlands, so that the forage, water, cover, structure, and security necessary for wildlife are available on public land.*

Rationale

Section 102.8 of FLPMA states that it is the policy of the United States to manage public land in a manner that would protect the quality of multiple resources and provide food and habitat for fish, wildlife, and domestic animals. The PRIA directs BLM to improve rangeland conditions with due consideration given the needs of wildlife and their habitats. Rangeland health regulations identify the need to foster productive and diverse populations and communities of plants and animals.

The character of upland vegetation types (arrangements, densities, age classes, etc.) greatly influences wildlife habitat quality and productivity. Because the character of upland vegetation can vary in response to Federal land use authorizations, BLM needs to consider the consequences of various land uses (such as grazing and mining) and vegetation treatments (such as burning and seeding) to the health of wildlife habitat. The outcomes of what may be considered proper range or forest management may not result in high quality wildlife habitat. Wildlife must have a reasonable amount of protection from the adverse impacts associated with human disturbances. This is especially true during breeding periods and on winter ranges.

Numerous wildlife species depend on native upland sagebrush steppe habitats to meet life history needs. In managing uplands, the BLM needs to consider the consequences and relationships of management to the life history needs of wildlife, consistent with guidelines addressed in the "Greater Sage-Grouse and Sagebrush-Steppe Ecosystems Interim Management Plan" (Sage-Grouse Planning Team 2000).

Management Direction by Alternative

Alternative A

Single-species management would continue to be emphasized in most habitat types. Pine forest, western juniper woodland, quaking aspen, and mountain shrub habitat types would be managed as described under the Shrub Steppe and Forest and Woodlands sections of this chapter.

The variable desired conditions of big sagebrush cover would be determined on a case-by-case basis in cooperation with ODFW to provide mosaics of sagebrush cover. Limited emphasis would be placed on specifically providing habitat for nongame wildlife species. Greater sage-grouse habitat would be protected from large-scale vegetation treatment projects or wildland fires.

Management of shrub steppe for migratory landbirds would be on a case-by-case basis. Fragmentation of habitats would improve slowly over time. Restoration projects could be undertaken on a case-by-case basis. Conservation of habitats would not be done on a landscape scale.

Disturbances to nesting raptors during mating, nesting, and fledging season would be avoided.

Wildlife water developments (2,000–3,000-gallon guzzlers) would be installed where wildlife water is deficient.

Alternative B

Management would generally be the same as for Alternative A, except restoration projects would not occur unless they promoted or did not negatively affect commodity uses and, big sagebrush habitat would be reestablished on native rangeland or seedings where economically important wildlife are present.

Alternative C

Equal emphasis would be placed on game and nongame wildlife habitat needs in sagebrush steppe, forest, and woodland habitats. Pine forest, western juniper woodland, quaking aspen, and mountain shrub habitat types would be managed as described under the Shrub Steppe and Forest and Woodlands sections of this chapter. To the extent possible, wildlife community connectivity and interrelationships would be emphasized. This approach would stress landscape or ecosystem management and be distinctly different from single-species management emphasis.

Big sagebrush habitat would be managed for shrub cover, structure, and forage values for the benefit of game and nongame wildlife. The desired range of conditions would include shrub cover values that meet or exceed the requirements described in "Wildlife Habitats in Managed Rangelands" (Thomas and Maser 1986) and big sagebrush distribution over a large enough area to avoid the adverse impacts of habitat fragmentation. The desired range of conditions would strive for big sagebrush overstories that emphasize the presence of mature, light- to moderately-stocked shrub canopies capable of supporting diverse herbaceous understories and that are present in a variety of spatial arrangements important to wildlife. This would apply to all native range or seeded areas in big sagebrush habitats throughout the planning area.

Management of large blocks of sagebrush steppe would also be done with migratory landbirds in mind. Management would focus on existing shrub steppe in high ecological condition on a no-net-loss basis and improve degraded habitats. Fragmentation would be reduced through restoration of degraded rangelands by active restoration projects and changes in management activities.

Disturbance to nesting raptors during mating, nesting, and fledging season would be avoided.

Wildlife water developments (2,000–3,000-gallon guzzlers) would be installed where wildlife water is deficient.

In crucial wildlife habitat such as greater sage-grouse habitat (Maps W-1), new rights-of-way would be avoided and OHV use throughout the resource area would be limited to existing roads and trails (Maps L-7 and R-6 of the Draft RMP/EIS).

Alternative D

Equal emphasis would be placed on game and nongame wildlife habitat needs in sagebrush steppe, forest, and woodland habitats. To the extent possible and practical, wildlife community connectivity and interrelationships would be emphasized in most habitats. This approach would stress landscape or ecosystem management and be distinctly different from single-species management emphasis. Pine forest, western juniper woodland, quaking aspen, and mountain shrub habitat types would be managed as described under the Shrub Steppe and Forest and Woodlands sections of this chapter.

Big sagebrush habitat would be managed for shrub cover, structure, and forage values for the benefit of game and nongame wildlife. The desired range of conditions would include shrub cover values that meet or exceed the requirements described in "Wildlife Habitats in Managed Rangelands" (Thomas and Maser 1986) and big sagebrush distribution over a large enough area to avoid the adverse impacts of habitat fragmentation. The desired range of conditions would strive for big sagebrush overstories that emphasize the presence of mature, light- to moderately-stocked shrub canopies, capable of supporting diverse herbaceous understories, and that are present in a variety of spatial arrangements important to wildlife. This would apply to all native range or seeded areas in big sagebrush habitats throughout the planning area.

Management of large blocks of sagebrush steppe would also be done with migratory landbirds in mind. Management would focus on existing shrub steppe in high ecological condition on a no-net-loss basis and improve degraded habitats. Fragmentation would be reduced through restoration of degraded rangelands by active restoration projects and changes in management activities.

Disturbance to nesting raptors during mating, nesting,

and fledging season would be avoided.

Wildlife water developments (2,000–3,000-gallon guzzlers) would be installed where wildlife water is deficient.

New rights-of-way would be avoided in greater sage-grouse breeding habitat (Map L-8). Most of north Lake County would be designated as limited to existing roads and trails year-round to protect wildlife habitat (see Map R-7 and SMA-24).

Alternative E

Future upland habitat conditions would be determined by natural processes.

Special Status Animal Species

Management Goal—*Manage public land to maintain, restore, or enhance populations and habitats of special status animal species. Priority for the application of management actions would be: (1) Federal endangered species, (2) Federal threatened species, (3) Federal proposed species, (4) Federal candidate species, (5) State listed species, (6) BLM sensitive species, (7) BLM assessment species, and (8) BLM tracking species. Manage in order to conserve or lead to the recovery of threatened or endangered species.*

Rationale

Section 102.8 of FLPMA requires that public land be managed to protect the quality of multiple resources and to provide food and habitat for fish, wildlife, and domestic animals.

The "Endangered Species Act" mandates management that leads to the conservation or recovery of federally listed threatened or endangered species. This Act, as well as BLM policy, encourages management to protect special status species not currently listed as threatened or endangered, to prevent Federal listing.

Most fish and wildlife assigned to a special status category are limited in their distributions, populations, or habitats and may be at risk over various geographic areas. Where evidence suggests land uses are adversely affecting special status species not currently listed as threatened or endangered, it is in the public interest to prevent the need for Federal listing under the "Endangered Species Act." Listing of a species as threatened or endangered may lead to restrictions on land uses, and under some circumstances may cause adverse socioeconomic impacts to commodity users. In most cases, there are both socioeconomic and biological benefits associated with conserving species to avoid Federal listing.

Maintenance, restoration, or enhancement of populations or habitat, as defined in the Glossary of this document, may represent appropriate BLM management depending on the habitat needs or specific circumstances of a species. Restoration or enhancement may not always be the only clear choice for BLM action regarding special status species. One potential limitation that could delay restoration or enhancement is that the biological mechanisms adversely affecting a species may not be well enough understood to identify needed management. Maintenance may also be a preferred course of action where resource conditions are exceptional.

Management Common to Alternatives A--D

Management of Warner sucker, Foskett speckled dace, Hutton tui chub, bald eagle, and peregrine falcon would be in accordance with recovery plans and consultation with the USFWS. Management of greater sage-grouse would be in accordance with current BLM management strategies as outlined in the "Greater Sage-grouse and Sagebrush-Steppe Ecosystems Management Guidelines" (Sage-Grouse Planning Team 2000). The BLM is currently part of a working group developing a long-term conservation strategy plan for Oregon and Washington which would be completed in the next 12–18 months. All BLM actions in "The Recovery Plan for the Threatened and Rare Native Fishes of the Warner Basin and Alkali Subbasin" (USDI-USFWS 1998) would be implemented (see Appendix H). Special status species management actions would be adjusted to accommodate additions or deletions in official listings of special status species.

Management Direction by Alternatives

Alternative A

Management would emphasize achieving desired range of conditions that maintain, enhance, or restore habitats or populations of any special status species regardless of economic importance. All special status species habitats or populations would be managed so that BLM actions do not contribute toward the need to list these species as federally threatened or endangered.

Management would provide habitat conditions that meet individual species requirements. Fish and wildlife community goals would generally be secondary to

goals for individual species.

A variety of projects or other land use adjustments might be required to manage for special status species. Some management for maintenance could require avoidance or mitigation measures. Some restoration or enhancement measures could involve very specific remedies with the potential to lead to substantial adjustments in customary land use practices. Because of the variability in habitat use by special status species, management actions could be required within any of the habitat types described in this plan.

Alternative B

Management would emphasize achieving desired range of conditions that maintain, enhance, or restore habitats and populations of economically important special status species listed in Table 2-24. All other special status species habitats or populations would be managed so that BLM actions do not contribute toward the need to list these species as federally threatened or endangered. Management for these other species would emphasize maintenance rather than restoration and enhancement.

Management would provide habitat conditions that favor individual special status species. Fish and wildlife community goals would be secondary to goals for individual species.

Management that might be required for special status species could include avoidance or mitigation measures. Some restoration or enhancement measures could involve very specific remedies leading to substantial adjustments in customary land use practices. Because of the variability in habitat use by special status species, management actions could be required within any of the habitat types described in this plan.

Alternative C

This alternative would include the most aggressively proactive measures for special status species management. Habitats and populations would be restored or enhanced in all areas where biologically sound and reasonable. Maintenance would only be considered where habitat or population conditions are considered to be at or near their potential.

Management would develop habitats that support healthy, biologically diverse communities of wildlife at the fine scale while meeting special status species needs. Individual species requirements would be included in management prescriptions, but not to an extent that overemphasizes the value of any one habitat type. This community approach to management is different from the single-species-driven management indicated in Alternatives A and B.

A variety of projects or other land use adjustments could be required to manage for special status species. Some management for maintenance could require avoidance or mitigation measures. Restoration or enhancement measures could involve remedies that lead to substantial adjustments in customary land use practices. Because of the variability in habitat use by special status species, management actions could be required within any of the habitat types described in this plan.

Alternative D

Management would emphasize achieving desired range of conditions that maintain, enhance, or restore habitats or populations of special status species regardless of their economic status. All special status species habitats or populations would be managed so that BLM actions would not contribute toward the need to list the species as federally threatened or endangered.

Management would be oriented toward the development of habitats that support healthy, biologically diverse communities of wildlife at mid and fine scales while meeting special status species needs. Individual species requirements would be included in management prescriptions, but not to an extent that overemphasizes that value of any one habitat type. This community approach to management is different from the single-species-driven management indicated in Alternatives A and B.

A variety of projects or other land use adjustments could be required to manage for special status species. Some management for maintenance could require avoidance or mitigation measures. Some restoration or enhancement measures could involve very specific remedies leading to substantial adjustments in customary land use practices. Because of the variability in habitat use by special status species, management actions could be required within any of the habitat types described in this plan.

Alternative E

Only those actions legally required to manage and protect federally listed species would be carried out. Management for other special status species would be minimal. Natural processes would primarily determine future conditions for special status species.

Livestock Grazing Management

Management Goal—*Provide for a sustainable level of livestock grazing consistent with other resource objectives and public land-use allocations.*

Rationale

The "Taylor Grazing Act" of 1934 is the legislative authority providing for livestock grazing on and protection of public land. FLPMA, PRIA, and other acts direct the management of public land for multiple use and sustained yield. Rangeland management strategies would provide for the maintenance or restoration of watershed function, nutrient cycling and energy flow, water quality, habitat for special status species, and habitat quality for populations and communities of native plants and animals. These management strategies have been supported by development of regional "Standards for Land Health for Lands Administered by the Bureau of Land Management in the States of Oregon and Washington" (USDI-BLM 1997b). The five standards are described in Appendix E4.

Management Common to Alternatives A and D

Where livestock grazing is found to be limiting achievement of multiple use objectives, actions to control intensity, duration, and timing of grazing and/or provide for periodic deferment and/or rest would be required to meet physiological requirements of key plant species and to meet other resource objectives. Upon determining that existing grazing management practices on public land are contributing to the nonattainment of resource objectives, appropriate actions would be implemented. The intent of grazing management is to leave sufficient herbaceous material on the ground to provide soil and watershed protection, to provide forage and cover for wildlife and wild horses, and to meet other resource objectives. Generally, problems pertaining to livestock grazing are not related to existing forage allocations, but are related to needed changes in management, such as permitted use, season of use, and livestock distribution. This is addressed in each of the alternatives and in Appendix E1, Allotment Management Summaries, which also notes problem areas and gives recommendations.

The current licensed grazing levels (Appendix E1, Allotment Management Summaries) would be maintained until analysis or evaluation of monitoring data or rangeland health assessments identify a need for adjustments to meet objectives. Applicable activity plans (including existing allotment management plans, agreements, decisions and/or terms and conditions of grazing use authorizations) would be revised and implemented to ensure that resource objectives are being met. The level of AUM's of permitted use in the alternatives is based on the average authorized AUM's in the resource area from 1991 to 2000 at light to moderate levels. The average authorized AUM's identified in each alternative is for analysis purposes only. The full permitted use level for each allotment has been and continues to be analyzed through individual allotment assessments, such as rangeland health and livestock grazing management guidelines, allotment evaluations, allotment management plans, watershed analyses, and implementation of biological opinions. It is through these assessments that any changes in forage allocation would be made where needed on an allotment-by-allotment basis. However, livestock permittees have the option to license up to their full active preference for any given year. Currently, the total permitted use for the resource area is 164,128 AUM's. However, permittees seldom use their full active preference for a variety of reasons, including previous agreements with BLM, management prescriptions in allotment management plans, economic factors, and forage and water availability.

Areas burned by wildland fire or prescribed fire would be rested a minimum of two growing seasons before they are reopened to livestock grazing. Decisions to resume livestock grazing would be based on monitoring data. Additional rest for a minimum of 2 years would occur in Alternative C. Rest for less than two growing seasons may be justified on a case-by-case basis.

In areas where livestock grazing is presently not compatible with other uses, no grazing would be permitted. Public land which is found not to be suitable for livestock grazing or containing resource values which cannot be adequately protected from livestock impacts through mitigating measures is not allocated to livestock grazing. Table 2-28 and Map G-1 (of the Draft RMP/EIS) show areas that are currently not allotted or are excluded from livestock grazing due to conflicts with other uses.

Further, livestock grazing would be managed during and following drought in accordance with "Oregon and Washington Drought Policy" to maintain soil and vegetation health and productivity following procedures outlined in Appendix E6.

Management Direction by Alternative

Alternative A

Continue authorization of 108,234 AUM's of averaged licensed use, with acknowledgment that the full permitted use level of 164,128 AUM's could be authorized.

Adjustments to terms and conditions of livestock grazing authorizations, based on monitoring and periodic evaluation of allotments, would be implemented to progress toward meeting objectives of existing land use plans. Administrative solutions, including reductions in levels of authorized livestock, changes in season of use, and installation of range improvement projects, would be considered as necessary to meet management objectives.

Herbaceous forage utilization levels would not exceed moderate levels.

Rangeland improvement projects would be implemented to minimize unacceptable livestock grazing impacts by accessing available, but underutilized forage and improving livestock distribution. Vegetative treatments would be implemented as identified in the vegetative management alternatives of this document. Best management practices for construction of rangeland improvements are presented in Appendix D.

Existing range improvements that support livestock grazing use would be maintained. Projects which do not function to meet management framework plan and rangeland program summary objectives would be abandoned and sites rehabilitated. Currently, about 155,734 acres are unalloted and another 84,801 acres are excluded from grazing for various reasons (Table 2-28).

Additional forage produced on a temporary basis would be made available to qualified applicants through temporary nonrenewable grazing authorization, when consistent with existing management framework plan and rangeland program summary objectives (USDI-BLM 1989e).

Implement enforcement of unauthorized use.

Alternative B

Emphasize livestock grazing on pubic land. Authorize up to 180,541 AUM's of permitted use, a 10 percent increase above the current permitted use level of 164,128 AUM's.

Adjustments to terms and conditions of livestock grazing authorizations, based on monitoring and periodic evaluation of allotments, would be implemented to progress toward meeting objectives. Administrative solutions, including reductions in levels of authorized livestock, changes in season of use, and installation of range improvement projects, would be considered as necessary to meet management objectives. The priority, on a case-by-case basis, would be to maintain or enhance authorized use levels for livestock.

Herbaceous forage utilization levels would not exceed 60 percent on uplands and seedings.

Rangeland improvement projects would be implemented to minimize unacceptable livestock grazing impacts by accessing available, but underutilized forage and improving livestock distribution. Temporary or permanent range improvements would be constructed to protect resource values while retaining optimum quantity of forage resources available for livestock (see Table E3-1 for proposed projects by allotment).

Vegetative treatments would be implemented as identified in the vegetative management alternatives of this document. Standard implementation procedures for construction of rangeland improvements would follow BLM Manual Handbook H-1741-1 and -2, and USDI-BLM and USDA-FS (1988).

Existing range improvements that support livestock grazing use would be maintained. Projects which do not function to meet management objectives would be abandoned and sites rehabilitated. Areas where grazing would be unalloted or excluded would be similar to Alternative A.

Additional forage produced on a temporary basis would be authorized to qualified applicants through temporary nonrenewable grazing, when consistent with maintaining other resource values (USDI-BLM 1989e).

Alternative C

Emphasize protection of natural values by authorization of only 86,587 AUM's of permittted use each year, a 48 percent decrease from current permitted use, and a 20 percent decrease from the 10-year average authorized use level.

Herbaceous forage utilization levels would not exceed light. Browse utilization levels would not exceed 30 percent in critical deer and antelope winter range.

Within LRA, the Devils Garden Allotment (907) (which has been available for livestock grazing on an emergency basis only and not allotted to a specific livestock operator) would be closed to grazing. In addition, six of the proposed ACEC's and one existing ACEC, totaling 50,497 acres, would be closed to grazing to provide protection botanical, cultural, and research natural area values. In total, 131,751 acres would be unalloted and 187,263 acres would be excluded from grazing (Map G-2 of the Draft RMP/ EIS).

Rangeland improvement projects would be implemented only to meet resource objectives. Administrative solutions (season of use revision, stocking level adjustment, and pasture exclusion) would be the preferred solution to meet resource management objectives. Range improvement projects that do not enhance resource values and meet management objectives would be abandoned and the sites rehabilitated. Vegetative treatments would be implemented only to return rangelands to proper functioning communities. Standard implementation procedures for construction of rangeland improvements would follow BLM Manual Handbook H-1741-1 and -2, and USDI-BLM and USDA-FS (1988).

Temporary nonrenewable grazing would not be authorized. Additional herbaceous production would not be allocated to livestock grazing, but would be retained onsite for values other than forage production.

Alternative D

Protect and improve natural values through the average authorized use level of 108,234 AUM's of permitted use, with acknowledgment that the full permitted use level of 164,128 AUM's could be authorized.

Herbaceous forage utilization levels would not exceed moderate.

Rangeland improvement projects would be implemented only to meet resource objectives. Administrative solutions (i.e., season of use revision, stocking level adjustment, and pasture exclusion) would be the preferred solution to meet resource management objectives. Range improvement projects that do not function to enhance resource values and meet management objectives would be abandoned and rehabilitated.

Vegetative treatments would be implemented only to return rangelands to proper functioning communities. Standard implementation procedures for construction of rangeland improvements would follow BLM Manual Handbook H-1741-1 and -2, and USDI-BLM and USDA-FS (1988).

Areas where grazing would be unalloted or excluded are shown on Map G-3.

Temporary nonrenewable grazing would be authorized only if such use would not conflict with other resource management outlined in this plan.

Alternative E

Commodity production would be excluded, eliminating livestock grazing. Other uses would be limited and natural values maximized.

No grazing use would be authorized. No rangeland projects would be planned or implemented in support of livestock grazing. All projects that support livestock grazing would be abandoned and rehabilitated that do not contribute to meeting other resource management objectives. Remaining rangeland projects would be maintained to design standards necessary to meet management objectives. All cooperative agreements with livestock operators would be vacated.

Wild Horses

Management Goal—*Maintain and manage wild horse herds in established herd management areas at appropriate management levels to ensure a thriving natural ecological balance between wild horse populations, wildlife, livestock, vegetation resources, and other resource values.*

Rationale

The "Wild Free-Roaming Horse and Burro Act" of 1971 requires the BLM to protect and manage wild horses in areas where they were found at the time of the Act, in a manner designed to achieve and maintain a thriving natural ecological balance in keeping with the multiple use management concept of public lands.

Management Common to All Alternatives

Management of both the Paisley and Beaty Butte Herd Management Areas are guided by herd management area plans (USDI-BLM 1977a, 1977b, 1995c; USDI-BLM and USDI-USFWS 1998b) which identify specific management objectives for each herd management area. These plans would continue and be revised by management direction contained in this RMP. Wild

horse population levels would be adjusted in accordance with the results of monitoring studies, allotment evaluations, and rangeland health assessments, when needed, in order to achieve and maintain objectives for a thriving natural ecological balance and multiple use relationships in each herd management area. Gathering of wild horses would continue as necessary to adjust wild horse populations. During gathers, horses would normally be reduced to the low end of the appropriate management level range, then allowed to increase to the top end of appropriate management level before another gather would occur. If emergency situations arise, horses could be gathered for their survival. Horses straying outside the herd management areas would be removed. The current memorandum of understanding with Hart Mountain National Antelope Refuge, whereby the BLM agrees to remove stray horses within the refuge boundaries, would be followed.

Horses released back into herd management areas after gathers would be animals exhibiting the special and unique characteristics of that herd as described in Table 2-32. In some instances, these horses may be from other wild horse herds. Horses would be selected to maintain herd characteristics and to diversify genetic variability, especially in the Paisley Desert Herd Management Area which has a lower appropriate management level. Research on fertility control may be implemented on a case-by-case basis as necessary to continue the research in developing a safe, effective vaccine. The fertility control vaccine (if approved for general use by the Food and Drug Administration) may be considered an option in management used to reduce the frequency of gathers and benefit the health of wild horses and rangelands.

Range improvements would be installed to encourage horses to stay within herd management area boundaries. Improvements would be consistent with other resource objectives of each alternative.

Management Common to Alternatives A–C

Herd management areas would initially be managed for the established appropriate management levels of 60–110 horses in the Paisley Desert Herd Management Area and 100–250 horses in the Beaty Butte Herd Management Area. Adjustments to appropriate management levels would be made as described in each alternative. Forage allocations would be 1,320 AUM's in Paisley Desert and 3,000 AUM's in Beaty Butte.

Management Common to Alternatives B–D

Forage for wild horses would be allocated to all horses in the herd management area regardless of age. Forage allocations for wild horses would be reduced to zero in Allotments 400 and 426 because these allotments are outside the herd management area boundaries. The calculation for allocating forage for wild horses would vary from Alternative A, but would be consistent with other resource management plans in the State (the calculation is: the number of horses at the top appropriate management level x 12 months).

The boundary in the Paisley Desert Herd Management Area would be modified. A total of 31,859 acres in the northwest corner would be designated as an unoccupied herd area. A herd would not be reestablished or managed in the herd area. See Map SMA-4 for location of the herd area and herd management area.

Management Direction by Alternative

Alternative A

Wild horses would be allocated forage based on the original number of horses established in each herd management area, which is approximately (but not exactly) the median of the current appropriate management level. The original number of horses was 85 in the Paisley Herd Management Area and 200 in the Beaty Butte Herd Management Area. A total of 1,020 AUM's would be allocated in Paisley Desert Herd Management Area and 2,400 in Beaty Butte Herd Management Area as described in the "Lakeview Grazing Management Final EIS" (USDI-BLM 1982b).

Established water developments used by horses would be maintained. Additional water developments, as identified in existing land use plans, would be constructed. Fencing and other structures identified in land use plans would be maintained and new ones developed.

Approximately 9,000 acres (2 percent) of the Beaty Butte Herd Management Area is recommended for prescribed burning to improve ecological condition. No burning is recommended in the Paisley Desert Herd Management Area due to risk of weeds and nonnative species such as cheatgrass invading the area.

Alternative B

When monitoring data support a downward adjustment in the allocation of forage resources within herd management areas, livestock production would be

considered a higher value use of the forage, and would be emphasized on a case-by-case basis to optimize commodity production from the public land. When analysis of the monitoring data identifies a need to reduce grazing impacts, reductions in wild horse appropriate management levels would be emphasized. Increases in livestock use would be given first priority when analysis of monitoring data identifies additional forage available on a sustained-yield basis.

Established water developments used by horses would be maintained. Additional identified water developments and range improvements would be constructed. Existing fencing and other structures would be maintained and new projects developed. Boundary fencing of herd management areas would be improved to assist in managing the horses inside the herd management areas.

Alternative C

When monitoring data support a downward adjustment in the allocation of forage resources within herd management areas, proportionate decreases in wild horse appropriate management levels and authorized active use by livestock would be implemented. This would be done through the adaptive management process, based on each species' contribution to the failure to meet management objectives or failure to maintain an ecological balance. When monitoring data identify additional available forage on a sustained basis, proportionate increases between wild horse appropriate management levels and livestock authorized active use would be emphasized, as consistent with meeting other management objectives of Alternative C.

Established water developments and other projects supporting wild horse populations would be maintained, as consistent with other management objectives. Projects designed to facilitate wild horse management that do not emphasize natural values would be abandoned and sites would be rehabilitated. Construction of water developments and other projects which would minimize impacts to other resources and emphasize natural values would be considered.

Alternative D

When monitoring data support a downward adjustment in the allocation of forage resources within herd management areas, proportionate decreases in wild horse appropriate management levels and authorized active use by livestock would be implemented. This would be done through the adaptive management process, based on each species' contribution to the failure to meet management objectives or failure to maintain an ecological balance. When monitoring data identify additional available forage on a sustained basis, proportionate increases between wild horse appropriate management levels and livestock authorized active use would be emphasized, as consistent with meeting other management objectives of Alternative D.

Established water developments and other projects supporting wild horse populations would be maintained, as consistent with other management objectives. Projects designed to facilitate wild horse management that do not emphasize natural values would be abandoned and sites would be rehabilitated. Construction of water developments and other projects which would minimize impacts to other resources and emphasize natural values would be considered.

The initial appropriate management level would be increased in the Paisley Desert Herd Management Area to 60–150 horses. This represents an increase of 40 horses at maximum appropriate management level, which is supported by monitoring data. The increase reflects extending the timeframe between gathers to 5 years, consistent with the gathering cycle in Beaty Butte. Forage allocations for Paisley Desert would be 1,800 AUM's; the Beaty Butte allocation would remain at 3,000 AUM's.

Alternative E

Initial forage allocations and appropriate management levels for wild horses would be the same as Alternative D.

Interior fencing in herd management areas would be removed. Appropriate management levels would be adjusted as the need is identified in monitoring data. Appropriate management levels would reflect a range of horse numbers in balance with available forage and resources. Horses would be gathered when appropriate management levels are exceeded or if horses stray outside the boundaries of the herd management areas. Forage allocations as such would not be made since there would be no domestic livestock grazing under this alternative. Restoration of unhealthy plant communities of the Great Basin Ecosystem found in the Paisley Desert Herd Management Area would not be done with intensive vegetation projects. Restoration would occur through natural processes over a longer period of time. Water developments would be maintained or new ones established only as needed for survival of the horses.

Special Management Areas

Areas of Critical Environmental Concern and Research Natural Areas

Management Goal—*Retain existing and designate new areas of critical environmental concern (ACEC's) and research natural areas (RNA's) where relevance and importance criteria are met and special management is required to protect the identified values.*

Rationale

Section 202(c)(3) of FLPMA mandates that priority be given to the designation and protection of ACEC's. These areas are defined in section 103(a) as areas where special management attention is required to protect and prevent irreparable damage to important values, resources, systems or processes, or to protect life and safety from natural hazards. To accomplish this, the following decisions are described for each alternative:

1) Which existing areas should be retained as ACEC's or RNA's and which proposed areas should be designated as ACEC's and/or RNA's?

2) If designated, how much area should be included in the designation?

3) If designated, what special management should be implemented to protect relevant and important values?

Appendix I contains a detailed description of each existing and proposed ACEC/RNA.

Actions Common to Alternatives A–D

The following narrative describes management direction that would apply to more than one ACEC or to more than one alternative. Table 3-3 summarizes the management direction for each existing and proposed ACEC/RNA.

ACEC designation: Under Alternative A, no new ACEC's would be designated. Four existing ones would be retained. Under Alternative B, existing ACEC's would be retained and only one new area, Connley Hills, would be designated.

Under Alternatives C and D, 4 existing ACEC's would be retained and 12 new ACEC's would be designated. One existing area would be expanded. The size and management direction would vary.

Under Alternative E, all existing ACEC designations would be revoked and no new ACEC's would be designated. Management in these areas would be the same as that applied across the planning area.

Research natural area designations: One existing RNA would be retained under Alternatives A and B. One existing RNA would be retained and nine new RNA's would be designated under Alternatives C and D. All fall within existing or proposed ACEC's. RNA's would be managed to preserve natural features and ecosystems in as natural a condition as can be found for research and educational purposes. The BLM designates and manages RNA's under the management guidance for ACEC's. More detailed management plans may be developed in the future, if needed. These plans would tier to the management direction contained in this RMP.

Special status and Bureau sensitive animals: Disturbance to nesting raptors would be avoided (January–August, depending on species), especially in Lost Forest, Lake Abert, Abert Rim, Black Hills, Connley Hills, Fish Creek, Hawksie-Walksie, and Table Rock.

Special status and Bureau sensitive plants: Disturbances to all special status plant populations would be avoided in all ACEC/RNA's where they occur. General inventories, monitoring, and research would continue for special status plants. Conservation agreements would be written for all Bureau sensitive plant species (former Federal Candidate Category 2).

Fire management: Under Alternatives A, B, C, and D, in all ACEC's and RNA's, wildland fires would be managed according to appropriate management response; however, some ACEC's would be analyzed for possible wildland fire use. Use of heavy equipment in ACEC's, WSA's, and RNA's would be avoided and would require line officer approval. Use of retardant would be allowed within these areas for initial attack. Retardant use during extended attack would be considered as a part of the wildland fire situation analysis, considering the resource values at risk. If used, heavy equipment would be restricted to existing roads and trails. Prescribed fires could be used in ACEC's where it can be shown to preserve the desired characteristics of the SMA and to meet management objectives.

Weed management: Noxious weeds could be aggressively controlled in all ACEC/RNA's using integrated weed management methods, such as biological control, site-specific spraying, and grubbing by hand, consistent

Table 3-3.—*Management summary for existing and proposed ACEC's/RNA's*

ACEC/RNA	Alternative	Acres [1,9]	ROW's [2]	Tenure zone	OHV [3]	VRM [4]	Grazing [5]	Personal wood/ plant collecting [6]	Minerals [7]		
									Locatable	Leasable	Salable
Existing ACEC's											
Devils Garden ACEC	A	28,241	EX	1	LE	I (IV)	O	O/O	NREC	C	C
	B	28,241	EX	1	LE	I (IV)	O	O/O	NREC	C	C
	C	28,241	EX	1	LD	I (II)	C	O/O	C	C	C
	D	28,241	EX	1	LD	I (II)	O [8]	O/O	NREC	C	C
	E	ND	EX	2	LE	I (IV)	C	O/O	C	C	C
Lake Abert ACEC	A	50,165	AV	1, 2	LE	I/II	O/C	C/C	C, O	C, NSO	C, O
	B	50,165	AV	1, 2	LE	I/II	O/C	C/C	C, O	C, NSO	C, O
	C	50,165	EX	1, 2	LD	I/II	O [8]/C	C/C	C, O	C, NSO	C, O
	D	50,165	AV	1, 2	LE	I/II	O [8]/C	C/C	C, O	C, NSO	C, O
	E	ND	EX	2	LE	I/II	C	C/C	C	C	C
Lost Forest/Sand Dunes/Fossil Lake ACEC											
Lost Forest RNA	A	9,047	EX	1	LD	I (III)	O	C/O	C	C	C
	B	8,883	EX	1	LD	I (III)	O	C/O	C	C	C
	C	8,883	EX	1	C	I (III)	C	C/O	C	C	C
	D	8,883	EX	1	LD	I (III)	O [8]	C/O	C	C	C
	E	ND	EX	2	LD	I (III)	C	C/O	C	C	C
Sand Dunes	A	11,453	EX	1	O	I (III)	O	C/O	NREC	C	C
	B	11,453	EX	1	O	I (III)	O	C/O	NREC	C	C
	C	11,453	EX	1	C	I (III)	C	C/O	NREC	C	C
	D	9,125	EX	1	O	I (III)	O [8]	C/O	NREC	C	C
	E	ND	EX	2	C	I (III)	C	C/O	C	C	C

ACEC/RNA	Alternative	Acres [1, 9]	ROW's [2]	Tenure zone	OHV [3]	VRM [4]	Grazing [5]	Personal wood/ plant collecting [6]	Minerals [7]		
									Locatable	Leasable	Salable
Fossil Lake	A	6,660	EX	2	C	III	C	C/O	O	NSO	O
	B	6,660	AV	1	C	III	C	C/O	O	NSO	O
	C	6,660	EX	1	C	III	C	C/O	O	C	C
	D	8,988	AV	1	C	III	C	C/O	O	NSO	C
	E	ND	EX	2	LE	III	C	C/O	C	C	C
Remainder of ACEC	A	8,960	EX	2	O	III	O	C/O	O	O	O
	B	8,500	AV	1	O	III	O	C/O	O	O	O
	C	8,500	EX	1	C	III	C	C/O	O	C	C
	D	8,500	AV	1	LD	III	O [8]	C/O	O	O	O
	E	ND	EX	2	LE	III	C	C/O	C	C	C
Warner Wetlands ACEC	A	52,033	AV	2	LD	III	L	O/O	O	O, NSO	C, O
	B	52,033	AV	1	LD	III	L	O/O	O	O, NSO	C, O
	C	52,033	EX	1	LD	III	L	O/O	O	O, NSO	C, O
	D	52,033	AV	1	LD	III	L	O/O	O	O, NSO	C, O
	E	ND	EX	2	LE	III	C	O/O	C	C	C
Proposed ACEC's											
Abert Rim ACEC	A	ND	EX	1	LE	I (IV)	L	O/O	NREC	C	C
	B	ND	EX	1	LE	I (IV)	L	O/O	NREC	C	C
	C	18,049	EX	1	LD	I (IV)	L	O/O	NREC	C	C
	D	18,049	EX	1	LD	I (IV)	L	O/O	NREC	C	C
	E	ND	EX	2	LE	I (IV)	C	O/O	C	C	C
Black Hills ACEC/RNA	A	ND	EX	2	LD	IV	O	O/O	O	O	O
	B	ND	EX	2	LD	IV	O	O/O	O	O	O
	C	3,048	EX	1	C	II	C	C/C	O	C	C
	D	3,048	AV	1	LD	III	O [8]	C/C	O	O-NSO	O
	E	ND	EX	2	LE	IV	C	O/O	C	C	C

ACEC/RNA	Alternative	Acres [1,9]	ROW's [2]	Tenure zone	OHV [3]	VRM [4]	Grazing [5]	Personal wood/ plant collecting [6]	Minerals [7]		
									Locatable	Leasable	Salable
Connley Hills ACEC/RNA	A	ND	EX/O	2	O	III (IV)	O	O/O	O	O	O
	B	3,599	AV	1	LE	III, IV	O	O/O	O	O-NSO	O
	C	3,599	EX	1	LD	II	C	C/C	O	C	C
	D	3,599	AV	1	LD	III	O [8]	C/C	O	O-NSO	O
	E	ND	EX	2	LE		C	O/O	C	C	C
Fish Creek Rim ACEC/RNA	A	ND	EX	1, 2	LE	I (II)	O	O/C	O, NREC	C, O	C, O
	B	ND	EX	1, 2	LE	I (II)	O	O/C	O, NREC	C, O	C, O
	C	8,725	EX	1	LD	I (II)	O [8]	O/C	O, NREC	C, O	C, O
	D	8,725	AV	1	LD	I (II)	O [8]	O/C	O, NREC	C, O	C, O
	E	ND	EX	2	LE	I (II)	C	C	C	C	C
Foley Lake ACEC/RNA	A	ND	O	2	O	IV	O	O/O	O	O	O
	B	ND	O	2	O	IV	O	O/O	O	O	O
	C	2,747	EX	1	LD	II	C	O/C	O	C	C
	D	2,230	AV	1	LD	III	O [8]	O/C	O	O	O
	E	ND	EX	2	LE	IV	C	O/O	C	C	C
Guano Creek/Sink Lakes ACEC/RNA	A	ND	EX	1	LE	I (III)	C	O/C	NREC	C	C
	B	ND	EX	1	LE	I (III)	C	O/C	NREC	C	C
	C	4,936	EX	1	LD	I (II)	C	O/C	NREC	C	C
	D	11,199	AV	1	LD	I (III)	C	O/C	NREC	C	C
	E	ND	EX	2	LE	I (III)	C	O/C	C	C	C

ACEC/RNA	Alternative	Acres [1,9]	ROW's [2]	Tenure zone	OHV [3]	VRM [4]	Grazing [5]	Personal wood/ plant collecting [6]	Minerals [7]		
									Locatable	Leasable	Salable
Hawksie-Walksie ACEC/RNA	A	ND	EX	1	LE	I (III)	O	O/C	NREC	C	C
	B	ND	EX	1	LE	I (III)	O	O/C	NREC	C	C
	C	17,339	EX	1	LD	I (III)	L	O/C	NREC	C	C
	D	17,339	AV	1	LD	I (III)	O [8]	O/C	NREC	C	C
	E	ND	EX	2	LE	I (III)	C	O/C	C	C	C
High Lakes ACEC	A	ND	O	2	O	IV	O	O/O	O	O	O
	B	ND	O	2	O	IV	O	O/O	O	O	O
	C	40,095	EX	1	LD	III	O [8]	O/O	O, NREC	C	C
	D	38,985	AV	1	LD	III	O [8]	O/O	O	O	O
	E	ND	EX	2	LE	III	C	O/O	C	C	C
Juniper Mountain ACEC/RNA	A	ND	O	2	LE	IV	O	O/O	O	O	O
	B	ND	O	2	LE	IV	O	O/O	O	O	O
	C	6,335	EX	1	LD	II	O [8]	C/O	O	C	C
	D	6,335	AV	1	LD	IV	O [8]	O/O	O	NSO	O
	E	ND	EX	2	LE	IV	C	O/O	C	C	C
Rahilly-Gravelly ACEC/RNA	A	ND	O	2	O	III, IV	O	O/O	O	O	O
	B	ND	O	2	O	III, IV	O	O/O	O	O	O
	C	20,127	EX	1	LD	III	O [8]	O/O	O	NSO	C
	D	19,648	AV	1	LE	III	O [8]	O/O	O	NSO	O
	E	ND	EX	2	LE	III, IV	C	O/O	C	C	C
Red Knoll ACEC	A	ND	O	2	O	III, IV	L	O/O	O	O	O
	B	ND	O	2	O	III, IV	L	O/O	O	O	O
	C	11,588	EX	1	LD	II	C	O/O	C	C	C
	D	11,127	AV	1	LD	II	L [8]	O/O	C, O	C, O	C, O
	E	ND	EX	2	LE	III, IV	C	O/O	C	C	C

ACEC/RNA	Alternative	Acres [1,9]	ROW's [2]	Tenure zone	OHV [3]	VRM [4]	Grazing [5]	Personal wood/ plant collecting [6]	Minerals [7]		
									Locatable	Leasable	Salable
Spanish Lake ACEC/RNA	A	ND	O	2	O	IV	O	O/O	O	O	O
	B	ND	O	2	O	IV	O	O/O	O	O	O
	C	4,699	EX	1	LD	III	O [8]	O/O	O	C	C
	D	4,699	AV	1	LD	IV	O [8]	O/O	O	O	O
	E	ND	EX	2	LE	IV	C	O/O	C	C	C
Table Rock ACEC	A	ND	EX	2	O, C	IV	L	O/O	O	O	O
	B	ND	EX	2	O, C	IV	L	O/O	O	O	O
	C	5,891	EX	1	LD	II	C	C/O	O	C	C
	D	5,139	AV	1	LD	II	L [8]	O/O	O	NSO	C
	E	ND	EX	2	LE	IV	C	O/O	C	C	C

[1] Acreage values are based on geographic information system calculations.
[2] ROW's = rights-of-way; EX = exclusion ~ no new rights-of-way would be allowed; AV = avoid ~ new rights-of-way would be allowed if there were no other options; O = open to new rights-of-ways.
[3] OHV = off-highway vehicle; C = closed to OHV's; O = open to OHV's; LD = limited to designated roads and trails; LE = limited to existing roads and trails.
[4] VRM = visual resource management; class in parentheses is how the area would be managed if released from wilderness study.
[5] C = closed to grazing; O = open to grazing; L = some portions of the area are open and some are closed to grazing.
[6] Plant collecting applies only to collection of plants or plant material for personal use or onsite firewood collection (dead and down) for camping; commercial firewood, post, or pole cutting would not be allowed in any of the ACEC's.
[7] Minerals; O = open for exploration, development, extraction of minerals; C = closed to all mineral activity; NSO = no surface occupancy allowed during exploration, development or extraction of oil, gas, or geothermal resources. In those ACEC's which overlap with WSA's, the WSA portion would be open to locatable minerals; however, no actions requiring reclamation are allowed (NREC). WSA's are closed to the sale or lease of minerals in all alternatives. If these WSA's are not designated wilderness, they would continue to be open to locatable minerals and could be open to sale or lease of minerals, depending on the alternative.
[8] Would continue to be open to grazing unless conflicts are identified in the future that would require modification to current grazing management.
[9] ND = no designation.

with protection or enhancement of relevant and important values and the existing weed control environmental assessment (USDI-BLM 1994d). Some areas such as Lake Abert and Warner Wetlands are covered by specific weed management plans (USDI-BLM 1995e, 1999g). Any weed control measures proposed in WSA's within ACEC's would be consistent with wilderness IMP direction (USDI-BLM 1995b).

Road management: In all ACEC/RNA's designated closed to OHV's, or where OHV's are limited to designated roads and trails, all roads not designated open would be signed closed, physically blocked, and/or rehabilitated. Existing road data sources include one or more of the following: U.S. Geological Survey (USGS) digital line graph and digital orthophotography data, global positioning system data, and field mapping. Additional, non-inventoried roads or trails may be present on the ground. Any new roads or trails discovered in the future within SMA's in the existing roads and trails category would remain open unless determined in a subsequent analysis that they are not needed or are causing resource damage. Any new roads or trails discovered in the future in SMA's under the designated roads and trails category would be closed. See Table 4-4 for a comparison of the miles of roads proposed for closure in SMA's for each alternative.

WSA management in areas of overlap with ACEC/RNA's: Management prescriptions were developed for Alternatives B, C, and D independently of WSA considerations. All management actions for those portions of ACEC's within an instant study area (ISA) or WSA would be governed by the wilderness IMP (USDI-BLM 1995b) until such time as Congress makes

a determination regarding wilderness designation for the area. Any WSA's, or portions thereof, designated an ACEC and later released from wilderness study would be managed according to the applicable management direction for that ACEC. Under some alternatives, the proposed ACEC management may be more restrictive than the wilderness IMP, such as closing an area to livestock grazing or limiting vehicle use to designated roads and trails rather than existing roads and trails. Should WSA's be designated as wilderness in the future, they would be managed in accordance with the direction contained in the authorizing legislation. Based on recent road inventory, it has been discovered that a number of roads within WSA's which do not appear on wilderness inventory maps (USDI-BLM 1989a) must be closed under all alternatives to comply with the wilderness IMP (USDI-BLM 1995b). These are shown as "historically closed" on the SMA maps. Seven proposed or existing ACEC's overlap with existing WSA's and an ISA (see Table 3-4).

Commercial or personal uses: Firewood, post, or pole cutting, for both commercial and domestic use, would not allowed in any of the existing or proposed ACEC/RNA's under any of the alternatives. Domestic firewood cutting, and bough cutting with offsite removal is prohibited under the wilderness IMP (USDI-BLM 1995b). This generally does not preclude collection of small amounts of dead or downed, woody material for firewood for onsite camping use, unless specifically prohibited in the following alternative description.

Plant or plant material (living or dead) collection for commercial purposes, including juniper berries or boughs, is generally allowed under permit under Alternatives A and B, within the proposed ACEC/RNA's, unless specifically prohibited in the following alternative description. It would not be allowed in any of the existing or proposed ACEC/RNA's under Alternatives C or D. Personal or Tribal collection of plants or plant materials would be allowed in most ACEC/RNA's, unless specifically prohibited in the following alternative description.

Nondestructive research: Nondestructive research would be encouraged in all of the proposed and existing ACEC's, and is not limited only to those areas that have RNA's. This could include collection of small quantities of plants or plant materials. Any research would need to be authorized by the BLM in writing and where necessary, permitted. The resulting data and information would be used by the BLM to help guide management of these areas.

Recreation: Commercial recreational use or use requiring a special permit proposed within ACEC's would be evaluated on a case-by-case basis and would be permitted, modified, or prohibited, as needed to protect the ACEC/RNA values. Dispersed or primitive camping use would be allowed in most existing or proposed ACEC/RNA's unless specifically prohibited in the following alternative description. Under Alternatives A and B, unrestricted rock and boulder climbing would be allowed within most existing or proposed ACEC/RNA's. Under Alternatives C, D, and E, rock and boulder climbing would be prohibited in Table Rock, High Lakes, and Black Hills ACEC's. The use of bolts or other permanent safety devices for rock or boulder climbing would require a permit within the remainder of the ACEC/RNA's. The use of bolts or other permanent safety devices would be prohibited under all alternatives within all WSA's (including areas of overlap with ACEC/RNA's) and significant caves.

Minerals: According to 43 CFR 3809.11, an approved plan of operation is required prior to commencing any operation, except casual use, involving locatable minerals in a designated ACEC. Other restrictions may be applied for leasable or salable minerals, depending on the type of other resource values present. Proposed mineral activities in those ACEC/RNA's that overlap with WSA's would be further limited by the wilderness IMP (USDI-BLM 1995b).

Lands and Realty: Any inholdings acquired would be managed in accordance with the management direction for the surrounding ACEC/RNA.

Tribal Consultation: Native American traditional uses and concerns would continue to be identified and protected through consultation with Tribal governments and individual Native Americans for management actions within existing and proposed ACEC/RNA's.

Management Direction by Alternative—Devils Garden ACEC

Alternative A

The existing ACEC designation and boundaries (28,241 acres) would be retained. The ACEC and WSA boundary are the same (Maps SMA-1, SMA-5, and R-1 of the Draft RMP/EIS).

New rights-of-way would be excluded from the area except to access non-Federal property (Map L-2 of the Draft RMP/EIS). The area would continue to be managed as land tenure Zone 1 (retention) (Map L-1 of the Draft RMP/EIS).

Table 3-4.—*Overlap of existing and proposed ACEC's and WSA's (in acres)* [1]

Area of critical environmental concern	Alternative C	Alternative D	Wilderness study area	Alternative C overlap	Alternative D overlap	WSA recommendation
Abert Rim Addition (P)	18,049	18,049	Abert Rim	18,049	18,019	Suitable
Devils Garden (E)	28,241	28,241	Devils Garden Lava Bed	28,241	28,241	Suitable
Fish Creek Rim (P)	8,725	8,725	Fish Creek Rim	6,876	6,876	Suitable
Guano Creek/Sink Lakes (P)	4,936	11,199	Guano Creek	4,936	11,199	Suitable
Hawksie-Walksie (P)	17,339	17,339	Sage Hen Hills, Hawk Mtn.	963	963	Suitable
High Lakes (P)	40,095	39,985	Guano Creek	1,240	0	Suitable
Lake Abert (E)	50,117	50,117	Abert Rim	7,110	7,110	Suitable
Lost Forest/Sand Dunes/Fossil Lake (E)	35,575		Sand Dunes, Lost Forest ISA [2]	24,516	24,516	Nonsuitable

[1] Acreage currently designated for existing (E) ACEC's and proposed (P) for Alternatives C and D. Proposed ACEC's would not be designated under Alternatives A, B, and E.
[2] ISA = instant study area.

OHV's would be limited to existing roads and trails. Based on a recent road inventory, it has been discovered that about 11.4 miles of roads (Table 4-4) not appearing on the wilderness inventory maps (USDI-BLM 1989a) must be closed to comply with the wilderness IMP (USDI-BLM 1995b). These are shown as "historically closed" on Map SMA-5. These roads would remain closed, even if the area is released from wilderness study. All other roads would remain open year-round.

Due to the WSA status, the area is managed as Visual Resource Management (VRM) Class I (Map VRM-1 of the Draft RMP/EIS). If the area is not designated wilderness, it would be managed as VRM Class IV.

Five allotments are located in the area. Livestock grazing on a temporary nonrenewable basis would continue in Allotment 907. Grazing in Allotments 900, 905, 906, 908, and 910 would continue as at present.

Though locatable mineral entry is allowed under the wilderness IMP, actions that require reclamation are not currently allowed (USDI-BLM 1995b). This effectively closes the area to mineral location. The area is also closed to the sale or lease of minerals. If the area is not designated wilderness, the ACEC would be opened to all mineral uses. Oil, gas, or geothermal activity would be subject to no-surface-occupancy stipulations, while locatable mineral exploration and development would require a plan of operation.

Alternative B

Under this alternative, the existing Devils Garden ACEC would be retained (Map SMA-2 of the Draft RMP/EIS). Management would be the same as under Alternative A (Maps L-3, L-6, R-1, R-5, and VRM-1 of the Draft RMP/EIS).

Alternative C

The ACEC would be retained under this alternative (Maps SMA-3 of the Draft RMP/EIS).

New rights-of-way would be excluded except to provide access to non-Federal land (Map L-6 of the Draft RMP/EIS). The area would continue to be managed as land tenure Zone 1 (retention) (Map L-4 of the Draft RMP/EIS).

OHV use would be limited to designated roads and trails as shown on Map R-6 of the Draft RMP/EIS. Most of the roads in the garden would be permanently closed, including the spur road from Road 6179 to Derrick Cave, even if released from wilderness study.

The ACEC would continue to be managed as VRM Class I (Map VRM-1 of the Draft RMP/EIS), but would revert to VRM Class II if it is not designated wilderness.

The entire ACEC would be closed to livestock grazing (Map G-2 of the Draft RMP/EIS).

The area would be closed to sale or lease of minerals, even if released from wilderness study. Mineral location would continue to be limited by the wilderness IMP (USDI-BLM 1995b) and the area would be recommended for withdrawl, even if released from wilderness study.

Alternative D

Under this alternative, the existing Devils Garden ACEC would be retained (Maps SMA-4 and -5).

New rights-of-way would be excluded except to provide access to non-Federal land (Map L-8). The area would continue to be managed as land tenure Zone 1 (retention) (Map L-5).

The Cabin Lake/Silver Lake Deer Winter Range Cooperative Vehicle Closure would be included into this area (Maps R-7 and SMA-24). Those roads closed to comply with the wilderness IMP (USDI-BLM 1995b) would remain closed (shown as "historically closed" on Map SMA-5), even if released from wilderness study. The road to Derrick Cave would be closed. The remainder of the roads would be closed to motorized travel from December 1 through March 31, annually. Motorized travel would be limited to designated roads and trails for the remainder of the year.

The ACEC would continue to be managed as VRM Class I (Map VRM-3 of the Draft RMP/EIS), but would revert to VRM Class II if it is not designated wilderness.

Livestock grazing would be managed according to existing permit stipulations (Map G-3). Any proposed changes in grazing, including time and intensity of use, would be evaluated for impacts on the relevant and important resources and would be permitted if the values would be maintained or enhanced. Where adverse impacts are identified, existing livestock use would be adjusted using a variety of methods, including, but not limited to, fencing, reduction in livestock numbers, and changes in grazing season of use. Proposed projects would be evaluated for impacts and

permitted where relevant and important ACEC or WSA values would be maintained or enhanced.

Though locatable mineral entry is allowed under the wilderness IMP, actions that require reclamation are not currently allowed (USDI-BLM 1995b). This effectively closes the area to mineral location. The area is also closed to the sale or lease of minerals (Map M-8, -9, and -10). If the area is not designated wilderness, the ACEC would be opened to all mineral uses, but activity would be managed to minimize impacts to bighorn sheep and other BLM special status species. Oil, gas, or geothermal activity would be subject to no-surface-occupancy stipulations, while locatable mineral exploration and development would require a plan of operation.

Alternative E

Under this alternative the ACEC designation would be revoked. The area would continue to be managed according to the wilderness IMP (USDI-BLM 1995b) until such time as Congress makes a decision regarding wilderness designation or consistent with management direction for the rest of the planning area (such as closed to grazing).

Management Direction by Alternative—Lake Abert ACEC

Alternatives A–D

Under Alternatives A–D, the Lake Abert ACEC (50,117 acres) would be retained (Maps SMA-1, -2, -3, -6 of the Draft RMP/EIS, and Maps SMA-4 and -7). Management of the ACEC would be according to the existing management plan amendment (USDI-BLM 1996d) and the wilderness IMP (USDI-BLM 1995b), as summarized below and in Table 3-3.

New rights-of-way locations would be avoided in the Lake Abert area (Map L-2, -6, and -8 of the Draft RMP/EIS). The Abert Rim WSA portion of the ACEC would continue to be managed as an exclusion area. The Abert Rim WSA portion of the area would continue to be managed as tenure Zone 1 (retention). Abert Lake would be managed as Zone 2 under Alternative A and as Zone 1 (retention) under Alternative B–D (Maps L-1, -3, -4, and -5 of the Draft RMP/EIS).

OHV use would be restricted throughout the ACEC to existing roads and trails (Maps R-2 and R-5 of the Draft RMP/EIS). Seasonal closures would be placed on the playa at the north end of the lake, in deer/bighorn sheep critical winter range, and near raptor nest sites, if needed. An existing two-track road at the mouth of Juniper Creek, east of Highway 395, would be converted to a foot trail. During the wet season, vehicle traffic may be restricted on those roads lacking subgrade reinforcement where critical erosion is known to occur. Several miles of roads and trails within the Abert Rim WSA (Table 4-4) have been closed. These are shown as "historically closed" on Map SMA-7.

The Abert Rim corridor will remain in its existing VRM Class I category. The remainder of the ACEC would be managed as VRM Class II (Maps VRM-1, -2, and -3 of the Draft RMP/EIS).

Livestock grazing management would continue as described in the management plan amendment (USDI-BLM 1996d). Grazing would continue to be excluded from most of the western shoreline and from the eastern shoreline up to the top of Abert Rim (Maps G-1, -2, and -3). Livestock use would continue based on existing permit stipulations and approved grazing systems. Any proposed changes in grazing, including time and intensity of use, would be evaluated for impacts on the relevant and important values and would be permitted if the values would be maintained or enhanced. Where adverse impacts are identified, existing livestock use would be adjusted using a variety of methods, including, but not limited to, fencing, reduction in livestock numbers, and changes in grazing season of use. Proposed projects would be evaluated for impacts and permitted where relevant and important values would be maintained or enhanced.

The existing ACEC, including the western portion of Abert Rim WSA, would be closed to the collection of all plant materials.

Within the WSA portion of the ACEC, mineral leasing or mineral disposal is currently not allowed under the wilderness IMP (USDI-BLM 1995b). Locatable mineral activity requiring reclamation would not be allowed; which essentially precludes locatable mineral activity (Maps M-8, -9, and –10). If Congress decides to release Abert Rim WSA from WSA study, that portion of the WSA within the ACEC would remain closed to salable and leasable mineral activities while locatable mineral activity would be allowed, but subject to preparation of a plan of operations.

The northern portion of the ACEC area (Map M-9) would be closed to sodium leasing. The rest of the ACEC is open to mining, but subject to special stipulations related to lake levels, total dissolved solids, and visual quality. Geothermal, oil, and gas leasing could occur throughout the remainder of the ACEC, but no

surface occupancy would be allowed within the ACEC boundary. Locatable mineral activity would be allowed throughout the remainder of the ACEC, but would require preparation of a plan of operations. Mineral material disposal would continue from the two existing pits only.

Noxious weeds would be managed according to direction in the management plan amendment (USDI-BLM 1996b, the wilderness IMP (USDI-BLM 1995b), and the "Abert Rim Weed Management Area Plan" (USDI-BLM 1995e).

Other management direction as specified in the management plan amendment (USDI-BLM 1996b) for air quality, fire, water resources, special status species, and cultural resources and would be continued under all alternatives.

The following changes to the existing management described above would be made under each alternative.

Alternative B

Under Alternative B, the total dissolved solids and lake-level restrictions on mining would be removed.

Alternative C

Under Alternative C, new rights-of-way would be excluded except to provide access to non-Federal land (Map L-7 of the Draft RMP/EIS). OHV's would be limited to designated roads and trails (Map R-6 of the Draft RMP/EIS). All roads on the west side of the lake would be closed. An additional total of about 15.9 miles of roads and trails would be closed (Table 4-4). In the rest of the ACEC, all existing roads would be designated open with possible seasonal closures.

Alternative D

Under Alternative D, OHV use east of Highway 395 and up to the top of the rim would be restricted to designated roads and trails. The remainder of the area (west of Highway 395) would remain in the existing roads and trails category (Map R-7). About 3.3 additional miles of roads and trails (Table 4-4) would be closed (Map SMA-7).

Alternative E

Under this alternative, the ACEC designation would be revoked. Management of the area would be the same as that prescribed for the rest of the planning area.

Management Direction by Alternative—Lost Forest/ Sand Dunes/Fossil Lake ACEC/RNA

Alternative A

The existing 36,120-acre ACEC, including the Lost Forest RNA/ISA, would be retained and managed according to the "High Desert Management Framework Plan" (Maps SMA-1 and -8 of the Draft RMP/EIS). The Lost Forest RNA/ISA and the Sand Dunes WSA (Map R-1 of the Draft RMP/EIS) would be managed according to the wilderness IMP (USDI-BLM 1995b) until such time as Congress makes a determination regarding wilderness designation for the two areas.

This area would be excluded from location of new rights-of-way, except that new rights-of-way could be placed in the existing corridor through Fossil Lake (Map L-2 of the Draft RMP/EIS). Lost Forest RNA/ISA and Sand Dunes WSA would continue to be managed as land tenure Zone 1 (retention). The remainder of the ACEC/RNA would continue to be managed as Zone 2 (Map L-1 of the Draft RMP/EIS).

The existing 6,660-acre vehicle closure on Fossil Lake would be retained (Maps R-2 and SMA-9 of the Draft RMP/EIS). The unfenced closure boundary would be signed. Vehicle use in the Lost Forest RNA/ISA would continue to be limited to designated roads and trails. Most of the Sand Dunes WSA would remain open to OHV use. Those roads shown as "historically closed" on Map SMA-9 would remain closed, even if the Lost Forest and Sand Dunes areas are removed from wilderness study.

The Lost Forest RNA and Sand Dunes WSA would continue to managed as VRM Class I (Map VRM-1 of the Draft RMP/EIS). If Congress removes these areas from wilderness consideration they would revert to VRM Class III. Fossil Lake and the remainder of the ACEC would continue to be managed as VRM Class III.

The present grazing management in the ACEC would continue: Fossil Lake is excluded from grazing; the remainder of the area falls in several pastures of Allotment 10103 (Map G-1 of the Draft RMP/EIS).

Cutting or collecting firewood for camping use would continue to be prohibited. Means to provide firewood for campers on high-use weekends would be investigated, including permitting a concessionaire to sell firewood from an offsite source.

The existing mineral withdrawal on Lost Forest RNA/ISA would be retained. The Sand Dunes WSA and Lost Forest RNA would be closed to sale or lease of minerals. Any locatable mineral activity in the Sand Dunes WSA is currently subject to the no reclamation stipulation. Should Congress remove the Sand Dunes WSA from wilderness study, mineral activity would be restricted similar to the rest of the ACEC area. The Fossil Lake area would be open to all mineral activity, subject to no-surface-occupancy restrictions for leasable minerals. The remainder of the ACEC would require preparation of a plan of operations for locatable mineral activity.

Alternative B

The existing ACEC and RNA would be retained. The boundary of the ACEC would be amended to exclude the Department of Defense withdrawal along the south boundary of the ACEC (Map SMA-2 of the Draft RMP/EIS). In addition, the northern boundary of the ACEC and the Lost Forest RNA would be made consistent and relocated to the southern edge of BLM Road 6141. These two changes would reduce the size of the area to about 35,575 acres. The Lost Forest mineral withdrawal and ISA boundary would remain as it is at present (Map SMA-8 of the Draft RMP/EIS).

The existing electrical transmission line corridor through Fossil Lake would be expanded in width up to 2,000 feet for locating future utility lines or rights-of-way. Stipulations and tower spacing would be used to protect relevant and important resources. New rights-of-ways would be excluded from the Sand Dunes WSA and Lost Forest ISA/RNA except for those necessary to access private lands (Map L-6 of the Draft RMP/EIS). Routing rights-of-way through the remainder of the ACEC would be avoided unless there were no other options. The entire ACEC/RNA would be managed as land tenure Zone 1 (retention) (Map L-3 of the Draft RMP/EIS).

OHV use would be managed as described under Alternative A. BLM Road 6179 through the Lost Forest would be upgraded to a single-lane road with turnouts and parking pulloffs and surface similar to the Access Road 6151 to the west.

VRM class (Map VRM-1 of the Draft RMP/EIS), livestock grazing (Map G-1 of the Draft RMP/EIS), firewood collecting, and minerals activities would be managed as described under Alternative A.

To better accommodate recreation use, private individual(s) would be encouraged to develop a commercial campground on private land adjacent to or near the sand dunes. If the Sand Dunes WSA is not designated wilderness, BLM would consider developing a campground on adjacent Federal land and charge fees for use, if no private campground is developed.

Alternative C

The existing ACEC/RNA would be retained. The boundary of the ACEC would be amended to exclude the Department of Defense withdrawal along the south boundary of the ACEC. In addition, the northern boundary of the ACEC and the Lost Forest RNA would be made consistent and relocated to the southern edge of BLM Road 6141 (Map SMA-3 of the Draft RMP/EIS). The Lost Forest ISA and the Sand Dunes WSA would be managed according to the wilderness IMP until such time as Congress makes a determination regarding wilderness designation for the two areas.

A corridor 300-feet wide would be identified for the existing electrical transmission line across Fossil Lake. Any new rights-of-way would be placed within this corridor. The rest of the ACEC would be excluded from all new rights-of-way except for any necessary to access non-Federal land (Map L-7 of the Draft RMP/EIS). The entire ACEC/RNA would be managed as land tenure Zone 1 (retention) (Map L-4 of the Draft RMP/EIS).

The entire ACEC, including the Sand Dunes, would be closed to OHV's (Map R-6 of the Draft RMP/EIS). All roads in the ACEC, except the Access Road 6151 would be closed. Road 6151 would be closed at the Lost Forest RNA western boundary.

The ACEC/RNA would be closed to overnight camping and would be open to day use only.

Visual resource management would be the same as described under Alternative A (Map VRM-2 of the Draft RMP/EIS).

The entire ACEC would be closed to livestock grazing to protect relevant and important resources (Map G-2 of the Draft RMP/EIS). Fences would be installed as needed to keep livestock out. Any fence construction in the WSA or ISA would be subject to the wilderness IMP (USDI-BLM 1995b).

Open fires and the collecting of firewood would be prohibited in the ACEC.

The mineral withdrawal on the Lost Forest ISA would be retained (Map M-2 of the Draft RMP/EIS). The

Sand Dunes WSA, Lost Forest RNA, and Fossil Lake areas would be closed to the sale and lease of minerals. Fossil Lake would be open to locatable mineral activity, subject to access restrictions and plan of operation requirements. Any locatable mineral activity in the Sand Dunes WSA would be subject to the no reclamation stipulation. Should Congress remove the Sand Dunes WSA from wilderness study, the area would be open to locatable mineral development. Locatable mineral activity within the remainder of the ACEC (except Lost Forest RNA/ISA) would be subject to access restrictions and require a plan of operation.

Alternative D

The existing ACEC/RNA would be retained. The boundary of the ACEC would be amended to exclude the Department of Defense withdrawal along the south boundary of the ACEC. Should the Department of Defense decide that they no longer need this site and the BLM revoke the withdrawal in the future, the southern boundary would revert to its current location (Map SMA-8 of the Draft RMP/EIS). In addition, the northern boundary of the ACEC and the Lost Forest RNA would be made consistent and relocated to the southern edge of BLM Road 6141 (Maps SMA-4 and -9). The Lost Forest RNA/ISA and the Sand Dunes WSA would be managed according to the wilderness IMP (USDI-BLM 1995b) until such time as Congress makes a determination regarding wilderness designation for the two areas.

The Sand Dunes WSA and Lost Forest RNA/ISA would be excluded from location of new rights-of-way. The existing electrical transmission line through the Fossil Lake would be identified as a right-of-way corridor up to 1000-feet wide for future utility lines or other rights-of-way. New rights-of-way in the remainder of the ACEC would be avoided unless there are no other options (Map L-8). The entire ACEC/RNA would be managed as land tenure Zone 1 (retention) (Map L-5).

The existing vehicle closure on Fossil Lake would be expanded to 8,988 acres (Maps R-7 and SMA-9a). The closure boundary shown on Map SMA-9a has been located using the global positioning system and leaves as much of the large, contiguous dunes in the open area as possible. The closure boundary would be fenced or signed on the ground. Vehicle use in the Lost Forest RNA/ISA would continue to be limited to designated roads and trails. Additional area west of Lost Forest and north of the Fossil Lake closure would be added to the designated roads and trails class (Maps R-7 and SMA-9a). Most of the Sand Dunes WSA would remain open to OHV use. Road 6151 through the Lost Forest RNA/ISA would be minimally upgraded to prevent widening and braiding of the road and resulting damage to relevant and important resources. Those roads shown as "historically closed" on Map SMA-9 would remain closed.

The Lost Forest RNA and Sand Dunes WSA would continue to managed as VRM Class I (Map VRM-3 of the Draft RMP/EIS). If Congress removes these areas from wilderness consideration they would revert to VRM Class III. Fossil Lake and the remainder of the ACEC would continue to be managed as VRM Class III.

Primitive camping areas would be designated in the Lost Forest RNA and Sand Dunes WSA, with camping allowed only in these sites (Map SMA-9). Parking areas along the main road 6151 through the Lost Forest would be provided for day use. Camping areas within the Sand Dunes WSA would be managed on a rotational basis (for example, two of the camping/staging areas would be open and available to use and the other area would be closed for an indeterminent amount of time [2–6 years] to allow natural rehabilitation to occur). The length of the closure would be based on the following criteria: (1) success of natural revegetation, (2) obliteration of human activities by the natural movement of sand, and (3) the public's adherence to the closures. Specific travel routes from the camping/staging areas to the barren dunes which are open to OHV use would be established. Adaptive management activities which would allow the continued use of each of these camping/staging areas while protecting the natural values of the area would be adopted as necessary to ensure their long-term use and protection. The establishment of a campground on private lands within the sand dunes area would be encouraged.

The grazing closure on Fossil Lake would be expanded to 8,988 acres (Map G-3). This would require construction of a fence within a WSA. Livestock use in the rest of the ACEC would continue based on existing permit stipulations. Any proposed changes in grazing, including time and intensity of use, would be evaluated for impacts on the relevant and important values and would be permitted if the values would be maintained or enhanced. Where adverse impacts are identified, existing livestock use would be adjusted using a variety of methods, including, but not limited to, fencing, reduction in livestock numbers, and changes in grazing season of use. Proposed range improvement projects would be evaluated for impacts and permitted where relevant and important values would be maintained or enhanced.

Collecting of firewood for camping use would be prohibited.

The mineral withdrawal on the Lost Forest RNA/ISA would be retained (Map M-2 of the Draft RMP/EIS). The Sand Dunes WSA and Lost Forest RNA/ISA areas would be closed to the sale and lease of minerals. Any locatable mineral activity in the Sand Dunes WSA would be subject to the no reclamation restriction of the wilderness IMP. Should Congress remove the Sand Dunes WSA from wilderness study, locatable mineral development would be allowed. Fossil Lake would be open to locatable mineral activity subject to seasonal restrictions and preparation of a plan of operations. It would be open to mineral leasing subject to no-surface-occupancy restrictions. Fossil Lake would be closed to mineral material disposal. Mineral activity within the remainder of the ACEC would be allowed, but subject to seasonal restrictions and locatable mineral development would require a plan of operation (Maps M-8, -9, and -10).

Alternative E

The Lost Forest/Sand Dunes/Fossil Lake ACEC designation and the Lost Forest RNA designation would be revoked. The former ACEC would be managed in the same manner as surrounding lands. The Lost Forest ISA and Sand Dunes WSA designations would continue and be managed according to the wilderness IMP (USDI-BLM 1995b) until such time as Congress makes a decision regarding their designation as wilderness, or consistent with management direction for the rest of the planning area (i.e., closed to grazing). The sand dunes would be closed to OHV use.

Management Direction by Alternative—Warner Wetlands ACEC

Management Common to Alternatives A–D

Under Alternatives A–D, the existing Warner Wetlands ACEC (53,087 acres) would be retained. Management of the ACEC would be according to the existing "Warner Wetlands Area of Critical Environmental Concern (ACEC) Management Plan" (USDI-BLM 1990b, 1990c, 1990d, 1990e, 1990f, 1990g, 1990h, 1990i, 1990j), except as highlighted in the alternative descriptions below (Maps SMA-1, -2, -3, and -10 of the Draft RMP/EIS, along with Maps SMA-4 and SMA-10).

Vehicles would be restricted to designated roads and trails (Maps R-2, R-5, R-6, and SMA-10 of the Draft RMP/EIS and R-7 and SMA-10). Roads shown as "historically closed" on Map SMA-10 would remain closed.

The area would be managed as VRM Class III (Maps VRM-I, -II, and -III of the Draft RMP/EIS).

Mineral management would be the same under these four alternatives. The eastern half of the ACEC would be closed to mineral disposal, open to leasing with no-surface-occupancy restrictions, and open to mineral location subject to seasonal restrictions along with the need to prepare a plan of operations. The western half is open to mineral disposal, open to mineral leasing, and open to mineral locations subject to preparation of a plan of operation (Maps M-8, -9, and -10).

Weed management in the ACEC would be conducted according to the "Warner Basin Weed Management Area Plan" (USDI-BLM 1999g).

Alternatives A and B

The ACEC would be open to new rights-of-way under Alternatives A and B (Maps L-2 and -6 of the Draft RMP/EIS). The entire ACEC would be managed as land tenure Zone 2 under Alternative A and as Zone 1 (retention) under Alternative B (Maps L-1 and -3 of the Draft RMP/EIS).

The core wetland area (potholes and acquired lands) (Map SMA-10 of the Draft RMP/EIS) is currently closed to livestock grazing. The remainder of the ACEC is grazed in accordance with an approved allotment management plan (USDI-BLM 1990g). This would continue under both alternatives.

Alternative C

The ACEC would be considered a right-of-way exclusion area (Map L-7 of the Draft RMP/EIS). The entire ACEC would be managed as land tenure Zone 1 (retention) (Map L-4 of the Draft RMP/EIS).

The 400-acre meadow management area at Hart Bar and the core wetland area (potholes and acquired lands) would be closed to grazing (Map SMA-10 of the Draft RMP/EIS). The remainder of the ACEC would be grazed in accordance with an approved allotment management plan (USDI-BLM 1990g).

Alternative D

The ACEC would be considered a right-of-way avoidance area (Map L-8). The entire ACEC would be

managed as land tenure Zone 1 (retention) (Map L-5).

Most of the core wetland area (potholes and acquired lands) would remain closed to livestock grazing. The remainder of the ACEC would be grazed in accordance with an approved allotment management plan (USDI-BLM 1990g). However, management of the 400-acre meadow management area at Hart Bar would be changed to manage for tallgrass nesting bird species rather than shortgrass nesting species. This would involve incorporating the meadow management area into the southern portion of the core wetland acquired lands portion of the ACEC (e.g., that portion south of Anderson Lake within the ditch and dike system [Map SMA-10]). This area would be divided by fencing or natural barriers. The southern portion would utilize fire, mowing, and livestock grazing (authorized on a temporary nonrenewable grazing basis) to meet specific management objectives or as a pretreatment prior to planned prescribed fire to facilitate/enhance fuel breaks. This would expand the meadow management area by approximately 1,500 acres.

Alternative E

Under this alternative, the Warner Wetlands ACEC designation would be revoked. Management of the area would be the same as that prescribed for the rest of the planning area.

Management Direction by Alternative—Proposed Abert Rim Addition to Lake Abert ACEC

Management Common to Alternatives A–D

Noxious weeds would be managed according to the direction set forth in the "Abert Rim Weed Management Area Plan" (USDI-BLM 1995e). The area would continue to be managed according to the wilderness IMP (USDI-BLM 1995b) (Map R-1 of the Draft RMP/EIS).

Alternative A

Under this alternative, this proposed addition would not be added to the Lake Abert ACEC (Map SMA-1 of the Draft RMP/EIS).

The area is managed as a right-of-way exclusion area due to the WSA status (Map L-2 of the Draft RMP/EIS). If released from wilderness study, it would be open to new right-of-way location. The entire ACEC would be managed as land tenure Zone 1 (retention).

OHV's would be limited to existing roads and trails (Map R-2 of the Draft RMP/EIS). Based on a recent road inventory, it has been discovered that about 6 miles of roads (Table 4-4) not appearing on the wilderness inventory maps (USDI-BLM 1989a) must be closed to comply with the wilderness IMP (USDI-BLM 1995b). These are shown as "historically closed" on Map SMA-7. If the WSA is not designated wilderness, it would be opened to OHV use, including "historically closed" roads.

The area would be managed as VRM Class I due to the WSA status (Map VRM-1 of the Draft RMP/EIS). If released from wilderness study, it would be managed as VRM Class IV.

Livestock grazing would continue as it is currently managed based on existing permit stipulations (Map G-1 of the Draft RMP/EIS). The majority of this area is in Allotment 517, which is grazed from April through October. The south end of the proposed add-on is within Allotments 400 and 518. Allotment 518 is grazed in summer. This portion of Allotment 400 is excluded from grazing use.

Mineral management of this area is restricted by WSA status. The area is closed to mineral leasing and material disposal. Locatable mineral activity is limited by the no reclamation requirement of the wilderness IMP (USDI-BLM 1995b). Should the area be removed from WSA status, the area would become open to leasable, saleable, and locatable development.

Alternative B

The proposed addition would not be added to the existing Lake Abert ACEC. It would be managed the same as under Alternative A (Maps SMA-2, G-1, L-3, L-6, R-1, R-5, VRM-1, and L-6 of the Draft RMP/EIS).

Alternative C

A total of 18,019 acres would be added to the existing Lake Abert ACEC under this alternative (Map SMA-3 of the Draft RMP/EIS). The add-on area lies completely within the Abert Rim WSA (Map R-8 of the Draft RMP/EIS) and would be managed according to the "Lake Abert ACEC Management Plan" (USDI-BLM 1996d) and the wilderness IMP (USDI-BLM 1995b).

New rights-of-ways would be excluded from the area (Map L-7 of the Draft RMP/EIS). The ACEC would be managed as land tenure Zone 1 (retention) (Map L-4 of the Draft RMP/EIS).

OHV's would be limited to designated roads and trails (Map R-7 of the Draft RMP/EIS). Based on a recent road inventory, it has been discovered that about 6 miles of roads not appearing on the wilderness inventory maps (USDI-BLM 1989a) must be closed to comply with the wilderness IMP (USDI-BLM 1995b). These are shown as "historically closed" on Map SMA-7. About 15.9 additional miles of roads and trails would be closed under this alternative (Table 4-4). If the WSA is not designated wilderness, these road restrictions would remain in effect.

The area would be managed as VRM Class I due to the WSA status (Map VRM-2 of the Draft RMP/EIS). If released from wilderness study, it would be managed as VRM Class IV.

The area would be open to grazing similar to Alternative A (Map G-2 of the Draft RMP/EIS). Any proposed changes in grazing, including time and intensity of use, would be evaluated for impacts on the relevant and important resources and would be permitted if the values would be maintained or enhanced. Where adverse impacts are identified, existing livestock use would be adjusted using a variety of methods, including, but not limited to, fencing, reduction in livestock numbers, and changes in grazing season of use. Proposed range improvement projects would be evaluated for impacts and permitted where relevant and important values would be maintained or enhanced.

The area would be closed to mineral leasing and disposal. Locatable mineral activity would be limited by the no reclamation requirement of the wilderness IMP (USDI-BLM 1995b). Should the area be removed from WSA status, it would become open mineral leasing and disposal. It would also be open to locatable mineral development subject to the development of a plan of operations.

Alternative D

A total of 18,019 acres would be added to the existing Lake Abert ACEC under this alternative (Maps SMA-4 and -7). The add-on area lies completely within the Abert Rim WSA (Map R-9) and would be managed according to the "Lake Abert ACEC Management Plan" (USDI-BLM 1996d) and the wilderness IMP (USDI-BLM 1995b).

New rights-of-ways would be excluded from the area (Map L-8). The ACEC would be managed as land tenure Zone 1 (retention) (Map L-5).

OHV's would be limited to designated roads and trails (Map R-7). Based on a recent road inventory, it has been discovered that about 6 miles of roads not appearing on the wilderness inventory maps (USDI-BLM 1989a) must be closed to comply with the wilderness IMP (USDI-BLM 1995b). These are shown as "historically closed" on Map SMA-7. About 3.3 additional miles of roads and trails would be closed under this alternative (Table 4-4). If the WSA is not designated wilderness, these road restrictions would remain in effect.

The area would be managed as VRM Class I due to the WSA status (Map VRM-3 of the Draft RMP/EIS). If released from wilderness study, it would be managed as VRM Class IV.

Livestock grazing would continue as it is currently managed based on existing permit stipulations (Map G-1 of the Draft RMP/EIS). The majority of this area is in Allotment 517, which is grazed from April through October. The south end of the proposed add-on is within Allotments 400 and 518. Allotment 518 is grazed in summer. This portion of Allotment 400 is excluded from grazing use. Any proposed changes in grazing, including time and intensity of use, would be evaluated for impacts on the relevant and important resources and would be permitted if the values would be maintained or enhanced. Where adverse impacts are identified, existing livestock use would be adjusted using a variety of methods, including, but not limited to, fencing, reduction in livestock numbers, and changes in grazing season of use. Proposed range improvement projects would be evaluated for impacts and permitted where relevant and important values would be maintained or enhanced.

The area would be closed to mineral leasing and disposal. Locatable mineral activity would be limited by the no reclamation requirement of the wilderness IMP (USDI-BLM 1995b). Should the area be removed from WSA status, it would become open mineral leasing and disposal. It would also be open to locatable mineral development subject to the development of a plan of operations (Maps M-8, -9, and -10).

Alternative E

Under this alternative, no additional area would be added to the existing Lake Abert ACEC. The area is entirely within the Abert Rim WSA (Map R-1 of the Draft RMP/EIS). The area would be managed according to the wilderness IMP, until such time as a decision is made by Congress regarding wilderness designation (USDI-BLM 1995b) or consistent with management direction for the rest of the planning area (i.e., closed to

grazing).

Management Direction by Alternative—Proposed Black Hills ACEC/RNA

Alternative A

No ACEC would be designated under this alternative. Management of the area would continue as at present.

Rights-of-way for utility lines or other uses would be excluded (Map L-2 of the Draft RMP/EIS). The area would continue to be managed as land tenure Zone 2 (Map L-1 of the Draft RMP/EIS).

OHV use would be limited to designated roads and trails (Map R-2 of the Draft RMP/EIS). Approximately 1.9 miles of road closed in the past would remain closed (Table 4-4). These are shown as "historically closed" on Map SMA-11.

The area would continue to be managed as VRM Class IV (Map VRM-1 of the Draft RMP/EIS).

The area would be retained as part of the Paisley Herd Management Area (Map SMA-1 of the Draft RMP/EIS). Livestock grazing would continue as presently managed (Map G-1 of the Draft RMP/EIS). The area is in Allotment 418 which is grazed from March through May.

The area would be open to all mineral uses including locatable, salable, and leasable minerals subject to approval of a site-specific NEPA analysis.

The conservation agreement with USFWS for the management and protection of Cusick's buckwheat and snowline cymopterus would be completed and signed. The existing habitat management plan for the two species would continue in force, as would monitoring and research of the plants.

Alternative B

No ACEC would be designated. Management under this alternative would be the same as under Alternative A, except that new rights-of-way would be allowed (Maps G-1, SMA-2, L-3, L-6, R-1, R-5, and VRM-1 of the Draft RMP/EIS).

Alternative C

Under this alternative, 3,049 acres would be designated as an ACEC and a RNA (Map SMA-3 of the Draft RMP/EIS).

The ACEC/RNA would be excluded from new rights-of-way location except to provide access to non-Federal land (Map L-7 of the Draft RMP/EIS). Legal access across adjacent private land would be acquired, if necessary, to maintain administrative access. The entire ACEC/RNA would be managed as land tenure Zone 1 (retention) (Map L-4 of the Draft RMP/EIS).

The area would be closed to OHV's (Map R-6 of the Draft RMP/EIS). A parking area outside the ACEC would be designated for public and administrative use. Approximately 1.9 miles of road closed in the past would remain closed (Table 4-4). These are shown as "historically closed" on Map SMA-11. An additional 4.9 miles of roads would be closed.

The area would be managed as VRM Class II (Map VRM-2 of the Draft RMP/EIS).

The area would also be closed to livestock grazing and to wild horse use to protect sensitive plant species. Fences would be installed, if needed, to exclude livestock and wild horses. The area would then become an inactive part of the Paisley Herd Management Area (Map G-2 and SMA-2 of the Draft RMP/EIS).

The ACEC/RNA would be open to locatable minerals, subject to preparation of a plan of operations. It would be closed to salable or leaseable minerals.

Collecting plant or plant material (living or dead) for personal use would be prohibited.

Camping and collection of dead or downed woody material for campfire use would be prohibited. Day-use only would be allowed.

The conservation agreement with USFWS for Cusick's buckwheat would be completed, signed, and implemented. Monitoring and research on this species would continue. The existing habitat management plan for these two species would continue in force.

Alternative D

Under this alternative, 3,049 acres would be designated as an ACEC and a RNA (Maps SMA-4 and -11).

New rights-of-way would be avoided unless there were no other options and then only with appropriate mitigating measures to protect relevant and important values (Map L-8). Legal access across private land

would be obtained, if needed, for public and administrative access. The entire ACEC/RNA would be managed as land tenure Zone 1 (retention) (Map L-5).

OHV's would be limited to designated roads and trails (Map R-7). Approximately 1.9 miles of road closed in the past would remain closed (Table 4-4). These are shown as "historically closed" on Map SMA-11. An additional 1.8 miles of roads would be closed.

The area would be managed as VRM Class III (Map VRM-3 of the Draft RMP/EIS).

Livestock grazing would continue based on existing permit stipulations (Map G-3). Any proposed changes in grazing, including time and intensity of use, would be evaluated for impacts on the relevant and important resources and would be permitted if the values would be maintained or enhanced. Where adverse impacts are identified, existing livestock use would be adjusted using a variety of methods, including, but not limited to, fencing, reduction in livestock numbers, and changes in grazing season of use. Proposed range improvement projects would be evaluated for impacts and permitted where relevant and important values would be maintained or enhanced. If needed, fences would be installed to exclude livestock and wild horse use.

Collecting plant or plant material (living or dead) for personal use would be prohibited.

The ACEC/RNA would be open to all minerals activity. All minerals activities would be subject to stipulations and mitigating measures to protect relevant and important values including: a no-surface-occupancy stipulation for geothermal, oil, or gas leasing activity and preparation of a plan of operation for locatable mineral development (Map M-8, -9, and -10).

Camping and collection of dead or downed woody material for campfire use would be prohibited. Day-use only would be allowed.

The conservation agreement with USFWS for Cusick's buckwheat would be completed, signed, and implemented. Monitoring and research on Cusick's buckwheat and snowline cymopterus would continue. The existing habitat management plan for these species would continue in force.

Alternative E

No ACEC would be designated under this alternative. Management would follow that for the remainder of the planning area.

Management Direction by Alternative—Proposed Connley Hills ACEC/RNA

Alternative A

No ACEC would be designated under this alternative. An area of 1,800 acres would continue to be managed under the 1985 interim RNA management plan to protect the western juniper/bluebunch wheatgrass, western juniper/Idaho fescue, and western juniper/big sagebrush/bluebunch wheatgrass plant communities.

The south portion of the area is excluded from the placement of new rights-of-way. The rest of the area would be open to new rights-of-way (Map L-2 of the Draft RMP/EIS). The area would continue to be managed as land tenure Zone 2 (Map L-1 of the Draft RMP/EIS).

The area would be open to OHV use (Map R-2 of the Draft RMP/EIS). Existing roads would be kept open.

Connley Hills would continue to be managed as a combination of VRM Class III and IV (Map VRM-1 of the Draft RMP/EIS).

Present grazing management would continue. The area is in Allotment 705 (Map G-1 of the Draft RMP/EIS) which is grazed from March through June.

The area would be open to all minerals activities based on approval of a site-specific NEPA analysis.

Alternative B

Under this alternative, 3,599 acres would be designated as an ACEC and a RNA (Map SMA-2 of the Draft RMP/EIS).

New rights-of-way would be avoided unless there were no other options and then only with appropriate mitigating measures to protect relevant and important resources (Map L-6 of the Draft RMP/EIS). Legal access across private land would be obtained if needed for public and administrative access. The ACEC/RNA would be managed as land tenure Zone 1 (retention) (Map L-3 of the Draft RMP/EIS).

OHV's would be limited to existing roads and trails (Map R-5 of the Draft RMP/EIS) and erosion control measures would be implemented where needed.

Visual resources would be managed similar to Alterna-

tive A (Map VRM-1 of the Draft RMP/EIS).

Existing grazing use would continue similar to Alternative A (Map G-1 of the Draft RMP/EIS).

The ACEC/RNA would be open to exploration, development, and extraction of locatable, salable, and leasable minerals. Any geothermal, oil, or gas leasing activity would be subject to a no-surface-occupancy stipulation. Mineral location would require preparation of a plan of operations.

Alternative C

Under this alternative, 3,599 acres would be designated as an ACEC and a RNA (Map SMA-3 of the Draft RMP/EIS).

New rights-of-way would be excluded except to provide access to non-Federal land (Map L-7 of the Draft RMP/EIS). The ACEC/RNA would be managed as land tenure Zone 1 (retention) (Map L-4 of the Draft RMP/EIS). Action would be taken to acquire the 80-acre inholding from a willing landowner.

OHV's would be limited to designated roads and trails. About 6 miles of roads or trails would be closed and rehabilitated (Table 4-4).

The area would be managed as VRM Class II (Map VRM-2 of the Draft RMP/EIS).

The ACEC/RNA would be closed to grazing to protect these important grass communities (Map G-2 of the Draft RMP/EIS). Fences would be installed as needed to keep livestock out of the area.

The ACEC/RNA would be limited to day-use only. No camping or collection of dead or downed woody material for campfire use would be allowed.

Collecting plant or plant material (living or dead) for personal use would be prohibited.

The area would be closed to sale or lease of minerals, but would be kept open for locatable mineral entry, subject to the preparation of a plan of operations.

Important sites within the area would be nominated to the National Register of Historic Places (NRHP).

Alternative D

Under this alternative, 3,559 acres would be designated as an ACEC and an RNA (Maps SMA-4 and -12).

New rights-of-way would be avoided unless there were no other options and then only with stipulations to protect relevant and important resources (Map L-8). The ACEC/RNA would be managed as land tenure Zone 1 (retention) (Map L-5). Actions would be taken to acquire the 80-acre private inholding from a willing landowner.

OHV's would be limited to designated roads and trails (Maps SMA-12 and R-7). About 4.1 miles of existing roads would be closed (Table 4-4).

The entire ACEC/RNA would be managed as VRM Class III (Map VRM-3 of the Draft RMP/EIS).

Livestock use would continue based on existing permit stipulations and approved allotment management plans (Map G-3). Any proposed changes in grazing, including time and intensity of use, would be evaluated for impacts on the relevant and important values and would be permitted if the values would be maintained or enhanced. Where adverse impacts are identified, existing livestock use would be adjusted using a variety of methods, including, but not limited to, fencing, reduction in livestock numbers, and changes in grazing season of use. Proposed range improvement projects would be evaluated for impacts and permitted where relevant and important values would be maintained or enhanced.

The ACEC/RNA would be limited to day-use only. No camping or collection of dead or downed woody material for campfire use would be allowed.

Collecting plant or plant material (living or dead) for personal use would be prohibited.

The ACEC/RNA would be open to all mineral development. Leasable mineral activity would be subject to a no-surface-occupancy stipulation. Locatable mineral activity would require preparation of a plan of operations.

Important sites within the area would be nominated to the NRHP.

Alternative E

No ACEC would be designated under this alternative. Management would follow that for the remainder of the planning area.

Management Direction by Alternative—Proposed Fish Creek Rim ACEC/RNA

Alternative A

No ACEC would be designated. That part of the area within the WSA (Map R-1 of the Draft RMP/EIS) would be managed according to the wilderness IMP until such time as Congress makes a decision regarding wilderness designation (USDI-BLM 1995b). Management of the part of the area outside of the WSA would continue as at present.

The WSA is considered a right-of-way exclusion area, except for those necessary to access non-Federal property (Map L-2 of the Draft RMP/EIS). If released from WSA status, the area would be opened to new right-of-way location. The area would continue to be managed as land tenure Zone 1 (retention) (Map L-1 of the Draft RMP/EIS).

OHV use would be limited to existing roads and trails within the WSA (Map R-2 of the Draft RMP/EIS). Based on a recent road inventory, it has been discovered that about 5.8 miles of roads (Table 4-4) not appearing on the wilderness inventory maps (USDI-BLM 1989a) must be closed to comply with the wilderness IMP (USDI-BLM 1995b). These are shown as "historically closed" on Map SMA-13. All other roads would remain open year-round. If released from WSA status, the area would be opened to OHV use, including "historically closed" roads.

The WSA would continue to be managed as VRM Class I (Map VRM-1 of the Draft RMP/EIS). If released from wilderness study, it would be managed as VRM Class II.

Livestock grazing use would continue as at present: the area is in Allotment 202 (Map G-1 of the Draft RMP/EIS) which is grazed from mid-April through mid-September.

Commercial and personal plant collecting would be limited by the wilderness IMP (USDI-BLM 1995b).

The WSA would be closed to mineral disposal and leasing. Mineral location within the WSA would be subject to the no reclamation requirement of the wilderness IMP (USDI-BLM 1995b). If released from wilderness study, the WSA would be open to all mineral activity. The area outside of the WSA (falling within the proposed ACEC boundary) would be open to all mineral activity.

Alternative B

No ACEC would be designated. Management would be the same as that described under Alternative A (see Maps G-1, L-3, L-6, R-1, R-5, and VRM-1 of the Draft RMP/EIS).

Alternative C

Under this alternative, 8,725 acres would be designated as an ACEC and a RNA (Map SMA-3 of the Draft RMP/EIS). Most of the proposed ACEC/RNA is within the Fish Creek Rim WSA (Map R-8 of the Draft RMP/EIS), and actions in the area would be managed according to the wilderness IMP until such time as a decision is made by Congress regarding wilderness designation (USDI-BLM 1995b).

The WSA is considered a right-of-way exclusion area, except for those necessary to access non-Federal property (Map L-7 of the Draft RMP/EIS). If released from WSA status, the area would still be managed as a right-of-way exclusion area. The remainder of the ACEC/RNA outside the WSA would be managed as a right-of-way avoidance area. The area would continue to be managed as land tenure Zone 1 (retention) (Map L-4 of the Draft RMP/EIS).

OHV's would be limited to designated roads and trails (Map R-6 of the Draft RMP/EIS). Based on a recent road inventory, it has been discovered that about 5.8 miles of roads not appearing on the wilderness inventory maps (USDI-BLM 1989a) must be closed to comply with the wilderness IMP (USDI-BLM 1995b). These are shown as "historically closed" on Map SMA-13. An additional 7 miles of other roads would be closed (Table 4-4). These roads would remain closed even if the area is released from WSA status.

The WSA would be managed as VRM Class I. If it is not designated wilderness, it would be managed as VRM Class II. The remainder of the ACEC, outside the WSA would be managed as VRM Class II (Map VRM-2 of the Draft RMP/EIS).

Grazing use would be based on existing permit stipulations (Map G-2 of the Draft RMP/EIS). Any proposed changes in grazing, including time and intensity of use, would be evaluated for impacts on the relevant and important resources and would be permitted if the values would be maintained or enhanced. Where adverse impacts are identified, existing livestock use would be adjusted using a variety of methods, including, but not limited to, fencing, reduction in livestock numbers, and changes in grazing season of use. Pro-

posed range improvement projects would be evaluated for impacts and permitted where relevant and important values would be maintained or enhanced. Any fence construction in the WSA would be subject to the wilderness IMP guidelines.

Commercial and personal plant collecting would be limited by the wilderness IMP (USDI-BLM 1995b).

The WSA would be closed to mineral disposal and leasing. Mineral location within the WSA would be subject to the no reclamation requirement of the wilderness IMP (USDI-BLM 1995b). If released from wilderness study, the WSA would be open to all mineral activity, with appropriate stipulations to protect relevant and important resources, including preparation of a plan of operations for mineral location. The area outside of the WSA (falling within the ACEC boundary) would be open to all mineral activity. Mineral location would require a plan of operation.

The spring and wetland site in the north end (outside the WSA) of the area would be rehabilitated.

A strategy would be developed to protect and manage the prostrate lousewort and the nodding melic grass, two sensitive plant species.

Alternative D

Under this alternative, 8,725 acres would be designated as an ACEC and a RNA (Maps SMA-4 and -13). Since part of the proposed ACEC/RNA is within the Fish Creek Rim WSA (Map R-9), management would be according to the wilderness IMP (USDI-BLM 1995b) until such time as a decision is made by Congress regarding wilderness designation.

New rights-of-way would be excluded from the WSA and avoided in the remainder of the ACEC/RNA (Map L-8). If the WSA is released from wilderness study, it would be managed as a right-of-way avoidance area. The area would continue to be managed as land tenure Zone 1 (retention) (Map L-5).

OHV's would be limited to designated roads and trails (Map R-7). About 5.8 miles of roads not appearing on the wilderness inventory maps (USDI-BLM 1989a) must be closed to comply with the wilderness IMP (USDI-BLM 1995b). These are shown as "historically closed" on Map SMA-13. An additional 2.1 miles of other roads would be closed (Table 4-4). These roads would remain closed even if the area is released from WSA status.

The WSA would be managed as VRM Class I. If it is not designated wilderness, it would be managed as VRM Class II. The remainder of the ACEC, outside the WSA, would be managed as VRM Class II (Map VRM-3 of the Draft RMP/EIS).

Grazing use would be based on existing permit stipulations (Map G-3). Any proposed changes in grazing, including time and intensity of use, would be evaluated for impacts on the relevant and important resources and would be permitted if the values would be maintained or enhanced. Where adverse impacts are identified, existing livestock use would be adjusted using a variety of methods, including, but not limited to, fencing, reduction in livestock numbers, and changes in grazing season of use. Proposed range improvement projects would be evaluated for impacts and permitted where relevant and important values would be maintained or enhanced. Any fence construction in the WSA would be subject to the wilderness IMP guidelines.

Commercial and personal plant collecting would be limited by the wilderness IMP (USDI-BLM 1995b).

The WSA would be closed to mineral disposal and leasing. Mineral location within the WSA would be subject to the no reclamation requirement of the wilderness IMP (USDI-BLM 1995b). If released from wilderness study, the WSA would be open to all mineral activity, with appropriate stipulations to protect relevant and important resources, including preparation of a plan of operations for mineral location. The area outside of the WSA (falling within the ACEC boundary) would be open to all mineral activity. Mineral location would require a plan of operation (Maps M-8, -9, and -10).

A strategy would be developed to protect and manage the prostrate lousewort and the nodding melic grass, two Bureau sensitive plant species.

Alternative E

No ACEC/RNA would be designated under this alternative. Most of the area is within the Fish Creek Rim WSA (Map R-1 of the Draft RMP/EIS). The area would be managed according to the wilderness IMP, until such time as a decision is made by Congress regarding wilderness designation (USDI-BLM 1995b) or consistent with management direction for the rest of the planning area (i.e., closed to grazing).

Management Direction by Alternative—Proposed Foley Lake ACEC/RNA

Alternatives A and B

Under these alternatives, no ACEC or RNA would be designated.

The conservation agreement with the USFWS for the Columbia cress would be retained and would continue to be followed.

The area would remain open to new rights-of-way location (Maps L-2 and L-6 of the Draft RMP/EIS). The area would remain in land tenure Zone 2 (Maps L-1 and L-3 of the Draft RMP/EIS).

The area would remain open to OHV use (Maps R-2 and R-5 of the Draft RMP/EIS).

The area would be managed as VRM Class IV as is the surrounding area.

Livestock grazing use would continue as at present. The area is divided between Allotment 515, which is grazed in the spring and lightly in the summer and fall, and Allotment 517, which is grazed from April through October.

Collecting plants or plant material for personal use would be allowed.

The area would be open to all minerals activities based on approval of a site-specific NEPA analysis.

Alternative C

Under this alternative, 2,747 acres would be designated as an ACEC and a RNA (Map SMA-3 of the Draft RMP/EIS). This boundary would include Featherbed Lake (where Columbia cress has been located in the past).

The conservation agreement with the USFWS for the Columbia cress would be retained and would continue to be followed.

New rights-of-way would be excluded except to provide access to non-Federal property (Map L-7 of the Draft RMP/EIS). The area would be managed in land tenure Zone 1 (Map L-4 of the Draft RMP/EIS).

OHV's would be limited to designated roads and trails (Map R-6 of the Draft RMP/EIS).

The ACEC/RNA would be managed as VRM Class II (Map VRM-2 of the Draft RMP/EIS).

Livestock grazing would be excluded to protect sensitive plant species (Map G-2 of the Draft RMP/EIS). Fences would be constructed as needed to exclude livestock. The existing exclosure to protect the Columbia cress would be enlarged.

The ACEC/RNA would be open to locatable mineral entry, subject to the preparation of a mining plan of operations, and closed to the sale or lease of minerals.

Collecting plant or plant material (living or dead) for commercial purposes, including firewood cutting, would not be allowed.

Eligible cultural sites would be nominated to the National Register of Historic Places.

Alternative D

Under this alternative, 2,230 acres would be designated as an ACEC and a RNA (Maps SMA-4 and -14). The Featherbed Lake portion would not be included since the Columbia cress has not been seen growing in or around the lake in 8 years. The boundary on the east side of the ACEC/RNA would be set back 100 feet from the existing County Road 3-10 right-of-way.

New rights-of-way in the ACEC/RNA would be avoided unless there are no other options (Map L-8). The area would be managed as land tenure Zone 1 (retention) (Map L-5).

OHV's would be limited to designated roads and trails (Map R-7). About 0.2 miles of roads would be closed (Table 4-4 and Map SMA-14).

The ACEC/RNA would be managed as VRM Class III (Map VRM-3 of the Draft RMP/EIS).

Livestock use would continue based on existing permit stipulations and approved allotment management plans (Map G-3). The exclosure at Foley Lake itself would be enlarged to protect the Columbia cress from further grazing. Other changes in grazing use could also be necessary. Any proposed changes in grazing, including time and intensity of use, would be evaluated for impacts on the relevant and important values and would be permitted if the values would be maintained or enhanced. Where adverse impacts are identified, existing livestock use would be adjusted using a variety of methods, including, but not limited to, fencing, reduction in livestock numbers, and changes in grazing

season of use. Proposed range improvement projects would be evaluated for impacts and permitted where relevant and important values would be maintained or enhanced.

Collecting plant or plant material (living or dead) for personal use would not be allowed.

The area would be open to all mineral activity with stipulations to protect relevant and important resources, and subject to preparing a plan of operations for mineral location.

Eligible cultural resource sites would be nominated to the NRHP.

Alternative E

No ACEC/RNA would be designated under this alternative. Management would follow that for the remainder of the planning area.

Management Direction by Alternative—Proposed Guano Creek/Sink Lakes ACEC/RNA

Alternative A

No ACEC would be designated under this alternative. The area (except the recent Billy Burr acquisition parcel) is wholly within the Guano Creek WSA (Map R-1 of the Draft RMP/EIS). Resource values would be managed according to the wilderness IMP (USDI-BLM 1995b) until such time as Congress makes a decision regarding wilderness designation. The Billy Burr parcel would be managed the same as adjacent non-WSA land.

The area is currently managed as a right-of-way exclusion area due to its WSA status (Map L-2 of the Draft RMP/EIS). If released from wilderness study, the area would be opened to new rights-of-way location. The area would continue to be managed as land tenure Zone 1 (retention) (Map L-1 of the Draft RMP/EIS).

OHV use is limited to existing roads and trails within the WSA (Map R-2 of the Draft RMP/EIS). About 0.2 miles of roads not appearing on the wilderness inventory maps (USDI-BLM 1989a) must be closed (Table 4-4) to comply with the wilderness IMP (USDI-BLM 1995b). These are shown as "historically closed" on Map SMA-16. If released from wilderness study, the area would be opened to OHV use, including "historically closed" roads.

The area is currently managed as VRM Class I due to its WSA status (Map VRM-1 of the Draft RMP/EIS). If released from wilderness study the area would be managed as VRM Class III.

The area would continue to be closed to grazing (Map G-1 of the Draft RMP/EIS) as described in a recent plan amendment (USDI-USFWS and USDI-BLM 1998a, 1998b) and the "Oregon Public Lands Transfer and Protection Act" of 1998, even if released from wilderness study.

Commercial and personal plant collecting would be limited by the wilderness IMP (USDI-BLM 1995b).

Due to WSA status, the area would be closed to mineral disposal and leasing. Mineral location within the WSA would be subject to the no reclamation requirement of the wilderness IMP (USDI-BLM 1995b). If released from wilderness study, the WSA would be open to all mineral activity, based on approval of a site-specific NEPA analysis.

The draft conservation agreement with the USFWS for Crosby's buckwheat and grimy ivesia would be completed. Monitoring and research of these plants would continue.

Alternative B

The proposed ACEC would not be designated under this alternative. Management would be the same as prescribed under Alternative A (see Maps G-1, L-3, L-6, R-1, R-5, and VRM-1 of the Draft RMP/EIS).

Alternative C

Under this alternative, about 4,936 acres would be designated as an ACEC and as a RNA (including the recent Billy Burr acquisition parcel) (Map SMA-3 of the Draft RMP/EIS). The north boundary would conform with the southern Hart Mountain National Wildlife Refuge boundary.

New rights-of-way would be excluded except to provide access to non-Federal property, even if released from wilderness study (Map L-7 of the Draft RMP/EIS). The area would continue to be managed as land tenure Zone 1 (retention) (Map L-4 of the Draft RMP/EIS).

OHV's would be limited to designated roads and trails (Map R-6 of the Draft RMP/EIS), even if the area is released from wilderness study. About 0.2 miles of

roads not appearing on the wilderness inventory maps (USDI-BLM 1989a) must be closed to comply with the wilderness IMP (USDI-BLM 1995b). These are shown as "historically closed" on Map SMA-16. An additional 2.4 miles of roads would be closed (Table 4-4) even if the area is released from WSA status.

The ACEC/RNA would be managed as VRM Class I due to WSA status. If the area is released from wilderness study, it would be managed as VRM Class II (Map VRM-2 of the Draft RMP/EIS).

The area would continue to be closed to grazing (Map G-2 of the Draft RMP/EIS) as described in a recent plan amendment (USDI-USFWS and USDI-BLM 1998a, 1998b) and the "Oregon Public Lands Transfer and Protection Act" of 1998, even if released from wilderness study.

Commercial and personal plant collecting would be limited by the wilderness IMP (USDI-BLM 1995b).

Due to WSA status, the area would be closed to mineral disposal and leasing even if released from wilderness study. Mineral location within the WSA would be subject to the no reclamation requirement of the wilderness IMP (USDI-BLM 1995b). If released from wilderness study, the WSA would be open to all mineral location, subject to the preparation of a plan of operations.

The draft conservation agreement with the USFWS for Crosby's buckwheat and grimy ivesia would be completed. Monitoring and research on these plants would continue.

Alternative D

Under this alternative, 11,239 acres would be designated as an ACEC and a RNA (Maps SMA-4). The ACEC/RNA boundary would be expanded to the same boundary as Guano Creek WSA (Map R-9 and SMA-16).

New rights-of-way would be excluded, even if released from wilderness study (Map L-8). The area would continue to be managed as land tenure Zone 1 (retention) (Map L-5).

OHV's would be limited to designated roads and trails (Map R-7), even if the area is released from wilderness study. About 0.2 miles of roads not appearing on the wilderness inventory maps (USDI-BLM 1989a) must be closed to comply with the wilderness IMP (USDI-BLM 1995b). These are shown as "historically closed" on Map SMA-16. An additional 2.4 miles of roads would be closed (Table 4-4), even if the area is released from WSA status.

The area would be managed as VRM Class I due to WSA status. If the area is released from wilderness study, it would be managed as VRM Class III (Map VRM-3 of the Draft RMP/EIS).

The area would continue to be closed to grazing (Map G-3) as described in a recent plan amendment (USDI-USFWS and USDI-BLM 1998a, 1998b) and the "Oregon Public Lands Transfer and Protection Act" of 1998, even if released from wilderness study.

Commercial and personal plant collecting would be limited by the wilderness IMP (USDI-BLM 1995b).

Due to WSA status, the area would be closed to mineral disposal and leasing even if released from wilderness study. Mineral location within the WSA would be subject to the no reclamation requirement of the wilderness IMP (USDI-BLM 1995b). If released from wilderness study, the WSA would be open to all mineral location, subject to the preparation of a plan of operations.

Alternative E

No ACEC would be designated under this alternative. The area is entirely within the Guano Creek WSA (Map R-1 of the Draft RMP/EIS). The area would be managed according to the wilderness IMP, until such time as a decision is made by Congress regarding wilderness designation (USDI-BLM 1995b), or consistent with management direction for the rest of the planning area (i.e., closed to grazing).

Management Direction by Alternative—Proposed Hawksie-Walksie ACEC/RNA

Alternative A

Under this alternative, no ACEC or RNA would be designated. All of this proposed area is within the Hawk Mountain and Sage Hen Hills WSA's and would be managed according to the wilderness IMP (USDI-BLM 1995b) until such time as Congress makes a decision regarding wilderness designation.

The area is currently managed as a right-of-way exclusion area due to its WSA status (Map L-2 of the Draft RMP/EIS). If released from wilderness study, the area would be opened to new rights-of-way location. The area would continue to be managed as land tenure

Zone 1 (retention) (Map L-1 of the Draft RMP/EIS).

OHV use is limited to existing roads and trails within the WSA (Map R-2 of the Draft RMP/EIS). About 3.7 miles of roads not appearing on the wilderness inventory maps (USDI-BLM 1989a) must be closed (Table 4-4) to comply with the wilderness IMP (USDI-BLM 1995b). These are shown as "historically closed" on Map SMA-15. If released from wilderness study, the area would be opened to OHV use, including "historically closed" roads.

The area is currently managed as VRM Class I due to its WSA status (Map VRM-1 of the Draft RMP/EIS). If released from wilderness study the area would be managed as VRM Class III.

The area would continue to be open to grazing (Map G-1 of the Draft RMP/EIS). It falls completely within the Beaty Butte Allotment (600) and is managed in accordance with an existing allotment management plan and wild horse herd management plan (USDI-BLM 1977a; USDI-BLM and USDI-USFWS 1998a, 1998b).

Commercial and personal plant collecting would be limited by the wilderness IMP (USDI-BLM 1995b).

Due to WSA status, the area would be closed to mineral disposal. Mineral location within the WSA would be subject to the no reclamation requirement of the wilderness IMP (USDI-BLM 1995b). If released from wilderness study, the area would be open to all mineral activity. However, mineral location would be subject to the preparation of a plan of operations.

Alternative B

No ACEC/RNA would be designated. Management under this alternative would be the same as under Alternative A (see Maps G-1, L-3, L-6, R-1, R-5, and VRM-1 of the Draft RMP/EIS).

Alternative C

Under this alternative, 17,339 acres would be designated as an ACEC and an RNA (Map SMA-3 of the Draft RMP/EIS).

New rights-of-way would be excluded from the ACEC/RNA except to provide access to non-Federal property, even if released from wilderness study (Map L-7 of the Draft RMP/EIS). The area would continue to be managed as land tenure Zone 1 (retention) (Map L-4 of the Draft RMP/EIS).

OHV's would be limited to designated roads and trails (Map R-6 of the Draft RMP/EIS), even if released from wilderness study. About 3.7 miles of roads not appearing on the wilderness inventory maps (USDI-BLM 1989a) must be closed to comply with the wilderness IMP (USDI-BLM 1995b). These are shown as "historically closed" on Map SMA-15. An additional 10.5 miles of roads would be closed (Table 4-4), even if released from wilderness study.

The area is currently managed as VRM Class I due to its WSA status (Map VRM-2 of the Draft RMP/EIS). If released from wilderness study the area would be managed as VRM Class III. The area would continue to be managed as land tenure Zone 1 (retention) (Map L-5).

A total of 6,786 acres in two areas would be excluded from livestock and wild horse grazing to protect RNA plant community values, if needed (Map G-2 of the Draft RMP/EIS). Any fence construction would be subject to the wilderness IMP. In the rest of the ACEC/RNA, livestock grazing use would continue based on existing permit stipulations and the approved "Beaty Butte Allotment Management Plan" (USDI-BLM and USDI-USFWS 1998a, 1998b). Wild Horse use would continue to be managed in accordance with the wild horse herd management plan (USDI-BLM 1977a). Any proposed changes in grazing, including time and intensity of use, would be evaluated for impacts on the relevant and important values and would be permitted if the values would be maintained or enhanced. Where adverse impacts are identified, existing livestock use would be adjusted using a variety of methods, including, but not limited to, fencing, reduction in livestock numbers, and changes in grazing season of use.

Commercial and personal plant collecting would be limited by the wilderness IMP (USDI-BLM 1995b).

Under the wilderness IMP (USDI-BLM 1995b), the area would be closed to the sale or lease of minerals. The area would be open to locatable mineral subject to the no reclamation stipulation. Should the area be released from WSA status, it would become open to mineral sale and location, subject to stipulations necessary to protect relevant and important resources. Mineral leasing would become open, subject to no surface occupancy.

Alternative D

Under this alternative, 17,339 acres would be designated an ACEC and a RNA (Maps SMA-4 and -15).

New rights-of-way in the ACEC/RNA would be excluded (Map L-8), even if released from wilderness study.

OHV's would be limited to designated roads and trails (Map R-7 of the Draft RMP/EIS), even if released from wilderness study. About 3.7 miles of roads not appearing on the wilderness inventory maps (USDI-BLM 1989a) must be closed to comply with the wilderness IMP (USDI-BLM 1995b). These are shown as "historically closed" on Map SMA-15. An additional 4.1 miles of roads would be closed (Table 4-4), even if released from wilderness study.

The area is currently managed as VRM Class I due to its WSA status (Map VRM-3 of the Draft RMP/EIS). If released from wilderness study the area would be managed as VRM Class III.

Livestock use would continue based on existing permit stipulations and the approved "Beaty Butte Allotment Management Plan" (USDI-BLM and USDI-USFWS 1998a, 1998b) (Map G-3). Wild horse use would continue to be managed in accordance with the wild horse herd management plan (USDI-BLM 1977a) (Map SMA-4). Any proposed changes in grazing, including time and intensity of use, would be evaluated for impacts on the relevant and important values and would be permitted if the values would be maintained or enhanced. Where adverse impacts are identified, existing livestock use would be adjusted using a variety of methods, including, but not limited to, fencing, reduction in livestock numbers, and changes in grazing season of use. Proposed range improvement projects would be evaluated for impacts and permitted where relevant and important values would be maintained or enhanced.

Commercial and personal plant collecting would be limited by the wilderness IMP (USDI-BLM 1995b).

Under the wilderness IMP (USDI-BLM 1995b), the area would be closed to the sale or lease of minerals. The area would be open to locatable mineral subject to the no reclamation stipulation (Maps M-8, -9, and -10). Should the area be released from WSA status, it would become open to mineral sale and location, subject to stipulations necessary to protect relevant and important resources. Mineral leasing would become open, subject to no surface occupancy.

Alternative E

No ACEC would be designated under this alternative. The area is entirely within the Hawk Mountain WSA (Map R-1 of the Draft RMP/EIS). The area would be managed according to the wilderness IMP, until such time as a decision is made by Congress regarding wilderness designation (USDI-BLM 1995b) or consistent with management direction for the rest of the planning area (i.e., closed to grazing).

Management Direction by Alternative—Proposed High Lakes ACEC

Alternative A

Under this alternative, no ACEC would be designated.

The area would also be open to new rights-of-way (Map L-2 of the Draft RMP/EIS). The area would continue to be managed as land tenure Zone 2 (Map L-1 of the Draft RMP/EIS).

The area would be open to OHV's (Map R-2 of the Draft RMP/EIS).

The area would continue to be managed as VRM Class IV (Map VRM-1 of the Draft RMP/EIS).

Grazing use would continue under the Beaty Butte, O'Keeffe Individual, and Hill Camp allotment management plans (USDI-BLM 1975, 1994b; USDI-BLM and USDI-USFWS 1998a, 1998b) (Map G-1 of the Draft RMP/EIS).

The area would be open to all minerals activities based on approval of a site-specific NEPA analysis.

Important cultural resources sites would be nominated to the NRHP.

The berm at the north end of Long Lake would be retained.

Alternative B

No ACEC would be designated under this alternative. Management would be the same as that described under Alternative A (Maps G-1, L-3, L-6, R-1, R-5, and VRM-1 of the Draft RMP/EIS).

Alternative C

Under this alternative, about 40,095 acres would be designated an ACEC (Map SMA-3 of the Draft RMP/EIS). A small portion in the northeast corner of this area falls within the Guano Creek WSA and would be managed in accordance with the wilderness IMP

(USDI-BLM 1995b).

New rights-of-way would be excluded, except to provide access to non-Federal land (Map L-7 of the Draft RMP/EIS). The area would be placed into land tenure Zone 1 (retention) (Map L-4 of the Draft RMP/EIS). Adjacent land on the west side of the ACEC would be acquired from a willing landowner, if such acquisition would improve resource protection or management of the ACEC.

OHV's would be limited to designated roads and trails (Map R-6 of the Draft RMP/EIS). About 23 miles of roads would be closed (Table 4-4).

The ACEC would be managed as VRM Class III (Map VRM-2 of the Draft RMP/EIS).

Livestock use would continue based on existing permit stipulations and the approved allotment management plans (USDI-BLM 1975, 1994b; USDI-BLM and USDI-USFWS 1998a, 1998b) (Map G-2 of the Draft RMP/EIS). Any proposed changes in grazing, including time and intensity of use, would be evaluated for impacts on the relevant and important values and would be permitted if the values would be maintained or enhanced. Where adverse impacts are identified, particularly to cultural plants (plants used for traditional Native American practices), existing livestock use would be adjusted using a variety of methods, including, but not limited to, fencing, reduction in livestock numbers, and changes in grazing season. Proposed range improvement projects would be evaluated for impacts and permitted where relevant and important values would be maintained or enhanced.

Most of the ACEC (outside the WSA) would be open to locatable mineral entry, subject to the preparation of a plan of operations. The small WSA portion would be subject to the no reclamation stipulation for mineral location. The entire area would be closed to the sale or lease of minerals.

The high concentration of greater sage-grouse leks in the ACEC (Map W-1) would be managed to maintain the continuity of greater sage-grouse habitat and to avoid disturbance during the breeding season.

If the berm at the north end of Long Lake is no longer needed, it would be removed.

Alternative D

Under this alternative, 38,985 acres would be designated as an ACEC (Maps SMA-4 and -16). The southern boundary of the ACEC would be set back 100 feet from the northern edge of the State Highway 140 right-of-way. The northern boundary would extend to the southern boundary of Hart Mountain National Antelope Refuge and Guano Creek WSA.

New rights-of-way in the ACEC would be avoided unless there were no alternatives (Map L-8). Legal access across the private land in the vicinity of Badger Hole would be acquired from a willing landowner, if necessary, to allow administrative and public access. The area would be placed into land tenure Zone 1 (retention) (Map L-5).

OHV's would be limited to designated roads and trails (Map R-7). About 17.8 miles of roads and trails would be closed (Map SMA-16).

The ACEC would be managed as VRM Class III (Map VRM-3 of the Draft RMP/EIS).

Livestock use would continue based on existing permit stipulations and the approved allotment management plans (USDI-BLM 1975, 1994b; USDI-BLM and USDI-USFWS 1998a, 1998b) (Map G-3). Any proposed changes in grazing, including time and intensity of use, would be evaluated for impacts on the relevant and important values and would be permitted if the values would be maintained or enhanced. Where adverse impacts are identified, particularly to cultural plants (plants used for traditional Native American practices), existing livestock use would be adjusted using a variety of methods, including, but not limited to, fencing, reduction in livestock numbers, and changes in grazing season. Proposed range improvement projects would be evaluated for impacts and permitted where relevant and important values would be maintained or enhanced.

The ACEC would be open to all mineral activities, subject to the preparation of a NEPA analysis, with stipulations to protect relevant and important resources. Mineral location would require preparation of a plan of operations (Maps M-8, -9, and -10).

The high concentration of greater sage-grouse leks in the ACEC (Map W-1) would be managed to maintain the continuity of greater sage-grouse habitat and to avoid disturbance during the breeding season.

If the berm at the north end of Long Lake is no longer needed, it would be removed.

Alternative E

No ACEC would be designated under this alternative. Management would follow that for the remainder of the planning area.

Management Direction by Alternative—Proposed Juniper Mountain ACEC/RNA

Alternative A

Under this alternative, no ACEC would be designated.

The area would be open to new rights-of-way location and would continue to be managed as land tenure Zone 2 (Maps L-1 and -2 of the Draft RMP/EIS).

During the summer of 2001, after the Draft RMP/EIS went to print, a large wildfire occurred in the vicinity of Juniper Mountain (Map FM-2). As part of the rehabilitation for the area, OHV use was temporarily limited to existing roads and trails. This was accomplished through a *Federal Register* notice dated April 12, 2002. This change is not reflected in Map R-2 of the Draft RMP/EIS.

The area would continue to be managed as VRM Class IV (Map VRM-1 of the Draft RMP/EIS).

Livestock grazing would continue under current management (Map G-1 of the Draft RMP/EIS). Juniper Mountain is in Allotment 515 which is used primarily in the spring and less in summer and early fall.

Though an open wood cutting area exists along the eastern edge of the proposed ACEC/RNA, the recent fire has removed some of the juniper material. The area is slated to be closed to future juniper firewood, poles, boughs, and berry collection, under this alternative.

The area would be open to all mineral activity based on approval of a site-specific NEPA analysis.

Alternative B

No ACEC would be designated under this alternative. Management of the area would be the same as described under Alternative A (Maps G-1, L-3, L-6, R-1, R-5, and VRM-1 of the Draft RMP/EIS).

Alternative C

Under this alternative, 6,335 acres would be designated as an ACEC and a RNA (Map SMA-3 of the Draft RMP/EIS).

The ACEC would also be excluded from new rights-of-way except to provide access to non-Federal land (Map L-7 of the Draft RMP/EIS). The area would be managed as land tenure Zone 1 (retention) (Map L-4 of the Draft RMP/EIS). Actions would be taken to acquire the 80-acre inholding from a willing landowner.

OHV's would be limited to designated roads and trails (Map R-6 of the Draft RMP/EIS). About 6.7 miles of roads and trails would be closed (Table 4-4).

The ACEC would be managed as VRM Class II (Map VRM-2 of the Draft RMP/EIS).

Livestock grazing would continue based on existing permit stipulations and approved allotment management plans (Map G-2 of the Draft RMP/EIS). Any proposed changes in grazing, including time and intensity of use, would be evaluated for impacts on the relevant and important values and would be permitted if the values would be maintained or enhanced. Where adverse impacts are identified, existing livestock use would be adjusted using a variety of methods, including, but not limited to, fencing, reduction in livestock numbers, and changes in grazing season of use. Proposed range improvement projects would be evaluated for impacts and permitted where relevant and important values would be maintained or enhanced.

The existing wood cutting area would be closed. Tree cutting for firewood, posts, or other uses, and gathering vegetative products, such as juniper boughs or berries, would be prohibited. Collection of dead and down wood for onsite campfire use would also be prohibited.

The ACEC would be open to locatable mineral entry, subject to the preparation of a plan of operations, and closed to the sale or lease of minerals.

Overnight camping would be prohibited.

Alternative D

Under this alternative, 6,335 acres would be designated as an ACEC and a RNA (Maps SMA-4 and -17).

New rights-of-way in the ACEC would be avoided unless there are no other options (Map L-8). The area would be managed as land tenure Zone 1 (retention)

(Map L-5). Acquisition of the 80-acre inholding from a willing landowner would be pursued.

OHV's would be limited to designated roads and trails (Map R-7). About 4.3 miles of roads and trails would be closed (Table 4-4 and Map SMA-17).

The ACEC would be managed as VRM Class IV (Map VRM-3 of the Draft RMP/EIS).

Livestock grazing would continue based on existing permit stipulations (Map G-3). Any proposed changes in grazing, including time and intensity of use, would be evaluated for impacts on the relevant and important values and would be permitted if the values would be maintained or enhanced. Where adverse impacts are identified, existing livestock use would be adjusted using a variety of methods, including, but not limited to, fencing, reduction in livestock numbers, and changes in grazing season of use. Proposed range improvement projects would be evaluated for impacts and permitted where relevant and important values would be maintained or enhanced.

The existing wood cutting area would be closed. Collecting dead and down woody material for onsite camping would be allowed.

The ACEC would be open to all mineral activity. Mineral location would require preparation of a plan of operations. Mineral leasing activity would be subject to a no-surface-occupancy stipulation (Maps M-8, -9, and -10).

Alternative E

No ACEC/RNA would be designated under this alternative. Management would follow that for the remainder of the planning area.

Management Direction by Alternative—Proposed Rahilly-Gravelly ACEC/RNA

Alternative A

Under this alternative, no ACEC would be designated.

The area would be open to new rights-of-way location (Map L-2 of the Draft RMP/EIS). The area would be managed as land tenure Zone 2 (Map L-1 of the Draft RMP/EIS).

The area would be open to OHV use (Map R-2 of the Draft RMP/EIS).

The northwest side of the area would continue to be managed as VRM Class III. The rest of the area would continue to be managed as VRM Class IV (Map VRM-1 of the Draft RMP/EIS).

Livestock grazing would be managed according to the existing "Rahilly-Gravelly Allotment Management Plan" (USDI-BLM undated C) (Map G-1 of the Draft RMP/EIS). The area is in Allotment 212 which is grazed primarily from March through mid-September.

The area would be open to all mineral activity based on approval of a site-specific NEPA analysis.

Alternative B

No ACEC would be designated under this alternative. Management would be the same as that described under Alternative A (Maps G-1, L-3, L-6, R-1, R-5, and VRM-1 of the Draft RMP/EIS).

Alternative C

Under this alternative, 20,127 acres would be designated as an ACEC and a RNA (Maps SMA-3 of the Draft RMP/EIS).

New rights-of-way would be excluded from the ACEC/RNA except those necessary to access non-Federal land. The area would be managed as land tenure Zone 1 (retention) (Maps L-4 and -7 of the Draft RMP/EIS). Actions to acquire the inholdings or adjacent lands from willing landowners would be initiated if such acquisition would enhance management of the relevant and important resources.

OHV use would be limited to designated roads and trails (Map R-6 of the Draft RMP/EIS). About 11.8 miles of roads and trails would be closed (Table 4-4).

The entire ACEC would be managed as VRM Class III (Map VRM-2 of the Draft RMP/EIS).

Livestock use would continue based on existing permit stipulations and approved allotment management plans (USDI-BLM undated C) (Map G-2 of the Draft RMP/EIS). Any proposed changes in grazing, including time and intensity of use, would be evaluated for impacts on the relevant and important values and would be permitted if the values would be maintained or enhanced.

Where adverse impacts are identified, existing livestock use would be adjusted using a variety of methods, including, but not limited to, fencing, reduction in livestock numbers, and changes in grazing season of use. Of particular concern would be spring grazing of cultural plants (plants traditionally used by Native Americans). Proposed range improvement projects would be evaluated for impacts and permitted where relevant and important values would be maintained or enhanced.

The ACEC/RNA would be open to locatable mineral entry, subject to preparation of a plan of operations, and open to leasable minerals subject to a no-surface-occupancy stipulation. It would be closed to the sale of minerals.

The high concentration of greater sage-grouse leks in the ACEC (Map W-1) would be managed to maintain the continuity of greater sage-grouse habitat and to avoid disturbance during the breeding season.

The ACEC would be identified as a traditional cultural property.

Commercial and noncommercial special recreation permits would not be authorized within the Rahilly-Gravelly ACEC/RNA.

Alternative D

Under this alternative, 19,648 acres would be designated as an ACEC and a RNA (Maps SMA-4 and -18).

New rights-of-way in the ACEC would be avoided unless there were no other options. The area would be managed as land tenure Zone 1 (retention) (Maps L-5 and -8). Actions to acquire inholdings or adjacent lands from willing landowners would be initiated if such acquisition would enhance management of the relevant and important resources.

OHV's would be limited to existing roads and trails (Map R-8).

The entire ACEC would be managed as VRM Class III (Map VRM-3 of the Draft RMP/EIS).

Livestock use would continue based on existing permit stipulations and approved allotment management plans (USDI-BLM undated C) (Map G-3). Any proposed changes in grazing, including time and intensity of use, would be evaluated for impacts on the relevant and important values and would be permitted if the values would be maintained or enhanced. Where adverse impacts are identified, existing livestock use would be adjusted using a variety of methods, including, but not limited to, fencing, reduction in livestock numbers, and changes in grazing season of use. Of particular concern would be spring grazing of cultural plants (plants traditionally used by Native Americans). Proposed range improvement projects would be evaluated for impacts and permitted where relevant and important values would be maintained or enhanced.

The ACEC would be open to all mineral activities. Locatable mineral development would require a plan of operations. Leasable mineral activity would be subject to a no-surface-occupancy stipulation.

The high concentration of greater sage-grouse leks in the ACEC (Map W-1) would be managed to maintain the continuity of greater sage-grouse habitat and to avoid disturbance during the breeding season.

The ACEC would be identified as a traditional cultural property.

Alternative E

Under this alternative no ACEC/RNA would be designated. Management would follow that for the remainder of the planning area.

Management Direction by Alternative—Proposed Red Knoll ACEC (formerly Tucker Hill)

Management Common to Alternatives A–D

There are major noxious weed infestations, primarily medusahead, in the proposed ACEC. Noxious weeds would be treated in the area using integrated weed management techniques with an emphasis on treatment and rehabilitation of medusahead sites. A Greater Abert Weed Management Area is proposed in this area which would include all of the land in the proposed Red Knoll ACEC. If a weed management area is established, the plan that would be developed for it would be the direction for weed management activities inside this ACEC. If the weed management area is not developed, but the ACEC becomes established, weed management would occur according to the weed management direction for the rest of the planning area.

Alternative A

The proposed ACEC would not be designated and management of the area would continue as at present.

The area would be open to the location of new rights-of-ways, as needed, based on a site-specific environmental analysis. The area would be managed as land tenure Zone 2 (Maps L-1 and -2 of the Draft RMP/EIS).

The entire area would be open to OHV use (Map R-2 of the Draft RMP/EIS).

The area would continue to be managed as VRM Class III and IV (Map VRM-1 of the Draft RMP/EIS).

Grazing would continue as currently managed (Map G-1 of the Draft RMP/EIS). The north half of the area, Allotment 0408, is not grazed. The south half of the area in Allotment 0404 is grazed.

The area would be open to mineral location, sale, and leasing based on approval of a site-specific NEPA analysis.

Alternative B

Under this alternative, the proposed ACEC would not be designated. The area would be managed as described under Alternative A (Maps G-1, L-3, L-6, R-1, R-5, and VRM-1 of the Draft RMP/EIS).

Alternative C

A total of about 11,588 acres would be designated as an ACEC (Map SMA-3 of the Draft RMP/EIS). The ACEC would be entirely south of the existing Tucker Hill perlite mine.

New rights-of-way would be excluded except for any necessary to access non-Federal land. The area would be managed as land tenure Zone 1 (retention) (Maps L-4 and -7 of the Draft RMP/EIS). Actions would be pursued to acquire private inholdings from a willing landowner.

OHV's would be limited to designated roads and trails (Map R-6 of the Draft RMP/EIS). About 7.3 miles of roads and trails would be closed (Table 4-4).

The entire ACEC would be managed as VRM Class II (Map VRM-2 of the Draft RMP/EIS).

The entire ACEC would be closed to livestock grazing to protect cultural values (Map G-2 of the Draft RMP/EIS).

The BLM would petition the Secretary of the Interior to withdraw the entire ACEC (11,588 acres) from locatable mineral entry. The ACEC would be closed to the sale or lease of minerals.

The ACEC would be identified as a traditional cultural property. Eligible cultural sites would be nominated to the NRHP.

Alternative D

Under this alternative, 11,127 acres would be designated an ACEC (Maps SMA-4 and -19). The boundary would exclude the Tucker Hill perlite mine. The southeast boundary of the ACEC would be set 100 feet back from existing county road right-of-way (Highway 2-10) to allow maintenance of the road or additional right-of-way uses.

New rights-of-way in the ACEC would be avoided unless there are no other options (Map L-8). The area would be managed as land tenure Zone 1 (retention) (Maps L-5).

OHV's would be limited to designated roads and trails (Map R-7). Approximately 3.8 miles of roads and trails would be closed (Table 4-4 and Map SMA-19).

The ACEC would be managed as VRM Class II (Map VRM-3 of the Draft RMP/EIS).

Livestock grazing in the ACEC would continue based on existing permit stipulations (Map G-3). Any proposed changes in grazing, including time and intensity of use, would be evaluated for impacts on the relevant and important values and would be permitted if the values would be maintained or enhanced. Where adverse impacts are identified, existing livestock use would be adjusted using a variety of methods, including, but not limited to, fencing, reduction in livestock numbers, and changes in grazing season of use. Proposed range improvement projects would be evaluated for impacts and permitted where relevant and important values would be maintained or enhanced.

The BLM would petition the Secretary of the Interior to withdraw the northwest one-third of the ACEC (approximately 4,600 acres) from locatable mineral entry. This same area would be closed to the sale or lease of minerals. The southern two-thirds of the ACEC would be open to locatable mineral entry, subject to the preparation of a plan of operations, and to the sale or lease of minerals with stipulations to protect relevant and important resources (Maps M-8, -9, and -10).

Alternative E

No ACEC would be designated under this alternative. Management would follow that for the remainder of the planning area.

Management Direction by Alternative—Proposed Spanish Lake ACEC/RNA

Alternative A

No ACEC would be designated under this alternative.

The area would continue to be open to new rights-of-way location. The area would continue to be managed as land tenure Zone 2 (Maps L-1 and -2 of the Draft RMP/EIS).

The area would be open to OHV use (Map R-2 of the Draft RMP/EIS).

The area would continue to be managed as VRM Class IV (Map VRM-1 of the Draft RMP/EIS).

Present grazing management would continue. The area is in Allotment 213 which is grazed for approximately 1 month each February (Map G-1 of the Draft RMP/EIS).

It would also be open to all mineral activity based on approval of a site-specific NEPA analysis.

Alternative B

No ACEC would be designated under this alternative. Management would be the same as that described under Alternative A (Maps G-1, L-3, L-6, R-1, R-5, and VRM-1 of the Draft RMP/EIS).

Alternative C

Under this alternative, 4,699 acres would be designated as an ACEC and a RNA (Map SMA-3 of the Draft RMP/EIS).

Rights-of-way, except to provide access to non-Federal land, would be excluded from the ACEC. The area would be managed as land tenure Zone 1 (retention) (Maps L-4 and -7 of the Draft RMP/EIS).

OHV use would be limited to designated roads and trails (Map R-6 of the Draft RMP/EIS). Approximately 4.4 miles of roads and trails would be closed (Table 4-4).

The ACEC would be managed as VRM Class III (Map VRM-2 of the Draft RMP/EIS).

Livestock use would continue based on existing permit stipulations (Map G-2 of the Draft RMP/EIS). Any proposed changes in grazing, including time and intensity of use, would be evaluated for impacts on the relevant and important values and would be permitted if the values would be maintained or enhanced. Where adverse impacts are identified, existing livestock use would be adjusted using a variety of methods, including, but not limited to, fencing, reduction in livestock numbers, and changes in grazing season of use. Proposed range improvement projects would be evaluated for impacts and permitted where relevant and important values would be maintained or enhanced. The livestock watering pond in the middle of the lake would be rehabilitated.

The ACEC would be open to locatable mineral activity under a plan of operation. It would be closed to the sale or lease of minerals.

Alternative D

Under this alternative, 4,699 acres would be designated as an ACEC (Maps SMA-4 and -20).

New rights-of-way in the ACEC would be avoided unless there are no other options (Map L-8). The area would be managed as land tenure Zone 1 (retention) (Maps L-5).

OHV use would be limited to designated roads and trails (Map R-7). Approximately 0.6 miles of roads and trails would be closed (Table 4-4 and Map SMA-20).

The ACEC would be managed as VRM Class IV (Map VRM-3 of the Draft RMP/EIS).

Livestock use would continue based on existing permit stipulations (Map G-3). Any proposed changes in grazing, including time and intensity of use, would be evaluated for impacts on the relevant and important values and would be permitted if the values would be maintained or enhanced. Where adverse impacts are identified, existing livestock use would be adjusted using a variety of methods, including, but not limited to, fencing, reduction in livestock numbers, and changes in grazing season of use. Proposed range improvement projects would be evaluated for impacts and permitted where relevant and important values would be maintained or enhanced. The livestock watering pond in the middle of the lake would be rehabilitated.

The ACEC would be open to all mineral activity (Maps M-8, -9, and -10). Mineral location would require preparation of a plan of operations.

Alternative E

Under this alternative, no ACEC would be designated. Management would follow that for the remainder of the planning area.

Management Direction by Alternative—Proposed Table Rock ACEC

Alternative A

Under this alternative, no ACEC would be designated.

No new major rights-of-way would be placed within 1 mile of the area. Distribution lines would be allowed. The rights-of-way for existing communication sites and access road to the site would be retained and managed according to the respective right-of-way grants. The area would continue to be managed as land tenure Zone 2 (Maps L-1 and -2 of the Draft RMP/EIS).

The area would continue to be open to OHV use except for an existing 56-acre closed area (Map R-2 of the Draft RMP/EIS). About 0.3 miles of roads and trails would remain closed (Table 4-4).

The area would continue to be managed as VRM Class IV (Map VRM-1 of the Draft RMP/EIS).

Livestock grazing would continue as presently managed (Map G-1 of the Draft RMP/EIS). The area is in two allotments. Allotment 714 encompasses most of the ACEC, but is currently not grazed. Allotment 708 includes the northwest portion of the ACEC and is grazed for 1 month in the spring.

The area would be open to all mineral activity subject to approval of a site-specific NEPA analysis.

The draft conservation agreement between BLM and USFWS for the protection and management of Cusick's buckwheat would be completed and implemented.

Alternative B

No ACEC would be designated under this alternative. Management would be the same as described under Alternative A (Maps G-1, L-3, L-6, R-1, R-5, and VRM-1 of the Draft RMP/EIS).

Alternative C

Under this alternative, 5,891 acres would be designated as an ACEC (Map SMA-3 of the Draft RMP/EIS).

New rights-of-way, except to provide access to non-Federal land, would be excluded. The area would be managed as land tenure Zone 1 (retention) (Maps L-4 and -7 of the Draft RMP/EIS). Actions to acquire the private property adjacent to the northeast corner of the ACEC from willing landowners would be initiated.

OHV use would be limited to designated roads and trails (Map R-6 of the Draft RMP/EIS). Approximately 11.1 additional miles of roads and trails would be closed (Table 4-4).

The ACEC would be managed as VRM Class II (Map VRM-2 of the Draft RMP/EIS).

The ACEC would be closed to livestock grazing to protect ACEC values (Map G-2 of the Draft RMP/EIS). Fences would be installed as needed to keep livestock out of the area.

The ACEC would be open to locatable mineral development, subject to the preparation of a plan of operations, but closed to the sale or lease of minerals.

The draft conservation agreement for the Cusick's buckwheat would be completed and implemented.

Recreation use would be limited to day-use only. The area would be closed to camping and associated collection of dead or down wood for campfire use.

The area would be identified as a traditional cultural property.

Alternative D

Under this alternative, 5,138 acres would be designated as an ACEC (Maps SMA-4 and -21). The western boundary of the ACEC would be set back 100 feet from the eastern edge of the county road right-of-way (Highway 5-14).

New rights-of-way would be allowed within existing rights-of-way. New rights-of-way outside the existing rights-of-way would be avoided unless there were no other options (Map L-8). The area would be managed as land tenure Zone 1 (retention) (Maps L-5). Actions to acquire the private property adjacent to the northeast corner of the ACEC from willing landowners would be initiated.

OHV use would be limited to designated roads and trails (Map R-7). About 3.6 additional miles of roads and trails would be closed (Table 4-4 and Map SMA-21).

The ACEC would be managed as VRM Class II (Map VRM-3 of the Draft RMP/EIS).

Part of the ACEC (Allotment 0714) would remain closed to grazing and part (Allotment 0708) would allow livestock use to continue based on existing permit stipulations (Map G-3). Any proposed changes in grazing, including time and intensity of use, would be evaluated for impacts on the relevant and important values and would be permitted if the values would be maintained or enhanced. Where adverse impacts are identified, existing livestock use would be adjusted using a variety of methods, including, but not limited to, fencing, reduction in livestock numbers, and changes in grazing season of use. Proposed range improvement projects would be evaluated for impacts and permitted where relevant and important values would be maintained or enhanced.

The ACEC would be open for locatable mineral development, subject to preparation of a plan of operations, and leasable minerals, subject to a no-surface-occupancy stipulation. The ACEC would be closed to the sale of minerals (Maps M-8, M-9, and M-10).

The ACEC would be identified as a traditional cultural property.

Camping would be allowed in designated areas only.

The draft conservation agreement for Cusick's buckwheat would be completed and implemented.

Alternative E

Under this alternative, no ACEC would be designated. Management would follow that for the remainder of the planning area.

Wilderness Values

Management Goal—*Wilderness study areas (WSA's) and proposed WSA additions would be managed under the "Interim Management Policy for Lands Under Wilderness Review" (wilderness IMP) (USDI-BLM 1995b). BLM-administered land acquired since the wilderness inventory and determined to have wilderness values would be included in adjacent WSA's.*

Rationale

Under FLPMA, wilderness preservation is part of BLM's multiple use mandate, and wilderness is recognized as part of the spectrum of resource values considered in the land use planning process. Under the wilderness review program, the existing designated WSA's are managed in accordance with BLM's wilderness IMP (USDI-BLM 1995b). The general standard for interim management is that land under wilderness review must be managed so as not to impair suitability for preservation as wilderness. Wilderness characteristics and values, described in section 2(c) of the "Wilderness Act of 1964" (Public Law 88-577) must be protected and enhanced in all WSA's. The initial task of identifying areas suitable for wilderness preservation has been completed as mandated in FLPMA section 603, and is documented in BLM's "Oregon Final Wilderness EIS" (USDI-BLM 1989a) and "Wilderness Study Report for Oregon" (USDI-BLM 1991a).

Lands acquired by the BLM since that time (currently 3,043 acres via donation, exchange, or purchase) were not included in the initial inventory for wilderness suitability. Sections 201 and 202 of FLPMA provide for ongoing inventories of public land resources and identification of significant areas through the RMP process. If acquired parcels of land adjacent to WSA's are found recommended as suitable for wilderness designation, these areas would be included in the appropriate WSA and managed under authority of FLPMA sections 202 and 302. The IMP would apply to these areas while under wilderness consideration by Congress.

Management Common to All Alternatives

Management direction for all WSA's and ISA's is set under the wilderness IMP (USDI-BLM 1995b) until such time as Congress makes a determination regarding wilderness designation. The wilderness IMP generally takes precedent over all other management direction. However, when a WSA overlaps another special designation, such as special recreation management area or an ACEC, if management of these areas is more restrictive than the IMP, the most restrictive management direction would be followed. Management of any congressionally designated wilderness areas would be set in future legislation, and can not be entirely predicted at this point in time. Management direction for any WSA's not designated by Congress and released from WSA status would be based on the existing RMP management direction for surrounding lands.

For WSA's studied under section 202 of the FLPMA, existing and new mining operations under the 1872 mining law would be regulated under 43 CFR 3802 only, to prevent unnecessary or undue degradation of the lands, not to prevent impairment of wilderness suitability. All other activities will be managed under the IMP.

According to the wilderness IMP, the use in WSA's of ". . . mechanical transport, including all motorized devices as well as trail and mountain bikes, may only be allowed on existing ways and within open areas that were designated prior to the passage of FLPMA (October 1976)." For the purposes of this analysis, existing roads and ways within WSA's are those that existed on the ground at the time the FLPMA was passed (1976) and were subsequently shown or described in the "Oregon Wilderness Final EIS" (USDI-BLM 1989a). After the publication of the Draft RMP/EIS, the BLM reexamined the roads and ways within all WSA's. This involved comparing the maps in the "Oregon Wilderness Final EIS" (USDI-BLM 1989a) with 1994 digital orthophotography, as well as, on-the-ground global positioning system location work. New roads and ways were captured using global positioning system or by "heads-up" digitizing from the digital orthophotography. Any new roads or ways that have been created or discovered either have already been closed to vehicle use or should be closed under all alternatives in order to comply with the wilderness IMP. These roads and ways are shown as "historically closed" on the SMA maps. (In contrast, existing roads and trails within the remainder of the planning area are defined as those roads or trails that exist on the ground at the time the RMP is approved and the record of decision is signed. These will be verified by comparison with 2000–2001 USGS National High Altitude Photography program photos which represents the best and most timely available source of data on this topic).

Preservation of wilderness values is paramount when managing WSA's and should be the primary consideration when evaluating any proposed action or use that may conflict with, or be adverse to, those wilderness values. Wilderness resource management objectives within a WSA would take precedence over all other management objectives.

All proposals for uses and/or facilities within WSA's would be reviewed to determine whether the proposal meets the nonimpairment criteria. The nonimpairment criteria are: (1) the use, facility, or activity must be temporary (this means a temporary use that does not create surface disturbance or involve permanent placement of facilities may be allowed if such use can easily and immediately be terminated upon wilderness designation); and (2) when the use, activity, or facility is terminated, the wilderness values must not have been degraded so far as to significantly constrain the area's wilderness suitability for preservation as wilderness. The only permitted exceptions to the nonimpairment criteria are:

1) emergencies associated with wildfire or search and rescue operations;

2) reclamation activities designed to minimize impacts created by violations and emergencies;

3) uses and facilities which are considered grandfathered or valid existing rights under the IMP;

4) uses and facilities that clearly protect or enhance the land's wilderness values or are the minimum necessary for public health and safety; and

5) reclamation of pre-FLPMA impacts.

The *minimum tool* concept would be applied to any approved actions within WSA's. This means that any actions would be accomplished using methods and equipment that have the least impact on the quality of an individual or group's wilderness experience, as well as the physical, biological, and cultural resources with the WSA.

Pre-FLPMA developments may continue to be used and maintained in WSA's to keep them in an effective, usable condition, but can not be modified to where they exceed the physical and visual impacts existing at the time FLPMA passed. New, temporary developments would need to satisfy the nonimpairment criteria and truly enhance wilderness values. New, permanent developments must satisfy the nonimpairment criteria, enhance wilderness values, and not require motorized access if the area were designated as wilderness. Because pre-FLPMA facilities such as waterholes, spring developments, guzzlers, and fences are considered grandfathered, they may be maintained periodically using motorized equipment, if through analysis, that method was found to be the minimum tool necessary for maintenance.

Management Direction by Alternative

Alternative A

All lands acquired adjacent to or within WSA's since the "Wilderness Study Report for Oregon" (USDI-BLM 1991a) are required to be assessed for wilderness

values. A number of such areas have been assessed to date. This assessment has found that some of lands meet the criteria for identification as a WSA. However, these lands can only be managed under the wilderness IMP if they go through the land use planning process. Under Alternative A, a land use plan or plan amendment would need to be completed to accomplish this.

Alternative B

Land acquired within or adjacent to lands identified in the "Wilderness Study Report for Oregon" (USDI-BLM 1991a) would not be added to existing WSA's and would not be managed under the IMP, even though they may meet the WSA criteria.

Alternatives C, D, and E

All lands acquired to date adjacent to or within WSA's have been assessed for wilderness characteristics. Under these three alternatives, those lands possessing wilderness characteristics and meeting the criteria for identification as a WSA would be included in the adjacent WSA and managed under the IMP to protect its wilderness values. Approximately 1,194 acres of acquired lands currently determined to have wilderness characteristics would be added to the following WSA's: Fish Creek Rim WSA—397 acres; Guano Creek WSA—604 acres; and Abert Rim WSA—193 acres. See Appendix J and Maps SMA-7, -13, and -16, for the wilderness study process and location of these acquired lands, respectively. Any inholdings or adjacent lands acquired in the future during the life of the plan which are determined to contain wilderness characteristics, would be automatically added to the WSA and managed in accordance with the wilderness IMP (USDI-BLM 1995b).

Wild and Scenic Rivers

Management Goal—*Protect and enhance outstandingly remarkable values of rivers determined to be administratively suitable for potential inclusion in the national wild and scenic river (WSR) system until Congress acts.*

Rationale

The "National Wild and Scenic Rivers Act" (Public Law 90-542 and amendments), section 1(b), states that ". . . certain selected rivers of the Nation which, with their immediate environments, possess outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values, shall be preserved in free-flowing condition, and that they and their immediate environments shall be protected for the benefit and enjoyment of present and future generations." Section 5(d) requires Federal agencies to consider potential wild, scenic, and recreational river areas in all planning for the use and development of water and related land resources. Section 10(a) describes the basic management requirement of protecting and enhancing the values that caused the river to be included in the national WSR system. In accordance with BLM policy, all eligible rivers were evaluated for suitability. The planning determination of suitability provides the basis for any decision to recommend legislation. Factors to be considered (see section 4[a] of the "National Wild and Scenic River Act") in the suitability determination include: the current status of land ownership and use in the area; the reasonably foreseeable potential uses of the land and water which would be enhanced, foreclosed, or curtailed if the area were included in the national WSR system, and the values which would be foreclosed or diminished if the river is not protected as part of the national WSR system; other agencies, organizations or public interested in designation or nondesignation; administrative costs; ability of the agency to manage and/or protect the river area; historic or existing rights.

An inventory of rivers in the LRA determined that three rivers were eligible for further study: Guano Creek, Twelvemile Creek, and Honey Creek (see Appendix J2 of the Draft RMP/EIS for the inventory assessment).

Management Common to All Alternatives

Provide interim protection of the oustandingly remarkable values of eligible and administratively suitable rivers while awaiting a determination by Congress. Refer to Appendix J3 of the Draft RMP/EIS for interim management policy and guidelines. Acquisition of non-Federal lands along the river corridors would be through voluntary willing sellers or exchange proponents, and would be added to eligible and suitable rivers.

Under Alternatives B, C, and D, the visual resources for Honey and Twelvemile Creeks would be managed as VRM Class II, and Guano Creek would be managed as VRM Class I because it is located within the Guano Creek WSA. If Guano Creek is not congressionally designated a wilderness, the VRM Class for the Guano Creek corridor would revert to Class II.

Management Direction by Alternative

Alternative A

None of the eligible streams would be recommended administratively suitable for potential designation by Congress as WSR's.

Alternative B

Same as under Alternative A.

Alternative C

Approximately 6.6 miles on Twelvemile Creek and 5.6 miles of Honey Creek would be recommended administratively suitable for potential designation by Congress as a WSR (Table 2-35 and Map R-8 of the Draft RMP/EIS), with a tentative classification as scenic. Approximately 10.6 miles of Guano Creek would be recommended administratively suitable for potential designation by Congress as a WSR, with a tentative classification as wild. Management guidelines and standards for scenic classification as listed in Appendix J3 of the Draft RMP/EIS would be followed while awaiting a determination by Congress.

Alternative D

Approximately 6.6 miles on Twelvemile Creek would be recommended administratively suitable for potential designation by Congress as a WSR (Table 2-35 and Map R-9 and SMA-22) with a tentative classification as recreational. Guano Creek and Honey Creek would not be recommended suitable for designation in the national WSR system. Management guidelines and standards for wild, scenic, and recreational classifications listed in Appendix J3 of the Draft RMP/EIS would be followed while awaiting a determination by Congress.

Alternative E

None of the eligible streams would be administratively suitable for potential designation by Congress as WSR's.

Cultural and Paleontological Resources

Management Goal 1—*Preserve and protect cultural resources in accordance with existing laws, regulations, and Executive orders, in consultation with Native Americans.*

Rationale

The BLM is required by law, regulations, and Executive orders to manage cultural resources in such a fashion that they would be preserved and protected from destruction, and that the appropriate uses would be made of such resources. Law, regulations, and Executive orders further require that such management be coordinated with the appropriate Native American Tribes and individuals.

Actions Common to All Alternatives

All management actions on public lands and private land projects which are federally funded, permitted, or assisted would require completion of section 106 of the "National Historic Preservation Act" regulations. This would consist of a literature review, a site survey on the ground to determine the presence or absence of sites, and site evaluation in consultation with Native Americans, as appropriate, and with the State Historic Preservation Officer, as appropriate.

All sites which have currently been identified, as well as sites identified in the future would be evaluated for placement in one of four use categories as specified in BLM Manual 8110 (USDI-BLM 1988c). These four uses are as follows:

1) *Conservation for future use:* This category places a site in protection from destruction with the intent to have it available at an unspecified date in the future for use in research or public interpretation.

2) *Public use:* Sites placed in this category would be used for recreation, public interpretation, education, etc.

3) *Experimental use:* Sites placed in this category would be used in scientific research. Such use may result in the complete consumption of the site in some cases. Site may be placed in public use as a result of the research which is conducted.

4) *Discharged sites:* These are sites which no longer

Table 3-5.—*Off-highway vehicle designations by area by alternative* [1, 2]

	Alternative A		Alternative B		Alternative C		Alternative D		Alternative E	
Area	Designation	Acres	Designation	Acres	Designation	Acres	Designation	Acres	Designation	Acres
Areas of critical environmental concern										
Existing										
Devils Garden	E	28,241	E	28,241	D	28,241	D	28,241	E	28,241
Lake Abert (overlap with Abert Rim WSA)	E	50,117	E	50,117	D	50,117	E	43,007	E	50,117
							D	7,110		
Lost Forest/Sand Dunes/Fossil Lake										
Fossil Lake	C	6,660	C	6,660	C	6,660	C	8,988	C	6,660
Lost Forest RNA/ISA	D	9,047	D	8,883	C	8,883	D	8,883	E	9,047
Sand Dunes WSA	O	11,453	O	11,453	C	11,453	O	9,910	C	11,453
Remainder of ACEC	O	8,960	O	8,580	C	8,580	D/O	7,344/1,418	C/E	8,960
Warner Wetlands	D	53,087	D	53,087	D	53,087	D	53,087	E	53,087
Proposed										
Black Hills RNA	D	1,729	D	1,729	C	3,049	D	3,049	E	
Connley Hills RNA			E	3,599	D	3,599	D	3,599	E	
Fish Creek RNA					D	8,725	D	8,725	E	
Foley Lake RNA					D	2,746	D	2,230	E	
Guano Creek/Sink Lakes RNA							D	11,119	E	
Hawksie-Walksie RNA					D	17,339	D	17,339	E	
High Lakes					D	40,095	D	38,985	E	
Juniper Mountain RNA	E	2,500	E	2,500	D	6,335	D	6,335	E	
Lake Abert ACEC addition					D	18,049	D	18,049	E	
Rahilly-Gravelly RNA					D	20,127	E	19,648	E	
Red Knoll					D	11,588	D	11,127	E	
Spanish Lake RNA					D	4,699	D	4,699	E	
Table Rock	C	57	C	57	D	5,891	D	5,139	C	57
Wilderness study areas [3, 6]	E	461,310	E	461,310	D	454,221	E	343,778	E	461,310
Wilderness study areas							D	110,443	E	
Proposed WSA additions (acquired lands)					D	1,194	D	1,194	E	

Area	Alternative A Designation	Alternative A Acres	Alternative B Designation	Alternative B Acres	Alternative C Designation	Alternative C Acres	Alternative D Designation	Alternative D Acres	Alternative E Designation	Alternative E Acres
Wild and scenic rivers										
Guano Creek					D	2,346			E	
Honey Creek					E	1,243			E	
Twelvemile Creek					E	2,206	D	1,311	E	
Other areas										
Alkali Lake Dunes	E	6,813	E	6,813	E	6,813	E	6,813	E	6,813
Buck Creek	C	590	C	590	C	590	C	590	C	590
Cougar Mountain	C	44	C	44	C	44	D	O [7]	C	44
Crane Mountain	C	1,057	C	1,057	C	1,057	C	1,030	C	1,057
Deer winter range [4]	D/O [5]	66,460	D/O [5]	66,460	D/E	100,834	D/E	128,556	D/E	66,460
North Lake Special Recreation Management Area		0		0			E	550,392 [8]	E	
Picture Rock Pass	E	491	E	491	E	491	E	491	E	491
South Green Mountain	C	14	C	14	C	14	C	14	C	14
West Side Cemetery	C	81	C	81	C	81	D	81	C	81
Remainder of LRA	O	2,508,408	O	2,504,974	E	2,349,385	O	1,756,799	E	3,075,000

[1] E = existing roads and trails; D = designated roads and trails; C = closed; and O = open.
[2] Acreage figures will not total correctly for the planning area (3,161,416 acres) due to overlap between areas (for example, Devils Garden ACEC equals the Devils Garden WSA, and acres appear in both designations.
[3] The acreage for the Sand Dunes WSA is found under ACEC's.
[4] Silver Lake and Fort Rock areas.
[5] Designated roads and trails from 12/1–3/31; open for the remainder of the year.
[6] OHV designations within WSA's are related to roads and ways; in the remainder of the LRA, they are referred to as roads and trails.
[7] Acreage is included in deer winter range.
[8] Total area within the special recreation management area (including non-BLM ownerships) is 1,117,007 acres. This acreage represents that portion of BLM lands in the special recreation management area not already included in some other area designation.

exist or have been so damaged that they have no value of any kind. Sites may have been destroyed by erosion, consumption in research, or through destruction caused by humans.

Alternative A

To protect against illegal artifact or fossil collecting, site or fossil excavations, and site or fossil vandalism, the listed, eligible, or potential NRHP sites and locations known to contain large numbers of sites would be patrolled regularly. This would include the subbasins of Warner Valley, Abert Lake, Summer Lake, Christmas Valley, and Fort Rock. In addition, the uplands surrounding these basins would also be patrolled.

A monitoring plan would be developed to evaluate the success of cultural resource protection and to provide a baseline for the present condition of sites and determine where stabilization and restoration is needed (Appendix R). Other uses would be limited as necessary to preserve and protect cultural resources. A regular schedule of meetings with local and regional Native American Tribes for consultation on the preservation and protection of sites would be established.

The OHV closure in the Fossil Lake paleontological area would be maintained, and exposed fossils would continue to be collected from the location.

Buildings and structures on the Shirk Ranch property located in Guano Valley would be stabilized or restored.

Alternative B

Management would be the same as Alternative A, except for the following. Buildings and structures on the Shirk Ranch property located in Guano Valley would be restored and plans for administrative and recreation use of the property would be developed.

The OHV closure in the Fossil Lake paleontological area would be maintained, and exposed fossils would continue to be collected from the location. An interpretive site for public recreational use at the location would be developed.

Alternative C

Management would be the same as Alternative A, except for the following: The buildings and structures at Shirk Ranch in Guano Valley would be restored.

The Fossil Lake and Sand Dunes areas would be closed to OHV's in order to protect exposed fossils. Year-round paleontological resource monitoring to prevent collection of exposed fossils would be initiated.

Alternative D

To protect against illegal artifact or fossil collecting, site or fossil excavations, and site or fossil vandalism, the listed, eligible, or potential NRHP sites and locations known to contain large numbers of sites would be patrolled regularly. This would include the subbasins of Warner Valley, Abert Lake, Summer Lake, Christmas Valley, and Fort Rock. In addition, the uplands surrounding these basins would also be patrolled.

A monitoring plan would be developed to evaluate the success of cultural resource protection and to provide a baseline for the present condition of sites and determine where stabilization and restoration is needed (Appendix R). Other uses would be limited as necessary to preserve and protect cultural resources. A regular schedule of meetings with local and regional Native American Tribes for consultation on the preservation and protection of sites would be established.

The OHV closure at Fossil Lake would be enlarged to about 8,988 acres (Table 3-5). Paleontological resource monitoring to determine damage to and collection of exposed fossils would be initiated.

Buildings and structures on the Shirk Ranch property located in Guano Valley would be stabilized.

Alternative E

To protect against illegal artifact and fossil collecting, archaeological site or fossil site excavation, and archaeological site or fossil vandalism, the listed, eligible or potential NRHP sites and locations known to contain large numbers of sites would be patrolled regularly.

Management Goal 2—*Increase the public's knowledge of, appreciation for, and sensitivity to cultural resources, Native American issues, and paleontological resources.*

Rationale

The BLM is required by law to preserve and protect cultural and paleontological resources. In order to do so, the public must be aware of their values and the impact which their activities have upon them. Cultural and paleontological resources are fragile and irreplaceable and can be damaged or destroyed by actions of the

public. Through vandalism and natural erosion, these resources are disappearing. If the public understands the effects of their actions and feels it has equity in the Nation's cultural and natural history heritage, the resources would be appreciated and better protected from vandalism.

Actions Common to All Alternatives

Actions would be initiated to develop public appreciation and protection through public education of the values and importance of cultural resources. All interpretation projects would be done in consultation with Native Americans, and implemented only if it would not impact the values at the site.

Alternative A

Cost-share programs with universities, museums, and researchers, and volunteers to inventory, analyze, and research the cultural resources within the resource area would be continued. Regular consultation with Native American Tribes on all matters dealing with use, protection, and preservation of cultural resources within the resource area would continue.

Alternative B

Same as for Alternative A, except on- and offsite interpretation of archaeological/paleontological sites which have educational and recreational values would be developed as long as such work does not contribute to the deterioration or destruction of the resources being interpreted. Work would be conducted with museums of the region, as well as nationally, for the creation of displays about the resources of the area. In addition, work would be done with researchers for the creation of brochures and books on the archaeology and paleontology of the resource area.

Interpretive sites and publications, as described above, would be developed for the Shirk Ranch Historic Site, the Fossil Lake paleontological site, the archaeological resources of the Fort Rock Basin and the Warner Valley region.

Alternative C

Actions, as outlined under Alternative A, would continue. Public interpretation of sites would be developed, but only if it would not impact the site or would improve its condition.

Alternative D

Cost-share programs with universities, museums, and researchers, and volunteers to inventory, analyze, and research the cultural resources within the resource area would be continued. Regular consultation with Native American Tribes on all matters dealing with use, protection, and preservation of cultural resources within the resource area would continue. Public education programs, which would increase public awareness of the need to preserve and protect cultural resource sites, would be developed.

Alternative E

Public interpretation and educational programs that do not involve onsite work or require any visitation of sites in the field would be developed.

Management Goal 3—*In consultation with local Native American Tribes, take actions, including designating areas of critical environmental concern (ACEC's), to protect traditional religious sites, landforms, burial sites, resources, and other areas of interest. Nominate as traditional cultural properties those areas that qualify.*

Rationale

It is required by laws, regulations, and Executive orders to consult with and coordinate BLM activities with Native American Tribes, so that their rights and interests are taken into account when land use decisions are made. In addition, American Indian traditions and traditional uses must be considered. Specifically, the agency must comply with the "National Historic Preservation Act," the "Native American Graves Protection and Repatriation Act," the "American Indian Religious Freedom Act," regulations 36 CFR 800, section 106 and 110, and Executive Order 13007 (Sacred Sites).

Actions Common to All Alternatives

Consultation with Native American Tribes would be documented under all alternatives.

Ownership of the West Goose Lake Reinterment Site (approximately 40 acres) and the Adel Paiute Cemetery (approximately 10 acres) would be transferred to the local Tribes or possibly to the Bureau of Indian Affairs to be managed in trust for reinternment purposes.

Alternative A

All land-disturbing activities within identified Native American religious sites or traditional cultural properties would be designed to eliminate or minimize adverse impacts. Proposed projects or actions would be modified to avoid the site or area, avoid time of use by Native American groups, or be eliminated altogether. Religious sites and traditional cultural properties would be managed for continued use by Native Americans and retained in Federal ownership. Native American requests to practice traditional activities on public lands would be considered on a case-by-case basis and would be allowed where practical and appropriate. All treaty rights and trust responsibilities as they apply to public lands within the resource area would be honored. Activity plans for Native American traditional use areas, when identified in consultation with affected Tribes, would be developed.

Alternative B

Management actions would be the same as for Alternative A, except areas would be set aside for special management only if doing so would not restrict other uses of same area. No areas would be removed from mineral entry.

Alternative C

The areas listed below would be designated as ACEC's to protect cultural resource values and traditional use areas. Eligibility of these areas as traditional cultural properties would be determined.

Red Knoll
Table Rock
Abert Rim Addition
High Lakes
Hawksie-Walksie
Connley Hills
Rahilly-Gravelly
Fish Creek

Proposed specific management direction for each of these areas under this alternative is described in the Special Management Area section of this chapter.

Alternative D

The areas listed below would be designated as ACEC's to protect cultural resource values and traditional use areas. Eligibility of these areas as traditional cultural properties would be determined. Proposed specific management direction for each of these areas under this alternative is described in the Special Management Area section in this chapter.

Red Knoll
Table Rock
Abert Rim Addition
High Lakes
Rahilly-Gravelly
Hawksie-Walksie
Connely Hills
Fish Creek

Alternative E

No ACEC's would be designated. Natural processes would be allowed to occur on all sites. Only management and uses required by law, regulations, and Executive orders would be allowed.

Management Goal 4—*In order to fulfill trust responsibilities with Tribal peoples, manage public land to maintain, restore, or enhance plant community health and cultural plants. Identify traditional ecological knowledge with humans as part of the ecosystem, and maintain habitat integrity with sustainable yields at a landscape level.*

Rationale

During the ICBEMP process, the concerns of American Indian peoples were analyzed—specifically their relationships with the natural environment and trends regarding agency relations with the project's affected Tribal peoples. The legal status of Tribal peoples, the sovereignty of Tribal governments, and the nature of reserved Tribes rights merit separate attention from the general public's concerns over ecosystem management. The BLM management actions affect resources and areas of concern to Tribal peoples, and the Federal government holds certain trust responsibilities and obligations to Tribal groups based on various legal agreements described in BLM Manual 8100, Information Bulletin OR 2000-095, Executive Order 1307, the "American Indian Religious Freedom Act," the "Native American Graves Protection and Repatriation Act," 36 CFR 800 section 106, and the "National Historic Preservation Act." There are four recognized Tribes that have interest in the planning area: Burns Paiute, Fort Bidwell Paiute, Warm Springs Confederated Tribes, and the Klamath Tribes. The rights retained by Tribes are viewed by them as an assurance by the U.S. Government to allow for the continuation of traditional

land uses. Thus, what is reserved supports a way of life for Indian communities, not just resource uses.

The importance of native plants has received relatively little recognition compared to other native resources. Plants continue to be valued and their parts used for purification, ceremonial, subsistence, commercial, and medicinal purposes and for creating objects of personal use, trade, gift-giving, or sale. Cultural plant lists and plant community/habitats have been listed and given significance by Tribal peoples. Also, the aquatic/terrestrial world has cultural significance to Tribes beyond its value as a source of food, medicine, textiles and other material resources. Its cultural significance is much more complex, involving social values and meaning that intertwine traditional societal, political, religious, and economic areas of modern native cultures (USDA-FS and USDI-BLM 1996h).

In order to more effectively protect Tribal interests under ICBEMP, certain guidelines were developed between the Tribal peoples and the Federal agencies concerning cultural plants and communities:

"Through treaties with the Federal government and regulatory acts signed over the past 30 years, Indian Nations have reserved rights and recognized interests to harvest a broad range of native plant and animal species. Therefore, sustainable harvest levels of the various species should be a management goal. Availability of these species is considered by Indian governments a trust responsibility of the Federal government. Inadequate quantities can lead to substantial effects on community well-being because numerous social activities center on the harvest, preparation, and consumption of the resources. This involves both the occurrence and access to the relevant resources. Occurrence of culturally important plant species may be measured through linkage with existing dominant overstory categories or associated soil types. Degree of access is determined by judging the potential effects that a number of anticipated impediments may be posed by differing management actions."

Plant communities that have cultural importance and value were identified in the process of consultation between the ICBEMP planners and Tribal peoples; these plant communities are labeled "cultural plant ethno-habitats." These communities were rated for vulnerability and viability. In order that resources can be protected, the specific locations of these plants are not identified, except in broad areas where they are protected, such as in ACEC's (Table 2-33) and in ethno-habitats (habitats defined by Tribal people as having human importance). There is great concern by Tribal peoples, anthropologists, botanists, and some land managers of Federal lands to protect the habitats where cultural plants are located. One conclusion from ICBEMP analysis also has importance in the Lakeview area: "Tribal plants occurring in nonforested habitats are most at risk for decreases in habitat that may influence continued harvestability." Nonforested ethno-habitats of critical concern in the LRA include tall sagebrush, low sagebrush scablands, wet meadows, and riparian zones.

Cultural plants are defined as those plants important to Tribal groups, both past and present, for subsistence, economic, and ceremonial purposes. Various historical factors since European contact have affected the availability of these plants within the planning area. Noxious weeds; the exclusion of fire; and impacts from grazing, timber harvest, and road building, among other factors, have all contributed to declines and dislocations in many of the plant species important to Tribes in eastern Oregon (Hanes, R., *personal communication*).

Management Direction by Alternative

Alternative A

In the project planning/NEPA process, cultural plants would be inventoried to insure that management actions on the land do not contribute to the declines of cultural plants. Meetings would be arranged with Tribal peoples to discuss management actions. Field trips with Tribal elders would be arranged to view cultural plant areas and other area for management actions. Surveys would be conducted, as needed for cultural resources related to western juniper woodlands.

Alternative B

Management would be the same as for Alternative A.

Alternative C

Plant resources, especially western juniper woodlands, would be managed for desired range of conditions by using a mix of protection, restoration, and enhancements measures. These measures may include prescribed fire and special considerations for wildland fire management. Old growth western juniper would be maintained or enhanced (see Forest and Woodlands section). Tribal resource people would be encouraged to contribute their concerns for management of all cultural plants.

Alternative D

Plant resources, especially western juniper woodlands, would be managed for desired range of conditions by using a mix of protection, restoration, and enhancements measures. These measures may include prescribed fire and special considerations for wildland fire management. Old growth western juniper would be maintained or enhanced (see Forest and Woodlands section). Tribal resource people would be encouraged to contribute their concerns for management of all cultural plants.

Alternative E

Natural processes would be allowed to operate; however, wood cutting or bough collecting for commercial purposes would be prohibited.

Human Uses and Values

Management Goal—*Manage public lands to provide social and economic benefits to local residents, businesses, visitors, and future generations.*

Rationale

Historically, commodity values on public lands have been made available to private individuals or businesses through sales, permitting, or other methods. The Federal government collects revenues when commodities are used. These commodities also generate private economic activity in the local, regional, national, and in some cases international economies.

Public lands also provide or contribute to numerous environmental amenities, such as clean water, scenic quality, and recreational opportunities. These amenities enhance local communities as places to live, work, or visit. Public lands also attract visitors to the area, many of whom purchase goods and services that generate local economic activity.

Business activities of Federal agencies also generate economic activity in the local, regional, and national economies as both an employer and purchaser of goods and services.

Federal lands also contribute to local governments where they are located. Many commodity programs include provisions to share collections with local governments. Payments-in-Lieu-of-Taxes are also made to compensate counties because Federal lands are exempt from local property taxes. Continuation of programs limits disruption of existing economic structures. Guidance within the plan defines the amount of economic opportunity in the future, especially related to mining and recreation.

Management Common to Alternatives A–D

The following objectives/actions which contribute to achieving the management goal would be the same for Alternatives A–D:

- Provide predictable and sustainable levels of commodity outputs.
- Meet subsistence needs of Tribes and Tribal communities to the greatest extent practicable.
- Provide natural resource amenities on public lands that enhance local communities as places to live, work, or visit (this could include water quality, scenic views, recreation sites, wildlife viewing, hunting, and fishing).
- Protect special areas with unique natural resource values for the enjoyment of future generations (this could include habitats of endangered species) (refer to Special Management Area section in this chapter).
- Target government business activities associated with public land management to the local economies to the extent permitted by the existing authorities (a monitoring plan would need to developed to evaluate if local versus nonlocal government spending changes over time).

In its resource management planning, the BLM selects a balance between current and future generations, local and regional and national interests, commodity uses and natural values, and physical and biological and social-economics.

Management Direction by Alternative

Alternative A

Commodity use would continue at existing levels and contribute to stability in the local livestock, mining, and tourism industries.

Natural resource amenities would continue to be provided at levels that meet or exceed existing legal

requirements. Where needed, improve environmental quality to meet or exceed requirements.

Existing facilities (roads, recreation sites, interpretive sites, and range improvements) would continue to be managed to facilitate commodity uses and continued access and availability of natural resource amenities. Continue existing management direction when determining the need for additional facilities.

Anticipated increases in demand for recreational opportunities would be addressed by implementing improvements in the Warner Wetlands Special Recreation Management Area, as identified in the existing plan. Management of the Sunstone Collection Area would continue under existing guidelines. Commercial recreation opportunities would be encouraged through the authorization of special recreation permits.

Existing special areas would be protected.

Existing business practices would be continued.

Alternative B

Availability of Federal forage available for use through the permit process would be increased. The availability of sunstone-bearing areas available for mining claim location would be increased. Maintain the existing level of opportunity for mineral exploration and development. Increased commodity availability would likely contribute to the expansion of the local tourism, livestock, and mining industries.

Natural resource amenities would continue to be provided at levels that meet or exceed existing legal requirements. Where needed, improve environmental quality to meet or exceed requirements using administrative or project- related solutions which minimize impacts to commodity production and public uses.

Existing facilities (roads, recreation sites, interpretive sites, and range improvements) would continue to be managed to facilitate commodity uses and continued access and availability of natural resource amenities. Additional facilities would be developed, as needed, to support commodity uses, consistent with natural resource objectives.

Anticipated increases in demand for recreational opportunities would be addressed by designating the North Lake Special Recreation Management Area to enhance tourism and recreation opportunities. This includes expanding existing developed and undeveloped recreation sites to accommodate increased visitation and developing partnerships to expand tourism and recreation. Implement improvements in the Warner Wetlands Special Recreation Management Area, as identified in the existing plan, and continue management of the Sunstone Collection Area under existing guidelines. Commercial and competitive use opportunities would be emphasized through the issuance of special recreation permits.

Existing and newly designated special areas would be protected.

Implement business practices which promote participation by local vendors and purchasers. This would include offering contracts that are diverse in size, type, term, and season. Operate within existing legal, regulatory, and administrative authorities.

Alternative C

Commodity uses would be reduced from existing levels to increase the level of protection for natural values. New commodity use levels would be established that could be maintained through time to contribute to stability in the local livestock, mining, and timber industries.

Natural resource amenities would continue to be provided at levels that meet or exceed existing legal requirements. Where needed, environmental quality would be improved to meet or exceed requirements using administrative or project related solutions which would protect or improve natural values.

Existing facilities (roads, recreation sites, interpretive sites, and range improvements) would continue to be managed to facilitate commodity uses and continued access and availability of natural resource amenities. Eliminate or develop alternatives for existing facilities which negatively impact natural values.

Anticipated increases in demand for recreational opportunities would be addressed by designating the North Lake Special Recreation Management Area to emphasize undeveloped, dispersed recreation opportunities and protect natural values. Minimal facilities would be constructed and maintained under this alternative. Management of the Warner Wetlands Special Recreation Management Area would be modified to further emphasize protection of natural and cultural values. Management of the Sunstone Collection Area would continue under existing guidelines as in Alternative A. Issuance of special recreation permits would be limited.

New special areas would be designated and existing special areas would be protected.

Business practices would be implemented that promote participation by local vendors and purchasers. This includes offering contracts that are diverse in size, type, term, and season. Operate within existing legal, regulatory, and administrative authorities.

Alternative D

Commodity use would continue at existing levels to contribute to stability in the local livestock, mining, and tourism industries.

Natural resource amenities would continue to be provided at levels that meet or exceed existing legal requirements. Where needed, improve environmental quality to meet or exceed requirements using administrative or project-related solutions which minimize impacts to commodity production and public uses while protecting natural values.

Existing facilities (roads, recreation sites, interpretive sites, and range improvements) would continue to be managed to facilitate commodity uses and continued access and availability of natural resource amenities. Eliminate or develop alternatives for existing facilities which negatively impact natural values.

Anticipated increases in demand for recreational opportunities would be addressed by designating the North Lake Special Recreation Management Area to emphasize undeveloped, dispersed recreation opportunities and protect natural values. Minimal facilities would be constructed and maintained under this alternative. Implementation of improvements in the Warner Wetlands Special Recreation Management Area as identified in the existing plan and continued management of the Sunstone Collection Area under existing guidelines. Special recreation permits would only be issued on an as-need basis to meet demand while protecting cultural and natural values.

New special areas would be designated and existing special areas protected.

Business practices that would promote participation by local vendors and purchasers would be implemented. This includes offering contracts that are diverse in size, type, term, and season. Operate within existing legal, regulatory, and administrative authorities.

Alternative E

Commodity uses would be eliminated on BLM-managed lands. This would likely contribute to the contraction and instability of the local livestock, mining, and tourism industries. It is unlikely that these industries would be completely eliminated because of the availability of these commodities on private lands and other public lands in the local area.

Natural resource amenities would continue to be provided at levels that meet or exceed existing legal requirements. Where needed, improve environmental quality to meet or exceed requirements using administrative or project-related solutions which emphasize elimination of commodity production and public uses to protect natural values.

Minimal levels of existing facilities (roads, recreation sites, and interpretive sites) would be maintained to protect human health and safety and to honor existing rights-of-way agreements. Alternatives would be developed for existing facilities that would negatively impact natural values. Eliminate and rehabilitate facilities no longer needed.

Anticipated increases in demand for recreational opportunities would be addressed by deemphasizing tourism opportunities. Recreation would be focused toward undeveloped types of activities while assuring a high level of protection of natural and cultural values. No special recreation permits would be issued for commercial recreational uses. Site rehabilitation or closure would be favored if resource values are being degraded beyond acceptable levels.

Special areas would be eliminated and no new special areas would be designated.

The overall number and value of contracts offered would be reduced. Business practices would be implemented that would promote participation by local vendors and purchasers. This includes offering contracts that are diverse in size, type, term, and season. Operate within existing legal, regulatory, and administrative authorities.

Air Quality

Management Goal—*Meet the national ambient air quality standards as described in the "Clean Air Act" (CAA) and follow the direction and requirements of the Southcentral Oregon Fire Management Partnership.*

Rationale

Out of all of the possible management activities considered, smoke produced from wild and prescribed fires would be the main factor affecting air quality.

Smoke may limit a land manager's ability to use larger and more frequent wildland fire for restoration and maintenance of fire-dependent ecosystems.

The CAA requires Federal agencies to comply with all Federal, state, and local air pollution requirements. The CAA also requires each state to develop a state implementation plan to ensure that the national ambient air quality standards are attained and maintained for the criteria pollutants. The ODEQ is responsible for producing the state implementation plan, but delegates the smoke management portion to the Oregon Department of Forestry. As part of the state implementation plan, the Oregon Department of Forestry developed instructions and requirements for wildland and prescribed fire emissions in the smoke management plan. Federal agencies are required to ensure that their actions conform to state implementation plans.

The national ambient air quality standards are described in the CAA and have been established for six pollutants. Of these six criteria pollutants, natural resource management activities largely affect only one—the production of particulate matter. Most particulate matter produced from fire is less than 10 micrometers (PM10) in diameter, which is the size class that is regulated. Because fire and smoke are a natural part of forest and rangeland ecosystems, PM10 produced from fire does not seriously affect these ecosystems. At the current time, PM2.5 is being studied by the State of Oregon, and ODEQ data is being collected to determine attainment status. This study should be completed within the next couple of years. However, it does have effects on human health.

Land managers and the public must make choices regarding prescribed fire and wildland fire use emissions versus emissions from wildland fires. Land managers have little control over where, when, and how much smoke is put into the air during wildland fires. Through prescribed fire, smoke levels can be better managed. For example, air quality can be somewhat diminished in the short term so that the probability is decreased of violating air quality standards in the long term. Although some of the alternatives call for a significant increase in emissions from prescribed fire and wildland fire use, these emissions would be mitigated to provide for public health and safety.

Management Direction by Alternative

Alternative A

An average of 5,000 to 20,000 acres would be burned per year using prescribed fire.

Alternative B

Under this alternative, prescribed fire and wildland fire use for achieving resource management objectives would be limited to 64,000 acres per year.

Alternative C

Under this alternative, prescribed fire and wildland fire use to achieve resource management objectives would be limited to 640,000 acres per year. Ideally, much less would be burned, but this would enable achieving landscape-scale objectives in years when those opportunities were available.

Alternative D

Under this alternative, prescribed fire and wildland fire use to achieve resource management objectives would be limited to 480,000 acres per year. Over a 10-year period, using prescribed fire and wildland fire use would be limited to 1,120,000 acres.

Alternative E

Prescribed fire would not be used. Natural fire processes would be allowed to operate in the ecosystem.

Fire Management

Management Goal 1—*Provide an appropriate management response on all wildland fires with emphasis on firefighter and public safety. When assigning priorities, decisions would be based on relative values to be protected commensurate with fire management costs.*

Rationale

Protection of human life (firefighter and public safety) is the highest priority during a wildland fire. Once firefighters have been assigned to a fire, their safety becomes the highest value to be protected. Property and natural and cultural resources are lower priorities.

The "Review Update of the 1995 Federal Wildland Fire

Management Policy" (http:\\www.nifc.gov/fire_policy/index.htm) acknowledges that fire is a critical natural process and must be reintroduced into the ecosystem on a landscape scale. Wildland fire management decisions are based on approved fire management and activity level plans, this RMP, and the best available science. The policy further emphasizes that for natural ignitions (i.e., lightning caused), a manager must have the ability to choose from the full spectrum of fire management actions—from prompt suppression to allowing fire to function in its natural ecological role. The "Interior Columbia Basin Final Environmental Impact Statement" (USDA-FS and USDI-BLM 2000b) states that wildland fire management strategies and suppression activities should minimize damage to long-term ecosystem function, and should emphasize protection, restoration, or maintenance of key habitats.

Management Common to All Alternatives

The "Lakeview District Fire Management Plan" (USDI-BLM 1998e) would be revised soon after completing the RMP. The fire management plan would prescribe the appropriate management response, including full suppression and modified suppression, throughout the resource area. It would also identify conditions and potential locations for wildland fire use and for prescribed fires, as well as other factors pertaining to fire management in the LRA.

Management Direction by Alternative

Alternative A

Provide for an appropriate management response of initial attack and full suppression on all wildland fires occurring outside of the Fort Rock Fire Management Area (Map FM-1 of the Draft RMP/EIS). For the Fort Rock Fire Management Area, wildland fires may be managed using limited suppression activities; this includes monitoring wildland fires that occur within the wildland fire use area boundaries (USDI-BLM 1996g). Use natural and human-created barriers (i.e., roads) as available for control lines. Use of heavy equipment in ACEC's, WSA's, and RNA's would be avoided and would require line officer approval. If used, heavy equipment would be restricted to existing roads and trails. Use of retardant would be allowed within these areas for initial attack. Retardant use during extended attack would be considered as a part of the wildland fire situation analysis, considering the resource values at risk and public and firefighter safety.

Alternative B

Provide for an appropriate management response of initial attack and full suppression on all wildland fires threatening commodity areas (Map FM-3 of the Draft RMP/EIS). Use natural and human-created barriers (i.e., roads), as available, for control lines. The use of surface-disturbing equipment and fire retardant in WSA's, ACEC's, and RNA's would be avoided. Exceptions may be granted by the field manager to protect public and firefighter safety, other Federal, state and private property, and commodity areas. During times of multiple ignitions and limited suppression resources, place highest priority on suppression resources to protect commodity areas from wildland fire. Use of heavy equipment in ACEC's, WSA's, and RNA's would be avoided and would require line officer approval. If used, heavy equipment would be restricted to existing roads and trails. Use of retardant would be allowed within these areas for initial attack. Retardant use during extended attack would be considered as a part of the wildland fire situation analysis, considering the resource values at risk and public and firefighter safety.

Alternative C

Provide for an appropriate management response (Map FM-4 of the Draft RMP/EIS) utilizing the full range of suppression options from active suppression to confining wildland fire spread by employing direct and indirect actions and use of natural topographic features, human-created barriers (i.e., roads), fuel, and weather factors. If the fire is achieving resource benefits, such as fuel reduction or restoring natural process to rangelands, the fire would be managed using a confinement strategy, allowing the fire to burn up to defendable natural or human-created barriers. Use of heavy equipment in ACEC's, WSA's, and RNA's would be avoided and would require line officer approval. If used, heavy equipment would be restricted to existing roads and trails. Use of retardant would be allowed within these areas for initial attack. Retardant use during extended attack would be considered as a part of the wildland fire situation analysis, considering the resource values at risk and public and firefighter safety.

Alternative D

Provide for an appropriate management response of initial attack and full suppression on all wildland fires threatening other Federal, state, and private property, or other sensitive areas such as threatened or endangered species and habitat, and cultural sites (Map FM-5). However, where the fire can achieve resource benefits, consider confining wildland fire spread by employing

direct and indirect actions and use of natural topographic features, human-created barriers (i.e., roads), fuel, and weather factors. Use of heavy equipment in ACEC's, WSA's, and RNA's would be avoided and would require line officer approval. If used, heavy equipment would be restricted to existing roads and trails. Use of retardant would be allowed within these areas for initial attack. Retardant use during extended attack would be considered as a part of the wildland fire situation analysis, considering the resource values at risk and public and firefighter safety.

Alternative E

Provide for an appropriate management response emphasizing initial attack, full suppression in instances only to protect human life, and other Federal, state, or private property. For wildland fires not threatening human life or other Federal, state, or private property, spend a minimal amount of time and effort on fire suppression.

Management Goal 2—*Rehabilitate burned areas to mitigate the adverse effects of wildland fire on soil and vegetation in a cost-effective manner and to minimize the possibility of wildland fire recurrence or invasion of weeds.*

Rationale

The "Emergency Fire Rehabilitation Handbook" (H-1742-1) (USDI-BLM 1998k)outlines the process for implementing emergency fire rehabilitation projects following wildland fires and wildland fire use. Emergency fire rehabilitation funds may be used to:

- protect life, property, and soil, water, and vegetation resources;
- prevent unacceptable onsite or offsite damage;
- facilitate meeting land use plan objectives and other Federal laws; and
- reduce the invasion and establishment of undesirable or invasive vegetation species.

Management Common to Alternatives A–D

Areas burned by wildland fire would be rested from grazing for a minimum of two growing seasons. Rest for less than two growing seasons may be justified on a case-by-case basis. Under Alternative C only, the area would be rested for a minimum of two full years.

Other temporary use restrictions, such as no off-road travel, may be imposed where warranted.

Management Direction by Alternative

Alternative A

Currently, emergency fire rehabilitation activities are implemented on a case-by-case basis following wildland fire. A separate environmental analysis is completed for each emergency fire rehabilitation project.

Alternatives B, C, and D

Emergency fire rehabilitation activities would be implemented after wildland fire. Emergency fire rehabilitation funds may be available for rehabilitation after wildland fire use, depending on the situation. Resource area direction for implementing emergency fire rehabilitation projects is found in Appendix L. Separate environmental analysis would only be completed for emergency fire rehabilitation projects that are outside the scope of activities described in Appendix L.

Alternative E

No emergency fire rehabilitation projects would be implemented under this alternative.

Management Goal 3—*Restore and maintain ecosystems consistent with land uses and historic fire regimes through wildland fire use, prescribed fire, and other methods. Reduce areas of high fuel loading resulting from years of fire suppression that may contribute to extreme fire behavior.*

Rationale

Both the "Integrated Scientific Assessment for Ecosystem Management in the Interior Columbia Basin" (USDA-FS and USDI-BLM 1996c) and the "Review Update of the 1995 Federal Wildland Fire Management Policy and Program Review" (http:\\www.nifc.gov/fire_policy/index.htm) recognize fire's essential role as an ecological process. The LRA is charged with clearly defining fire management goals, objectives, and actions in comprehensive fire management plans, which are tiered to this RMP. Fire management plans would include identification of areas for wildland fire use and prescribed fire.

ICBEMP emphasizes that strategic watershed-scale fuel management and fire use planning, often integrat-

ing a variety of treatment methods, would cost-effectively reduce fuel hazards to acceptable levels and achieve both ecosystem health and resource benefits. Fire management programs and activities should be based upon protecting resources, minimizing costs, and achieving land management objectives. They must also be economically viable. ICBEMP also stresses the use of fire to restore and sustain ecosystem health based on sound scientific principles and information. This must also be balanced with other societal goals, including public health and safety, air quality, and other specific environmental concerns. Finally, ICBEMP states that prescribed fire should be considered in wilderness areas where it has been determined that wildland fire use for resource benefit would not achieve desired rates of ecosystem maintenance or restoration.

Sound risk management is a foundation for all fire management activities. Risks and uncertainties relating to fire management activities must be understood, analyzed, communicated, and managed as they relate to the cost or consequences of either doing or not doing an activity.

Management Common to Alternatives A–D

A fire management plan would be updated for the LRA soon after completion of the RMP. The fire management plan would identify conditions and potential locations for wildland fire use and for prescribed fires, as well as other factors pertaining to fire management in LRA.

For Alternatives A, B, C, and D, treatment acres refer to those areas analyzed in an environmental assessment; it does not assume that 100 percent of those acres are treated. The intent is to actually treat approximately 40–70 percent of the area, and keep 30–60 percent untreated. A goal of landscape-level treatment is to break up treated and untreated areas in a mosaic effect. The acres listed in the alternatives are upper limits for analytical purposes, and not targets. For Alternatives C and D, wildland fire use may cause the number of treated acres to vary widely from year to year, and in some years may accomplish a very large number of treated acres. Lightning-caused fires in excess of 100,000 acres have occurred periodically in the rangeland fuels on the LRA.

Areas burned by prescribed fire would be rested from grazing for a minimum of two growing seasons. Rest for less than two growing seasons may be justified on a case-by-case basis. Under Alternative C only, the area would be rested for a minimum of two full years. Other temporary use restrictions, such as no off-road travel, may be imposed where warranted.

Management Direction by Alternative

Alternative A

Use prescribed fire and mechanical, chemical, and biological hazardous fuels reduction treatments on a case-by-case basis to improve forage base and restore natural processes. There are no areas designated for wildland fire use. The Fort Rock Fire Management Area is managed for appropriate suppression response, rather than wildland fire use. Many fires occurring within the Fort Rock Fire Management Area boundaries are monitored and allowed to be extinguished naturally. For the past 5 years, BLM has prescribed burned approximately 5,000 to 20,000 acres per year (this is approximately 0.15 to 0.6 percent of the LRA). There have been very little mechanical hazardous fuels reduction treatments on the LRA. Appendix B of the "Lakeview Grazing Management EIS" (USDI-BLM 1982a) describes mechanical/chemical treatments to shrub/western juniper habitats, few of which have been implemented to date.

Alternative B

Under this alternative, prescribed fire and mechanical, chemical, and biological hazardous fuels reduction treatments would be used primarily to enhance commodity production and enhance the forage base for livestock. Therefore, landscape-level treatments would not occur under this alternative. There would be no areas designated for wildland fire use. No more than 2 percent of the resource area (64,000 acres) would be treated annually by prescribed fire or mechanical methods under this alternative; less than 10 percent (320,000 acres) would be burned or mechanically treated for hazardous fuels reduction in a 10-year period.

Alternative C

Under this alternative, prescribed fire, mechanical, chemical, and biological fuel treatments, and wildland fire use would be emphasized to restore natural processes, and to protect, maintain, and enhance natural resources. Emphasis would be placed on using prescribed fire for restoration of degraded rangelands. Areas for possible wildland fire use would be determined under this alternative, but would be further analyzed in the fire management plan. The Fort Rock Fire Management Area would no longer be managed for appropriate suppression response, but would be

managed for wildland fire use. No more than 20 percent of the resource area (640,000 acres) would be treated annually by prescribed fire, mechanical fuel treatments, and wildland fire use combined under this alternative. Less than 50 percent (1,600,000 acres) would be treated in a 10-year period.

Alternative D

Under this alternative, prescribed fire, mechanical, chemical, and biological fuel treatment, and wildland fire use would be used to: protect, maintain, and enhance natural resources; restore degraded habitats; and protect other adjacent Federal, state and private land. Areas for wildland fire use would be determined under this alternative, but would be further analyzed in the fire management plan. The Fort Rock Fire Management Area would no longer be managed for appropriate suppression response, but would be managed for wildland fire use. No more than 15 percent of the resource area (480,000 acres) would be treated annually by prescribed fire, mechanical fuel treatment for hazard reduction, and wildland fire use under this alternative. Less than 35 percent (1,120,000 acres) of the resource area would be treated in a 10-year period.

Alternative E

Under this alternative, there would be no prescribed fire, no mechanical, chemical, and biological fuel treatments for hazard reduction, and no wildland fire use for resource benefit.

Recreation Resources

Management Goal—*Provide and enhance developed and undeveloped recreation opportunities, while protecting resources, to manage the increasing demand for resource-dependent recreation activities.*

Rationale

The FLPMA provides for recreation use of public land as an integral part of multiple use management. Dispersed, unstructured activities typify the recreational uses occurring throughout the majority of the LRA. Policy guidelines in BLM Manual 8300 direct the BLM to designate special units known as special recreation management areas. Management within these special recreation management areas focuses on providing recreation opportunities that would not otherwise be available to the public, reducing conflicts among users, minimizing damage to resources, and reducing visitor health and safety problems. Major investments in recreation facilities and visitor assistance are appropriate in special recreation management areas when required to meet management objectives.

Public lands not designated as special recreation management areas, or other special designations, are managed as extensive recreation management areas. Management direction within extensive recreation management areas focuses on actions to facilitate recreation opportunities by providing basic information and access. Visitors in extensive recreation management areas are expected to rely heavily on their own equipment, knowledge, and skills while participating in recreation activities.

In accordance with FLPMA, the "BLM's Recreation—A Strategic Plan" (USDI-BLM 1990l) sets recreation policy on the national level. The policy emphasizes resource-dependent recreation opportunities that typify the vast western landscapes; striving to meet the social and economic needs of present and future generations, providing for the health and safety of the visitor, and accomplishing these goals within the constraints of achieving and maintaining healthy ecosystems.

Actions Common to Alternatives A–D

Under Alternatives B, C, and D, the North Lake Special Recreation Management Area (Maps R-1 and -8 of the Draft RMP/EIS and map R-9) and extensive recreation management area designations would become effective upon signature of the approved RMP and record of decision. An individual recreation area management plan outlining specific management for the North Lake Special Recreation Management Area would be prepared following publication of the approved RMP.

All areas within the LRA not covered under a special designation, such as WSA's, special recreation management areas, ACEC's, etc., would be managed as an extensive recreation management area.

Recreation area management plans would not be prepared for the extensive recreation management areas. Specific management actions or projects in the extensive recreation management areas would be included in individual project plans or in plans written for SMA's following publication of the approved RMP.

Any recreational use within ACEC's, including commercial and noncommercial uses authorized under special recreation permits, would be evaluated and permitted, modified, or prohibited as needed to protect ACEC values. However, camping would be prohibited

in a few of the ACEC's under Alternatives C and D.

Throughout the LRA, occupancy and use for recreational camping is limited to 14 consecutive days. Camping within 300 feet of any water source is prohibited. A water source is defined as any fenced spring enclosure, flowing spring, man-made metal or concrete water tank or trough, or dirt pond.

Designation of additional scenic byways or vehicle routes would be considered, provided they are consistent with OHV designations and resource concerns are addressed. Existing scenic byway designations would remain.

Under Alternatives B, C, and D, designation of the North Lake Special Recreation Management Area is proposed.

Operations for all wilderness therapy groups authorized within the proposed North Lake Special Recreation Management Area would be limited to the following area: east of County Road 5-12 B and BLM Road 6121, and north of Lake County Road 5-14. Adjacent to the proposed North Lake Special Recreation Management Area there are a number of campsites associated with wilderness therapy operations located within the Prineville and Burns Districts that are addressed under this RMP process. Within the Prineville District campsites are located in Sections 4, 14, and 34, T.22S., R.19E.; Sections 1 and 3, T.23S., R.19E.; Sections 15 and 36, T.23S., R.20E.; Sections 19, 29, and 33, T.23S., R.12E.; and Sections 5, 8, and 23, T.24S., R.21E. Campsites within the Burns District are located in Sections 4, 13, 22, and 26, T.25S., R.22E., and Section 2, T.26S., R.22E.

Management Direction by Alternative

Alternative A

Under this alternative, management of the existing Warner Wetlands Special Recreation Management Area would continue and the remaining public land throughout the LRA would be managed as an extensive recreation management area. Possible future designation of special recreation management areas to enhance tourism and recreation opportunities would be considered. Existing developed and undeveloped recreation sites (including trails, wildlife viewing areas, back country byways, interpretive areas, and campgrounds) would be expanded to accommodate increased visitation. Opportunities for partnerships to expand tourism and recreation would be optimized. Recreation experiences would be provided through increased information and education opportunities.

Commercial recreation opportunities would be continued through the authorization of special recreation permits consistent with present management direction while providing for resource protection. Special recreation permits, for both commercial and noncommercial activities, would be authorized throughout the LRA.

The Sunstone Collection Area would be managed under existing guidelines, where there would be no commercial collection of stones, and only hand tools may be used.

Development of a watchable wildlife site on the north end of Abert Lake would be considered.

Wilderness therapy schools would be authorized, through the issuance of special recreation permits, to operate on BLM-administered lands within the LRA and portions of the Prineville and Burns Districts. Total user days (defined as any calendar day, or portion thereof, that a participant/client/student is accompanied or serviced by an operator or permittee) associated with wilderness therapy school operations may not exceed 16,600 for combined use in Lakeview, Prineville, and Burns Districts. Group size would be limited to nine students, plus staff. In the vicinity of Fredericks Butte in north Lake County, no wilderness therapy schools would be authorized to operate with more than two groups at any one time within Lakeview, Burns, and Prineville Districts. No more than five groups would be authorized to operate concurrently within this area. When possible, no campsites would be authorized within 5 miles of any year-round residence.

Special Recreation Management Areas

Warner Wetlands Special Recreation Management Area: Management of the Warner Wetlands Special Recreation Management Area would be as outlined in the "Warner Wetlands Recreation Area Management Plan" (USDI-BLM 1990). Existing management direction allows hunting, motorized boating, and personal motorized watercraft (jetskis and waverunners) use. Vehicles would be required to stay on designated roads and trails. The following projects, previously approved to enhance and provide new recreation opportunities, would be considered:

- Upgrade approximately 12–13 miles of existing roads to provide all-weather public access to Turpin, Campbell, and Stone Corral Lakes.

- Construct small campgrounds at Turpin and Campbell Lakes with associated boat ramps, parking areas, and vault toilets.

- Continue to develop handicap accessible nature trails, view points, and interpretive sites within the special recreation management area.

- Develop and maintain foot and canoe trails and develop self-guiding interpretive literature.

- Pursue development of a joint USFWS and BLM campground along County Road 3-12.

Alternative B

The designation of special recreation management areas to enhance tourism and recreation opportunities would be optimized. All remaining public land not under special designation status would be managed as an extensive recreation management area. Existing developed and undeveloped recreation sites (including trails, wildlife viewing areas, backcountry byways, interpretive areas, and campgrounds) would be expanded to accommodate increased visitation. Opportunities for partnerships to expand tourism and recreation would be optimized. Visitors' recreation experiences would be enhanced through increased information and education opportunities.

Commercial and competitive use opportunities would be emphasized through the issuance of special recreation permits.

Wilderness therapy schools would be authorized up to 16,400 user days, through the issuance of special recreation permits, to operate on BLM-administered lands within the LRA. The 16,400 users days would be split between the North Lake Special Recreation Management Area (8,300) and the remainder of the LRA (8,100). The North Lake Special Recreation Management Area would include use within the general areas of Prineville and Burns Districts as described under management common to all alternatives section. Group size would be limited to 12 students/group, plus staff. No company would be authorized to operate with more than two groups at ay one time in the North Lake Special Recreation Management Area and no more than five groups could operate concurrently. No more than three groups per company would be authorized to operate within the remainder of the LRA at any one time. When possible, no campsites would be authorized within 5 miles of any year-round residence.

Special Recreation Management Areas

Warner Wetlands Special Recreation Management Area: Management of the Warner Wetlands Special Recreation Management Area would be the same as listed under Alternative A.

Proposed North Lake Special Recreation Management Area: The North Lake Special Recreation Management Area would be established. Primary values include, but are not limited to, unique geologic features, cultural resources, wildlife resources, botanical resources, scenery, and a variety of recreational opportunities such as hunting, fishing, hiking, sightseeing, motorized and non-motorized OHV activities, environmental education, and scientific studies. The special recreation management area would include four WSA's (Devils Garden, Squaw Ridge, Four Craters, and Sand Dunes), the Lost Forest/ Sand Dunes/Fossil Lake ACEC, Duncan Reservoir Campground, West Fork Silver Creek, Buck Creek, and the associated geologic and natural features in the area (such as Black Hills, Crack-in-the-Ground, Derrick Cave, Sand Dunes, Lost Forest, Fossil Lake, and Table Rock) (Map R-8 of the Draft RMP/EIS). The management emphasis for this special recreation management area would include, but not be limited to, OHV use, increased monitoring and patrols to curb vandalism, and encourage commercial uses (such as wilderness therapy schools, guided hunting, and nature tours, etc.).

Management of the Lost Forest/Sand Dunes/Fossil Lake ACEC would be consistent to that under Alternative A. Collection of down and dead wood and cutting trees in the ACEC would be prohibited. Means to provide firewood for campers on high-use weekends would be investigated including permitting a concessionaire to sell firewood. The main road through the Lost Forest RNA/ISA (BLM Roads 6151 and 6141A) would be upgraded to a single lane road with turnouts and parking pulloff. If the Sand Dunes WSA is not designated wilderness, the BLM would consider developing a campground on adjacent public land and charge use fees if no private campground is developed on nonpublic land.

The Green Mountain primitive campground would be upgraded to a developed campground. Facilities could include developed campsites, toilet facilities, and a potable water system. The Duncan Reservoir Campground would be upgraded with the development of a potable water system. Fees would be charged for the use of these campgrounds, if the proposed upgrades are implemented.

Development of picnic area along Highway 31 (at milepost 34.5) would be considered. Facilities could include picnic sites with tables, vault toilets, potable water system, and kiosks for interpretation of resources and history within the North Lake Special Recreation Management Area.

Alternative C

Recreation would be focused towards undeveloped types of activities while assuring a high level of protection of natural and cultural values. Developed recreation would be focused on the protection and interpretation of cultural and natural values and for public health and safety. If resource values are being degraded beyond acceptable levels, site rehabilitation or closure would be favored. Tourism opportunities would be deemphasized. Visitors' recreation experiences would be enhanced through increased information and education opportunities.

Special recreation management areas would be designated with an emphasis on undeveloped, dispersed recreation opportunities and protection of natural values. Minimal facilities would be constructed and maintained. All lands not designated as a special recreation management area would be managed as an extensive recreation management area.

The issuance of special recreation permits would be limited and the protection of cultural and natural values would be emphasized.

The Sunstone Collection Area would be managed under existing guidelines as listed in Alternative A.

Overnight camping would be prohibited within the Juniper Mountain ACEC.

Commercial and noncommercial special recreation permits would not be authorized within the Rahilly-Gravelly ACEC/RNA.

Wilderness therapy schools would be authorized a maximum of 10,200 user days to operate on BLM-administered lands within the Lakeview District and portions of Prineville and Burns Districts. The 10,200 users days would be split between the proposed North Lake Special Recreation Management Area (4,800) and the remainder of the LRA (5,400). Group size would be limited to nine students/group, plus staff. No school would be authorized to conduct operations with more than one group at any one time, and no more than four groups would be authorized to operate concurrently in the proposed North Lake Special Recreation Management Area. Throughout the remainder of the LRA, no school would be authorized to conduct operations with more than two groups at any one time. When possible, no permanent campsites would be authorized within 5 miles of any year-round residence. No wilderness therapy school would be allowed to operate within the North Lake Special Recreation Management Area in the winter between December 1 and March 31, annually.

Special Recreation Management Areas

Warner Wetlands Special Recreation Management Area: The Warner Wetlands Special Recreation Management Area would be managed to protect natural and cultural values. Management could be modified through a site-specific NEPA analysis. Motorized boating and personal motorized watercraft (jetskis and waverunners) within the special recreation management area would be allowed. Vehicles would be restricted to a few designated roads and trails. The following projects would be considered:

- Upgrade roads, as necessary, for resource protection.
- Close and rehabilitate roads, as necessary.
- Maintain present facilities, such as handicap accessible nature trails, view points, and interpretive sites within the special recreation management area.
- Develop and maintain foot and canoe trails and develop self-guiding interpretive literature in response to increased use.
- Pursue development of a joint USFWS and BLM campground along County Road 3-12.

Proposed North Lake Special Recreation Management Area: The proposed North Lake Special Recreation Management Area would be established to include the areas as described under Alternative B (Map R-8 of the Draft RMP/EIS). Management emphasis would be on protection of natural and cultural resource values.

The proposed Black Hills and Connley Hills ACECs would be a day-use area only with no overnight camping. Collection of dead and down wood and cutting of trees would be prohibited.

The Lost Forest/Sand Dunes/Fossil Lake ACEC would be closed to overnight camping. The entire ACEC

would be day-use only. The entire ACEC would be closed to OHV's. The collection of dead and down wood and cutting of trees within the ACEC would be prohibited. Open fires would be prohibited throughout the ACEC.

Recreation use within the proposed Table Rock ACEC would be limited to day-use only—no overnight camping would be allowed.

Climbing and rappelling activities would be prohibited in the Crack-in-the-Ground.

Alternative D

Management of two special recreation management areas (Warner Wetlands and the proposed North Lake Special Recreation Management Areas) would focus on providing quality recreation opportunities while protecting resource values. Remaining public lands throughout the resource area would be managed as an extensive recreation management area. Management of existing developed recreation use areas and their associated maintenance would be continued and improvements and expansion would be allowed if needed for protection of natural values, for public health and safety, and to address increases in demand. This would include such actions as replacing old toilets or picnic tables, installing barriers to contain vehicles, or adding a toilet, firerings, or interpretive information to an existing site that is receiving heavier use. New recreation sites and areas would be established, if needed, to meet increased recreation demand, but only if other resource values can be protected. Examples of this may include providing toilets, parking areas, or interpretive displays. Tourism opportunities and development would be pursued only if they are consistent with meeting other resource objectives.

Special recreation permits would be issued on an as-needed basis to meet demand while protecting cultural and natural resource values and to maintain public health and safety.

No commercial collection of stones and only hand tools would be allowed in the Sunstone Collection Area. Development of a designated, primitive campground in the vicinity of the Sunstone Collection Area would be considered within the next 10 to 15 years. Facilities could include firerings, campsite pads, and a potable water source. There is currently a vault toilet on site. The area would be proposed as a fee site, if facilities were constructed.

Wilderness therapy schools would be authorized a maximum of 12,800 user days to operate on BLM-administered lands within the LRA. The 12,800 users days would be split between the North Lake Special Recreation Management Area (7,400) and the remainder of the LRA (5,400). Group size would be limited to nine students/group, plus staff. No school would be authorized to operate with more than two groups at any one time within the North Lake Special Recreation Management Area and no more than four groups would be authorized to operate concurrently. No more than two groups would be authorized to operate at any one time in the Burns and Prineville Districts (this applies only to those areas in the Burns and Prineville Districts listed under the Actions Common to All Alternatives section). Throughout the remainder of the LRA, each school would be authorized to operate with no more than three groups at any one time. When possible, no permanent campsites would be authorized within 5 miles of any year-round residence.

Special Recreation Management Areas

Warner Wetlands Special Recreation Management Area: Management of the Warner Wetlands Special Recreation Management Area would be as outlined below, unless modified through a site-specific NEPA analysis. Hunting and motorized boating would be allowed within the Warner Wetlands Special Recreation Management Area. Personal motorized watercraft (jetskis and waverunners) would not be allowed. Vehicles are required to stay on designated roads and trails. The following projects, previously approved to enhance and provide new recreation opportunities, would be considered:

- Upgrade roads and construct facilities such as trailheads and boat ramps as necessary for resource protection.
- Close and rehabilitate roads as necessary.
- Maintain present facilities, e.g., handicap accessible nature trails, view points, and interpretive sites within the special recreation management area.
- Develop and maintain foot and canoe trails and develop self-guiding interpretive literature in response to increased use.
- Pursue development of a joint USFWS and BLM campground along County Road 3-12.

Proposed North Lake Special Recreation Management Area: The North Lake Special Recreation

Management Area would be established and would include four WSA's (Devils Garden, Squaw Ridge, Four Craters, and Sand Dunes), the Lost Forest/Sand Dunes/Fossil Lake ACEC, the proposed Devils Garden ACEC, the proposed Connley Hills ACEC/RNA, the proposed Black Hills ACEC/RNA, the proposed Table Rock ACEC, Duncan Reservoir Campground, West Fork Silver Creek, Buck Creek, and the Green Mountain primitive camping area (Map R-9). The management emphasis for this special recreation management area would include, but not be limited to, OHV use, increased monitoring and patrols to curb vandalism, commercial uses (such as wilderness therapy schools, guided hunting, and nature tours, etc.), the protection of natural and cultural resource values, maintaining public health and safety, and meeting increased recreation demand.

No overnight camping would be allowed in the Black Hills ACEC or the Connley Hills ACEC. Collection of dead and down wood and the cutting of trees (firewood cutting) would be prohibited.

The main road through the Lost Forest/Sand Dunes/Fossil Lake ACEC would be minimally upgraded to prevent continued resource damage. Camping would only be allowed in four designated primitive campsites located along the outer boundary of the Lost Forest RNA/ISA. The campsites would be small, with parking for one or two vehicles. No new campsites or other facilities would be developed within the Lost Forest RNA/ISA (see Map SMA-9 for campsite locations). Camping at the base of Sand Rock would be prohibited and the sites rehabilitated. A small pulloff along the road for parking would be delineated for day-use access to the Sand Rock area.

There would be three camping/staging areas allowed in the Sand Dunes WSA. Use of these three camping/staging areas would be managed on a rotational basis, i.e., two of the camping/staging areas would be open and available to use and the other area would be closed for an indeterminate amount of time (2–6 years) to allow natural rehabilitation to occur. The length of the closure would be based on the following criteria: (1) success of natural revegetation, (2) obliteration of human activities from the natural movement of sand, and (3) the public's adherence to the closure. Designation of specific travel routes from the camping/staging areas to the barren dunes which are open to OHV use would be established. Adaptive management activities which would allow the continued use of each of these camping/staging areas would be adopted as necessary to ensure the long-term use and protection of these areas. Collection of dead and down wood and the cutting of trees would be prohibited throughout the ACEC. However, opportunities such as a concessionaire to provide firewood for high-use weekends would be explored. The BLM would also consider developing a campground on adjacent Federal or acquired land and charge use fees if no private campground is developed in the adjacent area.

Camping would be allowed in designated camping areas within the proposed Table Rock ACEC. Specific sites would be designated in the future North Lake Special Recreation Management Area plan.

Climbing and/or rappelling activities would be prohibited in the Crack-in-the-Ground.

Development of a picnic area along Highway 31 (at milepost 34.5 south) would be considered. Facilities would include picnic sites with tables, vault toilets, and kiosks for interpretation of resources and history within the North Lake Special Recreation Management Area.

Alternative E

Recreation management would be kept to a minimal level. Recreation would be focused towards undeveloped types of activities while assuring a high level of protection of natural and cultural values. Developed recreation would be focused on the protection and interpretation of cultural and natural values and for public health and safety. If resource values are being degraded beyond acceptable levels, site rehabilitation or closure would be favored.

Tourism opportunities would be deemphasized. Information and interpretive education would not be provided to the visiting public. No commercial special recreation permits would be issued and existing permits would be terminated. Only surface collection would be allowed in the Sunstone Collection Area.

The Lost Forest/Sand Dunes/Fossil Lake ACEC designation would be revoked. The former ACEC would be managed in the same manner as the surrounding land. OHV's would be limited to existing roads and trails. The Lost Forest ISA and Sand Dunes WSA designations would continue. These areas would continue to be managed according to the wilderness IMP until such time as Congress makes a decision regarding their designation as wilderness.

Special Recreation Management Areas

No special recreation management areas would exist; all public land would be managed as an extensive

recreation management area.

Off-Highway Vehicles

Management Goal—*Manage off-highway vehicle (OHV) use to protect resource values, promote public safety, provide OHV use opportunities where appropriate, and minimize conflicts among various users.*

Rationale

Federal regulations (43 CFR Part 8340) and BLM planning guidance require the BLM to designate all BLM-administered land as either open, limited, or closed in regard to off-road vehicle (now termed off-highway vehicle or OHV) use. These designations are designed to help meet public demand for OHV activities, protect natural resources, ensure public safety, and minimize conflicts among users.

Management Common to Alternatives A–D

All management actions for those portions of ACEC's within ISA's or WSA's would be governed by "Interim Management Policy for Lands Under Wilderness Review" (USDI-BLM 1995b) until such time as Congress makes a determination regarding wilderness designation. The OHV designations in WSA's would remain in effect until congressional release of the WSA's, or until such time that actual or unforeseeable use levels cause the nonimpairment criteria to be violated, in which case more restrictive designations may be made. Areas released from WSA status would be managed according to the designations of the surrounding area.

Map R-1 of the Draft RMP/EIS shows the location of each WSA and Appendix J1 of the Draft RMP/EIS contains a description of each area.

According to the wilderness IMP, the use in WSA's of ". . . mechanical transport, including all motorized devices as well as trail and mountain bikes, may only be allowed on existing ways and within open areas that were designated prior to the passage of FLPMA (October 1976)." For the purposes of analysis, existing roads and ways within WSA's are those that existed on the ground at the time the FLPMA was passed (1976) and were subsequently shown or described in the "Oregon Wilderness Final EIS" (USDI-BLM 1989a). Any new roads or ways that have been created or discovered since either have already been closed to vehicle use or should be closed under all alternatives in order to comply with the wilderness IMP. Existing roads and trails within the remainder of the planning area are defined as those roads or trails that exist on the ground at the time the RMP is approved and the record of decision is signed. These will be verified by comparison with 2000–2001 USGS National High Altitude Photography program aerial photography which represents the best available source data on this topic.

Off-road vehicle is defined as any motorized vehicle designed for, or capable of, travel on or immediately over land, water, or other natural terrain, *excluding*: (1) any nonamphibious registered motorboat; (2) any military, fire, emergency, or law enforcement vehicle while being used for emergency purposes; (3) vehicles in official use; (4) any combat or combat support vehicle when used in times of national defense emergencies; and (5) any vehicle whose use is expressly authorized by the authorized officer, or is otherwise officially approved. The exceptions to OHV use proposed under all alternatives would automatically apply in cases 1 through 4 above without further authorization required.

Under case 5, individuals authorized to use public lands under a license, lease, permit, contract, or other authorization may be allowed to use an OHV in a closed area or off-road in a limited use area on a case-by-case basis. This would have to be approved by the authorized officer as part of the appropriate authorization process. Approval would take into consideration the type of vehicle, frequency of trips, season of use, purpose, and existing resource values requiring protection (soils, vegetation, wildlife, cultural, paleontological, WSA, etc.). The requester would have to demonstrate that the use was necessary to carry out the primary purpose(s) of the license, lease, permit, contract, or other authorization and no other practicable alternatives were available. The vehicle would have to be the least impacting type capable of performing the required task. Travel would be limited to frozen or dry soil conditions to minimize potential impacts to soil and avoid other protected resource values. The frequency of trips would be limited to the minimum necessary to complete the required task and would be controlled to prevent the development of new trails on the landscape.

Existing scenic byways or vehicle routes would be retained.

Designation of new scenic byways or vehicle routes would be considered, provided they are consistent with OHV designations and resource concerns are addressed. Additional environmental analysis and

documentation would be required.

Emergency vehicle closures previously implemented would become permanent. Future emergency vehicle closures may be implemented if it is determined that OHV's are causing or would cause considerable adverse effects upon resources. Such emergency closures would be announced via a notice published in the *Federal Register* and in local newspapers.

Any roads designated for closure may be signed, physically barricaded, and/or restored. Priority areas for restoration would be riparian conservation areas, damaged watersheds, and wildlife or plant habitat.

Table 3-5, Maps R-2, R-5, and R-6 of the Draft RMP/EIS, and Map R-7 show OHV designations by alternative. Refer to Table 4-5 in Chapter 4 for total acres designated for OHV use. Refer to Table 4-4 for miles of roads proposed for closure by alternative.

Management Direction by Alternative

Alternative A

Motorized vehicle use would be managed according to current designations. Table 3-5 and Map R-2 of the Draft RMP/EIS display the existing OHV designations in the LRA. Organized off-highway vehicle use would be allowed if it is consistent with protection of resource values. Within WSA's, all mechanical and motorized vehicle use would be limited to existing roads and ways, except for the Sand Dunes WSA which would remain in the open designation.

Alternative B

Off-highway vehicle use would be similar to Alternative A and shown on Map R-5 of the Draft RMP/EIS and Table 3-5 and SMA-5, except for additional limited acres in the proposed Connley Hills ACEC. There would be an emphasis on the open designation. Opportunities for organized OHV events would be greater under this alternative.

Alternative C

Off-highway vehicle use would be managed to emphasize the protection of natural values. Organized OHV events would only be allowed on existing and/or designated roads and trails.

The Sand Dunes WSA would be closed to OHV's.

The existing deer winter range area closure in north Lake County would be expanded by 34,374 acres. During the period December 1 through March 31, annually, motorized travel would be limited to designated roads and trails. The remainder of the year, motorized travel would be limited to existing roads and trails.

The remainder of the LRA, including a northern wildlife area in north Lake County, would be limited to existing roads and trails year-round.

These restrictions are shown on Maps R-6 and SMA-23 of the Draft RMP/EIS and Tables 3-5 and 4-4.

Alternative D

Off-highway vehicle use would be managed with the focus on protection of natural values. Organized OHV events would only be allowed on existing and/or designated roads and trails, and in the Sand Dunes WSA (subject to wilderness IMP guidelines).

Off-highway vehicle designations in the following WSA's would be limited to designated roads and ways: Abert Rim WSA; Fish Creek Rim WSA; Guano Creek WSA; Hawk Mountain WSA; Devils Garden WSA; and Sage Hen Hills WSA. Off-highway vehicle designations in the following WSA's would be limited to existing roads and ways: Basque Hills WSA; Diablo Mountain WSA; Four Craters Lava Bed WSA; Orejana Canyon WSA; Rincon WSA; Spaulding WSA; and Squaw Ridge Lava Bed WSA (Table 3-5). Map R-7 depicts the OHV designations for the above listed WSA's.

Proposed OHV designations for the Lost Forest/Sand Dunes/Fossil Lake ACEC vary from open to limited to closed (Table 3-5 and Map SMA-9A). The existing Fossil Lake Vehicle Closure Area encompasses approximately 6,660 acres and an additional 2,328 acres are proposed for closure to OHV's (totalling approximately 8,989 acres).

The OHV designation for the portion of the existing Lake Abert ACEC which lies on the east side of Highway 395 would be limited to designated roads and trails (ways); the remainder of the existing ACEC located on the west side of Highway 395 would be limited to existing roads and trails. The proposed Lake Abert ACEC addition lies entirely within the boundaries of the Abert Rim WSA, and the OHV designation for the proposed ACEC would be the same as the WSA—limited to designated roads and ways (trails) (Map R-7).

The proposed OHV designation for the existing Devils Garden ACEC and WSA (the ACEC and WSA boundaries are the same) would be a seasonal limitation. It is within the proposed addition to the deer winter range closure area (Map SMA-24). Throughout most of the year, the Devils Garden WSA and ACEC would be limited to designated roads and trails. However, during the period December 1 through March 31, annually, all of the roads and ways within the WSA and ACEC would be closed. Cougar Mountain, adjacent to the Devils Garden WSA and ACEC, would be limited to designated roads and trails (Maps SMA-5 and 24).

Off-highway designations for the following proposed ACEC's would be limited to designated roads and trails (or ways if they overlap existing WSA's): Black Hills ACEC; Connley Hills ACEC; Fish Creek Rim ACEC (which overlaps with the Fish Creek Rim WSA); Foley Lake ACEC (2,230 acres); Guano Creek/Sink Lakes ACEC (11,239 acres which overlap with the Guano Creek WSA); Hawksie-Walksie ACEC (which overlaps with the Sage Hen Hills WSA and the Hawk Mountain WSA); High Lakes ACEC; Juniper Mountain ACEC; Rahilly Gravelly ACEC; Red Knoll ACEC; Spanish Lake ACEC; and Table Rock ACEC (Table 3-3).

The existing Cabin Lake/Silver Lake Deer Winter Range Cooperative Road Closure area in north Lake County would be expanded by an additional 34,374 acres. During the period December 1 through March 31, annually, OHV uses within the expanded deer winter range area (totaling 100,834 acres) would be limited to designated roads and trails (Table 3-5). During the remainder of the year, the OHV designation for the expanded deer winter range area would be limited to existing roads and trails, with the exception of the Devils Garden WSA and ACEC which would be under the designated roads and ways (trails) designation (Map SMA-5). Refer to Map SMA-24 which depicts the expanded Cabin Lake/Silver Lake Deer Winter Range Cooperative Road Closure area. Under the Draft RMP/EIS, OHV uses were limited to existing roads and trails in an area of north Lake County referred to as the *northern wildlife area*. The northern wildlife area is located entirely within the North Lake Special Recreation Management Area and the proposed OHV designations are the same so any reference to the proposed northern wildlife area will be dropped. The proposed OHV designation for most of the North Lake Special Recreation Management Area (encompassing approximately 552,558 acres) would be limited to existing roads and trails, unless an area within the special recreation management area is associated with another special management area and subsequently other OHV designations. Special management areas located within the North Lake Special Recreation Management Area include WSA's, ACEC's, deer winter range, etc., and other OHV designations would apply as addressed elsewhere under this alternative. Refer to Maps R-7 and R-8 which depict the OHV designations and boundary for the proposed North Lake Special Recreation Management Area.

Off-highway vehicle designations for the Alkali Lake Sand Dunes (6,813 acres) and an area near Beaty Butte (59,206 acres) would be limited to existing roads and trails. Refer to Map R-7 which shows these areas.

The following areas are presently closed to OHV uses and the closures would be carried forward under this alternative: Buck Creek (590 acres); Crane Mountain (1,057 acres); South Green Mountain (14 acres); and, the West Side Gravel Pit Area (80 acres). Refer to Maps R-7, SMA-24, -25, and -27.

Alternative E

Designations for existing ACEC's (and associated OHV designations) would be revoked and no new ones would be designated. Vehicle management in WSA's and several small areas would be the same as in Alternative A, except for the Sand Dunes which would be closed. The rest of the LRA would be limited to existing roads and trails.

Visual Resources

Management Goal—*Manage public land actions and activities consistent with visual resource management (VRM) class objectives.*

Rationale

Section 102(8) of FLPMA declares that public land would be managed to protect the quality of scenic values and, where appropriate, to preserve and protect certain public land in its natural condition. NEPA, section 101(b), requires Federal agencies to ". . . assure for all Americans . . . esthetically pleasing surroundings." Section 102 of NEPA requires agencies to ". . . utilize a systematic, interdisciplinary approach which would ensure the integrated use of . . . Environmental Design Acts in the planning and decision making . . ." process. Guidelines for the identification of VRM classes on public land are contained in BLM Manual Handbook 8410-1, Visual Resource Inventory (USDI-BLM1986c). See Draft RMP/EIS Appendix M-3 for a detailed description of VRM classifications. The establishment of VRM classes on public land is based

Table 3-7.—*Summary of mineral restrictions by alternative* [1]

	Alternatives				
	A	B	C	D	E
Locatable minerals					
Open	971,377	975,464	0	917,447	0
Closed	17,231	14,225	55,415	21,050	3,043,900
Closed NMM [2]	1,900	0	1,900	1,900	0
NSO [3]	0	0	2,340,360	0	0
NREC [4]	466,864	466,864	440,916	457,332	0
Other [5]	1,586,528	1,587,347	214,547	1,646,171	0
Leasable minerals					
Open	963,213	966,686	0	944,621	0
Closed	493,697	492,812	579,187	496,983	3,043,900
NSO [6]	612,776	620,006	2,369,434	810,490	0
Special stipulations [5]	974,214	964,396	290,189	791,806	0
Salable minerals					
Open	981,664	985,438	0	947,232	0
Closed	975,044 [7]	969,224 [7]	2,870,643 [8]	1,193,945 [8]	3,043,900
Other	1,087,192	1,089,238	312,623	902,724	0

[1] Numbers shown are in acres.
[2] Closed to nonmetaliferous mining.
[3] Includes areas where no surface occupancy restrictions from greater sage-grouse interim guidelines would apply, but would require a formal withdrawal to implement.
[4] Activities requiring future reclamation are not currently allowed under the wilderness IMP (USDI-BLM 1995b).
[5] Other restrictions or special stipulations may include: plan of operations, seasonal access limitations, and special design.
[6] No surface occupancy.
[7] Includes areas identified in existing land use plans under Alternatives A and B where no ground disturbance is allowed to protect greater sage-grouse.
[8] Includes areas where no surface occupancy restrictions from greater sage-grouse interim guidelines would effectively result in closure to salable minerals under Alternatives C and D.

on an evaluation of the landscape's scenic qualities, public sensitivity toward certain areas (such as certain special recreation designations and WSA's), and the location of affected land from major travel corridors (distance zoning).

Actions Common to Alternatives A–D

WSA's would be managed under VRM Class I. Should a WSA not be designated by Congress, the area would return to the original inventoried VRM class unless it has been reclassified due to overlap with a SMA (such as an ACEC, RNA, or WSR, etc.).

Management Direction by Alternative

Alternative A

Management would continue as described under the existing management framework plan and plan amendments. Emphasis would be given to protecting and/or mitigating intrusions in medium and high scenic quality areas. All developments, land alterations, and vegetative manipulations within 5 miles of all major travel routes and recreation sites would be designed to minimize visual impacts (unseen areas within these 5-mile zones would not be held to this standard). Pipelines, powerlines, season-long grazing, vegetation spraying, western juniper chaining, or other major vegetative alteration projects would not be allowed in high scenic quality areas. Grass seedings, shrub plantings, tree plantings, fires, insect infestations, and other vegetation alterations would be allowed along major travel routes within low-quality scenic areas. Vegetation manipulation projects would be designed to maximize scenic quality, but minimize scenic intrusions. Visual resources in existing ACEC's would be managed as displayed in Table 3-3. Public lands would

be managed under VRM classifications shown on Map VRM-1 of the Draft RMP/EIS.

Alternative B

Visual resources in the LRA within the planning area would be managed the same as under Alternative A, as shown in Map VRM-1 of the Draft RMP/EIS.

Alternative C

Emphasis would be given to protecting and/or mitigating intrusions in all areas. All developments, land alterations, and vegetative manipulations within 5 miles of all major travel routes and recreation sites would be designed to minimize visual impacts (unseen areas within these 5-mile zones would not be held to this standard). Pipelines, powerlines, season-long grazing, vegetation spraying, western juniper chaining, or other major vegetative alteration projects would not be allowed in high scenic quality areas. Grass seedings, shrub plantings, tree planting, fires, insect infestations, and other vegetation alterations would be allowed along major travel routes within low-quality scenic areas. Vegetation manipulation projects would be designed to maximize scenic quality, but minimize scenic intrusions.

Visual resources within ACEC's would be managed as displayed in Table 3-3. Management of eligible or suitable WSR's would be managed under Class II, unless managed as Class I under other resource prescriptions (e.g., WSA's, ACEC's/RNA's). Public land would be managed under VRM classifications as indicated on Map VRM-2 of the Draft RMP/EIS.

Alternative D

Emphasis would be given to protecting and/or mitigating intrusions in all areas. All developments, land alterations, and vegetative manipulations within 3 miles of all major travel routes and recreation use areas would be designed to minimize visual impacts (unseen areas within these 3-mile zones would not be held to this standard). All projects would be designed to maximize scenic quality, but minimize scenic intrusions.

Visual resources in ACEC's would be managed as displayed in Table 3-3. Management of eligible or suitable WSR's with a potential classification of wild or scenic would be under Class II, unless managed as Class I under other resource prescriptions (e.g., WSA's, ACEC/RNA's). Public land would be managed under VRM classifications shown in Map VRM-3 of the Draft RMP/EIS.

Alternative E

Natural processes would occur with minimal human intervention. Existing VRM classes would be removed except for WSA's, which would be managed under VRM Class I. Should a WSA not be congressionally designated as wilderness, the area would not be assigned any VRM management class.

Energy and Mineral Resources

Within legal constraints, all Federal mineral estate locatable, leasable, and salable minerals would be available for exploration, development, and production subject to existing regulations and standard requirements and stipulations. Locatable minerals would not be available in areas withdrawn from the operation of the mining laws. Where necessary to protect important lands and resources, mineral exploration and development would be subject to additional restrictions which could include no leasing, no disposal of mineral materials, no surface occupancy, no ground disturbance, wilderness IMP nonimpairment standard, special design requirements, requiring preparation of a plan of operations, and seasonal or other timing restrictions. Appendix N3 describes the types of standard mineral development stipulations and guidelines that apply to the planning area. Table 3-7 summarizes acres of mineral restrictions which would apply to the various alternatives.

Energy derived from the burning of biomass generated by juniper treatment is covered in the Forest and Woodlands section.

Management Goal 1—*Provide opportunity for the exploration, location, development, and production of locatable minerals in an environmentally-sound manner. Eliminate and rehabilitate abandoned mine hazards.*

Rationale

The general mining laws give the public the right to locate and develop mining claims on public land. The "Mining and Minerals Policy Act" of 1970 declares that it is the continuing policy of the Federal government to foster and encourage private enterprise in the development of domestic mineral resources. Section 102 of FLPMA directs that the public land would be

managed in a manner which recognizes the Nation's need for domestic sources of minerals and other commodities from the public lands, while managing these lands in a manner that would protect scientific, scenic, historic, archeological, ecological, environmental, air and atmospheric, and hydrologic values. The Bureau's mineral and national energy policy policies state that public lands shall remain open and available for mineral exploration and development unless withdrawal or other administrative action is justified in the national interest.

Management Common to Alternatives A–D

Locatable mineral exploration and development is regulated under 43 CFR 3802 for WSA's, and 3809 (as amended) for other public lands. The wilderness IMP (USDI-BLM 1995b) states that locatable mineral development and exploration activities within WSA's can occur in accordance with the mining laws, but are currently limited to only those actions that do not require reclamation, unless the operation had established grandfathered uses or valid existing rights on October 21, 1976. This policy restriction effectively closes WSA's to mining that requires reclamation or degrades wilderness values. However, should the wilderness IMP be revised or Congress takes action to remove some areas from WSA status, some of these areas could eventually be made more available for mineral development during the life of the plan.

For WSA's studied under section 202 of FLPMA, existing and new mining operations under the 1872 mining law would be regulated under 43 CFR 3802 only to prevent unnecessary or undue degradation of the lands, not to prevent impairment of wilderness suitability.

Locatable mineral exploration and development within ACEC's typically requires the preparation and approval of a plan of operations prior to development. In addition, many areas within the planning area are subject to numerous overlapping types of mineral location restrictions or special stipulations (refer to Appendix N3). This makes determining the amount of area open, closed, or restricted to mineral development difficult. For instance, an ACEC (which requires a plan of operations) may partially overlap a WSA (which is subject to the no reclamation stipulation). For simplicity, such an area of overlap has been reclassified as no reclamation allowed to reflect the most restrictive management measure in place, regardless of how many other types of restrictions may also apply. Any WSA's which overlap with areas where other mineral restrictions apply, which are later removed from WSA status, would be managed in accordance with the remaining restrictions. In the example above, an area where a WSA overlaps an ACEC could change from no reclamation to mineral development after approval of a plan of operations if Congress removed WSA status during the life of the plan.

The amended 3809 regulations became effective on January 20, 2001. Acknowledging a notice (exploration operations of 5 acres or less, outside of SMA's) is not a Federal action that requires compliance with NEPA, so no environmental documentation must be prepared. The BLM does review notices to ensure that no unnecessary or undue degradation would occur, and that a plan of operations is not required. A plan of operations is required for all mining activity that is not casual use, regardless of the number of acres disturbed. A plan is also required for all exploration activities that disturb over 5 acres, bulk sampling which would remove 1,000 tons or more of presumed ore for testing, or for any surface-disturbing operations greater than casual use in certain SMA's and lands/waters that contain federally proposed or listed threatened or endangered species or their proposed or designated critical habitat. The approval of plans of operations is a Federal action that requires NEPA compliance. Mining claim use and occupancy under 43 CFR 3710 also requires NEPA compliance.

As a result of the implementation of the amended 3809 regulations, it is anticipated that LRA would receive several plans of operations in the Rabbit Basin sunstone area annually. Descriptions of plan filing and processing requirements, anticipated activity, and resulting surface disturbance can be found in Appendix N2, Mineral Development Scenarios, Locatable Mineral Resources. Standard mitigating measures can be found in Appendix N3. The Lakeview Proposed RMP/FEIS constitutes the NEPA analysis guiding the approval of future sunstone exploration and mining plans of operations in the Rabbit Basin sunstone area only (Map M-4 of the Draft RMP/EIS). It supplements the "Final Environmental Impact Statement for the Surface Management Regulations for Locatable Mineral Operations" (USDI-BLM 2000i). It also amends EA No. OR-010-98-05, "Mining Use and Occupancy—Sunstone Mining Area" (USDI-BLM 1998h). Any mining plans of operations or mining claim use and occupancy outside of the Rabbit Basin sunstone area would require separate, and site-specific, NEPA environmental documentation prior to approval.

Management Direction by Alternative

Alternative A

Lands currently open to locatable mineral activity would continue to be available (Table 3-7). Existing restrictions and requirements for other resource protection would apply. The Lost Forest RNA/ISA, part of Abert Rim WSA, and the Public Sunstone Area, totaling approximately 17,231 acres, are currently closed to locatable mineral entry, and would remain closed under this alternative (Map M-2 of the Draft RMP/EIS). Approximately 468,864 acres of additional lands located within WSA's are subject to the wilderness IMP nonimpairment/no reclamation standard, and are, for all practical purposes, closed to locatable mineral entry. Mining restrictions for non-metalliferous minerals would continue in public water reserves totaling approximately 1,900 acres. About 1,371,538 acres are subject to a combination of other types of protective stipulations including preparing a plan of operations, seasonal restrictions, and special visual design measures. These other restrictions/stipulations apply primarily to areas of big game winter range, raptor nesting habitat, areas within 2 miles of greater sage-grouse leks, and VRM Class II. The Public Sunstone Collection Area would remain open to recreational collecting.

Alternative B

Locatable mineral restrictions under this alternative would be similar to those for Alternative A with the following exceptions. The mineral segregation on the Public Sunstone Area would be revoked thereby making an additional 2,540 acres of sunstone-bearing basalt available for mining claim location. Public water reserve withdrawals would be revoked. These reserves could be protected by more site-specific rights-of-way and the 43 CFR 3809 regulations. This would open approximately 1,900 acres of public land to non-metalliferous mineral entry.

Designation of one new SMA (Connley Hills ACEC/RNA) would occur which would require a plan of operation before locatable mineral activity could occur in this area. Public land or minerals with moderate or high potential would not be disposed of unless equal values would be obtained. See Table 3-7 for a summary of areas affected by mineral restrictions under this alternative.

Alternative C

The areas identified in Table 3-7 represent existing formal withdrawals (Map M-2 of the Draft RMP/EIS) from the operation of the mining laws and areas proposed for withdrawal under this alternative, such as Devils Garden ACEC/WSA and Red Knoll ACEC. (Formal withdrawal approval would be required by the Secretary of the Interior and Congress before most of this area could be officially closed to mineral location). The "Greater Sage-Grouse and Sagebrush Steppe Ecosystem Management Guidelines" call for locatable mineral activity, where a plan of operation is required, to avoid surface occupancy within 0.6 miles of known/occupied greater sage-grouse habitat. This would apply to up to 2,340,360 acres of the planning area.

About 440,916 acres would be subject to the no reclamation stipulation under the wilderness IMP. About 214,547 acres would be subject to a combination of other types of protective stipulations including preparing a plan of operations, seasonal restrictions, and special visual design measures. These other restrictions/stipulations apply primarily to areas of big game winter range, raptor nesting habitat, suitable WSR's, and VRM Class II.

The mineral segregation on the Public Sunstone Area (2,540 acres) would be retained, thereby keeping the area open to recreational collecting by the public. Existing public water withdrawals would be retained (1,900 acres), closing them to nonmetaliferous mining.

Alternative D

The resource area would be open to locatable mineral activity except for the area (21,064 acres) shown in Table 3-7 as closed. The areas identified as closed represent existing formal withdrawls from the operation of the mining laws (Map M-2 of the Draft RMP/EIS) and areas proposed for withdrawl under this alternative, such as the northwestern portion of Red Knoll ACEC (about 4,600 acres). An additional 468,102 acres would be subject to the no reclamation stipulation of the wilderness IMP. About 1,436,196 acres would be subject to a combination of other types of protective stipulations including: preparing a plan of operations, seasonal restrictions, and special visual design measures. These other restrictions/stipulations apply primarily to areas of big game winter range, greater sage-grouse breeding habitat, raptor nesting habitat, suitable WSR's, and VRM Class II. Existing public water reserve withdrawals would be retained (1,900 acres). The mineral segregation on the Public Sunstone Area (2,540 acres) would be retained thereby

keeping the area open to recreational collecting by the public.

Alternative E

Actions would be taken to withdraw the entire resource area from locatable mineral entry, subject to existing rights. Because the withdrawal would exceed 5,000 acres, congressional approval would be required.

Management Goal 2—*Provide leasing opportunity for oil and gas, geothermal energy, and solid minerals in an environmentally-sound manner.*

Rationale

The "Mineral Leasing Act" of 1920, as amended, and the "Geothermal Steam Act" of 1970, as amended, provide the opportunity for the public to explore for, develop, and produce publicly-owned leasable minerals. The "Mining and Minerals Policy Act" of 1970 declares that it is the continuing policy of the Federal government to foster and encourage private enterprise in the development of domestic mineral resources.

Section 102 of FLPMA directs that the public land would be managed in a manner which recognizes the Nation's need for domestic sources of minerals and other commodities from the public lands, while managing these lands in a manner that would protect scientific, scenic, historic, archeologic, ecological, environmental, air and atmospheric, and hydrologic values. The Bureau's mineral and national energy policy states that public lands shall remain open and available for mineral exploration and development unless withdrawal or other administrative action is justified in the national interest.

Management Common to Alternatives A–D

Oil and gas leasing and development would be regulated under 43 CFR 3100, Geothermal Resources Leasing and Development, under 43 CFR 3200, and Solid Mineral Leasing, under 43 CFR 3500, to ensure that all operations are conducted with adequate consideration given to environmental and resource conservation concerns. In order to protect special resource values and special investments, leasing would be subject to lease stipulations shown in Appendix N3. Although the specific wording of the stipulations could be adjusted at the time of leasing, the protection standards described in the appendix would be maintained.

All WSA's would be closed to mineral leasing until such time as Congress makes a decision regarding designation of these areas as wilderness. Areas not designated wilderness could be opened to mineral leasing during the life of this plan. Many areas within the planning area are subject to numerous, overlapping types of mineral leasing restrictions or special stipulations (refer to Appendix N3). This makes determining the amount of area open, closed, or restricted to mineral development difficult. For instance, an ACEC (which may have a no-surface-occupancy stipulation) may partially overlap a WSA (which is closed to leasing). For simplicity, such an area of overlap has been reclassified as closed to reflect the most restrictive management measure in place, regardless of how many other types of restrictions may also apply. Any WSA's which overlap with areas where other mineral restriction/stipulations apply, which are later removed from WSA status by Congress, would be managed in accordance with the remaining restrictions. In the example above, an area where a WSA overlaps an ACEC would change from closed to open to mineral leasing with no surface occupancy. Table 3-7 summarizes mineral leasing restrictions for each alternative.

Management Direction by Alternative

Alternative A

Exploration permits and leases would continue to be issued in those areas currently open to mineral leasing with stipulations, as appropriate, to protect other resources (Table 3-7). A total of about 493,697 acres, primarily in WSA's, existing ACEC's and Lost Forest RNA/ISA, would be closed to mineral leasing. Of that total, about 18,000 acres in the Lake Abert ACEC would be closed only to sodium leasing. About 612,776 acres would be subject to no-surface-occupancy restrictions. These apply primarily to portions of the Lake Abert and Warner Wetlands ACEC's, areas within 2 miles of greater sage-grouse leks, and known raptor nesting habitat. Other restrictions/stipulations would apply to approximately 759,214 acres of the planning area, primarily in big game winter range, VRM Class II, and the remainder of the Warner Wetlands ACEC.

Alternative B

Mineral leasing restrictions would be similar to Alternative A with the following exceptions. The lake-level and total dissolved solid stipulations for mineral leasing on Lake Abert would be eliminated under this alternative in order to facilitate future sodium mining operations. Future leasing of lands eliminated from wilderness consideration would be allowed during the

life of the plan. Designation of new SMA's that could restrict or prohibit mineral leasing would be limited to Connley Hills ACEC/RNA.

A total of 492,812 acres would be closed to mineral leasing, mainly within WSA's, Lost Forest RNA, and the northern part of Lake Abert ACEC. About 620,006 acres would be subject to no-surface-occupancy restrictions. About 747,396 acres would be subject to other leasing restrictions/stipulations, primarily in big game winter range, VRM Class II, raptor nesting habitat, and part of Warner Wetlands ACEC. The remainder of the resource area would be open to mineral leasing.

Alternative C

About 579,187 acres would be closed to mineral leasing, primarily within WSA's and some of the proposed ACEC's. Future leasing of lands eliminated from wilderness consideration would be allowed with necessary constraints to protect resource values. About 2,369,434 acres would be subject to no-surface-occupancy restrictions, primarily in known/occupied greater sage-grouse habitat. An additional 290,189 acres would be subject to other restrictions/stipulations, primarily in big game winter range.

Alternative D

A total of 1,305,124 acres would be open to mineral leasing. About 498,602 acres in WSA's, WSR's and some ACEC's would be closed to mineral leasing. Most ACEC's would be open to mineral leasing with stipulations to protect relevant and important resources. Future leasing of lands eliminated from wilderness consideration would be allowed with necessary constraints to protect resource values. Another 776,436 acres would be subject to no-surface-occupancy restrictions, primarily in some ACEC's and all greater sage-grouse breeding habitat. Other restrictions/ stipulations would apply to approximately 658,648 acres of the planning area, primarily in big game winter range, VRM Class II, raptor nesting habitat, and the remainder of the Warner Wetlands ACEC.

Alternative E

All mineral estate (3,238,810 acres) in the planning area would be closed to energy and mineral leasing.

Management Goal 3—*In an environmentally-sound manner, meet the demands of local, state, and Federal agencies, and the public, for mineral material from public lands.*

Rationale

The "Materials Act" of 1947, as amended, authorized the disposal of mineral materials such as sand, gravel, stone, clay, and cinders. The "Mining and Minerals Policy Act" of 1970 declares that it is the continuing policy of the Federal government to foster and encourage private enterprise in the development of domestic mineral resources.

Section 102 of FLPMA directs that the public land would be managed in a manner which recognizes the Nation's need for domestic sources of minerals and other commodities from the public lands, while managing these lands in a manner that would protect scientific, scenic, historic, archeologic, ecological, environmental, air and atmospheric, and hydrologic values. The Bureau's mineral and energy policy states that public lands shall remain open and available for mineral exploration and development unless withdrawal or other administrative action is justified in the national interest.

Management Common to Alternatives A–D

Mineral material exploration and development is regulated under 43 CFR 3600. Throughout the alternatives, effort would be made to work with the State and counties to rehabilitate exhausted rock sources and relinquish any material site rights-of-way and free use permits no longer needed. All surface disturbance would be reclaimed at the earliest feasible time. The standards that govern these activities are shown in Appendix N3. Table 3-7 shows the restrictions and lands open and closed to mineral location under each alternative.

All WSA's would be closed to mineral material disposal until Congress makes a decision regarding designation of these areas as wilderness. Areas not designated as wilderness could be made available for mineral disposal during the life of the plan. Many areas within the planning area are subject to numerous, overlapping types of mineral disposal restrictions or special stipulations (refer to Appendix N3). This makes determining the amount of area open, closed, or restricted to mineral development difficult. For instance, an ACEC (which may have a seasonal restriction) may partially overlap a WSA (which is closed to mineral disposal). For simplicity, such an area of

overlap has been reclassified as closed to reflect the most restrictive management measure in place, regardless of how many other types of restrictions may also apply. Any WSA's which overlap with areas where other mineral restriction/stipulations apply, which are later removed from WSA status by Congress, would be managed in accordance with the remaining restrictions. In the example above, an area where a WSA overlaps an ACEC would change from closed to mineral disposal to open.

Management Direction by Alternative

Alternative A

Mineral material disposal would continue from existing pits and quarries, and from potential sources currently open to mineral material disposal. A total of about 975,044 acres would remain closed to mineral material disposal under this alternative, primarily in WSA's, portions of ACEC's, areas within 2 miles of greater sage-grouse leks, and the Sunstone Public Collection Area. However, use of the southern portion of the Devils Garden lava flow as a common use area for the sale of decorative stone would be pursued if this area is dropped from wilderness consideration during the life of the plan. An additional 872,192 acres would have other types of restrictions apply, primarily associated with big game winter range, VRM Class II, raptor nesting habitat, and most of Lake Abert ACEC (Table 3-7).

Alternative B

Salable mineral disposal under this alternative would be similar to Alternative A, except as described below. Mineral material disposal would be allowed from all public lands, except those shown as closed under this alternative in Table 3-7. A total of about 969,224 acres would be closed to mineral material disposal, primarily in WSA's, Lost Forest RNA, areas within 2 miles of greater sage-grouse leks, and parts of Lake Abert and Warner Wetlands ACEC's. However, any lands eliminated from wilderness consideration could be opened to mineral disposal during the life of the plan. Should this occur, common-use areas for the disposal of decorative stone and cinders in the Devils Garden, Squaw Ridge, and Four Craters lava flows would be established, as the best quality decorative stone within the planning area is known to occur in these areas, and cinders are needed for local roads.

An additional 874,238 acres would have other types of restrictions apply, primarily associated with big game winter range, VRM Class II, raptor nesting habitat, and parts of Lake Abert and Warner Wetlands ACEC's (Table 3-7).

Community pits in high-demand areas would be established when it is not possible to make sales from state or county sources. Possible future community site designations include Cougar Mountain pit and the Paisley, Westside, and Summer Lake areas. Except for the Connley Hills ACEC/RNA, no new SMA's would designated which would restrict or prohibit mineral material disposal. The BLM would work with state and county road departments to find rock sources that meet the demand for public projects and mineral material sale to the public.

Alternative C

Approximately 2,810,643 acres would be closed to mineral sale, mainly in WSA's, existing and proposed ACEC's, all known/occupied greater sage-grouse habitat, and proposed WSR's. Mineral material disposal would be allowed on a case-by-case basis in WSA's eliminated from wilderness consideration in the future, with priority consideration given to protecting sensitive resources.

An additional 312,623 acres would have other types of restrictions apply, primarily associated with big game winter range, VRM Class II, raptor nesting habitat, and Lake Abert ACEC (Table 3-7).

Alternative D

The resource area would be open to mineral material disposal, except for those areas identified in Table 3-7 as closed (1,161,052 acres) under this alternative. Areas closed to mineral sale involve mainly WSA's, existing and proposed ACEC's, greater sage-grouse breeding habitat, and proposed WSR's. Mineral material disposal from lands eliminated from wilderness consideration by Congress in the future would be allowed on a case-by-case basis with consideration given to protecting sensitive resources.

An additional 772,634 acres would have other types of restrictions apply, primarily associated with big game winter range, VRM Class II, raptor nesting habitat, and Lake Abert ACEC (Table 3-7).

Alternative E

The entire resource area (about 3,238,810 acres), including existing pits and quarries, would be closed to mineral material disposal, except where required by law or where essential for critical road construction and

emergencies to protect human safety.

Lands and Realty

Management Goal 1—*Retain public land with high public resource values. Consolidate public land inholdings and acquire land or interests in land with high public resource values to ensure effective administration and improve resource management. Acquired land would be managed for the purpose for which it was acquired. Make available for disposal public land within Zone 3 by State indemnity selection, private, or state exchange, "Recreation and Public Purpose Act" lease or sale, public sale, or other authorized method, as applicable.*

Rationale

Section 102 of FLPMA requires that public land be retained in Federal ownership unless disposal of a particular parcel would serve the national interest. Acquisition of land to consolidate ownership patterns would provide for more efficient land management and administration for both public and private landowners. Retention and acquisition of land containing significant resource values would provide for long-term protection and management of those values.

Management Common to All Alternatives

Newly acquired lands would be managed for the highest potential purpose for which they are acquired. Acquired lands within ACEC's or other SMA's which have unique or fragile resources would be managed the same as the surrounding SMA. Lands acquired without special values or management goals would be managed in the same manner as comparable surrounding public lands.

Land tenure would be based on three zones:

(1) Zone 1 land is identified for retention in public ownership and includes high-value lands such as lands within WSA's and ACEC's;

(2) Zone 2 land has been identified generally for retention and consolidation of ownership and includes BLM-administered lands outside of Zone 1 areas; and

(3) Zone 3 land generally has low or unknown resource values and meets the disposal criteria of section 203 of FLPMA and is potentially suitable for disposal by a variety of means (see Appendix O1 for a complete explanation of land tenure).

Land tenure adjustments in any of the zones would generally occur under the authority of FLPMA; however, under certain circumstances, other authorities may be applicable as well. The disposition of Bankhead-Jones lands would be accomplished by FLPMA sale or exchange and not by "Recreation and Public Purpose Act" or by State In Lieu Selection.

Public access would be maintained or improved through all land tenure adjustment transactions.

All past and future public lands sold or exchanged under 43 U.S.C. 682(b) ("Small Tracts Act"), 43 U.S.C. 869 ("Recreation and Public Purposes Act"), 43 U.S.C. (Sales), or 43 U.S.C. 1716 (Exchanges), where minerals are reserved to the United States, shall be opened to operation under the mining laws upon the publication of opening orders in the *Federal Register* informing the public of such action.

All land tenure adjustments would be made in conformance with the "Interior Appropriations Act" of 1992 and the "Federal Land Ownership Plan for Lake and Harney Counties." These require no net increase in Federal ownership as of September 30, 1991.

Management Direction by Alternative

Alternative A

Land tenure adjustments would be consistent with existing land use planning with emphasis on acquiring land with high public resource values such as lands within ACEC's or WSA's, threatened or endangered species habitat, or riparian/wetland areas, etc.

Approximately 41,500 acres of public land in Zone 3 would be available for disposal as specifically identified in existing land use planning on Map L-1 of the Draft RMP/EIS, and as described in Appendix O2. Land could be disposed of through a variety of means including, but not limited to sale, exchange, and "Recreation and Public Purpose Act" lease or patent.

Alternative B

Public land holdings in Zone 1 would be retained or increased with emphasis on acquiring land that would facilitate commodity production. Under certain circumstances, disposal of small parcels of public land would be permitted in Zone 1 to meet other resource objectives.

Public land holdings in Zone 2 would be retained or increased with special emphasis on land exchanges that benefit commodity production. Under certain circumstances, disposal of public land may be permitted in Zone 2 to meet other resource objectives.

Approximately 54,500 acres of public land in Zone 3 as specifically identified on Map L-3 of the Draft RMP/EIS, and as described in Appendix O2, would be available for disposal.

Approximately 200 acres are identified for disposal by direct sale to Lake County or other civic-related entity(s) with county approval for Fort Rock community expansion purposes only. An additional 200 acres is identified for direct sale to Native American Tribal entity(s) or transferred to the Bureau of Indian Affairs to be managed in trust for reinternment purposes. The Oregon Department of Parks and Recreation has requested possible disposal consideration of approximately 28,750 acres of public and Bankhead-Jones land northwest of Fort Rock, Oregon, adjacent to the Deschutes National Forest. The purpose of the consideration is for the reestablishment of the historic Fort Rock Ranch.

Alternative C

Public land holdings in Zone 1 would be retained or increased with emphasis on acquiring land with high public resource values. Actions would be pursued to acquire lands from owners willing to dispose of private or state lands within or adjacent to WSA's, ACEC's, or WSR's. Under certain circumstances, disposal of small parcels of public land would be permitted in Zone 1 in order to achieve other resource objectives.

Public land holdings in Zone 2 would be retained or increased with special emphasis on acquiring land with high public resources values. Actions would be pursued to acquire lands from owners willing to dispose of private or state lands within or adjacent to WSA's, ACEC's, or WSR's. Under certain circumstances, disposal of public land would be permitted in Zone 2 in order to achieve other resource objectives.

Approximately 7,500 acres of public land in Zone 3 as specifically identified on Map L-4 of the Draft RMP/EIS, and as described in Appendix O2, would be available for disposal.

Approximately 200 acres are identified for disposal by direct sale to Lake County or other civic-related entity(s) with county approval for Fort Rock community expansion purposes only. An additional 200 acres is identified for direct sale to Native American Tribal entity(s) or transferred to the Bureau of Indian Affairs to be managed in trust for reinternment purposes.

Alternative D

Public land holdings in Zone 1 would be retained or increased with emphasis on acquiring land with high public resource values. Actions would be pursued to acquire lands from owners willing to dispose of private or state lands within or adjacent to WSA's, ACEC's, or WSR's. Under certain circumstances, disposal of small parcels of public land would be permitted in Zone 1 in order to achieve other resource objectives.

Public land holdings in Zone 2 would be retained or increased with special emphasis on acquiring land with high public resources values. Actions would be pursued to acquire lands from owners willing to dispose of private or state lands within or adjacent to WSA's, ACEC's, WSR's. Under certain circumstances, disposal of public land would be permitted in Zone 2 in order to achieve other resource objectives.

Approximately 8,750 acres of public land in Zone 3 as specifically identified on Map L-4, and as described in Appendix O2, would be available for disposal.

Approximately 200 acres are identified for disposal by direct sale to Lake County or other civic-related entity(s) with county approval for Fort Rock community expansion purposes only. An additional 200 acres is identified for direct sale to Native American Tribal entity(s) or transferred to the Bureau of Indian Affairs to be managed in trust for reinternment purposes.

Alternative E

Public land would be considered for disposal on a case-by-case basis only.

Management Goal 2—*Meet public needs for land use authorizations such as rights-of-way, leases, and permits.*

Rationale

Rights-of-way and other land uses are recognized as major uses of the public lands and are authorized pursuant to sections 302 and 501 of FLPMA.

Section 503 of FLPMA provides for the designation of rights-of-way corridors and encourages utilization of rights-of-way in-common to minimize environmental impacts and the proliferation of separate rights-of-way.

Table 3-8.—*Acres of rights-of-way exclusion and avoidance areas*

Rights-of-way restriction	Alternative				
	A	B	C	D	E
Avoid (acres)	68,257	58,297	2,201,664	828,332	0
Reason for restriction	■Parts of 2 ACEC's [1]	■Parts of 3 ACEC's ■1 Watchable Wildlife site	■Greater sage-grouse habitat [2] ■Big game winter range [3] ■2 WSR's	■Greater sage-grouse breeding habitat ■Big game winter range ■15 ACEC's ■1 WSR ■3 NRHP districts ■1 Watchable Wildlife site	
Exclude (acres)	510,722	485,898	696,545	487,192	3,161,326
Reason for restriction	■13 WSA's [4] ■ISA [4] ■4 sensitive resource areas	■13 WSA's ■1 ISA	■13 WSA's ■1 ISA ■15 ACEC's ■3 NRHP districts ■1 Watchable Wildlife site	■13 WSA's ■1 ISA	■All BLM lands in planning area except existing rights-of-way corridors

[1] "High Desert Management Framework Plan Amendment for Lake Abert ACEC in Lake County, Oregon" (1996).
[2] "Greater Sage-Grouse and Sagebrush-Steppe Ecosystems Management Guidelines" (2000).
[3] "High Desert Management Framework Plan" (1983).
[4] Wilderness IMP (1995).

Bureau policy is to encourage prospective applicants to locate their proposals within corridors. Designation of avoidance areas—those areas that would be avoided by new rights-of-way unless there are no other options—would provide early notice to potential applicants when they are planning rights-of-way or other land use projects. Only facilities and uses would be permitted in avoidance areas which are consistent with the special designation associated with that area. Designation of exclusion zones—those areas where no new rights-of-way would be allowed—would provide protection of lands and resources, which have values which are not compatible with rights-of-way or other land uses.

The United States' potential liability, under various hazardous materials statutes, would be limited if disposal of waste, both hazardous and nonhazardous, are prohibited on public lands. Private lands are generally available for private waste disposal. If a bonafide public need for new waste disposal sites arise, land could be made available by sale or exchange. Currently, there are no authorized waste disposal sites on public lands in the LRA.

Management Common to Alternatives A–D

Applications for rights-of-way, leases, permits, and other forms of land-use authorization, with the exception of rights-of-way corridors within WSA's and SMA's (which are addressed separately) would be processed in a timely manner, on a case-by-case basis, in compliance with the NEPA process. In accordance with current policy, land-use authorizations may not be issued for any use which would involve disposal or storage of materials which could contaminate the land (i.e., landfills, hazardous waste disposal sites, etc.).

With proper NEPA compliance, the upgrading/expansion of existing rights-of-way and issuance of new rights-of-way would be allowed within existing corridors crossing designated rights-of-way exclusion and avoidance areas. Parallel and/or perpendicular access roads across designated right-of-way exclusion and avoidance areas for construction and maintenance of facilities located within existing corridors would also be allowed.

Realty-related unauthorized uses on public land would be detected, confirmed, and abated on all lands. Upon resolution, unauthorized uses on public land which do not conflict with other significant resource values would be authorized or terminated, as appropriate. Sites affected by unauthorized uses would be rehabilitated, as necessary.

Generally, there is no regulatory width that dictates rights-of-way corridors. A width of 2,000 feet (1,000 feet each side of centerline) is considered an appropriate/reasonable width to provide engineering flexibility, system compatibility, and reliability factors, and would be used for purposes of this plan. Variation from the 2,000-foot width may occur within the range of alternatives.

Management Direction by Alternative

Alternative A

Corridor designation would continue as necessary, consistent with existing land use plans.

All WSA's and the Buck Creek Watchable Wildlife Site are considered rights-of-way exclusion areas, except for rights-of-way needed to provide reasonable access to non-Federal inholdings. Lake Abert ACEC is considered a right-of-way avoidance area (Table 3-8 and Map L-2 of the Draft RMP/EIS).

Alternative B

Applicants for electrical transmission lines greater than 69 kilovolts, all mainline fiber optics facilities, and pipelines greater than 10 inches in diameter would be encouraged to locate their facilities within designated corridors.

Portions of the Lost Forest/Sand Dunes/Fossil Lake ACEC/RNA, Lake Abert ACEC, Connley Hills ACEC, the Buck Creek Watchable Wildlife Site would be rights-of-way avoidance areas. All WSA's would be rights-of-way exclusion areas (Map L-6 of the Draft RMP/EIS and Table 3-8).

All existing transdistrict electrical transmission lines, except the south corridor, identified by the "Western Regional Corridor Study" (Western Utility Group 1993) and some county roads would be designated as right-of-way corridors. Nominal corridor width would be 1,000 feet on each side of centerline of existing facilities, except where the alignment forms the boundary of a SMA, where the width would be 2,000 feet on the side opposite that boundary. Corridor widths may vary dependent upon project size and would be determined on a case-by-case basis.

Alternative C

All linear rights-of-way for electrical transmission lines greater than 69 kilovolts, all mainline fiber optics

facilities, and all pipelines greater than 10 inches in diameter would be located within designated corridors.

All ACEC's, WSR's, the Buck Creek Watchable Wildlife Site, NRHP Districts, and WSA's would be rights-of-way exclusion zones (Map L-7 of the Draft RMP/EIS) except for rights-of-way needed to provide reasonable access to non-Federal inholdings. All greater sage-grouse habitat would be considered a right-of-way avoidance zone (Table 3-8).

All existing transdistrict electrical transmission lines, except the south corridor, identified by the "Western Regional Corridor Study" (Western Utility Group 1993) and some county roads would be designated as rights-of-way corridors. Nominal corridor width would be 500 feet on each side of centerline of existing facilities, except where the alignment forms the boundary of a SMA, where the width would be 1,000 feet on the side opposite that boundary. Corridor widths may vary dependent upon project size and would be determined on a case-by-case basis.

Alternative D

Applicants for electrical transmission lines greater than 69 kilovolts, all mainline fiber optics facilities, and pipelines greater than 10 inches in diameter would be encouraged to locate their facilities within designated corridors.

All ACEC's, WSR's, the Buck Creek Watchable Wildlife Site, and greater sage-grouse breeding habitat would be designated right-of-way avoidance areas except for rights-of-way which would not conflict with management objectives for the area. WSA's and NRHP districts would be considered exclusion areas (Map L-8 and Table 3-8).

Alternative E

The entire planning area would be considered a right-of-way exclusion area, except for existing rights-of-way.

Management Goal 3—*Acquire public and administrative access to public land where it does not currently exist.*

Rationale

Due to the fragmented nature of public lands in some parts of the resource area, the need to acquire legal public and administrative access is required to ensure continued effective administration and public use of these lands. This need becomes more acute as public use of these lands increases and as landowners become more aware of the value of public and private land for recreation and other purposes. Land tenure adjustment actions (exchanges or fee purchases) can be a valuable tool for access acquisitions. However, without careful review, lands actions, particularly exchanges, can result in lost access. Other tools can also be utilized, such as constructing new roads around lands where access is restricted and the cost associated with acquisition excessive, or where such acquisition is not feasible.

Management Common to Alternatives A–D

SMA's would receive first priority for both fee title and easement acquisition, with the North Lake Special Recreation Management Area receiving second priority. Shifts in priority may occur dependent upon the level of necessity.

Management Direction by Alternative

Alternative A

Legal public or administrative access, including conservation and scenic easements, would be acquired on a case-by-case basis as the need arises. Emphasis would be placed on providing access for BLM administrative facilities and program-related activities.

New roads would be constructed around private lands where easement acquisition is not feasible or desirable.

Alternative B

Legal public or administrative access would be acquired on a case-by-case basis where public demand or an administrative need exists. Emphasis would be placed on providing administrative access to public land with high mineral, timber, grazing, or recreational value.

New roads would be constructed around private lands where easement acquisition is not feasible or desirable.

Alternative C

Legal public or administrative access would be acquired on a case-by-case basis where public demand or an administrative need exists.

New roads around private lands would be constructed where easement acquisition is not feasible or desirable, when it supports the protection of natural values.

Alternative D

Legal public or administrative access would be acquired on a case-by-case basis where public demand or an administrative need exists. Emphasis would be placed on providing access to areas containing high public values, when it supports the protection of natural values.

New roads would be constructed around private lands where easement acquisition is not feasible or desirable.

Alternative E

New access rights would not be acquired unless prescribed by law. No road construction would occur unless prescribed by law and/or for the protection of public health and safety.

Management Goal 4—*Utilize withdrawal actions with the least restrictive measures necessary to accomplish the required purposes.*

Rationale

Section 204 of FLPMA gives the Secretary of the Interior the authority to make, modify, extend, or revoke withdrawals and mandates periodic review of existing withdrawals.

Interior Departmental Policy (DM 603) further requires that:

1) All withdrawals shall be kept to a minimum, consistent with the demonstrated needs of the agency requesting the withdrawals.

2) Lands shall be available for other public uses to the fullest extent possible, consistent with the purposes of the withdrawal.

3) A current and continuing review of existing withdrawals shall be instituted.

Management Common to All Alternatives

Withdrawal review continuations, modifications, and revocations would continue in the future, as the need arises.

Other agency requests for new withdrawals, relinquishments, and modification would be considered on a case-by-case basis.

Management Direction by Alternative

Alternative A

Requests for new withdrawals and withdrawal relinquishments or modifications would be considered on a case-by-case basis.

Alternative B

No new lands would be withdrawn from the public land, mining, and mineral leasing laws unless required by law. All existing public water reserves would be revoked upon completion of the required revocation process, NEPA-related compliance, and with BLM Oregon and Washington State Office approval.

Alternative C

Under this alternative, the entire Red Knoll ACEC and Devils Garden ACEC/WSA would be withdrawn from the public land and mining laws.

Alternative D

Approximately 4,600 acres of the Red Knoll ACEC would be withdrawn from the public land and mining laws under this alternative.

Alternative E

The entire resource area would be withdrawn from public land, mining, and mineral leasing laws.

Roads/Transportation

Management Goal —*Maintain existing roads on the resource area transportation plan and other roads to provide administrative or public access to public land. Construct new roads using best management practices (BMP's) and appropriate mitigation to provide administrative, permitted, and recreational access as needed. Close roads that are not longer needed or that are causing resource damage.*

Rationale

Access is necessary for BLM personnel to administer the various resource management programs on public land including livestock grazing, mining, wildlife habitat management, watershed management, recreation management, and numerous other programs. Access is also an important factor in fire suppression

and fire management. Roads on BLM-administered lands are used by permitted users such as miners and livestock operators. Roads are also heavily used by recreationists for dispersed recreation activities such as hunting, fishing, camping, rockhounding, OHV driving, and sightseeing. Providing and maintaining access to the public lands is an important public service provided by BLM.

Actions Common to All Alternatives

Any roads on the transportation plan which are not needed for administrative or public access do not need to remain open. Likewise, any roads that are causing significant resource damage need to be closed and rehabilitated.

Any roads proposed to be closed would be reviewed by an interdisciplinary team to determine need for the road, resource damage being caused, appropriate closure means, alternative access available, etc. Appropriate NEPA documentation would then be completed if it is determined the road should be closed. Closures would consist of signing and physically blocking access if needed. Rehabilitation could consist of simply closing a road and allowing natural regrowth of vegetation to occur, or it could consist of plowing or ripping the road and seeding with an appropriate seed mix.

The draft "Washington and Eastern Oregon Districts Transportation Management Plan" (USDI-BLM 2000e) would serve as the LRA transportation management plan when that document is approved. A supplemental transportation management plan specific to the resource area and tiered to the larger plan may be prepared, if necessary.

An estimated amount of road construction is shown for each alternative for the the life of the plan. This estimate is based on actual road construction for the past 10 years and is for analysis purposes only. It is meant to include only BLM construction and does not include construction that may result from a major project such as a mine devlopment, oil and gas exploration and development, or major utility line. Any new roads constructed or trails developed as a result of such a project would be reclaimed after the project is completed if they are not needed for future access such as monitoring or maintenance.

Management Direction By Alternative

Alternative A

Approximately 100 miles of roads would be maintained annually based on priority determinations and the amount of annual road maintenance budget. New roads would be constructed on an as-needed basis, but new construction would be minimal. New roads could be constructed around private property to allow access to public land. Based on road construction for the past 10 years, new road construction is expected to be less than 20 miles over the life of the plan.

Roads not needed for resource management or causing significant erosion problems would be closed on a case-by-case basis. In recent years, about 187 miles of roads and trails (ways) have been permanently closed, primarily in WSA's. Another 164 miles are seasonally closed within deer winter range (Table 4-4).

Alternative B

Approximately 100 miles of roads would be maintained annually based on priority determinations and the amount of annual road maintenance budget. Management would be the same as under Alternative A, except that new roads would be constructed to facilitate commodity production and recreation access. New roads would be allowed for major projects such as mineral development, power generating plants, electrical transmission lines, and pipelines. For analysis purposes, it is estimated that no more than 30 miles of new roads would be constructed by BLM over the life of the plan. New road construction would meet BMP's to protect soils and watersheds (Appendix D).

Roads that are causing resource damage and that are no longer needed for access to facilitate commodity production would be considered for closure. Existing road closures would be similar to Alternative A (Table 4-4).

Alternative C

Approximately 100 miles of roads would be maintained annually based on priority determinations and the amount of annual road maintenance budget. The emphasis of road maintenance would be to protect and maintain resources. New construction would be considered on a case-by-case basis and would meet BMP's for road construction as outlined in Appendix D. New roads would be allowed for major projects such as mineral development, power generating plants,

and transmission lines, etc., if such projects are permitted. Roads could be constructed around private property to provide access to public land. For analysis purposes, it is estimated that no more than 20 miles of new roads would be constructed by BLM over the life of the plan.

Roads on the transportation plan, as well as roads not on the plan, which are no longer needed for administrative or public access or which may be causing resource damage such as erosion, would be noted and actions would be taken to close and rehabilitate the road or to correct the cause of the resource damage. Approximately 399 miles of roads in ACEC's and WSA's would be closed permanently. Another 239 miles would be seasonally closed in deer winter range (Table 4-4).

Alternative D

Approximately 100 miles of roads would be maintained annually based on priority determinations and the amount of annual road maintenance budget. The emphasis of road maintenance would be to protect and maintain resources. New construction would be considered on a case-by-case basis and would meet BMP's for road construction as outlined in Appendix D. New roads would be allowed for major projects such as mineral development, power generating plants, and transmission lines, etc., if such projects are permitted. Roads could be constructed around private property to provide access to public land. For analysis purposes, it is estimated that no more than 20 miles of new roads would be constructed by BLM over the life of the plan.

Roads on the transportation plan, as well as roads not on the plan, which are no longer needed for administrative or public access or which may be causing resource damage such as erosion, would be noted and actions would be taken to close and rehabilitate the road or to correct the cause of the resource damage. Approximately 246 miles of roads in SMA's would be closed permanently. Another 288 miles would be seasonally closed (Table 4-4).

Alternative E

Roads would be maintained only as needed to provide for human health and safety. No new roads would be constructed unless required by law.

Permanent road closures would be the same as under Alternative A. About 5 miles of roads would be seasonally closed (Table 4-4).

Chapter 4 — Environmental Consequences

Introduction

This chapter analyzes the environmental impacts that are projected to occur as a result of implementing land management actions described for each alternative. The baseline used for project impacts is the current condition described in Chapter 2–Affected Environment. Impacts are projected for the short term (0 to 10 years unless otherwise noted) and for the long term (10 to 20 years).

Each of the resource management activities that could impact other resource values are analyzed by program. There are some programs that would have the same impact across all alternatives, or would have little or no effect and do not need further analysis. The analysis for each alternative is presented by resource and organized into four sections:

Management Goal: These are defined in Chapter 3 and would be the same for each alternative.

Analysis of Impacts: This is a description of the possible impacts, both beneficial and adverse, from a proposed land use allocation or management action. The impact or change is compared to the current management situation, Alternative A. For ease of reading, the analysis shown in Alternative A may be referenced in following alternative impact discussions with such statements as, ". . . impacts would be the same as Alternative A. . . ," or ". . . impacts would be the same as Alternative A, except for . . .," as applicable.

Summary: At the end of each resource discussion is a summary comparison of impacts for each alternative, describing how well it meets the management goal.

Secondary, Indirect, and Cumulative Impacts: The final section under each resource discussion is a description of secondary, indirect, and cumulative impacts of the past, present, and reasonably-foreseeable future actions for each alternative. This section also considers impacts of other agency actions, as well as actions on private land within or adjacent to the planning area.

Assumptions

Several general assumptions were made to facilitate the analysis of potential impacts. The assumptions listed below are common to all alternatives. Other assumptions specific to a particular resource are listed under that resource.

- Changes in Bureau of Land Management (BLM) policies have been made since the current land use plans were approved. This includes such things as the "Standards for Rangeland Health and Guidelines for Livestock Grazing Management" (USDI-BLM 1997a).
- All alternatives would maintain the vegetation resource and meet needs for water, nutrient, and energy cycling.
- Funding and personnel would be sufficient to implement any alternative described and would be the same across all alternatives.
- Monitoring studies would be completed as indicated, and adjustments or revisions would be made as described in the Adaptive Management section of Chapter 3.
- Appropriate maintenance would be carried out to maintain the functional capability of all developments (roads, fences, and other projects).
- The approved Resource Management Plan (RMP) would remain in effect for 15 to 20 years.

Critical Elements of the Human Environment

The following critical elements of the human environment are addressed in Chapter 4, as required by the "National Environmental Policy Act" (NEPA): air quality, floodplains, cultural/paleontological resources, prime or unique farmlands, Native American religious concerns, threatened or endangered species, areas of critical environmental concern (ACEC's), potential wild and scenic rivers (WSR's), wilderness study areas (WSA's), visual resources, water resources, and environmental justice. The alternatives call for varying degrees of resource use and protection. As a result, there are varying degrees or forms of protective management or mitigation for some of these resources or land use allocations. These critical elements will also be considered, as appropriate, in site-specific project NEPA analysis, design, and implementation.

Plant Communities

Shrub Steppe

Management Goal 1—*Restore, protect, and enhance the diversity and distribution of desirable vegetation communities, including perennial native and desirable introduced plant species. Provide for their continued existence and normal function in nutrient, water, and energy cycles*.

Management Goal 2—*Protect healthy, functioning ecosystems consisting of native plant communities. Restore degraded high-potential landscapes and decadent shrublands.*

Assumptions

Characteristics used to analyze the degree to which vegetation communities meet the desired range of conditions and thus, rangeland vegetation management objectives, are displayed in Figure 4-1.

Reduced vegetation structure and ground cover lead to increased soil erosion rates. Soil erosion rates on shrub steppe communities are highly dependent on the proportion of the soil surface protected from raindrop impact by vegetation. Erosion rates increase exponentially as plant cover decreases (Meeuwig 1970).

Prescribed burn treatments would create a mosaic pattern of islands and stringers and would maintain structure (connectivity) and desired diversity. Wildland fire may accomplish these patterns, but because of cheatgrass and exotic annuals, large, contiguous areas are often burned instead of a mosaic of burned and unburned areas.

The alternatives have the potential to affect vegetation in terms of the relative abundance of species within communities, the relative distribution of plant communities, and the relative occurrence of seral stages of those communities. However, implementation of any alternative would not result in the complete elimination of a plant species, plant community, or seral stage. Management actions would not intentionally eliminate a special status plant species.

Analysis of Impacts

Alternative A

Maintenance of vegetative composition of nonnative seedings would ensure continued forage production. Some stands of seeded nonnative perennial species would continue to be managed primarily for forage production and would make minimal progress toward supporting greater species or structural diversity. Connectivity of big sagebrush cover may be reduced. Implementation of vegetation manipulation projects must be consistent with existing management objectives.

Integrated weed management actions would slow the spread of established stands of noxious weeds and reduce the establishment of new infestations.

Watershed improvements for both function and processes would maintain or enhance vegetation conditions in most cases. Water resource management activities would usually meet minimum construction standards, as would construction and maintenance of roads. There would be minimal or no damage to shrub steppe vegetation communities. If flooding occurs due to natural causes or related to construction, rehabilitation could be carried out swiftly and effectively. Commodity uses, including recreational use, off-highway vehicle (OHV) use, livestock production, mineral exploration, and other uses, would increase localized areas of soil disturbance and increase the mechanisms of seed dispersal, impacting sagebrush steppe communities.

The ecological condition of the shrub steppe community could be improved, and there could be an increase of forage production through the development and implementation of economically feasible grazing systems and range improvements. In areas such as the Beaty Butte allotment, not all of the animal unit months (AUM's) are utilized; however, livestock tend to concentrate in small areas around water sources, causing concentrated overutilization. Methods to move and disperse livestock would benefit the diversity and condition of the shrub steppe around such sites.

Carrying capacities and seasons of use for livestock in some areas would continue at a level that would provide for a diversity of seral stages of rangeland plant communities, while other areas would support the earlier seral stages of rangeland vegetation types resulting from localized problems in range management.

Disturbance associated with relatively high carrying capacities and long seasons of use for livestock would result in a landscape dominated by the low structural diversity (annual grasses and forbs) characteristic of the earlier seral stages of rangeland vegetation. The use of livestock grazing systems would have both

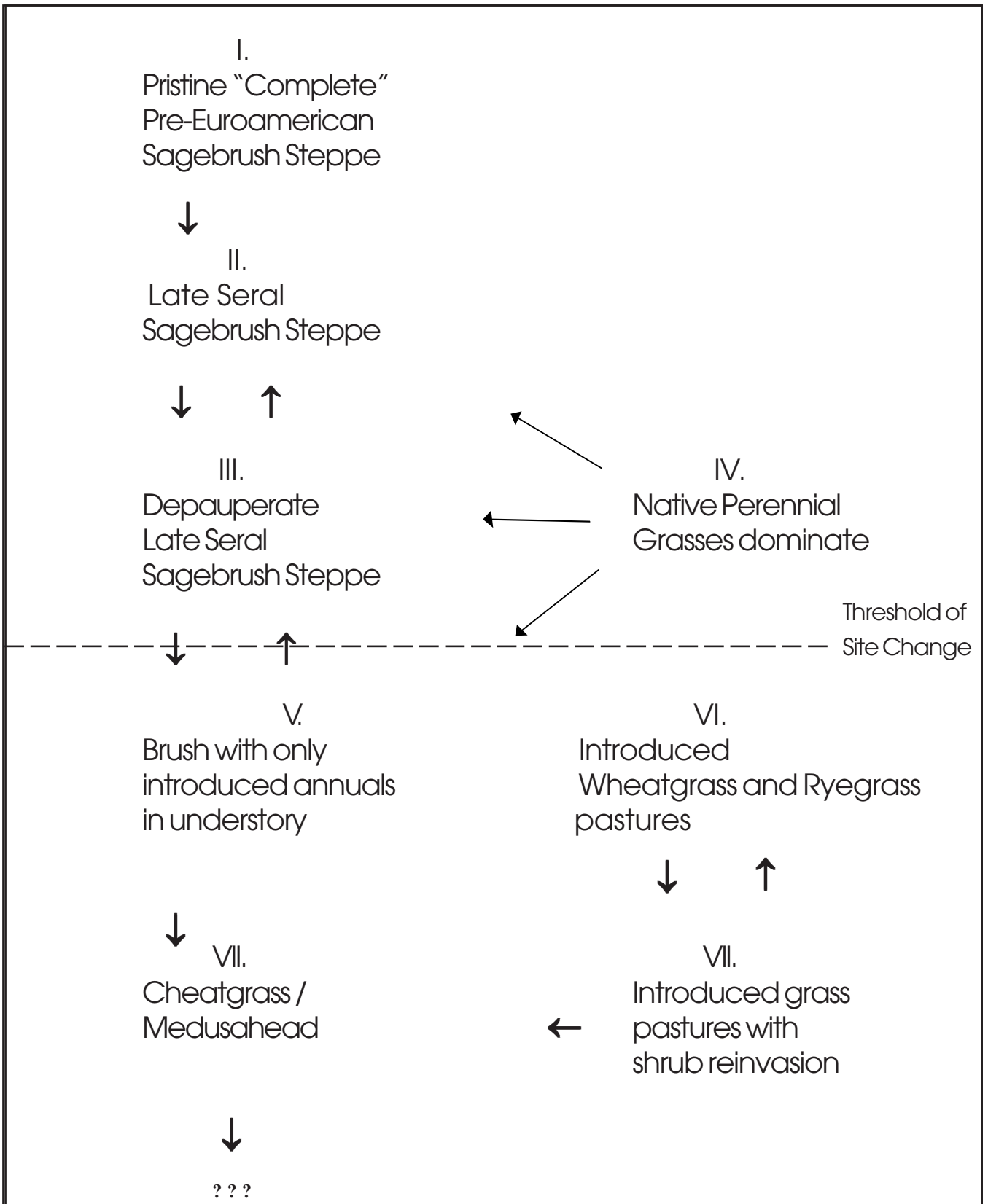

Figure 4-1.— ***State and transition model of successional change in sagebrush steppe (from West 1999).***

positive and negative impacts on vegetation, depending on the system and the vegetation community. The impacts of the different grazing systems on each vegetation community are described in Appendix E2 of the Draft RMP/Environmental Impact Statement (EIS). The grazing systems are described in Appendix E5.

The rest/rotation system is both the most common livestock grazing system in use in the resource area (56 percent of acres grazed) and also the system that would be expected to most improve key species composition. Therefore, the vegetation composition on over half of the resource area would potentially improve under this alternative. There are allotments that primarily use a rest/rotation system, but some pastures utilize other systems that may be more beneficial, such as spring grazing in a riparian pasture. For the purpose of this analysis, the positive impacts of this combination are recorded as part of the rest/rotation system because that system controls the largest acreage within the allotment. The key herbaceous vegetation composition would either be improved or maintained under the other five grazing systems; this accounts for 36 percent of the acres under a grazing system in the resource area. About one percent of the acreage in the resource area would show a short-term decrease in species composition as a result of being grazed under a spring/summer grazing system. This is due to the fact that forage species would be grazed during their growing season.

The spring/fall and deferred grazing systems could result in a decrease in palatable woody vegetation, such as willows, quaking aspen, and antelope bitterbrush. These grazing systems are found on about 4 percent of the acres that are grazed in the resource area. The difference in the alternatives is the rate at which the palatable woody species composition could decline. A summary of grazing impacts to key species vegetation by type of grazing system and season of use is shown in Table 4-1. Specific impacts of livestock grazing to the various plant communities by grazing system are discussed in Appendix E2 of the Draft RMP/EIS.

Wild horse management areas pose different problems and need to be kept at appropriate management levels in order to meet specific management (horses, wildlife, plant community health, livestock, and recreation) objectives. Where appropriate management levels are exceeded, or during drought, patches and larger areas of shrub steppe communities could be destroyed. Hoof disturbances along regular trails could cause long-lasting soil degradation and loss of water infiltration.

No new SMA's would be designated (ACEC's or WSR's), thus eliminating the possibility of special protective management for new research natural areas (RNA's), Oregon Natural Heritage Program (ONHP) plant community cells (emphasizing shrub steppe), and BLM special status plant species habitats. The habitat management plan for the Black Hills area would continue to restrict OHV use, as would the emergency closures for Table Rock and South Green Mountain to protect BLM sensitive plant species.

Full suppression of wildland fire outside of the Fort Rock Fire Management Area would not allow for wildland fire use to improve resources. Use of prescribed fire would be on a case-by-case basis. Areas that are burned by wildland fire would be rehabilitated or revegetated to protect soil, water, and vegetation resources or to prevent unacceptable damage (such as introduction of noxious weeds and cheatgrass). Resting rehabilitated areas for a minimum of two growing seasons would allow vegetation to reestablish, allow litter to build up on the soil, and reduce erosion. Two seasons of rest could also make the disturbed area less susceptible to the invasion of noxious weeds.

The identification of plant communities considered "at risk" by the Interior Columbia Basin Ecosystem Management Project (ICBEMP) due to cultural values would require increased consultation with the Tribal people and awareness among resource specialists.

With most of the area accessible to OHV use, the potential for water channeling, vegetation removal, weed dispersal, and soil disturbance would increase. A moderate increase in localized impacts would result within areas currently used for recreation.

Exploration, development, and production of minerals could cause changes in species composition and relative abundance of species, despite preparation of plans of operation. Even after reclamation efforts, it would be unlikely that environmental conditions supporting the predisturbance plant community would be restored. The scale of these effects would vary across the alternatives as larger areas would have either surface restrictions on energy and mineral exploration and development or no-surface-occupancy stipulations. Mitigation measures would be included in plan of operations. Soils could be stockpiled for future reclamation and native seeds could be gathered and grown for future seed sources from the site.

New road construction, road maintenance, and right-of-way use to support commodity-related activities would minimally increase vegetation impacts. Long-term impacts from roads and rights-of-way would be mini-

Table 4-1.—*Livestock grazing impacts to key species vegetation by type of grazing system and season of use*

Type of grazing	Alternative A	Alternative B	Alternative C	Alternative D
Winter	Would improve or maintain key species composition because of dormant season grazing.	Same as Alternative A, except composition of palatable woody vegetation would decrease.	Same as Alternative A.	Same as Alternative A.
Spring	Would improve or maintain key species composition as plants have time and soil moisture to reach full growth, produce seed, and replenish reserves.	Would maintain key species composition as plants have time and soil moisture to reach full growth, produce seed, and replenish reserves.	Same as Alternative A.	Same as Alternative A.
Spring/summer	About 60% of acres would have decreases in key species composition—this results from continuous heavy use in concentration areas such water sources, fences, and bottom lands.	About 66% of acres would have decreases in key species composition—this results from continuous heavy use in concentration areas such water sources, fences, and bottom lands.	About 48% acres would have decreases in key species composition—this results from continuous heavy use in concentration areas such water sources, fences, and bottom lands.	Same as Alternative A.
Spring/fall	Would only maintain existing key herbaceous species composition; composition of palatable woody vegetation would decrease.	Same as Alternative A, except the loss of palatable woody species would be accelerated.	Same as Alternative A, except the loss of palatable woody species would be at a slower rate.	Same as Alternative A.
Deferred	Would improve or maintain key herbaceous species composition because of dormant season grazing; composition of palatable woody vegetation may decrease.	Same as Alternative A, except the loss of palatable woody species would be accelerated.	Same as Alternative A, except any loss of palatable woody species would be at a slower rate.	Same as Alternative A.

Type of grazing	Alternative			
	A	B	C	D
Deferred rotation	Would only maintain existing key species composition.	Same as Alternative A, except the composition of palatable woody vegetation may decrease.	Same as Alternative A.	Same as Alternative A.
Rest rotation	Would significantly improve the composition of key species. System has the advantage of grazing rotation and provides a yearlong rest which promotes seed production, root growth, plant vigor, and litter accumulation.	Would only improve or maintain the composition of key species.	Same as Alternative A.	Same as Alternative A.

mized with best management practices (BMP's). Short-term impacts would occur until disturbed surfaces were contoured and revegetated.

Alternative B

Upland native shrub steppe communities would be managed to attain a trend toward desired range of conditions based on site potential. Management actions would be for maintenance of the condition where vegetation composition and structure were consistent with desired conditions. Forage production and other commodity values of native and nonnative vegetation resources would be optimized.

Impacts to shrub species would be similar to those identified in Alternative A. Connectivity of big sagebrush cover would be maintained in native vegetation communities that provide important wildlife habitat.

Impacts resulting from vegetation manipulation, primarily seedings, would be similar to those identified in Alternative A; however, more use of nonnative species might be employed. This might ensure seeding success but would provide less diversity. Some stands of seeded nonnative perennial species would continue to be managed primarily for forage production, so connectivity of big sagebrush cover may be reduced.

Weed management would have impacts similar to those identified in Alternative A.

Management of special status plant, fish, and wildlife species would have the same impacts as identified in Alternative A.

Impacts from livestock management actions would be similar to those identified in Alternative A. As a result of optimizing livestock use of available forage, the benefits of returning vegetation material to the soil would be minimized. Long-term vigor and health of vegetation communities could be maintained across the landscape, except at localized areas of concentrated activity. About one percent of the acreage in the resource area would show a short-term decrease in species composition as a result of spring/summer livestock grazing during the growing season. In the long term, impacts of spring/summer grazing would be reduced significantly when replaced by spring, deferred, deferred rotation, or rest/rotation grazing systems. The grazing system or combination of systems best suited to replace spring/summer grazing would be determined by allotment, depending on the vegetation and the multiple use objectives for that allotment. In the long term, there would be less than one percent of the resource area under spring/summer grazing under Alternative B.

The spring/fall and deferred grazing systems may result in a decrease in palatable woody vegetation, such as willows, quaking aspen, and antelope bitterbrush. The rate of decline would be faster under this alternative than under Alternative A. A summary of grazing

impacts to key species vegetation by type of grazing system and season of use is shown in Table 4-1. Specific impacts of livestock grazing to the various plant communities by grazing system are fully discussed in Appendix E2 of the Draft RMP/EIS.

Impacts from wild horse management would be as described in Alternative A, except impacts would increase due to greater horse numbers in both the Beaty Butte and Paisley Herd Management Areas. Wild horse use of an area is much more widespread than livestock use; horses use hilltops, ridgelines, and other areas. They also concentrate around water holes or running water and have been known to dig up areas in canyon bottoms where water is running below the surface. Several factors play into the equation for wild horse management: the herd numbers, forage AUM's for the horses, and how frequently herds are gathered. The net result would be an increase in horse impacts on sagebrush steppe plant communities in the Paisley Desert and Beaty Butte Herd Management Areas. Hoof disturbances along regular trails and territories would be long-lasting and could lead to soil degradation and loss of water infiltration.

Impacts to vegetation from new project construction would be similar to those identified in Alternative A, though more projects could be constructed.

Management of wildland fire and prescribed fire would have impacts similar to those identified in Alternative A; however, treatment configuration of prescribed burns would emphasize commodity production such as livestock forage, as opposed to mosaics, which benefit wildlife.

Impacts from recreation use would be similar to those identified in Alternative A, except there would be more development of roads, trails, and campgrounds, and less emphasis on dispersed recreation. Recreation use would be more concentrated; therefore, the impacts of visitor use (such as vegetation trampling and removal) would be more concentrated. Impacts from OHV use would be of the same type identified in Alternative A, but fewer acres would be designated open (Tables 3-5 and 4-5).

The impacts from mineral exploration or development would be similar to those identified in Alternative A, except the acreage of high mineral potential land remaining available for exploration and development would be highest under this alternative.

New road construction, road maintenance, and right-of-way use to support commodity-related activities would be similar to Alternative A, but of greater magnitude.

Alternative C

The ecological condition of the shrub steppe community could be improved with the emphasis on diversifying composition and structure of vegetation.

Nonnative seedings would change over time by allowing natural establishment of native shrubs and grasses, and in some cases may be actively rehabilitated by use of prescribed fire or physical manipulation to native seedings, especially where mosaic plant communities are desired. Large nonnative seedings could be broken up into mosaics of native vegetation using greenstripping. These actions would support the progress toward greater species and/or structural diversity. Connectivity of big sagebrush cover would be encouraged, especially in greater sage-grouse nesting areas.

With the aid of rehabilitation, less livestock grazing, and the use of prescribed fire, this alternative would generally reduce dominance by woody species, such as juniper and bitterbrush, and would increase mosaics of diverse structures of multiple-aged shrubs, forbs, and perennial grasses. This would result in greater productivity and improved natural functions and watershed stability. Shrub reintroduction into burned sites would maintain diversity at a moderate scale, especially within habitat of sagebrush-dependent wildlife species.

Watershed improvement for both function and processes would enhance vegetation conditions in most cases. Water resource management activities, as well as construction and maintenance of roads, would not have a negative effect on plant communities if they met minimum construction standards. In some cases, actions such as check dams (to slow down overland flow) would be beneficial to the shrub steppe community.

Proactive management is needed to prevent unnaturally large and/or frequent wildland fires in areas where fuel buildup or exotic annual grass invasions have occurred. Such management actions may include altering grazing regimes to prevent annual plant invasions (such as spring rest/rotation in seedings), prescribed fire to prevent fuel buildup (especially to reduce high woody vegetation densities), brush beating to release forbs and grasses and to reduce shrub densities, and/or restricting OHV use.

Areas that are burned by wildland fire would be rehabilitated or revegetated to protect vegetation

resources and to prevent introduction of noxious weeds and cheatgrass. Livestock use of burned areas would be deferred for a minimum of two years following rehabilitation. This would allow the desired vegetation to become established and litter accumulation to have recovered to levels that are adequate to support and protect plant community functions.

The impacts of livestock management actions would be similar to Alternative A. However, there would be 20 percent fewer AUM's and no authorized temporary nonrenewable grazing use. Appropriate grazing could retain adequate plant litter to maintain soil productivity and limit accelerated erosion, but with lower utilization levels, progress toward attaining desired range of conditions would be accelerated. Less fencing and water development would open new areas for grazing but would require more activity in moving livestock away from existing water resources. Long-term vigor and health of vegetation communities, which includes maintenance of soil stability and energy, nutrient, and water cycling, would be maintained across the landscape, except at small, localized areas of livestock concentrations. Much of the reduced grazing pressures would be within proposed ACEC's and would help protect and enhance the biodiversity of these plant community cells.

The vegetation composition on areas under rest/rotation grazing systems (56 percent of the area grazed) would improve under this alternative. The spring/fall and deferred grazing systems may result in a decrease in palatable woody vegetation, such as willows, quaking aspen, and antelope bitterbrush. These grazing systems are found on about 4 percent of the acres that are grazed in the resource area. Decline would be slowest under this alternative. Also, there may be a decline in palatable woody species under winter and deferred rotation grazing that would not occur in the other alternatives.

About one percent of the acres in the resource area would have a decrease in species composition under the spring/summer grazing system. These impacts would be short term or as long as the spring/summer grazing systems were still in effect. The long-term impacts of spring/summer grazing would be reduced significantly, as this system would be replaced by spring, deferred, deferred rotation, or rest/rotation grazing systems. The grazing system or combination of systems best suited to replace spring/summer grazing would be determined by allotment, depending on the vegetation and the multiple use objectives for that allotment. In the long term, less than one percent of the resource area would be under spring/summer grazing in this alternative.

A summary of grazing impacts to key species vegetation by type of grazing system and season of use is shown in Table 4-1. Specific impacts of livestock grazing to the various plant communities by grazing system are fully discussed in Appendix E2 of the Draft RMP/EIS.

Wild horse impacts would be similar to Alternative B.

Livestock forage production and range improvements would be reduced. Construction of fewer new rangeland projects would limit impacts to vegetation and would allow for recovery of heavily used areas around water sources.

This alternative proposes a significant increase in SMA's: 12 new ACEC's, 1 existing ACEC expansion, and 1 new WSR. These designations require special management to protect the natural resources, especially those that overlap RNA's. This special management would protect native plant communities from other uses and allow those communities to reach their potential, especially those designated as plant community "cells" by the ONHP. Among these cells are 12 examples of sagebrush steppe communities. These designations would give priority management attention to the areas.

Recreation would emphasize dispersed camping and recreational use and undeveloped types of recreation, thereby lessening the magnitude of impacts. At the same time, dispersed recreation use is difficult to control. Support facilities and interpretation of natural and cultural values would help develop a conservation ethic for the recreational users. Rehabilitation or closure of recreation sites where other resource values are being jeopardized would help restore plant community diversity and structure.

Impacts from OHV use would be the same types as identified in Alternative A, but of much less magnitude because none of the area would have an open designation. There would be a 79 percent increase in limited and closed designations. This would allow more control over the use of OHV's and would significantly lower the associated negative impacts.

The impacts from mineral exploration or development would be similar to those identified in Alternative A; however, this alternative would be the most restrictive. The withdrawal of the proposed Red Knoll ACEC from mining would have a positive influence on maintaining the naturalness of the sagebrush steppe and the cultural

plant values of this area.

Rights-of-way and pipelines would have the least negative impact of all the alternatives. Nominal corridor width would be half the size proposed in Alternative B, thus reducing the amount of physical disturbance to plant communities associated with these actions. The few actions involving legal public or administrative access would be limited and generally of little impact; however, where new roads are constructed, BMP's would be implemented (Appendix D).

Alternative D

This alternative is a balance between Alternatives A and C, so that natural values would be protected and improved while providing some commodity production. Many vegetation communities would progress toward a reduced dominance by woody species and an increased mosaic of multiple-aged shrubs, forbs, and perennial grasses (both native and introduced species). Long-term vigor and health of the vegetation communities, which include maintenance of soil stability and energy, nutrient, and water cycling, would be maintained across the landscape, except in localized areas of concentrated activity and in degraded communities of weeds/cheatgrass or shrub-invaded crested wheatgrass seedings. Shrub reintroduction into rehabilitated burned sites would maintain diversity at most scales. All acreage seeded would receive native seed mixtures and in some areas, introduce adapted perennial grasses.

Impacts from vegetation manipulation, primarily seedings, would be similar to those in Alternative A. Use of a mixture of native and introduced species would maintain some diversity and some degree of seeding success. The chances of establishment of mixed seedings on marginal sites and during poor climatic conditions would be higher than using all native species. This alternative would support establishment of desirable perennial cover in sites currently dominated by sagebrush, annual species, and western juniper. However, the long-term goal would be to support biodiverse and sustainable plant communities.

Management of special status plant species would have the same impacts as those identified in Alternative C due to the number of existing and new SMA's being proposed to protect and enhance special status plant species. The ACEC/RNA's being proposed would preserve plant community cells identified by the ONHP and would protect plants and other resource values not currently being protected under Alternative A.

Livestock forage (AUM's) would not change. Temporary nonrenewable grazing use would be allowed when it did not conflict with other resource values, uses, or objectives. Administrative solutions (seasons of use, stocking levels, etc.) would attempt to maintain other resource values for multiple use and sustainability. The impacts would be similar to Alternative A. Compared to Alternative C, plant litter would be less available for incorporation into soils, biological crusts would be less, and soils would be less protected from erosive overland flow.

The vegetation composition on areas under rest/rotation grazing systems (56 percent of the area grazed) would improve. The spring/fall and deferred grazing systems may result in a decrease in palatable woody vegetation, such as willows, quaking aspen, and antelope bitterbrush. These grazing systems are found on about 4 percent of the acres that are grazed. Rate of decline would be the same as under Alternative A. About one percent of the acres in the resource area would have a decrease in species composition under the spring/summer grazing system. These impacts would be short term or as long as the spring/summer grazing systems are still in effect. The long-term impacts of spring/summer grazing would be reduced significantly, as this system would be replaced by spring, deferred, deferred rotation, or rest/rotation grazing systems. The grazing system or combination of systems best suited to replace spring/summer grazing would be determined by allotment, depending on the existing vegetation and the multiple use objectives for that allotment. In the long term, there would be less than one percent of the resource area under spring/summer grazing. A summary of grazing impacts to key species vegetation by type of grazing system and season of use is shown in Table 4-1. Specific impacts of livestock grazing to the various plant communities by grazing system are discussed in Appendix E2 of the Draft RMP/EIS.

Wild horse impacts would be similar to Alternative B.

Impacts to vegetation from new project construction would be similar to those identified in Alternative A.

Management of wildland fire and prescribed fire would have impacts similar to those identified in Alternative A.

Impacts from undeveloped recreational opportunities would be similar to those identified in Alternative C, but there would be less emphasis on undeveloped, dispersed recreation. There would be more emphasis on establishing new recreation sites and developing tourism opportunities. The specific effects on the

plant communities would depend on where these activities take place. Areas open to OHV use would be smaller than Alternative A; limited and closed OHV designations would be greater than Alternative A. This alternative allows for more concentration of recreational activities, therefore increasing the accumulated negative effects. The increase of closed roads would mitigate those effects in ACEC's.

More vegetative communities would be protected by right-of-way avoidance areas compared to Alternative A. The protection provided by right-of way exclusion areas would be the same under all alternatives. Future right-of-way corridor widths would be limited to 1,000 feet on each side of the centerline, about the same as under Alternative A and almost twice as large as Alternative C. The risk of weed infestation would be similar to Alternative A, but higher than Alternative C within the disturbed corridor.

The impacts from mineral exploration or development would be similar to those identified in Alternative A, except the acreage of high mineral potential land remaining available for exploration and development would be less. In the Red Knoll ACEC, a smaller area would be proposed for mineral withdrawal (Tables 3-5 and 4-5). Only the land with higher mineral potential would be proposed for withdrawal. Some of the Red Knoll ACEC would remain open to potential mining impacts.

Roads causing resource damage or that are no longer needed would be closed and rehabilitated allowing the possibility for increased biodiversity and improvement of plant communities. It would also help to stem the introduction of invasive weeds and plants such as cheatgrass. When acquiring legal access, emphasis would be placed on providing access to areas containing high public resource values. This would increase the possibility of increased vegetation disturbance in those areas.

Alternative E

Shrub steppe communities over the last 150 years have had impacts that are irreversable, such as grazing by sheep and livestock, introduction of cheatgrass and other nonnative aggressive weeds, suppression of wildland fires, and range improvements that help determine where and when cattle graze. All of these actions have changed the landscape significantly from pre-European contact. None of the planning area is in precontact "pristine" condition, nor would the BLM try to return the landscape to that state (even if it was possible). To abandon active management of the area would have a long-term negative impact on the shrub steppe plant communities.

Altered vegetation communities would not progress toward desired range of conditions. Natural processes of succession within communities dominated by annual and woody species would rarely progress toward desired range of conditions, even when actions impacting vegetative resources were reduced or eliminated. Additionally, impacts resulting from increased numbers and cyclic growth of wild horse populations, and failure to control the establishment and spread of noxious weeds, would not be consistent with meeting vegetation management objectives.

Monocultures of nonnative seeded species would not be managed to improve diversity. Some smaller stands may contain adequate native seed to develop the desirable mosaic of multi-aged shrubs, forbs, and native grasses as a result of natural establishment. Many larger stands dominated by competitive nonnative species would allow little opportunity for establishment or increased dominance by native species.

In the absence of noxious weed control and management, weeds would continue to impact sagebrush steppe communities and soil stability. Though a number of actions that increase the risk of dominance by noxious weeds would be limited by actions of Alternative E, seed dispersal and soil disturbance favoring undesirable plants would continue. Native sagebrush steppe species do not compete well with many introduced noxious weeds, even when disturbances are removed and seed dispersal mechanisms are reduced (Roche and Burrill 1992; Butler 1993). Lack of adequate measures to control the introduction and spread of noxious weeds would reduce the biodiversity and productivity of many shrub steppe communities.

With the removal of livestock grazing, those impacts identified in Alternatives A–D would be eliminated. The condition of areas previously impacted would recover as allowed by competing exotic annual species and/or lack of soil. Natural succession would improve the condition of many vegetation communities, even though the process would take longer than with active rehabilitation. Altered vegetation communities which have reached or passed a viable threshold and are dominated by annual species and/or noxious weeds would not improve (Figure 4-1). Utilization of forage resources by wildlife would continue. Deposition of plant litter and incorporation of organic matter into the soil would increase across the landscape, resulting in increased productivity, decreased erosion caused by overland flow of precipitation, and progress toward

desired range of conditions. On sites dominated by native species, rates of water, nutrient, and energy cycling would be restored to near-natural levels. Sites supporting shallow-rooted exotic annual species would continue to alter water, nutrient, and energy cycling.

Wild horse populations would have the same impacts as Alternative A. Horses would be retained at appropriate management levels, which could be adjusted.

Short-term impacts to vegetation would occur as existing rangeland projects supporting livestock grazing were abandoned and structures removed. In the long term, areas disturbed during project removal would revegetate naturally to resemble surrounding vegetation communities; however, areas around past waterholes would recover more slowly, depending on the extent of previous impacts.

On average, the annual acreage burned by wildland fire would increase significantly due to greater fuel loads from lack of suppression and decreased grazing. The size and frequency of wildland fire in sites dominated by exotic annual species would increase. Increased fire frequency, especially in sites dominated by flammable annual species and along the tracks of frequent summer storm activity, would maintain communities currently vegetated by annual and shrub vegetation, with little opportunity for the establishment and increased dominance of perennials. Communities with perennials may degrade toward more annual species dominance. As annual species dominance increases, soil erosion accelerates, especially immediately following fire. Lack of rehabilitation to establish desirable vegetation components and protect soil resources would result in significant long-term impacts.

The condition of vegetation resources in areas not subject to frequent fire would improve as the impacts from livestock grazing were eliminated. However, without some prescribed fires or other rehabilitation actions, shrubs would tend to outcompete grass and perennial understory plants. Areas dominated by cheatgrass and other annuals would increase over desirable perennial plant cover. Depending on the soil type and other ecological conditions, conversion of shrub/annual grassland and annual grassland to perennial-dominated communities would occur very slowly. This change would probably be offset by conversion to annual species as a result of frequent wildland fires.

Fine fuels would increase with limited utilization of herbaceous growth, resulting in increased occurrence and frequency of wildland fire. The condition of some vegetation communities currently dominated by a desirable mosaic of native species and with a healthy understory of forbs and perennials would be maintained in those areas not subject to frequent fire. Frequent wildland fire in healthy, native communities would cause a decline in vegetation diversity and health and would allow for encroachment of weeds and annual species; this would lead to a decline in natural levels of nutrients, water, and energy cycling. Diversity and health of altered vegetation communities dominated by annual species would continue to decline with frequent fire.

Impacts to vegetation from recreation activities would increase within areas of concentrated activity, including developed facilities. Human-caused wildland fire may increase as recreational activity increases, resulting in impacts to vegetation resources.

Limiting OHV use to existing roads and trails on all public lands would limit direct and indirect impacts identified in Alternative A.

The entire planning area would be proposed for withdrawal and would not be available for mineral development; therefore, there would be no associated negative impacts. This would have a positive effect on plant communities because of the lack of disturbance.

Minimal new road construction, as well as the restriction of rights-of-way to existing corridors, would minimize or eliminate long-term impacts of surface disturbance. Limited maintenance of existing roads would increase impacts to vegetative resources as a result of normal breakdown of roadbeds, wet weather rutting by vehicles, and channeling of runoff.

Summary of Impacts

Under Alternative A, sagebrush steppe would continue to improve in areas that are in late seral, although recovery rates and extent of recovery would be reduced in sagebrush areas without perennial understory and in seedings, especially where shrubs have begun to invade. Management would continue on a case-by-case, site-specific basis with less consideration for the ramifications of watershed analysis. Rangeland health standards would be analyzed for each allotment in the resource area. The major impacts to the sagebrush steppe communities are from wildland fires (short-term impact, but possibility of annual exotic plant introduction), invasion by juniper (with loss of diversity, especially in the understory), weed invasion, and continued possible livestock misuse in seedings (such as repeated spring use every year). All of these actions would drive the threshold of site change away from

rehabilitation and toward pure stands of cheatgrass and weeds (Table 4-2). The management goal could not be achieved under this alternative.

Impacts under Alternative B would be similar to Alternative A; however, there would be an increased impact from livestock grazing for increased commodity yield. Improvements could occur on a case-by-case basis, especially with more aggressive juniper management, but would have minimal desirable impact. While noxious weed management would emphasize protection of commodity resources, these actions would have an indirect effect on the desirable vegetative communities. The continued use of nonnative seedings would be counterproductive for biodiversity. The management goal for shrub steppe could not be achieved under this alternative because of the emphasis on commodity production and public uses.

Impacts under Alternative C would be much less than Alternatives A or B, especially with the decrease in livestock AUM's. Because of the wider watershed-scale management approach, recovery rates could be much faster, resulting in better conditions with greater biodiversity and desirable vegetative communities. Alternative C has the most aggressive prescribed burning and wildland fire use, as well as the most aggressive weed and juniper management strategies. With an aggressive emergency fire rehabilitation program, the long-term benefits from prescribed and wildland fire activities could be used to help restore degraded sagebrush steppe communities. This type of fire management, along with greenstripping and other possible mechanical treatments for thinning of sagebrush, could rehabilitate dense, stagnant stands and meet the desired range of condition standards. With emphasis on protection and restoration of natural values, the management goal for shrub steppe communities could be achieved under this alternative, especially in late seral communities.

Impacts under Alternative D would be similar to Alternative C; however, keeping the same livestock AUM's, management, and livestock grazing strategies could reduce recovery rates for late seral and other shrub steppe communities. The increase of wild horse numbers and AUM's in the Paisley Herd Management Area could reduce the recovery rates in the wild horse areas, especially in the areas that are already in early seral stage, brush with introduced annuals, and seedings. The management goal for shrub steppe communities possibly could be achieved, but at a much slower rate than Alternative C and only with an aggressive program of greenstripping, active seed programs for rehabilitation, prescribed fires, and studies to understand more about sagebrush steppe communities.

The impacts of different grazing systems, by vegetation type, are described in Appendix E2 of the Draft RMP/EIS. Grazing systems are described in Appendix E5. The rest/rotation grazing system would be expected to most improve key species composition. As a result, the vegetation composition on over half of the acres (56 percent) in the resource area would improve under all alternatives. While the rest/rotation system may benefit many vegetation types, it must not be assumed that it would always provide the most benefit. Another grazing system or combination of systems may be better suited for some vegetation types and allotments.

The spring/summer grazing system is the one grazing system that may result in a decrease in key species composition across all alternatives. The key herbaceous vegetation composition would either be improved or maintained under the other five grazing systems across all alternatives—this accounts for 36 percent of the acres under a grazing system in the resource area.

The number of acres with a decrease in species composition in the spring/summer grazing system would vary by alternative. These impacts would be in the short term or as long as the spring/summer grazing systems were still in effect. Under Alternatives B, C, and D, the long-term impacts of spring/summer grazing would be reduced significantly as this system would be replaced

Table 4-2.—*Characteristics of vegetation communities meeting desired range of conditions*

Less desirable to more desirable
Noxious weeds/exotic annuals → desirable nonnative perennials → desirable native perennials/annuals
Limited vegetation structure → multi-structured vegetation → low native species diversity → high native species diversity
No occurrence of cryptobiotic crusts → high presence of cryptobiotic crusts
Disconnected habitats (strongholds disjunct) → connected habitats (strongholds linked) [1]
Diversity at the broad scale only → diversity at many scales

[1] These characteristics may be connected over time rather than space due to Great Basin biogeography and pluvial lakes/flooding.

by spring, deferred, deferred rotation, or rest/rotation grazing systems. The grazing system or combination of systems best suited to replace spring/summer grazing would be determined on an allotment-by-allotment basis, depending on the vegetation and the multiple-use objectives for that allotment. In the long term, there would be less than 1 percent of the acres in the resource area under spring/summer grazing in Alternatives B, C, and D.

The spring/fall and deferred grazing systems would result in a decrease in palatable woody vegetation such as willows, quaking aspen, and antelope bitterbrush across Alternatives A–D.

Under Alternative E, even with the elimination of livestock grazing, impacts resulting from wild horse populations and failure to control the establishment and spread of noxious weeds would have a negative effect on the shrub steppe community. Natural processes would be the primary determinants of ecosystem conditions and plant communities. However, allowing natural processes to dominate in heavily altered ecosystems would not restore natural plant communities, natural ecosystems, or natural fire regimes (assuming "natural" means more typical of pre-Euroamerican settlement conditions). Instead, entirely new ecosystems would develop. In areas dominated by nonnative annual and biennial plants, fire return intervals would decrease. In areas dominated by dense stands of woody species, fire return intervals and subsequent fire severity would increase. These new ecosystems would likely support a different suite of plant species. Population levels of many current species, especially those with limited distribution or already in decline, would likely decrease, and some may be extirpated. Natural processes of succession within communities dominated by annual and woody species would rarely progress toward desired range of conditions, even when actions were taken for rehabilitation. The management goal for shrub steppe communities would not be achieved during the life of the plan if natural processes were left to determine the outcome of habitat conditions.

Secondary, Indirect, and Cumulative Impacts

In studying the cumulative effects of the dynamics of the sagebrush steppe over time, there have been major impacts that are in evidence today. Since introduction of cattle, sheep, and horses into the planning area 150 years ago, many changes have taken place, due in part to changes in fire and livestock grazing management. The most drastic effect on land management was the prevention of wildland fires and the accidental introduction of noxious weeds and nonnative annual grasses (such as cheatgrass). The altered understory and fire regime, plus accelerated soil erosion, have caused many areas to decline to the point where they have lost the potential for native perennial plant community dominance.

Eight major "states" or pathways of shrub steppe plant community conditions have been modeled by researchers (Figure 4-1; West 1999). These states cross over the divisions of sagebrush species and subspecies that make up the shrub steppe communities. None of the planning area is in pre-contact "pristine" condition, nor is it possible to return the landscape to that state. In analyzing the conditions of sagebrush steppe communities, information from the ecological site inventories and statewide GAP analysis (Kagan and Caicco 1996) was used. Some of the states in the model are easy to capture; however, neither of these mapping methods was very precise in capturing states II, III, or V. The understories that determine each of these states could be examined for site-specific projects or could be determined for grazing allotment analyses. As more information is gathered, this model would help in understanding shrub steppe community dynamics and could influence management decisions.

There is little representation of the late seral sagebrush steppe (state II) which is the relictual (a persistent remnant of an otherwise extinct flora or plant community) remains of the pre-European shrub steppe community. Stagnant sagebrush (state III), which consists of shrubs with depauperate or bare understory, comprises about 4 percent (99,500 acres) of the planning area. Herb-dominated stands (state IV) and areas where perennial native grasses dominate do not occur except in small patches in the planning area (around 2 percent or 54,300 acres). Where they do occur, ACEC/RNA's have been proposed for these plant communities' protection and research. All four of these states can be reversed and have good potential for rehabilitation management and actions.

The remainder of the sagebrush steppe community consists of states that have exceeded the ". . . threshold of site change." Subsequent management requires expensive, risky, and extensive solutions to return to one of the more desireable native states (I–IV). The remaining states consist of desertified sagebrush steppe, which constitutes brush with only introduced annuals (cheatgrass or crested wheatgrass seedings) in the understory (state V). This comprises about 17 percent (375,000 acres) of the planning area. Introduced wheatgrass and ryegrass pastures (state VI), such as crested wheatgrass seedings, comprise about 3 percent (72,000 acres) of the planning area. Introduced

grass pastures with shrub reinvasion (state VII) comprise about 3 percent (60,640 acres) of the planning area. Cheatgrass/medusahead (state VIII) comprise at least 10 percent of the planning area.

By identifying and quantifying the described conditions (states) of sagebrush steppe in the planning area, management can better direct the use of allotments and rehabilitation possibilities. Also, these states are a method for examining wildlife populations within the same parameters (Knick et al. 1999). It is cheaper and more feasible to foster good stewardship of land having late seral vegetation (manage while in states I–IV) rather than to rely on restoration efforts after degradation has taken place (states V–VIII).

One of the recent proposals for rehabilitation after wildland fires is to plant crested wheatgrass immediately after a fire (especially if preferred native seeds are not available). Then, after the soil has been stabilized, go into the area and replant with native seed. This is costly, and in many instances may not work. Recent research has demonstrated that planting crested wheatgrass caused a decline in soil quality and may increase the amount of carbon dioxide in the atmosphere. Soil revegetated with native grasses is a more effective sink for carbon. The results suggest that the effects of this introduced species extend beyond the displacement of native species and the reduction of diversity, and include the alteration of pools and flows of energy and nutrients in the ecosystem (Christian and Wilson 1999).

The past discussion is a method for determining past use and effects of management on the sagebrush steppe and how the individual plants interact with each other. The major secondary, indirect, or cumulative impacts to sagebrush steppe vegetation is loss of late seral communities, destruction of understory and perennial vegetation, loss of biodiversity, and conversion to marginal and degraded communities below the threshold of possible restoration. In the section on monitoring, methods for breaking up areas of monoculture, whether it be cheatgrass, crested wheatgrass, or sagebrush stands, mechanical means such as brush beating, replanting of sagebrush, or prescription burns all need to be considered to create a mosaic of diverse plant communities.

The impacts on plant communities from activities implemented on adjacent private, state, and Federal lands would involve mainly fire management and recreational uses. The closure of roads and OHV use could have a significant impact on shrub steppe communities. The loss of habitat due to noxious weed invasion could cause severe impacts to sagebrush communities. Integrated weed management involving all landowners would be important for effective prevention of noxious weed invasion and establishment.

Riparian and Wetlands

Introduction

Due to the interrelated nature of riparian/wetland vegetation, hydrology, watershed function, water quality, and aquatic and wildlife habitat, the following section includes a discussion of the impacts of management alternatives on all of these resource values collectively in one location. More detailed descriptions of impacts to some of these related resource values are also discussed in other resource impact sections of Chapter 4.

Management Goal—*Restore, maintain, or improve riparian vegetation, habitat diversity, and associated watershed function to achieve healthy and productive riparian areas and wetlands.*

Analysis of Impacts

Alternative A

Under current management, BMP's are developed and applied on a case-by-case basis. Because there is currently no set of standard BMP's, they cannot be analyzed here.

Managing for proper functioning condition only as a minimum goal may limit further improvement toward site potential in riparian/wetland areas. In other words, proper functioning condition is not the ultimate goal but the first step in attaining desired range of condition. Focusing specifically on the riparian/wetland areas discounts effects at a watershed scale. Management to promote or maintain proper functioning condition on a minimum of 75 percent of the riparian/wetland areas could limit further improvements toward site potential. Actions that maintain/improve watershed conditions, improve ecological condition, improve vegetation cover and condition, manage nonnative seedings, and manage forest and woodland areas would have a positive impact in the long term on riparian/wetland areas by increasing vegetation cover on uplands and reducing erosion into riparian/wetland areas. Impacts would be minimal, however, because improvement from these actions would be slow and incremental on a variety of sites scattered throughout the resource area.

Juniper removal and prescribed burn projects in upland portions of watersheds could have positive impacts on riparian/wetland vegetation by improving ground cover, infiltration, soil moisture storage, and watershed conditions in the uplands. Increasing grass, forb, and (eventually) shrub cover is expected to improve infiltration rates and soil moisture storage.

Management of special status plant species would have a beneficial effect on riparian/wetland vegetation where the specific plant species depended on improved riparian/wetland vegetation. However, emphasizing management for the requirements of individual species could minimize overall watershed improvement by concentrating on local site improvement at the cost of wider, watershed-level improvement. Incorporation of special status plant species management into allotment monitoring and evaluation processes would be beneficial where the plant habitat depended on improved riparian/wetland vegetation.

Control of weeds would improve or maintain watershed and riparian conditions, which would result in a positive effect to riparian/wetland vegetation. By reducing competition for water and nutrients, ground cover would improve to species with better soil-holding capabilities. Native species protect banks and survive flood flows better than many introduced and noxious weeds. Continued public education would help reduce weed spread.

Continued adjustment of management on riparian/wetland areas would be beneficial to riparian function and water quality. Improvements could be limited by the restricted goals and objectives permitted under the current plans.

Riparian/wetland vegetation maintenance and restoration would improve fish and aquatic habitat; however, improvement limited only to proper functioning condition could prevent further improvement to site potential, as described above.

Managing for proper functioning riparian/wetland conditions that consider plant community structure, cover, forage, and other riparian habitat elements important to game and nongame wildlife species could have positive effects on riparian/wetland vegetation and associated riparian/wetland-dependent wildlife species. Deer fawning and riparian/wetland nesting habitat would improve.

Existing grazing systems have led to improved riparian/wetland conditions, and the option is available to further adjust systems and modify or construct exclosures to meet objectives (grazing systems and their effects are described in Appendix E-2 of the Draft RMP/EIS and Appendix E-5). However, objectives are defined primarily by proper functioning condition, and as discussed in Chapter 2, proper functioning condition is only a beginning point, with desired range of condition usually being a much more advanced state. Hence, the level of improvement would be limited compared to setting objectives based on site potential.

Impact of grazing authorization and rangeland project implementation on riparian/wetland sites is site-specific. Grazing management on many of these sites in the resource area has been adjusted to maintain or improve riparian sites by managing for vegetation and stream channel improvement. Other sites still need management adjustment, mainly small wetland/riparian areas within larger pastures. Project work would only be completed with environmental analyses and mitigative measures to protect riparian/wetland function.

Authorization of temporary nonrenewable grazing use could preclude the accumulation of surplus plant matter for ground cover, litter development, and enhancement of watershed conditions, riparian/wetland vegetation, and ground-nesting wildlife species. Unauthorized grazing use in riparian or wetland pastures could have a negative impact on these resources. If use is detected early, this action would have a minimal negative effect. If use occurs over a longer period, it could have a negative effect, if bank-stabilizing or wetland vegetation is removed over authorized levels.

Maintenance of current spring developments for livestock, wild horse, and wildlife water would have positive effects on offsite riparian/wetland vegetation by distributing use away from critical riparian/wetland areas. Water availability away from other wetland riparian sites distributes use to more locations. Maintenance of exclosure fences around spring developments and outflows prevents grazing and trampling of vegetation at the spring site. However, by not returning spring flows into their natural channels, loss of riparian/wetland vegetation extent would continue.

Playa or lakebed water development could impact sites currently in proper functioning condition but would be allowed only where it did not negatively impact threatened or endangered plants or animals. Limiting additional playa and lakebed developments would maintain the current proper functioning condition of affected lentic systems and would be a positive impact to wetland conditions. Lakebed development could change the water regimes onsite or allow water to be transported offsite, negatively affecting wetland

vegetation. Lakebed pit construction could penetrate the impermeable subsoil layer in the lakebed and result in the loss of the water-holding capability of the lake.

Wild horses use the herd management areas year-round and impact riparian/wetland sites negatively in some areas (especially springs in the Beaty Butte area). These effects include uncontrolled removal of vegetation and trampling. Confining horses to herd management areas would reduce damage and benefit the riparian resources outside these areas. Effects on riparian/wetland vegetation due to new water development project implementation would need to be determined on a case-by-case basis, but generally new developments near riparian/wetland areas would have a negative effect if horses had access to remove vegetation. Fences and other management structures could have a beneficial effect by preventing use in these areas.

Managing public lands to primarily provide social and economic benefits to local residents, businesses, visitors, and future generations could have potentially greater impacts to riparian/wetland vegetation in the future.

All wildland fires would have a negative short-term impact on wetland/riparian vegetation as ground cover is removed and woody species are burned. Short-term effects from wildland fire in riparian/wetlands that are in proper functioning condition would be less adverse, and functionally, these areas would respond more quickly to revegetation and rehabilitation efforts. In the long term, if the fire resulted in increased perennial ground cover and resprouting of woody species, it would have positive effects by improving watershed conditions. Sprouting species, some willows, and quaking aspen would respond more quickly after fire.

Fire control activities, including fire line construction, aerial retardant application, and engine access, can have negative impacts to riparian/wetland vegetation. These types of fire control activities cause ground disturbance that can result in increased sedimentation and nick-points in stream channels. Effects would need to be determined on a case-by-case basis and mitigated or eliminated where possible.

Rehabilitating burned areas to mitigate the adverse effects of wildland fire on soil and vegetation in a cost-effective manner and to minimize the possibility of wildland fire recurrence or invasion of weeds would have a positive effect on riparian/wetland vegetation and would be beneficial by reducing soil loss and sediment production. However, benefits may be limited, since emergency fire rehabilitation activities are implemented on a case-by-case basis following wildland fire, and a separate environmental assessment is completed for each emergency fire rehabilitation project.

Prescribed fire can be an effective tool for increasing ground cover and releasing quaking aspen stands from competition with invasive species, and would be beneficial to riparian/wetland vegetation. At the current level of prescribed fire activity (10,000–20,000 acres per year), impacts to riparian/wetland vegetation are minimal and short term. This level, however, may be inadequate to meet the upland vegetation requirements to return to a natural fire cycle. Some quaking aspen sites would continue to decline as juniper outcompeted quaking aspen for water, nutrients, and space. As with wildland fire, prescribed fire can have some short-term detrimental effects as ground cover is removed and erosion and sedimentation increase. These effects can be minimized by prescription design. As ground cover is increased and better soil-holding vegetation is established by grasses rather than shrubs, riparian wetland sites would benefit in the long term.

Current management of the Warner Wetlands Special Recreation Management Area and the remaining public land as an extensive recreation management area could cause negative impacts to riparian/wetland vegetation on some localized sites. Current recreation developments are minimal and have minimal impacts on riparian/wetland vegetation. Increased public use could have a negative effect as more people are attracted to the area and remove vegetation, alter drainage patterns, and compact riparian/wetland sites. Controlling public use could have a positive effect.

Continuing the Cabin Lake/Silver Lake Mule Deer Winter Range Cooperative Vehicle Closure could have a positive effect on riparian/wetland vegetation by limiting off-road travel during a period when soils are saturated and the potential for erosion is greatest. Managing motorized vehicles in accordance with existing open and limited designations would continue to cause negative effects on riparian/wetland vegetation on a site-specific basis, since approximately 2.5 million acres of the resource area are open to OHV's. This allows cross-country travel off of existing roads. Controlling OHV use would have a positive effect by limiting potential for channelization and vegetation removal. Organized events would only be authorized if there were no effects to riparian/wetland resources.

Effects of energy and mineral exploration, location, development, and production would depend on the

location and degree of disturbance. The effects would vary from none, to small-scale effects away from riparian/wetland areas, to major impacts if the exploration requires road development and disturbance in riparian/wetland sites. The effects would be similar for oil and gas leasing, geothermal energy, and mineral material disposal. Effects would occur from ground disturbance that would increase erosion, remove riparian/wetland vegetation, and alter drainage patterns by site and road development. Release of contaminants by development of ore or materials used in extraction could impact riparian/wetland vegetation. Water used in mineral production could dewater streams or reduce stream flows.

Right-of-way development in, across, or near riparian/wetland areas (primarily associated with roads) would have a negative impact on riparian function. Development could result in the loss or constriction of floodplains, disruption or restriction of channel form, and removal of vegetation. Surface and subsurface flows would be disrupted. Drainage patterns could be altered, creating erosion and incision of channels. This type of impact can be observed on several area roads where channels have incised because floodplains have been narrowed by road construction. Most negative impacts to riparian/wetland vegetation would be long term. Rehabilitation following surface disturbance would focus on restoring wetlands to normal functioning conditioning.

Acquiring legal public access to existing, BLM-administered riparian/wetland areas through conservation and scenic easements would ensure future access to these areas, allow management and monitoring of these sites, and should cause no effects to riparian/wetland vegetation. Public use over current levels is not expected over the life of the plan, so impacts should not increase. Riparian/wetland acquisition would increase public land acreage of these special habitats and would benefit riparian/wetland habitats and water quality as specific management is applied to improve these acquired sites. Current policy does not allow for the direct sale of these types of habitats out of the public domain; therefore, the total acres of these habitats would not decrease during the life of the plan.

Construction of new roads or maintenance of existing roads in or through riparian or wetland areas would have a negative impact by reducing vegetation and increasing potential for soil erosion similar to right-of-way development. Development could result in the loss or constriction of floodplains, disruption or constriction of channel form, and removal of vegetation. Surface and subsurface flows would be disrupted. This type of impact can be observed on several area roads where channels have incised because floodplains have been narrowed by road construction. The degree of impact would depend on the extent of the project within the riparian/wetland zone.

Alternative B

Implementation of BMP's would reduce or eliminate some of the impacts to riparian/wetland habitats described below (Appendix D).

Implementation of riparian/wetland restoration projects would benefit riparian/wetland vegetation. Maintenance of spring developments could have positive impacts on riparian/wetland vegetation by distributing livestock use away from riparian/wetland areas, thereby better managing grazing use and trampling of vegetation.

Actions to maintain/improve watershed conditions, improve ecological condition, improve vegetation cover and condition, manage nonnative seedings, and manage forest and woodland areas would have impacts similar to those under Alternative A. However, positive impacts would likely occur more slowly, since emphasis would be on the production and use of forage, as well as other commodity uses.

Juniper management would have more positive effects on riparian/wetland vegetation than Alternative A, since up to 75 percent of early- to mid-successional stands of juniper would be treated. It is not known exactly what percentage of this juniper management would have a direct benefit to riparian/wetland areas. However, projects associated with riparian/wetland areas would have a high priority to produce more improvement to such sites.

Managing upland habitats so that the forage, water, cover, and plant community structure necessary for wildlife are available on public land would not negatively effect riparian/wetland vegetation if wildlife and livestock use did not concentrate in these areas.

Maximizing authorization of temporary nonrenewable grazing use and increasing livestock grazing use by up to 11,657 AUM's could further preclude the opportunities to enhance other resource values.

Playa or lakebed water developments could degrade sites currently in proper functioning condition and could have a negative impact to wetland conditions. These effects are described in Alternative A.

Wild horse management impacts could cumulatively impact riparian/wetland vegetation if the increase of domestic livestock grazing use occurs in the same area as wild horse use.

Impacts from social and economic uses could be intensified with emphasis on commodity production and other public use.

Wildland fire and rehabilitation impacts would be similar to Alternative A. However, short- and long-term prescribed fire impacts could increase with the threefold increase of prescribed fire activity proposed. Deferment of grazing for a minimum of two growing seasons after wildland or prescribed fire in upland areas would promote residual ground cover necessary for ground-nesting species and protect upland function.

Optimizing management of the Warner Wetlands Special Recreation Management Area and expanding management of existing developed and undeveloped recreation sites could have greater impacts to riparian/wetland vegetation, due to increased visitor use of the area.

Managing motorized vehicles with emphasis on the open OHV use designation and maximizing opportunities for organized OHV events could cause more negative impacts to riparian/wetland vegetation by directly damaging vegetation and increasing erosion.

The effects on riparian/wetland vegetation from energy and mineral exploration, location, and development would be similar to Alternative A, but of greater magnitude since it emphasizes commodity production.

The impacts of disposal or exchange of public lands on riparian/wetland habitats would be similar to Alternative A.

New road construction and maintenance of existing roads would have a greater potential for impacting watershed health under this alternative and therefore, have a negative impact on riparian/wetland vegetation by increasing high flows and contributing excess sediment. However, the level of effect could be minimized by following road construction BMP's for riparian/wetlands.

Alternative C

Implementation of BMP's would reduce or eliminate some of the impacts described below (Appendix D).

Western juniper, old growth, snag management, and bighorn sheep management would have the same effects on riparian/wetland vegetation as Alternative B.

Noxious weed management would have the greatest beneficial impacts to riparian/wetland habitats by eradication of a greater number of weeds within the resource area.

Manage upland habitats so that the forage, water, cover, and structure necessary for game and nongame wildlife species would positively benefit riparian/wetland vegetation. Manage livestock forage production to support an increase of 8,390 additional wildlife AUM's would have a minimal impact on riparian/wetland vegetation.

Reducing domestic livestock grazing authorization by 23,015 AUM's and eliminating livestock grazing in riparian conservation areas would eliminate or reduce impacts to riparian/wetland habitats associated with livestock use, including vegetation trampling and overuse, bank destabilization, and fouling the water. Eliminating authorization of temporary nonrenewable grazing use and abandonment and rehabilitation of rangeland projects could also benefit special status species if adequate water is available for use.

Grazing use authorization would be reduced by about 21,647 AUM's, emphasizing other resource values. Grazing impacts would be less from those found in Alternatives A and B, as long as minimum riparian standards for rangeland health were met. Exclusion of livestock in riparian/wetland habitats would have beneficial impacts.

Rehabilitation of spring developments would have positive effects on riparian/wetland vegetation by returning all flow to the original channel, as long as livestock were excluded from these areas. Eliminating new playa and lakebed development and rehabilitating nonfunctioning sites would benefit riparian/wetland habitats and return the sites to proper functioning condition.

Impacts from suppression of wildland fires would be greater than Alternatives A or B. With the increased upper limit of 640,000 acres burned annually and the possible designation of areas for wildland fire use, there is a potential for an increased, permanent loss of riparian/wetland vegetation, depending on where the fires occur and the condition of the habitat prior to the burn. Nonfunctioning riparian/wetland areas could be identified and not placed in designated wildland fire use areas. In habitat in proper functioning condition, wildland fire use would cause temporary riparian/

wetland vegetation loss. Emergency fire rehabilitation would continue to occur to meet resource objectives and rehabilitate areas in nonfunctioning condition.

Prescribed fires could be designed to mitigate or eliminate habitat losses through the use of BMP's. Prescribed burn projects could have more impact than Alternatives A and B, since the upper size limit for prescribed and wildland fires combined would increase to 640,000 acres per year. Riparian/wetland areas in proper functioning condition would recover from fire quicker than those not functioning properly and the impacts would be short term. These effects would be the same as described in Alternative A.

Improving ecological conditions and restoration in the uplands after a prescribed or wildland fire would benefit riparian/wetland habitat by maximizing vegetative production, protecting upland function, and contributing to the continued health of the watershed. Minimum standards for rangeland health would be followed. Rehabilitation seed mixes would be limited to native perennial species only.

Managing recreational use in the Warner Wetlands Special Recreation Management Area and emphasizing undeveloped, dispersed recreation opportunities in North Lake Special Recreation Management Area would benefit riparian/wetland vegetation.

Managing motorized vehicles with an emphasis on the limited OHV use designations and restricting organized OHV events to existing roads and trails would benefit riparian/wetland vegetation.

Effects of energy and mineral exploration, location, development, and production on riparian/wetland habitats could vary from small scale to major impacts if the exploration requires road development and other disturbance. Although all practical measures to maintain or restore riparian/wetland habitat are required of all mining operations, impacts to these resources would continue to occur in the form of localized surface disturbance over the short term. The effects would be similar for oil and gas leasing, geothermal energy, and solid mineral material disposal. The effects would be less than either Alternatives A or B, since this alternative emphasizes protection of natural values and closes certain areas to mineral entry.

The impacts of disposal or exchange of public lands on riparian/wetland habitats would be similar to Alternative A.

New road construction would have less potential for impacting watershed health under this alternative and therefore, would have minimal impacts on riparian/wetland habitat. The level of effect could be minimized by following BMP's, road construction and rehabilitation standards, and adhering to other resource objectives. The removal of all roads within riparian conservation areas and other unneeded roads within the resource area would positively impact riparian and watershed conditions.

Alternative D

Implementation of BMP's would reduce or eliminate some of the impacts described below (Appendix D).

Western juniper, old growth, snag management, and bighorn sheep management would benefit riparian/wetland habitat.

Noxious weed management would benefit riparian/wetland habitats, with greater emphasis on restoration of infested areas.

Managing upland habitats so that the forage, water, cover, structure, and security necessary for game and nongame wildlife species would benefit riparian/wetland vegetation. Managing livestock forage production to support an increase of 9,138 additional wildlife AUM's would have a minimal impact on riparian/wetland vegetation.

If standards and compliance with the conditions of the "Bald Eagle Management Area Plan" (USDA-FS 1994) are followed, effects to riparian/wetland vegetation from timber management would be minimal.

Grazing impacts on riparian/wetlands would be minimized under this alternative as long as minimum standards for rangeland health were met. Implementing livestock grazing systems in riparian conservation areas that promote the recovery or maintenance of riparian systems to the desired range of conditions (based on site potential) would benefit riparian/wetland habitats. The potential for authorization of suspended nonuse and temporary nonrenewable grazing use could cause impacts to riparian/wetland vegetation; however, these uses would only be authorized if conflicts with other uses would not occur. The abandonment and rehabilitation of rangeland projects that do not contribute to meeting other management objectives could benefit riparian/wetland vegetation and allow for restoration of sites not in functioning condition.

Modification of spring developments would benefit riparian/wetland vegetation by distributing livestock

use away from riparian/wetland areas, thereby better managing grazing use and trampling of vegetation.

Restricting further playa and lakebed development and initiating restoration of these systems would benefit riparian/wetland habitats by returning the sites to proper functioning condition.

Impacts from suppression of wildland fires and prescribed fire use would be greater than Alternatives A or B and similar to Alternative C. With the increased upper limit of 640,000 acres burned annually and the possible designation of areas for wildland fire use, there is potential for the permanent loss of more riparian/wetland vegetation, depending on where the fires occur and the condition of the habitat prior to burning. Prescribed fires could be designed to mitigate or eliminate losses, and nonfunctioning riparian/wetland areas could be identified prior to the designation of new wildland fire use areas. Emergency fire rehabilitation would continue to occur to meet resource objectives and rehabilitate areas not in functioning condition. Riparian/wetland areas in proper functioning condition would recover more rapidly than those not in proper functioning condition, and impacts would be short term.

Improving ecological conditions and restoration in the uplands after a prescribed or wildland fire would have the same beneficial impacts on riparian/wetland habitat by maximizing vegetative production, and would protect upland function and contribute to the continued health of the watershed. Minimum standards for ecosystem health would be followed and seed mixes would not be limited to native perennial species only.

Management of recreational use in the Warner Wetlands and North Lake Special Recreation Management Areas would benefit riparian/wetland vegetation by limiting use in these areas.

Managing motorized vehicles with more of an emphasis (than Alternatives A or B) on the limited OHV use designations and restricting organized OHV events to existing roads and trails would benefit riparian/wetland vegetation.

Effects of energy and mineral exploration, location, development, and production in riparian/wetland habitats could vary from small scale to major impacts if the exploration required road development and other disturbance. Although all practical measures to maintain or restore riparian/wetland habitat are required of all mining operations, impacts to these resources would continue to occur in the form of localized surface disturbance over the short term. The effects would be similar for oil and gas leasing, geothermal energy, and solid mineral material disposal. The effects would be less since they emphasize protection of natural values and close more areas to mineral entry than either Alternatives A or B.

The impacts of disposal or exchange of public lands on riparian/wetland habitats would be similar to Alternative A.

New road construction would have less potential for impacting watershed health than Alternatives A or B. The level of effect could be minimized by following road construction and rehabilitation standards and adhering to other resource objectives and BMP's. The removal of any roads within riparian conservation areas that are impacting the stream and/or riparian zone would improve riparian and watershed conditions.

Alternative E

Full implementation and maintenance of the Warner Wetlands and Lake Abert ACEC plans would not occur under this alternative and would cause negative impacts to riparian/wetland vegetation from erosion and flooding.

Natural processes would regulate western juniper, old growth, and snag management under this alternative. Juniper expansion would continue causing negative impacts to riparian/wetland vegetation.

Special status plant species would not be actively managed under this alternative except for future federally listed species, as specified in future recovery plans. This action would have a minimal effect on riparian/wetland vegetation.

Noxious weed management would focus only on high priority areas to protect adjacent private property and would have negative impacts on riparian/wetland habitats currently infested or occupied in the future under this alternative.

Maintenance and restoration would not occur in fish and aquatic habitat, continuing to cause negative impacts to riparian/wetland vegetation.

There would be no management of upland habitats (including rangeland improvements) to provide forage, water, cover, structure, and security necessary for game and nongame wildlife species. This would cause negative effects on riparian/wetland vegetation due to concentrated wildlife use. Bighorn sheep would be

allowed to disperse naturally and could cause negative effects on riparian/wetland vegetation if concentration occurs.

Since livestock grazing would be eliminated under this alternative, there would be no effects from grazing management.

BLM-authorized projects would be limited to those required by law and wild horse survival. BMP's would be implemented on any new projects. The abandonment of all rangeland projects could negatively impact riparian/wetland vegetation by concentrating wildlife use. No maintenance or rehabilitation of spring developments would occur under this alternative, negatively affecting riparian/wetland vegetation within nonfunctioning sites. Restoration of playa and lakebed habitats would not occur under this alternative, negatively affecting nonfunctioning riparian/wetland areas and areas at risk in the future.

Wild horses could cause negative impacts to riparian/wetland vegetation if horse numbers increased above appropriate management levels and concentration occurred.

Social and economic uses would cause the least impact to riparian/wetland vegetation, since no commodity production would be allowed from public land.

Prescribed burning would not be initiated under this alternative. Impacts from wildland fires would be the greatest under this alternative. The appropriate management response would emphasize initial attack, full suppression only to protect human life, and other Federal, state, or private property. Large tracts of crucial wildlife and special status species habitat could be burned and left unusable for the life of this plan. No emergency fire rehabilitation would be completed following a wildland fire. Riparian/wetland areas currently below proper functioning condition would not be restored after wildland fire. Future conditions of riparian/wetland areas would be the result of natural processes across the landscape, as no restoration would be conducted.

Managing motorized vehicles with emphasis on limited and closed OHV use designation and not authorizing organized OHV events would have the same effects on riparian/wetland vegetation as Alternative C.

The effects on riparian/wetland habitat from the energy and minerals program would be least under this alternative, only authorizing energy and mineral actions required by law.

No riparian or wetland acquisition or disposal would occur under this alternative, negatively affecting the potential for increase of riparian/wetlands in public ownership.

New road construction would have the least potential for impacting watershed health under this alternative. Only new roads required by law would be constructed. The level of impacts could be minimized further by following road construction and rehabilitation standards and adhering to other resource objectives and BMP's. Road maintenance would not occur under this alternative. Those roads negatively affecting riparian/wetland areas would continue to cause impacts, and other roads would have potential to cause negative effects in the future without regular maintenance.

Summary of Impacts

Under Alternative A, riparian/wetland vegetation and associated wildlife habitats would continue to improve, although recovery rates and extent of recovery would be reduced to allow for commodity uses, including livestock, transportation, and recreation. Management would continue on a case-by-case basis on a site-specific level with less consideration for watershed-scale effects. The major impacts to riparian/wetland vegetation are from wildland fire (short-term impact), and the lack of an aggressive juniper/quaking aspen and weed management program (long-term impact). The management goal for riparian/wetland vegetation could be achieved under this alternative, with the exception of quaking aspen management and the continuing encroachment of juniper into these stands. Without immediate treatment, some quaking aspen stands could be lost forever. Wetland areas could also be infested with noxious weeds if more effective chemicals are not approved.

Because of law and policy ("Endangered Species Act" and "Clean Water Act" [CWA], etc.) setting high minimum management standards, the impacts from Alternative B would be similar to Alternative A, even though commodity production would be emphasized. Minimally acceptable conditions would be required, and mitigation would occur on a case-by-case basis rather than on a watershed scale. While improvements would occur, they would take longer and not be as extensive as under Alternative A. The management goal for riparian/wetland vegetation could be achieved, but at a much slower rate due to the emphasis on commodity production and public use. Noxious weed management would emphasize protection of commodity resources as opposed to watershed resources. Juniper management would be more aggressive than

Alternative A and would have a beneficial impact to riparian/wetland vegetation.

Negative impacts from Alternative C would be much less than under Alternatives A or B. Recovery rates would be much faster, resulting in better riparian/wetland vegetation conditions. Watershed-scale effects would result in more stable conditions. With emphasis on protection and restoration of natural values, the management goal for riparian/wetland vegetation would be achieved. This alternative has the most aggressive weed, juniper, prescribed burning, and wildland fire use management programs, which could cause greater short-term impacts to riparian/wetland vegetation. An aggressive emergency fire rehabilitation program following wildland fire, coupled with prescribed fire, could be used to restore nonfunctioning riparian/wetland sites.

Impacts from Alternative D would be similar to Alternative C; however, recovery rates for riparian/wetland vegetation would require more time to achieve desired range of condition. Slower recovery rates would be due to less stringent direction to restore watershed function, so less improvement would occur. More consideration is given to watershed scale effects than under Alternatives A and B. The management goal for riparian/wetland vegetation could be achieved under this alternative.

Impacts from Alternative E would be similar to Alternative D; however, without active restoration, currently nonfunctioning riparian/wetland habitats may never reach their full potential. Watershed-scale effects would progress toward natural recovery of uplands, but increased juniper encroachment would continue to cause negative watershed level effects to riparian/wetland vegetation. By allowing natural processes to determine the outcome of habitat conditions, the management goal for riparian/wetland vegetation may never be achieved on limited sites under this alternative.

Secondary, Indirect, and Cumulative Impacts

The major secondary, indirect, or cumulative impacts to riparian/wetland vegetation are habitat loss, destruction, conversion to less marginal habitat, and loss of habitat connectivity. This habitat loss can result from upstream impacts on other land ownerships from forest stand conversion, channel alteration, water withdrawal, road construction, and other vegetation treatments.

The cumulative effects of conversion of riparian/wetland habitat in combination with the BLM's proposed alternatives could have major impacts on special status and other wildlife species dependent on these habitats. Private landowners have converted and drained some wetland habitats to create livestock forage and pasture. Channelization and irrigation water withdrawal on private lands have altered flood and late season flows, which has impacted lower stream reaches and wetland function. Some private landowners have also implemented wetland restoration projects that restore riparian/wetland function. Activities involving prescribed burning would have to be coordinated with adjacent landowners to minimize cumulative, short-term impacts caused by the combined actions. The loss of habitat due to noxious weed invasion could cause severe impacts to riparian/wetland vegetation and special status and other wildlife species using these habitats. Integrated weed management involving all private landowners is essential to protecting these habitats from noxious weed invasion and establishment.

Actions that have a cumulative effect on watershed function, especially in relation to a watershed's ability to capture, store, and slowly release water, would effect riparian and wetland vegetation. On United States Forest Service (USFS) and private lands in the upper elevations of shared watersheds, forest management practices such as commercial and precommercial thinning, partial cut and sanitation, salvage sales, prescribed burning, and wildland fire, would cause negative impacts downstream. On most forested watersheds in the planning area, equivalent clear-cut acres from timber harvest and road construction (resulting in increased canopy openings and decreased ground cover), along with channel incision and channelization, have resulted in increased flood flows, increased flood frequency, and floods that occur earlier in the season. The Deep Creek, Silver Creek, and Chewaucan watershed assessments/analyses (USDA-FS and USDI-BLM 1998a; USDA-FS 1997b, 1999) have demonstrated these changes to some degree in each watershed. The change to earlier, more frequent and intense flood flows has impacted channel form, and thereby fish and aquatic habitat. The cumulative effects that created our current conditions are now being reversed as watershed/landscape analyses are completed and forest health improvements are implemented. Improving forest health should improve watershed conditions, thus having a beneficial effect on riparian/wetland vegetation. The cumulative effect of these projects would build over time to again return to better fish and aquatic habitat conditions.

Private land trends are difficult to predict, but more programs are available to assist private land owners in

implementation of watershed improvements. With increased participation of private land managers, some improvement in stream conditions is anticipated.

Increased sedimentation could result as roads and culverts are placed. However, effects would need to be determined on a case-by-case basis and could be minimized by mitigation.

Forest and Woodlands

Management Goal 1—*In commercial (pine) forest stands, maintain or restore forest health and meet wildlife habitat needs.*

Assumptions

Due to scattered locations, small area size, harsh sites, and low volumes per acre, management of the commercial forest stands for programmed, sustained yield of commercial forest products is not economically feasible. Treatment of the scattered stands outside SMA's (ACEC/RNA's, WSR's, WSA's, etc.) is usually not feasible unless combined with similar land on adjacent ownerships or as part of a larger landscape treatment. As a result, acres of forest treatments and commercial production are not predictable and are not discussed below.

Analysis of Impacts

Alternatives A–D

Management of commercial forestlands within SMA's would be directed by specific plans to protect the special values of the area. Outside SMA's, commercial forest stands would be treated on an "opportunity" basis, as described above. Wildland fires which threaten commercial stands would be fully suppressed in most cases. Table 4-3 shows a summary of impacts to commercial forestland by alternative.

Alternative E

No stand treatments would be done. Forest stands, as a result, would typically be dense, overstocked, and stressed. As ladder fuels increased, the risk of catastrophic loss of entire forest stands from wildland fire would increase over time. Risk of catastrophic loss from insects and disease would also increase over time, as trees became more stressed and less resilient.

Summary of Impacts

Alternatives A–D would have similar impacts. Table 4-3 shows that the area of commercial forest within SMA's is the same across these alternatives (8,739 acres, or 60 percent of the total commercial forestland). Management of these forestlands would be guided by, and subordinate to, the management objectives of the SMA's in which they are located. Treatment of the scattered stands outside SMA's is usually feasible only when it can be combined with treatments on adjacent ownerships or as part of a larger landscape treatment. Wildland fires which threaten commercial forest stands would be suppressed in most cases. Under Alternative E, no stand treatments to improve forest health would be done.

Secondary, Indirect, and Cumulative Impacts

The extent of forest health treatments on commercial forestlands, mainly by thinning and prescribed fire, would be uncertain under Alternatives A–D. Since these forest stands are relatively small in size, any treatment would be dependent on landscape-scale applications, feasibility to combine with adjacent ownerships, or the overall management objectives of SMA's. Under Alternative E, no stand treatments would be done. As understory densities increased, trees would become more stressed and less resilient. Risk of catastrophic loss from insects and stand-replacing fires would increase with time, with little or no natural regeneration of trees due to destruction of the seed source and competition for light, nutrients, and water.

Management Goal 2—*Restore productivity and biodiversity in western juniper woodlands and quaking aspen groves.*

Alternatives A–D

Outside historic (old growth) sites, western juniper woodlands would be managed for the enhancement of other resource values. In areas dominated by invasive juniper (less than 130 years old), management would be driven by the goal of maintaining or restoring native grass or shrub communities after removal of the juniper overstory.

The concept of a sustained yield of commercial forest products does not technically apply, since the species itself is classified as noncommercial. A programmed harvest of juniper products on a sustained-yield basis is not proposed under any alternatives in this plan. However, recovery or salvage of such products as

Table 4-3.—*Lakeview Resource Area forest area within and outside special areas by alternative* [1]

	Alternative				
	A	B	C	D	E
Commercial forests [2]					
Total forest area	14,455	14,455	14,455	14,455	14,455
Within special areas	8,739	8,739	8,779	8,739	0
Outside special areas	5,716	5,716	5,676	5,716	14,455
Juniper woodland					
Total forest area	215,052	215,052	215,052	215,052	215,052
Within special areas	34,887	36,845	61,117	60,424	0
Outside special areas	180,165	178,207	153,935	154,628	215,052
Quaking aspen [3]					
Total forest area	2,063	2,063	2,063	2,063	2,063
Within special areas	87	87	87	87	0
Outside special areas	1,976	1,976	1,976	1,976	2,063

[1] Special areas include WSA's, ACEC's, RNA's, and WSR's.
[2] Commercial forests include ponderosa pine and other forest types from the Oregon GAP dataset.
[3] Since quaking aspen stands are typically smaller than the minimum mapping unit size used in the GAP analysis, these acre values are assumed to be underestimated.

firewood, posts, poles, sawlogs, boughs, and biomass would take place on many of the juniper stands which have been burned or identified for treatment (Map V-3) for enhancement of other resource values.

Management of juniper woodlands within ACEC/RNA's could be further defined in specific plans to protect the special values of the areas. Management of juniper within WSA's would be limited to wildland fire use or prescribed fire methods by the "Interim Management Policy for Lands Under Wilderness Review" 1995 (wilderness IMP) (USDI-BLM 1995b). Table 4-3 shows a summary of impacts to juniper woodlands by alternative. In treated areas, juniper dominance would be generally limited to rocky outcrops, ridges, and other historic (old growth) sites where wildland fire frequency is limited by lower site productivity and sparse fuels. Western juniper would occur at low densities in association with vigorous shrubs, grasses, and forbs (where site potential permits). Historic western juniper sites would retain old growth characteristics.

Under Alternative A, quaking aspen stands would be treated on a case-by-case basis. Treated stands would improve through removal of competing species and/or promotion of regeneration. Untreated stands would continue to decline (Wall et al. 2001) due to competition and lack of resprouting. Under Alternatives B, C, and D, the direction to treat all quaking aspen stands within the life of the plan would greatly improve stand condition and benefit aspen-dependent wildlife species.

Alternative E

No active restoration treatments would be done in western juniper or quaking aspen stands.

Western juniper would continue to dominate invaded sites, as well as historic juniper sites. Western juniper woodlands would continue to increase in density and area, except in areas of recent wildland fire. Historic western juniper sites would continue to experience an increase in younger trees, with increased mortality of individual old growth juniper on the driest sites.

Quaking aspen stands would continue to decline and die out (Wall et al. 2001), except after instances of wildland fire.

Summary of Impacts

Table 4-3 shows the area of juniper woodlands located within SMA's, ranging from 0 to 28 percent, depending on the alternative. Management of these juniper woodlands would be determined by the specific objectives for the special management area (SMA). Alternative A would maintain the present management

practice of meeting public demand for juniper products, while reserving individual snags and old growth trees within treatment areas. By maximizing juniper harvest and treating up to 75 percent of early- to mid-successional juniper woodlands, Alternative B would treat the largest area of juniper and provide the greatest release of native grass and sagebrush communities. Alternatives C and D would treat fewer acres, while Alternative E would involve no management treatments at all.

Alternative A would provide no guidelines for quaking aspen management, while Alternatives B, C, and D would prescribe treatment of all quaking aspen stands being invaded by western juniper and provide the greatest benefit to aspen-dependent wildlife species. Alternative E provides no active treatment of quaking aspen stands.

Secondary, Indirect, and Cumulative Impacts

Historic (old growth) juniper sites would be managed to enhance old growth trees (by thinning or fire) under all alternatives except Alternative E. These old growth stands would improve in vigor by removing competitive, smaller, invasive trees. In areas dominated by invasive juniper (less than 130 years old), the greatest improvement in grass/sagebrush communities would occur through the release of native grasses and sagebrush under Alternative B. Alternatives C and D would treat fewer acres but still improve species composition on a large scale. Alternative E would result in continued juniper expansion and increased density in existing invaded areas. Alternative A would not specifically address management of quaking aspen groves, but Alternatives B, C, and D would improve condition of aspen groves by treating all groves being invaded by western juniper, which, in effect, is nearly all aspen stands. Alternative E would involve no treatment and would allow juniper to take over these stands, with a subsequent decline and termination of the quaking aspen groves.

Special Status Plants

Management Goal 1—*Manage public lands to maintain, restore, or enhance populations and habitats of special status plant species. Priority for the application of management actions would be: (1) Federal endangered or threatened species, (2) Federal proposed species, (3) Federal candidate species, (4) State listed species, (5) BLM sensitive species, (6) BLM assessment species, and (7) BLM tracking species.*

Management Goal 2—*Protect, restore, and enhance the variety of native plant species and communities in abundance and distributions that provide for their continued existence and normal functioning.*

Analysis of Impacts

Alternative A

The present management is driven by the requirements of the individual plant species and would emphasize maintenance rather than restoration and enhancement. Conservation agreements would be written and implemented with the U.S. Fish and Wildlife Service (USFWS) for those species at highest risk. This would leave some other special status species at risk and leave little emphasis on managing for those specific habitat requirements.

Management of special status plant species/communities and cultural plant species/communities would improve vegetation community diversity.

Weed invasions into areas where rangeland health has declined or where surface disturbing projects are developed would have a major, adverse impact on special status plant populations. Weeds would compete directly for resources (space, light, water) and could prevent special status plants from fully occupying their historic ranges. This would be especially true for medusahead invasion in sensitive buckwheat sites, one of the few noxious weeds that invades these barren ash soil sites.

The continuation of current livestock grazing practices, including seasons of use, stocking levels, and turn-out locations, could have an adverse, long-term impact on some special status plant species. Exclosure fences have been constructed at three sites to evaluate the effect of grazing pressures on special status species: prostrate buckwheat, Columbia cress, and Bogg's Lake hedge-hyssop. Repeated studies at these sites for the past 7 years have demonstrated that all three plant species have been negatively impacted by livestock grazing. The prevalence of introduced plants that now compete with native species (especially cheatgrass), grazing on the plants, and the direct trampling impact of livestock, suggest that overall impacts on special status species are and would continue to be adverse. Direct impacts to certain species which are known to be palatable to livestock would continue to be adverse unless sites were fenced or grazing impacts were otherwise mitigated, such as through a change in the season of use.

Creation of exclosures around parts of the special status plant species areas have produced a baseline of foraging use (livestock and wildlife) effects for comparison to nonforaging areas and protected habitat. This data helps with management of the plant species and has added to the general biodiversity of the communities.

Fire management would have a variety of impacts on special status plants. Wildland and prescribed fires have a positive impact on some of the species. For many species, there is not enough biomass or fine fuels to carry a fire in the plant community. Fire suppression activities, such as line construction, would avoid plant sites as much as possible. Maps have been prepared with plant locations for resource fire advisers to use to avoid sites.

Use of heavy equipment in existing ACEC's, RNA's, and WSA's would be avoided and would require line officer approval. Use of retardant would not be limited within these areas for initial attack. Use of retardant during extended attack would be considered as part of the wildland fire situation analysis, considering the resource values at risk. Maps showing SMA boundaries and sensitive and cultural plant species locations would be available for wildland fire situation analyses. As a result of these precautions, impacts to special status plants or communities from fire suppression would be minimal. Management for some special status species and cultural plants that are not fire tolerant (unknown for some of the species) might constrain the use of prescribed fire.

Seeding or planting of native or exotic plant species to stabilize wildland fire or other disturbed areas or to provide additional forage for wildlife or domestic livestock, could alter habitat or affect populations of special status plant species. These actions could increase competition for occupation of a site and alter nutrient cycling regimes by the extensive use of nitrogen-fixing species, such as legumes, in the seedings.

An increase in recreation use within areas of high special status plant concentrations would result in adverse impacts. This could occur through trampling and subsequent weed introductions where sites are disturbed. An increase in OHV activities could result in long-term adverse impacts on special status plant species, particularly those occurring on volcanic ash and sandy soils. Impacts would include destruction of habitat, destruction of plants, and weed introductions resulting in habitat modification and increased competition for resources. Overall, recreation use is anticipated to be adverse.

Locatable mining activities, leasable mineral activities, and mineral material disposal activities would have the potential to impact special status plants and their habitats. The extent of impacts would be determined primarily by the amount of activity, location, and mining techniques. Leasable mineral activities would be subject to stipulations which generally result in minimal direct impacts to special status plants. Habitat fragmentation could cause long-term indirect negative impacts, as gene flows could be disrupted where sites become unavailable for colonization and exotic/noxious weeds are introduced. Mineral material disposal activities would have no impact on special status plants because this would not be allowed near known occurrences or habitats.

Adjustments in land tenure would generally be beneficial, as BLM policy emphasizes retention of public land with high resource values and would not permit exchange or sale of public land occupied by special status species (unless land of equal or higher biological value is acquired in exchange). Prior to approval and issuance of any rights-of-way, lease, or permit, site examinations for special status plants would be conducted; therefore, generally no adverse impact would occur.

Alternative B

Vegetative treatments, including juniper control, prescribed burning, and seedings, could impact special status species, depending on the species, the number of exotic species within the area, overall ecological condition, and the likelihood that exotics would colonize the sites following treatment. Field surveys would be conducted prior to treatments; however, due to the generally large size of such treatments, species may be overlooked and adverse impacts could result if species are uprooted during mechanical treatments.

Increased livestock use would have a short-term impact to special status plant species particularly through trampling in concentrated use areas, defoliation of the palatable species, and potential introduction of weed seeds into new sites. Exclosure fences would be constructed to protect plant sites; some individual sites could be lost because of the lag time between establishing and confirming monitoring results and construction of protective exclosures. Long-term impacts would be slight to moderate to species as a whole; direct long-term negative impacts to certain species which are known to be palatable to livestock would continue at most sites, except those areas fenced to exclude

livestock.

Depending on the number of projects proposed, construction of new projects could result in long-term indirect adverse impacts on some species if the projects resulted in moving livestock into areas that were previously used lightly. In some cases, special status plants could benefit by improved dispersion of livestock. This action may result in numerous indirect impacts to species, particularly through introduction of weed seeds and potential reduction in seral stages at localized sites.

As in Alternative A, locatable mining activities, leasable mineral activities, and mineral material activities would have the potential to impact special status plants and their habitats. In the Devils Garden, if not designated wilderness, all lava resources would be available for commercial collection. Though no special status plants are known to exist in the area, one rare *Mimulus* species may grow there. Inventories would have to be carried out before mining occurs. Lake Abert would be open to mining salts in the lake. This does not threaten any plant species, but extraction, development, and other disturbances related to mining could have an adverse impact on special status plants.

Fire management would have the same potential impacts as Alternative A, as would the seeding or planting of native or exotic plant species to provide additional forage for wildlife or domestic livestock or to stabilize disturbed areas.

An increase in recreation uses in areas of high plant concentrations would result in adverse impacts to special status plant species. This could occur through trampling and subsequent weed introductions where sites are disturbed. Overall, recreation use would be slight to moderately adverse, depending on concentrations of recreational use. OHV activities would have the same types of impacts as in Alternative A.

Impacts from adjustments in land tenure and rights-of-way, leases, or permits would be the same as Alternative A.

Alternative C

This alternative would manage for desired range of conditions by using a mix of restoration and enhancement measures for special status plant species, and by using protection measures only where there are no opportunities for restoration. It would emphasize land management that fosters overall community health, habitat integrity, and landscape-level issue resolution, as well as meeting the requirements of individual species and their habitats. Conservation agreements would be developed to protect and monitor special status plant species and habitats. There also would be more emphasis to conduct systematic inventories of populations and distributions of special status plant species where baseline information does not currently exist.

Vegetation treatment impacts would be the same as Alternative B. However, there would be fewer treatments, and less acreage would be treated and impacted.

Wildland fire management impacts would be the same as Alternative B, with special status plant species considered in all suppression actions. Since most sensitive plants are adapted to fire, the implementation of more prescribed fire, compared to Alternatives A and B, would not significantly impact sensitive plant species. Prescribed fire is recommended at Cave Springs (which is now fully protected from grazing by fencing) as a method of clearing vegetation, which is competing with the reestablishment of desert allocarya. Several other methods of reestablishing this extirpated species have been attempted, and all have failed.

Livestock grazing would decrease AUM's by 20 percent, and no temporary nonrenewable grazing use would be authorized, thus lessening the adverse effects on sensitive plants. This would be especially true in areas where livestock grazing has been documented to have a direct effect on specific special status plants. Studies have shown, using existing exclosure fences around part of the communities, that special status species plants are being threatened by grazing of wildlife, livestock, and wild horses. Fencing would protect populations of Bogg's Lake hedge-hyssop, prostrate buckwheat, Cusick's buckwheat, snowline cymopterus, and Columbia cress from livestock and wild horses.

Observation and monitoring have demonstrated that wild horses prefer areas that are open and similar to the ash-flow, open soil areas of sensitive plant species. Horses tend to destructively congregate in these areas and mark them with their dung piles. In the Beaty Butte Herd Management Area, horse trails cross several sensitive plant species areas. While the AUM's of forage for wild horses would not change in either herd area, wild horse impacts would still occur. The population of Crosby's buckwheat near Fish Fin in Beaty Butte, and possibly Cusick's buckwheat and snowline cymopteris in the Black Hills, would need to be monitored to determine if horses are causing damage to those populations. Horses range and graze much

differently than livestock; the ashy hills where the buckwheats grow are regularly visited by wild horses. Wild horse hoof action and creation of trails kill the plants that are barely surviving in these hostile habitats.

Nine of the ACEC's (proposed and existing) have special status species growing within them and would be managed, in part, to enhance those values. Creating ACEC's with special management would have beneficial effects for both plants and their habitats within the ACEC boundaries. The added protection of overlapping WSA boundaries exists on about 115,652 acres. In these nine ACEC's, careful consideration would be given to mitigate or deny authorization of activities that could have a potentially negative effect on the plants or habitats. What may be good for other resources (such as project developments) could have a negative impact on the plants or their habitats. WSR designation of Guano Creek in the area of Crosby's buckwheat and grimy ivesia would limit mining activity and other potentially surface-disturbing activities.

Benefits to be derived from OHV restrictions would include elimination of OHV disturbance for specific, vulnerable special status plants and their populations. The likelihood that OHV activity would bring weed seed into species habitat would be reduced; however, weed establishment may still occur through other means. In addition, limitations in all ACEC/RNA's to designated roads and trails would provide protection to plant sites. Benefits would occur to sites currently identified as vulnerable to OHV activity, and emergency closure procedures would be used if new conflicts were identified. OHV activity in parts of the volcanic ash and sand complexes, where limitations would not be imposed, would result in certain plants being vulnerable to direct and indirect impacts in the short term.

Locatable mining activities, leasable mineral activities, and mineral material disposal would be much more restricted than Alternatives A or B, including mineral withdrawal for most of the Red Knoll ACEC. There would be less possibility of disturbance to sensitive plant sites by mineral extraction, access road construction, or other supporting activities.

Issuance of any rights-of-way, leases, or permits would have the same impacts as Alternative A. Adjustments in land tenure would be advantageous to special status plants. This alternative places emphasis on acquiring land of high habitat quality and containing other significant biological resources, including special status species. An opportunity to acquire a private section of Mud Creek (20 acres) through the cooperation of The Nature Conservancy, would protect Oregon semaphore grass (*Pleuropogon oregonus*), the only Federal candidate for listing in Lake County. There is also an opportunity to reintroduce this species in other locations on Mud Creek from grass stock grown at Oregon State University.

Alternative D

This alternative is similar to Alternative C, except that protection of habitats or populations would have equal management weight with that of habitat restoration or enhancement. Conservation agreements would be developed to protect special status plant species and habitats. Conservation strategies would then be written to ensure the continuance of these species. Systematic inventories of populations and distributions of special status plant species would be conducted as in Alternative C.

Vegetation treatment impacts would be similar to Alternative C, particularly those associated with prescribed fire treatments.

Livestock grazing would be the same as Alternative A. The current livestock grazing practices, including seasons of use, stocking levels, and turnout locations, would have an adverse long-term impact on some special status plant species. Even though administrative solutions would be emphasized for rangeland projects, fencing would be required in several areas to protect special status plant species from grazing by wild horses and livestock. Special status species management objectives would be incorporated into allotment monitoring and evaluation processes, as in all other alternatives.

While the AUM's of forage allocated to wild horses would not change in either herd area, wild horse impacts would still occur. The population of Crosby's buckwheat near Fish Fin in Beaty Butte and possibly Cusick's buckwheat and snowline cymopteris in the Black Hills, would need to be monitored to determine if horses were causing damage. Although horses usually are not in the Black Hills, Cusick's buckwheat and snowline cymopteris monitoring would need to include horse presence and use of area. Hoof action and trails would kill the plants that are barely surviving in these fragile ash habitats.

Nine of the ACEC's (proposed and existing) have special status species growing within them and would be managed, in part, to enhance those values. The added protection of overlapping WSA boundaries exists. In these nine ACEC's, careful consideration

would be given to mitigate or deny authorization of activities that could have a potentially negative effect on the plants or habitats. These actions, combined with conservation agreements, would provide protection for the habitat and individual plant species.

OHV designations in the open class would be less than Alternative A; for the limited class, they would be substantially higher than Alternatives A or B, but less than Alternative C; for closed class, they would be slightly more than Alternatives A or B (Table 4-5). These designations, coupled with an increase in recreation use within areas of high special status plant concentrations, could result in adverse impacts. Recreation use is anticipated to have a moderately adverse effect on special status plants and communities.

Wildland fire management impacts would be the same as Alternative C, with special status plant species considered in all suppression actions. A prescribed fire to help with the reintroduction of desert allocarya at Cave Springs would be proposed.

Locatable mining activities, leasable mineral activities, and mineral material disposal would have the same impacts as Alternative C, except that there would be less area proposed for withdrawal in the Red Knoll ACEC, allowing a possible sight increase in disturbance by mineral extraction, access roads, and other supporting activities.

Issuance of any rights-of-way, leases, or permits would be the same as Alternative A. Adjustments in land tenure would be advantageous to special status plants and would be the same as Alternative C.

Alternative E

Lack of aggressive weed control would have the potential to result in severe long-term adverse impacts to numerous sensitive species, particularly those along roads and trails where vehicle use may import weeds. Noxious weeds would spread into plant sites, physically displacing populations, preventing normal reproductive processes, and causing water competition on ash soil sites.

Absence of livestock grazing would have a beneficial impact on those special status plants currently grazed or trampled by livestock. In addition, livestock as a mechanism for transporting noxious weeds into new areas would be eliminated. With no project development, mining or other similar disturbances, natural processes would benefit special status plant species. Wild horse impacts would be similar to Alternatives B, C, and D.

If prescribed fire is not allowed, many plant communities that are on the threshold of becoming decadent or desertified would eventually become cheatgrass/meduashead communities or would be overcrowded with shrubs at the expense of the perennial grass/forb understory (Figure 4-1). This action would have a direct impact on special status plants, many of which are already in soils and locations where conditions are marginal for survival. Fire suppression to protect life and property could result in certain sites burning repeatedly within a short time. This may have an adverse effect on plant communities in an early seral stage and would adversely affect some special status species. However, a beneficial impact may be that minimal direct physical damage would occur to plant sites as a result of fire suppression activities.

Lack of recreation management and uncontrolled recreation activities would result in detrimental effects, such as trampling, harvesting damage, and weed introduction in special status species habitats. These effects would occur in areas where recreational activities, such as hiking and camping, are likely to increase.

With cross-country OHV use eliminated, sensitive plant sites would receive full protection from short-term trampling and long-term trails caused by OHV activity. The removal of OHV vehicles in the Sand Dunes would have a positive effect, increasing the possibility that native plants, even special status species, would return to previously disturbed areas.

Summary of Impacts

Under Alternative A, special status plant species and their habitat could continue to improve, although recovery rates and extent of recovery would vary and could be reduced to allow for commodity uses. Mitigation would occur on a case-by-case basis rather than on a watershed or larger scale. While improvements would occur, they would take longer. The major impacts to special status plant species are from wildland fire (short-term impacts and in some cases, depending on plant species, beneficial), the weed management program (long-term impact), grazing impacts from wild horses and livestock, and recreation (especially OHV impacts). The management goals for special status plant species and their habitats could be achieved under this alternative with added protection by fencing. Alternative A would have an overall beneficial impact and would facilitate meeting the objectives for most special status plants and their habitats.

Under Alternative B, in habitats that would be heavily impacted, special status plant species may decline or remain at low levels, potentially contributing to Federal listing of some plant species. Species would be protected individually with little regard for overall habitat health. The objective for special status plants may not be met for species found in heavily impacted areas and where general ecological health is critical to species survival. Overall, this alternative would provide for maintenance of special status plant species, but there is a risk that some species and sites may receive significant adverse impacts and require fencing or other mitigation to meet the objectives.

The overall impact of Alternative C would be positive. Major threats would include OHV activities at the most critical plant sites, management of livestock grazing, and project development placement. All could be mitigated by early planning of activities. Beneficial impacts would be obtained with retention and establishment of ACEC's, because numerous plant populations would be given priority management protection within adequate boundaries for species and habitat representation within a full range of variation. The emphasis on restoration or enhancement would have more importance than protection and maintenance measures. Alternative C would have an overall beneficial impact and would facilitate meeting the objectives for most special status plants and their habitats.

Impacts from Alternative D would be similar to Alternative C, especially with the establishment of new ACEC's; however, recovery rates for special status plant species habitat would require more time to improve. The emphasis would be a balance of protection of habitats and populations with equal weight on restoration and enhancement. The overall impact of Alternative D would be slightly more positive than Alternative A. However, this alternative has several threats to these plants and their communities: the amount of area open to OHV activities, the same livestock grazing goals, increased wildhorse use, and simple ignorance of the special status plants. Plants and activities potentially affecting them would need to be monitored. The ACEC designations would create beneficial impacts, as would restoration plans for impacted habitats. Numerous plant populations would be given priority management protection within adequate boundaries for species and habitat representation within a full range of variation.

Impacts from Alternative E would be similar to Alternative D, but there would be no disturbance from permitted activities and active restoration (there would be no restoration or enhancement and no protective fences). The overall impact on special status plants would be negative. Although there would be no livestock grazing, there would be negative wildlife and wild horse impacts. Lack of noxious weed control and wildland fire suppression would be critical factors causing displacement of plants at certain sites. During the life of this plan, the management goal for special status plant species and their associated habitats may never be achieved in horse herd areas, areas of repeated wildland fires, and where noxious weeds would not be controlled because of allowing natural processes to determine the outcome of habitat conditions. This could contribute to the Federal listing of some plant species.

Secondary, Indirect, and Cumulative Impacts

The major secondary, indirect, or cumulative impacts to special status plant species would be habitat degradation or loss (threatening viability of populations), destruction of the plants, and loss of habitat connectivity and variability.

The impacts from activities implemented on the adjacent public lands creates additional cumulative impacts on the landscape scale. Oregon Department of Transportation (ODOT) coordinates with the BLM for spraying of noxious weeds so special status species in vulnerable areas may be protected. The USFS and USFWS contact the BLM for possible joint impacts, such as fence building, road maintenance, and other actions on their respective administered lands. The ONHP is the data steward for the State and the BLM special status plant species; however, it is not involved in management of those species on Federal lands.

Wild horses from outside the Beaty Butte Herd Management Area could constitute a threat to special status plant species as they move from adjacent ownerships. The BLM manages the herds on BLM land and coordinates with the other agencies, but the cumulative effects still occur.

In the writing of conservation agreements, the BLM takes into account the entire range and distribution of a special status plant species. The cumulative effects of "threats" across the entire range of these species is important in creating conservation strategies. An example is grimy ivesia: there are only 31 plants in the planning area; however, on the Sheldon National Antelope Refuge in Nevada, there are a relatively large number of plants. By analyzing all populations and their ecology, conservation strategies could be proposed.

Land use authorizations could result in substantial surface disturbance, whereby special status plants could be indirectly impacted by fragmentation of habitat or introduction of exotic plants from disturbed areas.

One potential threat to special status plants is the gradual warming of the atmosphere and increase of carbon dioxide; this combination could have a long-term impact on sensitive plant species that are finely adapted to their environment. The BLM cannot change these impacts, but would consider them in viewing all impacts on special status plant species.

Noxious Weeds and Competing Undesirable Vegetation

Management Goal—*Control the introduction and proliferation of noxious weeds and competing undesirable plant species, and reduce the extent and density of established populations to acceptable levels.*

Analysis of Impacts

Alternative A

Projects or activities designed to maintain or improve watershed function, rangeland health, and wildlife habitat would involve ongoing efforts to control weeds to protect/restore plant diversity. Improvements in ecological function would have a positive impact, in that weeds would be less likely to invade, although there would still be some risk of plant establishment. Maintaining and restoring habitat in good condition would reduce the risk of weed invasion. Improved range condition would result in a decreased likelihood of weed establishment and an increased resiliency to weed invasion. Conversely, any resource activity or management action which results in ground disturbance could increase the risk of weed invasion and establishment.

Construction and maintenance of projects, use of heavy equipment, livestock grazing, fire suppression, and recreation activities could all contribute to the spread of existing weeds and the introduction of new species. People, vehicles, equipment, livestock, and wildlife coming from outside the planning area could bring weeds with them and could spread existing infestations. Weeds could be introduced through contaminated seed, mulch, and forage. Cleaning equipment prior to any maintenance or construction activity and before leaving the job site (if the site is already infested) would reduce the risk of seed and plant part movement to other areas. Awarding contracts for projects to local contractors could reduce the risk of introduction and spread of new weeds from outside the planning area.

Ten-mile maintenance buffers between domestic sheep/goats and bighorn sheep would preclude the use of sheep or goats as weed control agents within the buffer area. Weed-infested areas where sheep and goats would be effective in controlling weeds are currently located within this 10-mile buffer. The potential for disease transmission exists for bighorn sheep which stray outside of their occupied habitat if domestic sheep and goats are being used for weed control. A prohibition on the disturbance of raptor nest/roost sites may preclude weed treatment activities within a certain distance from a nest/roost and at certain times of the year.

Deferring grazing following fire would reduce the risk of weed invasion by eliminating a possible mechanism of seed dispersion and the likelihood of increased disturbance, allowing desirable vegetation to become established. Reducing stocking levels, maintaining nonnative seedings in a vigorously productive state, and rehabilitating projects that do not meet management objectives would decrease the risk of weed invasion and establishment. However, livestock water developments would encourage concentrated use around waterholes, which would likely result in bare ground, providing a site for weed establishment. Once established, the weeds could be easily spread by animals to uninfested areas. Temporary nonrenewable grazing use in weed-infested areas could increase the risk of weed spread. The potential impacts resulting from the authorization of temporary nonrenewable grazing use could be mitigated by not allowing temporary nonrenewable grazing use in weed-infested areas during a time when propagules can be transported elsewhere by livestock or vehicles. The potential impacts resulting from livestock grazing could be mitigated by not allowing livestock in weed-infested areas during a time when propagules can be transported elsewhere. Livestock arriving from outside the planning area could be held in feedlots to allow weed seed to pass through the digestive system and fall off the coat. Requiring certified weed-free seed, mulch, and forage could reduce the risk of weed introduction to new areas.

The maintenance of wild horse numbers and low priority for restoration of poor condition rangelands in the Paisley Desert Herd Management Area would contribute to deteriorated range condition and could

increase the risk of weed invasion and establishment.

Weed control in WSA's and ACEC's would be carried out according to special guidance to protect or enhance resource values. Weeds found on acquired lands which are adjacent to or within existing WSA's that meet wilderness criteria would be aggressively controlled. Weed control would benefit the natural values found in these SMA's.

Prescribed fire would have a beneficial impact as a weed control method and as a tool to stimulate reestablisment of native plants. This would be a part of an integrated weed management prescription to achieve resource objectives. However, some weed species are stimulated by fire and are better able to take advantage of the disturbance than more desirable native plants. Fire suppression activities could introduce weeds when fire equipment and supporting resources are brought in from areas outside the planning area. Existing weeds could be spread to other areas. Emergency fire rehabilitation activities would reduce the risk of weed invasion by reestablishing vegetation on burned sites; however, these activities could potentially introduce or spread weeds through equipment and vehicle use or contaminated seed. Mitigation measures would be implemented to reduce this possibility.

Motorized vehicles could introduce weeds from elsewhere and/or spread existing weeds along ways and trails. Driving cross-country could open up undisturbed areas to weeds spread by vehicles and could establish a conduit for weed movement. However, the increasing demand for recreation would present an increased opportunity to provide weed education materials. Restricting some recreation uses/access could reduce the risk of introduction and the spread of weeds. Allowing organized OHV events would provide an opportunity to educate large groups about weeds. Closing roads decreases the risk of weeds being introduced and spread by vehicles.

All Visual Resource Management (VRM) Class I areas (Map VRM-1 of the Draft RMP/EIS) would require diligent, ongoing inventory and control of weeds. Large weed patches seen from a distance could detract from the visual resource value.

Mining and road construction/maintenance actions could contribute to the spread of existing weeds and the introduction of weed species.

Corridors and rights-of-way tend to be hot spots for weeds. They act as conduits for weed spread and establishment. Acquiring access through weed-infested properties is possible. Mitigation measures could include locating access routes to avoid weed-infested areas and cooperation with willing landowners to control infestations as access is acquired.

Alternative B

The "Abert Rim Weed Management Area Plan" (USDI-BLM 1995e) would be expanded to provide guidance for the proposed Greater Abert Weed Management Area. This area would include all lands within the Abert Subbasin. The plan would be modeled after the "Warner Basin Weed Management Area Plan" (USDI-BLM 1999g). The Abert Subbasin includes lands of several jurisdictions. Noxious weeds and undesirable plants are invading and expanding in the subbasin (just as they are in other parts of the planning area). The development of a cooperative weed management strategy for the basin would benefit all lands in the subbasin. Presently, the weed infestations are still reasonably manageable. If a cooperative effort to control weeds across the subbasin is not adopted, the weed problem would get much worse. Losses to wildlife habitat, water quality, forage production, silviculture, agricultural production, and recreation values would accelerate.

Projects or activities which maintain or improve watershed function, rangeland health, and wildlife habitat, as well as management actions which result in ground disturbance, would have the same impact described under Alternative A. The emphasis on increased commodity production would provide greater opportunities for weed introduction, spread, and establishment. As such, the weed program would need to become more aggressive with increased efforts in education, prevention, early detection, and control. People, vehicles, equipment, livestock, and wildlife coming from outside the planning area would have the same impact as in Alternative A.

Projects such as fencing, mining, vegetation projects to optimize forage production and use by livestock and wildlife, juniper harvest, increased prescribed fire, and commercial use in the Sunstone Collection Area would cause more disturbance to soil and vegetation and would increase the potential for weed invasion.

Wild horse impacts on weed introduction and expansion would be similar to Alternative A. Even if numbers of horses were reduced, there would likely be a subsequent increase in livestock use with similar impacts on weed introductions and expansion.

OHV, VRM, mining, land tenure, rights-of-way, and

road construction/maintenance actions would have the same types of impact as Alternative A, but would likely be of greater magnitude.

Alternative C

Impacts of developing and implementing the "Greater Abert Weed Management Area Plan" would be the same as described under Alternative B.

Projects or activities which maintain or improve watershed function, rangeland health, and wildlife habitat, as well as activities or management actions which result in ground disturbance, would have the same impact that is described under Alternative A. The emphasis on protection of natural values under this alternative would dictate that the weed program be the most aggressive. A zero-tolerance policy for noxious weeds would result in eradication attempts on all existing sites, increased efforts in inventory and education, and restoration of all weed sites toward the reestablishment of native species.

The actions proposed under this alternative, such as fewer range improvements, less emphasis on providing livestock forage, excluding livestock from streams, springs, and riparian and wetland areas, no temporary nonrenewable grazing use, rehabilitation projects using native species only, removal of roads in riparian areas, increased mineral restrictions, and limiting OHV use to existing roads and trails, would have a positive impact in that these actions would result in a decreased likelihood that weeds would be introduced and existing infestations would be less likely to spread.

Actions pertaining to prescribed fire, wildland fire use, and wild horses would have the same impact as Alternative A.

Alternative D

Impacts of developing and implementing the "Greater Abert Weed Management Area Plan" would be the same as described under Alternative B.

Projects or activities which maintain or improve watershed function, rangeland health, and wildlife habitat, as well as activities or management actions which result in ground disturbance, would have the same impact as Alternative A. Since this alternative strives to strike a balance between protecting and improving natural values while providing commodity production, the weed program would be expanded from present management. Inventory, control, and restoration efforts would increase. Education and outreach efforts would be expanded to include areas outside of Lake County in an attempt to prevent other species from spreading into the planning area.

Livestock grazing impacts would be similar to Alternative A. Increasing AUM's for wild horses and increasing the appropriate management level in the Paisley Desert Herd Management Area would cause more disturbance to soil and vegetation and increase the potential for weed invasion and establishment.

Actions pertaining to prescribed fire and wildland fire use would have the same impact as Alternative A.

Actions such as limiting OHV use to designated or existing roads and trails in some areas (Map R-7), removing livestock from streams which are functioning at risk or nonfunctioning, and restricting mineral development (Maps M-8, -9, and -10) would have a positive impact. There would be a decreased likelihood that weeds would be introduced and existing infestations would be less likely to spread.

VRM, land tenure, rights-of-way, and road construction/maintenance actions would have the same types of impact as Alternative A.

Alternative E

Since uses would be limited, commodity production excluded, and natural processes maximized, the impacts to weeds would be both positive and negative. The exclusion of commodity production activities would generally be positive in that there would be fewer opportunities for ground disturbance and transport of plant parts by people and equipment associated with the commodity use. Only high priority noxious weed species and infested areas on BLM land would be treated to prevent spread to adjacent private property.

Activities which maintain or improve watershed function, rangeland health, and wildlife habitat, as well as management actions which result in ground disturbance, would have the same impact that is described under Alternative A. Maintaining roads for administrative access, maintaining existing water developments crucial to wildlife and wild horses, and removing riparian exclosures could result in ground disturbance, which would increase the risk of weed introduction and establishment.

Impacts from wild horses would be the same as described in Alternative D.

The lack of active fire rehabilitation following wild-

land fire could have detrimental effects if the fire passes through a weed-infested area. Many weed species are encouraged by fire and could dominate the site following a fire if no rehabilitation is implemented.

Summary of Impacts

Under all alternatives, the introduction and spread of weeds would continue. Any management action which results in ground disturbance could increase the risk of weed invasion and establishment. The degree to which the introduction and spread of weeds can be controlled varies by alternative. In Alternative A, weeds would continue to invade from areas outside the planning area, though the size and number of existing infestations could decrease with continued treatment. In Alternative B, there would be an increased risk of weed introduction and establishment because of increases in commodity production that would bring additional equipment and people to the area, possibly bringing weeds from elsewhere or spreading existing infestations. In Alternative C, the short-term risk of weed introduction and establishment would be high as restoration projects were implemented, disturbing the ground surface. In the long term, the risk of weed invasion would decrease as improvements in ecological function occur. Under Alternative D, the risk of weed introduction and establishment could decrease as inventory, control, and education efforts are expanded. The impact in Alternative E would be mixed. The exclusion of permitted uses and commodity production could provide less opportunity for weed introduction and establishment. However, the lack of restoration and fire rehabilitation could lead to an increase in weeds spread.

Secondary, Indirect, and Cumulative Impacts

At the present time, the Fremont National Forest does not have a comprehensive, well-established weed management program. As a result, the forest would continue to be a source of weed infestation since the headwaters of many of the streams on the planning area are located on the forest. Weed seeds would continue to travel downstream onto BLM-administered lands.

If the injunction against the use of certain herbicides is lifted in the future, it would facilitate the control and eradication of weeds on BLM-administered lands. However, it is likely that regardless of the methods used to control weeds, their introduction and spread would continue for the foreseeable future.

Soils and Microbiotic Crusts

Management Goal—*Manage soil and microbiotic crusts on public lands to maintain, restore, or enhance soil erosion class and watershed improvement. Protect areas of fragile soil using best management practices (BMP's).*

Analysis of Impacts

The lack of specific data from the planning area makes impact analysis difficult, if not impossible. However, there is some scientific evidence that is pertinent. Ponzetti (2001) states that ". . . biotic crust responses to recovery from grazing in Oregon appear similar to that of other arid and semi-arid ecosystems." This data ". . . demonstrates overall effects of grazing on lichen and bryophyte soil crusts of Oregon, rather than merely site-specific responses. Slightly lower mean species richness of crusts was found in the currently grazed pastures." This is consistent with data from other parts of the western continental United States and Australia. In general, ". . . biotic crusts from shrub steppe habitats in Oregon are likely to develop greater species richness if they are protected from livestock grazing. However, the magnitude of that difference and the years of protection required to realize an increase in richness remains unknown and may vary from site to site."

Ponzetti found lower crust cover in currently grazed sites. This is consistent with research in the southwestern United States but has not been documented for the Columbia or Northern Great Basins. "Since biotic crusts are known to increase soil stability and reduction in biotic crust cover and surface roughness increases the potential for soil loss. Other functional attributes of crusts may be affected by reduced cover, including contributions of nutrients and soil organic matter." They concluded that within the study region, ". . . biotic soil crust communities are more sensitive to livestock disturbance than vascular plant communities." If the data being collected by ecological site inventory or other research is similar to these conclusions, microbiotic crust analysis may need to become an integral part of rangeland health assessment and in future management decisions.

Alternative A

BMP's (Appendix D) are implemented on a case-by-case basis and are not always applied. As a result, impacts to soils can occur from the construction or maintenance of roads, range improvements, and other surface-disturbing projects. Impacts include soil

compaction from vehicle, livestock, or wild horse use and loss of soil offsite by wind and water erosion. Soils currently in poor condition in the Paisley Desert and Sheeprock areas would remain a low priority for restoration and would possibly get worse.

Domestic livestock and wild horses would continue to have negative impacts to soils by increased compaction at waterholes and along trails. Overuse of vegetation could degrade soil conditions. Areas with poor soil conditions would remain in poor condition. Livestock grazing has a different effect on crusts depending on soil types. Livestock use that does not implement rest/rotation strategies that minimize frequency of surface disturbance during dry seasons and maximizes periods between disturbances may need to be changed to reduce impacts to biological soil crusts (Belnap et al. 2001). Little information exists on the effects of horse populations on biological crusts; however, hoof disturbances along regular trails could cause long-lasting loss of crust cover.

Both prescribed fire and wildland fire remove vegetation and microbiotic crusts which could lead to increased soil erosion. Wildland fires tend to burn at higher temperatures than prescribed fires and could sterilize the soil, killing soil microbes, destroying seed sources, and volatilizing soil nutrients such as nitrogen. Areas burned by wildland fire would be rehabilitated on a case-by-case basis. Burned areas would be rested from livestock grazing for a minimum of two growing seasons. This would eventually provide vegetative cover and reduce soil erosion.

Soil compaction and erosion would occur in localized areas with high concentrations of recreation users, such as developed or primitive campgrounds.

Leaving a high percentage of the planning area open to OHV use (Table 4-5) could have an impact on soils. Vehicles would be able to drive off existing roads and ways, which would result in soil compaction, thereby slowing or preventing water infiltration and causing erosion.

Soils would be impacted by continued mining activity at the existing Tucker Hill Perlite Mine west of Valley Falls, the Oil-Dri diatomaceous earth mining operation in Christmas Valley, and the sunstone mining claims in Warner Valley, as well as mining proposals that could arise in the future (Table 4-6). Soils could be removed offsite or lost to erosion. To minimize this impact and to aid in reclamation of mined sites, soil would be stockpiled onsite and seeded, as needed, to stabilize soil movement and retain organic matter.

Using the ICBEMP road density classification, current road density in the planning area is very low to moderate (ranging from 0.02 to 1.7 miles of road per square mile; Map R-4 of the Draft RMP/EIS). This road density level would not have a significant impact on soils, except in localized areas where roads pass through highly-erodible soils. The projected level of new road construction and average annual road maintenance levels would not cause a significant impact on soils.

Alternative B

Implementing BMP's (Appendix D) on all projects would reduce impacts to soils. Restoration of areas in poor condition, such as Paisley Desert and Sheeprock, would be a high priority under this alternative. Such restoration would improve soil conditions.

Increased livestock use would increase soil compaction, especially around watering and salting areas, and would reduce vegetation cover and litter. These actions would increase soil erosion potential. Wild horse impacts would be similar to Alternative A.

Prescribed fire and wildland fire impacts would be similar to Alternative A. However, the impacts of prescribed fire would be up to three times greater.

Recreation and OHV use would have a similar impact as Alternative A.

Mining activity would impact soils similar to Alternative A. However, the magnitude of impact would be greater (Table 4-6). Any stockpiled soil for reclamation would be seeded to provide a vegetation cover to reduce offsite soil loss from the stockpiles due to wind and water erosion during the life of the mining operation.

Road closures would be few under this alternative, but would help to reduce soil compaction and potential erosion in localized areas. Additional road construction and maintenance and right-of-way use, to support commodity-related activities, would minimally increase soil impacts.

Alternative C

Improvements to soil condition would be greatest under this alternative. Watershed improvement for both function and processes would enhance soil conditions in most cases. Restoration of areas in poor condition, such as the Paisley Desert and Sheeprock areas, would be a high priority. Such restoration would improve soil

conditions. Use of BMP's would be required on all soil-disturbing projects. Fewer projects would be completed. This would reduce loss of soil during construction, as well as reduce soil loss from erosion after the project is finished.

Reduced livestock grazing levels could retain adequate plant litter to maintain soil productivity and limit erosion. Progress toward attaining desired range of conditions would be accelerated. Wild horse impacts would be similar to Alternative A.

Total protection from disturbance would be the easiest way to improve microbiotic soil crusts, but this is not often possible or desirable. However, protection of relic sites as rangeland reference areas would provide important baseline comparisons for ecological potential and future scientific research. While biotic crusts have not been the main criteria for proposing ACEC's, the proposed areas would be less disturbed, allowing for the crusts to recover naturally from damage caused by off-road vehicles and livestock grazing. The benefits from healthy microbiotic crusts are nutrient inputs, better water infiltration and soil surface stability, and in some cases, healthy biocrusts prevent invasion of small-seeded invasive plant species (Belnap et al. 2001).

Impacts of wildland fire would be similar to Alternative B. Impacts of prescribed fire would be similar to Alternative A, but of greater magnitude than Alternatives A or B.

Recreation impacts would be similar to Alternative A. All OHV use would be limited to existing or designated roads and trails. Off-road driving of any kind would not be allowed. This would prevent development of new trails, soil compaction, and new erosion sources. Microbiotic crusts would have a greater chance to recover to ecological potential.

Mineral exploration and development activity would be highly restricted (Table 4-6); therefore, impacts to soils would be minimal.

The greatest number of existing roads would be closed under this alternative (Table 4-4). This would reduce soil compaction and erosion potential, especially in some watersheds. New road construction and road maintenance actions would have similar impacts as Alternative A.

Alternative D

Improvements to soil condition would be greater than Alternatives A or B, but less than Alternative C. Restoration of areas in poor condition, such as the Paisley Desert and Sheeprock areas, would be a high priority. Such restoration would improve soil conditions. Use of BMP's would be required on all potential soil-disturbing projects. This would reduce loss of soil during construction, as well as reduce soil loss from erosion after the project is finished.

Livestock grazing impacts on soils would be similar to Alternative A. Wild horse impacts would be similar to Alternative A, but of greater magnitude due to increased horse numbers.

Recreation impacts would be similar to Alternative A. Impacts to soils from OHV use could be significant. Approximately 56 percent (Table 4-5; Map R-7) of the planning area would be open to cross-country travel, which would result in increased soil compaction and erosion potential.

Mining activity would be restricted in many ways (Maps M-8, -9, and -10) and would have impacts similar to Alternative C (Table 4-6). On any mineral exploration or development activity, topsoil would be stockpiled and used for later reclamation. Stockpiled soil would be seeded to reduce loss to wind or water erosion.

Road closures (Table 4-4) would decrease soil compaction and erosion, especially in some watersheds. New road construction and road maintenance actions would have similar impacts as Alternative A.

Alternative E

BMP's would be implemented for all soil-disturbing projects. However, very few new projects would be done. Areas currently in poor condition in the Paisley Desert and Sheeprock areas would remain a low priority for improvement and would possibly get worse.

With the removal of livestock grazing, the condition of soils previously impacted could recover over time. Deposition of plant litter and incorporation of organic matter into the soil would increase across the landscape, resulting in increased soil productivity, decreased erosion from overland flow, and progress toward the desired range of conditions. On sites dominated by native species, rates of water, nutrient and energy cycling, and soil movement would be restored to near historic levels. Sites supporting shallow-rooted exotic annual species would continue in a degraded condition.

Table 4-4.—*Miles of roads proposed for closure within special management areas* [1]

Area	Alternative A	B [2]	C [2]	D [2]	E [2]	Reasons
Existing areas of critical environmental concern						
Devils Garden ACEC/WSA [3]						
Permanent	11.4	11.4	35.1	11.6	11.4	WSA/big game
Seasonal [4]	0.0	0.0	0.0	40.0	0.0	Big game
Lake Abert/Abert Rim ACEC/WSA [3]	6.4	6.4	22.3	9.7	6.4	WSA resources
Fossil Lake/Sand Dunes/Lost Forest ACEC/RNA/WSA [3]	23.0	23.0	54.4	25.1	23.0	WSA/cultural and paleontological resources
Warner Wetlands ACEC						
Permanent	30.6	30.6	67.7	30.6	30.6	Wildlife/erosion
Seasonal	4.8	4.8	0.0	4.8	4.8	Erosion
Proposed areas of critical environmental concern						
Black Hills ACEC/RNA	1.9	1.9	6.8	3.7	1.9	Botanical resources/erosion
Connley Hills ACEC/RNA	0.0	0.0	6.0	4.1	0.0	Botanical resources/erosion
Fish Creek Rim ACEC/RNA/WSA [3]	5.8	5.8	12.8	7.9	5.8	WSA
Foley Lake ACEC/RNA	0.0	0.0	0.3	0.2	0.0	Botanical resources/cultural resources
Guano Creek/Sink Lakes ACEC/RNA/WSA [3]	0.2	0.2	2.6	2.6	0.2	WSA/botanical resourses/erosion
Hawksie-Walksie ACEC/RNA/WSA [3]	3.7	3.7	14.2	7.8	3.7	WSA/cultural resources
High Lakes ACEC	0.0	0.0	23.0	17.8	0.0	Cultural resources
Juniper Mountain ACEC/RNA	0.0	0.0	6.7	4.3	0.0	Botanical resources/erosion
Rahilly-Gravelly ACEC/RNA	0.0	0.0	11.3	0.0	0.0	Botanical/cultural resources/ erosion
Red Knoll ACEC	0.0	0.0	7.3	3.8	0.0	Cultural resources/riparian resources
Spanish Lake ACEC/RNA	0.0	0.0	4.4	0.6	0.0	Botanical resources/erosion
Table Rock ACEC/RNA	0.3	0.3	11.4	3.9	0.3	Botanical/cultural resources/erosion
Other areas						
Cabin Lake/Silver Lake Deer Winter Range Cooperative Seasonal Road Closure Area [4]	159.0	159.0	239.1	243.4	0.0	Big game
Buck Creek Watchable Wildlife Site	0.4	0.4	0.4	0.4	0.4	Wildlife/erosion
Cougar Mountain	1.7	1.7	1.7	1.7	1.7	Big game
Crane Mountain	0.7	0.7	0.7	0.7	0.7	Cultural/botanical resources/erosion

Area	Alternative A	B [2]	C [2]	D [2]	E [2]	Reasons
Green Mountain	0.4	0.4	0.4	0.4	0.4	Botanical resources
Westside Gravel Pit	0.2	0.2	0.2	0.2	0.2	Cultural resources
Twelvemile Creek WSR	0.0	0.0	0.2	0.2	0.0	WSR resources
Alkali Lake Sand Dunes	0.0	0.0	0.0	0.0	0.0	
Wilderness Study Areas						
Four Craters	16.5	16.5	16.7	16.7	16.5	WSA resources
Sage Hen Hills	0.0	0.0	2.1	2.1	0.0	WSA resources
Squaw Ridge	9.7	9.7	9.7	9.7	9.7	WSA resources
Diablo Mountain	35.1	35.1	39.0	39.0	35.1	WSA resources
Spaulding	21.7	21.7	21.7	21.7	21.7	WSA resources
Orejana	10.1	10.1	10.1	10.1	10.1	WSA resources
Basque Hills	7.1	7.1	7.1	7.1	7.1	WSA resources
Rincon	1.7	1.7	1.7	1.7	1.7	WSA resources
Totals						
Permanent	188.6	188.6	399.1	246.5	188.6	
Seasonal	163.8	163.8	239.1	288.2	4.8	

[1] Mileage values are calculated from road data within geographic information systems.
[2] Closure total includes miles historically closed under Alternative A.
[3] Includes WSA overlap with the ACEC.
[4] Closure is seasonal from December 1 to March 1 each year; the remainder of the year OHV's are limited to existing roads and trails.

Short-term impacts to soil could occur as existing rangeland projects are abandoned and removed. In the long term, areas disturbed during project removal would be stabilized by natural revegetation. However, areas around water holes would recover more slowly, depending on the extent of historic impacts.

Wild horses would have negative impacts to soils similar to Alternative A. Areas with poor soil conditions would remain in poor condition.

The impacts of wildland fire would be similar to Alternative A. However, human-caused wildland fire may increase as recreational activity increases, resulting in increased impacts to soils.

Impacts to soils from recreation activities would increase within areas of concentrated activity, including primitive sites and developed facilities.

All OHV use would be limited to existing roads and trails. Off-road driving of any kind would not be allowed. This would prevent development of new trails, soil compaction, and new erosion sources. Limited maintenance of existing roads could increase impacts as a result of the normal breakdown of roadbeds, wet-weather rutting by vehicles, and channeling of runoff.

Summary of Impacts

BMP's would be implemented for all ground-disturbing activities, such as new projects, fences, road maintenance, and pipelines (Appendix D). The soil management objective would be met under all the alternatives; however, Alternative C would provide the greatest amount of protection to soils, followed by Alternative D.

The greatest potential impacts to soils would be off-road vehicle use, mineral development, and new road construction. The likelihood of new, large scale mineral development is low under all alternatives. Very little new road construction would be expected, since there has been virtually none in the past 20 years.

Indirect, Secondary, and Cumulative Impacts

Watershed condition, including soils, on public lands have improved since the late 1800s. With the implementation of BMP's as standard operation procedures under all alternatives, this improvement would continue. However, there are some upland soil conditions that would not recover without active restoration. Such restoration projects are described within several other resource management sections in various alternatives.

Soil, vegetation, and watershed conditions are intricately tied together. While improving one component can help improve the others, the greatest benefit comes from the synergistic effect of improving all components concurrently. It is the intent of this plan that the synergistic, positive effects would be carried through the life of the plan and beyond.

Water Resources/Watershed Health

Management Goal 1—*Protect or restore watershed function and processes which determine the appropriate rates of precipitation capture, storage, and release.*

Management Goal 2—*Ensure that surface water and groundwater influenced by Bureau of Land Management (BLM) activities comply with or are making significant progress toward achieving State of Oregon water quality standards for beneficial uses, as established by the Oregon Department of Environmental Quality (ODEQ).*

Assumptions Common to Alternatives

- Water quality management plans or total maximum daily loads would improve watershed health.
- The CWA would be implemented through the use of BMP's (Appendix D) and the future development of water quality management plans.
- Management activities that improve vegetation in uplands and riparian areas would decrease flood magnitude and frequency and improve late season flows.
- Native plant communities would capture, store, use, and release water in a manner which decreases erosion.
- A correlation exists between the amount of compaction in a watershed and the number of miles of roads and trails present.

Analysis of Impacts

Direct impacts: The indicators of change for direct impacts to watershed health are: (1) the percentage of

a watershed in potential natural plant communities and (2) the amount of compacted land surface present. Upland plant communities are currently being inventoried to determine what communities are present and each community's condition. This process is called ecological site inventory. An estimate can be made of plant communities and their condition for areas where no inventory data currently exists, but the estimate would be updated with the ecological site inventory information when available. The amount of compacted area in the watershed would be estimated by the number of miles of roads and trails present. If a watershed has many roads and trails, it would also have borrow pits, foot trails, recreation sites, and other compacted areas in relative proportion to the amount of roads and trails. Road density would be used as a surrogate for estimating the amount of compaction in a given watershed.

Risk analysis: The data necessary to analyze the indicators of change for direct impacts is currently being collected for some parts of the planning area and cannot always be estimated for Alternatives B through E. This impact analysis would look at the risk of proposed management based on total number of acres managed, ability of management to change the vegetation community, and ability of management to increase compaction of bare soil. While some management actions could have a wide range of effects, more acres affected or more intense management would increase the risk of changing the vegetation community, increasing compaction, and increasing the amount of bare soil. One example would be OHV use. The risk to watershed function would increase with the amount of acres open to off-road travel. Not all use would cause a decrease to watershed function, but the risk would exist.

Impacts Common to All Alternatives

All alternatives would comply with the CWA by managing for restoration and maintenance of the physical, biological, and chemical integrity of the water in the planning area. This would include management striving to meet Oregon State water quality standards and implementing BMP's. This would provide the baseline resource protection and would protect watershed health. Over time, the condition of watersheds would improve.

There are about 261,500 acres of relatively unmanaged land within the planning area. This area would have little or no recreation, roads, mining, and grazing management. This allows for the natural capture, storage, and release of precipitation. These lands would have a very low risk of management changing the rate of infiltration or soil water storage capacity.

Alternative A

The shrub steppe community management goals and actions focus on maintaining current conditions and use. Restoration would occur on a case-by-case basis. This would not move the upland watershed vegetation communities toward potential natural condition. This would have a risk of changing the rate and ability of watersheds to capture (infiltration rate), store (soil pore space), and release (plant use or water subsurface movement) water. This alternative would maintain the existing upland watershed condition, including areas in poor condition in the Sheep Rock and Paisley Desert areas.

The riparian and wetland vegetation management goals and actions focus on achieving proper functioning condition on a minimum of 75 percent of the area. Restoration would be on a case-by-case basis. Proper functioning condition would be the first step toward achieving the desired range of conditions. However, it would not achieve the potential natural condition or desired future condition. Maintenance of existing and construction of new spring developments would increase the risk to watershed function by increasing water consumption and compaction by domestic livestock, wild horses, and wildlife. Modification of spring developments to allow water to return to riparian areas would improve watershed function. Construction and maintenance of water developments in intact playas and lakebeds would put these systems at risk of negative impacts to water capture, storage, and release because of increased compaction, loss of vegetation, and damage to the impermeable layer.

Western juniper woodlands management goals and actions focus primarily on meeting public demand for juniper products. However, juniper removal or treatment could benefit many aspects of watershed health. Juniper sites have consistently low water infiltration rates, indicating high surface runoff flows, high kinetic energies, and high erosion potentials (Buckhouse and Gaither 1982). Sites with low interspace vegetation cover (mid-successional and old growth woodland stages) have exponentially higher sediment and erosion potentials than sites with greater ground cover from more uniformly dispersed vegetation (Gaither and Buckhouse 1983). Juniper encroachment may impact hydrologic cycles (Wall et al. 2001). Juniper effectively intercept rain and snow before it hits the ground surface (Young and Evans 1984; Larsen 1993). Intercepted snow is subject to sublimation. Within invaded

aspen stands, this can result in less water retained in the snowpack underneath the trees compared to the amount found under a pure aspen stand (Johnson 1971). Conifers also use more water than aspen (Gifford et al. 1983, 1984; Jaynes 1978). Without BMP's, there would be an increased risk of negative effects to watershed function (capture, storage, and release) due to changes in vegetation communities and increased compaction.

The special status plant species management goals and actions focus on individual species. This management would not achieve ecological or watershed goals and thus would have risks for negative impacts on watershed function.

The noxious weeds (and competing undesirable vegetation management) goals and actions focus on integrated management. The populations of noxious weeds would have increased negative effects on watershed function by decreasing the amount of water captured and increasing the use of water onsite.

The water resources and watershed health management goals and actions focus on maintaining current conditions and use. This would put watershed function at risk due to the use of minimum standards for road building and other management actions. Restoration would be on a case-by-case basis without the use of watershed analysis. Because BMP's are prescribed on a case-by-case basis without long-term effectiveness monitoring, there would be a risk to watershed function.

The fish and aquatic habitat management goals and actions focus on instream and near stream condition and use. Protection of fish habitat, riparian areas, and streams would support a healthy watershed.

The wildlife and special status animal species management focuses on maintenance, restoration, or enhancement of habitat. This would support watershed function by moving vegetation and soil conditions closer to potential natural community. However, managing for a single species could put watershed function at risk because an ecological, holistic approach would not be used, and the interaction of watershed function and multiple species needs to be addressed.

The livestock grazing management actions would continue to authorize 108,234 AUM's for livestock grazing. Temporary nonrenewable grazing use would also be allowed. While this could be achieved with no negative impacts to watershed function, there currently are areas with poor vegetation and soil conditions. In these areas, there would continue to be negative impacts to watershed function.

The wild horse management goals and actions focus on continuation of horse use at existing levels within two existing herd management areas near Paisley and Beaty Butte. Wild horses have negative impacts to watershed function by increased water consumption and compaction at water holes. Overuse could degrade vegetation and soil conditions. Currently, there are areas within the herd management areas with poor vegetation and soil condition negatively impacting watershed function. Because the restoration of poor condition, unhealthy rangelands in the Paisley Desert would remain a low priority, negative effects would possibly get worse.

The SMA management goals and actions focus on maintaining the current number of SMA's. Special management areas are at lower risk of damage to watershed function than areas under multiple use management. There would be a risk for negative impacts to watershed function.

The fire management goals and actions focus on suppression, rehabilitation, and fuels reduction treatments. Treatments would occur on 10,000 to 20,000 acres annually. Negative impacts could occur with fire suppression and mechanical treatments due to increased compaction. There would be a risk for negative impacts to watershed function.

The recreation management goals and actions focus on maintaining current conditions and uses, with development in response to public demand. This alternative would have a significant area open to OHV's (Table 4-5). This use would increase the risk of compaction and degraded vegetation or soil condition. This would have a risk for negative impacts to watershed function.

The energy and minerals management goals and actions focus on maintaining current conditions and use. This use would increase the risk of compaction and degraded vegetation or soil condition. This would have a risk for negative impacts to watershed function.

The lands and realty management goals and actions focus on maintaining current conditions and use. Land adjustments which acquire land in good watershed condition would improve overall watershed function. Implementation of rights-of-way for new roads and utility corridors would increase the risk of compaction and degraded vegetation or soil condition. These actions would have a possibility of both improving and degrading watershed function.

The roads and transportation management goals and actions focus on maintaining current conditions and use. Closing roads not needed or causing resource damage would be considered on a case-by-case basis. New road construction and road maintenance would increase compaction and degrade vegetation within and near the road bed. Current road density, by subbasin, is shown on Map R-4 of the Draft RMP/EIS. This would have a risk for negative impacts to watershed function, but that risk would be decreased with the closure and obliteration of unneeded roads.

Alternative B

The shrub steppe community management goals and actions focus on improving forage for livestock grazing. The restoration goal would increase forage on degraded landscapes. This would not move the upland watershed vegetation communities toward potential natural community. The desired range of condition for the shrub steppe would be a range of vegetation communities, including those not in potential natural condition. This would have a risk of changing the rate and ability of the watershed to capture (infiltration rate), store (soil pore space), and release (plant use or water subsurface movement) water. This alternative would maintain the upland watershed condition. There would be a risk to watershed functions because the amount of compaction and water use by plants has been altered, negatively affecting watershed functions. The risk would be greater than under Alternative A.

The riparian and wetland vegetation management goals and actions focus on achieving proper functioning condition. Restoration would occur on a case-by-case basis but would not interfere with commodity production. Impacts would be similar to Alternative A, though the risk would be less than Alternative A.

The western juniper woodlands management goals and actions focus on maximizing allowable commercial and public harvest. There would be an increased risk of negative effects to watershed function due to increased compaction. Harvesting trees in a drainage would also increase the risk of changing subsurface flow to surface flow, possibly increasing surface erosion. The risk would be greater than under Alternative A.

The special status plant species management goals and actions focus on individual species and would not achieve ecological or watershed goals. Thus Alternative B would have risks for negative impacts on watershed function, but this risk would be similar to Alternative A.

The noxious weeds (and competing undesirable vegetation) management goals and actions focus on integrated management, increased inventory, and education. Populations of noxious weeds and competing undesirable vegetation could increase, thus causing a negative effect on watershed function. The risk would be less than under Alternative A.

The water resources and watershed health management goals and actions focus on maintaining current conditions and protection of riparian conservation areas. This would put watershed function at risk due to using minimum standards for road building and other management actions. Restoration would be on a case-by-case basis without the use of watershed analysis. Because BMP's would be used on a case-by-case basis without long-term effectiveness monitoring, there would be a risk to watershed functions. The focus of management in the riparian conservation area would not protect uplands, thus there would be a risk to watershed functions. The risk would be less than Alternative A.

The fish and aquatic habitat management goals and actions focus on instream and near stream condition and use. Protection of fish habitat, riparian areas, and streams would support a healthy watershed, but would not protect uplands; thus there would be a risk to watershed functions. The risk would be greater than Alternative A.

The wildlife and special status animal species management focuses on maintenance, restoration, or enhancement of habitat. This would support watershed function by moving vegetation and soil conditions closer to potential natural community. Managing for a single species could put watershed functions at risk because the interaction of watershed function and multiple species would still need to be addressed. The risk would be the same as Alternative A.

The livestock grazing management actions would authorize up to 119,057 AUM's for livestock grazing and would optimize temporary nonrenewable grazing use. The would increase the risk of negative impacts to watershed functions. The risk would be greater than Alternative A.

The wild horse management goals and actions and risk of negative impacts would be similar to Alternative A.

The SMA goals and actions focus on increasing the number of SMA's by adding Connley Hills with an increase in total acreage of SMA's. These areas would be at lower risk of damage to watershed function than

areas under multiple-use management. This alternative would have a risk for negative impacts to watershed function, but it would be slightly less than Alternative A.

The fire management goals and actions focus on suppression, rehabilitation, and fuel reduction treatments. Treatments would occur on up to 64,000 acres annually. With the increase of fuel treatment, there should be a decrease in wildland fire suppression. There would be more impacts from mechanical treatments than prescribed fire. Negative impacts could occur with fire suppression and mechanical treatments due to increased compaction. There would be a risk for negative impacts to watershed function. The risk would be greater than Alternative A.

The recreation management goals and actions focus on increasing tourism and recreational use. The impacts would be similar to Alternative A (Table 4-5), though the risk for negative impacts to watershed function would be greater than Alternative A.

The energy and minerals management goals and actions focus on maximizing the mineral exploration and development. This would increase the risk of compaction and degraded vegetation or soil condition. This alternative would have a risk for negative impacts to watershed function. Revoking the public water reserve withdrawals would decrease the ability to provide for public multiple use and would increase single private use. The area around Lake Abert, especially the north end, would be impacted by removal of lake-level and total dissolved solids stipulations on mineral leasing. Any development or extraction of lakebed evaporites would negatively impact water resources of Lake Abert by changing the water cycle of the lake and altering the water chemistry. This alternative would have a risk for negative impacts to watershed function. The risk would greater than Alternative A.

The lands and realty management goals and actions focus on maintaining current conditions and increasing area that could be used for other public purposes. Emphasizing land tenure and access acquisition for commodity production could preclude acquisition of high resource value property and result in missed opportunities to facilitate management of watershed health. New rights-of-way could have a negative effect due to land disturbance from construction and increases in compaction and impacts to vegetation condition. Expansion of powerline corridors to 2,000 feet could have substantial negative effects due to the increased size of the potential disturbance area. This alternative would have a risk for negative impacts to watershed function. The risk would be greater than Alternative A.

The roads and transportation management goals and actions focus on maintaining current conditions and use. New road construction and road maintenance would increase compaction and degrade vegetation within and near the road bed. This alternative would have a risk for negative impacts to watershed function. The risk would be greater than Alternative A. Closing roads would reduce areas of soil compaction and potential erosion sources.

Alternative C

The shrub steppe management goals and actions focus on restoring and maintaining a diverse composition and structure of vegetation. From a watershed perspective, restoring degraded conditions would move the upland watershed vegetation communities toward potential natural condition. Implementation of this alternative could maintain and improve upland watershed condition. Implementation of Alternative C has less risk than Alternatives A or B.

The riparian and wetland vegetation management goals and actions focus on identification and development of riparian management objectives. Restoration would be on a case-by-case basis. This would move watersheds toward achieving the desired range of conditions. Rehabilitation of developed springs would return flows to channels that would improve watershed function. Determining feasibility of wetland restoration in lakebeds and playas could improve watershed function. Removing roads from riparian conservation areas would allow full development of floodplains and reduce sediment loads, improving watershed condition. Implementation of Alternative C would have less risk than Alternatives A or B.

The western juniper woodlands management goals and actions focus on protection of resource values. This would move juniper ecosystems toward potential natural community. There would be a risk of negative effects to watershed function due to increased compaction. Harvesting trees in drainages would also increase the risk of changing subsurface flow to surface flow, thereby increasing erosion. The risk would be less than Alternatives A or B.

The special status plant species management goals and actions focus on restoration and enhancement and create new SMA's. This management would move toward ecological or watershed goals and thus would have a low risk for negative effects on watershed

function. The risk would be less than Alternatives A or B.

The noxious weeds (and competing undesirable vegetation) management goals and actions focus on a zero tolerance for noxious weeds. The populations of weeds would decrease, which would have a positive effect in restoring watershed function. The risk would be less than Alternatives A or B.

The water resources and watershed health management goals and actions focus on reducing current impacts and maintaining good condition. This would restore watershed function due to decreased road densities, grazing near streams, springs and wetlands, and uses in drainages where activities would adversely impact watershed function. The risk would be less than Alternatives A or B.

The fish and aquatic habitat management goals and actions focus on instream and near stream condition and use and connectivity. Protection of fish habitat, riparian condition, streams, and the watersheds that support them would support healthy watershed function. The risk would less than Alternatives A or B.

The wildlife and wildlife habitat management of special status animal species focuses on maintenance, restoration, or enhancement of ecosystems. This would support watershed function by moving vegetation and soil conditions closer to potential natural community. The risk would be less than Alternatives A or B.

The livestock grazing management actions would authorize about 20 percent fewer AUM's for livestock grazing. While this could be achieved with no negative impacts to watershed function, there would be a risk of negative impacts to watershed functions. The risk would be less than Alternatives A or B.

The wild horse management goals and actions focus on continuation of horses using rangelands near Paisley and Beaty Butte. Wild horses would have negative impacts to watershed function by increased water consumption and compaction at waterholes, and overuse, which could degrade vegetation and soil conditions. There would be a risk for negative impacts to watershed functions. The risk would be the same as Alternative B, but less than Alternative A.

The SMA's goals and actions would increase the acreage of areas under special management. Areas in special management would be at lower risk of damage to watershed function than areas under multiple-use management. The amount of use allowed, such as grazing or recreation, would increase the risk of compaction and degradation of vegetation or soil condition. This alternative would have a decreased risk for negative impacts to watershed function. The risk would be less than Alternatives A or B.

The fire management goals and actions focus on limited suppression, native seed rehabilitation, and fuels reduction up to 640,000 acres. With the increase of fuel treatment, there should be a decrease in wildland fire suppression over the long term. Fuels treatment would emphasize prescribed fire. Negative impacts could occur with fire suppression and mechanical treatments due to increased compaction. The risk would be less than Alternatives A or B.

The recreation management goals and actions focus on maintaining and enhancing natural values. With none of the resource area designated open to OHV use, this alternative would begin to restore watershed function. The risk would be less than Alternatives A or B.

The energy and minerals management goals and actions decrease the amount of land open to mining. This would decrease the risk of compaction and degradation of vegetation or soil condition but would not entirely eliminate it. This alternative would have a risk for negative impacts to watershed function. The risk would be less than Alternatives A or B.

The lands and realty management goals and actions focus on improving current resource conditions and use. Land adjustments would acquire land in good watershed condition and improve overall watershed function. Implementation of rights-of-way for road building and utility corridors would increase the risk of compaction and degradation of vegetation or soil condition. There would be an increase in areas where rights-of-way are excluded. This would have a greater possibility of improving rather than degrading watershed function. The risk would be less than Alternatives A or B.

The roads and transportation management goals and actions focus on protecting resource values. Closing roads no longer needed or causing resource damage would be considered on a case-by-case basis. BMP's would be used for new road construction and maintenance. Roads would increase compaction and degradation of vegetation within and near the road bed. This alternative would have a risk for negative impacts to watershed function, but this would decrease with protection of resources. The risk would be less than Alternatives A or B.

Alternative D

The shrub steppe management goals and actions focus on restoring and maintaining natural values while providing forage production. Restoration of degraded conditions would occur on a watershed level. This would move upland watershed vegetation communities toward potential natural condition. This could maintain and improve upland watershed condition. Implementation would have a greater risk than Alternative C, but less risk than Alternatives A or B.

The riparian and wetland vegetation management goals and actions focus on identification and development of riparian management objectives. Restoration would be on a case-by-case basis. This would move the watershed toward achieving the desired range of conditions. Not allowing new water developments in intact playas and lakebeds would decrease the risk of negative impacts to watershed functions. Removing roads, which negatively impact streams within riparian conservation area, would allow full development of floodplains and reduce sediment loads improving watershed condition. Alternative D would have a greater risk than Alternative C but less risk than Alternatives A or B.

The western juniper woodlands management goals and actions focus on protection of resource values. This would move juniper ecosystems toward potential natural conditions. The implementation of harvest BMP's would protect watershed functions. Alternative D would have a greater risk than Alternative C but less risk than Alternatives A or B.

The special status plant species management goals and actions focus on restoration and enhancement and create new SMA's. This management would move toward ecological or watershed goals and thus would have a low risk for negative effects on watershed function. Alternative D would have the same risk as Alternative C but less risk than Alternatives A or B.

The noxious weed (and competing undesirable vegetation) management goals and actions focus on an integrated approach. The populations of weeds would decrease over time and have a positive effect on restoring watershed function. Alternative D would have a greater risk than Alternative C but less risk than Alternatives A or B.

The water resources and watershed health management goals and actions focus on reducing current impacts and maintaining good condition. This would move toward restoring watershed function due to implementation of BMP's, minimum standards for upland grazing, and evaluation of near stream grazing. Alternative D would have a greater risk than Alternative C but less risk than Alternatives A or B.

The fish and aquatic habitat management goals and actions focus on protection and restoration of instream and near stream condition. Protection of fish habitat, riparian condition, streams, and the watersheds that support them would promote healthy watershed function. Alternative D would have a greater risk than Alternative C but less risk than Alternatives A or B.

The wildlife and management of special status animal species focuses on maintenance, restoration, or enhancement of ecosystems. This would support watershed function by moving vegetation and soil conditions closer to potential natural community. Alternative D would have the same risk as Alternative C but less risk than Alternatives A or B.

The livestock grazing management actions would authorize 108,234 AUM's for livestock grazing and allow temporary nonrenewable grazing use. While this could be achieved with no negative impacts, there would be a risk of negative impacts to watershed functions. Alternative D would have a greater risk than Alternative C but less risk than Alternatives A or B.

The wild horse management goals and actions focus on the continuation of horses using rangeland near Paisley and Beaty Butte. Wild horses would have negative impacts to watershed function by increasing water consumption and compaction at waterholes, and overuse, which could degrade vegetation and soil conditions. There would be a risk for negative impacts to watershed functions. Alternative D would have a greater risk than Alternative A, which would be greater than Alternatives B and C.

The SMA goals and actions would increase the acreage of areas under special management. Areas in special management would be at a lower risk of damage to watershed function than areas under multiple use management. The amount of use, such as grazing or recreation, would increase the risk of compaction and degradation of vegetation or soil condition. This would have a decreased risk for negative impacts to watershed function. Alternative D would have a greater risk than Alternative C but less risk than Alternatives A or B.

The fire management goals and actions focus on limited suppression, native seed rehabilitation, and fuels reduction on up to 480,000 acres. With the increase of fuel treatment there should be a decrease in

wildland fire suppression over the long term. Negative impacts could occur with fire suppression and mechanical treatments due to increased compaction. Alternative D would have a greater risk than Alternative C but less than Alternatives A or B.

The recreation management goals and actions focus on maintaining and developing recreational uses. This alternative would have a large percentage of the planning area open to OHV use (Table 4-5; Map R-7). This alternative would have a greater risk of negatively impacting watershed function than Alternative C but much less than Alternatives A or B.

The energy and minerals management goals and actions decrease the amount of land open to mining from the current level. This would decrease the risk of compaction and degradation of vegetation or soil condition, but would not eliminate it entirely. This alternative would have a risk for negative impacts to watershed function greater than Alternative C but less than Alternatives A or B.

The lands and realty management goals and actions focus on maintaining current resource conditions and use. Land adjustments would acquire land in good watershed condition and improve overall watershed function. New rights-of-way for road building and utility corridors would increase the risk of compaction and degradation of vegetation or soil condition. There would be an increase in areas where rights-of-way are excluded. This alternative would have a greater possibility of improving rather than degrading watershed function. Alternative D would have a greater risk than Alternative C but less than Alternatives A or B.

The roads and transportation management goals and actions focus on protecting resource values. Closing roads no longer needed or causing resource damage would be considered on a case-by-case basis. BMP's would be used for new road construction and maintenance. Roads would increase compaction and degradation of vegetation within and near the road bed. This alternative would have a risk for negative impacts to watershed function, but this would decrease with protection of resources. Alternative D would have the same risk as Alternative C but less than Alternatives A or B.

Alternative E

The shrub steppe management goals and actions focus on natural restoration. This would move most upland watershed vegetation communities toward potential natural community. This alternative could maintain and improve upland watershed condition. Some vegetation communities would not move towards desired range of condition. Alternative E would have a greater risk than Alternatives C and D but less risk than Alternatives A or B.

The riparian and wetland vegetation management goals and actions focus on natural restoration. This would move watersheds toward achieving the desired range of condition. Alternative E would have less risk than Alternative C, which would be less than Alternatives D, A, or B, respectively.

The western juniper woodlands management goals and actions focus on natural restoration. This would move watersheds toward achieving the desired range of conditions. Alternative E would have less risk than Alternative C, which would be less than Alternatives D, A, or B, respectively.

The special status plant species management goals and actions focus on restoration and protection with no new SMA's. This would move toward ecological or watershed goals and thus would have a low risk for negative effects on watershed function. Alternative E would have a greater risk than Alternatives C and D but less risk than Alternatives A and B.

The noxious weed (and competing undesirable vegetation) management goals and actions are limited. Populations of weeds would increase and have a negative effect on watershed function. Alternative E would have a greater risk than all other alternatives.

The water resources and watershed health management goals and actions focus on natural restoration. This would move most upland watershed vegetation communities toward potential natural community. This alternative could maintain and improve the upland watershed condition. Some vegetation communities would not move toward desired condition. Alternative E would have a greater risk than Alternative C but less risk than Alternatives A, B, or D.

The fish and aquatic habitat management goals and actions focus on natural restoration. Long-term restoration of fish habitat, riparian condition, streams, and the watersheds that support them would promote healthy watershed function. Alternative E would have less risk than all other alternatives.

The wildlife and special status animal species management focuses on natural restoration. This would support watershed function by moving vegetation and soil conditions closer to potential natural community.

Alternative E would have less risk than Alternatives C and D, which would be less than Alternatives A and B.

There would be no permitted livestock grazing. This would reduce the risk of negative impacts from livestock grazing. Alternative E would have less risk than Alternative C, which would be less than Alternatives D, A, or B, respectively.

The wild horse management goals and actions focus on continuation of horses using rangeland near Paisley and Beaty Butte. Wild horses would have negative impacts to watershed function by increased water consumption and compaction at waterholes, and overuse, which could degrade vegetation and soil conditions. There would be a risk for negative impacts to watershed functions similar to Alternative D, which would have a greater risk than Alternatives A, B, and C, respectively.

There would be no SMA's or commodity use. The risk of damage to watershed function would be minimal because of the decrease in commodity uses. Alternative E would have less risk than Alternative C, which would be less than Alternatives D, B, and A, respectively.

Fire management actions would focus primarily on suppression and protecting life and property. As a result, fire suppression activities would be reduced. Negative impacts could occur with fire suppression due to increased compaction of soils from equipment. Alternative E would have less risk than Alternative C, which would be less than Alternatives A and D, which would be less than Alternative B.

The recreation management goals and actions focus on maintaining or minimizing current use. This alternative would have no acres designated open to OHV's. This alternative would help restore watershed function. Alternative E would have less risk than Alternative C, which would be less than Alternatives D, A, and B, respectively.

The energy and minerals management goals and actions would withdraw the entire planning area from mining. This would significantly reduce the risk to watershed function. Alternative E would have less risk than Alternative C, which would be less than Alternatives D, A, or B, respectively.

The lands and realty management goals and actions focus on maintaining current land status with a small amount of disposal possible. The entire planning area would be excluded from the location of new rights-of-way. This would reduce the risk to watershed function. Alternative E would have less risk than Alternative C, which would be less than Alternatives D, A, or B, respectively.

The roads and transportation management goals and actions focus on maintaining existing road system. Closing roads no longer needed or causing resource damage would be considered on a case-by-case basis. BMP's would be used for a very limited amount of new road construction and maintenance. Roads would increase compaction and degraded vegetation within and near the road bed. This alternative would have a risk for negative impacts to watershed function, but this would decrease with protection of resources. Alternative E would have a greater risk than Alternative C, which would be the same as Alternative D, but less than Alternatives A or B.

Summary of Impacts

Under Alternative A, water resources and watershed health could continue to improve, although recovery rates and extent of recovery would be reduced to allow for commodity uses, including livestock, transportation, and recreation. Management would continue on a case-by-case, site-specific basis with less consideration for watershed-scale effects. The management goals for water resources and watershed health would be difficult to achieve under this alternative.

Impacts from Alternative B would be similar to Alternative A because of law and policy ("Endangered Species Act," CWA, etc.) setting a high minimum standard. Because of the priority on commodity production, the risk of negative impacts would increase, as would the cost and effort of implementation. Minimally acceptable conditions would be required, and mitigation would occur on a case-by-case basis rather than on a watershed scale. While improvements could occur, they would take longer and not be as extensive as under Alternative A. The management goal for water resources and watershed health would be more difficult to achieve under this alternative then Alternative A.

Impacts from Alternative C would be much less than under Alternative A. Recovery rates would be much faster and the final results would be better for water resources and watershed health conditions. Watershed scale effects at the levels specified in Alternative C would result in more stable conditions. The management goal for water resources and watershed health would be achieved under this alternative.

Impacts from Alternative D would be less that under

Alternative A. Impacts of implementation of water resources and watershed health guides would be similar to Alternative C, including BMP implementation, but with less stringent direction to restore watershed function and processes. More consideration would be given to watershed scale-effects than under current management. The management goal for water resources and watershed health could be achieved under this alternative.

Impacts from Alternative E would be less than under Alternative A, except for noxious weeds. Without disturbance from commodity production and permitted uses, water resources and watershed health would, in most cases, quickly improve and progress to a later successional plant community. However, some habitats would need active restoration, such as headcut stabilization, or vegetation restoration to acheive recovery within the 15- to 20-year lifespan of this plan. The management goal for water resources and watershed health could be achieved under this alternative.

Secondary, Indirect, and Cumulative Impacts

Management which has or could affect the ability to achieve water resource and watershed health goals include past, present, or future land-disturbing activities in a given watershed. This would include activities which take place on adjacent ownerships, such as past grazing, timber harvest, or road building. The complex system of water diversions, including dams, diversions, canals, and the draining and ditching of wetlands all have had cumulative effects on BLM lands. These activities would be considered when decisions are made on BLM management. The cumulative effects would be similar for all alternatives.

Since the late 1800s, the overall watershed health of the public lands has improved. The damage can still be observed in streams as increased peak flows, decreased base flows, and increased sediment loads and loss of fish habitat. The damage to upland vegetation and soil conditions is still occurring in systems that can not recover without changes in current management, including active restoration.

Noxious weeds and competing undesirable vegetation is the one area that has not improved since the late 1800s. This situation overshadows the desired conditions and changes the path of potential plant communities in some areas. It also can prevent attainment of desired conditions if not controlled on adjacent lands.

Fish and Aquatic Habitat

Management Goal—*Restore, maintain, or improve habitat to provide for diverse and self-sustaining communities of wildlife, fish, and other aquatic organisms.*

Assumptions

- The analysis of effects on stream habitat would also represent effects on lake or reservoir habitat.
- Management activities that improve vegetation in uplands and riparian areas are assumed to decrease flood magnitude and frequency and to improve late season flows. Additionally, improvement in riparian/wetland vegetation would have a direct improvement on fish and aquatic habitat.
- Effects of water quality management plans or total maximum daily loads on fish habitat would be positive under all alternatives.
- Implementation of the "Recovery Plan for the Native Fishes of the Warner Basin and Alkali Subbasin" (USFWS 1998) would be beneficial for all native fish in the Warner Subbasin, as would compliance with biological opinions for the Warner sucker.

Analysis of Impacts

Alternative A

Commercial forest management would have minimal impacts to fish and aquatic habitats, due to the low amount of commercial forestlands in the planning area and their location compared to habitats. While some increase in runoff and sediment could be expected, they could be reduced by following mitigation and current harvest standards. By improving ground cover, juniper management would benefit fish and aquatic habitats as runoff and erosion were reduced. Juniper management associated with riparian/wetland habitats would have a direct beneficial effect and could increase flows at springs (refer to Management Goal 2, Forest and Woodlands and the Water Resources/Watershed Health section of this chapter). The current prohibition of juniper management in Deep, Twentymile, and Twelvemile Creek Canyons would continue to allow degradation of the uplands and associated stream conditions in this portion of the planning area.

Where special status plant habitats are associated with fish and aquatic habitats, considering the effects to the special status species would decrease impact to the associated fish and aquatic habitat. However, emphasizing management based on individual species instead of habitats could limit the amount of possible improvement.

Weed control would have positive effects on fish and aquatic habitats by improving ground cover and decreasing competition with more desirable riparian/wetland plant species.

Improving ecological conditions would benefit aquatic habitats by reducing flood frequency and flow, increasing infiltration, and extending flows later into the season. Improving ecological conditions along streams and other riparian habitats would have direct improvement to these habitats. The extent of impacts from vegetation manipulation would be determined on a case-by-case basis, depending on the implementation method and location. While vegetation manipulation projects could have short-term negative impacts as ground is disturbed (such as by fire and disking), and runoff and sedimentation increases, there should be long-term positive impacts as ground cover increases, thereby reducing runoff and sedimentation. Watershed condition improvement is based on specific problem areas rather than by entire watersheds, so additional watershed-level effects from sediment production and flood events would be greater than potential. Limiting improvement based on proper functioning condition would minimize the improvement potential of fish and aquatic habitats over what would be possible based on site potential, especially if the improvement is focused on the riparian/wetland site instead of the overall watershed. As discussed in Chapter 2, proper functioning condition would only be a beginning point, with the desired range of condition usually being a much more advanced state. Setting objectives based on proper functioning condition only could preclude development to the full site potential of the habitat.

Management designed to improve water quality and to meet ODEQ standards would result in improved watershed, stream conditions, and water quality, as well as improved fish and aquatic habitats. The goal of reducing summer temperatures would result in less stress to stream resident fish, thus improving survival rates. Reduced sediment loads would improve spawning gravels.

Fish and aquatic habitats associated with special status animal species habitats for listed, candidate, and Bureau species would benefit from targeting the special status species habitat for improvement, including implementation of conservation agreements and recovery plans. Emphasizing individual species management over habitat or watershed level management would reduce the extent and level of improvement. Emphasizing individual species could have the effect of benefitting one species over another, which could alter the amount of improvement to fish and aquatic habitat.

Current exclosures and grazing systems have improved many riparian areas, and this improvement would be predicted to continue. Limiting livestock use on bitterbrush to meet deer winter range needs could result in lighter riparian use and would be beneficial to fish and aquatic habitats. Livestock exclosures have maximized riparian improvement and recovery rates to the extent possible without structural work, so maintenance of the exclosures would be beneficial.

Impacts to fish and aquatic habitats from livestock grazing authorization are site-specific and closely tied to impact on associated vegetation. Direct impact to banks from trampling and hoof action, as well as water contamination from livestock waste products, could also occur. Current livestock management has improved conditions on most aquatic habitats; however, on some springs and streams, the grazing authorization continues to have an adverse impact. The sites that are adversely affected are usually small, isolated reaches more often associated with private lands. Authorization of temporary nonrenewable grazing use prevents "excess" vegetation from being left for ground cover and litter development. This prevents enhancement of watershed conditions and fish and aquatic habitat. Limiting new livestock water developments in playas would protect the habitats of the aquatic species that depend on the natural conditions.

There are no perennial fish habitats associated with wild horse herd management areas. Wild horses use the herd management areas year-round and impact some seasonal riparian/aquatic habitats negatively, especially the springs in the Beaty Butte Herd Management Area. Confining horses to herd management areas would prevent damage to sites outside these areas. Control of horse numbers would have some beneficial effect, but because of concentration of use on the springs, the effect would be limited as damage occurred from a minimal amount of season-long use, and any additional use by greater numbers would have little additional effect. Unless riparian sites were addressed specifically, restoration of poor condition, unhealthy rangelands in the Paisley Desert Herd Management Area would have little effect. Mainte-

nance and construction of water developments for horses could be disruptive to aquatic habitats. Fence construction to control wild horse use could be beneficial to aquatic habitats.

Current ACEC and RNA designations would have no effect on fish and aquatic habitats. Interim protection of outstandingly remarkable values for potential WSR's could preclude some management actions beneficial to fish and aquatic habitats, such as instream structures and watershed-level vegetation management, especially juniper treatments.

Limiting land-disturbing activities within identified Native American religious sites or traditional cultural properties could preclude some activities, such as vegetation manipulation, land exchange, or structural improvement, that would be beneficial to fish and aquatic habitats. Traditional uses may impact fish and aquatic habitats by vegetation removal.

The effect of making contracts for services and sale of products available to local firms would be site-specific. However, if competition is limited, the cost of projects to improve fish and aquatic habitats could be greater so fewer projects would be developed. Continuing commodity production levels could result in excessive use in some areas and continued facility operation—especially some roads—could result in channel effects and sedimentation.

Recreation activities in the Warner Wetlands Special Recreation Management Area could have some effect on fish and aquatic habitat, but the effects would be limited if current activity levels continue. Because use tends to concentrate around aquatic habitats, recreation activities could have negative effects through channel alteration and vegetation removal. Effects from the development of recreation sites, tourism, and special recreation permits would be site-specific and could be minimized by design. Controlling public use with special recreation permits would be beneficial.

OHV use has site-specific impacts that could be severe when associated with fish and aquatic habitats. Even though OHV control is limited, specific closures and limitations in existing ACEC's and WSA's would be beneficial. More diverse effects occur at the watershed scale and could result in increased sediment production. No specific areas have been identified as having impacts from OHV's, but there are numerous areas of use scattered across planning area. Some of these areas are on two-track trails not in the transportation plan, and others are on open areas and hillsides.

Managing VRM Class I areas (primarily WSA's) could preclude some management actions beneficial to fish and aquatic habitats, such as instream structures and watershed-level vegetation management, especially juniper treatment.

Impacts from locatable mineral development and exploration would depend entirely on the location of the work. Prospecting would have little impact. Exploration could result in surface disturbance, including road construction. Increased sediment production could be expected. Mine development could result in increased runoff, sediment, and water contamination. The extent of impact would depend on the location of the mine in proximity to aquatic habitats. Existing developments at Tucker Hill, Sunstone Area, and Christmas Valley diatomite operations would have little effect on fish and aquatic habitats. Instream suction dredging could increase sediment production, alter width/depth and other channel characteristics, and disturb or remove shoreline vegetation.

Because of the ability to adjust site development to avoid fish and aquatic habitats, oil and gas leasing should have little impact unless the access roads to the sites or cross-country travel and exploration occur in these habitats. In these cases, sediment could be increased and vegetation disturbed. Geothermal exploration and development would have similar impacts as oil and gas, but an additional concern would be the effects development could have on groundwater aquifers that supply springs. Effects could occur both to temperature and flow of springs, thus altering the associated aquatic habitat. Foskett Spring is of special concern.

Exploration for sodium salts could have impacts to the aquatic habitats associated with the development of drill pads and roads, especially around Abert Lake. Development of a sodium mine would impact a much larger area and would lower lake levels, altering the water availability for shoreline vegetation. The springs near the lake, including XL Spring, could be impacted by lowered water tables and plant construction and operation. While minimum lake levels are prescribed by the current plan (USDI-BLM 1996d), lowering the lake to these levels in 1 year could result in even lower levels in following years because of low input due to drought or increased irrigation demand. Wells developed to support mine operations could have a direct impact to shoreline springs. Impacts would depend on the location of the plant and the direction and location of access and shipping routes.

Impacts from salable mineral development would

depend on the location of the development but should be minimal, based on the ability to modify location of the site. Reclamation of sites would improve ground cover, reducing erosion and runoff potential, and could be beneficial to fish and aquatic habitats.

Land tenure adjustments could improve fish and aquatic habitats. The acquisition of parcels along Twelvemile Creek would allow instream improvements to benefit fish and aquatic habitats. Right-of-way development could have negative effects with increased sediment production and vegetation removal and disturbance. Depending on the location and type of right-of-way, mitigation could minimize effects. For example, rights-of-way involving roads would have greater impacts than small power lines. Access acquisition could be beneficial if it facilitated access for management of fish and aquatic habitats; however, increased sediment and runoff could result.

Minimum standards for roads and other construction activities would provide minimal protection for fish and aquatic habitat from degradation due to erosion and sedimentation. Closing selected roads would have localized positive effects, if doing so reduced runoff and erosion. The road closures and rehabilitation could restore flood plain functioning and reduce direct channel impingement.

Alternative B

The effects resulting from public and commercial use of juniper would depend on harvest criteria and restrictions/BMP's placed on harvest.

This alternative introduces the concept of riparian conservation areas management that would be beneficial to fish and aquatic habitat. Setting a desired range of conditions would be beneficial by recognizing the potential of the site. Improving ecological conditions along streams and other riparian habitats would have direct improvement to these habitats, but the improvement would be restricted by the emphasis on commodity production. Prohibiting water right acquisition could preclude opportunities for fish habitat improvement.

Optimizing forage production implies more extensive use would result in less ground cover and increased impacts to aquatic habitats. Impacts from livestock grazing would be site-specific and closely tied to impacts to associated vegetation. If additional forage from adjustment of appropriate management levels is allocated to livestock, the improvement to aquatic habitats (associated primarily with springs) would be reduced over nonallocation. However, livestock could be managed to provide seasonal rest or deferment, so some improvement could be expected. Emphasizing project construction over grazing management actions could reduce the rate and extent of potential improvements. Construction of additional water developments could have a direct negative impact to aquatic habitats. Allowing new livestock water developments in playas could have negative impacts to the aquatic habitats associated with intact lakes. Spring function improvement would occur but would be limited because of the emphasis on commodity production. Corridor fencing of streams would increase maintenance and cost, but would result in substantial improvement to currently grazed streams.

Optimizing the authorization of temporary nonrenewable grazing use would preclude excess vegetation from being left for ground cover and litter development and further enhancement of watershed conditions and fish and aquatic habitat.

Emergency fire rehabilitation should be beneficial by reducing soil loss and sediment production by fire line rehabilitation and increased ground cover; however, the allocation of additional forage to livestock would reduce benefits. Prescribed fire impacts would be similar to, but of greater magnitude than, Alternative A.

Recreation and OHV impacts would be similar to Alternative A; however, maximizing OHV events could increase impacts to fish and aquatic habitats from additional erosion and sedimentation, resulting in a loss of clean gravel spawning sites.

The springs near Lake Abert, including XL Spring, could be impacted by lowered water tables and directly impacted by the plant construction and operation associated with mineral leasing, especially since current restrictions for minimum lake level would be lifted. Wells developed to support mine operations could have a direct impact to the shoreline springs. Impacts would depend on the location of the plant and direction and location of access and shipping routes. The lack of restrictions on mining and mineral leasing could result in negative effects to fish and aquatic habitats, should development occur on undisturbed lands.

Emphasizing land tenure adjustments for commodity production could result in lost opportunity to acquire valuable aquatic habitats through exchange. Construction of new and expansion of existing powerline corridors to 2,000 feet could have substantial negative effects due to the increased size of the potential distur-

bance area.

Road closures could improve fish and aquatic habitats if they reduce runoff and erosion, but limiting closures to those that would not impact commodity resources could limit the improvement. Implementing BMP's during new road construction and maintenance would minimize impacts to these habitats.

Alternative C

Juniper management would benefit fish and aquatic habitats, improving ground cover and reducing runoff and erosion. Juniper management in riparian/wetland habitats would have a direct beneficial effect and could increase flows at springs; from a watershed level, it would provide increased and longer-lasting stream flows. (Refer also to the Water Resources/Watershed Health section of this chapter.) Limiting stand treatment to 10 percent by wood cutting could reduce benefits. Limiting treatment to 50 percent of stands with fire would reduce benefits. Some areas would need treatment other than by fire to be effective.

Managing special status plant habitats based on a desired range of conditions and considering landscape-level effects would stabilize improvement trends and allow for better long-term conditions compared to management emphasizing individual species.

Increased emphasis on weed control would benefit aquatic and fish habitat through improvement in overall watershed conditions.

Setting standards for watershed and soil conditions would allow determination of progress toward meeting those standards. Managing for improvement on a watershed scale would result in more stable conditions and improved fish and aquatic habitats. Allowing only uses that promote progress toward attainment of instream processes would have direct beneficial effects, especially on the watershed scale. Acquisition of water rights for conversion to instream flows would have substantial benefits by stabilizing flows and maximizing riparian conditions. Designation and management of riparian conservation areas would be beneficial to fish and aquatic habitat.

Considering nongame species could result in additional positive effects to fish and aquatic habitats over concentrating on game species only. Many wildlife species in the Great Basin are dependent on riparian habitat for all or part of their life cycle needs. Improving conditions for all wildlife species should relate directly to fish and aquatic habitat improvements.

Minimizing forage production and range improvements could improve fish habitat by reducing direct impacts from grazing, especially effects from water developments. Following BMP's for grazing or eliminating this use from areas not meeting objectives would improve fish and aquatic habitats. Impacts from livestock grazing would be site-specific and closely tied to impacts to associated vegetation. Beneficial effects to fish and aquatic habitats would occur from grazing systems that maximize improved riparian conditions.

Allowing excess forage (that could have been authorized under temporary nonrenewable grazing use) to remain ungrazed would increase ground cover and litter development, reduce overland flow of water and resulting erosion, and have a beneficial effect on watershed conditions and fish and aquatic habitat.

Rehabilitation of developed springs would return flows to channels that would create additional habitats for aquatic species. One example of this is the development at Falls Spring, where most flow is diverted to a trough, but spring snails are located in the natural outflow channel left with the remaining water. Returning more flow to the channel would create a more secure and better habitat. Determining feasibility of wetland restoration in lakebeds and playas could lead to improved aquatic habitats.

Wild horse impacts would be similar to Alternative A.

Recreation impacts would be similar to Alternative A. Restricting OHV use to existing roads and trails could benefit some fish aquatic habitat or prevent problems from occurring in the future. At Twelvemile Creek, OHV's have eroded a hillside, which is creating a direct sediment input to the stream. Preventing OHV use would allow the site to heal and would stop further erosion and site degradation.

Managing VRM Class I (WSA's) and Class II (WSR's) areas could constrain some management actions beneficial to fish and aquatic habitats, such as instream structures and watershed level vegetation management, especially juniper treatment.

Effects from restricting mineral development (Tables 3-7 and 4-6) would depend on the location of the restriction, but the effect could be very beneficial.

Limiting rights-of-way to designated corridors would minimize additional impacts to fish and aquatic habitat. Acquisition of high resource value lands, including riparian/wetland habitat, would be beneficial.

Access acquisition could be beneficial if it facilitated management of fish and aquatic habitats; however, if new roads are constructed to complete access, increased sediment and runoff could result. The use of BMP's would minimize these effects.

Closing roads would reduce sedimentation and improve aquatic habitats. With few exceptions, impacts to fish habitats from roads (that could be moved) are not great in the planning area. Removing roads from riparian conservation areas would allow full development of flood plains and reduce sediment loads, improving fish and aquatic habitats.

Alternative D

Juniper management would improve ground cover and benefit fish and aquatic habitats as runoff and erosion were reduced. Juniper management associated with riparian/wetland habitats would have a direct beneficial effect and could increase spring flows. (Refer also to the Water Resources/Watershed Health section of this chapter.)

Managing special status plant habitats based on desired range of conditions and landscape-level effects would stabilize improvement trends and allow for better long-term conditions overemphasizing management based on individual species.

Management designed to restore water quality would result in improved watershed, stream conditions, and water quality, and would improve fish and aquatic habitats. Acquisition of water rights for conversion to instream flows would have substantial benefits by stabilizing flows, maintaining water in habitats, and maximizing riparian conditions. Setting objectives based on site potential would be beneficial. Designation and management of riparian conservation areas and establishing a desired range of conditions would be beneficial to fish and aquatic habitat. Considering watershed-level effects and setting objectives based on desired range of condition would be beneficial.

Considering nongame species across most areas could result in additional positive effects to fish and aquatic habitats over concentrating on game species only. Many wildlife species in the Great Basin are dependent on riparian habitats for all or part of their life cycle needs. Improving conditions for all wildlife should relate directly to fish and aquatic habitat improvements.

Livestock grazing would have impacts similar to Alternative A. However, following BMP's for grazing or eliminating this use from areas not meeting objectives would improve fish and aquatic habitats. Existing exclosures have maximized riparian improvement and recovery rates, so maintenance of the exclosure would be beneficial. Spring function improvement would occur but would be limited because of the requirement to supply livestock water. Determining feasibility of wetland restoration in lakebeds and playas could lead to improved aquatic habitats. Limiting new livestock water developments in playas would protect the habitats of the aquatic species that depend on the natural conditions.

Wild horse numbers would increase compared to other alternatives, but because of the concentration of use on the springs, this effect would be limited, as damage occurs from a minimal amount of season-long use and the additional use by greater numbers would have little added impact. Increasing horse numbers in the Paisley Desert Herd Management Area would result in little change in impact to aquatic habitats. Maintenance and construction of water developments for horses could be disruptive to aquatic habitats. By controlling use on aquatic habitats, fences could be beneficial. Seeding or erosion control could provide some benefit to aquatic habitats.

Recreation impacts would be similar to Alternative A. Restricting OHV use in portions of the planning area (Table 4-5; Map R-7) could benefit some fish aquatic habitat or prevent problems from occurring in the future. This benefit would be greater than Alternatives A or B but less than C.

Managing VRM Class I (WSA's) and Class II (Twelvemile Creek WSR) areas could constrain some management actions beneficial to fish and aquatic habitats, such as instream structures and watershed level vegetation management, especially juniper treatments.

Impacts from energy and mineral resource development would be similar to Alternative C (Tables 3-7 and 4-6; Map M-8, -9, and -10).

Limiting rights-of-way to designated corridors would minimize additional impacts to fish and aquatic habitats. Access acquisition could be beneficial if it facilitated management of fish and aquatic habitats; however, if new roads are constructed, increased sediment and runoff could result. Use of BMP's would minimize these effects. Acquisition of high value resource lands, including riparian/wetland habitat, would be a positive impact.

Additional road closures could improve fish and aquatic habitats if they reduce runoff and erosion. The closures and rehabilitation could restore flood plain functioning and reduce direct channel impingement.

Alternative E

Allowing only natural processes to restore watershed and ecological conditions would allow recovery to occur, but at a slower rate than using active restoration techniques, especially in pool and spawning gravel developments. Reduction of soil erosion and associated siltation of spawning areas could be reduced.

Lack of juniper management would result in decreased ground cover as the juniper canopy closed. Sediment production would increase and quaking aspen stand conversions would continue. Some springs and their associated aquatic habitat would decline as juniper dewatered the springs. The effects of juniper encroachment would occur at a watershed scale. (Refer also to the Water Resources/Watershed Health section of this chapter.)

Allowing only natural processes to define vegetation composition would allow the spread of weeds that could reduce ground cover and replace more desirable riparian vegetation. Sites that would respond to active woody vegetation plantings would be delayed in recovery.

Elimination of livestock use would allow full development of riparian vegetation at a faster rate. Increased willow and other woody vegetation cover would stabilize banks and provide increased shading and cover.

Wild horse impacts would be similar to Alternative A. Maintenance and construction of water developments for horses could be disruptive to aquatic habitats. Removing interior fencing in herd management areas could result in additional use and degradation of fish and aquatic habitats.

Lack of spring development maintenance would eventually lead to the failure of the development, the return to a natural spring function and, in many cases, increased riparian habitat.

No active rehabilitation after wildland fire could reduce ground cover and increase sediment production. Water quality and fish habitat would be negatively impacted by increased sedimentation and water temperatures.

Recreation impacts would be similar to Alternative A. Restricting OHV use to existing roads and trails throughout most of the planning area (Table 4-5) could benefit some fish aquatic habitat or prevent problems from occurring in the future. This benefit would be similar to Alternative C.

Elimination of mineral entry, energy and mineral leasing, and mineral material disposal would preclude any impacts to fish and aquatic habitat from such activities.

No option is provided for acquiring new habitats, so sites that could be better protected under Federal ownership could be lost and habitat degradation could occur. Right-of-way exclusion would preclude any impacts to fish and aquatic habitat. Loss of access rights and not developing new access roads would preclude any impacts to fish and aquatic habitat.

Minimum road maintenance or closures would result in substantial increases in sediment production and subsequent siltation of spawning beds in the short term. Over time, sediment production would decrease or stop, and there would be an overall decrease in siltation. Construction of only those new roads required by law would be beneficial by reducing sediment production and promoting full flood plain development.

Summary of Impacts

Under Alternative A, fish and aquatic habitats would continue to improve, although recovery rates and extent of recovery would be reduced by commodity uses, including livestock grazing, roads, and recreation. Management would continue on a case-by-case basis on a site-specific level with less consideration for watershed-scale effects. The management goal for fish and aquatic habitats could be achieved under this alternative.

Impacts from Alternative B would be similar to Alternative A. Because of law and policy ("Endangered Species Act," CWA, etc.) providing minimum protection standards, the difference in effects between Alternatives A and B would be minimal, even though commodity uses would be emphasized. Generally, minimally acceptable conditions would be required, and mitigation would occur on a case-by-case basis rather than on a watershed scale. While improvements would occur, they would take longer and not be as extensive as would occur under Alternative A. The management goal for fish and aquatic habitats could be achieved under this alternative, although at a much

slower rate.

Impacts from Alternative C would be much less than Alternative A. Recovery rates would be much faster and would result in better fish and aquatic habitat conditions. Giving consideration to watershed-scale effects would result in more stable conditions. The management goal for fish and aquatic habitats would be achieved sooner and would be the most desirable for these resource values compared to all other alternatives.

Alternative D, impacts of water resources and watershed health guidance, would be similar to Alternative C, including BMP implementation, but with less stringent direction to restore watershed function and processes. There would be less improvement to fish and aquatic habitat than Alternative C. More consideration would be given to watershed-scale effects than under Alternatives A or B. The management goal for fish and aquatic habitats could be achieved under this alternative, the results would not be as fast, nor progress as far as under Alternative C, but it would be faster than Alternatives A or B.

Alternative E would have mixed effects. Without disturbance from commodity uses, fish and aquatic habitats would, in most cases, quickly improve and progress to a later successional plant community. However, some degraded habitats would need some type of active restoration, such as head cut stabilization, to prevent loss of habitat or recovery within the life of the plan. Watershed scale effects would also be mixed, with natural recovery of uplands progressing well but increased juniper encroachment continuing to degrade watershed conditions and impact fish and aquatic habitats. The management goal for fish and aquatic habitats could be achieved under this alternative. This alternative would achieve goals at a rate and end point similar to Alternative C, except on areas needing active restoration.

Secondary, Indirect, and Cumulative Impacts

Actions that have a cumulative effect on watershed function, especially in relation to the watershed's ability to capture, store, and slowly release water, would ultimately impact fish and aquatic habitat. On most forested watersheds in the planning area, the ". . . equivalent clear cut acres cumulative watershed effects . . ." model evaluations indicate that timber harvest and road construction, along with channel incision and channelization, have resulted in increase flood flows, increased frequency of floods, and floods that occur earlier in the season. The Deep Creek, Silver Creek, and Chewaucan Watershed assessments/analyses (USDA-FS and USDI-BLM 1998b; USDA-FS 1997b; 1999) have demonstrated these changes to some degree in these watersheds. The change in the hydrograph has impacted channel form and thereby, fish and aquatic habitat. The cumulative effects that led to current watershed conditions are now being reversed as forest health improvements are implemented. The cumulative effect of these projects would build over time to return to better fish and aquatic habitat conditions.

Irrigation development has impacted both habitat and fish directly. Water withdrawal increases water temperature and may at times dewater streams removing any fish habitat available. Past diversion structures and channelization have fragmented habitats by preventing fish access to some stream habitats or by preventing access to more secure water in times of drought. For instance, the connection between Honey Creek and Hart Lake is blocked by several diversions that do not allow adequate fish passage, and the diversions are not screened to prevent fish from moving into irrigation channels and subsequently being stranded in fields. Major modifications to Deep and Twentymile Creeks have resulted in the loss of connectivity between these streams and Crump Lake. Most of the diversion structures could be modified to improve connectivity and still provide for irrigation.

Lack of fire has impacted vegetative communities by increased sagebrush and conifer (mainly western juniper) invasion. As canopy cover closes, ground cover from grasses and forbs is reduced, decreasing infiltration and reducing late-season flows. Increased erosion and sediment loads may impact spawning sites. Grazing has added to this process by removing fine fuels, reducing fire size and frequency, and by reducing competition, enabling better establishment of sagebrush and conifers.

The introduction of predatory game fish to the planning area has affected the ability of native fish to thrive and, in some cases, survive. Crappie, bass, and bullhead in Warner Valley have reduced the ability of native trout and suckers to thrive in area lakes. Higher in the watershed, brook trout compete directly with native redband trout.

Wildlife and Wildlife Habitat

Management Goal 1—*Facilitate the maintenance, restoration, and enhancement of big game (mule deer, elk, pronghorn, and bighorn sheep) populations and habitat on public land. Pursue management in accordance with Oregon Department of Fish and Wildlife (ODFW) big game species management plans in a manner consistent with the principles of multiple use management.*

Analysis of Impacts

Alternative A

Protection, restoration, and enhancement of desirable vegetation communities would be beneficial to big game habitat. Management of vegetation within bighorn sheep habitat to provide for diverse, self-sustaining wildlife communities would have positive impacts to bighorn sheep.

Reduction and exclusion of natural (wildland) fires across the landscape has led to a dramatic increase of western juniper in many wildlife habitats. Historically, periodic wildland fires removed invasive juniper and sagebrush, and renewed big game forage grasses and forbs. If invasive western juniper continue to increase, many habitats would be adversely affected. The big game forage base would decrease and predator hiding cover would increase. Though juniper management projects could be implemented in some areas, under current management plans, no specific direction exists for the removal of juniper in bighorn sheep habitat. As western juniper cover increases, bighorn sheep use would be concentrated in areas with less western juniper cover.

Noxious weeds are a significant threat to almost all wildlife habitats. Continued efforts to control noxious weeds would be beneficial to big game. Some limited disturbance for short periods would occur during weed control activities, but over the long term, these activities would be beneficial.

Current forage production on nonnative ranges have both positive and negative impacts to big game species. Some desirable nonnative seedings, like crested wheatgrass, provide habitat for pronghorn and mule deer at some times of the year. Depending on the grazing season and duration of use, these seedings could have both positive and negative impacts to these species. If large seedings overlap with mule deer winter range, negative impacts for deer will occur. Limiting livestock use on winter browse would benefit mule deer and pronghorn.

The ODFW has set management objectives for most populations of game species that occur within the planning area. Current livestock numbers and forage allocations are not considered to be a limiting factor for most big game species. Some negative impacts occur, but most could be minimized by adjustments in the timing, duration, and location of livestock grazing during critical times of the year when these wildlife species are present.

Current livestock and wild horse management practices would have minimal impacts to bighorn sheep populations and habitat. This is mostly due to differences in habitat use. Overlap does exist between livestock/horses and bighorn sheep, especially during drought conditions when bighorn sheep are more likely to venture farther away from rimrock areas in search of water. Current livestock or wild horse numbers and forage allocations are not considered to be limiting factors on bighorn sheep populations. If this was to change in the future, livestock/wild horse allocations or numbers would be adjusted on a case-by-case basis.

Range improvement projects would have both negative and positive impacts, depending on the location and type of project proposed. Range improvements to increase forage could benefit big game species, but would probably not occur in the steep, rocky areas typical of bighorn sheep habitat and would have minimal impacts on bighorn sheep. Maintenance and improvements in existing wildlife water developments would benefit wildlife. Maintaining a buffer of at least 9 miles between occupied bighorn sheep habitat and domestic sheep and goats would help to ensure that bighorn sheep do not contract diseases from these animals.

Current recreation activities would have minimal effects on big game and their habitat. Recreational viewing and hunting does occur throughout the planning area. Hunting serves as one important management tool for controlling herd populations at levels set by the ODFW. These impacts would continue to be minimal and are not expected to dramatically increase over time.

Adverse impacts from exploration and development of locatable and salable minerals could impact big game habitats. Loss or destruction of habitat could occur through surface-disturbing operations. Leasable mineral development could impact big game habitat, but the impacts could be mitigated more effectively

(Appendix N3). After mine closure and reclamation, these species would reoccupy these areas (provided mining activities did not result in invasions of undesired vegetation or noxious weeds). If the Devils Garden WSA is not designated wilderness, disposal of mineral material, decorative stone, and cinder in the area would negatively impact bighorn sheep habitat.

Impacts from land acquisitions and disposals would be minimized by retaining land with quality bighorn sheep habitat and mule deer winter range. Impacts from authorizations of rights-of-way for large-scale powerlines, fiberoptic cables, and pipelines could be significant, depending on how much habitat was impacted and by using appropriate mitigation and BMP's.

Continuing seasonal road closures in the Cabin Lake/ Silver Lake Deer Winter Range Cooperative Closure Area and permanent road closures in the Devils Garden WSA/ACEC and Cougar Mountain (Table 4-4) would reduce harassment of mule deer and bighorn sheep.

Alternative B

Protection, restoration, and enhancement of desirable vegetation communities would be beneficial to big game habitat, provided that forage enhancement activities for livestock did not overlap with mule deer or pronghorn winter range.

Reduction and exclusion of natural fires across the landscape has led to a dramatic increase of western juniper in many habitats. Historically, periodic fires removed invasive juniper and renewed forage. The treatment of 18,000 to 30,000 acres of invasive juniper on bighorn sheep range in the Devils Garden, East Lava Field (Squaw Ridge), Fish Creek Rim (Lynch Rim), South Warner Rim, Coleman Rim, South Abert Rim, and Hadley Butte herd ranges and 10,000 to 25,000 acres in mule deer winter range using a combination of prescribed fire and mechanical methods would benefit big game. After treatment, the forage base would increase and predator hiding cover would decrease, thereby having positive impacts.

Reducing the amount of invasive western juniper in bighorn sheep habitat would occur on Lynch Rim and would have positive impacts to bighorn sheep. Within this area, removal of western juniper would provide the increased forage and better landscape structure that bighorn sheep prefer.

Noxious weeds are a significant threat to almost all wildlife habitats. If efforts are shifted from controlling weeds in big game habitats to control in other commodity-driven areas, then big game habitats would suffer negative impacts. These impacts would probably be minor, unless major disturbances occurred and the resulting conditions were more suitable for noxious weeds.

By placing an emphasis on specific habitat needs for individual species, including big game species, management of vegetation within big game habitats providing diverse, self-sustaining communities of wildlife would have positive impacts to big game species. Improvements in onsite wildlife water developments in some areas would also have beneficial impacts to wildlife.

Increased emphasis on forage production and increased numbers of livestock could cause increased negative impacts to big game species. Direct competition between big game species and livestock for forage would remain minor due to dietary differences between livestock and most species. Adjustments in timing, duration, and location of livestock grazing would minimize other impacts to big game species. Livestock and wild horse management practices would have minimal impacts to bighorn sheep populations and habitat, mostly due to differences in habitat use. Overlap does exist between livestock, horses, and bighorn sheep, especially during drought conditions when bighorn sheep are more likely to venture further away from rimrock areas in search of water. Current livestock or wild horse numbers are not considered to be limiting factors on bighorn sheep populations. If this changed within the life of the plan, changes in livestock allocations or wild horse numbers would be addressed on a case-by-case basis and adjustments would be made accordingly.

Increased fire response and full suppression in commodity areas would have both positive and negative impacts to big game habitats. Fires would have positive long-term benefits to big game by removal of invasive western juniper. Fires would also have negative, short-term impacts if forage and cover species were removed.

The impacts of recreational viewing and hunting of big game would be similar to Alternative A.

Impacts from energy and mineral exploration and development in big game habitats would be similar to Alternative A. Loss or destruction of habitat could occur in the case of some surface operations. After mine closure and or reclamation, these species would reoccupy these areas, providing the activities do not

result in invasions of undesired vegetation or noxious weeds. Negative impacts to bighorn sheep would result from increased human activity in the areas of the Devils Garden, Squaw Ridge, and Four Craters lava flows. Removal of cinders and decorative stone would cause bighorn sheep displacement and possible abandonment of habitats where repeated disturbance from humans occurs. Increased activity in the north end of Lake Abert ACEC could also cause increased negative impacts compared to Alternative A.

Maintaining existing seasonal/permanent road closure impacts would be similar to Alternative A.

Alternative C

The increased emphasis on restoration and ecosystem health and decreased emphasis on commodity production would provide increased forage for big game species, including areas of nonnative seedings. These positive impacts would occur where the desirable vegetation was compatible with the type of forage that big game prefer.

Invasive western juniper would be actively treated in some areas for wildlife habitat restoration purposes. Reduction and exclusion of natural fires across the landscape has led to a dramatic increase of western juniper in many habitats. Historically, periodic fires removed invasive juniper and renewed forage. The treatment of 18,000 to 30,000 acres of invasive juniper on bighorn sheep range in the Devils Garden, East Lava Field (Squaw Ridge), Fish Creek Rim (Lynch Rim), South Warner Rim, Coleman Rim, South Abert Rim, and Hadley Butte herd ranges and 10,000 to 25,000 acres in mule deer winter range using a combination of prescribed fire and mechanical methods would benefit big game. This would have beneficial impacts to big game species if patches of adequate security cover are left after treatment. After treatment, the forage base would increase and predator hiding cover would decrease, thereby having positive impacts.

Increased control of noxious weeds would have positive benefits to big game. Currently, noxious weeds occur in a few areas. At this time, many of these infestations are minor, but given the right conditions, have potential to increase. Increased weed control would not dramatically increase big game populations but would provide better quality habitat.

Big game habitat would improve as a result of increased watershed function and improved watershed condition.

Allocation of an additional 9,138 AUM's of wildlife forage would benefit big game populations. Direct competition between big game species and livestock for forage would decrease and remain minor due to dietary differences between livestock and most game species. Adjustments in timing, duration, and location of livestock grazing would minimize other impacts to big game species. Limiting livestock use on winter browse would benefit deer and pronghorn. Allowing no domestic sheep grazing in the planning area unless it can be demonstrated that it would not negatively impact established or proposed bighorn sheep augmentation sites would minimize conflicts between bighorn and domestic sheep.

The impacts of recreational viewing and hunting of big game would be similar to Alternative A.

Limiting OHV use to existing roads and trails across the planning area would result in less disturbance to big game. Disturbance from OHV's does occur in some areas and is higher in the early spring and fall. Reduced disturbance from OHV's will result in positive impacts to big game.

Impacts from fire suppression activities would be similar to those in Alternative B. In extreme cases, wildland fire would alter big game habitats enough to have negative impacts. Repeated fire could negatively impact habitat by changing from perennial species to annual exotic grasslands, such as cheatgrass. As a result of fuels reduction projects, potential wildland fire frequency, size, and severity would decline over the life of the plan. This would have positive impacts to many big game habitats.

Impacts from energy and mineral exploration and land acquisitions would be similar to those in Alternative A. Adverse impacts could result from loss or destruction of habitat during some operations, but impacts are expected to be kept to a minimum by avoiding important habitats. Expanding seasonal/permanent road closures would benefit mule deer and bighorn sheep more than Alternative or B (Table 4-4).

Closing roads that are not needed would benefit big game. Road closures would reduce access and thereby, reduce human disturbance, increasing the quality of the habitat.

Alternative D

Protection, restoration, and enhancement of desirable vegetation communities would be beneficial to big game habitat. Increased emphasis on restoration and

habitat diversity in nonnative seedings would have positive impacts to game species. These positive impacts to game species would occur where increased emphasis on desirable vegetation was compatible with forage that game species would utilize.

Invasive western juniper would be treated in some areas for restoration of wildlife habitat. The impacts would be similar to Alternative C.

Noxious weeds are a significant threat to almost all wildlife habitats. Continued efforts to control noxious weeds would be beneficial to big game habitat. Some limited disturbance for short periods would occur in big game habitat during weed control activities, but would be beneficial over the long term.

By placing equal emphasis on habitat needs for individual species, communities, game, and nongame species, management of vegetation within big game habitats to provide for diverse, self-sustaining communities would have positive impacts to big game. Allowing no new domestic sheep grazing in the planning area unless it can be demonstrated that it would not negatively impact established or proposed bighorn sheep augmentation sites would minimize bighorn sheep/domestic sheep conflicts. Improvements in onsite wildlife water developments would also have beneficial impacts to wildlife in some areas.

Current forage production on nonnative ranges would have both positive and negative impacts to big game species. Some desirable nonnative seedings, like crested wheatgrass, provide habitat for pronghorn and mule deer at given times of the year. Depending on grazing season use and duration of use, these seedings could have both positive and negative impacts to these species. If large seedings overlap with deer winter range, negative impacts would occur. Some negative impacts could be minimized by adjustments in the timing, duration, and location of livestock grazing during critical times of the year when these wildlife species are present. Allocation of an additional 9,138 AUM's of wildlife forage would benefit big game populations. Limiting livestock use on winter browse would benefit deer and pronghorn.

Livestock and wild horse management practices have minimal impacts to bighorn sheep populations and habitat, mostly due to differences in habitat use. Overlap does exist between livestock, horses, and bighorn sheep, especially during drought conditions when bighorn sheep are more likely to venture further away from rimrock areas in search of water. Livestock or increased wild horse numbers would not limit bighorn sheep populations. If this changes within the life of the plan, changes in livestock allocations or wild horse numbers would be addressed on a case-by-case basis and adjustments would be made accordingly.

Range improvements to increase forage would probably not occur in bighorn sheep habitat and would have minimal impacts to bighorn sheep. Range improvement projects in other big game habitats would have both negative and positive impacts, depending on the location and type of project proposed.

Impacts of recreation viewing and hunting would be similar to Alternative A.

Impacts from OHV use would be reduced on the northern one-third of the planning area, due to limiting vehicles to existing or designated roads and trails (Map R-7). This would lead to greater security and habitat quality for big game species within this area.

Adverse impacts from exploration and development of minerals could occur on big game habitats. Loss or destruction of habitat could occur in the case of some surface operations. After mine closure and reclamation, these species could reoccupy these areas, providing that reclamation activities did not result in invasions of undesired vegetation or noxious weeds. If the Devils Garden WSA is not designated as wilderness, disposal of mineral material, building stone, and cinders in that area would negatively impact bighorn sheep habitat.

Impacts from land acquisitions and disposals would be minimized by retaining land with quality bighorn sheep habitat and mule deer winter range. Impacts from authorizations of rights-of-way and permits for large-scale powerlines, fiberoptic cables, and pipelines could be significant if large areas of significant habitat were impacted. It is expected that these impacts would be avoided through the use of right-of-way avoidance and exclusion areas (Map L-8).

Expanding seasonal/permanent road closures (Table 4-4) would benefit mule deer and bighorn sheep more than Alternatives A and B, but less than Alternative C (Map SMA-24).

Alternative E

No active restoration of big game habitats would occur. Habitat quality and condition would be determined by natural processes.

Impacts from noxious weeds would increase due to

lack of control and increased spread rates after fires. With lack of noxious weed control and no active restoration after wildland fires, quality of big game habitat would decrease over the life of the plan.

No livestock grazing would be authorized across the planning area; therefore, no forage allocation would be necessary. Maximum forage would be available for wildlife uses. No major negative impacts from management of forage production would occur to wildlife. Wildlife populations would be expected to slightly increase over the life of the plan, except that impacts from fire or other natural processes would change the habitat.

Impacts from wild horses would remain the same as Alternative A. Some negative impacts to wildlife would be expected to occur, but these could be kept to a minimum by close monitoring of wild horse numbers within herd management areas and by gathering excess horses on a regular basis.

Wildland fire would be the major factor shaping wildlife habitats on the landscape. In most areas of the sagebrush steppe, there would be no threats to human life or manmade structures, and therefore, wildland fires would not be suppressed. In dry years, large wildland fires would sweep over the landscape changing the structure of most wildlife habitat from sagebrush steppe to grassland. Sagebrush steppe that currently has a viable understory of native and nonnative perennial grasses and forbs would probably continue to have these perennial species after recovery from fire. Sagebrush steppe that currently has an understory of exotic annual grasses or no perennial grasses would most likely be converted to annual grasslands, which would require several years without fire to allow shrub reestablishment. It is doubtful that shrubs could be reestablished on many of these sites without active restoration or rehabilitation. Wildland fires would not receive active rehabilitation.

Positive impacts from fire would occur from western juniper removal in some habitats. Western juniper stands with a significant shrub understory remaining or with closed canopies would be removed by wildland fire. Western juniper stands without a sufficient shrub understory or closed canopies would remain on the landscape.

Impacts of recreation viewing and hunting would be similar to Alternative A.

Use of OHV's would be limited to existing or designated roads and trails across the planning area. This would provide positive impacts to big game species.

Summary of Impacts

Under Alternative A, big game habitat would continue to improve slowly over time. Continued emphasis on single species management and on game species would ensure that habitats for game species are maintained. Active management of invasive western juniper, winter range, and noxious weeds would be the key to success. These activities would be considered through site-specific analysis on a case-by-case basis for each area and would not be considered for big game habitats as a whole across the planning area. The management goal would be met over the life of the plan.

Impacts for Alternative B would be similar to Alternative A, except that more human disturbance would occur in bighorn sheep habitat from rock collectors. If this disturbance was significant, displacement of bighorn sheep from these habitats would occur. This alternative also takes a more active approach to managing western juniper. If displacement of bighorn sheep occurs under this alternative, the management goal for bighorn sheep would not be met within these areas. The management goal would be met in areas where increased human activity did not take place.

Under Alternatives C and D, habitats for big game species would also be maintained. Emphasis would be placed on communities, game, and nongame species. Both alternatives take a more holistic approach to western juniper management, outlining where management activities would be expected to occur over the life of the plan. Both alternatives focus on active restoration of degraded habitats, but Alternative C would achieve the management goals faster than Alternative D. Neither of these alternatives would be effective without increased funding for restoration. The management goal would be met under both alternatives, but the timeframe would be directly associated with the amount of funds that are available for restoration.

Under Alternative E, wildland fires would not be suppressed except to protect human life and property, and would likely burn more habitats than under the other alternatives. The lack of active restoration would have negative impacts to big game habitat if noxious weeds or exotic annual grasses became major problems. This management goal would likely not be achieved completely under this alternative. The degree of achievement would rely solely on natural processes and could vary greatly.

Secondary, Indirect, and Cumulative Impacts

Under Alternative E, indirect impacts from natural processes would occur. Wildland fire would remove a large proportion of shrub habitats from the planning area. No active restoration would occur on lands burned by wildland fire. This would have dramatic negative impacts to many big game species. If this happens, many sites with low ecological integrity and invasive annual grasses would develop into annual grasslands, decreasing the value of these lands for wildlife.

Historic cumulative impacts to big game habitat were from overgrazing at the turn of the century and introduction of domestic sheep diseases. Degraded range conditions allowed for invasion by cheatgrass and noxious weeds. Decades of fire suppression have also allowed western juniper invasion in some areas. Without major new disturbances in noxious weed areas, the spread of these weeds would eventually stabilize, but disturbances in this landscape are inevitable. Alternatives that support noxious weed control, removal of western juniper in a natural mosaic pattern, and active restoration of big game habitats would reduce or eliminate these cumulative impacts.

Management Goal 2—*Manage upland habitats, including shrub steppe, forest, and woodlands, so that the forage, water, cover, structure, and security necessary for wildlife are available on public land.*

Analysis of Impacts

Impacts Common to All Alternatives

Following the interim greater sage-grouse management guidelines (Sage-Grouse Planning Team 2000) would protect and enhance greater sage-grouse habitat (sagebrush connectivity and grass/forb availability) until a more comprehensive, long-term strategy for greater sage-grouse and other sagebrush steppe-dependent wildlife species is completed. The degree to which these interim guidelines are implemented does vary somewhat by alternative; most notably between Alternatives C and D. Once completed, the long-term strategy would supercede the greater sage-grouse direction contained in this RMP, to the further benefit of greater sage-grouse and their habitat.

Alternative A

Protection, restoration, and enhancement of desirable native upland vegetation communities would be beneficial to upland wildlife species, including sagebrush-dependent species by increasing the quality of habitat.

Maintaining large nonnative seedings and not allowing sagebrush to naturally reestablish in these areas would have negative impacts to some wildlife species, especially sagebrush-dependent species. Large seedings could act as a barrier thereby reducing dispersal and movements from one habitat area to another.

Restoring degraded or decadent shrublands would have a positive impact on sagebrush-dependent wildlife. As active management and restoration of these areas occurs, better-quality habitat would be available for sagebrush-dependent wildlife.

Management of commercial forestlands would only be considered for forest or ecosystem health issues. These types of activities would have beneficial impacts to forest/forest fringe wildlife species.

Juniper woodland management would continue to occur on a limited scale. Reducing the amount of invasive western juniper in some areas where it has invaded sagebrush stands would have positive impacts to upland wildlife, particularly sagebrush-dependent wildlife (Miller 1999; Reinkensmeyer et al. 2000), provided the area is not subsequently invaded by undesirable plant species or noxious weeds. When western juniper begins invading sagebrush, the diversity of wildlife species, mostly small birds and mammals, initially increases. As juniper density continues to increase, the density of shrubs decreases, as does diversity of species using these sites. Eventually, shrubs are outcompeted and disappear from the site, thereby changing wildlife species composition to favor tree and cavity nesters (Miller 1999; Reinkensmeyer et al. 2000). Managing these sites to provide a diversity of habitat would provide positive benefits for a great number of upland wildlife species.

Riparian areas are very important to many upland species because most of them also spend a portion of their time in this habitat. Activities that restore or improve riparian vegetation and function would have positive impacts to upland species. The degree of these impacts would be directly related to the degree of improvement in riparian vegetation and function.

Noxious weeds are a serious threat to all upland wildlife species, but especially to sagebrush-dependent species. When noxious weeds invade high quality wildlife habitat, forage, cover, and structure of habitats are negatively impacted. Efforts to control and eradicate noxious weeds would have positive impacts to

upland wildlife, including sagebrush-dependent wildlife. The degree of these impacts would be directly related to the degree of decrease in noxious weeds and the degree of restoration that occurs after weed eradication.

Negative impacts to migratory upland birds would occur on a case-by-case basis. Fragmentation of habitats would still occur, but would improve slowly over time. Limited restoration projects would have positive impacts to migratory landbirds, but conservation of habitats would not be done on a landscape scale. Habitats for migratory upland birds would be expected to remain the same over time.

Current livestock and wild horse management practices could have some negative impacts to upland wildlife, including sagebrush-dependent species, by direct or indirect alteration of forage, cover, and/or habitat structure. Excessive utilization in some areas would remove desirable grass and forb cover that some species require. These negative impacts could be minimized by adjustments in timing and duration of livestock use and by close monitoring of wild horse herds within the herd management areas.

The habitat protection resulting from management of existing ACEC/RNA's would continue to have positive benefits to upland and sagebrush-dependent wildlife species. Management of these areas has resulted in slight increases in the habitat quality and populations of these species.

Current and historic fire suppression activities have had a dramatic impact on sagebrush-dependent wildlife. This, along with other factors, has contributed to an increase in the density of sagebrush stands and a decrease in the grass and forb component within those stands. This has had a negative impact on many upland species, including sagebrush-dependent species. If current management trends continue without active sagebrush stand restoration, populations of many sagebrush-dependent species would continue to decline. At the landscape level, these dense stands of sagebrush would likely burn more intensively and across larger areas than under historical conditions. As a result, most sagebrush types in the planning area would likely not reestablish for decades.

Prescribed fires can have dramatic positive and negative impacts to wildlife habitat. These impacts depend greatly on the wildlife species being considered and on the intensity, duration, and timing of the fire activity. Impacts from prescribed fire would be considered on a case-by-case basis.

OHV use would continue to impact upland and sagebrush-dependent species throughout much of the planning area. Most negative impacts to these species would be related to direct disturbance and would typically occur during nesting season. Some habitat modification could also take place, but this would be limited to a few areas.

Energy and mineral exploration and development and new rights-of-way or utility corridors would have some negative impacts on upland wildlife habitat within localized areas. New mineral developments in sagebrush habitats could be mitigated by avoiding important areas, limiting surface disturbance, and limiting travel off existing roads. However, most impacts would require a long time to recover and a loss of habitat would result in the short term. New rights-of-way or utility corridors located in native sagebrush habitat would have negative impacts on sagebrush-dependent wildlife. New construction located near greater sage-grouse lek sites would cause habitat disturbance and create raptor perches. This could cause major negative effects and, over time, cause abandonment of the lek site due to increased predation, or habitat changes.

Alternative B

Impacts would be the same as Alternative A, with the following differences:

Restoring degraded and decadent shrublands would have a positive impact on sagebrush-dependent wildlife. However, Alternative B would emphasize restoration that optimizes forage production rather than native wildlife habitat. If an increase in forage allocation occurred on decadent or degraded native rangeland, the resulting decrease in grasses and forbs and increase in sagebrush density would have negative impacts on greater sage-grouse and other sagebrush-dependent wildlife species.

Reducing the amount of invasive western juniper in some areas would have similar impacts as Alternative A, but less emphasis would be placed on nongame wildlife species where increased commodity production could be attained.

Livestock management would be similar to Alternative A, but would have increased negative impacts on wildlife habitat due to the increased emphasis on commodity production.

Impacts from prescribed and wildland fire would be the same as Alternative A. However, increased treatments

of quaking aspen stands with prescribed fire would remove invasive western juniper, stimulate new aspen growth, and would have positive impacts to associated wildlife species.

Increased energy and mineral exploration and development on the north end of Abert Lake would have significant negative impacts to wildlife. If sodium settling ponds were built within the guidelines of the mineral development scenarios (Appendix N2), wildlife would be displaced from 30 to 50 percent of the playa habitat on the north end of the lake. Geothermal energy development would have similar impacts. Supporting facilities, such as a processing plant, powerlines, and pipelines, would also cause increased negative impacts to wildlife through modification of habitat.

Alternative C

Protection, restoration, and enhancement of desirable vegetation communities would be beneficial to upland wildlife species, including sagebrush-dependent species. Increased emphasis on native plant species and on reestablishing species diversity and structure in nonnative seedings would increase both the quality and quantity of habitat available for these species. If significant protection and restoration were to occur across the landscape, then populations of these wildlife species would increase.

Management of large blocks of sagebrush steppe would have positive impacts to migratory landbirds. A focus on existing shrub steppe in high ecological condition and a "no net loss" of these habitats would have positive impacts to these species. Positive impacts would also occur through a reduction in fragmentation from restoration of degraded rangelands and changes in management activities. Habitats for many species of landbirds would be expected to increase over time.

Reducing the amount of invasive western juniper in some areas would have similar impacts as Alternative A, but increased emphasis would be placed on non-game wildlife species. Reducing the amount of young western juniper in areas where it has invaded sagebrush stands would have a positive impact to sagebrush-dependent wildlife (Miller 1999; Reinkensmeyer et al. 2000), provided the area is not subsequently invaded by undesirable plant species or noxious weeds. Managing these sites to provide a diversity of habitats would provide positive impacts for a great number of wildlife species.

Management for zero tolerance for noxious weeds would benefit most wildlife species. Aggressive noxious weed management would increase habitat quantity and quality for upland and sagebrush-dependent wildlife species.

Increased emphasis on landscape management and ecosystem health and decreased emphasis on commodity use would have positive impacts on wildlife species by increasing the quality of available habitat. Reductions in livestock forage allocations, adjustments in timing and duration of livestock use, and close monitoring of wild horse herds within the herd management areas would minimize negative impacts.

The habitat protection resulting from management of existing and new ACEC/RNA's would have positive benefits to upland and sagebrush-dependent wildlife species. This would result in slight increases in habitat quality and populations of these species.

Wildland fire management activities under this alternative would shift to aggressive fire suppression in sagebrush habitats with high ecological integrity to protect remaining habitats important to sagebrush dependant species. Without aggressive suppression, declines in sagebrush-dependant species would accelerate. The increased emphasis on the use of prescribed fire for restoration of degraded habitats could have negative impacts to sagebrush-dependent wildlife species if key habitats are burned. Treating habitats that are key to the survival of these species would be avoided if significant negative impacts are suspected. Increased treatments of quaking aspen stands with prescribed fire would remove invasive western juniper, stimulate aspen growth, and would have positive impacts to associated wildlife species.

Limiting OHV use to existing roads and trails across the planning area would result in much less disturbance and greater security for upland wildlife species compared to Alternatives A or B. Reduced disturbance from OHV's would result in slight increases to these species.

New rights-of-way or utility corridors, if located in native sagebrush habitat, could have negative impacts on some sagebrush-dependent wildlife. However, the location of new rights-of-way would be avoided in greater sage-grouse habitat (Map L-4 of the Draft RMP/EIS and Map W-1).

Impacts from energy and mineral exploration would be the same as those listed in Alternative A.

Alternative D

Restoring degraded and decadent shrublands would have a positive impact on sagebrush-dependent wildlife. As active management and restoration of these areas occurred, better quality habitat would be made available. Protection, restoration, and enhancement of other desirable upland vegetation communities would benefit wildlife by increasing the quality of habitat. Maintaining large nonnative seedings and not allowing sagebrush to naturally reestablish these areas would have negative impacts to sagebrush-dependent species. Large seedings could act as a barrier to some species, thereby reducing movement from one habitat area to another.

Management of large blocks of sagebrush steppe would have positive impacts to migratory landbirds. A focus on existing shrub steppe in high ecological condition and a "no net loss" of these habitats would have positive impacts to these species. Positive impacts would also occur through a reduction in fragmentation from restoration of degraded rangelands and changes in management activities. Habitats for many species of landbirds would be expected to increase over time.

Riparian areas are very important to many upland wildlife species because most of them also spend a portion of their time in this habitat. Activities that restore or improve riparian vegetation and function would have positive impacts. The degree of these impacts would be directly related to the degree of improvement in riparian vegetation and function.

Management of commercial forestlands would only be considered for forest health or wildlife issues. These types of activities would have beneficial impacts to forest/forest fringe wildlife species.

Reducing the amount of invasive western juniper in some areas where it has invaded sagebrush would have positive impacts to wildlife (Miller 1999; Reinkensmeyer et al. 2000), provided the area is not subsequently invaded by undesirable plant species or noxious weeds. When western juniper begins invading sagebrush, the diversity of wildlife species, mostly small birds and mammals, initially increases. As juniper density continues to increase, the density of shrubs decreases, as does the diversity of wildlife species using these sites. Eventually, shrub cover would disappear from the site, thereby decreasing species diversity (Miller 1999; Reinkensmeyer et al. 2000). Managing these sites to provide a diversity of habitat would provide positive impacts for a great number of wildlife species. Reducing the amount of invasive western juniper in bighorn sheep habitat would have positive impacts to bighorn sheep. Within these areas, removal of western juniper would provide the increased forage and better landscape structure.

Noxious weeds are a serious threat to all upland wildlife species. When noxious weeds invade quality wildlife habitat, forage, cover, and structure of habitats are negatively impacted. Efforts to control and eradicate noxious weeds would have positive impacts to wildlife. The degree of these impacts would be directly related to the degree of decrease in noxious weeds and the degree of restoration that occurs after weed eradication.

Livestock and wild horse management practices could have some negative impacts to upland wildlife species by altering forage, cover, and/or structure of habitats directly or indirectly. Excessive utilization in some areas can remove desirable grass and forb cover that some species require. These negative impacts can be minimized by adjustments in timing and duration of livestock use and by close monitoring of wild horse herds within the herd management areas for appropriate management levels.

The impacts of existing and new ACEC/RNA management and fire management would be similar to Alternative C.

Current and historic suppression of wildland fires, along with other factors, has contributed to an increase in the density of sagebrush stands and a decrease in the grass and forb component within those stands. This has had a negative impact on many wildlife species. This trend would be countered by increased prescribed fire and wildland fire use. Fire can have dramatic positive and negative impacts to wildlife habitat. These impacts depend greatly on the wildlife species being considered and on the intensity, duration, and timing of the fire activity.

Limiting OHV use to existing roads and trails in the northern end of the planning area (Map R-7; Table 4-5) would decrease impacts to upland wildlife species. Reduced disturbance from OHV's could result in slight population increases of these species.

Energy and mineral exploration and new rights-of-way or utility corridors would have some negative impacts on upland wildlife habitat within localized areas. New mining activities in sagebrush vegetation could be mitigated by avoiding areas, limiting surface disturbance, and limiting travel off existing roads. However, most impacts would require a long time to recover, and

a loss of habitat would result in the short term. New rights-of-way or utility corridors, if located away from existing corridors and in native sagebrush habitat, would have negative impacts on sagebrush-dependent wildlife. The location of new rights-of-ways would be avoided near greater sage-grouse lek sites and breeding habitat (Map L-8 and W-1).

Alternative E

Natural processes would be the driving force shaping the quality, connectivity, and diversity of upland wildlife habitats.

Impacts from noxious weeds would increase due to the lack of control and increased spread rates after wildfires. With lack of noxious weed control and no active restoration after wildland fires, wildlife habitat quality would decrease.

No livestock grazing would be authorized across the planning area. All existing forage would be available for wildlife use. Increased residual grasses and forbs would benefit sagebrush-dependent wildlife species. Upland wildlife populations could increase, except that impacts from fire or other natural processes would change habitats.

Impacts from wild horses would be similar to Alternative A. Some negative impacts to wildlife would be expected, but these could be kept to a minimum by close monitoring of wild horse herds within the herd management areas and by gathering excess horses on a regular basis.

Wildland fire would be the major factor shaping wildlife habitats on the landscape. In most areas of the sagebrush steppe, there would be no threats to human life or manmade structures and therefore, wildland fires would not be suppressed. In dry years, large wildland fires would sweep over the landscape, changing the structure of most wildlife habitat from sagebrush steppe to grassland. Sagebrush steppe that currently has a viable understory of native and nonnative perennial grasses and forbs would probably continue to have these perennial species present following fire. Sagebrush steppe that currently has an understory of exotic annual grasses or no perennial grasses would most likely be converted to annual grasslands, which would require several years without fire to allow shrub reestablishment. It is doubtful that shrubs could be reestablished on many of these sites without active restoration or rehabilitation. Wildland fires would not receive active rehabilitation.

Wildland fires would open understories in ponderosa pine stands, maintaining them in open conditions. No major negative impacts to wildlife would be expected to occur unless stand replacement fires removed large portions of forest. Western juniper stands with a significant shrub understory remaining or with closed canopies would be removed by wildland fire. Western juniper stands without a sufficient shrub understory or closed canopies would remain on the landscape.

Impacts to upland wildlife from wildland fire would vary widely from species to species.

Wildlife diversity in juniper woodlands would decrease. Areas with the most wildlife diversity (mid-sucessional stands) would be the ones most likely consumed by wildfire due to the presence of shrubs in these stands. Negative impacts to sagebrush-dependent wildlife would be significant. Without active rehabilitation, many burned habitats would likely be converted to semi-permanent annual grasslands. Available habitat and populations of sagebrush-dependent wildlife would decline over the long term. Increases in nonnative grasses and conversion of sagebrush steppe to grasslands would have negative impacts to migratory landbirds. It is expected that habitats for many species of landbirds would be expected to decrease greatly over time. Other wildlife species that prefer open grasslands would benefit from wildland fire and their populations would be expected to increase.

Use of OHV's would be limited to existing roads and trails across the planning area. Impacts would be similar to Alternative C.

Summary of Impacts

Under Alternative A, habitats for most upland wildlife would remain relatively static over time. Some habitats such as Wyoming big sagebrush will continue to decline, but others, such as open grasslands, would be created. Habitat for sagebrush-dependent species would continue to decline slowly over time. Identification, conservation, and fire suppression activities within the remaining blocks of sagebrush steppe where ecological integrity is still high would offset this decline. Some restoration of degraded sagebrush steppe would occur, but this would not be a priority. Maintaining nonnative seedings to promote forage production would support the declining trend in sagebrush-dependent species. There would be mixed results for other wildlife species, depending on the species. For the most part, under this alternative, restoration and management of wildlife habitats would only be considered on a case-by-case basis, not at the

landscape level. The management goal would be met over the life of the plan, although no significant increases or decreases would be expected to occur when considering wildlife as a whole.

Impacts from Alternative B would be similar to Alternative A, except that increased emphasis would be placed on commodity production. Restoration would also be focused in commodity production areas. Commodity production areas would receive fire suppression priorities over other resource values. With increased emphasis on commodity production, some wildlife habitats would continue to decline. The management goal for most upland wildlife species would be met within the life of the plan, but at a slower rate than under Alternative A. Sagebrush-dependent species would continue to decline and this management goal would most likely not be met within the life of the plan.

Under Alternative C, remaining habitats that are important to priority wildlife species would be a primary area of focus. The remaining blocks of sagebrush steppe where ecological integrity is high would be closely monitored and conserved. Restoration priorities would be given to those areas with important wildlife habitats, such as sagebrush steppe that is in moderate to low ecological condition where natives grasses and forbs could disappear from the site. Active restoration would move these areas back toward higher ecological integrity and reverse the decreasing trend. Close monitoring of grazing activities to allow for enough residual grasses to remain onsite would also benefit wildlife habitats. Sagebrush-dependent species would increase over the life of the plan at a moderate rate. Alternative C would meet the management goal faster than all other alternatives.

Alternative D would have impacts similar to Alternatives A and C. Habitats that are important to priority wildlife species (sagebrush steppe) would still get priority, but would be achieved at a slower rate than Alternative C and at a faster rate than Alternatives A and B. The management goal would be met under this alternative, but the timeframe for meeting the management goal would be directly associated to the amount of funds that are available for restoration.

Alternative E would impact sagebrush-dependent species the most. Wildland fire would remove a large proportion of the sagebrush habitats over time. No restoration would occur on lands burned by wildland fire. This would have dramatic negative impacts to these species. It would take decades for most of these habitats to recover. Any sites with low ecological integrity and invasive annual grasses would require much longer to recover. This management goal would not be met under this alternative, and sagebrush-dependent species would decline

Alternative E would negatively impact upland wildlife species the most. Wildland fire would remove a large proportion of sagebrush habitats over time. No restoration would occur on lands burned by wildland fire. This will have dramatic negative impacts to many priority wildlife species. It would take decades for most of these habitats to recover. Any sites with low ecological integrity and invasive annual grasses would require much longer to recover. The management goal will not be met under this alternative and many upland and sagebrush-dependent wildlife species would decline at much greater rates than under Alternative A.

Secondary, Indirect, and Cumulative Impacts

Historic, cumulative impacts to sagebrush steppe habitats occurred from overgrazing at the turn of the century and decades of fire suppression. Coupled with the invasion of exotic species, such as cheatgrass, this has led to a reduction in understory grasses and forbs and has left much of the remaining sagebrush habitats in moderate to low ecological condition. Activities that allow noxious weeds and invasive exotic plant species like cheatgrass to increase would cause cumulative impacts to wildlife habitats. At any given moment in time, these impacts would not be significant, until some type of large disturbance, like wildland fire, reduces competition with other species, allowing invasive species to increase. Without major investments in restoration, these cumulative impacts would continue to keep most sagebrush habitats in poor condition. Alternatives that support active management and restoration would increase habitat for sagebrush-dependent species.

Special Status Animal Species

Management Goal—*Manage public land to maintain, restore, or enhance populations and habitats of special status animal species. Priority for the application of management actions would be : (1) Federal endangered species, (2) Federal threatened species, (3) Federal proposed species, (4) Federal candidate species, (5) State listed species, (6) BLM sensitive species, (7) BLM assessment species, and (8) BLM tracking species. Manage in order to conserve or lead to the recovery of threatened or endangered species.*

Analysis of Impacts

Alternative A

Actions that maintain/improve watershed conditions, improve ecological condition, improve vegetation cover and condition, manage nonnative seedings, manage forest and woodland areas, and manage livestock grazing would benefit special status animal species by increasing vegetative cover. Impacts would be minimal because improvement from these actions would be slow and incremental on a variety of sites scattered throughout the planning area. Some special status species could be negatively impacted by an increase in vegetative cover.

Managing sagebrush cover in seedings and on native rangeland to meet the life history requirements of sagebrush-dependent wildlife species could have a positive effect on special status species, utilizing sagebrush habitat by maintaining or improving watershed conditions in the uplands.

Managing for proper functioning riparian/wetland condition only could limit further improvement toward site potential in riparian/wetland special status animal species habitat. Management to promote or maintain proper functioning condition on a minimum of 75 percent of the riparian/wetland areas would limit further improvements toward site potential in special status animal species habitat. Implementation of specific restoration habitat projects in areas where conditions are not recovering naturally would benefit special status animal species. Managing for riparian/wetland conditions that consider structure, forage, and other riparian habitat elements important to game and nongame wildlife species could have positive effects to special status species and their habitat. Riparian/wetland foraging, nesting, and parturition habitat would improve.

Forest management, in the form of commercial and precommercial thinning, partial cut, sanitation and salvage sales, and prescribed burning and wildland fire could have negative impacts to some special status animal species habitat. However, by improving forest health, watershed conditions could be improved, thus having a beneficial effect on special status animal species dependent upon riparian, wetland, or aquatic habitat. All forest health projects would comply with special conservation plans or biological evaluations for potentially affected species.

Juniper management could have positive effects on special status animal species habitat. By improving ground cover, watershed conditions could be improved, thus having a beneficial effect special status animal species habitat. Juniper removal and prescribed burn projects would have a positive effect on maintaining and enhancing quaking aspen stands with riparian special status animal species. Juniper-dependent special status species could be negatively affected over the short term by stand management.

Control of noxious weeds would improve or maintain watershed conditions, which would result in a positive effect on special status species habitat.

Maintaining or improving watershed conditions would have a beneficial impact on all special status animal species and their habitat. Aquatic species would benefit directly from increased water yield. Increased summer flows would result in better fish survival. Satisfactory soil conditions would result in improved cover, reduced erosion potential, and improved spawning sediments by providing cleaner and better aerated gravels. Maintaining or improving water quality, implementing the CWA, and complying with water quality standards established by ODEQ would have a direct benefit to aquatic special status species. Cooler water temperatures would result in less stress to stream resident fish, thereby improving survival rates, especially for larger fish. Reduced sediment loads would improve spawning gravels.

There have not been any systematic inventories or habitat monitoring of populations and distributions of special status animal species within the planning area, with the exception of the Warner sucker. Impacts to special status species would be minimal. Site-specific environmental analysis and mitigation would be used to minimize or eliminate loss of Warner sucker critical spawning habitat, raptor nesting or roosting sites, or parturition areas. The only current recovery plans for special status species are for bald eagles, peregrine falcons, the Warner sucker, and associated threatened and rare native fishes of the Warner Basin. Implementation of these plans positively affect other special status species.

Existing grazing systems and exclosures on streams, springs, and riparian/wetland areas would continue to improve special status animal species habitat, and the option would be available to further adjust systems and modify or construct new exclosures to meet new special status species objectives. However, current objectives would be defined primarily by proper functioning condition, so the level of improvement would be limited compared to setting objectives based on site potential or individual species habitat require-

ments. Within the range of Warner suckers, the grazing program has been covered by biological evaluations, and where effects may occur, they have been covered by a biological opinion. Effects on other species would need to be covered on a case-by-case basis, accounting for individual species needs.

Authorization of temporary nonrenewable grazing use would preclude excess vegetation providing additional ground cover, litter development, further enhancement of watershed conditions, or nesting cover for ground-nesting special status wildlife species.

Wild horses use the herd management areas year-round and impact these areas negatively (especially the springs in the Beaty Butte area). Confining horses to herd management areas and keeping their populations within appropriate management levels would reduce damage to sites outside these areas. Keeping horses inside the herd management areas could cause negative impacts to special status species within these areas; however, this would indirectly benefit sensitive species occurring outside these areas.

Effects on special status species due to water development project implementation would need to be determined on a case-by-case basis, but generally new developments would concentrate livestock and wild horse use and could have a negative effect on special status species. Fences and other management structures could have a beneficial effect by controlling use away from critical sensitive species use areas or have a negative effect by concentrating use within critical areas. Maintenance of spring developments could have positive effects on terrestrial special status animal species habitat by distributing livestock use away from these areas and providing a semi-permanent water supply to these animals, as well as vegetative habitat. Maintenance of spring developments would continue to restrict riparian site development on several springs and would cause a loss of functioning of the spring system. Potential aquatic special status species, such as spring snails, could be negatively affected by continued maintenance. Limiting playa and lakebed development would maintain the current proper functioning condition of wetland special status species habitat. Some of the current lakebed developments have changed water and vegetative conditions onsite or have broken the water-holding seal, allowing water to travel underground or offsite. This has had a negative effect on special status species, as well as other wildlife populations by reducing the distribution, abundance, and diversity of forbs, an important food source found on the lakebed.

Implementation and maintenance of the Warner Wetlands and Abert Lake ACEC plans (USDI-BLM 1989c, 1996d) would maintain or enhance the current level of proper functioning condition in these two areas and allow the few areas not currently in proper functioning condition to approach this condition. This would maintain or enhance riparian/wetland special status species habitat. Protection of existing ACEC's with special status species habitat values would have beneficial impacts. Retaining existing WSA's could have a positive effect on protecting special status species and their habitat; however, the "Interim Management Policy for Lands Under Wilderness Review" (USDI-BLM 1995b) could preclude some management actions, such as vegetation manipulation or structural project work, that would be beneficial.

Managing public lands to provide social and economic benefits (such as commodity production) to local residents, businesses, visitors, and future generations could have potential future impacts to special status species and their habitat and would need to be determined on a case-by-case basis.

The long-term effects of wildland fires could be positive or negative on special status animal species habitat. If the fire results in increased perennial ground cover and better watershed conditions, it would have positive effects. If the fire results in more annual or reduced ground cover, it would have negative effects. All wildland fires would have a negative short-term impact on special status animal species habitat as a result of the removal of vegetation cover. Short-term effects within special status animal species habitat that are in proper functioning condition would be less adverse and functionally would respond quicker to revegetation and rehabilitation efforts. Special stipulations in the "Bald Eagle Management Area Plan" (USDA-FS 1994) focus on protection of bald eagle habitat through wildland fire suppression and prescribed burning projects to reduce fuel loading and the risk of catastrophic stand-replacement fires.

Ground-disturbing wildland fire control activities, including line construction, aerial retardant application, and engine access, could have negative impacts to special status species habitat. Effects would need to be determined on a case-by-case basis and mitigated, where possible, through the fire management planning process.

Rehabilitating burned areas to mitigate the adverse effects of wildland fire on soil and vegetation, and to minimize the invasion of weeds, would have a positive effect on special status animal species habitat. How-

ever, benefits would be limited, since emergency fire rehabilitation activities are implemented on a case-by-case basis.

Prescribed fire could be an effective tool at increasing ground cover and releasing quaking aspen stands from competition with invasive species and would be beneficial to special status animal species. At the current level of prescribed fire activity, impacts to special status species would be minimal and short term. This level, however, may be inadequate to meet the upland vegetation requirements to return to a natural fire cycle. Some sites would continue to decline in ground cover with or without prescribed fire and could require revegetation.

Current management of the Warner Wetlands Special Recreation Management Area and the remaining public land as an extensive recreation management area could cause negative impacts to special status species and their habitat. Effects would occur on a site-specific basis. Increased public use could have a negative effect, while controlling public use could have a positive effect. Current recreation developments are minimal and would have minimal impacts to special status species. Expansion of existing or development of new recreation sites could have a negative effect on special status species habitat. Project design or avoidance could minimize or eliminate impacts.

Continuing the Cabin Lake/Silver Lake Deer Winter Range Cooperative Seasonal Vehicle Closure could have a positive effect on special status species habitat by limiting off-road travel during a period when soils are saturated and the potential for erosion is greatest. Managing motorized vehicles in most of the planning area in the open OHV designation (Map R-2 of the Draft RMP/EIS) would continue to cause negative effects on special status species and their habitat on a site-specific basis, since OHV's could travel cross-country, off existing roads in open areas.

Managing public land actions and activities in a manner consistent with VRM class objectives could minimally impact special status species/habitat by limiting restoration opportunities.

The impacts of energy and mineral exploration and development on special status species and their habitat could vary from minimal with small-scale effects, to major if the activity requires road development and disturbance in special status animal species habitats. Although all practical measures to maintain or restore special status species habitat would be required of all mining operations, impacts to these resources would continue to occur in the form of localized surface disturbance over the short term. The effects would be similar for oil and gas leasing, geothermal energy, and solid mineral material sales. Laws, regulations, policies, and special stipulations (Appendix N3) would minimize these negative effects.

Land tenure adjustments would have the potential to result in a wide range of positive and negative impacts to special status species and their habitat. Special status species habitat is considered to be of high public value and would be of high priority for retention and acquisition. Riparian/wetland acquisition would benefit riparian/wetland-dependent sensitive species. Once under public ownership, special status species habitat would generally receive higher priority for enhancement, resulting in better vegetation conditions. Law prohibits disposal of special status species habitat that may jeopardize the existence of or lead to actions to further list the species, so impacts from disposal actions would be minimal.

Right-of-way development around or through special status animal species habitat could have a negative impact on the functioning of these sites. Level of mitigation or avoidance would determine the level of effect. Most negative impacts would have limited or temporary impacts to the immediate vegetation. Rehabilitation following surface disturbance should restore this habitat to its functional state before disturbance. Acquiring access could cause minimal effects to special status species and their habitat; however, it could cause negative impacts due to increased visitation and disturbance during critical nesting and birthing periods.

New road construction would have potential for impacting watershed health and therefore, could have a negative impact on special status species and their habitat. The level of effect could be minimized by following road construction and rehabilitation standards. Road maintenance in special status animal species habitat could have a negative impact to the species, which could be mitigated by design modification or relocating the road out of the area.

Alternative B

Maintenance and improvement of watershed and associated ecological condition, soil condition, water quality, vegetative cover and condition, nonnative seedings, forest and woodland areas, riparian/wetland areas (proper functioning condition), spring developments, and visual resources would have the same impacts as Alternative A.

Implementation of riparian/wetland restoration projects would benefit riparian/wetland vegetation and special status species and their habitat. Modification of spring developments to allow improved riparian function would benefit special status animal species and habitat. Limiting playa and lakebed development would have the same effects as Alternative A. Mitigative measures on BLM-authorized projects would eliminate or reduce impacts to special status species utilizing riparian/ wetland habitats.

Juniper management would have more positive and negative effects on special status species and their habitat than Alternative A, since up to 75 percent of early- to mid-successional stands of juniper would be treated. The negative effects of this aggressive juniper management would probably be short term and could be mitigated.

Quaking aspen stand management direction would greatly improve stand condition and maintain those stands that are currently functioning. There could be minimal, short-term impacts to riparian-dependent special status and other species; however, the long-term benefits of stand health would outweigh the short-term impacts. Quaking aspen management would be designed to protect known sensitive species nesting and parturition sites.

Managing upland habitats so that the forage, water, cover, structure, and security necessary for most wildlife are available on public land would benefit some special status animal species.

Continued adjustment of livestock management in those riparian/wetland habitats used by special status species would be beneficial (limited by the goals and objectives of the management action and associated biological evaluation or conservation plan). Increasing domestic livestock grazing authorization by 11,657 AUM's could impact special status species and their habitat, depending on where the increased use would occur. Reinstatement of suspended nonuse and increases to full licensed preference in areas currently below active preference could directly impact special status animal species. Maximizing authorization of temporary nonrenewable grazing use could further preclude opportunities to sensitive animal special habitat, as described in Alternative A.

Wild horse management impacts would be similar to Alternative A but could cumulatively impact special status species and their habitat more if the increase of domestic livestock grazing authorization use (described above) occurs in the same area as wild horse use.

Social and economic uses would be similar to Alternative A; however, impacts to sensitive species could be intensified with emphasis on commodity production and public uses.

The impacts of wildand fire and rehabilitation would be similar to Alternative A. Prescribed fire impacts could increase with the threefold increase of prescribed fire activity proposed, thereby impacting special status species and their habitat even more.

Impacts from optimizing the management of the Warner Wetlands Special Recreation Management Area, designating the North Lake Special Recreation Management Area, and expanding management of existing developed and undeveloped recreation sites would be greater than Alternative A due to increased visitor use.

OHV impacts would be similar to Alternative A; however, maximizing opportunities for organized OHV events could cause more negative impacts to special status species and their habitat than Alternative A.

The effects from the energy and mineral program would be greatest under this alternative due to the emphasis on commodity production. Although all practical measures to maintain or restore special status species habitat would be required of all mining operations, short-term impacts to these resources would continue to occur in the form of localized surface disturbance.

Land tenure adjustments, right-of-way development, and acquisition of public access would have the same impacts as Alternative A.

New road construction would have the greatest potential for impacting watershed health compared to the other alternatives and therefore, would have a negative impact on special status species and their habitat. The level of effect could be minimized by following road construction and rehabilitation standards (Appendix B).

Road maintenance impacts would be similar to Alternative A. However, it is anticipated that more road maintenance affecting sensitive species and their habitat would be completed under this alternative than any other alternative.

Alternative C

Maintenance or improvement of watershed and associated soil conditions, water quality, riparian/wetland areas (proper functioning condition), special status

plant species management, SMA management, and wild horse management would benefit special status animal species.

Managing sagebrush cover in seedings and on native rangeland to meet the life history requirements of sagebrush-dependent wildlife species would benefit special status animal species. Restoration of nonnative seedings to diversify structure and composition would have beneficial impacts on shrub-dependent special status species and their habitat.

Exclusion of livestock in riparian/wetland habitats would be beneficial to special status animal species using these habitats. Rehabilitation of spring developments would have positive effects on special status animal species by returning all flow to the original channel as long as livestock were excluded from these areas. Eliminating new playa and lakebed development and rehabilitating non-functioning sites would benefit special status species and their habitats and return the sites to proper functioning condition. Mitigative measures on BLM-authorized projects would eliminate or reduce impacts to special status species utilizing riparian/wetland habitats.

Western juniper, old growth, and snag management would have the same impacts to special status species as Alternative B.

Quaking aspen stand management would have the same effects on special status species and their habitat as Alternative B.

Noxious weed management would have the greatest beneficial impacts to special status species and their habitats by eradication of all weeds within the planning area.

Managing upland habitats so that the forage, water, cover, structure, and security necessary for game and nongame wildlife species would positively benefit special status animal species. Bighorn sheep management would have the same effects on special status species as Alternative B. Managing forage production to support the increase of 9,138 additional wildlife AUM's identified by ODFW would have a minimal impact on special status wildlife species and their habitat; however, this alternative would highlight the need to consider the importance of all wildlife species. There would be the potential for future impacts from expansion of the Lake County elk herd, but this would be on a site-specific basis.

Grazing use authorization would be reduced to 86,587 AUM's while emphasizing other resource values. Reducing domestic livestock grazing authorization could benefit special status species and their habitat, depending on where the decreases occurs. Livestock grazing impacts would be less than Alternative A. Eliminating authorization of temporary nonrenewable grazing use and abandonment and rehabilitation of rangeland projects could also benefit special status species if adequate water is available for use.

The impacts of social and economic uses would be less than Alternative A.

Impacts from wildland fires could be greater under this alternative than Alternative A. Reduced livestock grazing would increase the buildup of fine fuels and possibly lead to higher fire frequencies and the loss of more acres of sagebrush, which could have a negative impact on sagebrush-dependent special status species over the short term. With the increased limit of 640,000 acres burned annually and the possible designation of areas for wildland fire use, there is potential for the loss of more special status species habitat depending on where the fires occur. Prescribed fires could be designed to mitigate or eliminate losses, and crucial habitat could be identified prior to the designation of new wildland fire use areas. Most special status species habitat loss would occur naturally from wildland fire and would be short term.

Impacts to special status animal species from dust and smoke created from construction or prescribed burn projects would be the same as Alternative A, even though the acre limit for prescribed fires and wildland fires would increase. Improving ecological conditions and restoration in the uplands after a prescribed or wildland fire would have the same beneficial impacts as Alternative A by maximizing vegetative production and protecting upland function, thereby contributing to the continued health of special status animal species habitat. Minimum standards for ecosystem health would be followed, and rehabilitation seed mixes would be limited to native species only.

Managing the Warner Wetlands Special Recreation Management Area and emphasizing undeveloped, dispersed recreation opportunities in the North Lake Special Recreation Management Area would benefit special status species and their habitat.

Managing off-road vehicles by limiting OHV use to existing or designated roads and trails would benefit special status species and their habitat.

Managing public land actions and activities in a

manner consistent with VRM class objectives would have the same impacts as Alternative A.

The effects from the energy and mineral program would be less than Alternatives A, B, or D, since it emphasizes protection of natural values and restricts mineral development.

Land tenure adjustments, rights-of-way development, and acquisition of public access would have the same impacts as Alternative A. Impacts from disposal of public land would be less than Alternatives A or B, since substantially fewer acres would be available for disposal.

New road construction would have less potential for impacting watershed health and therefore, would have minimal impacts. The level of effect could be minimized by following road construction and rehabilitation standards (Appendix B). The removal of all roads within riparian/wetland areas and all other roads within the planning area not required by law would positively impact special status species and reduce the need to perform future maintenance.

Alternative D

Maintenance or improvement of watershed and associated soil conditions, water quality, riparian/wetland areas (proper functioning condition), special status plant species management, SMA management, and wild horse management would benefit special status animal species.

Managing sagebrush cover in seedings and on native rangeland to meet the life history requirements of sagebrush-dependent wildlife species would benefit special status animal species. Restoration of nonnative seedings to diversify structure and composition would have beneficial impacts on shrub-dependent special status species and their habitat.

Implementation of riparian/wetland restoration projects would benefit special status species and their habitat. Modification of spring developments to allow improved riparian function would benefit special status animal species and their habitat. Eliminating new playa and lakebed development and rehabilitating nonfunctioning sites would benefit special status species and their habitat and would return the sites to proper functioning condition. Mitigative measures on BLM-authorized projects would eliminate or reduce impacts to special status species utilizing riparian/wetland habitats.

Juniper management would have more positive and negative effects than Alternative A, since up to 50 percent of early- to mid-successional stands of juniper would be treated. The negative effects of this aggressive juniper management would probably be short term and could be mitigated.

Quaking aspen stand management direction would greatly improve quaking aspen stand condition and maintain those stands that are currently functioning. There could be minimal short-term impacts to riparian-dependent special status species; however, the long-term benefits of stand health would outweigh the short-term impacts. Quaking aspen management would be designed to protect known sensitive species nesting and parturition sites.

Noxious weed management would benefit special status species and their habitats by increasing emphasis on habitat restoration.

Maintenance and restoration of fish and aquatic habitat would benefit special status aquatic animal species and their habitat.

Managing upland habitats so that the forage, water, cover, structure, and security necessary for game and nongame wildlife species would positively benefit special status animal species. Managing forage production to support an increase of about 9,138 additional wildlife AUM's identified by ODFW would have a minimal impact on special status wildlife species and their habitat; however, this alternative would highlight the need to consider the importance of all wildlife species. There would be a potential for future impacts from the expansion of the Lake County elk herd, but this would be site-specific.

Continuing the current livestock grazing authorization of 108,234 AUM's would have minimal negative impacts on special status species and their habitat, as long as minimum standards for ecosystem health were met. Temporary nonrenewable grazing use and construction of rangeland projects would not be authorized if there were negative impacts to special status species.

Deferment of livestock grazing for a minimum of two growing seasons after wildland fire or prescribed fire would have positive effects. Implementation and maintenance of livestock grazing systems in riparian/wetland habitats would be beneficial to special status animal species using these habitats by promoting the recovery or maintenance of riparian systems to desired range of conditions based on site potential.

Managing public lands to provide social and economic benefits (such as commodity production) to local residents, businesses, visitors, and future generations could have potential future impacts to special status species and their habitat, and would need to be determined on a case-by-case basis.

Potential impacts from suppression of wildland fires could be greater under this alternative than Alternative A. With the increased limit of up to 480,000 acres burned annually with prescribed and wildland fire and the possible designation of areas for wildland fire use, there would be a potential for loss of more special status species habitat, depending on where the fires occur. Prescribed fires could be designed to mitigate losses, and crucial habitat could be identified prior to the designation of new wildland fire use areas. Most habitat loss would occur naturally from wildland fire and would be a short-term impact. Emergency fire rehabilitation would continue to occur to meet resource objectives. Improving ecological conditions and restoration in the uplands after a prescribed or wildland fire would benefit special status animal species habitat by maximizing vegetative production and protecting upland function, thereby contributing to the continued health of special status animal species habitat. Minimum standards for ecosystem health would be followed; however, nonnative perennial species could be used for fire rehabilitation.

Current recreation developments are minimal and have minimal impact to special status species. Optimizing the management of the Warner Wetlands Special Recreation Management Area and North Lake Special Recreation Management Area would benefit special status species and their habitat.

Enlarging the Cabin Lake/Silver Lake Deer Winter Range Cooperative Seasonal Vehicle Closure would benefit special status species and their habitat by limiting off-road travel during a period when soils are saturated and the potential for erosion is greatest. Managing motorized vehicles with an emphasis on the limited OHV use designation in the northern portion of the planning area (Map R-7) and authorizing organized OHV events on existing roads and trails would minimally impact special status species and their habitat. Off-road vehicle use would still occur in open OHV use designations and would cause negative effects on a site-specific basis.

Managing public land actions and activities in a manner consistent with VRM class objectives could minimally impact special status species and their habitat by limiting restoration opportunities.

Effects of energy and mineral exploration and development could vary from minimal with small-scale effects, to major if the activity requires road development and disturbance in critical special status species habitats. Although all practical measures to maintain or restore special status species habitat are required of all mining operations (Appendix N3), impacts to these resources would continue to occur in the form of localized surface disturbance over the short term. The effects would be similar for oil and gas leasing, geothermal energy, and solid mineral material sales. Laws, regulations, policies, and special stipulations (Appendix N3) would minimize the negative effects from mineral activity.

Land tenure adjustments would have the potential to result in a wide range of positive and negative impacts. Special status species habitat would be considered of high public value and would be a priority for future acquisition. Once under public ownership, special status species habitat would receive generally higher priority for enhancement, resulting in better vegetation conditions. Law prohibits disposal of special status species habitat that could jeopardize the existence of or lead to actions to further list the species, so impacts from disposal actions would be minimal.

Right-of-way development around or through special status animal species habitat could have a negative impact on the functioning of these sites. The level of mitigation or avoidance would determine the level of effect. Most negative impacts would have limited or temporary impacts to the immediate vegetation. Rehabilitation following surface disturbance should restore this habitat to its functional state before disturbance. Acquiring access could cause minimal effects to special status species and their habitat; however, it could cause negative impacts due to increased visitation and disturbance during critical nesting and birthing periods.

New road construction would have less potential for impacting watershed health under this alternative and therefore, would have minimal impacts. The level of effect could be minimized by following road construction and rehabilitation standards (Appendix B). The removal of any roads within riparian conservation areas would positively impact special status species and would reduce the need to perform future maintenance.

Alternative E

Natural processes would be allowed to define vegetation composition in existing vegetation communities. Nonnative seedings and site rehabilitation would not be

conducted under this alternative. The lack of diversity, structure, and composition would have negative impacts on shrub-dependent special status species and their habitat.

Spring developments would be removed as needed for wildlife or wild horses. Springs could be maintained or rehabilitated if critical to special status animal species. Overall, the impacts to special status species would be minimal from spring restoration. Restoration of playa and lakebed habitats would not occur, negatively affecting nonfunctioning riparian/wetland areas used by special status species.

There could be some negative effects to forest-dependent special status species without active forest management, especially forest health projects. Habitats could be lost from fir and juniper encroachment or become unusable to certain special status species. Natural processes would regulate western juniper, old growth, and snags. Juniper expansion would continue causing negative impacts to special status species and their habitat. Natural processes would also regulate quaking aspen stands. Juniper would replace aspen stands and negatively affect aspen-dependent special status species.

Special status plant species would not be managed under this alternative except for Federally listed species, as specified in recovery plans. This action would have a minimal effect on special status animal species.

Noxious weed management would focus only on high priority areas to protect adjacent private property and could have negative impacts on special status species habitats currently infested or occupied in the future.

Maintenance and restoration would not occur in fish and aquatic habitat and could cause negative impacts to riparian, wetland, or aquatic special status species.

There would be no active management of upland habitats to provide forage, water, cover, structure, and security necessary for game and nongame wildlife species, which could cause negative effects on special status species due to concentrated wildlife use. Bighorn sheep would be allowed to disburse naturally and could cause negative effects on other special status species if concentration occurs.

There would be minimal effects on special status species from grazing management. Species dependent upon grazing or some other form of disturbance could be negatively impacted. The lack of grazing would allow the buildup of fine fuels and increase the risk of large catastrophic wildland fires, which would have a negative impact over the short term. The abandonment of all rangeland projects could negatively impact special status species by concentrating wildlife use or eliminating available water. Mitigative measures would be used on all BLM-authorized projects to eliminate or reduce impacts to special status species habitat; however, projects would be limited to only those required by law and wild horse survival.

Wild horses could cause negative impacts if horse concentration occurs in special status animal habitat.

Full implementation and maintenance of the Warner Wetlands and Abert Lake ACEC plans would not occur and would cause negative impacts to riparian/wetland-dependent special status species from erosion and flooding. SMA designation would not continue and could cause negative impacts to special status species.

Social and economic uses would cause the least impact to special status species, since no commodity production would be allowed from public land.

The impacts from wildland fire would have the greatest negative impact on special status species and their habitat under this alternative. The appropriate management response would emphasize initial attack, full suppression only to protect human life or property. Large tracts of special status species habitat could burn and become unusable for the life of this plan. No emergency fire rehabilitation would be completed following a wildland fire. Natural processes would define future conditions of special status species habitat across the landscape. No restoration would be conducted.

Limiting vehicle use within the entire planning area to existing roads and trails and not authorizing organized OHV events would have a positive impact on special status species.

Managing public land actions and activities in a manner consistent with VRM class objectives would have the same impacts on special status species as Alternative A.

The effects from the energy and mineral program would be least under this alternative.

No riparian or wetland acquisition or disposal would occur and would negatively effect the potential for an increase of riparian/wetland-dependent special status species habitat in public ownership.

New road construction would have the least potential for impacting special status species habitat under this alternative. Only roads required by law would be constructed. The level of effect could be minimized further by following road construction and rehabilitation standards, BMP's (Appendix B), and recovery/ conservation plans. Minimal road maintenance would occur under this alternative. Those roads negatively affecting special status species habitat would continue to cause impacts, and other roads within the area would have the potential for causing negative effects in the future without regular maintenance.

Summary of Impacts

Under Alternative A, special status animal species habitat would continue to improve, although recovery rates and extent of recovery would be reduced to allow for commodity uses, including livestock, transportation, and recreation. Management actions would continue on a case-by-case basis with less consideration for watershed-scale effects. The major impacts to special status species would be from wildland fire (short-term impact) and the lack of an aggressive juniper/quaking aspen and weed management program (long-term impact). The management goal for special status species and their habitat could be achieved under this alternative, with the exception of quaking aspen management and the continuing encroachment of juniper into these stands. Without immediate treatment, some quaking aspen stands could be lost forever, negatively affecting quaking aspen-dependent special status species. Wetland areas could also be taken over with noxious weeds if more effective chemicals are not developed and approved. This could have a serious effect on wetland-dependent special status wildlife species.

Impacts from Alternative B would be similar to Alternative A. Because of current law and policy ("Endangered Species Act," CWA, etc.) setting minimum management standards, the difference in effects is not that great, despite the emphasis on commodity production. Minimally-acceptable conditions would be required, and mitigation would occur on a case-by-case basis rather than on a watershed scale. While improvements would occur, they would take longer and not be as extensive as would occur under Alternative A. The management goal for special status wildlife species could be achieved, although at a much slower rate (longer than the life of this plan), due to the emphasis on commodity production and public uses. Juniper and quaking aspen management would be more aggressive than Alternative A and would have a beneficial impact on those species dependent on quaking aspen and potential negative impacts to species dependent on juniper habitats. Quaking aspen and juniper projects would be designed to minimize or eliminate impacts to special status wildlife species. Noxious weed management would emphasize protection of commodity resources, as opposed to watershed resources, and could have a negative effect on special status wildlife species and their habitat.

Impacts from Alternative C would be much less than under Alternatives A or B. Recovery rates would be much faster, resulting in better special status wildlife species habitat conditions. Considering watershed-scale effects would result in more stable conditions. With emphasis on protection and restoration of natural values, the management goal for special status wildlife species could be achieved under this alternative. This alternative has the most aggressive weed, juniper, and quaking aspen management strategies of any of the alternatives. Alternative C also has the most aggressive prescribed burning and wildland fire use management program, which could cause greater short-term impacts to special status wildlife species and their habitat. With an aggressive emergency fire rehabilitation program, the long-term impacts from prescribed and wildland fire activities could restore marginal special status species habitat.

Impacts from Alternative D would be similar to Alternative C; however, recovery rates for special status wildlife species habitat would require more time. Slower recovery rates would be caused by less stringent direction to restore watershed function and processes, so there would be less improvement to specific special status wildlife species habitat. More consideration would be given to watershed-scale effects than under Alternatives A and B. The management goal for special status wildlife species and their habitat could be achieved under this alternative.

Impacts from Alternative E would be similar to Alternative D; however, without disturbance from permitted activities and active restoration, marginal special status wildlife species habitats may never reach their full potential and currently occupied habitats could become unusable. Watershed-scale effects would progress toward natural recovery of uplands, but increased juniper encroachment would continue to degrade riparian/wetland habitat. By allowing natural processes to determine the outcome of habitat conditions for special status wildlife species, the management goal for special status wildlife species and their associated habitat may never be achieved under this alternative.

Secondary, Indirect, and Cumulative Impacts

The major secondary, indirect, or cumulative impacts to special status wildlife species would be habitat loss, destruction, conversion to less marginal habitat, and loss of connectivity. The impacts from activities implemented on adjacent USFS- and USFWS-administered lands, as well as private and state lands, would create cumulative impacts to those associated directly with BLM-authorized actions.

For instance, Hart Mountain National Antelope Refuge utilizes prescribed burning and juniper cutting to meet the management objectives in their comprehensive management plan. Private landowners and the USFS are also treating juniper and sagebrush habitats, although at a reduced amount. The cumulative effects of treating juniper and sagebrush habitats, in combination with the BLM's proposed alternatives, could have major impacts to special status species utilizing these habitats. Future treatments would have to be closely coordinated with other Federal and state agencies, and with private landowners to provide optimal habitat and connectivity for sensitive wildlife species. Coordination would also be required with other Federal and state agencies in fire planning to highlight and protect crucial sensitive wildlife species habitats and corridors. All future BLM-authorized juniper and sagebrush manipulation projects would be designed to minimize or eliminate impacts to special status wildlife species and consider the cumulative impacts from other non-BLM projects that may affect special status wildlife species and their habitat.

Timber management on adjacent national forests would have minimal cumulative effect on special status species if the "Bald Eagle Management Area Plan" (USDA-FS 1994) is followed.

Livestock Grazing Management

Management Goal—*Provide for a sustainable level of livestock grazing consistent with other resource objectives and public land-use allocations.*

Assumptions

Livestock grazing has an impact on the vigor and reproduction of key plant species. Actions which enhance plant species vigor and reproduction cause an increase in the number and size of that species in a plant community. Conversely, if the action adversely affects a plant's vigor and reproduction, the species would decrease in number and size in a plant community. Any change in the size or number of a species would be known as a change in composition. For the purpose of this analysis, it is assumed that all available nutrients and water are fully utilized by the existing vegetation. Therefore, any change in the amount of one species would result in an opposite change in the amount of some other herbaceous species. Significant changes in species composition reflect changes in other vegetative characteristics, such as production, range condition and trend, ground cover, and threatened or endangered plants.

The three components of livestock grazing that impact vegetation are vegetation allocation, grazing systems, and range improvements. The vegetation allocation for each allotment was initially determined in the "Rangeland Program Summary Record of Decision, Lakeview EIS Area" and associated land use plans (USDI-BLM 1982b, 1983a, 1983b, 1983c) using 50 percent utilization as the standard, except in the crested wheatgrass seedings. The vegetation allocation for each allotment can be adjusted based on subsequent monitoring, allotment evaluation, plan amendments (USDI-BLM 1989c, 1996d; USDI-USFWS and USDI-BLM 1998a, 1998b), allotment management plans, and rangeland health assessments. The vegetation allocation is set so the impacts from utilization are similar across allotments. However, the time and duration of the utilization, which is determined by the grazing system and the range improvements, have a significant impact on the vegetation in each allotment.

Table 4-1 shows how key species composition would be impacted by each grazing system under each alternative. The key species composition is also an indicator of plant cover, plant production, plant vigor, reproduction, and litter cover. The grazing systems are described in detail in Appendix E2 of the Draft RMP/EIS, which also contains a detailed description of grazing impacts on vegetation communities.

Analysis of Impacts

Alternative A

Existing management of plant communities would likely maintain or increase the quality and quantity of forage available to livestock. Rehabilitated areas would be excluded from grazing for a minimum of two growing seasons after the project. This forage loss would be short term. Rehabilitation projects would likely increase the quantity and quality of forage available in the long term. Changes in grazing systems

and seasons of use could be used to promote or maintain upland and riparian proper functioning condition.

Current noxious weed management would maintain forage production in some areas, would have the potential to increase forage production in other areas, and may not be effective in some areas, resulting in a loss of forage production.

Special status plant species management could result in changes in grazing systems to protect plant sites or minor decreases in livestock forage due to construction of protective exclosures.

Most management actions for wildlife, wildlife habitat, and special status animal species would have little impact to the current livestock grazing program. The potential for changes in grazing systems and seasons of use would remain. However, most necessary changes to livestock management have already been implemented and no major future actions would be anticipated.

Maintenance and improvement of watershed function and the continuation of existing grazing systems and exclosures would have several impacts to livestock grazing. Providing widely-distributed water sources for livestock would have the potential for long-lasting, negative impacts near the water source, but would have the positive effect of distributing livestock more evenly across the landscape. Forage in existing exclosures would remain unavailable to livestock and decrease livestock distribution somewhat. This would result in slight forage quantity and quality decreases. Impacts from the management of fish and aquatic habitat (primarily related to exclosures) would be similar to those stated above.

The current permitted use level of 164,128 AUM's could be authorized annually. However, it is more likely that the average authorized use level (108,234 AUM's) of permitted use would continue. The full permitted use level for each allotment would continue to be evaluated by allotment through rangeland health assessments, allotment evaluations, allotment management plans, watershed analyses, plan amendments, and implementation of biological opinions. Changes in forage allocation would be made, where needed, on an allotment-specific basis.

Based on existing land use plans, there would be the potential to construct an additional 62 miles of pipeline, 37 reservoirs, and 32 waterholes. Approximately 10,000 acres that were proposed to be treated and seeded have not been completed to date. If implemented, these rangeland improvement projects, in addition to temporary nonrenewable grazing use, would make additional forage available to livestock.

Management of wild horses would reduce the amount of forage and water available for livestock.

The management of existing ACEC's, WSA's, WSR-eligible streams, and significant caves would cause a loss of available forage through changes in grazing systems and seasons to protect other resource values. Most major changes to livestock grazing management have already been implemented.

The use of prescribed fire and rehabilitation of wildland fires could result in a long-term increase in forage quality and quantity after these sites recover. Fire would cause a decrease in forage available for livestock use in the short term, requiring changes in livestock grazing use. Short-term impacts of emergency fire rehabilitation include grazing exclusion following the rehabilitation.

At the current level of recreational use, there would be no impact to livestock grazing. Areas designated open to OHV use would have the potential to decrease forage availability. There would be a potential for a loss in animal condition if OHV use occurred in the vicinity of livestock and caused stress to the animals.

Mineral exploration and development could impact forage production in localized areas. The extent of these impacts would likely be minimal but would depend on the location and size of disturbance, along with the success of site reclamation following mining activity.

Historically, land exchanges and acquisitions have not had an impact on the forage available to livestock. However, any future acquisition or exchange of lands would have the potential to increase or decrease the forage available to livestock. Approximately 42,500 acres of land would be made available for disposal (Zone 3 shown on Map L-1 of the Draft RMP/EIS). These lands include seven allotments and make up a substantial part of six allotments. Two of these six allotments would have the potential of being completely disposed, resulting in a loss of availability of about 1,485 AUM's of forage. Land acquisition could include lands that would have forage available for livestock. This would have the potential to increase forage available for livestock grazing by an unknown amount.

Alternative B

Management of plant communities would likely increase the available forage to livestock. Forage production would be increased through restoration of existing nonnative seedings and decadent, disturbed, and degraded sites. Allowing grazing in rehabilitated areas prior to two growing seasons, if consistent with management objectives, could increase forage availability.

Springs and water developments would be managed to allow riparian function while providing livestock with watering access, increasing potential distribution and available forage. Restoration of riparian/wetland areas would be done in a manner that did not impact livestock grazing.

Impacts to livestock grazing from the management of special status plant species would be similar to Alternative A.

Increased inventory and detection of noxious weeds to protect commodity resources and increase public education would likely increase or maintain current levels of forage available to livestock.

If management for water resources, water quality, and fish and aquatic habitat is implemented, impacts to livestock grazing would be similar to Alterative A. Corridor fencing of all streams would decrease the available forage to livestock. This would occur through a direct loss of forage and a decrease in the potential distribution of animals.

Most management actions for wildlife, wildlife habitat, and special status animal species would have impacts similar to Alternative A. Reestablishment of big sagebrush in seedings could decrease the forage available to livestock.

The permitted use would be increased to 180,541 AUM's, a 10 percent increase above the current permitted use level. The utilization level would be increased to 60 percent to provide for the additional AUM's. Changes in allotment management plans and other activity plans would be required. The full permitted use level for each allotment would continue to be evaluated by allotment through rangeland health assessments, allotment evaluations, allotment management plans, watershed analyses, plan amendments, and implementation of biological opinions. Changes in forage allocation would be made, where needed, on an allotment-specific basis. These additional AUM's, combined with temporary nonrenewable grazing use authorized in years of favorable growing conditions and the use of range improvement projects to meet resource objectives, would result in an increase in forage available to livestock grazing.

Wild horse management would have impacts similar to Alternative A.

ACEC, WSA, and significant cave management would have impacts similar to Alternative A.

Up to 64,000 acres of prescribed burn treatments and wildland fires would be allowed annually. The compliance with air quality standards would result in no impact to livestock grazing. Fire would cause a decrease in forage available for livestock use in the short term, requiring changes in livestock grazing use. Short-term impacts of emergency fire rehabilitation would include grazing exclusion following rehabilitation. Use of prescribed fire and rehabilitation of wildfire areas to optimize the forage base would result in an increase in forage quality and quantity available to livestock over the long term.

Development of recreational opportunities and OHV use could decrease forage available to livestock. The potential for loss in animal condition due to OHV use causing stress to the animals would be similar to Alternative A.

Mineral exploration and development could impact forage production in localized areas similar to Alternative A. However, the extent of these impacts would be greatest of all the alternatives.

Future acquisition or exchange of lands would have the potential to increase or decrease the forage available to livestock. Land that would facilitate commodity production would be emphasized for acquisition. This would have the potential to increase the forage available to livestock grazing. Disposal would include land within 14 allotments (Zone 3 shown on Map L-3 of the Draft RMP/EIS). One of these allotments would lose most of its land mass and result in the unavailability of 1,970 AUM's to livestock.

Alternative C

Permanent closure of an additional 50,497 acres (compared to Alternatives A, B, and D) to grazing in order to emphasize natural values in plant communities would directly decrease the availability of forage for livestock. Indirectly, a decrease in the development of range improvements would likely result in decreased livestock distribution and a loss of forage available to

livestock. The reestablishment of native species in areas where nonnative species of high forage value currently exist, as well as the permanent or temporary closures associated with these projects, could result in a decrease of forage available to livestock. If the areas that would be rehabilitated to native species currently contain species of little or no value to livestock, and the areas would eventually be reopened to grazing, there could be an increase in forage available to livestock. Native seeding would still result in more forage available to livestock than if no rehabilitation was conducted. There could be an increase in the amount of time an area is excluded from grazing following rehabilitation; however, this impact would be short term and would not ultimately affect available forage.

Depending on the type of treatment within quaking aspen stands, changes in livestock grazing use could be required. Increased amount and quality of forage could be available for livestock use after treatments have been applied.

By increasing the inventory and detection of weeds and eradicating and restoring all existing sites, there would be an increase in available forage. Expanding public education efforts would be beneficial to livestock through a decrease in weed spread and introduction. This increased forage availability could potentially lead to more allocation of forage to livestock, or an increase in forage quality, allowing better condition and health of the animals.

The impacts to livestock grazing in regard to special status plant species would be applicable to a broader area than in either Alternatives A or B. The decrease in available forage would likely be greater due to the length of time areas could be closed to grazing and the size of areas closed to grazing. This would also be true for five of the areas that are proposed to be designated as ACEC/RNA's that contain special status plant species. Grazing would be excluded from these areas, resulting in a decrease in forage available to livestock.

The protection and restoration of watershed function and processes, and meeting the surface and groundwater water quality standards, would impact livestock grazing in several ways. Initially, management efforts to attain these goals could require changes in the frequency, intensity, and season of livestock use. Animals could have limited access to water, decreasing livestock distribution and indirectly decreasing forage availability. The long-term impacts could include improved animal health due to improved range condition, the opportunity to increase livestock numbers in rehabilitated areas, continued changes in forage available to livestock, and increases in water availability due to improved watershed health. Exclusion of grazing from all streams, springs, riparian areas, wetlands and their associated riparian conservation area would result in a direct decrease to forage available for livestock. Indirectly, loss of access to water sources could limit distribution in areas where grazing can continue and ultimately decrease forage availability. The exclusion of livestock from all riparian areas would directly decrease the quantity and quality of forage available by making the forage in those areas inaccessible to the animals. This loss could be more significant in quality of forage than quantity.

Providing for aquatic habitat may result in adjustments to livestock grazing use and potentially require changes in frequency, intensity, and season of use. Grazing systems and livestock exclusion necessary to manage for instream processes and habitat diversity, state water quality standards for fish or other aquatic beneficial uses, proper functioning condition, riparian potential, and riparian management objectives would potentially result in one or a combination of the following: changes in frequency, intensity, and season of livestock use; decreased or increased forage availability for livestock; and/or increased water availability for livestock. Grazing closures would result in a permanent loss of forage available to livestock. If stream habitat goals and objectives are not being met, livestock grazing use could be adjusted. Implementing BMP's to limit sediment loading in streams would improve water quality and water availability to livestock. If future acquired wetlands are a continuation of wetlands and riparian areas present in adjacent BLM land, water availability to livestock would have the potential to increase and persist. There would be no potential to increase available forage if there is no development of new water sources. This could also impact the quality and quantity of current available forage by limiting the opportunity to increase livestock distribution in an area.

The impacts from wildlife management would result in broader impacts to livestock grazing than those from Alternatives A and B because of the emphasis on landscape scale resolution. The allocation of additional forage for elk, deer, and bighorn sheep, and the readjustment of total AUM's in allotments with mule deer and pronghorn habitat, would have no effect on the current AUM's allocated to livestock grazing. Reestablishment of native big sagebrush wildlife habitat could decrease the available forage for livestock grazing on native rangeland or seedings, depending on current conditions. Grazing systems and livestock exclusion necessary to manage for desired future habitat condi-

tions could potentially result in one or a combination of the following changes in frequency, intensity, and season of livestock use or changes in forage availability for livestock. Depending on the desired condition, forage available to livestock could increase or decrease. Adjustments to livestock grazing use in 46 allotments containing pronghorn winter forage and 81 allotments containing mule deer winter forage could occur. If management includes exclusion of grazing, there could be a loss of forage availability. Ultimately, a loss in forage for livestock during specific seasons would occur, most likely a decrease in fall use. This would have minimal impact as there are few permits currently issued for fall grazing. There would be no authorization of domestic sheep grazing, resulting in a complete loss of forage availability for that species. This would not impact the current forage available to livestock grazing as all current permits are for cattle.

Livestock grazing management would incorporate the needs of special status animal species and corresponding habitats and the "Recovery Plan for the Native Fishes of the Warner Basin and Alkali Subbasin" (USDI-USFWS 1998). Potential impacts could include changes to current livestock grazing intensity, frequency, and season of use.

Permitted use would be decreased to 86,587 AUM's, a 48 percent reduction from the current level of permitted use. The full permitted use level for each allotment would continue to be evaluated by allotment through rangeland health assessments, allotment evaluations, allotment management plans, watershed analyses, plan amendments, and implementation of biological opinions. Changes in forage allocation would be made, where needed, on an allotment-specific basis. By not authorizing temporary nonrenewable grazing use, there would be no additional AUM's available for livestock above those licensed. Indirectly, the abandonment of range projects would decrease the available forage for livestock by decreasing the ability to distribute livestock, as necessary, to utilize forage available in specific areas.

Restoration activities in plant communities in the Paisley Desert wild horse herd management area would increase forage available for livestock grazing; however, the forage allocated for livestock would probably reflect the current allocation. Any additional water developments constructed for horses would aid in the distribution of livestock, depending on placement. The abandonment of established water developments and other projects that do not emphasize natural values would reduce the water available to livestock and wild horses, along with decreasing distribution opportunities and available forage.

A total of nine existing or proposed ACEC's would be closed to grazing, creating a loss of 11,011 AUM's of forage available to livestock on about 96,171 acres. The Devils Garden Allotment would no longer be available for emergency livestock grazing. Closure of the Arrow Gap Allotment to grazing would result in a loss of 160 AUM's to livestock. In order to incorporate the management of three eligible WSR corridors, livestock grazing use could require changes in frequency, intensity, and season of use. Grazing is already excluded from all three of these stream corridors, resulting in a loss of forage available to livestock.

Limiting land-disturbing activities within identified Native American religious sites or traditional cultural properties could include closure of areas to grazing. This would decrease the forage available to livestock, potentially resulting in a reduction of AUM's. Management of cultural plants would potentially require changes in frequency, intensity, and season of use of livestock grazing, also resulting in reduced available forage and AUM's. There would also be a potential for decreasing the quality of forage available to livestock.

Reduction in commodity use to increase the level of protection for natural values would likely have a direct impact to livestock in the form of reduced forage availability. By establishing reduced commodity use levels meant to establish stability to the local livestock industry, there would be an initial loss in forage availability that could result in higher probability of available forage in the future.

The amount of acres treated by prescribed and wildland fires and the subsequent rehabilitation of these areas would result in the greatest potential increase in forage quality and quantity available to livestock (in areas not excluded to grazing). Fire would decrease available forage in the short term, requiring changes in livestock grazing use. Short-term impacts of emergency fire rehabilitation include grazing exclusion following the rehabilitation. The length of time an area would be closed to grazing could be increased, depending on individual site conditions found during monitoring. In the long term, vegetation could return with improved species diversity and increased forage quantity and quality. The emphasis on natural landscapes and processes could potentially provide less forage available to livestock than the practice of using nonnative and native/nonnative seed mixtures, as outlined in Alternatives A, B, and D. However, this would be site-dependent, and ultimately, any rehabilitation would increase favorable site conditions following a fire and

could provide more forage than is currently available in degraded and senescent plant communities.

Any expansion or development of recreation sites that exist within grazing allotments would have the potential to decrease the forage available for livestock use. Limiting most OHV use to existing roads and trails would prevent the potential decrease in forage availability and would decrease the probability of animal condition loss due to stress that could occur under other alternatives.

Mineral exploration and development would impact forage production in localized areas, but less so than Alternatives A or B.

The acquisition of lands with emphasis on land with high public resource values could increase or decrease the forage available for livestock grazing, depending on the public values at the time. A number of allotments include land that have been identified for disposal (Zone 3 shown on Map L-4 of the Draft RMP/EIS). Significant forage loss is unlikely, due to the fact that the total amount of land that could be disposed is minimal in each allotment.

Alternative D

Changes in grazing management to attain a trend toward the desired range of conditions in upland native shrub steppe communities could decrease the forage available to livestock in the short term. These management changes should benefit livestock grazing in areas that currently contain invasive and undesirable plant species. Although the management of nonnative seeding to maintain seeding production, improve structural and species diversity, and maintain forage production may not change the current quantity of available forage, it could make the current amount of available forage persist for a longer period of time. These efforts would result in short-term forage loss due to changes in grazing management immediately after project implementation. The long-term impact of rehabilitation efforts in areas that include annual, weedy, invasive woody, and decadent species would be an increase in available forage. Using a mixture of native and nonnative seeds for rehabilitation would result in more forage available to livestock than if no seeding was done. However, the amount of increase would depend on the success of the rehabilitation effort.

Riparian and wetland vegetation management could include management actions that exclude grazing or change the grazing system and season of use, both short and long term, to promote the recovery of riparian systems.

Continuing the current integrated management of noxious weed species while expanding efforts to inventory and detect new infestations, would benefit livestock by decreasing the opportunity for undesirable species to displace quality forage.

Special status plant species management impacts would be similar to Alternative C.

Water resource/watershed health management impacts would be similar to Alternative C. Exceptions include six allotments that currently have stream reaches determined to be functioning-at-risk or nonfunctioning. These allotments would be impacted in the short term by excluding grazing for up to 5 years, decreasing the quality and quantity of forage available to livestock. If, through the rangeland health assessment process, the existing grazing system is determined to be a contributing factor to the undesirable condition, changes would be incorporated into the grazing system to promote riparian recovery. The long-term impacts could include improved animal health due to improved range condition, the opportunity to increase livestock numbers in rehabilitated areas, continued changes in forage available to livestock, decreases in forage availability depending on the grazing system changes, and increases in water availability due to improved watershed health.

Management for fish and aquatic habitat could require future changes in grazing management, including decreases in the quantity and quality of forage available to livestock grazing due to changes in grazing systems, including exclosures.

Bighorn sheep management and the allocation of an additional 8,390 AUM's to wildlife would not have an impact on livestock forage availability. These additional AUM's are currently unalloted for any specific use. Management of upland habitat would have impacts similar to Alternative C. Current livestock grazing management would potentially require changes in frequency, intensity, and season of use to incorporate management of upland wildlife habitat. Resulting impacts could include a decrease in forage available to livestock and the exclusion of grazing in specific areas. Adjustment to livestock grazing use in 46 allotments containing pronghorn winter forage and 81 allotments containing mule deer winter forage could occur. A loss in forage for livestock during specific seasons would occur, most likely a decrease in fall use. This would be minimal, as there currently is not a large amount of fall

livestock use.

Management would emphasize landscape-level resolution rather than single special status animal species management, resulting in impacts similar to Alternative C. These would be greater than those from Alternatives A and B because of the emphasis on landscape-scale resolution.

The average authorized use level (108,234 AUM's) would continue; however, the current permitted use level of 164,128 AUM's could be authorized annually. The full permitted use level for each allotment would continue to be evaluated by allotment through rangeland health assessments, allotment evaluations, allotment management plans, watershed analyses, plan amendments, and implementation of biological opinions. Changes in forage allocation would be made, where needed, on an allotment-specific basis. Administrative solutions to meet resource management needs would not affect the quantity of forage available to livestock. Although temporary nonrenewable grazing use could be authorized, there may not be as much forage available to livestock as in Alternative A. Additional herbaceous production could be retained for values other than forage production.

Increasing the gather cycle for wild horses and the subsequent increases of the appropriate management level by 40 horses (Paisley Desert Herd Management Area) could affect forage available to livestock in the Sheeprock and Christmas Lake Allotments. Horse numbers have exceeded this appropriate management level in the recent past, and any impact to livestock grazing through this increase would be minimal.

The Devils Garden Allotment would no longer be available for emergency livestock grazing, slightly reducing AUM's available to livestock. Closure of the Arrow Gap Allotment to grazing would result in a loss of 160 livestock AUM's. Impacts from the designation and management of SMA's would be greater than Alternative A, but less than those in Alternative C. WSA and cave management would have the same impacts as Alternative A.

Impacts to livestock grazing by proposed cultural and paleontological resource management under would be similar to Alternative C.

Reduction in commodity use to increase the level of protection for natural values would likely have a direct impact to livestock in the form of reduced forage availability. By establishing new commodity use levels, meant to establish stability to the local livestock industry, there could be an initial loss in forage availability that could result in an increase in available forage in the future.

In areas not excluded from grazing, wildland and prescribed fires, followed by rehabilitation, would result in an increase in available forage. Short-term impacts of emergency fire rehabilitation could include grazing exclusion following the rehabilitation. In the long term, vegetation may return with improved species diversity and increased forage available for livestock grazing. Prescribed fire treatment areas would have a decrease in forage available for livestock use in the short term, requiring changes in livestock grazing use. In the long term, these same fire treatment areas would have an increase in quantity and quality of forage available for livestock use.

Any expansion or development of recreation sites within grazing allotments would have the potential to slightly decrease the available forage. Livestock grazing use would potentially require changes in frequency, intensity, and season of use, and could be limited in these recreation areas. Although there would be no organized OHV events off of existing or designated roads and trails, there would be a large area (Tables 3-5 and 4-5) designated open to OHV use (Map R-7), creating a high potential to decrease available forage and animal condition due to stress.

Mineral exploration and development would impact forage production in localized areas similar to Alternative A.

Impacts of land disposal (Zone 3 shown in Map L-5) and acquisition would be similar to Alternative C.

Alternative E

There would be a complete loss of forage available to livestock as grazing permits authorizing an average 108,234 AUM's annually would be canceled. No rangeland projects in support of livestock grazing would be planned or implemented. Rangeland projects that support livestock grazing only and are not needed for other purposes would be abandoned and rehabilitated.

Summary of Impacts

Alternative A would allow the management goal for livestock grazing to be met. Management practices outlined under this alternative would support the rangeland health standards and guidelines. If livestock are determined to be the causative agent in the

nonattainment of a standard, then corrective actions would be taken. Management actions that could result in reductions in forage available to livestock and loss of management flexibility, as well as management actions that could increase forage and retain management flexibility, are present under this alternative. The actions proposed would generally allow for grazing management flexibility. Permitted AUM's would remain the same as currently permitted under the present management. Impacts to livestock grazing would be minimal, with the potential to slightly increase or decrease forage availability.

Alternative B would allow the management goal for livestock grazing to be met. Management practices outlined under this alternative would support the rangeland health standards and guidelines. If livestock are determined to be the causative agent in the nonattainment of a standard, corrective actions would be taken. Management actions that could result in reductions in forage available to livestock and loss of management flexibility, as well as management actions that could increase forage and retain management flexibility, are present under this alternative. The actions proposed would generally allow for grazing management flexibility. Permitted AUM's would reflect a 10 percent increase from those permitted under the present management. Livestock grazing would be benefit under Alternative B, with the potential to increase forage availability due to the emphasis on commodity production and an increase to a 60 percent forage utilization level.

Alternative C would allow the management goal for livestock grazing to be met. Management practices outlined under this alternative would support the rangeland health standards and guidelines. If livestock are determined to be the causative agent in the nonattainment of a standard, then corrective actions would be taken. Management actions that could result in reductions in forage available to livestock and loss of management flexibility, as well as management actions that could increase forage and retain management flexibility, would occur. The actions proposed would generally allow for grazing management flexibility. Permitted AUM's would reflect a 48 percent decrease from those currently permitted. Impacts to livestock grazing would likely be more apparent and longer-lasting than the impacts from Alternatives A and B. This is due to the actions under Alternative C emphasizing natural values and processes over commodity production. Although this emphasis could be achieved with grazing, there would be more constraints on this use and a loss of forage available to livestock.

Alternative D would allow the management goal for livestock grazing to be met. Management practices outlined under this alternative would support the rangeland health standards and guidelines. If livestock are determined to be the causative agent in the nonattainment of a standard, then corrective actions would be taken. Management actions that could result in reductions in forage available to livestock and loss of management flexibility, as well as management actions that could increase forage and retain management flexibility, would occur. The actions proposed would generally allow for grazing management flexibility. Impacts to livestock grazing would likely be more apparent and longer-lasting than the impacts from Alternatives A and B, but not as drastic as those in Alternatives C or E. This is due to the actions under Alternative D protecting and improving natural values while providing commodity production.

Implementation of Alternative E would eliminate livestock grazing on public lands in the planning area, and thus would have the most detrimental impact to livestock grazing of all the alternatives. The management goal for livestock grazing would not be met.

Cumulative, Indirect, and Secondary Impacts

Although impacts to livestock grazing from any individual management action under Alternative A are negligible, there would be potential for actions to have a greater impact when considered cumulatively. It is anticipated that the recreational use of public lands would continue to increase. There would be potential for impacts to livestock grazing, as well as loss of forage, if individual users have conflicts with the livestock or resource damage increases with the recreational use. Livestock grazing in areas with heavy recreational use may need to be modified. Presently, management of elk and bighorn sheep does not impact livestock grazing. Future management of greater sage-grouse habitat could include actions that impact livestock grazing. Any changes to the management of wildlife species recommended by ODFW may result in the need to change grazing systems and seasons of use. When combined, management of OHV use, mineral development, cultural, paleontological, and land disposal may decrease the available forage for livestock if multiple actions occurred in the same allotment.

Under Alternative B, impacts to livestock grazing would generally increase the forage available to livestock. Increased opportunity for prescribed fire to optimize the forage base and rehabilitation using high forage value species would increase the forage avail-

able to livestock. These efforts, combined with rangeland improvements, would promote the use of currently unavailable or undesirable areas. Commodity production would include actions that impact livestock grazing in situations where other commodities are emphasized. Where other commodity-based resources are present, cumulative impacts could result in a loss of forage. Presently, management of elk and bighorn sheep does not impact livestock grazing. Any changes to the management of wildlife species recommended by ODFW could result in the need to change grazing systems and seasons of use. Future management of greater sage-grouse habitat could include actions that impact livestock grazing. When combined, management of recreation, OHV use, mineral development, cultural, paleontological, and land disposal could decrease the available forage for livestock if multiple actions occurred in the same allotment.

The cumulative impacts to grazing under Alternative C could be significant. Allotments that have the most potential of being impacted would be those where grazing is the causative agent in nonattainment of rangeland health or other standards. These areas may contain special status plants and wildlife, aquatic habitat, wildlife habitat, streams, riparian areas, and recreational opportunities in need of rehabilitation. Impacts would be greater if management activities required complete livestock exclusion and/or loss of present forage base. Closure of an area to recreation use could increase recreation use in other areas. This could result in decreased forage availability and use conflicts.

Under Alternative D, impacts to livestock grazing would generally not affect the total AUM's available to livestock. In a case-by-case basis, there could be cumulative impacts to the forage selection and quality of forage. Management actions that include wildlife, such as greater sage-grouse, elk, and bighorn sheep, combined with other resource issues in an area, could decrease the forage available to livestock. Any closure to recreation in one area may not directly impact livestock grazing. Indirectly, use in other areas could increase and impact forage availability for livestock.

Under Alternative E, livestock grazing would be eliminated from the planning area. There would be no secondary, indirect, or cumulative impacts to the program.

Wild Horses

Management Goal—*Maintain and manage wild horse herds in established herd management areas at appropriate management levels to ensure a thriving natural ecological balance between wild horse populations, wildlife, livestock, vegetation resources, and other resource values*.

Assumptions

All wild horses removed from the herds would be placed in the BLM's adoption program or otherwise placed for long-term care. Under Alternative B, increases in livestock grazing would not result in improper rangeland management. Therefore, more intensive grazing systems and range improvement projects would be required under this alternative.

Analysis of Impacts

Alternative A

Management of nonnative seedings within herd management areas benefit wild horses by providing a stable forage base and reducing competition with domestic livestock for nonnative forage.

Special status plant species occur in both the Paisley Desert and Beaty Butte Herd Management Areas. Management designed to benefit special status plant species could limit opportunities to enhance wild horses and conflict with the needs of wild horses, especially if protective fencing is used.

Weed management actions could limit the spread of noxious weeds, reducing impacts on forage production in the herd management areas.

The watershed health goals would benefit wild horses by providing stable or increased forage production and availability. Existing grazing systems and exclosures on streams, springs, and riparian/wetland areas would benefit wild horses in the long term, as improved health of streams, springs, and riparian/wetlands provide a longer time period of water availability and improved forage production and availability.

Forage needs of wildlife, livestock, and wild horses are met under current management strategies. Bighorn sheep occur in both herd management areas. In most instances, the habitats of bighorn sheep, livestock, and wild horses do not overlap. An exception would be near waterholes where animals concentrate. If manage-

ment objectives for wildlife and livestock are not achieved, adjustments in appropriate management levels may be necessary to meet other resource objectives. Current livestock levels could be maintained without reductions in appropriate management levels. When wild horse numbers increase above appropriate management levels with no corresponding reduction in livestock numbers, key areas become overgrazed and forage production and availability decrease. Impacts to resources are compounded during periods of drought, resulting in decreased health of wild horses.

Grazing systems and range improvements designed to improve ecological condition would increase forage production and provide a stable environment for wild horses, as long as increased forage production is not entirely consumed by livestock. Under these conditions, appropriate management levels could be maintained and overall health of the herds would improve. When livestock use is balanced with forage production, horses would have adequate forage during the summer and prior to winter. Adequate forage would help maintain the health of the herds and assist in maintaining viability. Livestock grazing would continue to be managed under a rest/rotation system in both herd management areas. Based on previous studies, rest/rotation grazing results in significantly better conditions than all other systems. Vegetation changes would benefit wild horses as herbaceous vegetation increases. Most change would occur on rangelands in mid-seral condition in both herd management areas.

Viable herds of wild horses would be maintained in balance with the forage and other resources. Herd characteristics described in Table 2-32 would be maintained. Horses from outside the herd management areas could be introduced to maintain genetic diversity. Genetic diversity would improve the health of the herds. Returning only the highest quality horses after gathering ensures that the herds would be highly reproductive and would be one of the most significant factors influencing the viability of the herds.

The current appropriate management level and forage allocation for horses would remain as shown in Table 2-29. The present forage allocation underestimates the needs of wild horses at the middle to upper end of the appropriate management level. Forage is currently allocated for the original number of horses in the herd management areas (85 in the Paisley Herd Management Area and 200 in the Beaty Butte Herd Management Area). After horses increase above these levels, they would be over the forage allocation.

Construction of new boundary fences or strengthening existing fences would encourage horses to stay inside herd management areas. Therefore, all impacts from wild horse use would be confined within the herd management areas.

New fencing designed for watershed restoration, fire rehabilitation, range improvement, livestock management, or protection of special status species would temporarily restrict movement of wild horses until they became accustomed to the change. During drought years, fences could prevent horses from reaching water sources, and actions such as leaving gates open and water hauling may be necessary to maintain the herds. Fencing affects the entire Paisley Desert Herd Management Area, which has approximately 46 miles of interior fencing. Grazing allotments within the boundaries of the herd management area include Allotments 418, 419, 428, and 10103. Fencing would be less of an impact to the Beaty Butte Herd Management Area, which has only 9 miles of interior fencing in one allotment (600). The fencing in the Beaty Butte Herd Management Area is constructed so that horses may move around the fence on the east side. No further interior fencing would occur in either herd management area.

Water developments benefit wild horses as well as livestock, because water is more limiting than forage in the herd management areas. Livestock operators would continue to maintain water developments used by wild horses. No further water developments would be recommended in the Paisley Desert Herd Management Area. As many as nine water projects would be recommended for the Beaty Butte Herd Management Area. Water development could allow for better health of animals during periods of drought and could increase the area used by horses.

Aggressive initial attack and full suppression of wildland fires would minimize short-term impacts to horses, such as loss of forage. Prescribed fire would reduce availability of forage on up to 9,000 acres in the Beaty Butte Herd Management Area in the short term until vegetation recovered from fire impacts. In the long term, vegetative productivity of herbaceous species and diversity of plant species may be maintained or increased with prescribed fire. An increase in herbaceous vegetation would benefit wild horses by increasing the available forage. Prescribed fire or wildland fire in the Paisley Desert Herd Management Area could reduce the amount of forage available in both the short and long term due to the risk of invasion from cheatgrass and noxious weeds.

Vegetation management designed for rehabilitation and

restoration of disturbed lands including seedings, sagebrush control, and prescribed or wildland fire, would reduce forage availability and habitat on approximately 20,000 acres in the short term, pending vegetative recovery from the initial disturbance. In the long term, vegetative productivity and diversity would be maintained or improved, and the viability and health of the herds would be maintained.

Mineral exploration and development would have a low probability of occurrence within herd management areas; therefore, minimal impacts would be expected. However, these activities could potentially occur anywhere in the planning area. A diatomite mine exists in the Paisley Desert Herd Management Area. Potential impacts from mineral activity include displacement of horses, loss of forage, interruption of normal movements, and change in normal areas of use.

Alternative B

Vegetation treatments would benefit livestock more than wild horses. More available forage would be allocated to livestock, possibly increasing competition with wild horses. Downward adjustments in appropriate management levels could become necessary, as more emphasis is placed on livestock use of the forage.

Noxious weed treatment, watershed health, wildland fire and prescribed fire, recreation and OHV use, and energy and mineral exploration and development would have the same impacts as Alternative A. Management for special status species would have the same impacts as Alternative A. The need to fence special status plants could be greater; therefore, the impacts described in Alternative A are more likely to occur.

Temporary nonrenewable grazing use would benefit livestock rather than horses, but would not negatively impact horses.

Viable herds of horses would be maintained in both herd management areas.

Alternative C

Impacts from most resource management actions would be similar to Alternative A, except the majority of negative impacts would be reduced. A significant positive effect to horses would result. Emphasis on natural values would limit the opportunities to enhance wild horse populations because appropriate management levels would not be maximized.

The impact from short-term forage loss as a result of proposed vegetation and restoration projects would have less of an impact than Alternative A because less emphasis would be placed on livestock use of forage.

Conflicts with livestock for available forage and water would be reduced. Grazing systems and range improvements, designed to improve ecological condition, would have impacts similar to Alternative A. Protection of springs in the Beaty Butte Herd Management Area may result in loss of water for wild horses. This could be offset by water developments elsewhere in the herd management area. Maintaining utilization levels in the light range on uplands would assure adequate forage availability for horses. Slight long-term increases in birth rates could be expected, along with increased winter forage, decreased winter deaths, and a general improvement in herd health. Herd characteristics would be maintained.

There would less potential for project development and less impacts to horses from project development.

Fencing would have the same impacts as Alternative A, although the amount of fence necessary for livestock management could be reduced.

Road closures may limit the time during which gathering could be scheduled and the placement of trap sites used in gathering. The potential for wild horse and human interactions would be reduced to benefit wild horses.

Alternative D

Most impacts would be the same as Alternative A, except that forage allocation for wild horses and livestock would be proportional. Grazing systems and range improvements, designed to improve ecological condition, would have similar impacts as Alternative A but would benefit wild horses as well as livestock.

The viability of wild horse herds would be maintained consistent with other uses. Established appropriate management levels would be increased initially and then maintained. Slight long-term increases in birth rates could be expected, along with increased winter forage, decreased winter deaths, and a general improvement in herd health. Herd characteristics would be maintained.

Alternative E

Competition between livestock and wild horses for available forage would be eliminated. Wild horses would be managed within the existing boundaries of

herd management areas and within the capabilities of the resources. Appropriate management levels could be revised until a level of "thriving ecological balance" is determined. Resource deterioration from overgrazing would not be allowed. Fencing within herd management areas would be removed, maximizing the area in which horses could roam freely. Healthy, viable herds would be maintained.

Gathers of excess horses would continue, but the time period between gathers could potentially be increased.

Minimal new project construction would occur. Existing water holes would be maintained. New water developments would be considered only if survival of the horses depended on the water.

The potential for long-term loss of habitat from wildland fire would be highest under this alternative.

Summary of Impacts

Under Alternative A, the objectives would be met with viable populations of wild horses maintained in both herd management areas. Appropriate management levels would remain constant in both herd management areas. In some instances, conflicts with livestock production and special status species could occur.

Under Alternative B, wild horse herds would be impacted more than in Alternative A, because forage would be allocated to livestock before wild horses. Periodic downward adjustments of appropriate management levels may be necessary to ensure that wild horses are managed consistent with meeting other management objectives. Gathering excess horses would likely occur more often than in the past in order to meet objectives commodity production. Increased gathering would increase stress on the herds.

Under Alternative C, the objectives for wild horses would be met and viable populations of wild horses would be maintained. Conflicts could occur on a site-specific basis. Herd health would be improved. The appropriate management levels would remain constant or could potentially increase. The appropriate management levels would remain the same as Alternative A.

Under Alternative D, the overall impacts to wild horses would be slight and positive. The objectives for wild horses would be met and viable populations of wild horses would be maintained. Conflicts may occur on a site-specific basis. Herd health would be improved as vegetation improves and forage is increased.

Under Alternative E, wild horse appropriate management levels could be maximized because there would be no competition from livestock grazing. Viable healthy herds of horses would be maintained. Few conflicts would occur. The highest threat would be loss of habitat from wildland fire.

Implementation of Alternatives A, C, and D, with constraints on livestock management, limited additional fence construction, management of wildland fire, and range improvement projects, would best meet management objectives to maintain and manage viable herds of horses in established herd management areas, considering other multiple-use objectives. The proposed emphasis on livestock production, recreational use, and other commodity values in Alternative B, would increase disturbance of wild horses. Forage, habitat, and water sources for horses could be restricted. Wild horse herds could be maximized under Alternative E consistent with maintaining their habitat and forage resources to support viable, healthy herds of horses in the long term.

Secondary, Indirect, and Cumulative Impacts

Indirect impacts to horses generally occur after a stress event, such as gathering. Indirect impacts may include spontaneous abortions, increased social displacement of band members, and conflicts such as brief skirmishes between studs.

Cumulative impacts under all alternatives would result in an annual average increase in horse numbers of 20 percent. Horses would be expected to adapt to changes such as increased vehicle use over time. Horses would adapt to changes in availability and distribution of critical habitat components of food, shelter, water, and space. Since the horses would be monitored and gathered periodically under all alternatives, they should be able to remain healthy within their existing herd areas. Increases in livestock numbers above that described in Alternative B could impact wild horse numbers in the long term and require downward adjustments in appropriate management level numbers—otherwise horses would remain at current appropriate management levels.

Wild horses could cause cumulative impacts to unfenced private land in the Beaty Butte Herd Management Area. Approximately 9 percent of the herd management area is private land, characterized as rangeland similar to that described for BLM land. Many of the springs in the herd management area occur on private land. Private lands provide a good forage base for horses, but grazing competition is at a high

level.

Cumulative impacts may occur as horses move to and from the Sheldon National Wildlife Refuge. Even though fencing along Highway 140 isolates most bands of horses from the Sheldon National Wildlife Refuge south of the highway, some interchange between herds does occur. If bands from the refuge mix with those in the Beaty Butte Herd Management Area, population-wide impacts, such as modification of age and sex ratios and separation of members of individual bands, may occur. Feral horses may be removed from the refuge in the future. Wild horses from the Beaty Butte Herd Management Area may continue to move onto the refuge.

Special Management Areas

Areas of Critical Environmental Concern and Research Natural Areas

Management Goal—*Retain existing and designate new areas of critical environmental concern (ACEC's) and research natural areas (RNA's) where relevance and importance criteria are met and special management is required to protect the identified values.*

Impacts Common to Several Alternatives

Wildland fires would not be expected to have significant, long-term impacts to ACEC/RNA values, due to the fact that the plant communities found in these areas are generally adapted to fire and are in good condition. However, fire suppression actions could cause significant impacts. Using heavy equipment to suppress wildland fires in existing and proposed ACEC/RNA's would require line officer approval. This restriction would help to protect the relevant and important resource values in ACEC/RNA's. Any rehabilitation of wildland fires would be done using native seed. The use of prescribed fires in ACEC/RNA's would promote naturalness by reintroducing fire into the ecosystem.

Under Alternatives A, B, and D, livestock use would continue based on existing permit stipulations and approved allotment management plans and would have little or no impact on relevant or important values. Plant community cells and other important resources would be monitored over time to determine if there are any impacts from grazing. The adaptive management process would be used to identify mitigation for grazing impacts. Any proposed future changes in grazing, including time and intensity of use, would be evaluated for impacts on the relevant and important values and would be permitted if the values would be maintained or enhanced. Existing livestock use would be adjusted where adverse impacts are identified using a variety of methods, including but not limited to fencing, reduction in livestock numbers, changes in grazing season, or exclusion. Proposed projects would be evaluated for impacts and permitted where relevant and important values would be maintained or enhanced. Under Alternatives C (Map G-2 of Draft RMP/EIS) and E, livestock grazing would be removed from most existing and proposed ACEC/RNA's and the associated impacts would not occur. This would be a significant benefit to the existing plant communities as healthy representations of natural systems would have a better chance of surviving over the long term, promoting biodiversity.

Under Alternatives C and D, Tribal people would have better access to traditional resources and use areas in eight of the ACEC's established, in part, for cultural resources and plants. This would ensure the sustainability of these resources so that they will be available for traditional and ceremonial practices in the future.

Under Alternatives B, C, and D, ACEC/RNA's would be managed as land tenure Zone 1 (Maps L-3 and -4 of the Draft RMP/EIS and L-5), thereby retaining these lands in Federal ownership/management. In addition, inholdings would be a high priority for future acquisition. This would improve the manageability of these areas.

Analysis of Impacts: Devils Garden ACEC

Alternatives A–D

Under Alternatives A and B there would be little or no change in current management or associated impacts. The area would continue to be protected from the impacts of new right-of-way locations and most mineral development, as well as managed as VRM Class I under the wilderness IMP (USDI-BLM 1995b), preserving the area's naturalness and scenic character.

Maintaining closures of trails created since the wilderness inventory was completed (Alternatives A-D) and permanent closure of the road into the Devils Garden in the center of the lava flow (Alternative C only) and to Derrick Cave (Alternatives C and D) (Map SMA-5) would protect these areas from impacts of vehicle use, soil compaction, and disturbances to natural character, as well as return these areas to more natural conditions.

Under Alternative D, all roads in the area prior to the wilderness inventory would be seasonally closed (Table 4-4; Maps SMA-5 and -24). This would decrease harassment of wintering mule deer and bighorn sheep, as well as limit other vehicle impacts.

Alternative E

Under this alternative, no impacts would be expected as long as the area is in WSA status. If the area is not designated as wilderness and is removed from WSA status, the integrity and scenic quality of the south end of the Lava Flow would be impacted as a result of mineral material disposal. OHV use on existing roads in the garden would impact the naturalness of the area.

Analysis of Impacts: Lake Abert ACEC

Alternatives A–D

Under Alternatives A–D, the Lake Abert ACEC would be retained. The impacts of Alternative A are described in detail in the "High Desert Management Framework Plan Amendment and Final Environmental Impact Statement for the Lake Abert Area of Critical Environmental Concern (ACEC) in Lake County, Oregon" (USDI-BLM 1996d).

Under Alternatives A and B, the size of the ACEC would not increase. Protection of resources would be provided by limiting OHV use to existing roads and trails and avoiding location of new rights-of-way. Retaining the ACEC designation would continue to provide protection and management direction for cultural resources. Alternative A would limit the amount of impacts from mineral leasing in portions of the ACEC. Impacts of Alternative B would be similar to Alternative A, except that Lake Abert would be opened to exploration, development, and mining of lakebed evaporite mineral salts. This would most likely occur at the north end of the lake. Such activity would have a negative impact on the water cycle of the lake, alter the water chemistry, and negatively impact the shorebird habitat that has recently gained world-wide recognition.

Under Alternatives C and D, Abert Rim WSA would be added to the ACEC. The entire WSA would be limited to designated roads and trails. Closures of trails created since the wilderness inventory was completed would be maintained. Proposed road closures are shown in Table 4-4 and Map SMA-7. OHV use around Lake Abert would be limited to existing roads and trails. This would limit access to certain areas, including areas with large numbers of cultural sites or artifacts.

Alternative E

The ACEC designation would be revoked, thereby removing special management to protect cultural, scenic, and biological values. The national historic district would remain in effect, protecting cultural values. Lake Abert would be open to exploration, development, and mining of lakebed evaporite mineral salts. Impacts from mineral activity would be the same as Alternative B.

Analysis of Impacts: Lost Forest/Sand Dunes/Fossil Lake ACEC/RNA

Impacts Common to Alternatives A-D

The Sand Dunes WSA would continue to be protected from the impacts of new right-of-way locations and most mineral development, as well as managed as VRM Class I under the wilderness IMP (USDI-BLM 1995b). Under Alternatives B-D, the boundary adjustments (Map SMA-9) would focus management actions in a more logical area that the BLM could readily influence and make management more efficient.

Alternatives A and B

The entire ACEC would remain open to camping. This would result in continued impacts from camping use, such as tree cutting for fire wood (even though the area is currently closed to firewood cutting), obliterating vegetation, disturbing soil, and vandalizing trees and rock formations in the Lost Forest RNA, particularly around Sand Rock. Development of a campground under Alternative B, either by the BLM or a private party, would help to reduce these impacts. Impacts would be contained and concentrated in an area specifically designed for high use.

The Sand Dunes would continue to be open to OHV use. In 2000, the BLM desired to find out if current management in the Sand Dunes was affecting the natural migration of the dunes, as well as how the migration might affect the surrounding area, such as the Lost Forest RNA. Aerial photographs taken of the dune field over the last 60 years were examined to document dune dynamics and migration patterns of the dune field. Other parameters (wind, precipitation, sand origin, particle size, dune shape, present movement, active, partially active, stabilized) and presence or absence of vegetation, were also examined. Since 1939, the areas on the southwestern edge of the dune

field and east of Fossil Lake have been active, moving about 5-10 meters to the east per year, covering about a hectare per year. However, one small section has had no net movement of sand at all. Two small areas within the northeast section of the Lost Forest have had very little movement and in one area appears to have retracted. The areas due west of the Lost Forest have averaged less than 1 meter of movement per year. It appears that what little sand movement spills off of dunes is piling up between the trees. The area of the largest dunes west of Lost Forest and south of County Road 5-14E was hard to assess quantitatively. Qualitatively, no measureable dune movement was detected. The overall conclusions suggest that between 1939 and 1994, the migration rates in the dune field were not sensitive to changes in climate or human use (Desert Research Institute 2001).

The existing Fossil Lake fence exclosure would continue to protect palentological and cultural sites from damage by OHV's, livestock trampling, and other disturbances. However, there would be no protection for newly-discovered paleontological and cultural sites in the sand dunes outside the exclosure. The management of most of the area as VRM Class I would benefit other resource values. Upgrading BLM Road 6151 through the Lost Forest would reduce impacts from vehicles driving off road to avoid muddy or rocky areas (i.e., soil compaction, damage to vegetation, and erosion). The restrictions on location of new rights-of-ways and mineral development would protect most of the ACEC/RNA, except Fossil Lake.

Alternative C

The limited effects of past grazing would be eliminated by prohibiting grazing within the ACEC's, thus improving the soils for microbiotic crusts, improving survival of grasses and forbs (perennial and annual), returning plant litter to the soil, and providing for greater productivity.

The maximum protection of paleontological and cultural resources would result from eliminating OHV use from the ACEC, limiting the size of the existing powerline corridor, retaining the mineral withdrawal in the Lost Forest RNA, and removing livestock grazing from the entire area. Implementing these actions would reduce the possibility of surface disturbance of cultural sites by up to 90 percent.

Closing the Lost Forest section of the ACEC to camping (day use only) would reduce vehicle and human use in fragile disturbed areas, especially around Sand Rock. This would also help eliminate the illegal cutting of trees for firewood and the vandalism of trees and rocks in the area. OHV activity would be prohibited in the entire ACEC. This would have a positive effect on the area as negative vehicle and human effects on dune vegetation and in the Lost Forest would be eliminated. The management of most of the area as VRM Class I would benefit other resource values similar to Alternative A. The restrictions on location of new rights-of-way and mineral development would protect most of the ACEC/RNA.

Alternative D

The size of the Fossil Lake closure area would be increased (Table 3-3; Map SMA-9A) to prevent damage to paleontological resources by OHV use. The expanded closure area would be fenced, which would protect artifacts that are found outside the existing fenced area. Outside the enlarged fenced area, the sand dunes would still be open to OHV use, which could result in some cultural and paleontological sites and artifacts being unearthed and destroyed. Protection of cultural and paleontological resources would be less than under Alternative C, but more than under Alternatives A and B. Continued livestock grazing could also damage these resources.

Within the existing exclosure of Fossil Lake, native vegetation has returned and is stabilizing the sandy area. This stabilization would be expected to occur in the enlarged exclosure area of low dunes. Rotating use of the camping and staging areas in the dunes would give those areas a chance for rehabilitation and vegetation. Development of a campground either by the BLM or a private party would reduce the disturbance associated with camping. Impacts would be contained and concentrated in an area specifically designed for such use. The inner dunes would have a chance to recover from damage, including soil disturbance, erosion, and destruction of vegetation caused by OHV use. Providing designated access routes between a campground and the dunes would further limit impacts to soil and vegetation caused by OHV's. The management of most of the area as VRM Class I would benefit other resource values similar to Alternative A. The restrictions on location of new rights-of-way and mineral development would protect most of the ACEC/RNA.

Alternative E

The impacts to cultural, paleontological, and biological resources would be similar to Alternative C, since the Sand Dunes would be closed to OHV's. Much of the area would continue to be protected by the wilderness

IMP (USDI-BLM 1995b) and restrictions on new rights-of-way or mineral development.

Analysis of Impacts: Warner Wetlands ACEC

Alternatives A–D

Under Alternatives A–D, the ACEC would be retained and management direction and protection of the important resources would continue as at present. The impacts of this management are described in detail in the "Warner Lakes Plan Amendment for Wetlands and Associated Uplands" (USDI-BLM 1989b).

Conducting noxious weed management in accordance with the "Warner Basin Weed Management Area Plan" (USDI-BLM 1999g) would have positive impacts on plant communities in the area. Changing the grazing use in the meadow management area under Alternatives C and D would not impact the ACEC as a whole.

Limiting OHV use to designated roads and trails would result in 28–60 miles of roads being closed (Table 4-4; Map SMA-10), depending on alternative, potentially reducing soil compaction and erosion. Reducing vehicle access would also reduce disturbance to wildlife. Continuing management of the area as VRM Class III would not impact other resource values.

Mineral development would be restricted only in the eastern half of the ACEC. Future development in the western half could have significant impacts. New rights-of-way would be excluded under Alternative C and avoided under Alternative D, both of which would restrict the potential amount of disturbance allowed from these activities.

Alternative E

The ACEC designation would be revoked and some fences not needed to protect wildlife habitat would be removed. This could open the area to more vehicles and people, which could result in more disturbance to soil, vegetation, and wildlife, as well as vandalism and illegal collecting of artifacts at cultural sites.

Analysis of Impacts: Proposed Abert Rim Addition to Lake Abert ACEC

Impacts Common to Alternatives A-D

Conducting noxious weed management in accordance with the "Abert Rim Weed Management Area Plan" (USDI-BLM 1995e) would have positive impacts on plant communities in the area. The area would continue to be protected from the impacts of new right-of-way locations and most mineral development, as well as managed as VRM Class I under the wilderness IMP (USDI-BLM 1995b).

Alternatives A and B

Abert Rim would not be added to the existing Lake Abert ACEC. Though the area would continue to be managed under the wilderness IMP (USDI-BLM 1995b), this would not provide special management direction and protection for the cultural and traditional cultural properties which have been identified, should Abert Rim WSA be dropped from wilderness consideration by Congress.

Alternative C

About 18,049 acres would be added to the Lake Abert ACEC, providing special management direction and protection for significant cultural and traditional cultural properties located within the addition area. Limiting OHV use to designated roads and trails would result in about 16 additional miles of roads and trails being closed, potentially reducing soil compaction and erosion.

Alternative D

About 18,049 acres would be added to the Lake Abert ACEC, providing special management direction and protection for significant cultural and traditional cultural properties located within the addition area. Continued grazing could cause trampling of cultural sites. Limiting OHV use to designated roads and trails would result in about 3.3 additional miles of roads and trails being closed (Table 4-4; Map SMA-7), reducing soil compaction and erosion.

Alternative E

The existing Lake Abert ACEC designation would be revoked and Abert Rim ACEC would not be designated. This would eliminate any special protection and management for cultural resources in the area. However, cultural resources would be generally protected, since neither livestock grazing, mining, nor any other commercial activities would be allowed. Recreation use would continue; therefore, there could be damage to cultural sites from illegal artifact collecting or vandalism.

ing a variety of treatment methods, would cost-effectively reduce fuel hazards to acceptable levels and achieve both ecosystem health and resource benefits. Fire management programs and activities should be based upon protecting resources, minimizing costs, and achieving land management objectives. They must also be economically viable. ICBEMP also stresses the use of fire to restore and sustain ecosystem health based on sound scientific principles and information. This must also be balanced with other societal goals, including public health and safety, air quality, and other specific environmental concerns. Finally, ICBEMP states that prescribed fire should be considered in wilderness areas where it has been determined that wildland fire use for resource benefit would not achieve desired rates of ecosystem maintenance or restoration.

Sound risk management is a foundation for all fire management activities. Risks and uncertainties relating to fire management activities must be understood, analyzed, communicated, and managed as they relate to the cost or consequences of either doing or not doing an activity.

Management Common to Alternatives A–D

A fire management plan would be updated for the LRA soon after completion of the RMP. The fire management plan would identify conditions and potential locations for wildland fire use and for prescribed fires, as well as other factors pertaining to fire management in LRA.

For Alternatives A, B, C, and D, treatment acres refer to those areas analyzed in an environmental assessment; it does not assume that 100 percent of those acres are treated. The intent is to actually treat approximately 40–70 percent of the area, and keep 30–60 percent untreated. A goal of landscape-level treatment is to break up treated and untreated areas in a mosaic effect. The acres listed in the alternatives are upper limits for analytical purposes, and not targets. For Alternatives C and D, wildland fire use may cause the number of treated acres to vary widely from year to year, and in some years may accomplish a very large number of treated acres. Lightning-caused fires in excess of 100,000 acres have occurred periodically in the rangeland fuels on the LRA.

Areas burned by prescribed fire would be rested from grazing for a minimum of two growing seasons. Rest for less than two growing seasons may be justified on a case-by-case basis. Under Alternative C only, the area would be rested for a minimum of two full years. Other temporary use restrictions, such as no off-road travel, may be imposed where warranted.

Management Direction by Alternative

Alternative A

Use prescribed fire and mechanical, chemical, and biological hazardous fuels reduction treatments on a case-by-case basis to improve forage base and restore natural processes. There are no areas designated for wildland fire use. The Fort Rock Fire Management Area is managed for appropriate suppression response, rather than wildland fire use. Many fires occurring within the Fort Rock Fire Management Area boundaries are monitored and allowed to be extinguished naturally. For the past 5 years, BLM has prescribed burned approximately 5,000 to 20,000 acres per year (this is approximately 0.15 to 0.6 percent of the LRA). There have been very little mechanical hazardous fuels reduction treatments on the LRA. Appendix B of the "Lakeview Grazing Management EIS" (USDI-BLM 1982a) describes mechanical/chemical treatments to shrub/western juniper habitats, few of which have been implemented to date.

Alternative B

Under this alternative, prescribed fire and mechanical, chemical, and biological hazardous fuels reduction treatments would be used primarily to enhance commodity production and enhance the forage base for livestock. Therefore, landscape-level treatments would not occur under this alternative. There would be no areas designated for wildland fire use. No more than 2 percent of the resource area (64,000 acres) would be treated annually by prescribed fire or mechanical methods under this alternative; less than 10 percent (320,000 acres) would be burned or mechanically treated for hazardous fuels reduction in a 10-year period.

Alternative C

Under this alternative, prescribed fire, mechanical, chemical, and biological fuel treatments, and wildland fire use would be emphasized to restore natural processes, and to protect, maintain, and enhance natural resources. Emphasis would be placed on using prescribed fire for restoration of degraded rangelands. Areas for possible wildland fire use would be determined under this alternative, but would be further analyzed in the fire management plan. The Fort Rock Fire Management Area would no longer be managed for appropriate suppression response, but would be

managed for wildland fire use. No more than 20 percent of the resource area (640,000 acres) would be treated annually by prescribed fire, mechanical fuel treatments, and wildland fire use combined under this alternative. Less than 50 percent (1,600,000 acres) would be treated in a 10-year period.

Alternative D

Under this alternative, prescribed fire, mechanical, chemical, and biological fuel treatment, and wildland fire use would be used to: protect, maintain, and enhance natural resources; restore degraded habitats; and protect other adjacent Federal, state and private land. Areas for wildland fire use would be determined under this alternative, but would be further analyzed in the fire management plan. The Fort Rock Fire Management Area would no longer be managed for appropriate suppression response, but would be managed for wildland fire use. No more than 15 percent of the resource area (480,000 acres) would be treated annually by prescribed fire, mechanical fuel treatment for hazard reduction, and wildland fire use under this alternative. Less than 35 percent (1,120,000 acres) of the resource area would be treated in a 10-year period.

Alternative E

Under this alternative, there would be no prescribed fire, no mechanical, chemical, and biological fuel treatments for hazard reduction, and no wildland fire use for resource benefit.

Recreation Resources

Management Goal—*Provide and enhance developed and undeveloped recreation opportunities, while protecting resources, to manage the increasing demand for resource-dependent recreation activities.*

Rationale

The FLPMA provides for recreation use of public land as an integral part of multiple use management. Dispersed, unstructured activities typify the recreational uses occurring throughout the majority of the LRA. Policy guidelines in BLM Manual 8300 direct the BLM to designate special units known as special recreation management areas. Management within these special recreation management areas focuses on providing recreation opportunities that would not otherwise be available to the public, reducing conflicts among users, minimizing damage to resources, and reducing visitor health and safety problems. Major investments in recreation facilities and visitor assistance are appropriate in special recreation management areas when required to meet management objectives.

Public lands not designated as special recreation management areas, or other special designations, are managed as extensive recreation management areas. Management direction within extensive recreation management areas focuses on actions to facilitate recreation opportunities by providing basic information and access. Visitors in extensive recreation management areas are expected to rely heavily on their own equipment, knowledge, and skills while participating in recreation activities.

In accordance with FLPMA, the "BLM's Recreation—A Strategic Plan" (USDI-BLM 1990l) sets recreation policy on the national level. The policy emphasizes resource-dependent recreation opportunities that typify the vast western landscapes; striving to meet the social and economic needs of present and future generations, providing for the health and safety of the visitor, and accomplishing these goals within the constraints of achieving and maintaining healthy ecosystems.

Actions Common to Alternatives A–D

Under Alternatives B, C, and D, the North Lake Special Recreation Management Area (Maps R-1 and -8 of the Draft RMP/EIS and map R-9) and extensive recreation management area designations would become effective upon signature of the approved RMP and record of decision. An individual recreation area management plan outlining specific management for the North Lake Special Recreation Management Area would be prepared following publication of the approved RMP.

All areas within the LRA not covered under a special designation, such as WSA's, special recreation management areas, ACEC's, etc., would be managed as an extensive recreation management area.

Recreation area management plans would not be prepared for the extensive recreation management areas. Specific management actions or projects in the extensive recreation management areas would be included in individual project plans or in plans written for SMA's following publication of the approved RMP.

Any recreational use within ACEC's, including commercial and noncommercial uses authorized under special recreation permits, would be evaluated and permitted, modified, or prohibited as needed to protect ACEC values. However, camping would be prohibited

in a few of the ACEC's under Alternatives C and D.

Throughout the LRA, occupancy and use for recreational camping is limited to 14 consecutive days. Camping within 300 feet of any water source is prohibited. A water source is defined as any fenced spring enclosure, flowing spring, man-made metal or concrete water tank or trough, or dirt pond.

Designation of additional scenic byways or vehicle routes would be considered, provided they are consistent with OHV designations and resource concerns are addressed. Existing scenic byway designations would remain.

Under Alternatives B, C, and D, designation of the North Lake Special Recreation Management Area is proposed.

Operations for all wilderness therapy groups authorized within the proposed North Lake Special Recreation Management Area would be limited to the following area: east of County Road 5-12 B and BLM Road 6121, and north of Lake County Road 5-14. Adjacent to the proposed North Lake Special Recreation Management Area there are a number of campsites associated with wilderness therapy operations located within the Prineville and Burns Districts that are addressed under this RMP process. Within the Prineville District campsites are located in Sections 4, 14, and 34, T.22S., R.19E.; Sections 1 and 3, T.23S., R.19E.; Sections 15 and 36, T.23S., R.20E.; Sections 19, 29, and 33, T.23S., R.12E.; and Sections 5, 8, and 23, T.24S., R.21E. Campsites within the Burns District are located in Sections 4, 13, 22, and 26, T.25S., R.22E., and Section 2, T.26S., R.22E.

Management Direction by Alternative

Alternative A

Under this alternative, management of the existing Warner Wetlands Special Recreation Management Area would continue and the remaining public land throughout the LRA would be managed as an extensive recreation management area. Possible future designation of special recreation management areas to enhance tourism and recreation opportunities would be considered. Existing developed and undeveloped recreation sites (including trails, wildlife viewing areas, back country byways, interpretive areas, and campgrounds) would be expanded to accommodate increased visitation. Opportunities for partnerships to expand tourism and recreation would be optimized. Recreation experiences would be provided through increased information and education opportunities.

Commercial recreation opportunities would be continued through the authorization of special recreation permits consistent with present management direction while providing for resource protection. Special recreation permits, for both commercial and noncommercial activities, would be authorized throughout the LRA.

The Sunstone Collection Area would be managed under existing guidelines, where there would be no commercial collection of stones, and only hand tools may be used.

Development of a watchable wildlife site on the north end of Abert Lake would be considered.

Wilderness therapy schools would be authorized, through the issuance of special recreation permits, to operate on BLM-administered lands within the LRA and portions of the Prineville and Burns Districts. Total user days (defined as any calendar day, or portion thereof, that a participant/client/student is accompanied or serviced by an operator or permittee) associated with wilderness therapy school operations may not exceed 16,600 for combined use in Lakeview, Prineville, and Burns Districts. Group size would be limited to nine students, plus staff. In the vicinity of Fredericks Butte in north Lake County, no wilderness therapy schools would be authorized to operate with more than two groups at any one time within Lakeview, Burns, and Prineville Districts. No more than five groups would be authorized to operate concurrently within this area. When possible, no campsites would be authorized within 5 miles of any year-round residence.

Special Recreation Management Areas

Warner Wetlands Special Recreation Management Area: Management of the Warner Wetlands Special Recreation Management Area would be as outlined in the "Warner Wetlands Recreation Area Management Plan" (USDI-BLM 1990). Existing management direction allows hunting, motorized boating, and personal motorized watercraft (jetskis and waverunners) use. Vehicles would be required to stay on designated roads and trails. The following projects, previously approved to enhance and provide new recreation opportunities, would be considered:

- Upgrade approximately 12–13 miles of existing roads to provide all-weather public access to Turpin, Campbell, and Stone Corral Lakes.

Managing the area as VRM Class III would provide little protection to other resources. Mineral development would have the potential to cause surface disturbance and related impacts. Mineral activity is not likely, since the area has only moderate potential for geothermal resources. Impacts associated with the location of new rights-of-way would be avoided.

Alternative E

No ACEC/RNA designation would mean no protection or special management of one ONHP plant community cell. However, since no grazing, mining, or other commercial activity would occur, the cell would exist in a more natural situation. The plant community would be monitored over time. The conservation agreement with the USFWS would provide some special management to Columbia cress.

Analysis of Impacts: Proposed Guano Creek/Sink Lakes ACEC/RNA

Impacts Common to Alternatives A–D

The area overlaps completely with the Guano Creek WSA and would continue to be protected from the impacts of new right-of-way locations and most mineral development, as well as managed as VRM Class I under the wilderness IMP (USDI-BLM 1995b). This area would continue to be excluded from livestock grazing; therefore, related impacts would not occur.

Alternatives A and B

No ACEC/RNA designation would be made. Therefore, no special management direction and protection would be provided for the resources other than the wilderness IMP (USDI-BLM 1995b). The two ONHP plant cells identified in the area (Appendix I) could be lost in the long term. Implementing the conservation agreement with the USFWS would benefit two special status plants: Crosby's buckwheat and grimy ivesia. OHV use would continue to be limited to existing roads and trails, which could reduce off-road surface disturbance, vegetation destruction, soil compaction, and erosion.

Alternative C

Approximately 4,936 acres would be designated as an ACEC/RNA. Protective management would be put in place that would benefit the condition and continued existence of the two plant cell communities, as well as the two special status plants, even if the area were released from wilderness study. These healthy representations of natural systems would have a better chance of surviving and representing biodiversity where surface-disturbing activities are limited. Implementing the conservation agreement with the USFWS would benefit the two special status plants.

Limiting OHV's to designated roads and trails, including closure of about 2.4 miles of existing roads and trails (Table 4-4), could reduce off-road surface disturbance, vegetation destruction, soil compaction, and erosion.

Alternative D

Approximately 11,239 acres would be designated as an ACEC/RNA (Table 4-4; Map SMA-15). The impacts would be the same as Alternative C.

Alternative E

No ACEC/RNA designation would mean no protection or special management would occur, except for that required by the wilderness IMP (USDI-BLM 1995b). Since no grazing, mining, or other commercial activity would occur, the plant community cells would exist in a more natural situation. The ONHP plant community cells and special status plants would be monitored over time. Implementing the conservation agreement with the USFWS would benefit the two special status plants.

Analysis of Impacts: Proposed Hawksie-Walksie ACEC/RNA

Impacts Common to Alternatives A–D

The area overlaps completely with the Hawk Mountain and Sage Hen Hills WSA's and would continue to be protected from the impacts of new right-of-way locations and most mineral development, as well as managed as VRM Class I under the wilderness IMP (USDI-BLM 1995b).

Alternatives A and B

Under Alternatives A and B, no ACEC/RNA designation would be made. No additional management direction and protection would be provided. The two ONHP plant cells identified in the area, as well as the high quality grasslands unique to that area (Appendix I) could be lost in the long term. However, continued management of the area as a WSA would provide some protection. OHV use would continue to be limited to existing roads and trails which could reduce off-road

surface disturbance, vegetation destruction, soil compaction, and erosion.

Alternative C

Approximately 17,339 acres would be designated as an ACEC/RNA. Management would provide direction and protection of cultural resources. Excluding livestock and wild horses from part of the area would be a significant benefit to the plant communities in the ACEC/RNA. Limiting OHV use to designated roads and trails, including closure of about 10.5 miles of existing roads and trails, could reduce off-road surface disturbance, vegetation destruction, soil compaction, and erosion, as well as protect cultural sites from surface disturbance, destruction, and theft. These actions would also protect the two ONHP cells and the high quality grasslands.

Alternative D

Approximately 17,339 acres would be designated as an ACEC/RNA. Management would provide special management direction and protection generally similar to Alternative C. However, the areas containing the plant cells are not proposed to be excluded from livestock or wild horses initially. The ACEC would be monitored to determine impacts from grazing. Limiting OHV use to designated roads and trails, including closure of about 4.1 miles of existing roads and trails (Table 4-4; Map SMA-15), could reduce off-road surface disturbance, vegetation destruction, soil compaction, and erosion

Alternative E

No ACEC/RNA designation would mean no special provision would be made for the protection or management of the two ONHP cells or the high quality grasslands other than that provided by the wilderness IMP (USDI-BLM 1995b). Since no grazing, mining, or commercial activity would occur, these sites would exist in a more natural situation. The ONHP cell plant communities and special status plants would be monitored over time.

No ACEC/RNA designation would eliminate special protection and management for cultural resources in the area. However, cultural resources would be generally protected since neither livestock grazing nor any other commercial activities would be allowed. There could be damage to sites from illegal artifact collecting and vandalism. Recreation use and associated impacts would continue.

Analysis of Impacts: Proposed High Lakes ACEC

Alternatives A and B

No designation would be made and no additional management direction and protection would be provided for the cultural resources and cultural plants in the area outside of Guano Creek WSA (Appendix I).

Alternative C

About 40,095 acres would be designated as an ACEC. The area overlaps a small portion of the Guano Creek WSA. This area would continue to be protected from the impacts of new right-of-way locations and most mineral development, as well as managed as VRM Class I under the wilderness IMP (USDI-BLM 1995b).

This is one of the few proposed ACEC's under this alternative where livestock grazing would be allowed. However, it would be closely monitored and adjusted in the future if impacts occur.

Management actions prescribed for the ACEC would provide protection and management direction for cultural resources. These actions would significantly benefit the integrity and scientific value of cultural sites. Limiting surface-disturbing activities and adjusting grazing use (if required) would benefit cultural plant species, ensuring their abundance and sustainability. This would be a benefit to local Tribes who desire to be able to harvest these plants for traditional or ceremonial uses.

Limiting OHV's to designated roads and trails and closure of about 23 miles (Table 4-4) of roads and trails could reduce off-road surface disturbance, vegetation destruction, soil compaction, and erosion, as well as protect cultural sites from surface disturbance, direct destruction of artifacts, and vandalism often resulting from human access. Managing most of the area (outside of the WSA) as VRM Class III would provide little protection for other resources.

Closing the area to sale and lease of minerals and excluding new rights-of-way would protect resources from surface disturbance and related impacts.

Alternative D

About 38,985 acres would be designated as an ACEC.

ACEC management actions would provide additional protection and management direction for cultural resources. Impacts to cultural plants and Native

American use of the area and plants would be the same as Alternative C.

OHV use would be limited to designated roads and trails and would include closure of about 17.8 miles of roads and trails (Table 4-4; Map SMA-16). This could reduce off-road surface disturbance, vegetation destruction, soil compaction, and erosion, as well as protect cultural sites from surface disturbance, direct destruction of artifacts, and vandalism often resulting from human access.

The area would be subject to future potential mining impacts of surface disturbance and resource damage. Impacts associated with new rights-of-way would be avoided.

Other impacts would be similar to Alternative C, but to a lesser degree since this alternative would be less restrictive.

Alternative E

No ACEC would be designated. This would eliminate any special protection and management for cultural resources and cultural plants in the area. However, cultural resources and plants would generally be protected since neither livestock grazing, mining, or any other commercial activities would be allowed. Recreation use would continue. There could be damage to sites from illegal artifact collecting and vandalism. Although Native Americans and others would still be able to harvest cultural plants, these plants would have no special protection or management. Long-term impacts on their continued existence would be uncertain.

Analysis of Impacts: Proposed Juniper Mountain ACEC/RNA

Alternatives A and B

No ACEC/RNA designation would be made. No additional management direction and protection would be provided. The one ONHP plant cell identified in the area, as well as old growth juniper woodland unique to that area (Appendix I) would not receive special management. The eastern half of this area burned in a lightening-caused wildfire in the summer of 2001. Some live stands of juniper remain. Restricting vehicles to existing roads and trails would facilitate revegetation of the area. If woodcutting is allowed to continue within the ACEC, it would be limited to dead and down material near existing roads and trails.

Alternative C

About 6,335 acres would be designated as an ACEC/RNA. All commercial wood or plant collection would be prohibited. This would have some short-term and long-term positive impacts on biological resources. Closing the area to wood cutting would protect the ecological and scientific values associated with the remaining old growth juniper woodland. Firewood for personal use could be made available immediately north and east of the ACEC within invasive juniper stands that burned in 2001 (Map V-3).

This is one of the few proposed ACEC's under this alternative where livestock grazing would be allowed. However, it would be closely monitored and adjusted in the future if impacts occur.

Closing the area to camping and limiting OHV's to designated roads and trails, along with closure of about 6.7 miles of roads and trails (Table 4-4), could reduce off-road surface disturbance, vegetation destruction, soil compaction, and erosion, as well as allow natural processes to operate, allow recovery from the fire, and facilitate continued research. Managing the area as VRM Class II would provide protection for other resource values.

Closing the area to the sale or lease of minerals and excluding new rights-of-way would eliminate disturbance impacts associated with these activities.

Alternative D

About 6,335 acres would be designated as an ACEC/RNA. Firewood for personal use would be made available immediately north and east of the ACEC within invasive juniper stands that burned in 2001 (Map V-3).

No impacts from camping would be expected as long as live trees were not cut for use as camp firewood. Limiting OHV's to designated roads and trails, along with closure of about 4.3 miles of roads and trails (Table 4-4; Map SMA- 17), could reduce off-road surface disturbance, vegetation destruction, soil compaction, and erosion, as well as allow natural processes to operate, allow recovery from the fire, and facilitate continued research. Managing the area as VRM Class IV would provide little or no protection for other resource values.

Although mineral exploration and development could cause surface disturbance and related impacts, it is not likely due to the relatively low mineral potential in the

area (Maps M-8, -9, and -10). Mineral leasing activity would be subject to a no-surface-occupancy stipulation. This would protect the integrity of the remaining woodland. New right-of-way locations and associated impacts would be avoided.

All other impacts would be the same as those described under Alternative C.

Alternative E

There would be no ACEC/RNA designation. There would there be no commercial activity, including woodcutting, livestock grazing, or mineral development. Therefore, no negative impacts would be likely to occur. Recreational use of the area, including camping, would continue with no expected impact. Scientific study and research would continue.

Analysis of Impacts: Proposed Rahilly-Gravelly ACEC/RNA

Alternatives A and B

No ACEC/RNA designation would be made. No additional management direction and protection would be provided for the relevant and important resources in the area. The one ONHP plant cell identified, as well as the one special status plant species unique to the area, Cooper's goldflower (Appendix I), would not receive special management and could be lost in the long term.

About two-thirds of the ACEC/RNA is within the Crump Geyser Known Geothermal Resource Area. Geothermal exploration and development would be likely in the future. This could cause a significant negative impact to the special status plant, cultural plants, and cultural sites in the area, depending on how the activity is conducted. Stipulations would be attached (Appendix N3) to any lease issued to protect the special resources in the area to the extent possible.

Alternative C

About 20,127 acres would be designated as an ACEC/RNA. This is one of the few proposed ACEC's under this alternative where livestock grazing would be allowed. However, it would be closely monitored and adjusted in the future if impacts occur.

Management direction would provide protection for cultural resources. These actions would significantly benefit the integrity and hence, the scientific value of cultural sites. Limiting surface-disturbing activities and adjusting grazing use to meet the needs of cultural plants would benefit these species and ensure their abundance and continued survival. Allowing collecting of vegetative material including cultural plants would allow Native Americans to continue to use the area for traditional purposes. It would provide one more area for sustainable cultural plant collection. This would be a benefit to the Tribes who desire to harvest these plants for traditional or ceremonial uses.

Limiting OHV use to designated roads and trails, including closure of about 11.8 miles of roads and trails (Table 4-4), could reduce off-road surface disturbance, vegetation destruction, soil compaction, and erosion. Managing the area as VRM Class III would provide little protection to other resource values.

Closing the area to mineral sale and placing a no-surface-occupancy stipulation on mineral leasing would limit mining related impacts. Geothermal exploration or development would have to be done from outside the area, which would eliminate any impacts to cultural resources or plant communities and special status species. Excluding new rights-of-way would eliminate disturbance impacts associated with this activity.

Alternative D

About 19,648 acres would be designated as an ACEC/RNA. Management direction would provide protection for the resources. Most impacts would be similar to Alternative C. Impacts to the plant community cells, the special status plant, and cultural plants and their use by local tribes would be the same as Alternative C.

Limiting OHV use to existing roads and trails could reduce off-road surface disturbance, vegetation destruction, soil compaction, and erosion, but not as much as Alternative C. Managing the area as VRM Class III would provide little or no protection to other resources.

Some protection would be provided by restricting mineral leasing to no surface occupancy. Impacts from mineral sale or location could still occur. New rights-of-way and associated impacts would be avoided.

Alternative E

No ACEC/RNA would be designated. This would eliminate special protection and management for cultural resources. However, cultural resources, cultural plants, and other botanical values in the area would be generally protected, since neither livestock

grazing, mining, or any other commercial activities including geothermal exploration and development would be allowed. Recreation use would continue. There could be damage to sites from illegal artifact collecting and vandalism. Although Native Americans and others would still be able to harvest cultural plants, these plants would have no special protection or management. Long-term impacts on their continued existence would be uncertain.

Analysis of Impacts: Proposed Red Knoll ACEC

Impacts Common to Alternatives A–D

Noxious weed treatment would benefit native plant communities in the area and would be similar under these four alternatives.

Alternatives A and B

No ACEC designation would be made. No special management direction would be provided for two special status plant species, a number of cultural plants, and an abundance of cultural resource sites (Appendix I).

Alternative C

About 11,588 acres would be designated as an ACEC. Management direction would provide protection of cultural resources. Limiting surface-disturbing activities and eliminating grazing (Map G-2) would prevent damage or destruction of cultural plants and the special status plants in the area. Allowing collecting of vegetative material, including cultural plants for individual use, would enable Native Americans to continue to use the area for traditional or ceremonial purposes and provide one more area for sustainable cultural plant collection.

Limiting OHV use to designated roads and trails, including closure of about 7.3 miles of roads and trails (Table 4-4), could reduce off-road surface disturbance, vegetation destruction, soil compaction, and erosion, as well as direct destruction of artifacts, which would significantly benefit the integrity and hence, the scientific value of cultural sites. Managing the area as VRM Class II would provide protection to other resources.

Withdrawing the area from mineral location, closing the area to mineral sale or lease, and excluding the location of new rights-of-way would prevent surface disturbance and destruction of cultural resources.

Alternative D

About 11,127 acres would be designated as an ACEC. Management direction would provide protection for cultural resources. Impacts to cultural plants and special status plants would be similar to those under Alternative C, except that livestock grazing would continue. However, grazing could be adjusted to reduce impacts to cultural plants or special status plants, if necessary.

Limiting OHV use to designated roads and trails, including closure of about 3.8 miles of roads and trails (Table 4-4; Map SMA-19), could reduce off-road surface disturbance, vegetation destruction, soil compaction, and erosion, and would significantly benefit the integrity and hence, the scientific value of cultural sites. However, the protection would not be as great as under Alternative C. Managing the area as VRM Class II would provide protection to other resources.

Closing approximately 4,600 acres of the area (where mineral potential is highest and development is most likely to occur) from mineral location (by withdrawal), sale, or lease would eliminate potential impacts from mining in part of the ACEC. However, the remainder of the area would remain open to mineral development, subject to special stipulations (Appendix E3). Mining related impacts could occur in this part of the area. New rights-of-way and associated impacts would be avoided.

Alternative E

No ACEC would be designated. This would eliminate any special management for cultural resources in the area. However, cultural resources would be generally protected since neither livestock grazing, mining, or other commercial activities would be allowed. Recreation use would continue. There could be damage to sites from illegal artifact collecting and vandalism.

No special provision would be made for the management of the two special status species; however, since no grazing, mining, or commercial activity would occur, the plants would exist in a more natural situation. These plants would be monitored over time. Similarly, cultural plants would exist in a more natural situation and Native Americans and others would still be able to harvest them. However, the long-term impacts on their continued existence would be uncertain.

Analysis of Impacts: Proposed Spanish Lake ACEC/ RNA

Alternatives A and B

No ACEC/RNA designation would be made. No additional management direction and protection would be provided for the resources. The two ONHP plant cells identified in the area (Appendix I) would not receive special management and could be lost over time.

Alternative C

About 4,699 acres would be designated an ACEC/ RNA. This is one of the few proposed ACEC's under this alternative where livestock grazing would be allowed. However, it would be closely monitored and adjusted in the future if impacts occurred.

Limiting OHV use to designated roads and trails, including closure of about 4.4 miles of roads and trails (Table 4-4), could reduce off-road surface disturbance, vegetation destruction, soil compaction, and erosion. Managing the area as VRM Class III would provide little or no protection to other resources.

Closing the area to sale or lease of minerals and excluding new rights-of-way would protect the two plant cell habitats by reducing potential vegetation loss and soil disturbance.

Alternative D

About 4,699 acres would be designated as an ACEC/ RNA.

Limiting OHV use to designated roads and trails, including closure of about 0.6 miles of roads and trails (Table 4-4; Map SMA-20), could reduce off-road surface disturbance, vegetation destruction, soil compaction, and erosion. Managing the area as VRM Class IV would provide little or no protection to other resources.

The area would remain open to mineral development and the potential for related impacts. The area has a moderate potential for geothermal resources. Exploration or development could impact the two plant cells by destroying vegetation, by driving vehicles off-road, or by constructing access roads. Geothermal leases would be issued with stipulations (Appendix E3) to protect resources to the extent possible. Location of new rights-of-way and associated impacts would be avoided.

Alternative E

No designation would mean no special provision would be made for the management of the two ONHP plant community cells; however, since no grazing, mining, or commercial activity would occur, the plant communities would exist in a more natural situation and would be monitored over time.

Analysis of Impacts: Proposed Table Rock ACEC

Impacts Common to All Alternatives

The special status plants, Cusick's buckwheat and snowline cymopterus, would continue to benefit from management and protection provided by the existing conservation agreement with USFWS.

Alternatives A and B

No ACEC designation would be made. No additional management direction would be provided for the cultural resources and cultural plants in the area (Appendix I).

Alternative C

About 5,891acres would be designated as an ACEC. Management direction would provide protection of cultural resources. Actions that limit surface disturbance would reduce direct destruction of artifacts, thereby maintaining the integrity and hence, the scientific value of cultural sites. These actions would also reduce impacts to special status plants.

Closing the area to camping and limiting OHV use to designated roads and trails, including closure of about 11.1 miles of roads and trails (Table 4-4), could reduce off-road surface disturbance, vegetation destruction, soil compaction, and erosion. Managing the area as VRM Class II would provide protection to other resources.

Closing the area to sale and lease of minerals and excluding new rights-of-way would eliminate impacts from these types of activities.

Alternative D

About 5,138 acres would be designated as an ACEC. Impacts would be similar to Alternative C; however, protection would not be as great. Management direc-

tion would provide protection of cultural resources. This is one of the few proposed ACEC's under Alternative D where livestock grazing and the associated impacts would continue to be excluded from part of the area.

Limiting camping use to designated areas and OHV use to designated roads and trails, including closure of about 3.6 miles of roads and trails (Table 4-4; Map SMA-21), could reduce off-road surface disturbance, vegetation destruction, soil compaction, and erosion. Managing the area as VRM Class II would provide protection to other resources.

The area would be closed to mineral sale. The area has a moderate potential for geothermal resources, but would be restricted by a no-surface-occupancy stipulation. This would eliminate potential impacts from these types of activities. New rights-of-way and associated impacts would be avoided.

Alternative E

No ACEC would be designated. This would eliminate any special cultural resources in the area. However, cultural resources would be generally protected, since neither livestock grazing, mining, or any other commercial activities would be allowed. Recreation use would continue. There could be damage to sites from illegal artifact collecting and vandalism.

Summary of Impacts

Under Alternative A, no new ACEC's would be designated and four existing ones would be retained. The overall impact on currently designated ACEC's would be generally beneficial, although a lack of restrictions on certain activities in some ACEC's leaves them vulnerable to adverse change. Twelve areas with identified relevant and important values would not be designated as ACEC/RNA's, and would therefore, not receive a priority for special management. The overall impact could be adverse in undesignated areas. The ACEC objectives would be met generally in the four existing ACEC's as priority for management would be extended to these areas.

Under Alternative B, four existing ACEC's would be retained and only one new area, Connley Hills, would be designated. The overall impact on the existing and the one proposed ACEC would be somewhat beneficial. Smaller areas within ACEC's would receive special management attention. Eleven potential ACEC's would not be proposed. The overall impact could be adverse in these undesignated areas. Emphasis on commodity uses would increase the risk of adverse impacts. The ACEC objectives would be met generally in the four existing ACEC's and the proposed Connley Hills ACEC.

Under Alternatives C and D, 4 existing ACEC's would be retained, 1 would be enlarged, and 12 new ACEC's would be designated. Nine new RNA's would be designated within nine of the ACEC's. Under both alternatives, the special management of the proposed ACEC's would help protect areas designated as ONHP plant community cells. These healthy representations of natural systems would have a better chance of surviving and providing biodiversity where no grazing is allowed and fences are constructed to limit wild horse access. Tribal people would have access to traditional resources and be able to use areas in eight ACEC's managed partially for cultural values and plants. This would ensure that these areas and resources are available for traditional and ceremonial practices in the future.

The overall impact of Alternative C on currently designated ACEC's would be generally beneficial, although a lack of restrictions on certain activities in some ACEC's leaves them vulnerable to adverse change. The emphasis on management for natural values would provide indirect benefits to the proposed ACEC's. Special management actions that mitigate adverse effects would be implemented for all activities within ACEC's. A priority for management would be extended to areas designated as ACEC's. Alternative C would provide the most extensive and most restrictice management for ACEC's. Overall, the ACEC objectives would be met for an extensive representation of relevant and important values.

In Alternative C, the impacts from livestock grazing would be significantly less because 102,412 acres within nine existing or proposed ACEC's would be closed to grazing. This would provide greater protection to special status plants and plant communities. All ACEC's would be closed to mineral sale and leasing but would remain open to locatable minerals, except for Red Knoll, where the entire ACEC would be withdrawn from mineral activity. Surface-disturbing activity associated with locatable mineral entry would be prohibited in ACEC's that overlap WSA's. (Surface disturbance requiring reclamation is prohibited in WSA's.) These actions would lessen or eliminate the negative effects of mineral development, such as road building and damage to soils and vegetation.

The overall impact on areas of existing and proposed ACEC's would be beneficial in Alternative D, although

a lack of restrictions on certain activities in some ACEC's leaves them vulnerable to adverse change. Special management actions that mitigate effects of adverse impacts would be implemented for all activities within the ACEC's. However, special monitoring of commodity use, such as livestock grazing and wild horse use, would be necessary. Overall, the ACEC objectives could be met for an extensive representation of relevant and important values.

In Alternative D, leasable mineral development is open or open with a no-surface-occupancy stipulation for the majority of the existing and proposed ACEC's. At Red Knoll, only the northern section would be withdrawn from mineral entry and would be fully protected from mineral development. Leasable mineral development is unlikely in most of the ACEC's due to low potential. However, where there is potential for development of geothermal resources (Black Hills, Connley Hills, Juniper Mountain, Rahilly-Gravelly, Sink Lakes, and Table Rock), there would be a no-surface-occupancy stipulation. This would protect the botanical and cultural resources in these areas. The Rahilly-Gravelly ACEC would be the most likely candidate for geothermal exploration and development due to the presence of the Crump Geyser Known Geothermal Resource Area. Except for the Lost Forest RNA portion of the Lost Forest/Sand Dunes/Fossil Lake ACEC and the northwest portion of Red Knoll ACEC, all other ACEC's would be open to locatable mineral development. However, no disturbance could occur in those portions of ACEC's within WSA's and the instant study area (ISA) until they are released from wilderness study. Sale of minerals would be closed for five of the ACEC's. Areas remaining open would be subject to potential adverse impacts from mineral activities.

Under Alternative E, all existing ACEC designations would be revoked and no new ACEC's would be designated. Management for these areas would be the same as that applied across the planning area. The cessation of many activities, including livestock grazing, all mineral activities, and all project development, would permit natural functions and processes to occur within the natural systems. However, the potential for increased horse numbers, nonaggressive weed control, and no management of woodland areas would result in long-term adverse impacts to relevant and important values. The management of wildland and prescribed fire would not be beneficial. There would be no prescribed fires, nor would there be rehabilitation of burned areas. Wildland fires would be allowed to burn except when endangering life or private property. These policies would create a repeated wildland fire regime, which could result in large stands of cheatgrass and noxious weeds, which in turn would create a higher potential for repeated wildland fires. This policy would cause damage to the relevant and important values of all the ACEC's.

Recreation use would be expected to increase, particularly in areas which had been previously designated, such as the Lost Forest/Sand Dune ACEC. Unless regulated, recreation use would result in adverse impacts to cultural and natural values. Overall, impacts of recreation use are anticipated to be moderate. With limited or no noxious weed control, weeds may spread throughout the planning area, resulting in degradation of natural values and severe long-term adverse impacts to natural area communities, plant/animal interaction, and biodiversity. Overall, the ACEC objectives would not be met because this alternative does not provide the necessary protection for relevant and important values.

Secondary, Indirect, and Cumulative Impacts

The major secondary, indirect, or cumulative impacts to ACEC's would be the loss of relevant and important values, such as special status species, unique plant communities, habitats, conversion to marginal plant communities, and loss of cultural values. Up to 147,149 acres of new ACEC's and 167,020 acres of existing ACEC's would be set aside to protect and have special management for special status species (plant and animal), cultural values, scenic values, and unique plant communities. Ten RNA's within these ACEC's would be available for researchers and exist as examples of plant communities for the entire State of Oregon. The impacts from activities implemented on the adjacent USFS, USFWS, state, and private lands, create additional cumulative impacts in addition to BLM-authorized actions.

Especially noteworthy is the increase of OHV recreation in the planning area, some from the closure of sand dunes on the Oregon coast and overflow from OHV areas in the Prineville District. Changes in dunes in the Lost Forest/Sand Dunes/Fossil Lake ACEC have recently been studied by researchers to determine the cumulative impacts of OHV use. The study concluded that neither climate or OHV use have caused significant changes in dune movement patterns since 1939 (Desert Research Institute 2001). Recreation use is predicted to increase just from the increase of population in Oregon, which would have an effect on recreation sites, roads, and would have a special impact in areas of traditional congregation of campsites.

One positive cumulative impact would be the sustain-

able use of up to 122,560 acres by Tribal people for cultural resources and practices; thus fulfilling the BLM's trust responsibility.

A lack of noxious weed policies and prevention on non-BLM lands has had a negative effect on the biodiversity of the existing plant communities within ACEC's in both short and long term. Overall, there has been a loss of biodiversity.

The role of wildland fire policies in non-BLM lands could also negatively impact the existing and proposed ACEC's in the long term, especially by disturbing the connectivity of plant and animal species habitats and by changing the wildland fire regimes at the landscape level.

If Congress decides to designate those WSA's that overlap ACEC's as wilderness, the values of the ACEC's would be greatly enhanced and would receive increased protection.

Wilderness Values

Management Goal—*Wilderness study areas (WSA's) and proposed WSA additions would be managed under the "Interim Management Policy for Lands Under Wilderness Review" (wilderness IMP) (USDI-BLM 1995b). BLM-administered land acquired since the wilderness inventory and determined to have wilderness values would be included in adjacent WSA's.*

Analysis of Impacts

Alternative A

There have been no parcels of land adjacent to or within any existing WSA's assessed through the land use planning process to determine if they would be suitable for wilderness designation. Until the assessment of a specific acquired parcel of land is completed, there would be a potential for wilderness values in these parcels to be impaired because they would not be afforded the same level of protection as the wilderness IMP (USDI-BLM 1995b).

Overall, wilderness values associated within the 12 WSA's would not be degraded under current management. The Sand Dunes WSA would remain open to motorized uses. The opportunity for visual solitude within the Sand Dunes WSA is greatest within the central core where the largest dunes occur. The opportunity for visual and auditory solitude is diminished toward the boundary of the WSA; sounds from human activities outside of the WSA influence solitude within the area as well. The continued motorized use of the Sand Dunes would preclude solitude potential, especially during periods of high use, which have typically been associated with holiday weekends such as Memorial Day, Fourth of July, and Labor Day. Over 1,000 people have been observed camping and riding OHV's within the WSA during recent Memorial Day weekends. Although holiday weekends are documented as the highest use periods, there has been a steady increase in use in OHV recreation activities observed throughout the year. There are three undeveloped camping areas located along the main access road (6151) to the Sand Dunes WSA. Concentrated vehicle use has caused soil compaction and impacts to vegetation within these areas. These areas would continue to see high use during the holiday weekends. During these high use periods, there is no opportunity for solitude in the Sand Dunes WSA. Outside of the high use periods, there are opportunities for solitude and primitive recreation experiences, but activities such as agriculture and other uses on adjacent private lands would be a negative impact to some degree. Over time, there would be more pioneered trails leading into and out of the central dunes area from these camping areas. There are 7 miles of fence within the Sand Dunes WSA, including a fence around Fossil Lake, which restricts OHV's from entering Fossil Lake from the central core area of the sand dunes. The Fossil Lake fence is noticeable on the flatter open terrain in the deflation basin on the very west portion of the WSA. However, this fence does not substantially affect the naturalness of the area.

Alternative B

Lands adjacent to or within existing WSA's that were acquired after the "Wilderness Study Report" (USDI-BLM 1991a) would not be added to existing WSA's. There would be limited management actions available to provide protection for any wilderness values and characteristics. This alternative does not meet the management goals for potential wilderness resources.

Overall, potential impacts to wilderness values associated with the 12 existing WSA's would be similar to Alternative A.

Alternative C

Approximately 1,194 acres of acquired lands within or adjacent to three WSA's (Abert Rim, Fish Creek Rim, and Guano Creek), determined to have wilderness characteristics would be recommended as suitable for wilderness designation. Adding these areas to the

existing WSA's would ensure that the wilderness characteristics and values are adequately protected.

The potential negative impacts to wilderness values from motorized uses within all of the WSA's would be lower than under either Alternatives A or B. All motorized and mechanical uses within WSA's under Alternative C would be limited to designated roads and ways; whereas under Alternatives A and B, the motorized uses would be limited to existing roads and ways.

The closure of the main road into the center of Devils Garden and the road from BLM Road 6179 to Derrick Cave would eliminate access on approximately 25 miles of roads within the Devils Garden WSA (Table 4-4). The opportunity to experience solitude, naturalness and primitive recreation activities would be enhanced with these road closures.

Closure of the Sand Dunes WSA to all OHV's would have a positive impact on the potential opportunities for experiencing primitive recreation and would improve visual and auditory solitude within the central core of the sand dunes. The opportunity for visual and auditory solitude would continue to be diminished toward the boundary areas of the WSA because of sounds and visual impacts from human activities and development outside of the WSA. With the entire area designated as day use only, the traditionally used camping areas along the main access road to the Sand Dunes would eventually revegetate and signs of past human use would diminish. The existing ways leading into and out of the core dunes area would be obliterated over time from the movement of sand and natural revegetation. Additionally, the fence separating Fossil Lake from the central core area sand dunes would no longer be necessary and could be removed. This would improve the naturalness of the area, as seen from the deflation basin located on the west portion of the WSA.

Alternative D

Approximately 1,194 acres of acquired lands within or adjacent to three WSA's (Abert Rim, Fish Creek Rim, and Guano Creek), were determined to have wilderness characteristics and would be recommended as suitable for wilderness designation. Adding these areas to the existing WSA's would ensure that the wilderness characteristics and values are adequately protected.

With the exception of the Sand Dunes WSA, motorized and mechanical uses within WSA's would be limited to either designated or existing roads and ways. Road closures within the Devils Garden WSA would be fewer than under Alternative C, and the Sand Dunes WSA would remain open to OHV's (as in Alternatives A and B). However, the total number of acres in the open designation would be decreased by about 2,328 (Table 3-3), because the Fossil Lake closure would be increased by a corresponding amount. Camping adjacent to the main access road to the Sand Dunes would be allowed to continue, but the use would be limited to designated areas on a rotational basis. Access into the central dunes areas would be limited to specific routes and some existing pioneered trails would be closed. Over time, the naturalness of these camping areas would be improved.

Overall, the management actions proposed would have similar but slightly more positive effects on wilderness values compared to Alternatives A and B and less benefit than Alternative C.

Alternative E

The addition of 1,194 acres of acquired lands within or adjacent to Abert Rim, Fish Creek Rim, and Guano Creek would be the same as under Alternatives C and D. Motorized and mechanical uses within WSA's would be limited to existing roads and ways, and the Sand Dunes WSA would be designated closed to OHV use.

Overall, the potential effects on wilderness values from management actions proposed would be similar to Alternative C. Alternatives C and E would possibly have a slightly greater positive effect than Alternatives A, B, or D because the Sand Dunes WSA would be designated closed under Alternatives C and E.

Summary of Impacts

Overall, the management actions proposed under Alternative D would have similar effects on wilderness values compared to Alternatives A and B. Management actions proposed under Alternatives C and E would have a greater positive effect on wilderness values than Alternative D.

Secondary, Indirect, and Cumulative Impacts

The addition of acquired lands to the existing WSA's would provide protection of the wilderness characteristics and values against future development and uses which would otherwise not be available without a recommended designation as wilderness. Management of existing WSA's and acquired areas would be guided by the wilderness IMP (USDI-BLM 1995b).

Wild and Scenic Rivers

Management Goal—*Protect and enhance outstandingly remarkable values of rivers determined to be administratively suitable for potential inclusion in the national wild and scenic river (WSR) system until Congress acts.*

Impact Analysis

Alternative A

Guano Creek, Honey Creek, and Twelvemile Creek would not be recommended administratively suitable for inclusion in the national WSR system. Guano Creek is located within the Guano Creek WSA, which would continue to provide protection of the outstandingly remarkable values under wilderness IMP (USDI-BLM 1995b). Potential designation of Guano Creek WSA by Congress as wilderness would provide a long-term level of protection similar to that afforded a designated WSR. If Congress should act to release the Guano Creek WSA from consideration, the BLM could revisit the issue and determine if the designation of Guano Creek as part of the national WSR system would be necessary to protect the outstandingly remarkable values.

As part of the Hart Mountain Jurisdictional Transfer, dated February 26, 1998 (and the Shirk Ranch Agreement, dated September 30, 1997), grazing is not authorized within the Guano Creek WSA, which includes the Guano Creek study corridor. The designation of Guano Creek as part of the national WSR system would not appreciably increase the level of protection over the current level of protection provided under the wilderness IMP (USDI-BLM 1995b) and the current management mentioned above. The most significant difference in the protections provided through potential wilderness designation and potential designation in the national WSR system is in the area of energy development. Under a wilderness designation, energy development (e.g., hydropower dams) could be authorized by the President, whereas under a WSR designation, energy development would be incompatible. The potential for energy development within the Guano Creek corridor is very low. Motorized use within the Guano Creek corridor area is limited to existing roads and ways. There are two existing ways within the Guano Creek corridor; one parallels the stream along the upper 1.5 miles and the other parallels the stream along the last 1.0 mile. Under wilderness designation these ways would be closed to motorized use. Under the existing situation, the potential negative impacts to the vegetative outstandingly remarkable values from motorized access is negligible.

Grazing is not authorized within the Honey Creek corridor with the exception of a water gap (a water gap allows cattle access to water for a distance of approximately 100–150 feet along the stream). There are approximately 5.6 miles of BLM-administered public land along a 17-mile stretch of Honey Creek, which starts at the Fremont National Forest boundary on the west and ends at Hart Lake in the east. This public land is interspersed with private land in a checker board pattern. Approximately 67 percent of the 17-mile segment is in private ownership. This checker board land ownership limits the ability to effectively manage stream resources, and the same would hold true if Honey Creek was proposed for designation as part of the national WSR system. Designation would not provide a significantly higher level of protection to the fisheries outstandingly remarkable values in Honey Creek than that which is already available under the "Endangered Species Act." There is potential for energy development, but the physical suitability is unknown. Because of the rural and arid nature of the area, potential for energy development is considered low. Recreational use of the area is very low. Water levels are generally too low for boating activities, and there is minimal evidence of human use. The potential for negative impacts to the fisheries outstandingly remarkable values from recreational uses, including motorized use, is negligible.

Designation in the national WSR system would not provide a significantly higher level of protection to the fisheries outstandingly remarkable values in Twelvemile Creek above that which is already available under the "Endangered Species Act." Recreation uses within the Twelvemile Creek area are relatively low and the effects of these activities on the fisheries outstandingly remarkable values are negligible. Impacts from motorized uses would not be significant, because access within the stream corridor is limited to three very rough, steep jeep trails (one is on private land). The potential for energy development within Twelvemile Creek is considered low because of the rural and arid nature of the area. Grazing is excluded within the Twelvemile Creek corridor by fencing.

Although the fisheries outstandingly remarkable values for both Honey and Twelvemile Creeks are currently afforded adequate protection under the "Endangered Species Act," these protections would be diminished should the Warner sucker be removed from Federal listing.

Alternative B

Guano, Honey, and Twelvemile Creeks would not be recommended administratively suitable for inclusion into the national WSR system. OHV designations for each of these streams would be the same as Alternative A. Overall, there would not be a significant increase in the potential for negative effects to the outstandingly remarkable values because of existing laws, regulations, and policies which currently apply on each of the three creeks, as described under Alternative A.

Alternative C

Guano, Honey, and Twelvemile Creeks would be recommended administratively suitable for inclusion in the national WSR system. Guano Creek would be recommended suitable for potential designation by Congress with a tentative classification as wild. Honey Creek and Twelvemile Creek would be recommended suitable for potential designation by Congress with a tentative classification as scenic.

Under a wild classification, no energy development would be allowed within Guano Creek. However, potential energy development within Guano Creek is considered low. Guano Creek is also located within the Guano Creek WSA and potential development within the stream corridor would be limited based on the WSA status and the future potential congressional designation as wilderness. No new mining claims and mineral leases would be allowed within 0.25 miles of the stream. There are no mining claims or oil and gas leases located near Guano Creek, and the potential for locatable minerals is very low. Grazing is currently not authorized and would not be allowed with or without designation in the national WSR system. Recreational use within the stream corridor is low and the restrictions on the development of recreation facilities within the stream corridor under the wild classification would not be necessary. Motorized travel on land and water could be permitted under the wild classification. However, access within the stream corridor due to WSA status would be limited to designated roads and ways, and the potential for impacts from OHV use would be negligible to nonexistent. The way located at the lower stream reach near the Shirk Ranch would be closed to OHV travel. Because Guano Creek is located within the Guano Creek WSA, the vegetative outstandingly remarkable values are afforded a level of protection under wilderness IMP (USDI-BLM 1995b), which is comparable to designation within the national WSR system. Additionally, the potential designation of Guano Creek WSA by Congress as wilderness would provide a long-term level of protection.

Under a scenic classification, no energy development would be allowed on either Honey or Twelvemile Creeks. However, potential energy development within each of these creeks is considered low. Although mining claims and mineral leases would be allowed under a scenic designation, the mineral potential in each of these stream corridors is low. There are no existing mining or oil and gas leases located near these streams. The potential for negative impacts to these stream corridors from resource extraction activities would be negligible to nonexistent. Livestock grazing would continue to be excluded from both streams. Development of recreation facilities would be allowed within the stream corridors, but the recreation uses within these areas are so low that any development would not be economically feasible or practical. Access to these stream corridors is limited, and the potential negative impacts to the fisheries outstandingly remarkable values is negligible. Designation of Honey Creek and Twelvemile Creek as part of the national WSR system, with a potential classification as scenic, would not provide a significantly higher level of protection to the fisheries outstandingly remarkable values than that which is already available under the "Endangered Species Act."

Alternative D

About 6.6 miles of Twelvemile Creek would be recommended administratively suitable for potential designation by Congress with a tentative classification as recreational. Honey Creek and Guano Creek would both be recommended administratively nonsuitable for inclusion in the national WSR system. The impacts associated with the nonsuitable recommendations for these two creeks would be the same as described under Alternative A.

Under a recreational designation, public use and access could be regulated, recreation facilities could be established within the stream corridor, forest practices would be allowed, mining could occur subject to existing regulations, rights-of-way (for transmission lines, pipelines, etc.) would be avoided or restricted to existing rights-of-way, and motorized uses would be permitted on land and water. Recreation and OHV (motorized uses) uses within the Twelvemile Creek area are relatively low and the effects of these activities on the fisheries outstandingly remarkable values are negligible. With the exception of 90 acres, all 6.6 miles (0.25 miles on either side of the stream) of Twelvemile Creek corridor is in public ownership (Map SMA-22). Acquisition of this private parcel would benefit the fisheries outstandingly remarkable values, regardless of potential designation in the

national WSR system.

The potential inclusion of Twelvemile Creek as part of the national WSR system under a recreational classification would provide an additional, although minimal, level of protection to the outstandingly remarkable values above the protections already provided under the "Endangered Species Act." However, should the Warner sucker be removed from the "Endangered Species Act" list, the protection afforded through the Act would no longer play a key role in the protection of the fisheries outstandingly remarkable values or associated habitat. Livestock grazing would continue to be excluded from this stream, regardless of any designation by Congress. Designation as part of the national WSR system would ensure a long-term level of protection relating to the outstandingly remarkable values, regardless of any future role the "Endangered Species Act" would or would not play in protection of the fisheries. Although Twelvemile Creek was given a tentative classification as scenic under the eligibility assessment, the recreational classification would provide the needed level of protection of the outstandingly remarkable values, while allowing a greater level of flexibility in the management of the fish populations and habitat within the stream corridor. Designation of Twelvemile Creek as a recreational river within the national WSR system would have a positive, but minimal, impact on the fisheries outstandingly remarkable values.

Alternative E

None of the three eligible streams would be recommended administratively suitable for potential designation by Congress as WSR's. The impacts to the outstandingly remarkable values for each of the streams would be the same as addressed under Alternatives A and B. Guano Creek would continue to be managed under the wilderness IMP (USDI-BLM 1995b), and there would be no change in current management. Management of Twelvemile and Honey Creek corridors would continue to be driven by the management prescriptions for the Warner sucker. No VRM class would be assigned to Twelvemile and Honey Creek. Visual resources would be managed to allow natural processes to determine visual quality. Visual resources within Guano Creek would be managed under VRM Class I because of the WSA status. Overall, there would not be a significant increase in the potential for negative effects to occur because of the protections afforded by existing laws, regulations, and management policies which are currently in place: Wilderness IMP (USDI-BLM 1995b) for Guano Creek and the "Endangered Species Act" for Honey and Twelvemile Creeks.

Summary of Impacts

Under Alternatives A, B, and E, none of the eligible streams would be recommended administratively suitable for potential designation by Congress as part of the national WSR system. Potential impacts to the outstandingly remarkable values associated with the three streams would be negligible without designation as part of the national WSR system because of the existing protections afforded them through the wilderness IMP (USDI-BLM 1995b) and the "Endangered Species Act." Additionally, grazing is excluded from each these streams and the potential negative impacts on the outstandingly remarkable values from this activity is not an issue.

Under Alternative C, Guano Creek is proposed for designation with a tentative classification as wild, while Honey Creek and Twelvemile Creek are recommend for designation with a tentative classification as scenic. The potential protection afforded the outstandingly remarkable values through designation and inclusion in the national WSR system would be negligible in comparison to the existing situation. Designation under a wild and/or scenic classification would provide protection against the possibility for hydropower development. However, the potential for hydropower development on all three streams is considered to be low. Additionally, given the protections provided the outstandingly remarkable values through the Wildnerness IMP (Guano Creek) and the "Endangered Species Act" (Honey Creek and Twelvemile Creek), designation as part of the national WSR system would provide little protection above what is currently in place.

Under Alternative D, only Twelvemile Creek would be recommended administratively suitable for possible designation by Congress at a tentative classification as recreational. The added protection of designation as a recreational river in the national WSR system would have a slightly higher potential to positively impact the outstandingly remarkable values (fisheries) in comparison to Alternatives A, B, and E, and would be comparable to Alternative C, even though the tentative classification under Alternative C would be scenic. Inclusion in the national WSR system under a tentative classification of recreational would ensure long-term protection of the fisheries outstandingly remarkable values, even if current protections under the "Endangered Species Act" would no longer be applicable. Alternative D, which provides protection of the outstandingly remarkable values under a tentative classifi-

cation of recreational, would be sufficient to meet the stated management goal for WSR's.

Secondary, Indirect, and Cumulative Impacts

Past water resource related projects (i.e., reservoirs and water diversion structures) on Guano, Honey, and Twelvemile Creeks have had an impact on each stream to varying degrees. On Guano Creek, Jacob's Reservoir, which is located above the study corridor, was constructed for irrigation purposes and has had an influence on the natural stream flow. There are several small reservoirs located upstream of the study corridor on Honey Creek, as well as several small diversion structures on private lands above and below the BLM-administered stream segments. There are also several diversion structures above and below the study corridor on Twelvemile Creek. Potential negative impacts to the outstandingly remarkable values from present or future projects or actions on lands within or adjacent to the study corridors would be negligible or nonexistent because of the existing protections under current laws, regulations, and policies; e.g., the wilderness IMP (USDI-BLM 1995b) and possible ACEC designation (Guano Creek) and the "Endangered Species Act" (Honey and Twelvemile Creeks).

Cultural and Paleontological Resources

Management Goal 1—*Preserve and protect cultural resources in accordance with existing laws, regulations, and Executive orders, in consultation with Native Americans.*

Management Goal 2—*Increase the public's knowledge of, appreciation for, and sensitivity to cultural resources, Native American issues, and paleontological resources.*

Management Goal 3—*In consultation with local Native American Tribes, take actions, including designating areas of critical environmental concern (ACEC's) to protect traditional religious sites, landforms, burial sites, resources, and other areas of interest. Nominate as traditional cultural properties those areas that qualify.*

Assumptions

Some of the actions which are described in the alternatives may have positive or beneficial impacts on cultural resources; some may have negative impacts which would have to be mitigated, as required by Federal laws and regulations. Some impacts would be destructive and cannot be mitigated (such as the destruction of a Native American traditional cultural property).

Significant cultural resource properties and Native American traditional cultural properties may be protected by various management strategies designed to preserve such sites for future scientific research, recreational uses, educational use, or Native American use. Examples of protected significant properties are the Abert Lake National Register District within the Lake Abert ACEC. Exclosures proposed by other programs, such as wildlife and range, often protect cultural resources from cattle congregation and human vandalism. WSA and wilderness designations help restrict OHV use and protect sites.

Analysis of Impacts

Impacts Common to Alternatives A–D

Impacts to cultural resources would generally be the same under all four alternatives.

The management proposed for riparian zones to improve water quality and aquatic habitat while reducing soil erosion would benefit cultural resources. Restricting livestock grazing along streams, stabilizing stream banks, and closing roads in or near riparian areas would maintain or enhance conditions of archaeological sites in these areas. Negative impacts often outweigh beneficial ones, but could be mitigated. Livestock and wild horse congregation and trampling could adversely affect cultural resources along streambanks and around springs.

The designation of SMA's, such as RNA's, ACEC's, and WSR's, generally would have a positive effect upon cultural resources and traditional cultural properties since management actions restrict detrimental uses. This would be accomplished by reduction or elimination of surface disturbances, which are often caused by activities such as OHV use, grazing, construction of range improvements, rights-of-way placement, and mineral entry. Restricting these activities would result in increased ground cover, leading to a reduction in soil erosion, which would help to maintain the integrity of cultural sites.

Prescribed fires generally would not have an impact on cultural resources. Any flammable structures that could be damaged or destroyed would be protected or avoided. Current fire management policy is to avoid

cultural sites, traditional cultural properties, and historic sites. However, in the case of wildland fire suppression, decisions must be made quickly, and occasionally there is no time to consult with a cultural resource specialist about cultural values. As a result, cultural or historic sites may be damaged or destroyed. Fires of low intensity (amount of heat) generally have little or no effect on cultural resources unless heavy equipment is used to create firelines and firebreaks. Fire severity (duration of heating) can adversely affect prehistoric sites because extreme heat can damage stone tools and lithic debris on or near the surface. Rock art can be vulnerable to both fire intensity and severity on rock types subject to spalling and in areas with high fuel loadings. Fires of any type may expose hidden sites to increased visibility and illegal collection. Prehistoric, historic, and traditional cultural properties could also be damaged by fireline construction, particularly with heavy equipment.

OHV activities, particularly if unregulated, could have a negative impact upon cultural resources and traditional cultural properties. Alternatives A, B, and D would manage large parts of the planning area in the OHV open use class. This would have the greatest impacts on cultural resources. New trails are created that cut and erode sites, scattering and breaking artifacts. The noise level and presence of people could impact the use of traditional cultural properties by Native Americans.

In addition, as OHV's take people into generally unvisited or hard-to-reach areas, the integrity of prehistoric and historic sites would be at greater risk of vandalism and collecting. Site vandalism and illegal excavation can increase in these instances. Looting of important sites is a continuing negative impact and is a criminal activity. Some people steal artifacts from public land and sell them for a profit, while others maintain private collections. Both actions impact the resource base.

When locatable minerals are mined under a plan of operation, provisions are made for inventory, evaluation, and sometimes mitigation of adverse effects to cultural resources. However, the notice of intent, which precedes a formal plan of operation, has a short timeframe, and occasionally these limited operations have adverse impacts on cultural resources. The operator would still be responsible and held accountable if the activities damaged archaeological properties. Increased mining for locatable minerals could have adverse impacts upon archaeological resources and traditional cultural properties. Locatable mining is governed by the regulations found at 43 CFR 3809. The regulations prohibit the "undue degradation" of the environment, which might be used to prevent associated mining impacts. Another vehicle for the removal of impacts is to withdraw areas of importance from mineral entry; however, that is a difficult action, requiring secretarial or congressional approval. Salable and leasable mineral development would involve site avoidance, no-surface-occupancy stipulations, or other mitigation methods to reduce potential impacts to cultural resources (Appendix E3).

The most common, least expensive, and quickest form of mitigation of adverse effects would be to cancel, relocate, or redesign a project to avoid cultural sites. This could be easily done if the project is a fence or pipeline. On more complex projects, such as highway construction, or projects which can only be placed in one location, mitigation would be more difficult. In these cases, the adverse effects would be mitigated by scientific excavation and data collection by archaeologists. Such mitigation would always be done in consultation with Native American Tribes who have an interest.

Alternative E

The removal of livestock grazing and potential for future construction of range improvement projects, mineral activity, rights-of-way, and other commercial uses would have an overall beneficial impact on cultural resources, as this would eliminate the sources of most ground-disturbing activity. Sites would not be disturbed, and artifacts would be left intact. However, the planning area would still be open to dispersed recreation and continued impacts from site vandalism and illegal artifact collecting. This would be a significant negative impact to the integrity and scientific value of the sites.

Excluding all commodity production from the planning area would also have a negative impact on the cultural resource program. Almost all survey or inventory work currently conducted on cultural resources is the result of doing cultural clearances for ground-disturbing projects. Since no new projects would be installed, there would be no need for new clearances. This source of information about cultural resources would essentially be lost.

Summary of Impacts

The objectives for cultural/paleontological resources would be met under all the alternatives to varied degrees. The short-term impacts of the preferred Alternative D on cultural resources would be positive

for the cultural resource program objectives, historic property interpretation and stabilization, and for the preservation of traditional Native American uses.

The long-term impacts of the preferred Alternative D on cultural resources would be positive for all cultural resource objectives, including locating and protecting sites, increasing opportunity for public education and enjoyment of cultural and paleontological resources via site interpretation, and systematic protection of traditional Native American uses.

Secondary, Indirect, and Cumulative Impacts

Because cultural resources are location-specific, fragile, and nonrenewable, adverse impacts across the landscape (regardless of land ownership) would be cumulative. For example, if there are 500 small lithic scatters in an area and 1 or 2 per year are lost to erosion, eventually none would exist. Likewise, each episode of vandalism diminishes the educational and scientific value of an archaeological site. Over time, the history and prehistory of an area may be completely lost.

Management Goal 4—*In order to fulfill trust responsibilities with Tribal peoples, manage public land to maintain, restore, or enhance plant community health and cultural plants. Identify traditional ecological knowledge with humans as part of the ecosystem, and maintain habitat integrity with sustainable yields at a landscape level.*

Analysis of Impacts

Alternative A

During the NEPA analysis process for proposed land management actions, impacts to cultural plants would be considered to determine if such actions would cause a decline. Consultation with the different Tribes would be carried out concerning cultural plants and juniper woodland management. On an as-needed basis, surveys for cultural properties would be conducted in juniper woodlands.

Impacts from activities such as livestock grazing, wild horses, OHV use, rights-of-way or mineral development, and in some cases, wildland fire, would have negative impacts on the cultural plants species because of ground disturbance and potential for noxious weed invasion. Tables 2-36 and 2-37 list those plants and plant communities at risk from such actions. Impacts from vegetation treatment could have a negative effect if cultural plants are not included in the seed mixes for rehabilitation. Since few of these plants have available seed, other species would replace them, and in the case of using crested wheatgrass plantings, it would have an extremely negative effect. However, replanting of both native and introduced plant species would curb the invasion of competing weeds.

Alternative B

Most of the impacts would be the same as Alternative A. However, the impacts to cultural plants would be slightly higher because of the increase in livestock and wild horse AUM's, especially in areas of spring use of low sagebrush and camas meadows or riparian areas. The increase of rangeland projects would spread the livestock into larger areas than Alternative A, which would slightly increase the possibility of impacts.

The possibility of biomass energy generation plants using juniper wood would have a definite effect on the some big sagebrush and juniper woodland communities. This could impact traditional uses in some areas. Such proposals would require preparation of a separate NEPA analysis and would need consultation with Tribal people.

Alternative C

The addition of new ACEC's and expansion of an existing ACEC specifically for management of cultural plant communities would have a significant positive effect on these resources. These ACEC's would limit ground disturbance from activities such as mining and right-of-way development and would protect many of the plant communities identified as important to Tribal people in the area.

Limiting juniper harvesting within SMA's would have a positive effect on the traditional use of this resource. The potential impacts of biomass energy generation on juniper woodlands would be similar to Alternative B. An increase of Tribal input and education within the BLM would have a positive effect for management needs and direction.

The decrease in AUM's for livestock and decreased number of range projects would have a positive effect on the plant communities. Wild horses would have the same impact as in Alternative A.

By limiting OHV use to existing or designated roads and trails (Map R-6 of the Draft RMP/EIS), the impact to cultural plants and communities would be lessened, compared to Alternatives A or B.

Alternative D

The impacts would be the same as Alternative C. However, the impact of the OHV open use designation would be greater than Alternative C. The impact of livestock grazing would be the same as Alternative A. The potential increase of wild horse numbers and AUM's could create an increased threat to cultural plants and communities within herd management areas.

Alternative E

This alternative would not designate any new ACEC's for cultural plants, and thus, would not provide extra management protection of these areas. Juniper woodlands and associated traditional uses would have increased protection with prohibition of wood and bough cutting.

Summary of Impacts

Alternatives A and B would generally have a negative impact on cultural plant community health. Project clearances and mitigation actions for protection of cultural plants would be done on a case-by-case basis. Consultation would continue with local Tribes. Only one new ACEC (Connley Hills) providing protection and management of cultural plants would be designated under Alternative B.

Under Alternatives C and D, impacts to plant communities and cultural plants would be much more beneficial. Eight new ACEC's would be designated, in part to protect the traditional uses and values that are important to local Tribes. Tribal people would have access to traditional resources and use areas in these eight ACEC's. Future management of these ACEC's would take these values into account.

Under Alternative E, no new ACEC's would be designated; therefore, this would preclude any special protection and management for cultural plants and traditional use areas. However, these resources would be generally protected since neither livestock grazing, mining, nor other commercial activities would be allowed. Native Americans and others would still be able to harvest cultural plants. However, these plants would have no special protection or management. Long-term impacts on their continued existence would be uncertain.

Secondary, Indirect, and Cumulative Impacts

Designating areas as ACEC's and prescribing special management for resources and values that are important to local Tribes fulfills BLM trust responsibilities. This provides a means to establish better working relationships with these Tribes. Actions in Alternatives C and D provide special management for areas that, while they are still available for other uses, would support traditional uses and needs of local Tribes. Across the larger landscape, areas that have traditional importance and use are disappearing or are being changed in ways that make them no longer compatible for Tribal uses. Designating these areas would help to ensure that some areas survive unchanged for the foreseeable future.

Human Uses and Values

Management Goal—*Manage public lands to provide social and economic benefits to local residents, businesses, visitors, and future generations.*

Assumptions

Recreation use of BLM-managed lands generates local economic activity in several ways. Visitors to the area purchase food, fuel, lodging, and other goods and services from local businesses. Some businesses cater specifically to visitors and have special recreation permits for commercial uses of BLM-managed lands. Examples include all types of guide services and wilderness therapy schools.

Current visitation to developed sites on BLM-managed land is estimated at 117,500 annually (out of an estimated total annual visitation of 155,118 visitors). Future demand for recreation opportunities is expected to increase at about 4.0 percent annually. Population increases are the primary drivers of this trend. The Oregon State Parks Department has projected annual growth rates for specific activities. Of particular concern in the Lakeview District is the projected increases in OHV use of 2.9 percent annually (Oregon State Parks and Recreation 1991). The projected demand for recreation opportunities can be met in multiple places by multiple ownerships. Future management of lands and recreation sites would determine the attractiveness of these areas for specific types of recreation uses. This would determine the distribution of recreation between regions and across ownerships.

Analysis of Impacts

Alternative A

Agriculture and livestock use: Opportunities to increase grazing use levels from the past average use level of 108,234 AUM's to the full active preference of 164,128 are retained. The ability of actual grazing use to increase to full active preference is tied to the development and implementation of economically feasible grazing systems and range improvements, and the willingness and ability of existing permittees to expand grazing operations when opportunities arise. Overall, it is anticipated that total cattle and calf sales in Lake County could be approximately $22.7 to $24.6 million (based on 1998 sales in the county), an increase of 9 to 17.9 percent from historic sales. The range of impacts identified represents uncertainty regarding the flexibility of permittees to expand productivity and herd sizes during seasons when livestock are not utilizing BLM-managed lands. Grazing fee collections could be approximately $221,573 annually if the current fee remains the same for the life of the plan, an increase of $75,457 from historic averages.

Mineral resources: Alternative A continues existing mineral withdrawals for about 13,400 acres. This would not change future development opportunities as discussed in Appendix N2 (reasonably foreseeable development scenarios) from the current situation. Continuation of the Public Sunstone Area would retain an important and unique recreational resource that contributes to tourism-related economic activity.

About 433,790 acres would continue to be closed to leasing. These closures affect about 10 percent of lands with high potential. Also, 101,433 acres would continue to be subject to no-surface-occupancy stipulations. These stipulations affect 11 percent of acres with high mineral potential (Table 4-6). The current management direction moderately limits opportunities for future mineral development, as discussed in Appendix N2. In the event that lands are eliminated from wilderness consideration by future congressional action, these lands would be reopened for mineral leasing unless constrained by other designations or specific closures. Necessary constraints would be implemented to protect resource values.

Alternative A continues present management of existing pits and quarries and allows for establishment of new sites in areas open to mineral material disposal. About 467,323 acres are closed to mineral material disposal. Several sites of high quality decorative stone, cinders, and dolomitic limestone are included within the closed acreage. This alternative identifies one potential site (Devils Garden) for establishment of a common use area if that particular area is dropped from wilderness consideration by future congressional action. A high level of lands would be available for mineral materials. The current needs and anticipated future demands of both public users and county, state, and Federal agencies could be met under this alternative.

Forest and woodland resources: Alternative A does not declare an allowable sale quantity for the forest and woodlands within the planning area. Instead, commercial forest products would be a byproduct of management treatments designed to reduce overstocking, control competing vegetation, remove invasive juniper or white fir, reduce ground and understory ladder fuels, improve forest health, and increase resistance to insect and disease outbreaks and wildland fires.

Commercial and public wood cutting is an important existing use that would be used to address some forest and woodland treatment needs, especially in invasive juniper stands. It is unlikely the demand for commercial and public wood cutting could completely address the identified need for treatment of invasive juniper stands over the life of the plan. Alternative A meets existing and anticipated future demand for commercial and public wood cutting opportunities. Other forest and woodland treatments (culturing, cutting, mechanical, thinning, and prescribed fire) could provide employment opportunities to various contractors and seasonal employees. The extent of these employment opportunities would be dependent of future funding of forest treatment activities.

Recreation resources: Alternative A develops tourism opportunities. New recreation sites would be developed to meet increased recreation demand and to protect cultural and natural value and public health and safety. This would meet current and future demands and would pursue opportunities to further expand recreation use and opportunities through developments, partnerships, and increased visitor information and education.

Motorized and mechanical vehicle use would be managed under open, limited to designated or existing roads and trails, and closed designations. The Sand Dunes WSA would be designated as open, allowing significant recreational use to continue. Special recreation permits would be issued for organized events consistent with the protection of resource values. Existing and future demand for motorized vehicle use would be met under this alternative.

Special recreation permits would be issued. Existing commercial recreational uses and organized recreational activities would continue. Existing guided uses and wilderness therapy schools would be able to use BLM-managed lands. Existing tourism-related firms would continue and would have opportunities to expand in the future.

Management of the Sunstone Collection Area would be continued. Future development of a primitive camping area in the vicinity would support additional visitor use. Sunstone collection is a unique recreational opportunity. No commercial uses would be permitted in the public collection area.

Federal agency activities: The business activities of the Federal government would not change significantly. With appropriated funding, current program emphasis would continue to generate local economic activity through direct Federal employment, local and regional purchases and contracting, and provision of commodities and recreational opportunities. The level of government and contract employment associated with restoration activities (such as prescribed fire, noxious weed treatment, and wildfire rehabilitation) would be unchanged.

Land tenure and revenue sharing: This alternative would not result in significant changes in Federal ownership patterns. Future land exchanges would have no significant impacts, including impacts to Federal revenue sharing programs, due to the equalization requirements of the 1992 "Interior Appropriations Act." Payments-in-Lieu-of-Taxes would increase due to Public Law 103-397, which authorizes increased payments. Actual increases would be dependent on congressional action to fund these increases.

Environmental justice: Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations," requires Federal agencies make achievement of environmental justice part of its mission by identifying disproportionately high adverse human health or environmental impacts of its programs, policies, and activities on minority and low income populations. Native Americans are a minority population of concern because of historic and current uses of public lands for traditional cultural practices. No other minority of low income populations has been identified.

There would be no disproportionate, adverse impacts to low income or minority populations from this alternative. Impacts related to Native American traditional uses are discussed in the Special Management Areas and Cultural and Paleontological Resources sections of Chapter 4.

Conclusion: Underlying demographic trends would dominate future population and age distribution conditions within the study area. Alternative A maintains current levels of economic uses of the public lands. This includes economic activity associated with Federal grazing use, mining activity, recreation, and restoration. Alternative A maintains the current level of economic opportunity for future development. This includes potential for growth in mining and recreation.

Alternative B

Agriculture and livestock use: Active preference would be increased to 180,541 AUM's, 10,823 AUM's more than active preference under Alternative A. The ability of actual grazing use to increase to full active preference is tied to the development and implementation of economically feasible grazing systems and range improvements, and the willingness and ability of existing permittees to expand grazing operations when opportunities arise. Overall, it is anticipated that total cattle and calf sales in Lake County could be approximately $23.3 to $25.7 million (based on 1998 sales in the county). This represents an increase of 11.6 to 23.2 percent from historic sales and 2.4 to 4.5 percent relative to potential sales under Alternative A. The range of impacts identified represents uncertainty regarding the flexibility of permittees to expand productivity and herd sizes during seasons when livestock are not utilizing BLM managed lands. Grazing fee collections could increase by approximately $90,068 from historic averages and by $14,611 when compared to Alternative A, if the current fee remains the same for the life of the plan.

Mineral resources: Alternative B would open an additional 4,440 acres to mining claim location through revocation of existing withdrawals. These areas include the current Public Sunstone Area (an area of high interest) and public water reserves (areas of low interest). These changes would not measurably change future development opportunities, as discussed in Appendix N2. Revocation of the Public Sunstone Area would eliminate an important and unique recreational resource, potentially reducing tourism-related economic activity.

Alternative B would slightly increase the acreage open to mineral lease from the current situation. Approximately 18,000 acres in the Lake Abert area would be made available for leasing by removing special stipulations that currently preclude sodium development.

This is an area of high potential. Lease closures total about 415,790 acres and would affect about 36 percent of lands with high potential (Table 4-6). About 105,108 acres would be subject to no-surface-occupancy stipulations. These stipulations would affect about 52 percent of acres with high mineral potential. With the exception of greatly increased opportunity for the development of sodium leasing in the Lake Abert area, this alternative would not appreciably change future mineral leasing development opportunities, as discussed in Appendix N2.

Alternative B would continue present management of existing pits and quarries and allow for establishment of new sites in areas open to mineral material disposal. Four specific sites for possible future community use areas would be identified. About 467,323 acres would continue to be closed to mineral material disposal. Several sites of high quality decorative stone and cinders would be included within the closed acreage. Three potential sites (Devils Garden, Squaw Ridge, and Four Craters) would be identified for establishment of a common use area if those particular areas are dropped from wilderness consideration by future congressional action. A high level of lands (about 85 percent) would be available for mineral materials use. The current needs and anticipated future demands of both public users and county, state, and Federal agencies could be met under this alternative.

Forest and woodland resources: Alternative B would not declare an allowable sale quantity for forest and woodlands. Instead, commercial forest products would be a byproduct of management treatments designed to reduce overstocking, control competing vegetation, remove invasive juniper or white fir, reduce ground and understory ladder fuels, improve forest health, and increase resistance to insect and disease outbreaks and wildland fires.

Commercial and public wood cutting would continue to be an important existing use that would be used to address some forest and woodland treatment needs, especially in invasive juniper stands. It is unlikely the demand for commercial and public wood cutting could completely address the identified need for treatment of invasive juniper stands over the life of the plan. Existing and anticipated future demand for commercial and public wood cutting opportunities would be met. Other forest and woodland treatments (culturing, cutting, mechanical, thinning, and prescribed fire) could provide employment opportunities to various contractors and seasonal employees. The extent of these employment opportunities would be dependent on future funding of forest treatment activities.

Recreation resources: Alternative B would emphasize the development of tourism opportunities. New recreation sites would be developed to meet increased recreation demand and to protect cultural and natural values and public health and safety. This would meet current and future demands and would provide opportunities to further expand recreation use and opportunities through developments and promotions.

Motorized and mechanical vehicle use would be managed under open, limited to designated or existing roads and trails, and closed designations. The Sand Dunes WSA would be designated as open, allowing a significant recreational use to continue. Special recreation permits would be issued for organized events.

Special recreation permits would be issued. Existing commercial recreational uses and organized recreational activities would continue. Existing guided uses and wilderness therapy schools would be able to use BLM-managed lands. Existing tourism-related firms would continue. Existing and new firms would have opportunities to expand in the future.

The Sunstone Collection Area would be managed to encourage commercial use. Opportunities could exist to expand tourism-related businesses to include outfitting and guided tours for the collection of sunstones.

Federal agency activities: The business activities of the Federal government could increase slightly. With appropriated funding, program emphases would shift to generate local economic activity through increased provision of commodities and recreational opportunities. The level of government and contract employment associated with restoration activities (such as prescribed fire, noxious weed treatment, and wildfire rehabilitation) would be similar to Alternative A.

Land tenure and revenue sharing: Impacts would be similar to Alternative A.

Environmental justice: Impacts would be similar to Alternative A

Conclusion: Underlying demographic trends would dominate future population and age distribution conditions. Alternative B would maintain current levels of economic uses of public lands. Several proposals to enhance visitor services and access on public lands could occur. Economic activity associated with visitors to public lands would increase. The current level of economic opportunity for future development would be maintained. This would include

potential for growth in mining, livestock use, and recreation.

Alternative C

Agriculture and livestock use: Active preference would decrease by 77,541 AUM's to 86,587 AUM's over the life of the plan. Opportunities to expand grazing operations using federal forage would be eliminated. Total cattle and calf sales in Lake County would be approximately $19.4 to $20.15 million (based on 1998 sales in the county). This would represent a decrease of 3.5 to 6.9 percent from historic sales and 11.4 to 21.1 percent relative to potential sales under Alternative A. The reduction in active preference below the historic use level of 108,234 AUM's would result in marginal to modest reductions in historic herd size for affected permittees, reducing productive capacity and sales. Permittees who experience reductions or loss of Federal grazing privileges would be required to restructure their existing operations to utilize existing private resources more efficiently or acquire new resources to replace those no longer provided by public lands. Changing the season of use would also require similar restructuring of livestock operations. The range of impacts identified represents uncertainty regarding the flexibility of permittees to restructure their existing operations. Restructuring of this kind favors large, diversified agricultural operations with capital reserves or resources. Smaller, less diversified operations and operations of relatively small, privately-owned land bases would be at greater risk of foreclosure or bankruptcy. Grazing fee collections would decrease by approximately $29,224 from historic averages and by $104,680 when compared to Alternative A, if the current fee remains the same for the life of the plan.

Mineral resources: Alternative C would continue existing mineral withdrawal for 13,400 acres and close an additional 18,459 acres to mineral location. These closures would moderately reduce future development opportunities, as discussed in Appendix N2.

Alternative C would moderately decrease the acreage open to leasing from the current situation. Closures would total about 532,403 acres. These closures would affect 98 percent of the lands with high potential. About 119,460 acres would be subject to no-surface-occupancy stipulations. These stipulations would affect 1 percent of the acreage with high mineral potential (Table 4-6). This would moderately reduce future mineral development opportunities, as discussed in Appendix N2.

Alternative C would continue present management of existing pits and quarries and allow for establishment of new sites in areas open to mineral material disposal. About 600,598 acres would be closed to mineral material disposal. Several potential sites for high quality decorative stone and cinders would be included within the closed acreage. Areas dropped from wilderness consideration by future congressional action would be opened to mineral material disposal. A high level of lands (about 82 percent) would be available for mineral material use. The current needs and anticipated future demands of both public users and county, state, and Federal agencies could be met under this alternative.

Forest and woodland resources: Alternative C would not declare an allowable sale quantity for the forest and woodlands. Instead, commercial forest products would be a byproduct of management treatments designed to reduce overstocking, control competing vegetation, remove invasive juniper or white fir, reduce ground and understory ladder fuels, improve forest health, and increase resistance to insect and disease outbreaks and wildland fires.

Commercial and public wood cutting would continue to be an important method used to address some forest and woodland treatment needs, especially in invasive juniper stands. It is unlikely that the demand for commercial and public wood cutting could completely address the identified need for treatment of invasive juniper stands over the life of the plan. Alternative C would meet existing and anticipated future demand for commercial and public wood cutting opportunities. Other forest and woodland treatments (culturing, cutting, mechanical, thinning, and prescribed fire) could provide employment opportunities to various contractors and seasonal employees. The extent of these employment opportunities is dependent on future funding of forest treatment activities.

Recreation resources: Alternative C deemphasizes tourism opportunities. Minimal new recreation sites would be developed. Opportunities for recreation in primitive and remote locations would occur unless resource values were being degraded beyond acceptable levels. Specific area closures and use limitations would be proposed to protect resource values and human safety. Some current uses would no longer be allowed and future demand for developed site recreational opportunities would not be met by this alternative. This could marginally impact existing recreation-related businesses and limit future opportunities to develop new recreational related businesses.

OHV use would be managed under open, limited to designated or existing roads and trails, and closed designations. The Sand Dunes WSA would be designated as closed, precluding a significant existing recreational use. The current annual visitation of about 11,000 generates an estimated $263,000 of visitor spending locally and throughout the region (Johnson et al. 1995). Displacement of these visitors to sites outside the north Lake County area would eliminate local spending generated by these visitors. The communities of Christmas Valley, Summer Lake, Silver Lake, and Fort Rock would be impacted. Special recreation permits would be issued for organized events, but use would be limited to designated or existing roads and trails. Some existing visitation could be shifted to other ownerships (primarily USFS) in the area and to other regions which offer greater opportunities for OHV use. Compared to Alternatives A and B, OHV restrictions (Map R-6 of the Draft RMP/EIS), along with closure of specific roads and trails (Table 4-4), would make it more difficult for the public and Tribal people to access public lands for hunting, other recreational pursuits, and traditional uses.

Issuance of special recreation permits would be limited. Existing guided uses and wilderness therapy schools would be able to use BLM-managed lands. Opportunities to develop new recreation-related businesses would be reduced compared to Alternatives A or B.

Management of the Sunstone Collection Area would continue under existing guidelines. This would retain an important and unique recreational resource that contributes to tourism-related economic activity.

Federal agency activities: The business activities of the Federal government could increase slightly. With appropriated funding, program emphasis would shift to generate local economic activity through direct Federal employment, local and regional purchases and contracting, improved recreational opportunities, and restoration activities. The level of government and contract employment associated with restoration activities (such as prescribed fire, noxious weed treatment, and wildfire rehabilitation) would increase and have the potential to slightly increase local employment. The extent would be dependent on future budget allocations, the extent contracts are used, and additional Federal employees hired to accomplish restoration objectives.

Land tenure and revenue sharing: Impacts would be similar to Alternative A.

Environmental justice: This alternative would preclude collection of vegetative products for personal use within some of the proposed ACEC's and/or RNA's (see Special Management Area section and Table 3-3). This restriction would reduce opportunities for all people equally. However, Native Americans would be disproportionately adversely impacted since they are the main traditional users of these products. Cultural resource values and traditional use areas would be protected in eight ACEC's which are proposed, in part, to protect cultural values and known Native American traditional use areas. Collection of vegetative products by Native Americans would be allowed to continue in these areas. No other ethnic groups or low income populations would be disproportionately adversely impacted.

Conclusion: Underlying demographic trends would dominate future population and age distribution conditions. Current levels of economic uses of the public lands would be decreased. Economic activity associated with visitation on public lands could increase because of underlying population increases, but the BLM would not provide new facilities or opportunities to attract additional recreational users. The level of economic opportunity for future development would decrease due to decreased acreage available for mineral development, decreased livestock use authorizations, and limited availability of special use permits.

Alternative D

Agricultural and livestock use: Active preference would be unchanged from Alternative A. Alternative D would retain opportunities to increase grazing use levels up to full active preference. The ability of actual grazing use to increase to full active preference is tied to the development and implementation of economically feasible grazing systems and range improvements, and the willingness and ability of existing permittees to expand grazing operations when opportunities arise. Total cattle and calf sales in Lake County could be approximately $22.7 to 24.6 million (based on 1998 sales in the county), an increase of 9 to 17.9 percent from historic sales. The range of impacts identified represents uncertainty regarding the flexibility of permittees to expand productivity and herd sizes during seasons when livestock are not utilizing BLM-managed lands. Grazing fee collections could be approximately $221,573 annually if the current fee remains the same for the life of the plan, an increase of about $75,457 from historic averages.

Mineral resources: Alternative D would continue existing mineral withdrawals and would close an additional 3,820 acres to mineral location (Table 3-7,

Map M-10). These closures would slightly reduce likely future development opportunities (Table 4-6), as discussed in Appendix N2.

Alternative D would slightly decrease acreage open to mineral leasing from the current situation. Leasing closures would total about 496,983 acres and affect about 91.2 percent of lands with high or moderate potential (Table 4-6; Map M-9). About 810,983 acres would be subject to no-surface-occupancy stipulations. These stipulations would affect about 53 percent of acres with high or moderate mineral potential. This alternative would not appreciably change future mineral development opportunities, as discussed in Appendix N2.

Alternative D would continue present management of existing pits and quarries and allow for establishment of new sites in areas open to mineral material disposal. About 41,658 acres of high/medium potential lands would closed to mineral material disposal (Table 4-6; Map M-8). Several potential sites for high quality decorative stone and cinders would be included within the closed acreage. Areas dropped from wilderness consideration by future congressional action would be opened to mineral material disposal on a case-by-case basis. A high level of lands (about 61 percent) would be available for mineral material use. The current needs and anticipated future demands of both public users and county, state, and Federal agencies could be met under this alternative.

Forest and woodland resources: Alternative D would not declare an allowable sale quantity for forest and woodlands. Instead, commercial forest products would be a byproduct of management treatments designed to reduce overstocking, control competing vegetation, remove invasive juniper or white fir, reduce ground and understory ladder fuels, improve forest health, and increase resistance to insect and disease outbreaks and wildland fires.

Commercial and public wood cutting would continue to be an important method used to address some forest and woodland treatment needs, especially in invasive juniper stands. It is unlikely that the demand for commercial and public wood cutting could completely address the identified need for treatment of invasive juniper stands over the life of the plan. Alternative D would meet existing and anticipated future demand for commercial and public wood cutting opportunities. Other forest and woodland treatments (culturing, cutting, mechanical, thinning, and prescribed fire) could provide employment opportunities to various contractors and seasonal employees. The extent of these employment opportunities would be dependent on future funding for forest treatment activities.

Recreation resources: Alternative D would develop tourism opportunities when consistent with other resource objectives. New recreation sites would be developed to meet increased recreation demand and to protect cultural and natural values and public health and safety. Alternative D would develop tourism opportunities when consistent with other resource objectives. This alternative would meet current and future demands, but would not pursue opportunities to further expand recreation use and opportunities through developments or promotions.

Motorized and mechanical vehicle use would be managed under open, limited to designated or existing roads and trails, and closed designations. The Sand Dunes WSA would be designated as open, allowing significant recreational use to continue. Special recreation permits would be issued for organized events under this alternative, but use would be limited to designated or existing roads and trails. Some existing visitation may be shifted to other ownerships (primarily USFS) in the area and to other regions which offer greater opportunities for use in areas designated as open.

Special recreation permits would be issued under this alternative. Existing commercial recreational uses and organized recreational activities would continue. Existing guided uses and wilderness therapy schools would be able to use BLM-managed lands. Existing tourism-related firms would continue and have opportunities to expand in the future under this alternative.

Compared to Alternatives A and B, OHV restrictions (Map R-7), along with closure of specific roads and trails (Table 4-4), would make it more difficult for the public and Tribal people to access public lands for hunting, other recreational pursuits, and traditional uses. This impact would be less than Alternatives C or E.

Management of the Sunstone Collection Area would continue under existing guidelines. Future development of a primitive camping area in the vicinity would support additional visitor use in the area. Sunstone collection is a unique recreational opportunity within the planning area. This would retain an important and unique recreational resource that contributes to tourism-related economic activity.

Federal agency activities: The business activities of the Federal government could increase slightly. With

appropriated funding, program emphasis would shift to generate local economic activity through direct Federal employment, local and regional purchases and contracting, improved recreational opportunities, and restoration activities. The level of government and contract employment associated with restoration activities (such as prescribed fire, noxious weed treatment, and wildfire rehabilitation) would increase and have the potential to slightly increase local employment. The extent would be dependent on future budget allocations, the extent that contracts are used, and additional Federal employees hired to accomplish restoration objectives.

Land tenure and revenue sharing: Impacts would be similar to Alternative A.

Environmental justice: The impacts to low income or minority populations would be similar to Alternative C.

Conclusion: Underlying demographic trends would dominate future population and age distribution conditions. Current levels of economic uses of the public lands would be maintained. This alternative includes several proposals to enhance visitor services and access on public lands. Economic activity associated with visitation of public lands would increase. The level of economic opportunity for future mineral development would decrease compared to Alternatives A or B, but would be higher than Alternatives C or E. Future opportunities for development of other commodity uses and recreation opportunities would be similar to Alternative A.

Alternative E

Agricultural and livestock use: Alternative E would result in elimination of all active preference within the planning area. Total cattle and calf sales in Lake County could be approximately $13.6 to $17.3 million (based on 1998 sales in the county). This would be a reduction of 17.3 to 34.7 percent from historic levels and approximately 24.1 to 44.6 percent less than potential sales under Alternative A. This would result in modest to significant reductions in herd size for affected permittees, reducing productive capacity and sales. Permittees who experience loss of Federal grazing privileges would be required to restructure their existing operations to utilize existing private resources more efficiently or acquire new resources to replace those no longer provided by public lands. Grazing operators could also choose to use private resources more intensively. The range of impacts identified represents uncertainty regarding the flexibility of permittees to restructure their existing operations. Restructuring of this kind would favor large, diversified agricultural operations with capital reserves or resources. Smaller, less diversified operations and operations on relatively small privately-owned land bases would be at greater risk of foreclosure or bankruptcy. Annual historic grazing fee collections of $146,116 would be foregone.

Mineral resources: Alternative E would withdraw the entire planning area from mineral location, precluding any future development. Existing mineral claims and developments would continue as valid existing rights.

The entire planning area would be closed to mineral leasing, precluding future development of leasable mineral resources. Existing mineral leases would continue as valid existing rights.

Existing pits and quarries would be closed. The entire planning area would be closed to mineral material disposal, except where required by law or where essential for critical road construction and emergencies to protect human safety. Current needs and anticipated future demands of both public users and county, state, and Federal agencies would not be met under this alternative. In particular, state and county agencies that receive material site rights-of-way and free use permits would face difficulty finding the mineral materials needed to build and maintain public roads. In addition, these agencies would face much higher costs when obtaining these materials from private sources. Mineral material site rights-of-way and free use permits would still be available on USFS and other Federal agency lands.

Forest and woodland resources: Alternative E would preclude all forest and woodland treatments, and thus, any auxiliary commercial products. Alternative E would not meet existing or anticipated future demand for commercial and public wood cutting. Forest and woodland treatment activities would not provide employment opportunities in the future.

Recreation resources: Alternative E would deemphasize tourism opportunities. No new recreation sites would be developed to provide visitor services. Existing sites would be closed or rehabilitated. Opportunities for recreation in primitive and remote locations would occur unless resource values were being degraded beyond acceptable levels. Area closures would be the primary management response when necessary to protect resource values and human safety. Current and future demand for developed site recreational opportunities would not be met by this alternative.

The entire planning area would be limited to existing

roads and trails, except for 19,996 acres including the Sand Dunes WSA, which would be designated as closed, and 66,460 acres of deer winter range, which would be limited to designated roads and trails. The economic impacts to the north Lake County area from closing the Sand Dunes to OHV use would be similar to Alternative C. No special recreation permits would be issued for organized events. This alternative would not provide for existing levels and types of use and would not meet anticipated future demands for OHV use. Some existing visitation would be shifted to other ownerships (primarily USFS) in the area and to other regions which offer greater opportunities.

Special recreation permits would not be issued. This would preclude commercial recreational uses and organized recreational activities. Existing guided uses and wilderness therapy schools would be unable to use BLM-managed lands, negatively impacting existing recreation related firms.

Public use of the Sunstone Collection Area would be limited to surface collection. No commercial uses would be permitted. Revocation of the Public Sunstone Area would eliminate an important and unique recreational resource, potentially reducing tourism-related economic activity.

Federal agency activities: The business activities of the Federal government could decrease significantly. With appropriated funding, program emphasis would shift to resource protection and enforcement. Local economic activity through direct Federal employment, local and regional purchases and contracting, recreational opportunities, and restoration activities would be reduced. Federal lands would no longer provide commodities for uses that generate economic activity. Mining, grazing, and special recreation permits would be curtailed. The level of government and contract employment associated with vegetation treatment activities would be limited to those necessary to protect human health and safety.

Land tenure and revenue sharing: Impacts would be similar to Alternative A.

Environmental justice: Impacts would be similar to Alternative A.

Conclusion: Alternative E, which would trigger employment losses and reduce opportunities for future economic growth associated with Federal land commodities, could intensify pressures contributing to outmigration from the area.

Opportunities for employment associated with restoration activities would be reduced because of allowing natural processes to determine the rate of ecosystem improvement.

Opportunities for developed recreation and OHV use would be decreased. Underlying growth trends for visitor use would continue. However, management actions would not be responsive to this demand. OHV designations would significantly reduce the amount and quality of opportunities for OHV use. Users would be displaced to other areas of the state or to other ownerships, such as USFS lands. Some users would no longer participate in the activity due to longer travel times to suitable sites.

Existing levels of mining activity on public lands would continue due to valid existing rights associated with existing mineral leases and mining claims. Future energy and mineral development opportunities would be precluded by closure of the remaining acres to mineral leasing, location, and disposal. Opportunities for energy and mineral development would remain on other lands in the area.

Summary of Impacts

Under Alternatives A–D, underlying demographic, regional, and national economic trends would be the primary determinants of economic activity in the future. Alternative E would disrupt existing uses on public lands and preclude future development of mineral resources. This would reduce existing levels of economic activity and negatively impact future economic growth.

Recreation growth is expected to continue. The BLM would continue to provide developed and dispersed recreational opportunities on its lands under Alternatives A–D. Alternative B particularly emphasizes economic activities on public lands through the increased emphasis on special use permits and recreational site development. The future economic impact of recreation would be highly dependent on the ability of local businesses to provide the goods and services demanded by existing and additional visitors. Alternative E would not address the existing or future recreational demand.

The impacts to the livestock sector of the economy would vary by alternative. Alternatives A and D would continue to provide existing levels of forage. No changes in economic activity would be anticipated. Alternative B would slightly expand potential livestock use. This would create additional potential economic

opportunities for affected permittees. Alternative C would negatively affect the livestock sector by reducing forage availability. Impacts would be moderate overall with some permittees experiencing significant reductions. Alternative E would eliminate all grazing of BLM lands. Impacts would be severe overall.

None of the alternatives would impact existing levels of mineral activity, because existing mineral claims and leases are unaffected. However, the alternatives would impact the potential for future development and associated economic activity. Alternatives C and E would severely reduce or eliminate the potential for future development through closure and withdrawal of lands to leasing, location, and disposal. Alternative B would provide the greatest opportunity for future mineral development. Alternative D would have a moderate impact on future mineral development through closures and no-surface-occupancy stipulations on lands with high potential. Alternative A would continue the present situation.

Secondary, Indirect, and Cumulative Impacts

Anticipated recreational growth would increase the demand for recreation across all ownerships. Alternatives which close lands to OHV use or close developed facilities would cause recreational use to be shifted to other ownerships, in particular to lands managed by the USFS. Opportunities would exist for private sector business growth to meet the increasing demand for recreational opportunities, especially for developed sites such as campgrounds.

Reduced livestock AUM's in Alternatives C and E would place additional grazing pressure on private lands and/or increase the demand for hay and other forage alternatives. Other public lands, in particular the USFS, would not be expected to increase grazing use as a result of increased demand for alternative forage.

The LRA is not a major contributor to economic activity in the lumber and wood products sector. None of the alternatives would change this. In the future, increased juniper utilization, including biomass energy generation, could reduce the costs and increase the feasibility of certain landscape treatments proposed under Alternatives A–D.

Air Quality

Management Goal—*Meet the national ambient air quality standards as described in the "Clean Air Act" (CAA) and follow the direction and requirements of the Southcentral Oregon Fire Management Partnership.*

Assumptions

- The national ambient air quality standards and the State "Oregon Smoke Management Plan" would not become more stringent.
- The maximum number of acres of prescribed fire would be ignited for each alternative over a 10-year span.
- The acres of potential wildland fire would be the same as stated in the Fire Management impact section.
- The amount of particulate matter and direction of smoke dispersion can be managed in prescribed fire but not in wildland fire.

Analysis of Impacts

Alternative A

Between 5,000–7,500 tons of particulate matter could be put into the atmosphere over a 10-year period from wildland fire. Another 10,000 tons of particulate matter could be produced by prescribed fire.

Alternative B

Between 6,250–8,750 tons of particulate matter could be put into the atmosphere over a 10-year period from wildland fire. Another 16,000 tons of particulate matter could be produced by prescribed fire.

Alternative C

Between 7,500–15,000 tons of particulate matter could be put into the atmosphere over a 10-year period from wildland fire. Another 32,000 tons of particulate matter could be produced by prescribed fire.

Alternative D

Between 7,500–15,000 tons of particulate matter could be put into the atmosphere over a 10-year period from

wildland fire. Another 24,000 tons of particulate matter could be produced by prescribed fire.

Alternative E

Between 10,000–20,000 tons of particulate matter could be put into the atmosphere over a 10-year period from wildland fire. No prescribed fire would be done.

Summary of Impacts

All alternatives would emit varying amounts of particulate matter, but because of the ability to manage emissions in prescribed fire, the air quality goal should be met in Alternatives A–D. Wildland fire is a random event. The alternatives with larger amounts of particulate emissions (Alternatives C–E) have the potential to exceed the air quality management goal. Due to the relative isolation of the planning area and the predominant wind patterns for smoke dispersion, the probability of degrading the airshed would be low.

Secondary, Indirect, and Cumulative Impacts

Smoke from prescribed or wildland fires burning simultaneously on the adjacent national forests—Modoc, Fremont, Winema, Deschutes—and adjacent BLM districts—Alturas Field Office, Surprise Field Office, Burns District, and Prineville Districts—and on private and state lands could have a significant impact on the air quality of southcentral Oregon. Prevailing winds in the area are south and southwesterly. As a result, multiple fires could degrade air quality in north Lake County and the Bend, LaPine, Prineville, and Burns areas. It is not likely that several prescribed fires would occur at the same time, since burn plans are coordinated with other BLM, USFS and Oregon Department of Forestry (ODF) offices. However, large wildland fires or escaped prescribed fires could occur at one time, resulting in significant air quality degradation.

Fire Management

Management Goal 1—*Provide an appropriate management response on all wildland fires with emphasis on firefighter and public safety. When assigning priorities, decisions would be based on relative values to be protected commensurate with fire management costs.*

Assumptions

- The most efficient level of fire suppression resources (people and equipment) would be funded over the time period assessed. The "acres burned" assumptions are from the latest initial attack analyzer calculations.

- Human life (firefighter and public safety) would be the highest priority during a wildland fire. Once firefighters have been assigned to a fire, their safety would become the highest value to be protected. Property, natural, and cultural resources would be secondary priorities.

Analysis of Impacts

Alternatives A and B

Firefighter and public safety would be maximized because of the ability to attack fires when they are small and to use direct tactics. The time spent on individual fires would be reduced, minimizing human exposure and fatigue. Aerial resources (planes and helicopters) would not utilized as often or for as long a duration. The percentage of large fires would be smaller and public exposure would be minimized. Large fire costs and resource damage would be smallest of the alternatives. Potentially, 100,000–150,000 acres could be burned by wildland fire over a 10-year period in Alternative A, and 125,000–175,000 acres in Alternative B.

Alternatives C, D, and E

Firefighter safety could be compromised due to the larger size of fires by the time action is taken. Public safety would be compromised due to larger fires burning unchecked. Large fires would take longer to extinguish, which would lead to more exposure time for firefighters. More aerial resources would be used and for longer durations. A higher percentage of fire starts would become large incidents. Total fire costs and resource damages would be much higher. About 150,000–300,000 acres could be burned by wildland fire over a 10-year period in Alternatives C and D, and 200,000–400,000 acres in Alternative E.

Management Goal 2—*Rehabilitate burned areas to mitigate the adverse effects of wildland fire on soil and vegetation in a cost-effective manner and to minimize the possibility of wildland fire occurrences or invasion of weeds.*

Analysis of Impacts

Alternative A

This alternative would be one of the most cost-effective over the short term. Rehabilitation would be on an as-needed basis, and the acres burned would be the smallest.

Alternative B

More acres would require rehabilitation than Alternative A. All wildland fires would be rehabilitated with an emphasis on forage production. In the long term, rehabilitation would benefit upland vegetation, wildlife habitats, and soil and watershed conditions by improving ground cover.

Alternatives C and D

The costs would be higher in these alternatives due to the amount of acreage burned. The acres of ground disturbed would also allow for increased risk of weed invasion. The conversion to a short fire regime would allow for more wildland fire occurrence.

Alternative E

No active rehabilitation would occur. Any rehabilitation of wildland fire areas would be the result of natural processes.

Management Goal 3—*Restore and maintain ecosystems consistent with land uses and historic fire regimes through wildland fire use, prescribed fire, and other methods. Reduce areas of high fuel loading resulting from years of fire suppression that may contribute to extreme fire behavior.*

Assumptions

- The funding levels for prescribed fire would be sufficient to treat the target acres.
- Air quality regulations would not become so stringent as to hamper the use of fire as a management tool.
- The number of qualified people available would be sufficient to carry out the program.
- For Alternatives A–D, "treated acres" refers to the acreages analyzed in a NEPA document. It does not assume that 100 percent of those acres would be burned by fire. When applying fire, the intent would be to burn approximately 40–70 percent of the area and keep 30–60 percent unburned. A goal of landscape-level treatments would be to create a mosaic of burned and unburned areas within a larger treatment area. The range of treated acres listed in the alternatives are for impact analysis purposes, not targets. For Alternatives C and D, wildland fire use could cause the number of treated acres to vary widely from year to year, and in some years could treat a very large number of acres. (Lightning-caused fires in excess of 100,000 acres have occurred periodically in the rangeland fuels in the planning area.)

Analysis of Impacts

Alternative A

The number of acres that would be converted to a historic fire regime, and the reduction of high fuel loadings would be relatively small. The option to manage wildland fires in the Fort Rock Fire Management Area would still be available. This option would have the potential to save thousands of dollars annually in fire suppression costs.

Alternative B

The number of acres that would be converted to a historic fire regime and the reduction of high fuel loadings would be larger than Alternative A. The areas that may need the most treatment to reach the management goal may not be the same acres that would be treated for forage and commodity production. The option to manage wildland fires in the Fort Rock Fire Management Area would not be available. This could cost thousands of dollars annually in fire suppression costs and tie up firefighting resources that could be available for higher priority fires.

Alternatives C and D

These alternatives would treat the most acres to meet the stated management goal. Areas designated for wildland fire use would have to have easily defendable boundaries. Prescribed fire would be the preferred method of restoration, but would not be nearly as cost-effective as wildland fire use. With the large amount of burned acres, the potential for an escaped fire increases, as does the potential for noxious weed or cheatgrass establishment following a fire.

Alternative E

This alternative would slowly meet the management goal for restoring historic fire regimes, unless nonnative, short-interval species become established. The reduction of high fuel loadings would be a random event, and the resulting high intensity fire behavior would most probably change the historic fire regime.

Summary of Impacts

Alternatives A and B provide the highest safety for firefighters and the public, and the costs of firefighting and fire rehabilitation are the lowest (with Alternative A lower than Alternative B because of the Fort Rock Fire Management Area). The availability of burned area is the smallest for the invasion of weeds. The restoration of fire regimes and reduction of fuel loading would take longer.

Alternatives C, D, and E rate lower over the life of the plan for firefighter and public safety. This could change as fire regimes and fuel loadings are changed. The costs for suppression and rehabilitation would increase over the over the life of the plan as more acres would be burned. The chances for escape of prescribed and wildland fire use would increase. The air quality could be impacted due to the large volume of burning. Alternatives C and D would restore the historic fire regime sooner with the availability of prescribed fire. The randomness and variability of fire occurrence in Alternative E would hamper ecosystem restoration, and the lack of rehabilitation could lead to the dominance of nonnative, short-interval species.

Secondary, Indirect, and Cumulative Impacts

Increased use of prescribed fire and wildland fire use would ultimately result in smaller and fewer wildland fires due to reduced fuel loadings. Fire severity and intensity would also be reduced. These actions would also begin to include fire as part of natural ecosystem processes and result in more natural potential vegetation groups across the landscape. Since prescribed fires and wildland fire use would also be occurring on the adjacent Fremont National Forests, Hart Mountain and Sheldon National Wildlife Refuges, and adjacent BLM districts, a more natural form of wildland fire in the ecosystem would begin to occur, not just in the planning area, but over several million acres in southeast Oregon.

Recreation Resources

Management Goal—*Provide and enhance developed and undeveloped recreation opportunities, while protecting resources, to manage the increasing demand for resource-dependent recreation activities.*

Analysis of Impacts

Alternative A

Management actions aimed at protecting, restoring, or enhancing watershed functions, forest health, riparian/wetland areas, upland vegetative communities, biodiversity, wildlife habitats and wildlife populations would not create significant effects on recreation. In some instances, recreation may benefit from these actions by increasing aesthetic values and through increased fish and wildlife populations providing opportunities for wildlife viewing and enhancing sport fishing and hunting.

Recreation could be negatively impacted from management actions relating to the maintenance, restoration, and protection of populations and habitats for special status plant and animal species. The degree of the effects on recreation would be dependent on the intensity of the actions. In particular, management actions initiated for the protection of greater sage-grouse and their habitat, could potentially have negative effects on dispersed recreation because of future area or road closures. Hunting would be the recreation activity with the greatest potential to be negatively impacted. Habitat important to the various life stages of the greater sage-grouse are known to occur over most of the planning area.

Actions initiated to protect cultural resources would have minimal negative impacts on recreation. Any restrictions, such as area or road closures, would typically be on a site-specific basis. Opportunities for interpretation and permitted commercial tours may exist, which would positively affect recreation. Potential resource degradation could be mitigated through interpretation and public education creating greater awareness and appreciation for these resources.

Wilderness therapy schools could create conflicts with other public lands users, ranchers, and residents, and could damage roads on a seasonal basis. Hunters would be the primary recreation user group negatively impacted. However, the impacts would be confined to localized areas where the groups are authorized to camp. The overall negative effects on hunters would

not be significant. In north Lake County, wilderness therapy schools are authorized to utilize 29 campsites within an area covering approximately 230 square miles east of Fredericks Butte Road. Given established group size limitations and limits on the number of groups authorized to operate within this area, the maximum number of campsites used at any one time would be five. There have been conflicts between ranchers/residents living in the area where three wilderness therapy companies have conducted operations in the past. Runaway students have been the focal point of concern. To reduce the potential for future conflicts relating to runaway students, there have been a number of permit stipulations initiated. When possible, wilderness therapy groups have been moved at least 5 miles from any year-round residents/ranches, there must be a minimum of one staff member for each three students, and a runaway protocol has been initiated to notify ranchers/residents of runaways.

Management actions relating to the development of mineral materials, oil, gas, and geothermal leasing, and locatable minerals would have minimal effects on recreation. Land acquisitions and the issuance of rights-of-way, leases, and permits would not cause significant negative effects on recreation.

Restricting vehicle access in the mule deer winter range in north Lake County (Map R-2 of the Draft RMP/EIS) would have minimal negative effects on dispersed recreation, and could provide greater opportunities of solitude for hikers and cross-country skiers during periods of adequate snow. Area or road closures would have minimal negative effects on dispersed recreation because they would typically occur on a limited site-specific basis. During periods when roads are wet (fall, winter, and early spring), there is a potential for resource impacts to occur.

Alternative B

Actions to protect, restore, or enhance watershed functions, riparian/wetland areas, upland vegetative communities, and wildlife habitats and populations would not increase significantly compared to Alternative A. Overall, these actions would improve aesthetic values while increasing fish and wildlife populations, providing opportunities for wildlife viewing and enhancing sport fishing and hunting. Negative effects to recreation based on actions to improve forest health and biodiversity could increase slightly compared to Alternative A because the size and number of juniper stand treatments would be maximized. However, these impacts would typically be short term and site-specific during periods of rehabilitation and revegetation.

Impacts associated with management actions which are aimed at maintaining, restoring, and enhancing wildlife and wildlife habitats would be similar to Alternative A. Improving habitats for game and nongame animals would have a positive impact on recreation by increasing wildlife viewing opportunities, as well as providing for quality sport hunting opportunities. Protection and improvement of fish habitats would continue to enhance sport fishing opportunities.

Actions relating to the maintenance, restoration, and protection of populations and habitats for special status plant and animal species would be similar to Alternative A. The negative effects on recreation would be minimal. Management actions to protect greater sage-grouse and their habitat could have a negative impact on motorized and nonmotorized recreation because of future area and road closures. The significance of the impacts would be dependent on the degree or level of the restrictions imposed through specific management actions.

The designation of one new ACEC/RNA (Connley Hills) could negatively affect localized dispersed recreation activities in the area through restrictions on activities such as camping, firewood gathering, and road closures.

Impacts to recreation relating to the protection of cultural resources would be similar to Alternative A. Access to cultural sites for interpretation and educational purposes would be given greater emphasis compared to Alternative A. There could be a corresponding increase in the positive effects on tourism.

The total number of authorized user days for wilderness therapy operations would be 16,400, a decrease of 200 user days compared to Alternative A. Of this total, 8,300 user days would be available for use within north Lake County and the remainder (8,100) would be available for use in other areas. The total number of groups authorized to operate at any one time in north Lake County (five groups) would not change. The number of authorized campsites in north Lake County would not vary appreciably from the number currently authorized (29). Given the proposed use levels and group limitations, the level and type of potential impacts associated with wilderness therapy operations would be similar to Alternative A.

Impacts to recreation relating to the development of mineral materials, oil, gas, and geothermal leasing, and locatable minerals would be similar to Alternative A, except for recreational sunstone collecting. Revoking the mineral segregation and allow mining claim

location on the Public Sunstone Area would create significant negative impacts to recreational rockhounds. Impacts from issuing new rights-of-way, leases, and permits would be similar to Alternative A. Greater emphasis on acquisition of lands with high recreational values would enhance recreation opportunities compared to Alternative A.

The impacts of the mule deer winter range closure in north Lake County would be similar to Alternative A. Management actions could include restricting recreational access via area or road closures (Map R-5 of the Draft RMP/EIS/Table 4-4) on a case-by-case basis. The impacts on nonmotorized and motorized recreation activities would be similar to Alternative A.

Alternative C

Impacts on recreation relating to actions to protect, restore, or enhance watershed functions, riparian/wetland areas, upland vegetative communities, and wildlife habitats and populations would be similar to Alternatives A and B. Negative effects to recreation based on actions to improve forest health and biodiversity would be lower in comparison to Alternative B (only 50 percent of the invasive juniper stands would be treated under Alternative C, whereas 75 percent would be treated under Alternative B, and commercial and public wood cutting would be maximized). However, impacts would typically be short term and site-specific during periods of rehabilitation and revegatation.

Impacts associated with management actions aimed at maintaining, restoring, and enhancing wildlife and wildlife habitats would be similar to to Alternatives A and B. Impacts of management actions proposed the protection and improvement of fish habitats would continue to enhance sport fishing opportunities, as under Alternatives A and B.

Actions relating to the maintenance, restoration, and protection of populations and habitats for special status plant and animals would be similar to Alternative A or B. Actions initiated to protect greater sage-grouse and crucial habitat would be greater than Alternatives A and B and would be dependent on the degree or level of the restrictions imposed.

Management of existing and proposed SMA's (e.g., ACEC's) would impact recreational opportunities. Overnight camping would not be allowed in the Lost Forest/Sand Dunes/Fossil Lake ACEC (35,566 acres), Juniper Mountain ACEC (6,334 acres), Black Hills ACEC (3,048 acres), Connley Hills ACEC (3,675 acres), and Table Rock ACEC (5,073 acres). Additionally, the Lost Forest/Sand Dunes/Fossil Lake ACEC would be closed to OHV use. The restrictions within the Lost Forest/Sand Dunes/Fossil Lake ACEC would have the greatest negative effect on motorized recreation uses. This area has traditionally received the highest concentration of OHV use in the planning area (primarily in the sand dunes within the Sand Dunes WSA). The camping restrictions within the Juniper Mountain, Black Hills, Connley Hills, and Table Rock ACEC's would not have a significant negative effect on recreation because overnight camping opportunities would continue adjacent to the boundaries of the ACEC's. Hunters would be the user group most impacted, because historically-used primitive hunting camps would no longer be accessible. The overall negative effects on recreation would be greater than under Alternatives A and B because of these restrictions, especially in relation to the Lost Forest/Sand Dunes/Fossil Lake ACEC.

Impacts to recreation relating to actions for the protection of cultural resources would be similar to Alternatives A and B.

The total number of authorized user days (10,200) for wilderness therapy school operations would be 6,400 less than under Alternative A, and 6,200 less than under Alternative B. Of the total available user days, 4,800 user days would be authorized within the North Lake Special Recreation Management Area (a decrease of 3,500 user days within this area compared to Alternative B). There would be 5,400 user days available for the remainder of the planning area (a decrease of 2,700 compared to Alternative B). Under Alternative A, the total number of user days (16,600) were not split between North Lake Special Recreation Management Area and the remainder of the planning area. Considering group number and size limitations, upwards of 13,500 user days could be utilized in North Lake Special Recreation Management Area under Alternative A, whereas under Alternative C, approximately 8,700 could be utilized. Only four groups would be authorized to operate within North Lake Special Recreation Management Area at any one time, one less than would be allowed under Alternatives A and B. The number of authorized campsites would be similar to Alternatives A and B. Negative impacts to other user groups within the North Lake Special Recreation Management Area would be significantly less than under Alternatives A and B. The level of potential negative impacts to other user groups from wilderness therapy operations in the remainder of the planning area would be higher under Alternatives A and B because of the higher number of available user days.

Because of the seasonal use limitations within the North Lake Special Recreation Management Area, the potential for damage to roads would be significantly less than Alternatives A and B. There would be a higher potential for negative impacts to roads in the remainder of the planning area because there would be no seasonal limitation on wilderness therapy school operations.

Approximately 35,300 acres would be added to the Cabin Lake/Silver Lake Deer Winter Range Cooperative Seasonal Vehicle Closure area located in north Lake County (Map R-6 of the Draft RMP/EIS). The dispersed recreation activities, such as hiking and cross-country skiing, would be enhanced with increased opportunities for solitude. Vehicle travel would be restricted to existing and designated roads and trails within most of the planning area (Map R-6 of the Draft RMP/EIS). Several areas would be closed to OHV use. A number of roads would be closed within SMA's (Table 4-4). These restrictions would have both negative and positive effects on dispersed recreation activities. Public and Tribal access would be restricted for motorized recreation and other activities, but nonmotorized recreationists would have a greater opportunity to experience solitude. There would be greater negative effects on recreation compared to either Alternatives A, B, or D.

Development of mineral materials, oil, gas, and geothermal leasing, and locatable minerals would be restricted to varying degrees within existing and proposed SMA's, resulting in slightly lower negative effects to recreation in comparison to Alternatives A and B. The mineral segregation on the Public Sunstone Area would be retained, which would allow public recreational collection of sunstones to continue similar to Alternative A.

The issuance of rights-of-way, leases, and permits would have similar impacts as Alternatives A and B. Similar to Alternative B, recreation opportunities would be enhanced with an emphasis on the acquisition of lands with a high public value.

Alternative D

Impacts on recreation relating to actions to protect, restore, or enhance watershed functions, riparian/wetland areas, upland vegetative communities, wildlife habitats and populations would be similar to Alternatives A, B, and C. Negative effects to recreation from actions to improve forest health and biodiversity would be lower in comparison to Alternative B but similar to Alternative C. Impacts would typically be short term and site-specific during periods of rehabilitation and revegetation.

Impacts associated with management actions to maintain, restore, and enhance wildlife and wildlife habitats would be similar to Alternatives A, B, and C. Management actions for the protection and improvement of fish habitats would continue to enhance sport fishing opportunities, similar to Alternatives A, B, and C.

Actions relating to the maintenance, restoration, and protection of populations and habitats for special status plant and animal species would be similar to Alternatives A, B, and C. The significance of any actions would be dependent on the intensity and duration of the proposed actions.

Management of existing and proposed SMA's (e.g., ACEC's) would impact recreational opportunities. No overnight camping would be allowed in the Black Hills ACEC (3,048 acres). Camping adjacent to the sand dunes (located within the Sand Dunes WSA) would be limited to three designated areas (Map SMA-9), with camping at one of the three areas closed on a rotational basis. Impacts to recreation activities, and in particular motorized recreational uses, would be significantly lower when compared to the Sand Dunes area under Alternative C, but similar to Alternatives A and B, other than the inconvenience of not being able to camp in traditionally-used areas adjacent to the open sand dunes.

Impacts relating to actions to protect cultural resources would be similar to Alternatives A, B, and C.

The total number of authorized user days for wilderness therapy school operations would be 12,800. This would be 3,800 less than Alternative A, 3,600 less than Alternative B, and 600 more than Alternative C. Of the total (12,800) available user days, 7,400 user days would be authorized within the North Lake Special Recreation Management Area (an increase of 2,300 user days over Alternative C, a decrease of 900 user days in comparison to Alternative B, and a decrease of 6,400 user days in comparison to Alternative A). There would be 5,400 user days available for the remainder of the planning area (the same as Alternative C and 2,700 less than Alternative B). The number of groups authorized to operate at any one time in the North Lake Special Recreation Management Area would be the same as Alternative C, which is two less than Alternative B, and one less than Alternative A. No more than three groups would be authorized to operate in the remainder of the planning area at any one time. Negative impacts to other user groups within the North Lake

Special Recreation Management Area would be less than Alternatives A and B and slightly higher than Alternative C. The level of potential impacts to other user groups in the remainder of the planning area would be the same as Alternative C and less than Alternatives A or B. The potential for damage to roads is higher than Alternative C (due to a lack of seasonal restriction on operations in the North Lake Special Recreation Management Area). Compared to Alternatives A and B, the potential for negative impacts to roads is slightly lower because of the lower number of groups authorized to operate at any one time and the lower number of authorized user days. The proposed number of user days would not negatively impact currently-authorized wilderness therapy schools operating in the planning area and portions of the Burns and Prineville Districts. These companies would continue to have the opportunity to increase their number of clients and operating areas through the permitting process.

The effects from the development of mineral materials, oil, gas, and geothermal leasing, and locatable minerals would be similar to Alternatives A and B, but slightly higher than Alternative C (which restricts mineral development). The mineral segregation on the Public Sunstone Area would be retained. There would be no negative effects on recreational collection of sunstone, as is the case under Alternative B. The impacts from issuing of rights-of-way, leases, and permits would be similar to Alternatives A, B, and C.

Approximately 35,300 acres would be added to the Cabin Lake/Silver Lake Deer Winter Range Cooperative Seasonal Vehicle Closure area located in north Lake County (Map R-7; SMA-24). The impacts would be similar to Alternative C. The Northern Wildlife Area would be expanded to coincide with the boundary of the North Lake Special Recreation Management Area. Vehicles would be restricted to existing or designated roads and trails in the northern portion of the planning area. Small areas would be closed to vehicle access (Map R-7). A number of roads would be closed within SMA's (Table 4-4, Maps SMA-5 to SMA-31). These restrictions would have both negative and positive effects on dispersed recreation activities. Public and Tribal access would be restricted for motorized recreation and other activities, but nonmotorized recreationists would have a greater opportunity to experience solitude. There would be greater negative effects compared to Alternative A or B, but less than Alternative C.

Alternative E

Impacts to recreation from actions to protect, restore, or enhance watershed functions, riparian/wetland areas, upland vegetative communities, and wildlife habitats and populations would be similar to Alternatives A–D. Natural process would be allowed to regulate (e.g., fire) forest health and biodiversity. There would be no impacts to recreation.

All existing ACEC's designations would be revoked and no new ACEC's would be designated. The effects would be less than Alternatives C and D and similar to Alternatives A and B.

Impacts from actions taken to protect cultural resources would be similar to Alternatives A–D.

No special recreation permits would be issued, which would eliminate all commercial uses of public lands, including guided hunting, nature tours, and wilderness therapy group uses. Overall, this would significantly impact recreation because it would preclude segments of the population from using and enjoying public lands.

Actions would be taken to withdraw the entire planning area from mineral entry, as well as close the area to mineral leasing and mineral material disposal. All of these actions would have a positive effect on recreation activities. The entire planning area would be considered a right-of-way exclusion area (except for existing rights-of-way), which would have a positive effect on dispersed recreation.

Impacts to recreation relating to the Cabin Lake/Silver Lake Deer Winter Range Cooperative Seasonal Vehicle Closure area in north Lake County would be the same as Alternatives A and B. Restricting vehicle use to existing roads and trails throughout most of the planning area would have impacts on public and Tribal access and recreational uses similar to Alternative C.

Summary of Impacts

Alternative A allows for dispersed and developed recreation opportunities while protecting other resources. Developed recreation sites would be maintained and expanded as necessary, to meet increasing demands for recreation activities. Protection of special status plant and animal species and their habitats could negatively impact dispersed recreation through future area or road closures on a limited, case-by-case basis. The management goal for recreation resources would be met under this alternative.

With the exception of several site-specific management actions, impacts to recreation resources from Alternative B would be similar to Alternative A. Revocation of the mineral segregation on the Public Sunstone Area would have significant negative effects on recreational collection of sunstone by the public. Impacts associated with wilderness therapy groups operating within north Lake County would potentially decrease slightly because total authorized user days would be capped at 8,300 annually.

Impacts to recreation uses under Alternative C would increase slightly in comparison to Alternatives A and B. Changes in OHV designations for the protection of wildlife, i.e., seasonal road restrictions on motorized access because of the mule deer winter range and the Northern Wildlife Area, would change the composition of dispersed recreation from motorized to nonmotorized. This would have both negative (to motorized recreation) and positive (greater opportunities for solitude) effects on recreation uses. Impacts associated with wilderness therapy groups would be less than both Alternatives A and B because of the decreased number of authorized user days and because of the seasonal restrictions in the North Lake Special Recreation Management Area. Restrictions within the Lost Forest/Sand Dunes/Fossil Lake ACEC would have significant effects on recreation resources in comparison to Alternatives A, B, and D.

Overall, impacts to recreation uses under Alternative D would be less than under Alternative C and slightly higher than under Alternatives A and B. Impacts to recreation uses within the Lost Forest/Sand Dunes/Fossil Lake ACEC would be lower than under Alternative C but similar to Alternatives A and B. There would be slightly higher impacts associated with wilderness therapy school operations under Alternative D in comparison to Alternative C, but lower than Alternatives A or B.

Impacts to recreation uses under Alternative E would be the lowest of any alternative, except in relation to commercial uses and motorized access. No commercial recreational uses would be allowed throughout the planning area, which would have higher impacts than any of the other alternatives. Over 99 percent of the planning area would be designated as limited to existing roads and trails for motorized access. This would impact recreational use slightly less than under Alternative C, but would have greater impacts than in comparison to Alternatives A, B, or D.

Secondary, Indirect, and Cumulative Impacts

When taken in concert, future management actions relating other resources on lands within and adjacent to the planning area could negatively impact recreation uses. Although the population base within the boundaries of the planning area is fairly steady, urban growth and increases in populations in surrounding areas, in particular the Bend/Redmond area, would have the potential to increase recreation uses, especially within north Lake County.

Off-Highway Vehicles

Management Goal–-*Manage off-highway vehicle (OHV) use to protect resource values, promote public safety, provide OHV use opportunities where appropriate, and minimize conflicts among various users.*

Impacts Common to Alternatives A–D

The frequency and extent of future off-road military, emergency, or law enforcement use in limited or closed areas is impossible to predict, but for analytical purposes is assumed to occur no more than three times per year in very small areas. The level of surface disturbance would depend on soil conditions, season of year, vegetative cover, and other factors. Wildfire, though difficult to predict, would likely occur over a much larger area. Rehabilitation actions typically occur following wildfire and could include water-barring, seeding, and other measures to mitigate impacts of firefighting actions, including off-road travel. Refer to the Fire Management section and Appendix L of the Draft RMP/EIS for more information.

The frequency and extent of future off-road use associated with authorizing exceptions for licensed, leased, permitted, contracted, or other authorized uses is also difficult to predict. The BLM is required to provide access for authorized uses such as livestock management and mineral location. However, due to the sideboards placed on granting such exceptions, impacts would be limited.

Analysis of Impacts

Alternative A

Actions to protect, restore, or enhance watersheds, riparian/wetlands areas, upland vegetative communities, fish, wildlife and their habitats, special status plant and animal species, and forest health and biodiversity

Table 4-5.— *Impacts to off-highway vehicle uses by alternative (acres)*

	Alternative									
	A		B		C		D		E	
Designation	Baseline [1]	% of total [2]	Proposed acres	% of total [2]	Proposed acres	% of total [2]	Proposed acres	% of total [2]	Proposed acres	% of total [2]
Open	2,508,408	79.4	2,504,974	79.3	0	0.0	1,760,352	55.7	0	0.0
Limited to designated roads/trails [3]	130,323	4.1	130,159	4.1	771,524	24.4	384,537	12.2	66,460	2.1
Limited to existing roads/trails	514,142	16.2	517,741	16.3	2,349,385	74.3	1,005,729	31.8	3,074,960	97.2
Closed	8,543	0.3	8,543	0.3	40,507	1.3	10,799	0.3	19,996	0.1

[1] The baseline acres represent current OHV designations in the LRA.
[2] The percent total acres represents the percentage of designated acres as part of the total acres within the LRA.
[3] Acreages include seasonal limitations for mule deer winter range.

would have the potential to negatively affect motorized recreation. The significance of the effects would be dependent on the intensity and duration of the proposed actions. Future management actions focusing on the protection of greater sage-grouse and habitat could have significant negative impacts on motorized recreation. Habitat important to various life stages of the greater sage-grouse occur over most of the planning area. Area and road closures would result in reduction in areas open to motorized uses. Potential negative effects relating to greater sage-grouse issues notwithstanding, it is anticipated that the negative impacts to motorized uses would not be significant because potential area and road closures would occur on a site-specific basis.

The management of existing SMA's (ACEC's, RNA's, and WSA's) negatively affects motorized recreation activities by restricting access.

Actions to protect cultural resources could negatively affect motorized uses because of potential road and area closures. Overall, these impacts would be minimal because these closures would be on a site-specific basis.

The greatest amount of public land would be open to OHV use under this alternative (Table 4-5; Map R-2 of the Draft RMP/EIS). About 642,000 acres would be limited to existing or designated roads and trails. About 8,500 acres would be closed to OHV use. These designations would not significantly restrict motorized recreation. The mule deer winter range closure in north Lake County would negatively impact motorized recreation activities, but these impacts are not significant because the closure only restricts access on a seasonal basis. Access is not restricted during hunting seasons. Snowmobile activities are negatively impacted, but the extent of the impact is dictated by the presence or lack of snowfall. The wettest periods of the year typically occur in the late fall, winter, and early spring. This is when motorized vehicles have the greatest potential to cause resource damage in open areas and roads.

The development of mineral materials, oil, gas, and geothermal leasing, and locatable minerals would have minimal negative effects on motorized recreation, and may possibly provide motorized recreational opportunities in the long term through the development of new roads and trails. In many instances, land acquisitions, the issuance of rights-of-way, leases, and permits, and the construction of roads may benefit motorized recreational activities by providing more opportunities for access.

Alternative B

Actions to protect, restore, or enhance watersheds, riparian/wetlands areas, upland vegetative communities, fish, wildlife and their habitats, and special status plant and animal species would have the same level of impacts as management actions proposed under the current situation. The significance of the effects would continue to be dependent on the intensity and duration of the proposed actions. Future management actions focusing on the protection of greater sage-grouse and their habitat would have the same potential to negatively impact motorized recreation as Alternative A. Negative effects could increase slightly compared to Alternative A from management actions to enhance forest health and biodiversity. Existing and new juniper treatment areas would be maximized; up to 75 percent of early- to mid-successional western juniper stands would be treated. However, these impacts would be short term.

The management of existing and creation of one new (Connley Hills) SMA would continue to negatively affect motorized recreation activities by restricting access.

Impacts relating to cultural resource management would be similar to Alternative A. The protection of cultural resources could negatively affect motorized recreation because of potential road and area closures. Overall, these impacts would be minimal because closures would occur on a site-specific basis.
The impacts of development of mineral materials, oil, gas, and geothermal leasing, and locatable minerals would be similar to Alternative A. Opportunities for increased motorized recreation could be slightly higher because of the potential for increased mineral development, especially in the long term. The impacts of issuance of rights-of-way, leases, and permits would be similar to Alternative A. With greater emphasis on acquisition of lands with high recreational values, motorized recreation would potentially be enhanced compared to Alternative A.

There would be a slight net loss of 3,434 acres (0.1 percent) under the open designation compared to Alternative A (Table 4-5). The number of acres limited to existing or designated roads and trails would increase about 3,434 acres. The impacts of the mule deer winter range closure in north Lake County would be the same as Alternative A. The impacts of limited, site-specific areas and road closures would be similar to Alternative A. The overall impact to motorized recreation would be similar to Alternative A.

Alternative C

Actions to protect, restore, or enhance watersheds, riparian/wetlands areas, upland vegetative communities, fish, wildlife and their habitats, and special status plant and animal species would have little effect on OHV use because none of the planning area would be designated as open.

The management of existing and creation of new SMA's would negatively affect motorized recreation activities by restricting access.

Impacts relating to cultural resource management would be similar to Alternatives A and B.

The use of all-terrain vehicles in conjunction with the collection of deer and elk antlers in north Lake County (including the expanded Cabin Lake/Silver Lake Deer Winter Range Cooperative Vehicle Closure area and the proposed Northern Wildlife Area) has been increasing in popularity over the past several years. With motorized access limited to designated or existing roads and trails, this activity would only be allowed on foot or horseback. However, there would be a benefit to this restriction because there could be a corresponding decrease in impacts from the use of all-terrain vehicles which cause rutting and soil erosion, especially during wet conditions, the trampling of vegetation, and conflicts with wildlife, including big game animals and greater sage-grouse. The use of motorized vehicles to retrieve big game during the hunting season would be eliminated throughout the planning area. This would have a significant negative impact on hunters, especially for elderly hunters and those with physical disabilities.

There would be no open designation for motorized use (Table 4-5). The negative impacts to motorized recreation in comparison to Alternatives A and B would be significant. Motorized access would be restricted to either a limited designation (24.4 percent designated roads and trails and 74.3 percent existing roads and trails) or closed (1.3 percent). Although the percentage of total acres closed would only increase by approximately one percent in comparison to Alternatives A and B, the Sand Dunes WSA would be included in these closures. The Sand Dunes WSA receives the highest OHV recreational use throughout the entire planning area. Closure of this area, in conjunction with 99 percent of the area designated as either limited to existing or designated roads and trails, would severely curtail motorized recreation uses. The impacts of road closures (Table 4-4) would further impact motorized vehicle use.

The impact of development of mineral materials, oil, gas, and geothermal leasing, and locatable minerals, as well as the issuance of rights-of-way, leases, permits, or the acquisition of lands would be similar to Alternatives A and B.

Alternative D

Actions to protect, restore, or enhance watersheds, riparian/wetlands areas, upland vegetative communities, fish, wildlife and their habitats, and special status plant and animal species would have impacts similar to Alternatives A and B. The significance of the effects would be dependent on the intensity and duration of the proposed actions. Negative effects related to management actions to enhance forest health and biodiversity would be similar to Alternatives A and B, and less than Alternative C. It is anticipated that the impacts would be short term. Future management actions focusing on the protection of greater sage-grouse and habitat would have the same potential to negatively impact motorized recreation as Alternatives A and B.

The management of existing and creation of new SMA's would negatively affect motorized recreation activities by restricting access to a similar degree as Alternative C.

Impacts to OHV uses relating to cultural resources would be similar to those addressed under Alternatives A–C.

The percentage of land in the open designation (55.7 percent) would be lower than Alternatives A and B and higher than Alternative C (Table 4-5). Motorized vehicle use would be limited to existing or designated roads and trails on about 44 percent of the area. The impacts of the addition to the Cabin Lake/Silver Lake Deer Winter Range Cooperative Vehicle Closure area would be similar to Alternative C (Map R-7, SMA-24). Vehicles would be seasonally limited to designated roads and trails from December 1 through March 31, annually. During the remainder of the year, this area would be limited to existing roads and trails. Motorized access within the North Lake Special Recreation Management Area would be the limited to existing roads and trails, similar to Alternative C. The impacts to motorized uses in the northern part of the planning area would be similar to Alternative C and greater than Alternatives A and B. The impacts of road closures (Table 4-4; Maps SMA-5 to SMA-31) would further impact motorized vehicle use.

The impacts of development of mineral materials, oil, gas, and geothermal leasing, locatable minerals, as well

as the issuance of rights-of-way, leases, permits, or the acquisition of lands would be similar to Alternatives A, B, and C.

Alternative E

Management actions relating to upland vegetative communities, fish, wildlife, and their habitats, and special status plant and animal species would have little or no impacts on motorized recreation. Future management actions focusing on the protection of greater sage-grouse and habitat would have the same potential to negatively impact motorized recreation as Alternatives A–D because of possible road closures.

The entire planning area would be designated as limited to existing roads and trails. Impacts to motorized recreation would be similar or slightly less than Alternative C. The designation of limited to existing roads and trails would essentially close Sand Dunes WSA to most vehicle use. Alternatives A, B, and D would be less-impacting in comparison to Alternative E. No organized OHV events would be authorized under Alternative E. This would be a greater impact than under the other alternatives (because OHV events would not be restricted).

Summary of Impacts

Common to all alternatives, future management actions which would focus on the protection of greater sage-grouse and their habitat could restrict motorized recreation. The significance of the impacts would be dependent on the scope of the area or road closures which could be initiated.

Alternative A provides for the highest percentage of public land that would be open to OHV uses (79.4 percent). Collectively, the limited and closed designations would not significantly restrict motorized recreation. The impacts of Alternative B would be very similar to Alternative A.

Alternative C would have much greater impacts than either Alternatives A or B. None of the planning area would be under the open designation, while approximately 99 percent would be under a limited designation. The overall negative impacts of Alternative E would be comparable to Alternative C. Under Alternatives C and E, no motorized uses would occur within the Sand Dunes WSA.

Alternative D would have less of a negative impact on motorized recreation uses than under Alternatives C or E. With added restrictions relating to the mule deer winter range and the North Lake Special Recreation Management Area, impacts to motorized uses would be higher under Alternative D than Alternatives A or B.

Management goals for OHV's would be best met under Alternative D. This alternative provides for the protection of resources while allowing opportunities for motorized recreation uses, including the Sand Dunes, which receives the highest density of motorized use within the entire planning area.

Secondary, Indirect, and Cumulative Impacts

Management actions, including past, present, and reasonably foreseeable actions, collectively, would impact motorized recreation uses and users within the planning area. Future management actions relating to the protection of potential or existing threatened, endangered, and/or sensitive plant and animal species have a high potential for negatively impacting motorized recreation uses. Future management actions relating to the protection of greater sage-grouse and their habitat would have an impact on motorized recreation uses within the planning area and other Federal lands adjacent to the planning area. However, the degree or level of these impacts is unknown at this time.

Past actions which have restricted access and/or numbers of motorized uses at popular OHV areas (e.g., the Oregon Coast, Millican Valley) result in users looking elsewhere for recreation opportunities. Uses then increase within other areas (e.g., Sand Dunes), which then results in increased user conflicts and potential resource impacts. The protection of the resources dictate increased management, which inevitably requires stricter controls on access and numbers of users.

The BLM's "National Management Strategy for Motorized Off-Highway Vehicle Use on Public Lands" (2001e) and the USFS's "Forest Service's Roadless Areas Initiative" would most certainly affect motorized recreation uses, in regard to both present and future actions proposed or enacted. The population growth that the Bend/Redmond area is experiencing would bring increased motorized recreation use in the northern part of the planning area.

Visual Resources

Management Goal—*Manage public land actions and activities consistent with visual resource management (VRM) class objectives.*

Analysis of Impacts

Alternative A

Actions that promote the protection of watershed functions, riparian and wetlands, fish and wildlife habitat, and upland vegetative communities would enhance the natural landscape character. Such actions could include reduced livestock grazing within riparian areas and stream bank stabilization. However, monoculture seedings, e.g., crested wheatgrass, could create an unnatural appearance within a characteristic landscape. Impacts from forest health management actions should not significantly affect visual quality if conducted on small, localized areas.

There are twelve WSA's, totaling approximately 472,768 acres, which are managed under a VRM Class I to maintain the highest level of protection for existing visual qualities. This designation would remain in effect until such time as Congress acts on designation.

With an emphasis on aggressive initial fire attack and full suppression of all wildland fires, there could be negative impacts to visual qualities. Specific actions causing adverse impacts would be from earth-moving equipment and other vehicles driving cross-country. Short-term, adverse impacts from controlled burns would not be significant if mitigation measures are followed.

The construction of new recreation sites or the expansion of existing sites would be considered if unacceptable resource degradation was occurring. It is anticipated that any such development would not significantly impact visual qualities and would reduce impacts in many cases. Negative effects could occur from OHV activities if these uses cause loss of vegetation, soil exposure, or erosion. Approximately 79 percent of the planning area is designated open, allowing cross-country vehicular travel.

Management actions relating to the development of mineral materials, oil, gas, and geothermal leasing, and locatable minerals have a high potential to change the natural character of the landscape. However, the potential for large-scale development relating to mining would be low. Mitigation measures relating to these activities (Appendix N3 of the Draft RMP/EIS) would reduce the significance of the effects.

The issuance of new rights-of-way, leases, and permits, and road construction activities would have the potential to negatively impact visual resources. Restricting future developments to designated utility corridors would help to mitigate these impacts.

Alternative B

Actions that promote the protection of watershed functions, riparian areas and wetlands, fish and wildlife habitat, and upland vegetative communities would enhance the natural landscape character. Such actions could include reduced livestock grazing within riparian areas and stream bank stabilization. The management actions would be similar to Alternative A. The overall changes in visual qualities would be similar as well. Changes to the landscape character could increase slightly compared to Alternative A from management actions to enhance forest health and biodiversity. Juniper treatment areas would be maximized; up to 75 percent of early- to mid-successional western juniper stands would be treated.

There would be no change in the VRM designations in WSA's. There would be no difference in visual qualities compared to Alternative A.

The overall impacts to visual resources relating to initial fire attack and suppression of wildland fires would not vary significantly from Alternative A. The level of prescribed burns and other fuel reduction treatments would be increased. This would raise the potential for short-term, adverse impacts to occur to visual resources, but the increase would not be significant.

Impacts from recreation would be similar to Alternative A. Negative effects from OHV activities would be similar to Alternative A.

Impacts from management actions relating to the development of mineral materials, oil, gas, and geothermal leasing, and locatable minerals would have a slightly higher potential to change the natural character of the landscape than under Alternative A, because these actions would be encouraged. However, the potential for large-scale development relating to mining would still be relatively low and existing mitigation measures (Appendix N3 of the Draft RMP/EIS) would reduce the significance of the effects from these actions.

The issuance of rights-of-way, leases, and permits, and road construction activities would have potentially the same impacts on visual resources as under Alternative A. Land acquisitions would focus on acquiring lands that would facilitate commodity production. These actions could potentially have a negative effect on visual quality on a site-specific basis.

Alternative C

Impacts to visual resource qualities from actions that promote the protection of watershed functions, riparian areas and wetlands, fish and wildlife habitat, and upland vegetative communities would be similar to Alternatives A and B. Changes to the landscape character from management actions to enhance forest health and biodiversity would decrease slightly in comparison to Alternative B, because there would be a decrease of 25 percent in the amount of early- to mid-successional western juniper stands proposed for treatment.

The effects of VRM designations in WSA's would be similar to Alternatives A and B. Proposed ACEC designations and associated changes in VRM management class would provide more protection of visual quality on up to180,000 acres.

The overall impacts relating to initial fire attack and suppression of wildland fires would be similar to Alternatives A and B. Reduction in fuel loads through prescribed fire, wildland fire, or other treatments are proposed for up to 640,000 acres; this level of treatment would cause a higher level of negative impacts to visual resources than Alternatives A or B. Under Alternative A, approximately 5,000–20,000 acres would treated annually, and approximately 64,000 acres would be treated under Alternative B.

The impacts from recreation activities would be similar to Alternatives A and B. Negative effects from OHV activities would be lower than under both Alternatives A and B. The total number of acres in the open designation would decrease significantly (Table 4-5) in comparison to Alternatives A and B.

Impacts from management actions relating to the development of mineral materials, oil, gas, and geothermal leasing, and locatable minerals would be similar to Alternative A. Compared to Alternative B, there would be less potential for negative impacts because consumptive uses would not be encouraged. It is anticipated that the potential for large-scale development relating to mining would be relatively low and existing mitigation measures (Appendix N3 of the Draft RMP/EIS) would reduce the significance of the effects.

The issuance of rights-of-way, leases, and permits, and road construction activities would have potentially the same impacts on visual resources as Alternatives A and B. Land acquisitions would have potential positive impacts by focusing on lands with high resource values.

Alternative D

Impacts to visual resource qualities from actions that promote the protection of watershed functions, riparian areas and wetlands, fish and wildlife habitat, and upland vegetative communities would be similar to Alternatives A, B, and C. Changes to the landscape character from management actions to enhance forest health and biodiversity would be similar to Alternative C.

The effects of VRM designations in WSA's would be similar to Alternatives A, B, and C. Proposed ACEC designations and associated changes in VRM management class would provide the same level of protection for visual qualities as Alternative C.

Impacts relating to initial fire attack and suppression of wildland fires would be similar to Alternatives A, B, or C. Fuel treatments (up to 480,000 acres annually) would be lower than Alternative C and higher than Alternatives A and B. Therefore, potential short-term negative effects on visual resources would be lower than Alternative C but higher than both Alternatives A and B.

The impacts from recreation activities would be similar to Alternatives A, B, and C. Negative effects from OHV activities would be similar to Alternative C.

Impacts from management actions relating to the development of mineral materials, oil, gas, and geothermal leasing, and locatable minerals would vary between Alternatives A, B, and C, but the differences would not be significant. More areas would be open to mineral leasing in comparison to Alternative C, but less in comparison to Alternative B. It is anticipated that the potential for large-scale development relating to mining would be relatively low and existing mitigation measures (Appendix N3 of the Draft RMP/EIS) would reduce the significance of the effects.

The issuance of rights-of-way, leases, and permits, and road construction activities would have potentially the same impacts as Alternatives A, B, and C. Land acquisition impacts would be the same as Alternative C.

Alternative E

The effects of VRM designations in WSA's would be similar to Alternatives A, B, and C. No ACEC's would be designated, so visual qualities within these areas would not receive the added protection, as under Alternatives C and D. All VRM designations in the

remainder of the planning area would be revoked and natural processes would be allowed to determine visual quality.

Commodity uses such as mining, grazing, commercial wood cutting, and other commodity uses would not be allowed. The potential for negative impacts in comparison to all of the other alternatives would be reduced significantly.

Negative impacts relating to initial attack and fire suppression would be higher than Alternatives A, B, C, or D because there would be a minimal level of time or resources used for these actions. However, fuel treatments would not occur, and the short-term impacts to visual qualities would be the lowest of all the alternatives.

Impacts from recreation uses would be minimized compared to all other alternatives. Site rehabilitation or closure would be the primary management action taken to prevent adverse impacts to visual qualities. Potential impacts from OHV uses would be lower than under any other alternative. The entire planning area would be limited to travel on existing roads and trails only.

Summary of Impacts

The management goals for visual resources could be met under all of the alternatives. With the exception of Alternative E, there would be potential for negative impacts to occur on a site-specific basis from such things as proposed development, grazing, woodland treatments, OHV use, mining, recreation activities, and fire suppression activities. However, by following BMP's and mitigation (Appendices D and N3) for specific projects, the degree or level of negative impacts on visual resources would be minimized.

The greatest protection for visual resources would occur under Alternative E. Alternative B would have the greatest potential for negatively impacting visual resources. Overall, Alternatives C and D are similar in terms of the potential for negatively impacting visual resources. Alternatives C and D would provide a greater level of protection for visual resources than Alternatives A and B.

Secondary, Indirect, and Cumulative Impacts

With the western United States experiencing increases in population, there is a corresponding increase in the potential for proposed development, commodity uses, recreation activities (motorized and nonmotorized), and the continuation of existing uses, such as grazing. It is not anticipated that these increases and other uses and activities would cumulatively have significant negative impacts on visual resources. Following BMP's and mitigation (Appendices D and N3) for individual projects, the overall effects or level of negative impacts on visual resources would be minimized.

Energy and Mineral Resources

Assumptions

The allocations and management prescriptions for other resource programs affect availability of land for exploration and development of energy and mineral resources differently throughout the alternatives. Operating constraints on locatable, leasable, and salable mineral activity vary from area to area across these alternatives.

Future trends and assumptions, along with 15- to 20-year energy and mineral development scenarios for the planning area, are discussed in detail in Appendix N2. It is assumed that the same level of interest in mineral exploration and development would be the same through all of the alternatives.

To assess the effects of various resource allocations and management prescriptions through the alternatives, constraints have been divided into four categories: (1) closures, including withdrawals; (2) no-surface-occupancy (for leasable minerals); (3) standard requirements or lease terms, and (4) additional restrictions, such as seasonal operating and controlled surface use constraints. The closures are further divided into discretionary (under the control of BLM) and nondiscretionary (imposed by law, regulation, Secretarial decision, or Executive order). Tables 3-7 and 4-6 show, by alternative, the acres of mineral estate of high, moderate, and low/unknown mineral potential available for, as well as restricted from, mineral exploration and development.

Management Goal 1—*Provide opportunity for the exploration, location, development, and production of locatable minerals in an environmentally-sound manner. Eliminate and rehabilitate abandoned mine hazards.*

Table 4-6.—*Acres of mineral restrictions within areas of high and moderate mineral potential* [1]

	Alternative A		Alternative B		Alternative C		Alternative D		Alternative E	
Mineral restrictions	High	Moderate	High	Moderate	High	Moderate	High	Moderate	High	Moderate
Leasable minerals										
Closed	41,268	440,199	41,269	439,314	41,347	520,041	41,315	443,439	114,309	2,708,184
NSO or other	59,524	1,071,171	59,523	1,068,605	81,770	2,201,725	66,751	1,269,207	0	0
Locatable minerals										
Closed	2,611	4,678	0	4,347	21,614	166,600	2,632	6,014	25,245	268,224
NREC or other	2,719	191,301	2,719	191,633	1,236	91,598	7,370	193,632	0	0
Salable minerals										
Closed	41,418	558	41,418	558	43,473	1,087	41,148	510	44,138	1,154
Other	1,468	203	1,468	203	660	64	1,268	332	0	0

[1] These acre values are for areas of Federal mineral ownership only.

Analysis of Impacts

Alternatives A and B

These alternatives provide the most land available for locatable mineral exploration and development with the fewest restrictions, with Alternative B being less restrictive than Alternative A. Under Alternative A, 10 percent of high-potential and 2 percent of moderate-potential locatable mineral lands would be closed, while 11 percent of high-potential and 71 percent of moderate-potential locatable mineral lands would be open subject to additional restrictions (Table 4-6).

Under Alternative B, 0 percent of high-potential and 2 percent of moderate-potential locatable mineral lands would be closed, and 11 percent of high-potential and 71 percent of moderate-potential locatable mineral lands would be open subject to additional restrictions. The Public Sunstone Collecting area would be open to mineral entry, which would make an additional 2,440 acres of high-potential sunstone ground available for mining claim location. An increase of up to 122 mining claims would be anticipated. This could equate to 122 new, small sunstone operations or a few new large ones. The public would not be able to collect sunstones without the permission of the mining claimants.

Alternative C

Except for Alternative E, this alternative would be the most restrictive to the exploration and development of mineral resources. Compared to Alternatives A and B, there would be less land available for mineral exploration and development and more restrictions on lands that remain open. About 86 percent of high-potential and 62 percent of moderate-potential mineral lands would be closed. About 5 percent of high-potential and 34 percent of moderate-potential mineral lands would be open, subject to additional restrictions (Table 4-6).

Alternative D

This alternative would provide for more mineral-related opportunities than Alternative C, but less than Alternative B. About 10 percent of high-potential and 2 percent of moderate-potential mineral lands would be closed. About 29 percent of high-potential and 72 percent of moderate-potential mineral lands would be open subject to additional restrictions (Table 4-6; Map M-10).

Alternative E

This would be the most restrictive of all of the alternatives. The entire planning area (100 percent) would be withdrawn from locatable mineral entry (Table 3-7).

Summary of Impacts

For locatable minerals, Alternative B, followed closely by Alternative A, would close or restrict the least amount of public land to locatable mineral exploration/development and therefore, would offer the greatest opportunity for these activities. Alternative E would close the entire area. The remaining alternatives would be intermediate in their overall effects to locatable mineral activity.

Management Goal 2—*Provide leasing opportunity for oil and gas, geothermal energy, and solid minerals in an environmentally-sound manner.*

Analysis of Impacts

Alternatives A and B

These alternatives provide the most land available for leasable mineral exploration and development with the fewest restrictions, with Alternative B being less restrictive than Alternative A. Under Alternative A, 36 percent of high-potential and 16 percent of moderate-potential fluid and solid leasable mineral lands would be closed due to WSA status, and 52 percent of high-potential and 40 percent of moderate-potential lands would be open subject to the no-surface-occupancy or other stipulations due primarily to sensitive wildlife habitat, visual quality, or cultural sites (Table 4-6).

Under Alternative B, 36 percent of high-potential and 16 percent of moderate-potential fluid and solid leasable mineral lands would be closed due to WSA status, and 52 percent of high-potential and 39 percent of moderate-potential lands would be open subject to the no-surface-occupancy or other stipulations due primarily to sensitive wildlife habitat, visual quality, or cultural sites (Table 4-6). This would be a minimal impact to the exploration and development of leasable minerals.

Alternative C

Except for Alternative E, this alternative would be the most restrictive to the exploration and development of leasable mineral resources. Compared to Alternatives A and B, there would be less land available for mineral

exploration and development, and more restrictions on lands that are open. About 36 percent of high-potential and 19 percent of moderate-potential mineral lands would be closed due to WSA status. About 72 percent of high-potential and 81 percent of moderate-potential mineral lands would be open subject to the no-surface-occupancy or other stipulations due primarily to sensitive wildlife habitat, visual quality, or cultural sites (Table 4-6). This would significantly reduce the amount of land available for exploration and development.

Alternative D

This alternative would provide for more leasable mineral-related opportunities than Alternative C, but less than Alternatives A and B. About 36 percent of high-potential and 16 percent of moderate-potential fluid and solid leasable mineral lands would be closed due to WSA status, and 58 percent of high-potential and 47 percent of moderate-potential mineral lands would be open subject to no-surface-occupancy and other stipulations due primarily to sensitive wildlife habitat, visual quality, or cultural sites (Table 4-6; Map M-9).

Alternative E

This would be the most restrictive of all of the alternatives. Mineral leasing would not be allowed in the entire (100 percent) planning area (Table 3-7).

Summary of Impacts

Impacts to leasable mineral resources range from minor to extreme. Alternative B, followed closely by Alternative A, would close or restrict the least amount of public land to leasable mineral exploration and development and therefore, would offer the greatest opportunity for these activities. Alternative E would close the entire area. The remaining alternatives would be intermediate in their overall effects to leasable mineral activity.

Management Goal 3—*In an environmentally-sound manner, meet the demands of local, state, and Federal agencies, and the public, for mineral material from public lands.*

Analysis of Impacts

Alternatives A and B

These alternatives provide the most land available for salable mineral exploration and development with the fewest restrictions. Under both Alternatives A and B, 94 percent of high-potential and 48 percent of moderate-potential mineral lands would be closed due primarily to WSA status, greater sage-grouse leks, sensitive plants, and cultural sites. About 3 percent of high-potential and 9 percent of moderate-potential lands would be open, but subject to other restrictions due primarily to sensitive wildlife and visual quality (Table 4-6). Opening the Devils Garden to salable mineral disposal would be a significant positive impact on the availability of decorative stone such as slab lava, should the area be released from wilderness study by Congress.

Alternative C

Except for Alternative E, this alternative would be the most restrictive to exploration and development of mineral material resources. Compared to Alternatives A and B, there would be less land available for salable mineral exploration and development and more restrictions on lands that are open. About 98 percent of high-potential and 94 percent of moderate-potential salable mineral lands would be closed due primarily to WSA status, greater sage-grouse leks, sensitive plants, and cultural sites. About 1 percent of high-potential and 6 percent of moderate-potential lands would be open, but subject to other restrictions due primarily to sensitive wildlife and visual quality (Table 4-6). This would be a significant reduction in the availability of salable mineral material sites.

Alternative D

This alternative would provide for more salable mineral opportunities than Alternative C, but less than Alternative B. About 91 percent of high-potential and 44 percent of moderate-potential salable mineral lands would be closed due primarily to WSA status, greater sage-grouse leks, sensitive plants, and cultural sites. About 91 percent of high-potential and 44 percent of moderate-potential lands would be open, but subject to other restrictions due primarily to sensitive wildlife and visual quality (Table 4-6; Map M-8). The amount remaining open would meet public demand.

Alternative E

This would be the most restrictive of all of the alternatives. All of the planning area (100 percent), including existing pits and quarries, would be closed (Table 3-7). The disposal of salable minerals would be allowed only for critical road construction and in case of emergencies, such as flood or erosion control.

Summary of Impacts

Impacts to salable mineral resources range from minor to extreme. Both Alternatives A and B would close or restrict the least amount of public land to salable mineral exploration and development and therefore, would offer the greatest opportunity for these activities. Alternative E would close the entire area. The remaining alternatives would be intermediate in their overall effects to mineral activity.

Secondary, Indirect, and Cumulative Impacts

The most favorable condition for exploration and development of mineral resources would occur with as few restrictions as possible. Individuals and companies involved in exploration and development face numerous environmental obligations to comply with standard requirements and lease and sale terms. Any additional measures for mitigation of disturbance to lands and nonmineral resources bring about even greater impacts to mineral exploration and development. Compliance with applicable environmental laws and regulations can add costs and delays, resulting in adverse effects to exploration and mining that cannot be avoided. The imposition of discretionary mitigation measures generally adds more costs to mineral exploration and development, thereby increasing the adverse effects to these programs. No-surface-occupancy stipulations may be appropriate for small areas where directional drilling may be feasible (up to 0.5 miles). For large areas covering many square miles, such as the proposed Rahilly-Gravelly ACEC and existing Abert Lake ACEC, no-surface-occupancy stipulations effectively close the area to mineral operations. In addition, seasonal restrictions could result in access times being too short for effective exploration and development. When one considers land currently closed to mineral operations, such as wildlife refuges, military withdrawals, and new special management proposals that restrict or preclude mineral operations such as WSA's and ACEC's, it is clear that cumulative impacts would be significant under the more restrictive alternatives.

Numerous mining notices, plans of operation, and occupancies could occur in the sunstone area. With every additional notice/plan/occupancy, impacts to the vegetation, wildlife, and visual resources of the area increase. Due to the open nature of the landscape, this area is visible for considerable distances. As the number of occupancies increase, the area could become noticeable from viewpoints on Hart Mountain and along other vantage points. In addition, the accumulation of impacts from these mining-related activities, grazing, and recreation could be substantial. It is difficult to project the actual number of acres that would be impacted from all of these activities. However, in 20 years the total cumulative surface disturbance from exploration, mining, and occupancy combined could reach 660 acres. Because of concurrent reclamation, it is unlikely that more than 160 acres of unreclaimed surface disturbance would exist at any given time.

The planning area would be open to mineral entry under Alternatives A–D. As long as the prospector/miner met the requirements of the general mining laws and "Federal Land Policy and Management Act" (FLPMA) and the relevant regulations, exploration, mining, and occupancy could not be denied. Compliance with relevant laws, regulations, restrictions imposed by the preferred Alternative D, and implementing appropriate mitigating measures (Appendices D and N3 of the Draft RMP/EIS), would minimize cumulative adverse impacts.

Some irreversible and irretrievable commitment of resources would occur and include the amounts of mineral commodities removed, such as sand, gravel, perlite, decorative stone, sunstones, and diatomite. Geothermal energy (heat) is a renewable resource that, over time, is replenished by the decay of radioactive minerals and heat-producing chemical reactions.

Lands and Realty

Management Goal 1—*Retain public land with high public resource values. Consolidate public land inholdings and acquire land or interests in land with high public resource values to ensure effective administration and improve resource management. Acquired land would be managed for the purpose for which it was acquired. Make available for disposal public land within Zone 3 by State indemnity selection, private or state exchange, "Recreation and Public Purpose Act" lease or sale, public sale, or other authorized method, as applicable.*

Assumptions

The Lands and Realty program is a support function for other resource programs. Consequently, impacts to the program are a direct result of the management emphasis of other resource programs. Land tenure actions would be directed to a point ranging from fully developing commodities to preserving natural values as dictated by other resource programs.

Lands being considered for disposal are placed in Zone 3 and are specifically identified, by alternative, on Maps L-1, -3, -4 of the Draft RMP/EIS, L-5, and Appendix O2. Contingent upon site-specific NEPA analysis and inventory for sensitive resource values, any of the land identified as suitable for disposal could be transferred from Federal ownership. Disposal would usually be by exchange or sale; however, the preferred method of disposal would be by exchange. Any acquired land or acquired interest in land would be managed for the purpose for which it was acquired or in the same manner as adjacent or comparable public land.

None of the alternatives would result in significant, net changes in Federal ownership patterns due to the tax base equalization requirements of the 1992 "Interior Appropriations Act."

Analysis of Impacts

Alternative A

Land sales would be limited to those parcels identified in existing management framework plans (approximately 42,500 acres; Map L-1 of the Draft RMP/EIS). Land sales could increase county(s) tax revenues by adding land to the tax rolls and could increase management flexibility in resolving situations involving survey errors and hiatuses and unauthorized uses. Land tenure adjustment by exchange would be allowed when there would be no significant resource conflict on the selected BLM-administrative parcels and the offered lands possess desirable resources. An emphasis on acquiring land with high resource values, such as lands within WSA's or ACEC's, threatened or endangered species habitat, riparian or wetland areas, etc., would be of primary consideration.

Management of special status species, either plant or animal, could limit or eliminate certain disposals and exchanges. Proposed land tenure adjustments may not be allowed in order to protect special status species habitat. Proposed land tenure adjustments may not be carried out in order to retain high value habitat in Federal ownership.

Proposals involving the consolidation of split-estate would be considered on a case-by-case basis. Actions that dispose of isolated, difficult to manage parcels and acquire inholdings or other parcels that "block up" large areas would improve overall management efficiency.

Alternative B

The major emphasis of land tenure adjustment would be for commodity production. Decisions to retain or dispose of public land or to acquire private land would be based on the opportunity to enhance commodity production. Exchanges may not result in the acquisition of land possessing high public resource values. In some cases, resource values (i.e., riparian and wildlife habitat) could be lost from public ownership if shown to benefit commodity production. Implementation of this proposal would limit disposal opportunities to approximately 54,800 acres (Map L-3 of the Draft RMP/EIS), which would be an increase above the level of Alternative A. The benefits derived from land sales would be similar to Alternative A.

Alternative C

Impacts would be the same as Alternative A, except the major emphasis of land tenure adjustment would be retention/acquisition of land with high public resource value. Decisions to retain or dispose of public land or to acquire private land would be based on the quality of public resource values. Implementation of this proposal would reduce the disposal opportunities to approximately 7,500 acres (Map L-4 of the Draft RMP/EIS), lower than either Alternative A or B. The benefits derived from land sales would also be reduced. Under certain circumstances, disposal of small parcels of public land would be permitted in Zones 1 and 2. The consolidation of split-ownership surface and subsurface estates would be pursued on a case-by-case basis to facilitate more efficient and effective management of public land.

Alternative D

The impacts would be the same as Alternative C, except the main emphasis for land tenure adjustment would be to protect and improve natural values while providing commodity production (Map L-5).

Alternative E

Public land would be retained and only considered for disposal on a case-by-case basis.

Summary of Impacts

Management goals would be achieved under all alternatives except Alternative E. Land sales opportunities would be greatest in Zone 3 under Alternatives A and B, approximately 42,500 acres and 54,800 acres,

respectively. Exchanges and acquisitions in other land zones would be allowed to meet other resource objectives. Implementing Alternative B, land tenure adjustments would emphasize retention/acquisition of commodity producing land. Significant public resource values, such as riparian and wildlife habitat, may potentially be lost from public ownership. Under Alternatives C and D, land tenure adjustments would emphasize retention/acquisition of land high in resource value. Disposal opportunities would be greatly reduced from Alternatives A and B, which in turn would limit the potential for private land acquisition by limiting the pool of public disposal lands necessary to maintain the required public/private land ownership ratio in the planning area. Under Alternative E, there would be little to no land acquisition, and the majority of the public lands would be retained and only considered for disposal on a case-by-case basis.

Management Goal 2—*Meet public needs for land use authorizations, such as rights-of-way, leases, and permits.*

Assumptions

Section 503 of the FLPMA provides for the designation of right-of-way corridors and encourages the use of rights-of-way in common to minimize environmental impacts and the proliferation of separate rights-of-way. BLM policy encourages prospective applicants to locate their proposals within existing corridors. However, when right-of-way corridor proposals are in conflict with SMA's, such as WSA's and ACEC's, these areas should be avoided.

Analysis of Impacts

Alternative A

There would be no impacts to the continued designation of existing right-of-way corridors. However, those areas identified as exclusion or avoidance areas (Map L-2 of the Draft RMP/EIS) would restrict the location of new rights-of-way and other land use authorizations.

Management of wildlife, fish, or their habitat could impact new rights-of-way and other land use authorizations. In order to protect certain habitats, rights-of-way may not be granted or may have to be rerouted, making them more costly and resulting in additional disturbance to the landscape.

Management of special status plant or animal species, and cultural and paleontological resources could place restrictions on the location of rights-of-way and other land use authorizations. Rights-of-way may not be granted or have to be rerouted, resulting in additional disturbance to the landscape.

Management of some existing ACEC's and all WSA's as avoidance or exclusion areas, respectively, would have a minimal impact on the placement of new rights-of-way, since most of the planning area would still be open to new rights-of-way.

Managing areas as VRM Class I would eliminate the placement of rights-of-way and other land use authorizations for powerlines and pipelines, since these actions would be a visible change to the landscape. Since VRM I areas coincide primarily with existing WSA's, the location of new rights-of-way would also be excluded by the wilderness IMP (USDI-BLM 1995b). These types of activities would have to be relocated to other areas, which could result in longer lines, additional cost, and greater total disturbance to the landscape.

Alternative B

This alternative would voluntarily restrict the location of facilities if applicants are encouraged to locate within designated corridors. Centralizing could make the facilities more vulnerable to terrorist activities, but would also confine surface and visual disturbance to existing corridors and rights-of-way.

Impacts from management of special status species, cultural and paleontological resources, wildlife, fish, and their habitat would be the same as Alternative A.

There would be one additional SMA (Connley Hills) that would further restrict the location of new rights-of-way in a small portion of the planning area (Map L-6 of the Draft RMP/EIS). Two existing right-of-way avoidance areas present in Alternative A would be removed. WSA's would continue to managed as right-of-way exclusion areas.

Management of VRM Class I areas would impact rights-of-way the same as Alternative A.

Alternative C

All linear rights-of-way for electrical transmission lines greater than 69 kilovolts, all mainline fiberoptics facilities, and all pipelines greater than 10 inches would be confined to designated corridors. This would centralize all major energy-related transmission facilities, making them more vulnerable to terrorist activities, but would confine surface and visual disturbance

to existing corridors. This alternative would designate all existing electrical transmission lines, except the south corridor, identified in the "Western Utilities Corridor Study" (Western Utility Group 1993) and some county roads as rights-of-way corridors and would reduce the minimum standard corridor width to 1,000 feet (Map L-7 of the Draft RMP/EIS).

The impacts associated with management of special plant and animal species, fish and aquatic habitat, cultural and paleontological resources, and VRM Class I areas would be the same as Alternative A.

Most big game winter range and all greater sage-grouse habitat would become right-of-way avoidance areas. More existing and proposed SMA's, compared to both Alternatives A and B, would be considered right-of-way exclusion areas. This would effectively limit the location of new rights-of-way or other land use authorizations in most of the planning area to existing corridors.

Alternative D

The impacts associated with management of special plant and animal species, fish and aquatic habitat, cultural and paleontological resources, VRM Class I areas, and WSA's would be the same as Alternative A.

The overall impacts would be greater than Alternatives A or B, but less than Alternative C because greater sage-grouse breeding habitat and existing and proposed ACEC/RNA's would be considered right-of-way avoidance areas (Map L-8).

Alternative E

This alternative would not meet management goal objectives since new rights-of way would be excluded from the entire planning area.

Summary of Impacts

Alternatives A and B would be the least restrictive of all the alternatives. Alternative B would designate all existing transmission lines, except the south corridor, in the "Western Utilities Corridor Study" (Western Utility Group 1993) and some county roads as right-of-way corridors and would establish a minimum standard corridor width of 2,000 feet. Alternative C would be the most restrictive of all the alternatives, except Alternative E, which considers the entire planning area as a right-of-way exclusion area. Alternative C would include most big game winter range and all greater sage-grouse habitat as a right-of-way avoidance area and mandates the location of all new large energy-related transmission facilities within designated corridors. It also would reduce the minimum standard corridor width to 1,000 feet. Alternative D would place all ACEC/RNA's and all greater sage-grouse breeding habitat into right-of-way avoidance areas. Under Alternative E, the entire planning area would be considered a right-of-way exclusion area. Management goals would be met under all alternatives, except Alternative E.

Management Goal 3—*Acquire public and administrative access to public land where it does not currently exist.*

Assumptions

Section 205 of the FLPMA authorizes the Secretary of the Interior to acquire lands and interest in lands consistent with the mission of the Department of Interior and with applicable land use plans. Any acquired interest in land would be managed for the purpose for which it was acquired or in the same manner as adjacent or comparable public land. All roadways/improvements constructed as a result of the acquisition of lands or interest in lands would be subject to NEPA analysis prior to actual construction.

Analysis of Impacts

Alternative A

This action would ensure the continued access to public land for administrative purposes, thereby allowing management of resources on all parcels of public land. Constructing new roads around private lands where easement acquisition is not feasible would provide management the flexibility to create access to public lands, as necessary.

Alternative B

The emphasis would shift from providing access for administrative purposes to acquiring access to public lands high in commodity value. This would allow increased access for management, extraction, or use of commodity resources on public lands. This would emphasize constructing new roads around private lands to facilitate commodity development and would forego opportunities to access other public land with significant resource values.

Alternative C

The BLM would acquire access where public demand and administrative need exists and construct roads around private land, if necessary, to secure access. Emphasis for access acquisition would be for the protection of natural values.

Alternative D

Access would be acquired where public demand and administrative need exists. New roads would be constructed around private land, if necessary, to secure access. Emphasis for access acquisition would be to provide access to public lands containing high resource values.

Alternative E

New access would only be acquired and road construction performed, as prescribed and mandated by law or for public health and safety.

Summary of Impacts

Alternative A is a continuation of present management. Access acquisition would emphasize providing access to BLM-administrative facilities and program-related activities. Alternative B would provide for acquiring access to public lands high in commodity value. Alternatives C and D would provide for acquiring access to protect natural values and to areas containing high resource values. Alternative E would provide for acquiring no new access unless mandated by law. All alternatives would provide for the option of constructing new roads around private lands when easement acquisition is not feasible. Management goals could be met under all alternatives. However, under Alternative E, meeting the goal would be met only where access is required by law or for public safety.

Management Goal 4—*Utilize withdrawal actions with the least restrictive measures necessary to accomplish the required purposes.*

Assumptions

Section 204 of FLPMA gives the Secretary of the Interior the authority to make, modify, extend, or revoke withdrawals, and mandates review of existing withdrawals. The Department of the Interior Policy (DM 603) requires that: (1) all withdrawals be kept to a minimum, (2) lands shall be available for other public uses to the fullest extent possible, and (3) a current and continuing review of existing withdrawals shall be instituted.

Analysis of Impacts

Alternative A

Alternative A is a continuation of the present situation. Withdrawals have been periodically reviewed in the past and revoked when no longer needed. This practice would continue.

Alternative B

This alternative would revoke the most existing withdrawals and be the least restrictive and least impacting on commodity or recreation related activities. However, it would afford the least protection of those resources where withdrawal may be deemed necessary.

Alternative C

Most existing withdrawals would remain. Red Knoll ACEC would be proposed for withdrawal. This would render approximately 11,600 additional acres unavailable for operation under the public land and mining laws, but the area would still be available for mineral leasing.

Alternative D

Most existing withdrawals would remain. Partial withdrawal of the Red Knoll ACEC would render approximately 4,600 acres unavailable for operation under the public land and mining laws but would be still be available for mineral leasing.

Alternative E

The remainder of the planning area would be withdrawn from the public land, mining and mineral leasing laws. This alternative would provide the most protection to natural resource values.

Summary of Impacts

In accordance with Department of Interior policy, management goals would be achieved under Alternatives A, C, and D. Alternatives B and E would be inconsistent with the management goals and Department of Interior policy. Alternative B would not allow any new lands to be withdrawn unless required by law, and would revoke all existing water reserves. Under Alternative C, the entire Red Knoll ACEC would be

withdrawn from the public land and mining laws. Under Alternative D, less than half of the Red Knoll ACEC would be withdrawn. Alternative E would withdraw the entire planning area, rendering it unavailable for operation under the public land, mining, and mineral leasing laws. This alternative would provide the most resource protection.

Secondary, Indirect, and Cumulative Impacts

Generally, the BLM and other Federal land management agencies operate under a no net loss policy in regard to land tenure adjustments. Therefore, the secondary, indirect, and cumulative impacts relative to Management Goal 1 are considered negligible. Most Federal land management agencies having land tenure adjustment programs strive to maintain the existing private/public land ownership ratio within their respective jurisdictional areas. State land management agencies may not operate under a no net loss policy, and if so, the disposal of state lands without replacement would increase the private land base within the planning area.

With the exception of Alternative E, the secondary, indirect, and cumulative impacts associated with the location of rights-of-way (Management Goal 2) would be similar for all the alternatives. Alternatives A–D would not prevent the location of new rights-of-way, but would restrict their location in certain areas to protect resource values. Excluding or avoiding certain areas from the location of rights-of-way could lessen the impact to a particular resource of high public value, but would not lessen the physical alteration of the landscape necessary to accommodate rights-of-way. The cumulative impact associated with rights-of-way would be a function of demand, the number, and acres occupied. Alternatives A–D would not affect the demand for or number of rights-of-way but only relocate the physical impact of new rights-of-way authorized. The more rights-of-way granted by land management agencies (Federal and state), as well as private easements, the more cumulative impact would occur on the landscape. Alternative E would not allow the location of new rights-of-way in the planning area, and therefore, secondary, indirect, and cumulative impacts would be negligible.

The secondary, indirect, and cumulative impacts associated with the acquisition of access rights (easements) (Management Goal 3) and the holders of such rights would include Federal and state land management agencies, as well as private entities. Alternatives A–D would not increase the demand for access acquisition but would establish the motivation for future acquisitions. The more easements acquired, through all sources, the more potential for road construction, and consequently, the more cumulative impact to the landscape. Alternative E would only allow access rights to be acquired as mandated by law or necessary to protect public health and safety. The secondary, indirect, and cumulative impacts would be considered negligible.

The BLM is the only Federal agency with the authority to withdraw public lands (Management Goal 4); therefore, all withdrawal requests from other Federal agencies would be processed by the BLM. The level of cumulative impact associated with withdrawals would be relative to the number of acres withdrawn, the restrictiveness of the withdrawal, and the public's position on the issue. Public lands are withdrawn either to set an area aside for a specific use or to afford valuable resources additional protection. Generally, withdrawals exclude land from appropriation under the public land, mining, and mineral leasing laws. This would impact commodity production and other human-related uses of the area.

Roads/Transportation

Management Goal—*Maintain existing roads on the planning area transportation plan and other roads to provide administrative or public access to public land. Construct new roads using best management practices (BMP's) and appropriate mitigation to provide administrative, permitted, and recreational access as needed. Close roads that are not longer needed or that are causing resource damage.*

Assumptions

- Based on past and present road maintenance budgets, approximately 100 miles of roads would be maintained each year, regardless of the alternative.
- Not all roads on the transportation plan would be maintained over the life of the plan.

Analysis of Impacts

Alternative A

The continuation of existing management would have no impact on the maintenance of existing roads. An average of approximately 100 miles of roads would continue to be maintained each year. The total number

of miles actually maintained annually would be based on the amount of funding received in the road maintenance budget. Roads not maintained would deteriorate, which could result in resource damage, such as erosion. Non-maintained roads could also be used less since they would be more difficult to drive, thereby providing less access to the planning area.

New roads would be constructed on a case-by-case, as-needed basis. Construction of roads around private lands to access BLM-administered lands would provide legal public and agency access. This could reduce conflicts with private landowners and reduce damage to private lands. New roads could be constructed across BLM-administered land by other land holders under a rights-of-way grant to access non-Federal land. Total new road construction would not exceed 20 miles over the life of the plan.

Roads would continue to be closed on a case-by-case basis to prevent major resource damage. Roads, trails, or ways permanently closed in the past would continue to be closed. Another 164 miles of roads and trails would continue to be seasonally closed in deer winter range (Table 4-4). This would limit motorized access primarily in some SMA's, but would be a relatively minor impact when compared to the access provided by approximately 5,000 miles of roads and trails that remain open on BLM lands within the planning area.

Alternative B

Impacts of road maintenance and new road construction would be similar to Alternative A. Priorities for maintenance would be those roads that would facilitate commodity production. Any new roads constructed on BLM-administered land, whether constructed by the BLM, another agency, or a private individual, would be constructed using appropriate BMP's (Appendix D) to protect adjacent land and resources. Total new road construction would not exceed 30 miles.

The impacts of road closures would be the same as Alternative A (Table 4-4).

Alternative C

The priorities for road maintenance would be those roads that are causing resource damage such as erosion. As a result, resource damage caused by roads would decrease. Construction of new roads around private lands to access BLM-administered lands would provide legal public and agency access. This could reduce conflicts with private landowners and reduce damage to private lands. New road construction, whether for BLM needs or to access non-Federal land, would likely not exceed 20 miles over the life of the plan. Any new roads constructed on BLM-administered land would be constructed using appropriate BMP's (Appendix D) to protect soil, watershed, riparian areas, and other resources. New roads would not be constructed in or near riparian conservation areas. This would limit, to a small extent, the placement of new roads.

There would be a concerted effort to close unneeded roads or roads damaging other resources. As a result, road closures would be greatest under this alternative. Approximately 211 additional miles of roads and trails would be permanently closed in SMA's. A total of about 239 miles of roads and trails would be seasonally closed in mule deer winter range (Table 4-4). Roads closed but not obliterated could still be used for authorized or permitted purposes. Roads closed and rehabilitated, either naturally or artificially, would be closed to future traffic. This would limit motorized access more than Alternatives A and B, primarily in SMA's, but would be a relatively minor impact when compared to the access provided by approximately 5,000 miles of roads and trails that would remain open on BLM lands within the planning area.

Alternative D

The impacts of road maintenance, construction, and road and trail closures would be similar to Alternative C. However, new permanent road and trail closures would total about 58 miles, primarily in SMA's. Seasonal road and trail closures would total about 288 miles in mule deer winter range (Table 4-4; Maps SMA-5 to SMA-31). This would limit motorized access more than Alternatives A and B, and slightly less than Alternative C, but would be a relatively minor impact when compared to the access provided by approximately 5,000 miles of roads and trails that would remain open on BLM lands within the planning area.

Alternative E

Impacts would be minimal, since maintenance would occur only to protect human health and safety or as required by law. This criteria would apply to very few roads in the planning area. New roads would not be constructed unless required by law or to provide access to non-Federal property. Such construction would not exceed 20 miles over the life of the plan. Any new roads constructed on BLM-administered land, whether constructed by the BLM, another agency, or a private individual, would be constructed using appropriate BMP's (Appendix D) to protect soil, watershed,

riparian areas, and other resources.

Roads, trails, or ways permanently closed in the past would continue to be closed. The impacts on access would be similar to Alternative A. The permanent closure of about 5 miles of existing roads and trails (Table 4-4) would be a relatively minor impact when compared to the access provided by approximately 5,000 miles of roads and trails that would remain open on BLM lands within the planning area. With the removal of livestock grazing and range improvements, a number of unneeded roads, ways, and trails could be closed in the future.

Summary of Impacts

Impacts would be similar under all alternatives, with the fewest impacts occurring under Alternative E and the most potentially occurring under Alternative B. Priorities for maintenance would vary across the alternatives, but would depend primarily on the annual road maintenance budget. Not all roads would be maintained over the life of the plan under any alternative. As a result, some roads could deteriorate to the point of causing resource damage or being impassable.

New road construction would be greatest under Alternative B and would not exceed 30 miles under any of the other alternatives. In Alternatives B–E, new construction would be done using appropriate BMP's (Appendix D) to protect adjacent resources.

The management goal would be met under all the alternatives except Alternative E.

Road closures would occur under all alternatives with the most miles of closure occurring under Alternative C. Most of these closures would be associated with SMA's.

Secondary, Indirect, and Cumulative Impacts

Roads that are not maintained over the life of the plan because of lower priorities could deteriorate to the point that they would be impassable, thereby reducing access to some parts of the planning area. Often these types of roads eventually cause resource damage, such as erosion.

New road construction could open parts of the planning area that currently do not have access. This could result in use by recreationists that could result in wildlife disturbance, soil and vegetation disturbance, erosion, and loss of solitude in an area.

The Fremont National Forest has an active, ongoing program of closing roads that are not needed for commercial or administrative purposes or that may be causing resource damage. This program, coupled with road closures on BLM lands, could have a significant positive impact on particular watersheds by reducing access, resulting in less compaction, less vegetation disturbance, and less erosion. These effects would be most beneficial in those watersheds shared by both the BLM and the Fremont National Forest.

Chapter 5 — Consultation and Coordination

Introduction

The Lakeview Resource Management Plan (RMP)/ Environmental Impact Statement (EIS) was prepared by an interdisciplinary team of resource specialists from the Lakeview District Office. Initial preparation for the plan began in 1997. The planning process began in earnest in early 1999 with the training of the interdisciplinary team (February) and the hiring of an interdisciplinary RMP team leader.

Public Participation

The official start of the preparation of the Lakeview RMP/EIS was initiated with the publishing of a "Notice of Intent" to prepare an RMP/EIS in the *Federal Register* on June 21, 1999. This notice also included an invitation to the public to suggest issues to be addressed in the RMP and to provide comments concerning management of the public lands. In addition, approximately 500 public information or scoping packets, providing information about the planning process and inviting comments, were mailed to agencies, organizations, and individuals. News releases were sent to newspapers and radio stations in both Klamath Falls and Lakeview. Paid notices announcing the scoping period and meetings were placed in the legal notices sections of the two newspapers. The "Notice of Intent," news releases, and legal notices identified the beginning of the EIS scoping period and the location, date, and time of the public scoping meetings. The comment period extended from June 21 through July 31, 1999.

The public scoping meetings were held at the interagency office in Lakeview on July 13, 1999, and at the North Lake School on July 14, 1999. Seven people, including private citizens, mining company managers, representatives of two State agencies, and a newspaper reporter attended the meeting in Lakeview. No one attended the meeting in north Lake County. Six written comments or letters were received at the meetings or during the comment period. These comments dealt primarily with designation of special management areas, preserving and protecting the naturalness of the resource area, and maintaining air quality in relation to prescribe burning. These comments were incorporated into the alternatives and the impact analysis of the Lakeview RMP/EIS.

Although technically not part of the public participation process, a subbasin review was conducted prior to completing the "Analysis of the Management Situation." The subbasin review was a multi-agency collaborative effort to "step down" to the local level the findings and assessments of the Interior Columbia Basin Ecosystem Management Project (ICBEMP) (see Appendix A). In other words, did the findings from ICBEMP have any meaning to the Lakeview RMP planning area? The subbasin review group determined that many of them did, and these were incorporated into the issues addressed in this plan.

The "Summary of the Analysis of the Management Situation" was prepared after the subbasin review and mailed to the planning mailing list in July 2000. It contained a description of the preliminary issues, alternatives, and planning criteria, as well as the resource area profile, existing management situation, and management opportunities. The public was requested to comment on the information in the document, particularly the issues, alternatives, and planning criteria. The RMP team received approximately 60 comment letters and emails. The majority of these comments dealt with the management opportunities identified for the Public Sunstone Collecting Area. Other comments dealt with potential management actions under the proposed alternatives. All comments were considered in developing the alternatives for the draft Lakeview RMP/EIS. See Table 5-1 for a summary of key events.

Approximately 1,300 copies of the Draft RMP/EIS were mailed out to interested agencies, Tribes, individuals, and organizations. In addition, the document was made available on the Lakeview District's planning webpage (http://www.or.blm.gov/Lakeview/Planning/planning.htm). Three public meetings were held during the 90-day public comment period on the Draft RMP/EIS. The BLM accepted comments for up to 60 days past the close of the comment period. A total of 320 comment letters were received. Approximately 150 letters were form letters or primarily "votes" for one alternative or another. About 90 of these form letters consisted of emails sent by members of ONDA. About 76 letters contained what were considered substantive comments. In addition, a petition was sent containing almost 500 signatures opposing proposed road and camping area closures in the northern part of Lake County. These are included in Volume IV.

Table 5-1.— *Summary of key public involvement events*

Date	Event
11-06-96	Lake County Commissioners: Briefing that discussed initiating Lakeview RMP.
03-05-97	Lake County Commissioners: Briefing that discussed initiating Lakeview RMP.
09-08-97	Confederated Tribes of Warm Springs Reservation Tribal member: Informed individual that Lakeview RMP would be initiated in near future.
01-22-98	Southeastern Oregon Resource Advisory Council: Briefing on proposed joint interagency planning effort with the U.S. Forest Service (USFS).
01-22-98	Southeastern Oregon Resource Advisory Council: Discussed proposal to prepare joint land use plan with Fremont and Winema National Forests.
01-27-98	Klamath Tribes staff member: Cultural specialist discussed ACEC proposals.
02-09-98	Klamath Tribes staff member: Cultural specialist discussed ACEC proposals.
03-04-98	Lake County Commissioners: Briefing on the proposal to prepare a joint land use plan with Fremont and Winema National Forests.
03-05-98	Tribal representatives of the Klamath Tribes and Burns Paiute Tribe: Cultural specialist discussed cultural ACEC proposals for Tucker Hill, Table Rock, and Long Lake (High Lakes).
04-29-98	Klamath Tribes staff member: Cultural specialist discussed ACEC proposals.
06-08-98	Burns Paiute Tribe staff member: Cultural specialist discussed ACEC proposals.
06-09-98	Klamath Tribes staff member: Cultural specialist discussed ACEC proposals.
06-12-98	Burns Paiute Tribal elders: Botanist and cultural specialist discussed ACEC proposals.
12-16-98	Lake County Commissioners: Briefing on preparation of the RMP/EIS, initiation of scoping period and schedule for 1999.
01-23-99	Fort Bidwell Paiute Tribal Council: Briefing on preparation of the RMP/EIS by managers and cultural specialists.
01-27-99	Southeastern Oregon Resource Advisory Council: Briefing on preparation of the RMP/EIS.
01-27-99	Southeastern Oregon Resource Advisory Council: Discussed status of joint land use planning effort with Fremont and Winema National Forests.
03-09-99	Burns Paiute Tribal Council: Briefing on preparation of the RMP/EIS by area manager.
03-17-99	Lake County Commissioners: Update on RMP/EIS, issues, schedule, and preparing the analysis of the management situation by area manager.
04-14-99	Lakeview Rotary Club: Area manager briefed club members on RMP process.
04-29-99	Southeastern Oregon Resource Advisory Council: Update on RMP/EIS, issues, ACEC's, and preparing the analysis of the management situation.
05-25-99	Klamath Tribes Executive Committee: Area manager discussed RMP/EIS and the subbasin review process.
05-29-99	Southeastern Oregon Resource Advisory Council: Discussed status of the RMP and issues that would be addressed.
06-21-99	Notice of intent published in the *Federal Register*.
06-25-99	Public scoping packets mailed to approximately 500 recipients.
07-13-99	Public scoping meeting in Lakeview.
07-14-99	Public scoping meeting in north Lake County.
07-21-99	Lake County Commissioners: Update on RMP/EIS scoping meetings, issues, and ACEC's.
07-27-99	Southeastern Oregon Resource Advisory Council: Update on RMP/EIS scoping meetings, issues, and ACEC's.
07-31-99	Formal public scoping period closed.

Date	Event
08-05-99	First subbasin review meeting.
08-18-99	Harney County Court: Initial briefing on the RMP/EIS; issues and schedule.
09-08-99	Second subbasin review meeting.
10-15-99	Southeastern Oregon Resource Advisory Council: Update on RMP/EIS, analysis of the management situation preparation, and subbasin review.
11-09-99	Third subbasin review meeting.
12-01-99	Lake County Commissioners: Update on RMP/EIS, analysis of the management situation preparation and subbasin review.
12-17-99	Klamath Tribes Executive Committee (Alan Foreman): Update on RMP/EIS and subbasin review findings to date.
01-04-00	Fourth subbasin review meeting.
01-25-00	Southeastern Oregon Resource Advisory Council: Update on the analysis of the management situation preparation and subbasin review.
02-09-00	Fifth subbasin review meeting.
02-16-00	Lake County Commissioners: Update on the analysis of the management situation preparation and subbasin review.
02-19-00	Fort Bidwell Paiute Tribal Council: Update on the analysis of the management situation preparation and subbasin review.
02-22-00	Klamath Tribes Executive Committee: Update on the analysis of the management situation preparation and subbasin review.
04-05-00	Harney County Court: Update on completion of the analysis of the management situation and subbasin review.
05-17-00	Lake County Commissioners: Update on completion of the analysis of the management situation and beginning RMP/EIS alternatives.
07-19-00	Southeastern Oregon Resource Advisory Council: Field trip to Lost Forest/Sand Dunes/Fossil Lake ACEC.
07-19-00	"Summary of the Analysis of the Management Situation" mailed to the resource area mailing list.
07-20-00	Southeastern Oregon Resource Advisory Council: Presentation of preliminary RMP/EIS alternatives.
08-26-00	Fort Bidwell Tribal Council: Presented completed analysis of the management situation and discussed preliminary alternatives (met with partial council).
09-19-00	Klamath Tribes Executive Committee: Presented completed analysis of the management situation and discussed preliminary alternatives and ACEC's.
09-20-00	Harney County Court: Presented completed analysis of the management situation and discussed preliminary alternatives and ACEC's.
09-20-00	Lake County Commissioners: Presented completed analysis of the management situation and discussed preliminary alternatives and ACEC's.
10-19-00	Southeastern Oregon Resource Advisory Council: Presented completed alternatives.
12-07-00	Southeastern Oregon Resource Advisory Council RMP Subcommittee: Presented alternatives to the subcommittee for their review and comments.
01-22-01	Southeastern Oregon Resource Advisory Council: Discussed subcommittee comments on alternatives with entire committee.
01-24-01	Burns Paiute Tribal Council: Presented alternatives to the Tribal council.
02-06-01	Klamath County Commissioners: Presented summary of the RMP to date.
02-07-01	Lake County Commissioners: Presented summary of actions by alternatives.

Date	Event
02-09-01	Klamath Tribes Executive Committee: Presented summary of actions by alternatives.
02-14-01	Staff of Congressman Walden and Senator Wyden: Presented summary of the RMP to date.
02-21-01	Harney County Court: Presented summary of actions by alternatives.
02-24-01	Fort Bidwell Tribal Council: Presented summary of RMP with emphasis on ACEC's for cultural management and disposal of two cemetery sites to local Tribes.
04-05-01	Southeastern Oregon Resource Advisory Council RMP Subcommittee: Discussed Chapter 4, Environmental Consequences.
04-23-01	Southeastern Oregon Resource Advisory Council: Discussed subcommittee comments on environmental consequences with entire committee.
06-01-01	Lake County Commissioners and Congressman Walden: RMP status update.
07-09-01	Southeastern Oregon Resource Advisory Council: RMP status update and schedule for publication.
07-20-01	Klamath, Lake, Modoc, and Siskiyou Outdoor Recreation Working Group: Summarized RMP and discussed proposals relating to outdoor recreation.
08-13-01	Lake County Chamber of Commerce: Summarized RMP process to date and proposals that could most affect the county economy.
08-13-01	Lake County Chamber Forum: Briefed attendees on status of the RMP.
09-13-01	BLM's Notice of Availability published in the *Federal Register*.
10-24-01	Postcard mailer announcing public review period and public meetings sent to all on the RMP mailing list.
11-02-01	U.S. EPA's Notice of Availability published in the *Federal Register*. Public comment period starts.
11-07-01	Notice of Availability published in local newspapers.
11-08-01	Notice of Availability published in local newspapers.
12-00-01	Klamath Tribes cultural staff: Stated they were preparing comments on the Draft RMP.
12-04-01	Public meeting; Lakeview, Oregon.
12-05-01	Lake County Commissioners: Briefed commissioners on main points of the Draft RMP/EIS.
12-05-01	Lake County Commissioners: Presented summary of the Draft RMP/EIS.
12-06-01	Public meeting; Bend, Oregon.
12-15-01	Postcard mailer rescheduling public meeting in north Lake County sent to those on the RMP mailing list living in north Lake County area.
12-19-01	Harney County Court: Briefed the court member on main points of the Draft RMP/EIS.
12-19-01	Harney County Court: Presented summary of the Draft RMP/EIS.
12-19-01	Klamath Tribes Tribal Council: Presented summary of the Draft RMP/EIS.
12-20-01	MC Beaty Butte Grazing Association members: Discussed Draft RMP.
12-27-01	Klamath Tribes: Discussed Draft RMP/EIS with the Tribal Council.
01-00-02	Lake County Chamber Forum: Briefed attendees on main points of the RMP and encouraged submission of written contracts.
01-03-02	Public meeting; North Lake County School, OR.
01-14-02	Southeastern Oregon Resource Advisory Council RMP Subcommittee: Discussed subcommittee comments on the Draft RMP/EIS.
01-18-02	Postcard mailer notifying public of inability to receive email comments, address change, and restating public comment period ending date, sent to the RMP mailing list.
01-23-02	Confederated Tribes of the Warm Springs: Discussed the Draft RMP/EIS and other issues.
01-24-02	Fort Bidwell Paiute Tribe: Met with Tribal chair and one council member to discuss Draft RMP/EIS.

Date	Event
01-24-02	Fort Bidwell Tribal Council: Presented summary of the Draft RMP/EIS.
02-14-02	Lake County Commissioners: Met with commissioners to discuss their comments on the Draft RMP/EIS.
02-14-02	Lake County Commissioners: Presented a summary of public comments and discussed their comments on the Draft RMP/EIS.
03-20-02	Lake County Commissioners: Briefed the commissioners on changes in proposed road closures and total active livestock preference.
04-15-02	Southeastern Oregon Resource Advisory Council: The council approved the Lakeview RMP subcommittee and will submit them officially.
05-02-02	Christmas Valley Community Meeting: Discussed proposed road closures in north Lake County and management of the Lost Forest/Sand Dunes/Fossil Lake area.
05-07-02	Lake County Commissioners: Discussed revisions in permanent and seasonal road closures and how to implement them on the ground.

Agencies, Local Governments, Tribes, and Organizations that Commented on the Draft RMP/EIS

Federal Agencies
- BLM, Surprise Field Office
- Lakeview Soil and Water Conservation District
- US EPA, Region 10
- Department of Energy, BPA

State Agencies
- Oregon Department of Fish and Wildlife
- Oregon Department of Environmental Quality

Local Government
- Lake County Board of Commissioners
- Lake County Farm Bureau

Native American Tribes
- Burns Paiute
- Klamath Tribes

Organizations
- Winter Wildlands Alliance
- Order of the Antelope Foundation
- American Lands Alliance
- Native Plant Society of Oregon
- Institute for Wildlife Protection
- Sierra Club
- Oregon Natural Desert Association
- Friends of Living Oregon Waters
- Western Watersheds Project
- Oregon Natural Resources Council
- Northwest Environmental Defense Center
- Hunters for Conservation
- The Lands Council
- Public Lands Foundation
- Blue Mountains Biodiversity Project
- League of Wilderness Defenders

Commercial Businesses/Organizations
- Cornerstone Industrial Minerals
- Land Resources Consulting
- Laird Ranch
- Kruse Ranch
- Lake County Chamber of Commerce
- Lakeside Terrace Restaurant, Motel, and RV Park

Chartered Advisory Groups
- Southeast Oregon Resource Advisory Council

A preferred Alternative D was identified in the Draft RMP/EIS. Numerous changes have been made to the preferred alternative in this Proposed RMP/Final EIS in response to public, Tribal, agency, and internal comments. A 30-day protest period is being provided on the Proposed RMP/Final EIS. The final decision will be made by the State Director, after resolution of any protests received. This decision will be published in an approved RMP/record of decision.

Consultation with U.S. Fish and Wildlife Service

In December 2000 the Lakeview Resource Area (LRA) initiated consultation with the U.S. Fish and Wildlife Service (USFWS) regarding potential impacts of actions proposed in the Lakeview RMP to federally listed species or species proposed for listing. This is in conformance with the memorandum of agreement between the BLM and the USFWS dated August 30, 2000. A lead representative for the USFWS was designated and was sent Lakeview RMP material for

review and input to the process. The USFWS sent the LRA a list of species either federally listed or proposed for listing that may occur in the planning area. Species that are known to occur in the planning area are addressed in this RMP/EIS. A biological opinion or concurrence will be requested on the Lakeview Proposed RMP/Final EIS.

Tribal Participation

Under Federal law and regulations, specific contact and consultation with Native American Tribes who might have an interest in the planning area is required. To accomplish this, district staff have met with or phoned Tribal groups regularly, and district management has made repeated updates at Tribal Council meetings. Copies of the resource management plan proposal were sent to each of the Tribal groups for review and comment. Tribal contact is documented further in Table 5-1.

Agencies and Organizations Contacted or Consulted

Oregon Department of Fish and Wildlife
Fort Bidwell Paiute Tribal Council
Burns Paiute Tribal Council
Klamath Tribes Executive Committee
Lake County Commissioners
Harney County Court
Southeastern Oregon Resource Advisory Committee
Wildlife Management Institute
U.S. Fish and Wildlife Service
Oregon Natural Resources Council
State of Idaho Department of Environmental Quality
U.S. Forest Service, Fremont National Forest

Agencies, Organizations, and Individuals on Mailing List

The resource area mailed the public scoping packet to approximately 500 agencies, organizations, and individuals. The "Summary of the Analysis of the Management Situation" was mailed to the same number. The current mailing list includes approximately 1,000 names of agencies, organizations, and individuals to which this draft Lakeview RMP/EIS was sent. The following list is representative of the entities on the mailing list:

Elected Officials

U.S. Senator Ron Wyden
U. S. Senator Gordon Smith
Congressman Greg Walden
Governor John Kitzhaber
State Senator Eugene Timms
Harney County Judge and Court
Klamath County Commissioners
Lake County Commissioners
Humboldt County Board of Commissioners
Modoc County Commissioners

Tribal Groups

Klamath Tribes Tribal Council
Fort Bidwell Paiute Tribal Council
Burns Paiute Tribal Council
Confederated Tribes of the Warm Springs Reservation
Fort McDermitt Tribal Council

Agencies

Bureau of Reclamation
Bonneville Power Administration
Natural Resources Conservation Service
U.S. Fish and Wildlife Service
Oregon Department of Fish and Wildlife
Oregon Department of Forestry
Oregon Department of Water Resources
Oregon Department of Agriculture
Oregon Division of State Lands
U.S. Environmental Protection Agency
U.S. Army Corps of Engineers
State Historic Preservation Officer
U.S. Geological Survey
Oregon Parks and Recreation Department
U.S. Forest Service, Region 6
U.S. Forest Service, Modoc, Fremont, and Winema National Forests
Oregon Department of Transportation
Oregon Department of Environmental Quality
Oregon Natural Heritage Program

Organizations

American Lands Rights Association
American Rivers Council
Desert Research Institute
Ducks Unlimited
Oregon High Desert Museum
The Nature Conservancy
Oregon Cattleman's Association
Oregon Natural Resources Council
Sierra Club

National Wildlife Federation
Wildlife Management Institute
Minerals Exploration Coalition
Society for Range Management
Southern Oregon Timber Industry Association
The Wilderness Society
Western Forest Industries Association
Wild Horse Organized Assistance
Oregon Natural Desert Association
Natural Resources Defense Council
Klamath Soil and Water Conservation District
Beaty Butte Grazing Association
Izaak Walton League
Oregon Trout
Public Lands Council
Native Plant Society of Oregon
Trout Unlimited
Audubon Society

Advisory Groups

Southeast Oregon Resource Advisory Council
Western Utility Group

Others

Livestock grazing permittees
Special recreation permittees
Recreation users
Interested public
Various businesses
Utility companies

Preparers

Table 5-2 lists the primary members of the Lakeview District Interdisciplinary Team who were responsible for the preparation of this document.

Table 5-2.—*Lakeview District Interdisciplinary Team for the Lakeview Proposed RMP/Final EIS*

Name and title	Education	Experience includes:
Albertson, Heidi *Rangeland Management Specialist*	B.S., Animal Science, B.S., Rangeland Management, Oregon State University	Rangeland management positions with USFS and BLM.
Albertson, Kristi *Editorial Assistant*	Journalism in progress, Western Baptist College	Proofread/edited Draft LRMP/EIS, and developed BLM public information literature.
Blythe, Philip *Prescribed Fire Specialist, Fuels*	B.S., Sociology, University of Oregon	Fire management, suppression, prescribed fire, and fuels treatment.
Boothe, Les *Rangeland Management Specialist*	B.S., Range Management, University of Wyoming; M.S., Range Science, Colorado State University	Horse and cattle nutrition studies at Colorado State University. Wrote chapters for EIS on, and developed and implemented reclamation plans for coal mines, and conducted vegetation inventories and monitoring studies before and after mining for Kaiser Steel Corporation. Designed and conducted vegetation monitoring studies, developed and implemented several allotment management plans, including writing and EIS, participated in the design and construction of many range improvements. Assisted in writing several biological assessments and a watershed analysis.
Cannon, William James *Resource Area Archaeologist*	B.A., Anthropology, Portland State University; M.A., Anthropology, Portland State University	Specialization in rock art research, Northern Great Basin archaeology, Native American issues, and experience in Northern Great Basin archaeology and Native American issues.
Carusona, Christopher *District Geologist (former)*	B.A., Geology, Eastern Washington University; B.S., Conservation of Wildland Resources, University of Washington	Geologist and forestry positions with BLM, and physical science position with the USFS.
Florence, Scott *Field Manager (former)*	B.S., Range Science, Washington State University	BLM range conservationist, wildlife biologist, supervisory natural resource management specialist and field (area) manager.
Forbes, Todd *Wildlife Biologist*	B.S., Wildlife Science, Oregon State University	Positions as wildlife biological technician and wildlife biologist with the USFS and with the BLM resource area.

Name and title	Education	Experience includes:
Frewing-Runyon, Leslie *Western Oregon Planner*	B.A., Economics, Willamette University	BLM economist and interdisciplinary team membership on numerous EIS's, including several interagency projects throughout Oregon and Washington.
Hollenkamp, Dan *Outdoor Recreation Planner (former)*	B.S., Environmental Studies, M.A., Environmental Studies, Bemidji State University	Planning and management of developed and dispersed recreation, wilderness management, WSA's, ACEC's, OHV's, visual resource management, FERC relicensing, lands special uses, recreation permitting, NEPA compliance, trail maintenance and construction, and cave management.
Hopper, Robert *Supervisory Rangeland Management Specialist*	B.S., Range Management/Wildlife Option, Washington State University	Planning, plan amendments, allotment management plans, coordinated resource management plans, soils classification, ecological site inventory, grazing management, grazing, system development/implementation, and vegetation manipulation and public land restoration. District and resource area range program leader.
Housley, Lucile *Botanist*	B.A., Plant Taxonomy and Ecology, Pomona College; M.S., Botany, Claremont Graduate School	Field botanist; botany, ecology, and ethnobotany; Executive Director Malheur Field Sation, Harney County, Oregon.
Johnson, Bill *Silviculture Forester*	B.S., Forest Management, University of Minnesota	Forest development and timber management forester in western Oregon, district forest lead in eastern Oregon, and silviculture forester in Klamath Falls, Oregon.
Keil, Martina *Rangeland Management Specialist (former)*	B.A., Public Relations, Susquehanna University; M.S., Rangeland Ecosystem Science, Colorado State University	Natural resource/rangeland management and research positions with NPS, USGS, and county agencies.
Kestner, Ken *Supervisory Natural Resource Specialist*	B.S., Fish, Wildlife, and Botany, Graduate Studies, Henderson State University	USFS district fish and wildlife biologist; BLM resource area supervisor of natural resource specialists.
Lindaman, Trish *Recreation Technician*	B.S., Recreation Education, University of Iowa	Management of developed and dispersed recreation, visual resource management, WSR's, WSA's, wilderness, ACEC's, and caves (USFS, NPS, and BLM).

Name and title	Education	Experience includes:
Machado, Barbara *Hydrologist*	B.S., Geology, California State University-Chico	Planning and management of soil and water resources. Includes positions with the USGS, Water Resources Division, USFS, and BLM.
McConnell, Erin *Noxious Weed Specialist*	B.S., Forestry/Recreation Management Emphasis, Oregon State University; M.S., Weed Science, *in progress*, Utah State University	Noxious weed specialist BLM, technical positions in range, recreation, and fire, biological control of weeds research, plant propagator with USDA/ARS, county park planner, environmental education.
Munhall, Alan *Fisheries Biologist*	B.S., Wildlife Management, B.S., Range Management, Oregon State University	Planning and management of wildlife, fisheries, and range programs—especially related to riparian, aquatic, and fisheries resources.
Platt, James *Civil Engineer*	B.S., Civil Engineering, University of California, Berkeley	Facilities, roads, and transportation management.
Romasko, Theresa *Range Management Specialist*	B.S., Forestry/Range Management, University of Montana	Range and forestry positions with USFS in Montana and rangeland management positions with the BLM in Wyoming, Montana, and Oregon.
Stewardson, Dan *Realty Specialist*	B.S., Wildlife Management, Humboldt State University	Range conservationist and realty specialist with BLM in Colorado, Montana, Nevada, and Oregon.
Stewart, Leah *Geographic Information System Coordinator*	Business Management (2 years), Oregon Institute of Technology	Timber resource management land management plan and geographic information system positions; private industry geographic information system manager.
Stofleth, Vern *Wildlife Biologist*	B.S., Wildlife Management, Oregon State University	Seasonal fishery biologist for the ODFW (4 seasons). BLM wildlife biologist for Lakeview Resource Area in Oregon Valley Resource Area in Montana. Served as resource management plan wildlife lead for both documents and numerous EIS's.
Sykes, Dwayne *Interdisciplinary Planner (former)*	B.S., Wildlife Science, New Mexico State University	Range management, wildlife management, wilderness, recreation management, and planning and environmental coordination.

Name and title	Education	Experience includes:
Taylor, Maple A. *Writer/Editor*	B.S., Wildlife Science, New Mexico State University; M.S., Range and Wildlife Management, Texas Tech University	State and Federal range and wildlife research, and technical and popular writing/editing for publication.
Thompson, Jim *Geographic Information System Specialist*	B.S., Environmental Science, Western Washington University; Geographic Information Systems Certificate, Green River Community College	Geographic information systems support for RMP; prepare maps; create, maintain, and edit appropriate geographic information systems databases.
Tillman, Kenneth G. *District HAZMAT Coordinator/Natural Resource Specialist*	B.S., Agriculture, Chico State University	Ranch foreman; BLM range conservationist, team leader ecological site inventory/ soil/vegetative inventory crew (Oregon), hazardous materials/surface protection specialist.
Wagner, Joe *Fire Ecologist*	B.S., Forestry/Range Management, University of Montana	BLM range conservationist in Ely, Nevada, and Alturas, California; BLM fire management officer in Phoenix, Arizona.
Whitman, Paul *Planning and Environmental Coordinator*	B.A., Biological Science, Illinois Wesleyan University; M.S., Zoology, Southern Illinois University-Carbondale	Ecologist and wildlife biologist conducting environmental impact and geographic information systems analyses for the U.S. Army Corps of Engineers. Provide land use planning, environmental impact analysis, and geographic information systems support for the BLM.

Chapter 6 — Glossary, References, and Index

Glossary

Active preference ~ That portion of the total grazing preference for which grazing use may be authorized.

Activity planning ~ Site-specific planning which precedes actual development. This is the most detailed level of BLM planning.

Actual use ~ The amount of animal unit months (AUM's) consumed by livestock based on the numbers of livestock and grazing dates submitted by the livestock operator and confirmed by periodic field checks by the BLM.

Adit ~ A horizontal, or nearly horizontal, passage from the surface by which a mine is worked or dewatered.

Adjustments ~ Changes in animal numbers, periods of use, kinds or class of animals or management practices as warranted by specific conditions.

Allotment ~ An area of land where one or more livestock operators graze their livestock. Allotments generally consist of BLM lands but may also include other federally managed, state owned, and private lands. An allotment may include one or more separate pastures. Livestock numbers and periods of use are specified for each allotment.

Allotment categorization ~ Grazing allotments and rangeland areas used for livestock grazing are assigned to an allotment category during resource management planning. Allotment categorization is used to establish priorities for distributing available funds and personnel during plan implementation to achieve cost-effective improvement of rangeland resources. Categorization is also used to organize allotments into similar groups for purposes of developing multiple use prescriptions, analyzing site-specific and cumulative impacts, and determining trade-offs.

Allotment management plan ~ A written program of livestock grazing management, including supportive measures if required, designed to attain specific management goals in a grazing allotment.

Allowable sale quantity ~ Formerly "allowable cut"; the volume that a sustained yield unit can produce annually under an approved land use plan.

Amendment ~ The process for considering or making changes in the terms, conditions, and decisions of approved RMP's or management framework plans using the prescribed provisions for resource management planning appropriate to the proposed action or circumstances. Usually only one or two issues are considered that involve only a portion of the planning area.

Analysis of the management situation ~ Step 4 of the BLM's land use planning process; it is a comprehensive documentation of the present conditions of the resources, current management guidance, and opportunities for change.

Animal unit month (AUM) ~ A standardized measurement of the amount of forage necessary for the sustenance of one cow or cow/calf pair for 1 month (approximately 800 pounds of forage). Equivalents are: one bull, steer, heifer, horse, burro, mule; or five sheep or goats over the age of 6 months.

Appropriate management level ~ The optimum number of wild horses and burros, expressed as a range from low end to top end, that contributes to a thriving natural ecological balance on public lands and protects the range from deterioration.

Appropriate management response ~ Specific actions taken in response to a wildland fire to implement protection and fire use objectives.

Aquatic ~ Living or growing in or on the water.

Archaeological quarry sites ~ Places where minerals occur which were a source of raw material for prehistoric/historic industries.

Area of critical environmental concern (ACEC) ~ Type of special land use designation specified within the "Federal Land Policy and Management Act" (FLPMA). Used to protect areas with important resource values in need of special management.

Assessment ~ The act of evaluating and interpreting data and information for a defined purpose.

Avoidance areas ~ Areas with sensitive resource values where rights-of-way and Section 302 permits, leases, and easements would be strongly discouraged. Authorizations made in avoidance areas would have to

be compatible with the purpose for which the area was designated and not be otherwise feasible on lands outside the avoidance area.

Back country byways ~ Vehicle routes that traverse scenic corridors utilizing secondary or back country road systems. National back country byways are designated by the type of road and vehicle needed to travel the byway.

Base metal ~ A metal inferior in value to platinum, gold, and silver, generally applied to commercial metals such as copper, lead and zinc.

Beneficial uses ~ The primary beneficial uses of surface water are domestic water supply, salmonid and resident fish habitat, irrigation, livestock watering, wildlife and hunting, fishing, water contact recreation, and aesthetic quality.

Best forest management practices ~ General forest management practices which are consistent for all timber harvest and treatment activities.

Best management practices (BMP's) ~ A set of practices which, when applied during implementation of management actions, ensures that negative impacts to natural resources are minimized. BMP's are applied based on site-specific evaluations and represent the most effective and practical means to achieve management goals for a given site.

Biomass ~ Vegetative material leftover from stand treatments. This term usually refers to such material that can be gathered and transported to cogeneration plants, and there utilized for production of electricity.

Board feet ~ A unit of solid wood one foot square and one inch thick.

Broad scale ~ A large, regional area, such as a river basin; typically a multi-state area.

Browse ~ To browse (verb) is to graze a plant; also, browse (noun) is the tender shoots, twigs and leaves of trees and shrubs often used as food by livestock and wildlife.

Buffer strip ~ A protective area adjacent to an area of concern requiring special attention or protection. In contrast to riparian zones which are ecological units, buffer strips can be designed to meet varying management concerns.

Bunchgrass ~ Individual grasses that have the characteristic growth habit of forming a "bunch" as opposed to having stolens or rhizomes or single annual habit.

Bureau of Land Management (BLM) ~ Government agency with the mandate to manage Federal lands under its jurisdiction for multiple uses.

Bureau sensitive species ~ Species eligible as federally listed or candidate, state listed, or state candidate (plant) status, or on List 1 in the Oregon Natural Heritage Database, or otherwise approved for this category by the State Director.

Candidate species ~ Any species included in the *Federal Register* notice of review that are being considered for listing as threatened or endangered by the U.S. Fish and Wildlife Service.

Carrying capacity ~ The maximum stocking rate possible without damaging vegetation or related resources.

C Category ~ Custodial management (see *Selective management categories*).

CCC ~ Consultation, cooperation and coordination: an interactive process for seeking advice, agreement, or interchange of opinions on issues, plans, or management actions from other agencies and affected permittee(s) or lessee(s), landowners involved, the district grazing advisory boards where established, any state having lands within the area to be covered by an allotment management plan and other affected interests.

Channel ~ An open conduit either naturally or artificially created which periodically or continuously contains moving water or forms a connecting link between two bodies of water.

Channel stability ~ A relative term describing erosion or movement of the channel walls or bottom due to waterflow.

Cherrystem road ~ A road that extends into a wilderness study area (WSA) but is excluded from the WSA by mens of drawing the WSA boundary around the road.

Cinnabar ~ The mineral mercuric sulfide; an ore of mercury.

Class I cultural inventory ~ An inventory of the existing literature and a profile of the current data base for cultural resources; frequently utilized to guide field

inventories.

Class II cultural inventory ~ A sample-oriented field inventory which is representative of the range of cultural resources within a finite study area.

Class III cultural inventory ~ An intensive field inventory designed to locate and record, from surface and exposed profile, all cultural resources within a specified area.

Climax ~ The culminating stage in plant succession for a given site where vegetation has reached a highly stable condition.

Closed ~ Generally denotes that an area is not available for a particular use or uses; refer to specific definitions found in law, regulations, or policy guidance for application to individual programs. For example, 43 CFR 8340.0-5 sets forth the specific meaning of closed as it relates to OHV use, and 43 CFR 8364 defines closed as it relates to closure and restriction orders.

Closed area designation ~ An area where off-highway vehicle (OHV) use is prohibited. Use of OHV's in closed areas may be allowed for certain reasons; however, such use shall be made only with the approval of the authorized officer.

Commercial (productive) forest land ~ Forest land which is producing, or has a site capable of producing, at least 20 cubic feet/acre/year of a commercial tree species.

Commercial tree species ~ Tree species whose yields are reflected in the allowable cut: pines, firs, spruce, Douglas-fir, and larch.

Competitive forage ~ Those forage species utilized by two or more animal species.

Conditional suppression ~ Suppression actions based on predetermined, stringent conditions, i.e., fire location, weather condition, forces available, and fire size. Monitoring must be done throughout the fire's duration and direct suppression will be taken if any one condition is exceeded.

Conformance ~ Means that a proposed action shall be specifically provided for in the land use plan or, if not specifically mentioned, shall be clearly consistent with the goals, objectives, or standards of the approved land use plan.

Conservation agreement ~ A formal signed agreement between the USFWS or National Marine Fisheries Service and other parties that implements specific actions, activities, or programs designed to conserve the species by reducing threats to the species, stabilizing the species' populations, and maintaining its ecosystem. The primary purpose of the agreement is to conserve this species through interim conservation measures under the 1973 "Endangered Species Act", as amended. These agreements can be developed at a State, regional, or national level and generally include multiple agencies, as well as Tribes.

Conservation strategy ~ A strategy outlining current activities or threats that are contributing to the decline of a species, along with the actions or strategies needed to reverse or eliminate such a decline or threats. Conservation strategies are generally developed for species of plants and animals that are designated as BLM sensitive species or that have been determined by the USFWS or National Marine Fisheries Service to be Federal candidates under the "Endangered Species Act."

Consistency ~ Means that the proposed land use plan does not conflict with officially approved plans, programs, and policies of Tribes, other Federal agencies, and state, and local governments to the extent practical within Federal law, regulation, and policy.

Critical growth period ~ A specified period of time in which plants need to develop sufficient carbohydrate reserves and produce seed (approximately the months of May and June for bluebunch wheatgrass).

Critical habitat ~ The area of land, water, and airspace required for the normal needs and survival of species.

Cultural plants ~ Plants traditionally used by Native Americans for subsistence, economic, or ceremonial purposes.

Cultural resources ~ Fragile and nonrenewable elements of the physical and human environment including archaeological remains (evidence of prehistoric or historic human activities) and sociocultural values traditionally held by ethnic groups (sacred places, traditionally utilized raw materials, etc.).

Cultural site ~ Any location that includes prehistoric and/or historic evidence of human use, or that has important sociocultural value.

Cultural values ~ These include archeological sites, historic sites, structures or features, and Native Ameri-

can traditional cultural properties.

Dacite ~ A fine-grained extrusive rock with the same composition as its intrusive equivalent, granodiorite.

Deferment ~ The withholding of livestock grazing until a certain stage of plant growth is reached.

Deferred grazing ~ Discontinuance of livestock grazing on an area for specified period of time during the growing season to promote plant reproduction, establishment of new plants, or restoration of the vigor by old plants.

Deferred rotation grazing ~ Discontinuance of livestock grazing on various parts of a range in succeeding years, allowing each part to rest successively during the growing season. This permits seed production, establishment of new seedlings, or restoration of plant vigor. Two, but more commonly three or more, separate pastures are required.

Diatomite ~ A sedimentary, siliceous rock made from an accumulation of microscopic siliceous skeletons of aquatic plants (diatoms) mixed with shell; also known as diatomaceous earth. The material can be used as a filter, absorbent, abrasive, filler, and insulation.

Director (BLM Director) ~ The national director of the BLM.

Discretionary closures ~ Areas where the BLM has determined that energy and/or mineral leasing, entry or disposal, even with the most restrictive stipulations or conditions would not be in the public interest.

Dispersed/extensive recreation ~ Recreation activities of an unstructured type which are not confined to specific locations such as recreation sites. Example of these activities may be hunting, fishing, off-road vehicle use, hiking, and sightseeing. Minimal management actions related to the Bureau's stewardship responsibilities are considered adequate in the areas where extensive recreation takes place and explicit recreation management is not required.

Disposal ~ Any BLM authority which transfers title out of public ownership.

Distribution ~ The uniformity of livestock grazing over a range area. Distribution is affected by the availability of water, topography, and type and palatability of vegetation as well as other factors.

Drainage (internal soil) ~ The property of a soil that permits the downward flow of excess water. Drainage is reflected in the frequeny and duration of soil saturation.

Ecological site inventory ~ The basic inventory of present and potential vegetation on BLM rangelands. Ecological sites are differentiated on the basis of significant differences in kind, proportion, or amount of plant species present in the plant community. Ecological site inventory utilizes soils, the existing plant community, and ecological site data to determine the appropriate ecological site for a specific area of rangeland and to assign the appropriate ecological status.

Ecological status ~ Ecological status is the present state of vegetation of a range site in relation to the potential natural community for that site. It is an expression of the relative degree to which the kinds, proportions and amounts of plants in a plant community resemble that of the potential natural plant community for the site. Four classes are used to express the degree to which the production or composition of the present plant community reflects that of the potential natural community (climax). Departures from climax can enhance or depreciate the value of the resultant plant community for various uses.

Ecological status (seral stage) ~ Percentage of present plant community that is climax for the range site:

Potential natural community	76–100
Late seral	51–75
Mid seral	26–50
Early seral	0–25

Ecosystem ~ A complete, interacting system of living organisms and the land and water that make up their environment; the home places of all living things, including humans.

Ecosystem management ~ The use of a "whole-landscape" approach to achieve multiple use management of public lands by blending the needs of people and environmental values in such a way that these lands represent diverse, healthy, productive, and sustainable ecosystems.

Endangered species ~ A plant or animal species whose prospects for survival and reproduction are in immediate jeopardy, as designated by the Secretary of the Interior, and as is further defined by the "Endangered Species Act."

Environmental assessment ~ One type of document prepared by Federal agencies in compliance with the "National Environmental Policy Act" (NEPA) which portrays the environmental consequences of proposed Federal actions which are not expected to have significant impacts on the human environment.

Environmental impact statement (EIS) ~ One type of document prepared by Federal agencies in compliance with NEPA which portrays the environmental consequences of proposed major Federal actions which are expected to have significant impacts on the human environment.

Ephemeral stream ~ A stream that flows only after rains or during snowmelt.

Erosion ~ The wearing away of the land surface by running water, wind, ice, or other geological agents.

Evaluation (plan evaluation) ~ The process of reviewing the land use plan and the periodic plan monitoring reports to determine whether the land use plan decisions and NEPA analysis are still valid and whether the plan is being implemented.

Evaporite ~ A sedimentary rock composed primarily of minerals produced from a saline solution as a result of extensive or total evaporation of seawater or inland lakes.

Exchange of use ~ Grazing authorization issued to a permittee free of charge for unfenced, intermingled private lands within an allotment.

Exclosure (livestock) ~ An area closed to livestock grazing and intended to remain closed to grazing in the long term. In some cases livestock may be authorized to trail through an exclosure, especially if there is no alternative route to move cattle from one place to another.

Exclusion area (rights-of-way) ~ Areas with sensitive resource values where rights-of-way and 302 permits, leases, and easements would not be authorized.

Existing management situation ~ A component of the analysis of the management situation; a description of the existing management direction governing resource management programs of a planning area.

Extensive recreation management area ~ Areas where significant recreation opportunities and problems are limited and explicit recreation management is not required. Minimal management actions related to the Bureau's stewardship responsibilities are adequate in these areas.

Extirpated ~ Population destroyed in that geographical location.

Federal candidate species ~ See *Special status species*.

Federal Land Policy and Management Act of 1976 (FLPMA) ~ Public Law 94-579. October 21, 1976, often referred to as the BLM' s "Organic Act," which provides the majority of the BLM's legislated authority, direction, policy, and basic management guidance.

Fine scale ~ A single landscape, such as a watershed or subwatershed.

Fire management plan ~ A strategic plan that defines a program to manage wildland and prescribed fires and documents the fire management program in the approved land use plan; the plan is supplemented by operational procedures such as preparedness plans, preplanned dispatch plans, prescribed fire plans, and prevention plans.

Fire preparedness ~ Activities that lead to a safe, efficient, and cost-effective fire management program in support of land and resource management objectives through appropriate planning and coordination.

Floodplain ~ The relatively flat area or lowlands adjoining a body of standing or flowing water which has been or might be covered by floodwater.

Forb ~ Annual or perennial plant (not a grass or shrub).

Forest land ~ Land that is now, or has the potential of being, at least 10 percent stocked by forest trees (based on crown closure) or 16.7 percent stocked (based on tree stocking).

Fossil ~ Mineralized or petrified form from a past geologic age, especially from previously living things.

Geographic information system ~ A computer system capable of storing, analyzing, and displaying data and describing places on the Earth's surface.

Geothermal energy ~ The use of steam and hot water generated by heat from the Earth to do work.

Goal ~ A broad statement of a desired outcome. Goals are usually not quantifiable and may not have estab-

lished time frames for achievement.

Grazing system ~ The manipulation of livestock grazing to accomplish a desired result.

Greenstripping ~ The practice of establishing or using patterns of fire resilient vegetation and/or material to reduce wildland fire occurrence and size. This practice also breaks up monocultures such as cheatgrass areas, and creates some biodiversity.

Ground cover ~ Vegetation, mulch, litter, rock, etc.

Groundwater ~ Water contained in pore spaces of consolidated and unconsolidated subsurface material.

Guidelines ~ Actions or management practices that may be used to achieve desired outcomes, sometimes expressed as best management practices. Guidelines may be identified during the land use planning process, but they are not considered a land use plan decision unless the plan specifies that they are mandatory. Guidelines for grazing administration must conform to 43 CFR 4180.2.

Habitat ~ A specific set of physical conditions that surround a species, group of species, or a large community. In wildlife management, the major constituents of habitat are considered to be food, water, cover, and living space.

Herd area ~ The geographic area identified as having been used by wild horse or burro herds as their habitat in 1971.

Herd management area ~ Public land under the jurisdiction of the BLM that has been designated for special management emphasizing the maintenance of an established wild horse herd.

Herd management area plan ~ An action plan that prescribes measures for the protection, management, and control of wild horses and burros and their habitat on one or more herd management areas, in conformance with decisions made in approved management framework or resource management plans.

Historic ~ Refers to period wherein nonnative cultural activities took place, based primarily upon European roots, having no origin in the traditional Native American culture(s).

Hydrothermal waters ~ Hot waters deep within the Earth's crust, that quickly ascends to the Earth's surface, loosing little heat at hot temperatures (hot springs, and geysers are examples).

I Category ~ Improve management (see *Selective management categories*).

IMP ~ (Wilderness) interim management policy for lands under wilderness review.

Implementation decisions ~ Decisions that take action to implement land use plan decisions. They are generally appealable to IBLA under 43 CFR 4.40.

Implementation plan ~ A site-specific plan written to implement decisions made in a land use plan. An implementation plans usually selects and applies best management practices to meet land use plan objectives. Implementation plans are synonymous with "activity" plans. Examples of implementation plans include interdisciplinary management plans, habitat management plans, and allotment management plans.

Indian Tribe (or Tribe) ~ Any Indian group in the conterminous United States that the Secretary of the Interior recognizes as possessing Tribal status (listed periodically in the *Federal Register*).

Interior Columbia River Basin Ecosystem Management Project (ICBEMP) ~ An ongoing project examining the effects (on a large, regional scale) of past and present land use activities on the Interior Columbia River Basin ecosystem and a small part of the Great Basin ecosystem.

Intermittent stream ~ A stream which flows most of the time but occasionally is dry or reduced to pool stage.

Initial (fire) attack ~ An aggressive fire suppression action consistent with firefighter and public safety and values to be protected.

Instant study area ~ A BLM primitive or natural area designated before November 1, 1975, subject to wilderness review under section 603(a) of FLPMA.

Interdisciplinary ~ Involving more than one discipline or resource management program; promotes resource management at a plant community, landscape, or ecosystem level.

Intermediate ~ Said of an igneous rock that is transitional between basic and silicic; an intermediate rock generally has a silica (silicon dioxide) content of 54 to 65 percent.

Invasive juniper ~ Juniper stands less than 130 years old, which have expanded to other vegetative sites due mainly to human-induced exclusion of natural fire.

Issue ~ A subject or question of widespread public discussion or interest regarding resource area management, identified through public participation.

Known geothermal resource area ~ A specific area identified where geothermal resources are known to occur.

Lacustrine ~ Wetland and deep water habitats exceeding 2 meters at low water and lacking trees, shrubs, and persistent emergent vegetation (see *Palustrine*).

Land classification ~ A process required by law for determining the suitability of public lands for certain types of disposal or lease under the public land laws or for retention under multiple use management.

Land treatment ~ All methods of range improvement and soil stabilization such as reseeding, brush control (burning and mechanical), pitting, furrowing, water spreading, etc.

Land use allocation ~ The identification in a land use plan of the activities and foreseeable development that are allowed, restricted, or excluded for all or part of the planning area, based on desired future conditions.

Land use authorizations ~ Those realty-related authorizations such as leases, permits, and easements authorized under section 302(b) of FLPMA and the "Recreation and Public Purpose Act."

Land use plan ~ A set of decisions that establish management direction for land within an administrative area, as prescribed under the planning provisions of FLPMA; an assimilation of land use plan-level decisions developed through the planning process outlined in 43 CFR 1600, regardless of the scale at which the decisions were developed.

Land use plan decision ~ Establishes desired outcomes and actions needed to achieve them. Decisions are reached using the planning process in 43 CFR 1600. When they are presented to the public as proposed decisions, they can be protested to the BLM Director. They are not appealable to IBLA.

Leasable minerals ~ Minerals that may be leased to private interests by the Federal government; includes oil, gas, geothermal, coal, and sodium compounds.

Limited area designation ~ An area restricted at certain times, in certain areas, and/or to certain vehicular use. These restrictions may be of any type, but can generally be accommodated within the following categories: number of vehicles, types of vehicles, time or season of vehicle use, permitted for licensed use only, use on existing roads and trails, use on designated roads and trails, and other restrictions.

Livestock forage condition ~ Based on percent of desirable forage in the composition for livestock and the existing erosion condition of a site. Condition of the range must include consideration of vegetation quality and quantity and soil erosion characteristics.

Livestock operation ~ The management of a ranch or farm so that a significant portion of the income is derived from the continuing production of livestock.

Locatable minerals ~ Minerals subject to exploration, development, and disposal by staking mining claims as authorized by the "Mining Law of 1872," as amended. This includes deposits of gold, silver, and other uncommon minerals not subject to lease or sale.

Management concern ~ Procedures or land-use allocations that do not constitute issues but, through the resource management plan/EIS preparation process, are recognized as needing to be modified or needing decisions made regarding management direction.

Management framework plan ~ Older generation of land use plans developed by the BLM; this generation of planning has been replaced by the RMP.

Management opportunities ~ A component of the analysis of the management situation; actions or management directions that could be taken to resolve issues or management concerns.

Marlaceous ~ Containing calcareous clay or mixture of clay and particles of calcite or dolomite, usually contains fragments of shells.

M Category ~ Maintain management (see *Selective management categories*).

Microbiotic crusts ~ Lichens, mosses, green algae, fungi, cyanobacteria, and bacteria growing on or just below the surface of soils.

Mineral entry ~ The location of mining claims by an individual to protect his right to a valuable mineral.

Mineral estate ~ Refers to the ownership of minerals

at or beneath the surface of the land.

Mitigation measures ~ Methods or procedures committed to by BLM for the purpose of reducing or lessening the impacts of an action.

Monitoring and evaluation ~ The collection and analysis of data to evaluate the progress and effectiveness of on-the-ground actions in meeting resource management goals and objectives.

Motorized equipment ~ Any machine activated by nonliving power source except small battery-powered, hand-carried devices such as flashlights, shavers, Geiger counters, and cameras.

Motor vehicle ~ Any vehicle which is self-propelled or any vehicle which is propelled by electric power obtained from batteries.

Multiple use ~ The management of the public lands and their various resource values so that they are utilized in the combination that will best meet the present and future needs of the American people; making the most judicious use of the land for some or all of these resources or related services over areas large enough to provide sufficient latitude for periodic adjustments in use to conform to changing needs and conditions; the use of some land for less than all of the resources; a combination of balanced and diverse resource uses that takes into account the long-term needs of future generations for renewable and nonrenewable resources, including, but not limited to, recreation, range, timber, minerals, watershed, wildlife and fish, and natural scenic, scientific and historical values; and harmonious and coordinated management of the various resources without permanent impairment of the productivity of the land and the quality of the environment with consideration being given to the relative values of the resources and not necessarily to the combination of uses that will give the greatest economic return or the greatest unit output.

"National Environmental Policy Act" (NEPA) ~ 1969 law requiring all Federal agencies to evaluate the impacts of proposed major Federal actions with respect to their significance on the human environment.

National Register of Historic Places ~ A register of districts, sites, buildings, structures, and objects, significant in American history, architecture, archaeology and culture, established by the "Historic Preservation Act" of 1966 and maintained by the Secretary of the Interior.

National register potential ~ Status of a cultural resource which is deemed qualified for the National Register of Historic Places, prior to formal documentation and consultation; managed as if it were actually listed.

National wildlife refuge ~ An area administered by the U.S. Fish and Wildlife Service (USFWS) for the purpose of managing certain fish or wildlife species.

Natural heritage (or plant community) cell ~ A unique ecosystem type used by the Natural Heritage Plan to inventory, classify, and evaluate natural areas. Cells must contain one or more ecosystem elements such as plant communities or ecosystems (terrestrial, aquatic, or wetland), special species (species of conservation interest because of their rarity, risk of extirpation or extinction, or under representation in the statewide natural area system), or unique geologic features (landforms, outcrops, and other geologic units) (Oregon Natural Heritage Advisory Council 1998).

Naturalness ~ Refers to an area which "generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable" (from section 2[c], "Wilderness Act").

Nephelometer ~ An instrument that determines light scattering, usually measured hour to hour and directed into a computer analysis system. Light scattering is useful as it roughly correlates to the amount of fine particulate matter in the air.

Noncommercial forestland ~ Forestland which is not capable of producing 20 cubic feet per acre of wood per year of commercial tree species.

Noncommercial tree species ~ Species whose yields are not reflected in the allowable cut, regardless of their salability. Includes all hardwoods, juniper and mountain mahogany.

Nondiscretionary closures ~ Areas specifically closed to energy and/or mineral leasing, entry or disposal by law, regulation, Secretarial decision, or Executive order.

Nonoperable ~ Forestlands unsuitable for any type of timber harvest activity due to their (1) physical features; for example, extremely rocky, boulder fields, rim rocks, rock outcrops and unsafe for logging operations and/or (2) forestlands on which logging activity will result in the loss of the site's potential for producing commercial tree species; for example loss of soil through erosion, slope failure and/or the inability to

reforest the site within acceptable time limits (usually 5 to 15 years) even with special reforestation techniques.

Nonproblem site ~ A subclass of commercial forestland which requires no special harvesting, reforestation or other restrictive measures in order to be managed on a sustained yield basis.

Nonrestricted forestland ~ Nonproblem sites in the timber base on which no special techniques are required for harvest, reforestation, and other management practices.

Nonuse ~ Available grazing capacity in AUM's which is not permitted during a given time period.

Noxious weed ~ According to the "Federal Noxious Weed Act" (Public Law 93-629), a weed that causes disease or has other adverse effects on man or his environment and, therefore, is detrimental to the agriculture and commerce of the United States and to the public health.

Objective ~ A description of a desired condition for a resource. Objectives can be quantified and measured and, where possible, have established time frames for achievement.

Off-highway vehicle ~ Any motorized vehicle capable of, or designed for, travel on or immediately over land, water or other natural terrain, excluding (1) any nonamphibious registered motorboat, (2) emergency vehicles, and (3) vehicles in official use.

Old growth ~ Forested stands meeting, or with the capability to meet, the following criteria:

- Be at least 40 contiguous acres.
- Contain mature trees with at least 15 trees per acre greater than 20 inches in diameter.
- Having a multilayered canopy with two or more age classes.
- Contain snags and down woody material.
- Contain understory plants.

Open ~ Generally denotes that an area is available for a particular use or uses. Refer to specific program definitions found in law, regulations, or policy guidance for application to individual programs. For example, 43 CFR 8340.0-5 defines the specific meaning of open as it relates to OHV use.

Open area designation ~ Any area where all types of vehicle use are permitted at all times, anywhere in the area subject to the operating regulations and vehicle standards set forth in 43 CFR 8341 and 8342.

Paleontology ~ A science dealing with the life forms of past geological periods as known from fossil remains.

Palustrine ~ All nontidal wetlands dominated by trees, shrubs, and persistent emergent vegetation and water depth in the deepest part of the basin less than 2 meters at low water.

Percentage of use ~ Grazing use of current vegetation growth, usually expressed as a percentage of volume removed.

Perennial (permanent) stream ~ A stream that ordinarily has running water on a year-round basis.

Period of use ~ The time of livestock grazing on a range area based on type of vegetation or stage of vegetative growth.

Perlite ~ A siliceous volcanic glass having numerous concentric spherical cracks that give rise to an onion-skin structure. The material can be heated and expanded to form a solid, foam-like material used in ceiling tiles, potting soil, and other applications.

Permit/leases (grazing) ~ Under section 3 of the "Taylor Grazing Act," a permit is a document authorizing use of public lands within grazing districts for the purpose of grazing livestock. Under section 15 of the "Taylor Grazing Act," a lease is a document authorizing livestock grazing use of public lands outside grazing districts.

Permitted use ~ The forage (expressed in animal unit months) allocated by, or under the guidance of, an applicable land use plan for livestock grazing in an allotment under a permit or lease.

Permit value ~ The market value of a BLM grazing permit which is often included in the overall market value of the ranch.

Petroglyph ~ A figure, design, or indentation carved, abraded, or pecked into a rock.

Pictograph ~ A figure or design painted onto a rock.

Plan maintenance ~ 43 CFR Part 1610.5-4 requires that resource management plans be maintained, as necessary, to reflect minor changes in data. In addition, 50 CFR Part 1502.9(c) requires Federal agencies to consider new information that becomes available after a NEPA analysis has been completed to determine if it is relevant to

the ongoing action and/or would substantially alter the impact analysis or lead to the need to alter an existing decision. This is accomplished through the plan review and maintenance process. Examples of new information include new research or monitoring studies that are conducted during the life of the plan.

Maintenance actions are limited to refining or documenting a previously approved decision from the plan. Maintenance actions can not expand the scope of the resource uses or restrictions, or alter the terms, conditions, or approved decisions in the plan. Maintenance actions do not require public or agency involvement, but must be documented. In contrast, new information that is significant enough to lead to revising an existing decision would require the preparation of a publicly-reviewed plan revision or amendment and associated NEPA document. BLM Districts in Oregon and Washington document plan maintenance actions, including recent monitoring results, in periodic Planning Update publications which are mailed to all interested parties.

Planning criteria ~ The standards, rules, and other factors developed by managers and interdisciplinary teams for their use in forming judgments about decision making, analysis, and data collection during planning. Planning criteria streamline and simplify the resource management planning actions.

Playa lake ~ A shallow lake that is seasonally dry; soils on the lake bottom are usually quite alkaline.

PM2.5 ~ Particulate matter with a diameter of 2.5 microns or less.

PM10 ~ Particulate matter with a diameter of 10 microns or less.

Potential natural community ~ The biotic community (living organisms) that would become established if all successional sequences were completed without interferences by man under the present environmental conditions.

Precious metal ~ A metal superior in value to commercial metals such as copper, lead, and zinc; generally applied to the precious metals such as gold, platinum, and silver.

Preferred alternative or plan ~ The alternative in the Draft RMP/EIS which the agency has initially selected that best fulfills the agency's statutory mission and responsibilities and offers the most acceptable resolution of the planning issues and management concerns.

Prehistoric ~ Refers to the period wherein Native American cultural activities took place which were not yet influenced by contact with historic nonnative culture(s).

Prescribed fire ~ The introduction of fire to an area under regulated conditions for specific management purposes (usually vegetation manipulation).

Presuppression ~ All actions involved in the location or allocation of suppression resources in order to be prepared to suppress wildland fires.

Proper use ~ The degree and time of use of the current year's plant growth which, if continued, will either maintain or improve the range condition consistent with conservation of other natural resources.

Proper use factor ~ The degree of use a kind of grazing animal will make of a particular plant when the range is properly grazed.

Public lands ~ Land or interest in land owned by the United States and administered by the Secretary of the Interior through the BLM, except lands located on the outer continental shelf, and land held for the benefit of Indians, Aleuts, and Eskimos.

Range betterment fund ~ A fund established by Congress in FLPMA comprised of 50 percent of the grazing fees collected by the U.S. Treasury. This fund is to be used for on-the-ground rehabilitation, protection, and improvement of the public lands that will arrest rangeland deterioration and improve forage conditions with resulting benefits to wildlife, watershed protection, and livestock production.

Range improvement ~ A structure, excavation, treatment or development to rehabilitate, protect, or improve public lands to advance range betterment; synonymous with range improvement.

Range seeding ~ The process of establishing vegetation by mechanical dissemination of seed.

Range trend ~ The direction of change in range condition and soil.

Raptor ~ Bird of prey with sharp talons and strongly curved beaks (such as hawks, owls, vultures, and eagles).

"Recreation and Public Purposes Act" ~ This act authorized the Secretary of the Interior to lease or convey public lands for recreational and public pur-

poses under specified conditions of states or their political subdivisions, and to nonprofit corporations and associations.

Recreational opportunity ~ Those outdoor recreation activities which offer satisfaction in a particular physical, social, and management setting in the EIS areas; these activities are primarily hunting, fishing, wildlife viewing, photography, boating, and camping.

Recreation opportunity spectrum ~ A framework for defining and stratifying classes of outdoor recreation environment, activities, and experience opportunities. These are defined along a continuum or spectrum divided into seven classes: primitive, semiprimitive nonmotorized, semiprimitive motorized, roaded modified, roaded natural, rural, and urban.

Recreational river areas ~ Those rivers or sections of rivers that are readily accessible by road or railroad, that may have some development along their shorelines, and that may have undergone some impoundment or diversion in the past.

Research natural area (RNA) ~ An area where natural processes predominate and which is preserved for research and education; under current BLM policy, these areas must meet the relevance and importance criteria of ACEC's and are designated as ACEC's.

Residual ground cover ~ That portion of the total vegetative ground cover that remains after the livestock grazing season.

Resiliency, economic or social ~ The ability of a community to respond to externally induced changes such as larger economic or social forces.

Resource advisory council (RAC) ~ A council established by the Secretary of the Interior to provide advice or recommendations to BLM management. In some states, provincial advisory councils (PAC's) are functional equivalents of RAC's.

Resource area ~ The on-the-ground management unit of the BLM comprised of BLM-administered land within a specific geographic area.

Resource area profile ~ A component of the analysis of the management situation; a description of the current condition, amount, location, use and demands of the natural resources in a planning area.

Resource management plan (RMP) ~ Current generation of land use plans developed by BLM under the FLPMA; replaces the older generation management framework plans; provides long-term (up to 20 years) direction for the management of a particular area of land, usually corresponding to a BLM resource area, and its resources.

Retort ~ A vessel used for the distillation of volatile materials.

Revision ~ The process of completely rewriting the land use plan due to changes in the planning area affecting major portions of the plan or the entire plan.

Rhyolite ~ A group of extrusive igneous rocks with the same composition as its intrusive equivalent, granite.

Right-of-way ~ A permit or an easement which authorizes the use of public lands for certain specified purposes, commonly for pipelines, roads, telephone lines, electric lines, reservoirs, etc.; also, the lands covered by such an easement or permit.

Right-of-way corridor ~ A parcel of land that has been identified by law, Secretarial order, through a land use plan or by other management decision as being the preferred location for existing and future right-of-way grants and suitable to accommodate one type of right-of-way or one or more rights-of-way which are similar, identical, or compatible.

Riparian conservation area (RCA) ~ An area delineated on the ground that encompasses a riparian ecosystem.

Riparian habitat ~ Riparian habitat is defined as a specialized form of wetland restricted to areas along, adjacent to, or contiguous with perennially and intermittently flowing rivers and streams; also, periodically, flooded lake and reservoir shore areas, as well as lakes with stable water levels with characteristic vegetation.

Rock art sites ~ Petroglyphs or pictographs.

Rockshelter ~ Naturally-formed recess in a rock formation which provided shelter to prehistoric occupants.

Road ~ A vehicle route which has been improved and maintained by mechanical means to endure relatively regular and continuous use.

Roadless ~ For the purpose of the wilderness review program, this refers to the absence of roads which have been improved and maintained by mechanical means to ensure relatively regular and continuous use. A way

maintained solely by the passage of vehicles does not constitute a road. *Words and phrases used in the above definition of roadless are defined as follows:*

Improved and maintained ~ Actions taken physically by man to keep the road open to vehicular traffic. "Improved" does not necessarily mean formal construction. "Maintained" does not necessarily mean annual maintenance.

Mechanical means ~ Use of hand or power machinery or tools.

Relatively regular and continuous use ~ Vehicular use which has occurred and will continue to occur on a relatively regular basis. Examples are access roads for equipment to maintain a stock water tank or other established water sources, access roads to maintained recreation sites or facilities, or access roads to mining claims.

Runoff ~ The water that flows on the land surface from an area in response to rainfall or snowmelt. As used in this RMP/EIS, runoff from an area becomes streamflow when it reaches a channel.

Salinity ~ A measure of the mineral substances dissolved in water.

Salable minerals ~ High volume, low value mineral resources including common varieties of rock, clay, decorative stone, sand, gravel, and cinder.

Satisfactory big game habitat condition ~ Big game habitat which does not have any habitat component deficiencies.

Scablands ~ Areas with low sagebrush and other forb communities on extremely shallow, stoney soils usually subtended by basalt or clay.

Scale ~ Refers to the geographic area and data resolution under examination in an assessment or planning effort.

Scenic byways ~ Highway routes which have roadsides or corridors of special aesthetic, cultural, or historic value. An essential part of the highway is its scenic corridor. The corridor may contain outstanding scenic vistas, unusual geologic features, or other natural elements.

Scenic quality ~ The degree of harmony, contrast and variety within a landscape.

Scenic river ~ A river or section of a river that is free of impoundments and whose shorelines are largely undeveloped but accessible in places by roads.

Scoping ~ The process of identifying the range of consideration, issues, management concerns, preliminary alternatives, and other components of an environmental impact statement or land-use planning document. It involves both internal and external, or public, involvement.

Seasonal (season long) grazing ~ Grazing use throughout a specific season.

Sediment ~ Soil, rock particles and organic or other debris carried from one place to another by wind, water, or gravity.

Selective management categories ~ Three categories broadly defining rangeland characteristics, potential, opportunities, and needs. The three categories are maintain, improve and custodial. The criteria for each category are:

Maintain category criteria:

- Present range condition is satisfactory.
- Allotments have moderate or high resource production potential, and are producing near their potential (or trend is moving in that direction).
- No serious resource-use conflicts/controversies exist.
- Opportunities may exist for positive economic return from public investments.
- Present management appears satisfactory.
- Other criteria appropriate to EIS area.

Improve category criteria:

- Present range condition is unsatisfactory.
- Allotments have moderate to high resource production potential and are producing at low to moderate levels.
- Serious resource-use conflicts/controversy exist.
- Opportunities exist for positive economic return from public investments.
- Present management appears unsatisfactory.
- Other criteria appropriate to EIS area.

Custodial category criteria:

- Present range condition is not a factor.
- Allotments have low resource production

potential, and are producing near their potential.
- Limited resource-use conflicts/controversy exist.
- Opportunities for positive economic return on public investment do not exist or are constrained by technological or economic factors.
- Present management appears satisfactory or is the only logical practice under existing resource conditions.
- Other criteria appropriate to EIS area.

Seral community ~ A successional plant community that differs in species composition from the climax or potential natural community.

Seral stage ~ See *Ecological status.*

Shrub ~ A low, woody plant, usually with several stems, that may provide food and/or cover for animals.

Siliceous ~ Containing silica (silicon dioxide).

Silicic ~ Containing silica in dominant amount.

Silviculture ~ The science and art of producing and tending a forest.

Similarity index ~ The present state of vegetation on an ecological site in relation to the kinds, proportions, and amounts of plants in another vegetation state possible on the site.

Slash ~ The branches, bark, tops, cull logs and broken or uprooted trees left on the ground after logging has been completed.

Social resiliency ~ See *Resiliency*.

Social science ~ The study of society and of individual relationships in and to society, generally including one or more of the academic disciplines of sociology, economics, political science, geography, history, anthropology, and psychology.

Solitude ~ The state of being alone or remote from habitations; isolation; a lonely, unfrequented, or secluded place.

Special recreation management area ~ Areas which require explicit recreation management to achieve the Bureau's recreation objectives and provide specific recreation opportunities. Special management areas are identified in the RMP, which also defines the management objectives for the area. Major Bureau recreation investments are concentrated in these areas.

Special status species ~ Includes the following:

(1) Threatened and endangered (T&E) species are those officially listed as threatened or endangered by the Secretary of the Interior under the provisions of the "Endangered Species Act." A final rule for the listing has been published in the *Federal Register*.

(2) Proposed species are species that have been officially proposed for listing as threatened or endangered by the Secretary of the Interior. A proposed rule has been published in the *Federal Register*.

(3) Candidate species are those species designated as candidates (Categories 1 and 2) for listing as threatened or endangered by the USFWS/National Marine Fisheries Service (NMFS). A list has been published in the *Federal Register*.

(4) State listed species are those proposed for listing or listed by a state in a category implying potential endangerment or extinction. Listing is either by legislation or regulation.

(5) Bureau sensitive species are those designated by a State Director, usually in cooperation with the state agency responsible for managing the species, as sensitive. They are those species that are either: (1) under status review by the FWS/NMFS; (2) whose numbers are declining so rapidly that Federal listing may become necessary; (3) with typically small and widely dispersed populations; or (4) those inhabiting ecological refugia or other specialized or unique habitats.

(6) Assessment species are species which are not presently eligible for official Federal or state status but are of concern in Oregon and may need protection or mitigation in BLM actions (special status is defined in IM-OR-91-57, "Oregon-Washington Special Status Species Policy").

Species diversity ~ The number, different kinds of, and relative abundances of species present in a given area.

Standard ~ A description of the physical and biological conditions or degree of function required for healthy, sustainable lands (e.g., land health standards).

State implementation plan (SIP) ~ A strategic document, prepared by a state (or other authorized air

quality regulatory agency) and approved by the U.S. Environmental Protection Agency, that throughly describes how requirements of the "Clean Air Act" will be implemented (including standards to be achieved, control measures to be applied, enforcement actions in case of violation, etc.).

State listed species ~ Any plant or animal species listed by the State of Oregon as threatened or endangered within the State under Oregon Revised Statutes 496.004, 498.026, or 564.040.

Step-down ~ The process of applying broad-scale science findings and land use decisions to site-specific areas using a hierarchical approach (subbasin review) of understanding current resource conditions, risks, and opportunities.

Stocking rate ~ The amount of animal units on a specified area at a specific time, usually expressed in acres/AUM.

Streambank (and channel) erosion ~ This is the removal, transport, deposition, recutting and bedload movement of material by concentrated flows.

Subbasin review ~ An interagency, collaborative consideration of resources, resource management issues, and management recommendations for one or more subbasins or watershed drainages approximately 800,000 to 1,000,000 acres in size.

Suitable for preservation as wilderness ~ Refers to a recommendation that certain Federal lands satisfy the definition of wilderness in the "Wilderness Act" and have been found appropriate for designation as wilderness on the basis of an analysis of the existing and potential uses of the land.

Sunstone ~ A semiprecious gemstone; a feldspar crystal found in basalt.

Suspended nonuse ~ Temporary withholding of a grazing preference from active use.

Sustainable annual harvest ~ The yield that a forest can produce continuously from a given level of management.

Sustained yield ~ Maintenance of an annual or regular periodic output of a renewable resource from public land consistent with the principles of multiple use.

Synecology ~ The study of community functioning and niche functions of plant populations in an ecosystem context.

Temporary nonrenewable (TNR) grazing use ~ Livestock grazing use authorized when forage is temporarily available due to nonuse, climatic conditions, range improvements, or other factors. When the amount of forage for livestock grazing increases temporarily, a nonrenewable permit may be issued if the increased use is consistent with multiple use objectives and does not interfere with existing livestock operations. Examples of the suitable or normal uses of TNR grazing are:

- to test carrying capacity of an area;
- to authorize use by a nonpermittee;
- for a vegetation treatment, such as a wolf plant problem;
- for better livestock management, such as shifting use between allotments, when one allotment may have excess forage and another needs rest.

The Nature Conservancy (TNC) ~ Private national organization dedicated to the preservation of biological diversity.

Thermal cover ~ Vegetation or topography that prevents radiational heat loss, reduces wind chill during cold weather, and intercepts solar radiation during warm weather.

Threatened species ~ Any plant or animal species defined under the "Endangered Species Act" as likely to become endangered within the foreseeable future throughout all or a significant portion of its range; listings are published in the *Federal Register*.

Thriving natural ecological balance ~ The condition of the public range that exists when management objectives have been achieved that will: (1) sustain healthy populations of wild horses and burros, wildlife, and livestock on public land, and (2) protect the desired plant community from deterioration.

Timber base ~ Commercial forestland judged to be environmentally and economically suitable and available for the continuous production of timber; the land from which the allowable cut is calculated and harvested.

Timber production capability classification ~ The process of partitioning forestland into major classes indicating relative suitability to produce timber on a sustained yield basis.

Total dissolved solids ~ The dry weight of dissolved

material, organic and inorganic, contained in water.

Total maximum daily load (TMDL) ~ An estimate of the total quantity of pollutants (from all sources: point, nonpoint, and natural) that may be allowed into waters without exceeding applicable water quality criteria.

Total preference ~ The total number of animal unit months of livestock grazing on public lands, apportioned and attached to base property owned or controlled by a permittee or lessee. The active preference and suspended preference are combined to make up the total grazing preference.

Tradition ~ Longstanding, socially conveyed, customary patterns of thought, cultural expression, and behavior, such as religious beliefs and practices, social customs and land or resource uses (e.g., root gathering). Traditions are shared generally within a social and/or cultural group and span generations.

Traditional cultural property ~ Cultural site eligible for inclusion in the National Register of Historic Places because of association with cultural practices or beliefs of a living community that are (1) rooted in the community's history, and (2) important to maintaining the continuing cultural identity of the community.

Tribe ~ See *Indian Tribe*.

Turbidity ~ An interference to the passage of light through water due to insoluble particles of soil, organics, microorganisms and other materials.

Unallotted lands ~ Public lands open to grazing which currently have no livestock grazing authorized.

U.S. Department of Interior (USDI) ~ Government department which oversees the BLM and many other agencies.

User day ~ Any calendar day, or portion thereof, for each individual accompanied or serviced by an operator.

U.S. Fish and Wildlife Service (USFWS) ~ Government agency responsible for managing fish and wildlife and their habitats.

Unsatisfactory big game habitat condition ~ Big game habitat which has a deficiency in one or more of the major habitat components.

Utilization ~ The proportion of the current year's forage production that is consumed or destroyed by grazing animals. This may refer either to a single species or to a whole vegetative complex. Utilization is expressed as a percent by weight, height, or numbers within reach of the grazing animals.

Value-at-risk classes ~ Six value classes (1–6, low to high) derived through interdisciplinary team evaluation of resource values for an area. Point values given an area by individual disciplines are combined to determine general values-at-risk classification for an area.

Vandalism ~ Willful or malicious destruction or defacement of public or private property. As used here, this includes damages done for personal gain, particularly unauthorized destructive activities that damage archaeological sites.

Vegetation manipulation ~ Alteration of present vegetation by using fire, plowing, or other means to manipulate natural successional fields.

Visitor-day ~ Twelve visitor-hours, which may be aggregated continuously, intermittently, or simultaneously by one or more persons. Visitor-days may occur either as recreation visitor-days or as nonrecreation visitor-days.

Visual resource(s) ~ The land, water, vegetation, animals, and other features that are visible on all public lands.

Visual resource management classes (VRM) ~ The degree of alteration that is acceptable within the characteristic landscape. It is based upon the physical and sociological characteristics of any given homogenous area.

VRM Class I (preservation) provides for natural ecological changes only. This class includes primitive areas, some natural areas, some wild and scenic rivers and other similar sites where landscape modification activities should be restricted.

VRM Class II (retention of the landscape character) includes areas where changes in any of the basic elements (form, line, color, or texture) caused by management activity should not be evident in the characteristic landscape.

VRM Class III (partial retention of the landscape character) includes areas where changes in the basic elements (form, line, color, or texture) may be evident in the characteristic landscape. However, the changes should remain subordinate to the visual strength of the existing character.

VRM Class IV (modification of the landscape character) includes areas where changes may subordinate the original composition and character; however, they should reflect what could be a natural occurrence within the characteristic landscape.

Volcanic maar ~ A volcanic landform resulting from explosive ash eruptions.

Water quality ~ The chemical, physical, and biological characteristics of water with respect to its suitability for a particular use.

Watershed ~ All lands which are enclosed by a continuous hydrologic drainage divide and lie upslope from a specified point on a stream.

Watershed cover ~ The material (vegetation, litter, and rock) covering the soil and providing protection from, or resistance to, the impact of raindrops and the energy of overland flow, and expressed in percent of the area covered.

Way ~ A vehicle route which has not been improved and maintained by mechanical means to ensure relatively regular and continuous use. These vehicle routes are associated with WSA's.

Wetlands ~ Permanently wet or intermittently flooded areas where the water table (fresh, saline, or brackish) is at, near, or above that soil surface for extended intervals; where hydric wet soil conditions are normally exhibited and where water depths generally do not exceed 2 meters (see *Lacustrine* and *Palustrine*).

Wilderness ~ An area that is essentially natural in character that has been designated by congressional action in order to preserve that naturalness.

Wilderness characteristics ~ Key characteristics of a wilderness listed in section 2(c) of the "Wilderness Act" of 1964 and used by BLM in its wilderness inventory. These characteristics include size, naturalness, outstanding opportunities for solitude, outstanding opportunities for primitive or unconfined recreation, and special features.

Wilderness study area (WSA) ~ Public land under the jurisdiction of the BLM which has been studied for wilderness character and is currently in an interim management status awaiting official wilderness designation or release from WSA status by Congress.

Wildfire ~ Any unwanted wildland fire.

Wildland fire ~ Any nonstructure fire, other than prescribed fire, that occurs in the wildland.

Wildland fire situation analysis ~ A decision-making process that evaluates alternative management strategies against selected safety, environmental, social, economical, political, and resource management objectives as selection criteria.

Wildland fire use ~ The management of naturally-ignited wildland fires to accomplish specific prestated resource management objectives in predefined geographic areas outlined in fire management plans. Wildland fire use replaces the obsolete term *prescribed natural fire* (for example a lightning fire might be designated for wildland fire use).

Wild river areas ~ Those rivers or sections of rivers that are free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and waters unpolluted. These represent vestiges of primitive America.

Withdrawal ~ Withholding of an area of Federal land from settlement, sale, location, or entry under some or all of the general land laws, for the purpose of limiting those laws in order to maintain other public values in the area or reserving the area for a particular public purpose or program; or transferring jurisdiction over an area of Federal land from one department, bureau, or agency to another.

Woodland ~ A forest community occupied primarily by noncommercial species such as juniper, mountain mahogany, or quaking aspen groves; all western juniper forest lands are classified as woodlands, since juniper is classified as a noncommercial species.

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